

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



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

December 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**

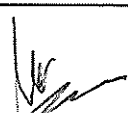

Report Title	Lamma Power Station Extension – Unit L10 & L11 & L12 Monthly EM&A Report (December 2019)
Date	13 January 2020
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EXECUTIVE SUMMARY

This is the 116th 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 December 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. The Gas-in and Synchronization for L10 are planned in mid-September and mid-October 2019 respectively to facilitate commissioning activities.

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.

With the Government’s approval to build the fourth combined cycle gas-fired generating unit (L12) in July 2018, the associated construction work commenced in April 2019. When L12 is commissioned in 2023, the total gas-fired electricity generation will further rise to reach about 70% of our total output.

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, road base and paving works), 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	275kV Station Building Extension works, Main Building Station, CW pipe installation, installation of columns and beams, Site formation works and pipe jacking works
Unit L11 Mechanical Erection	Condenser installation, HRSG installation and turbine block installation
Unit L11 Electrical, Instrumentation & Control Erection	Cable installation

Unit L12 Foundation Works	Bored Pile Work and Pre-drilling Work
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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

Independent Environmental Checker (IEC) conducted a site inspection on 10/12/2019. The site conditions were generally satisfactory.

EPD officials from Regional Office (South) visited Lamma Power Station on 19/12/2019. 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-RS0531-19	01/07/19	31/12/19	Contractor	19/06/19
Construction Noise Permit	GW-RS0809-19	15/09/19	14/03/20	Contractor	11/09/19
Construction Noise Permit	GW-RS0930-19	02/11/19	01/05/20	Contractor	22/10/19
Construction Noise Permit	GW-RS1064-19	04/12/19	03/06/20	Contractor	26/11/19
Construction Noise Permit	PP-RS0013-19	08/08/19	30/01/20	Contractor	06/08/19
WPCO Discharge Licence	WT00027316-2017	01/03/17	31/03/22	Contractor	01/03/17
WPCO Discharge Licence	WT00034006-2019	08/08/19	31/08/24	Contractor	22/08/19
WPCO Discharge Licence	WT00034368-2019	11/09/19	30/09/24	Contractor	11/09/19
Registration of Chemical Waste Producer	WPN5213-912-P2781-22	22/02/16	-	Contractor	22/02/16

Description	Permit No.	Valid Period		Issued To	Date of Issuance
		From	To		
Registration of Chemical Waste Producer	WPN5517-912-T2007-02	17/03/05		Contractor	17/03/05
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
Waste Disposal Billing Account	Account No.: 7027672	24/04/17	-	Contractor	24/04/17
Waste Disposal Billing Account	Account No.: 7033637	01/04/19	-	Contractor	01/04/19

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

One complaint against dust pollution at the construction site was received in the reporting month. An investigation was carried out in accordance with the action plan stipulated in the EM&A Manual. Yet nothing abnormal was identified and the case was closed.

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 before discharge and to ensure compliance with the WPCO discharge licence already obtained.

Unit L11 Mechanical Erection

- 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 Electrical, Instrumentation & Control Erection

- 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 L12 Foundation 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 and to ensure compliance in accordance with the WPCO discharge licence already obtained.

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 December 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, road base and paving works), 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, 275kV station building extension works,

Main Station Building, CW pipe installation, installation of columns and beams, site formation works and pipe jacking works. Construction activities for Unit L11 mechanical erection were condenser installation, HRSG installation and turbine block installation. Construction activity for Unit L11 electrical, instrumentation & control erection was cable installation. Construction activities for Unit L12 foundation works were bored pile work and pre-drilling work. 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, road base and paving works)	<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"> – General noise mitigation measures employed at all work sites throughout the construction phase. – 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 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
2.	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		
3.	Condenser installation HRSG installation Turbine block installation	<p>Air</p> <ul style="list-style-type: none"> - Dust suppression measures implemented according to the EMP. <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		
4.	Cable installation	<p>Air</p> <ul style="list-style-type: none"> - Dust suppression measures implemented according to the EMP. <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.

Item	Construction Activities	Environmental Mitigation Measures
Unit L11 Civil and Building Works		
5.	275kV Station Building Extension Works	<p>Air</p> <ul style="list-style-type: none"> - All regulated machine attached with valid exception/approval NRMM labels. - Wheel washing facility was provided. <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 desilting pit and tanks for reuse on water spraying. <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
6.	Main Station Building, CW Pipe Installation, Installation of Columns and Beams, Site Formation Works and Pipe Jacking Works (Set up of jacking and receiving pit)	<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. - Excavated slope and soil stock covered with cement or tarpaulin. - Wheel washing facility was provided. <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 desilting 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
Unit L11 Mechanical Erection		
7	Condenser installation HRSG installation Turbine block installation	<p>Air</p> <ul style="list-style-type: none"> – Dust suppression measures implemented according to the EMP. <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 Electrical, Instrumentation & Control Erection		
8	Cable installation	<p>Air</p> <ul style="list-style-type: none"> – Dust suppression measures implemented according to the EMP. <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 L12 Foundation Works		
9.	Bored Pile Work	<p>Air</p> <ul style="list-style-type: none"> – Dust suppression in the main haul road. – Using ULSD for PMEs. – Cover dusty stockpile with tarpaulin and water spraying. <p>Noise</p> <ul style="list-style-type: none"> – General noise mitigation measure employed at all work sites throughout the construction phase. – Routine checking should be carried out to ensure the requirements as stipulated in the CNP have been fulfilled. <p>Wastewater</p> <ul style="list-style-type: none"> – Wastewater should be pumped to the sedimentation ponds for desilting process. After that, waste water will be re-used for construction activities or pumped

Item	Construction Activities	Environmental Mitigation Measures
		<p>for storage.</p> <p>Waste Management</p> <ul style="list-style-type: none"> - Waste Management Plan submitted and implemented
10.	Pre-drilling Work	<p>Noise</p> <ul style="list-style-type: none"> - General noise mitigation measure employed at all work sites throughout the construction phase. - Routine checking should be carried out to ensure the requirements as stipulated in the CNP have been fulfilled. <p>Wastewater</p> <ul style="list-style-type: none"> - All wastewater will be re-used for construction activities or pumped for storage. <p>Waste Management</p> <ul style="list-style-type: none"> - Waste Management Plan submitted and implemented.

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.

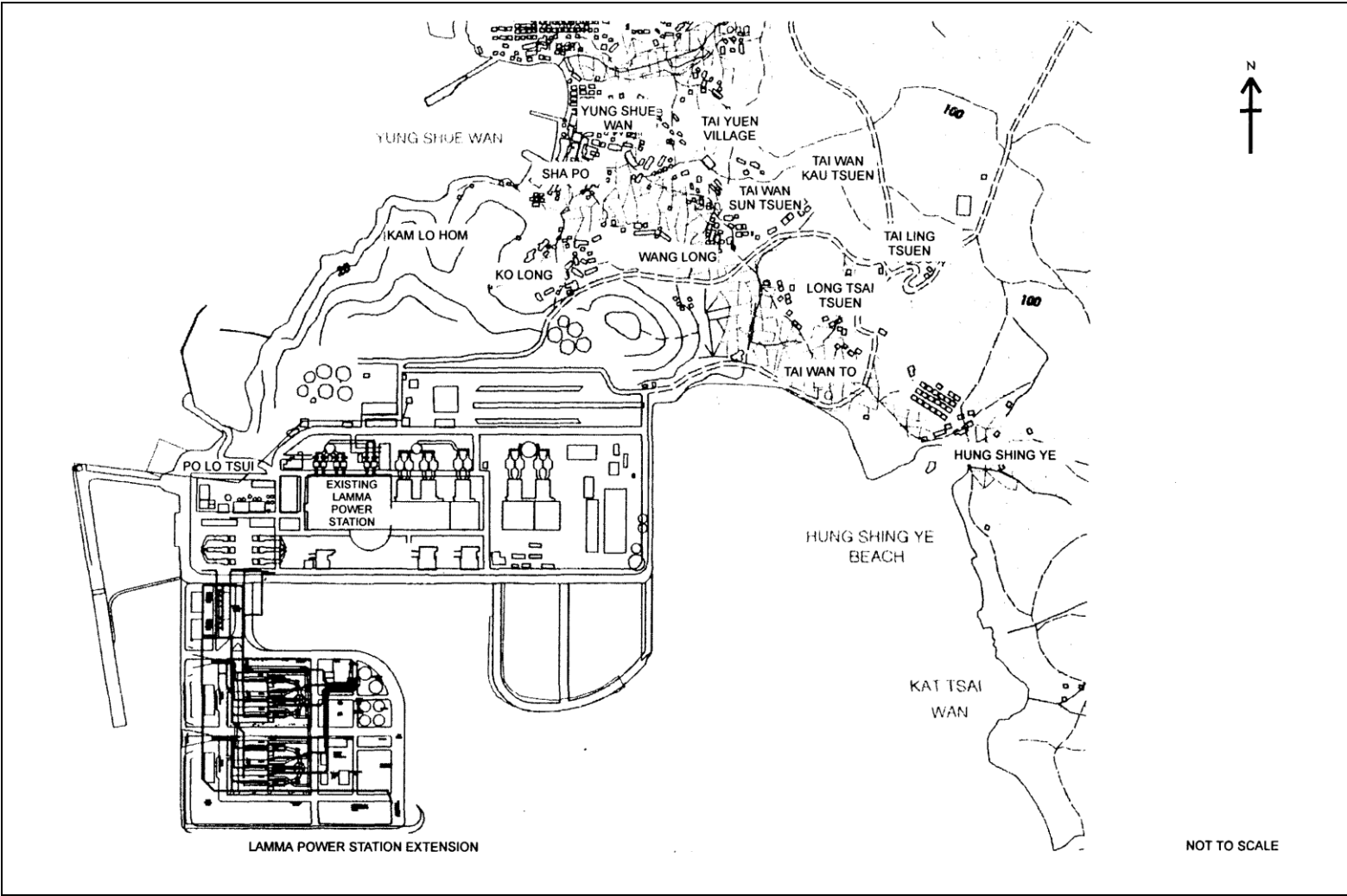


Figure 1.1 Layout of Work Site

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.

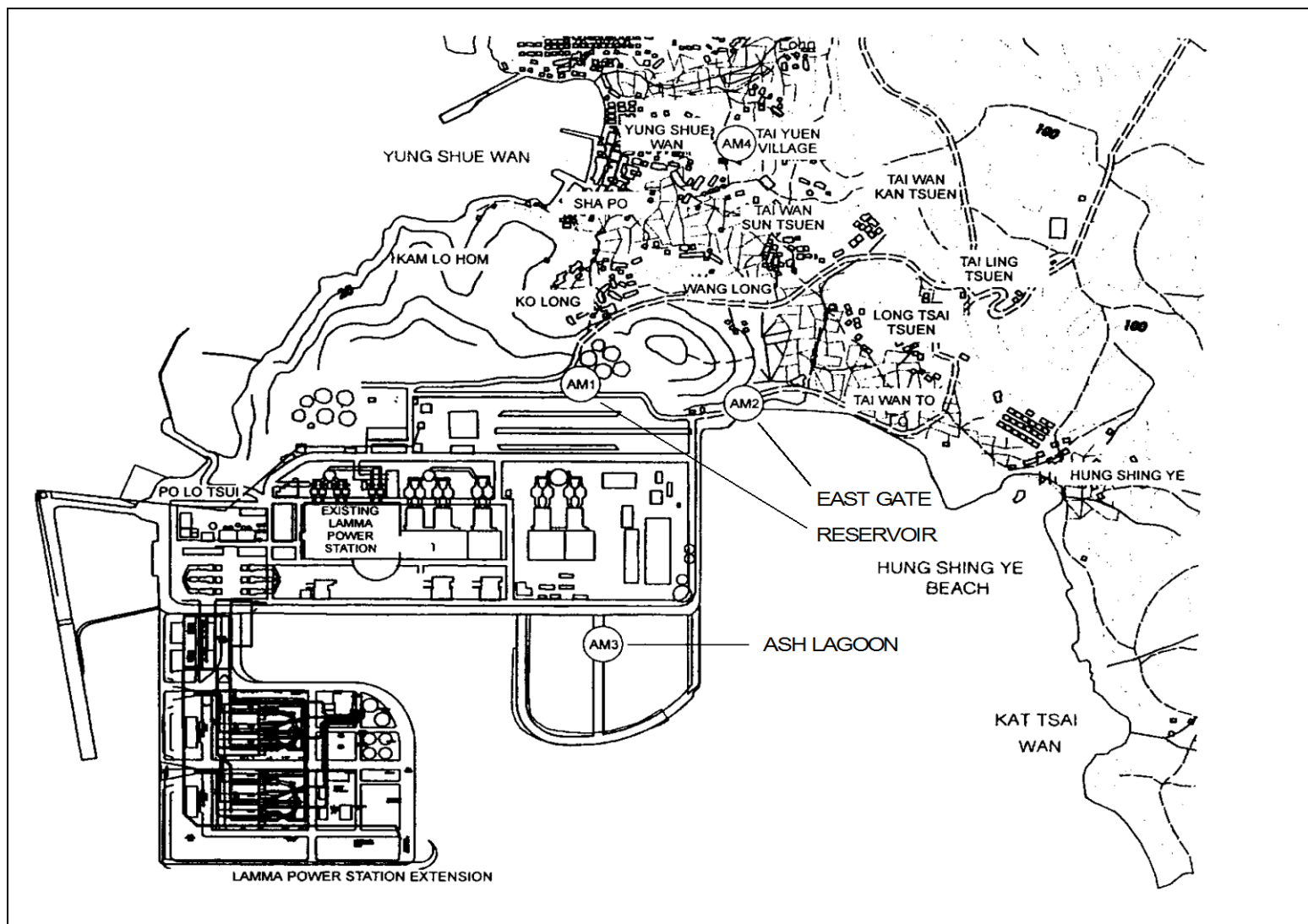


Figure 2.1 Location of Air Quality Monitoring Stations

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
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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 calibrations for Ching Lam and Ash Lagoon noise monitoring stations were carried out in September and December 2019 respectively. The next calibrations for the corresponding noise monitoring stations were scheduled in March and June 2020 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.

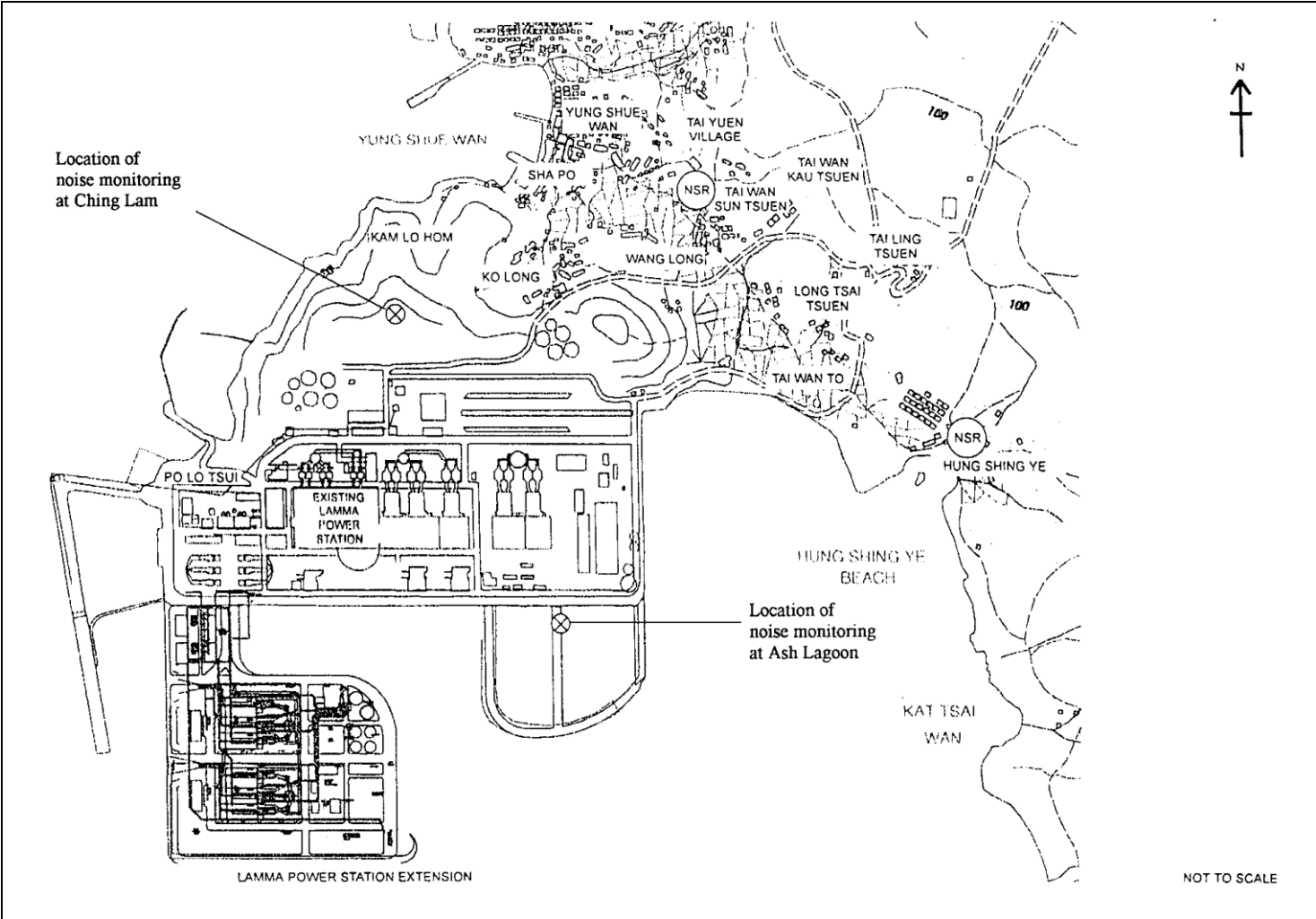


Figure 3.1 Location of Noise Monitoring Stations

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)	01/12/19-31/12/19	0	0	
2	Ambient TSP (1-hour)	01/12/19-31/12/19	0	0	
Noise					
1	Noise level at the critical NSR's predicted by the noise alarm monitoring system	01/12/19-31/12/19	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 December 2019 are shown in [Table 4.2](#).

Table 4.2 Estimated Amounts of Waste in December 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

11,100.40 Tonnes	0 Tonnes	20.29 Tonnes	0 Litres
------------------	----------	--------------	----------

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

4.4 Site Environmental Audit

Independent Environmental Checker (IEC) conducted a site inspection on 10/12/2019. The site conditions were generally satisfactory.

EPD officials from Regional Office (South) visited Lamma Power Station on 19/12/2019. 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-RS0531-19	01/07/19	31/12/19	Power Block Facilities works for Unit L10. Operation of PME during restricted hours	Valid
Construction Noise Permit	GW-RS0809-19	15/09/19	14/03/20	Civil and Building Works for Unit L11. Operation of PME during restricted hours	Valid
Construction Noise Permit	GW-RS0930-19	02/11/19	01/05/20	Foundation work for Unit L12. Operation of PME during restricted hours.	Valid
Construction Noise Permit	GW-RS1064-19	04/12/19	03/06/20	Foundation work for Unit L12 at Station Road. Operation of PME during restricted hours.	Valid

Description	Permit No.	Valid Period		Highlights	Status
		From	To		
Construction Noise Permit	PP-RS0013-19	08/08/19	30/01/20	Percussive piling for foundation work of Unit L12.	Valid
WPCO Discharge Licence#	WT00027316-2017	01/03/17	31/03/22	Civil and Building Works for Unit L10	Valid
WPCO Discharge Licence##	WT00034006-2019	08/08/19	31/08/24	Civil and Building Works for Unit L11	Valid
WPCO Discharge Licence	WT00034368-2019	11/09/19	30/09/24	Foundation Works for L12	Valid
Registration of Chemical Waste Producer	WPN5213-912-P2781-22	22/02/16	-	Civil and Building Works for Unit L10	Valid
Registration of Chemical Waste Producer	WPN5517-912-T2007-02	17/03/05		E&M Equipment Installation and Maintenance	Valid
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 – L10	Valid
Waste Disposal Billing Account	Account No.: 7031135	21/06/18	-	Civil and Building Works for Unit L11	Valid
Waste Disposal Billing Account	Account No.: 7027672	24/04/17	-	E&M Erection of Power Block Facilities – L11	Valid
Waste Disposal Billing Account	Account No.: 7033637	01/04/19	-	Foundation works for Unit L12	Valid

Notes: # - No discharge of effluent was carried out in the reporting period.

- Water quality monitoring was carried out in November 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 December 2019, one complaint against the construction activities was received as summarized in Table 4.4.

Table 4.4 Environmental Complaints Received in December 2019

Case Reference / Date, Time Received / Date, Time Concerned	Descriptions /Actions Taken	Conclusion / Status
Ref.: LMX/C/1902 Received: 10/12/2019 Concerned: "Recently"	<p>A letter (dated 10/12/2019) was received from EPD regarding a complaint against construction dust pollution at the Lamma Extension site.</p> <p>The ET Leader and Engineer had initiated an investigation with the Contractors in accordance with the action plan stipulated in the EM&A Manual. The investigation result revealed that proper dust suppression / control measures were in place and there was no abnormal site activity in the week before. EPD officials also inspected the Lamma Extension site on 19/12/2019 with no adverse comment.</p> <p>The dust monitoring data had also been reviewed and no exceedance of action / limit levels of TSP was recorded in December 2019.</p> <p>Nonetheless, the Contractors had been reminded of their obligations to follow the statutory requirements and the construction works would continue to be monitored under the EM&A program.</p> <p>The IEC and EPD had been informed of the findings accordingly.</p>	<p>Nothing abnormal was identified.</p> <p>Case closed.</p>

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 before discharge and to ensure compliance in accordance with the WPCO discharge licence already obtained.

Unit L11 Mechanical Erection

Noise Impact

- 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 Electrical, Instrumentation & Control Erection

Noise Impact

- 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 L12 Foundation 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 and to ensure compliance in accordance with the WPCO discharge licence already obtained.

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. One complaint against dust pollution at the construction site was received in the reporting month but nothing abnormal was identified. No prosecution was received for this Project in the reporting period.

The environmental performance of the Project was generally satisfactory.

Appendix A Organization Chart

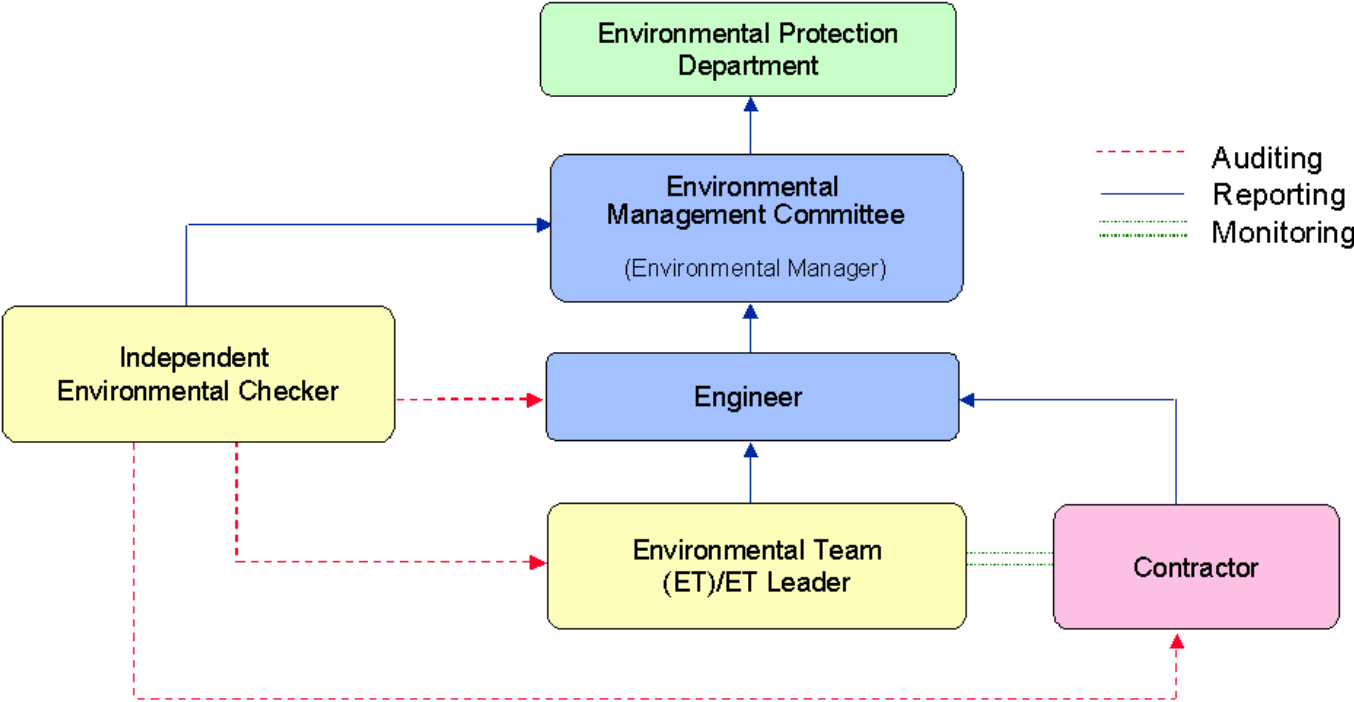


Figure A.1 Organisation of EM&A Programme at Construction Phase

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 (December 2019 to March 2020)

24hr TSP Monitoring	1hr TSP Monitoring
2/December/2019	2/ December /2019 1500hr to 1800hr
8/ December /2019	8/ December /2019 1500hr to 1800hr
14/ December /2019	14/ December /2019 1500hr to 1800hr
20/ December /2019	20/ December /2019 1500hr to 1800hr
26/ December /2019	26/ December /2019 1500hr to 1800hr
1/January/2020	1/January/2020 1500hr to 1800hr
7/January/2020	7/January/2020 1500hr to 1800hr
13/January/2020	13/January/2020 1500hr to 1800hr
19/January/2020	19/January/2020 1500hr to 1800hr
25/January/2020	25/January/2020 1500hr to 1800hr
31/January/2020	31/January/2020 1500hr to 1800hr
6/February/2020	6/February/2020 1500hr to 1800hr
12/February/2020	12/February/2020 1500hr to 1800hr
18/ February/2020	18/February/2020 1500hr to 1800hr
24/February/2020	24/February/2020 1500hr to 1800hr
1/March/2020	1/March/2020 1500hr to 1800hr
7/March/2020	7/ March/2020 1500hr to 1800hr
13/March/2020	13/ March/2020 1500hr to 1800hr
19/ March/2020	19/ March/2020 1500hr to 1800hr
25/March/2020	25/ March/2020 1500hr to 1800hr

APPENDIX D AIR QUALITY MONITORING RESULTS

Site: Lamma Power Station Extension

Month: December 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. (%)
2/12/2019	67	118	64	85	44	360	54
8/12/2019	42	47	35	21	23	90	47
14/12/2019	44	44	36	44	26	60	75
20/12/2019	42	43	39	47	24	70	78
26/12/2019	75	83	71	78	19	360	73

1 hour TSP Measurement:-

Date	Time	TSP concentration ($\mu\text{g}/\text{m}^3$)		
		Reservoir (AM1)	East Gate (AM2)	Ash Lagoon (AM3)
2/12/2019	15:00 - 15:59	96	155	81
	16:00 - 16:59	68	102	66
	17:00 - 17:59	40	90	62
8/12/2019	15:00 - 15:59	50	70	42
	16:00 - 16:59	69	54	39
	17:00 - 17:59	54	47	46
14/12/2019	15:00 - 15:59	35	45	51
	16:00 - 16:59	56	56	56
	17:00 - 17:59	50	60	44
20/12/2019	15:00 - 15:59	31	39	28
	16:00 - 16:59	31	34	31
	17:00 - 17:59	36	34	41
26/12/2019	15:00 - 15:59	115	125	117
	16:00 - 16:59	106	124	118
	17:00 - 17:59	109	110	93

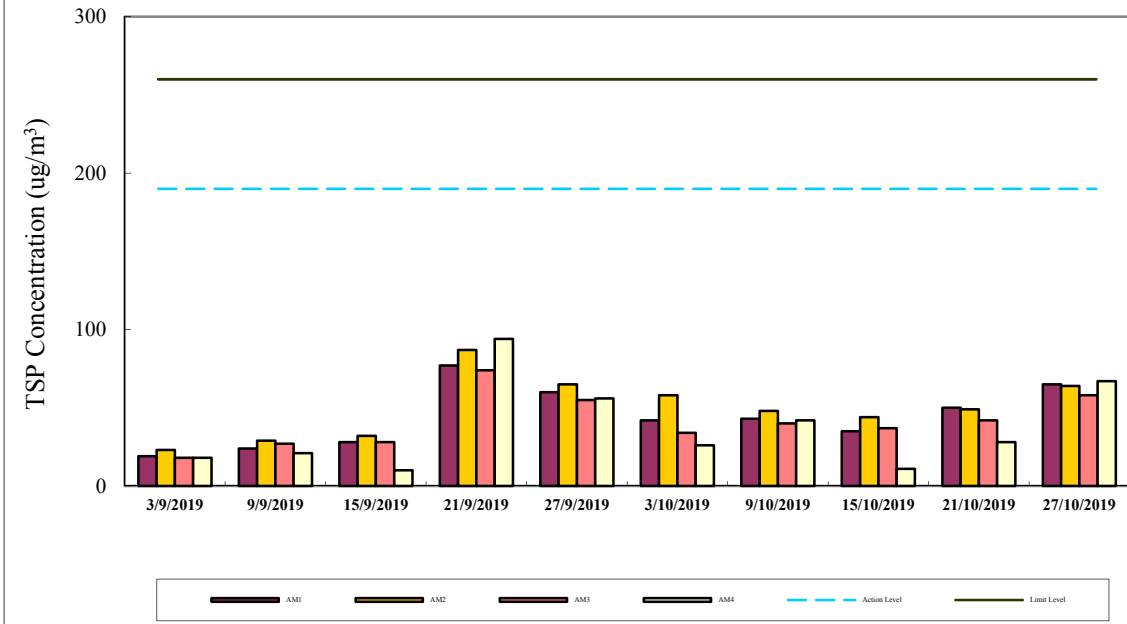
	1-hr TSP ($\mu\text{g}/\text{m}^3$)	24-hr TSP ($\mu\text{g}/\text{m}^3$)
Action Level	340	190
Limit Level	500	260

Calibration: Calibration details are shown in appendix F.

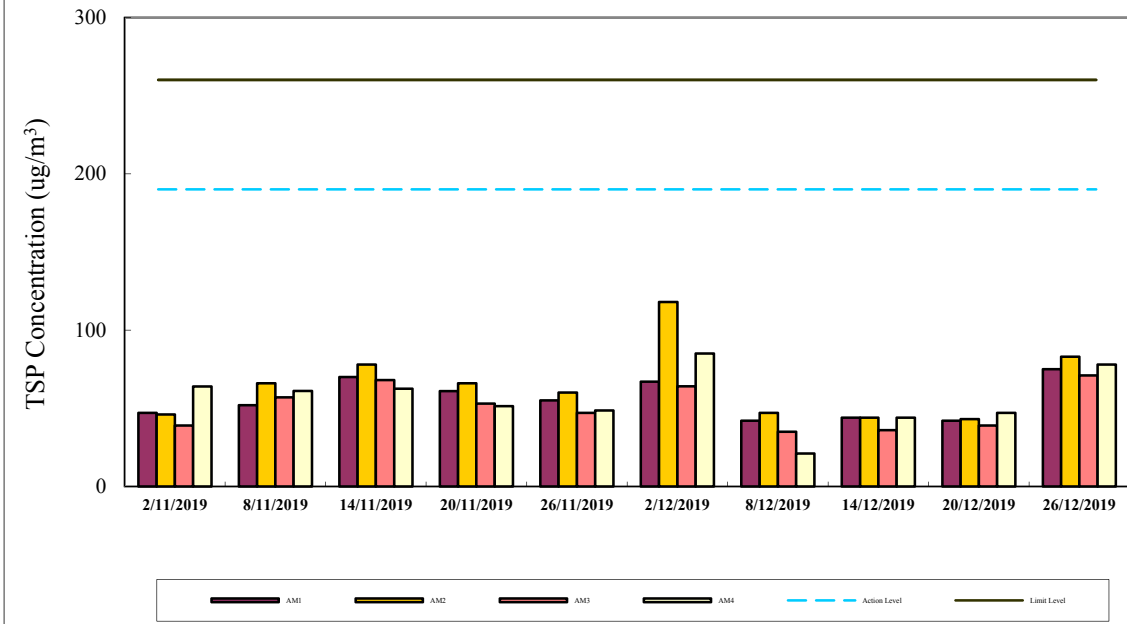
Equipment used:

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

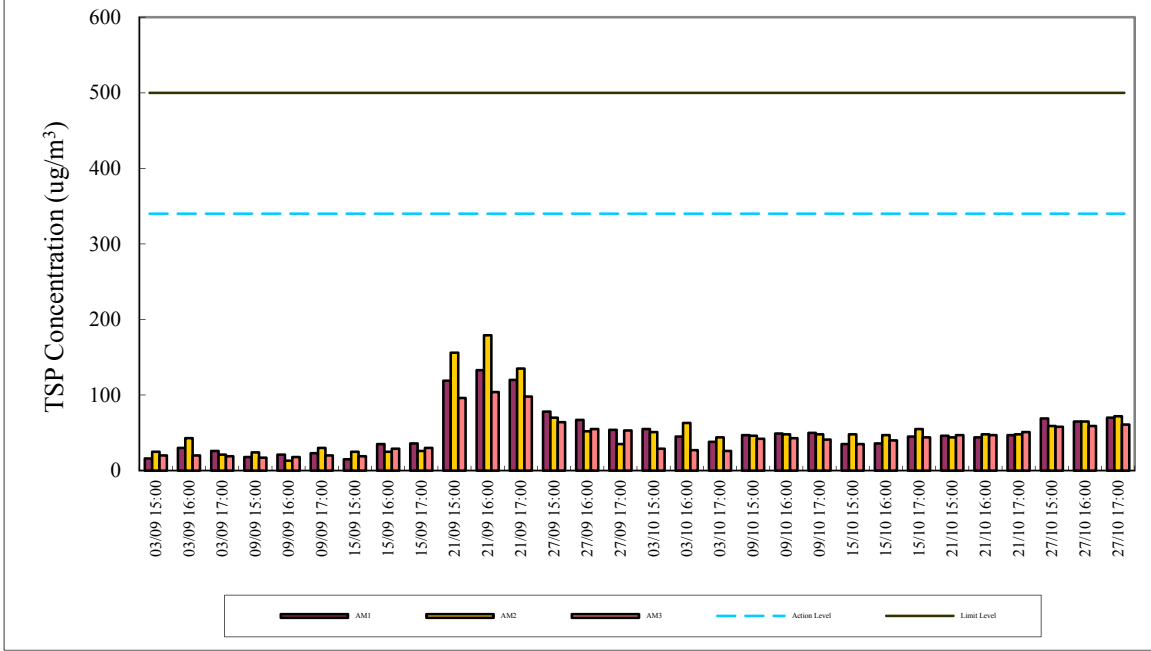
24-hr TSP Air Monitoring Data (September 2019 - October 2019)



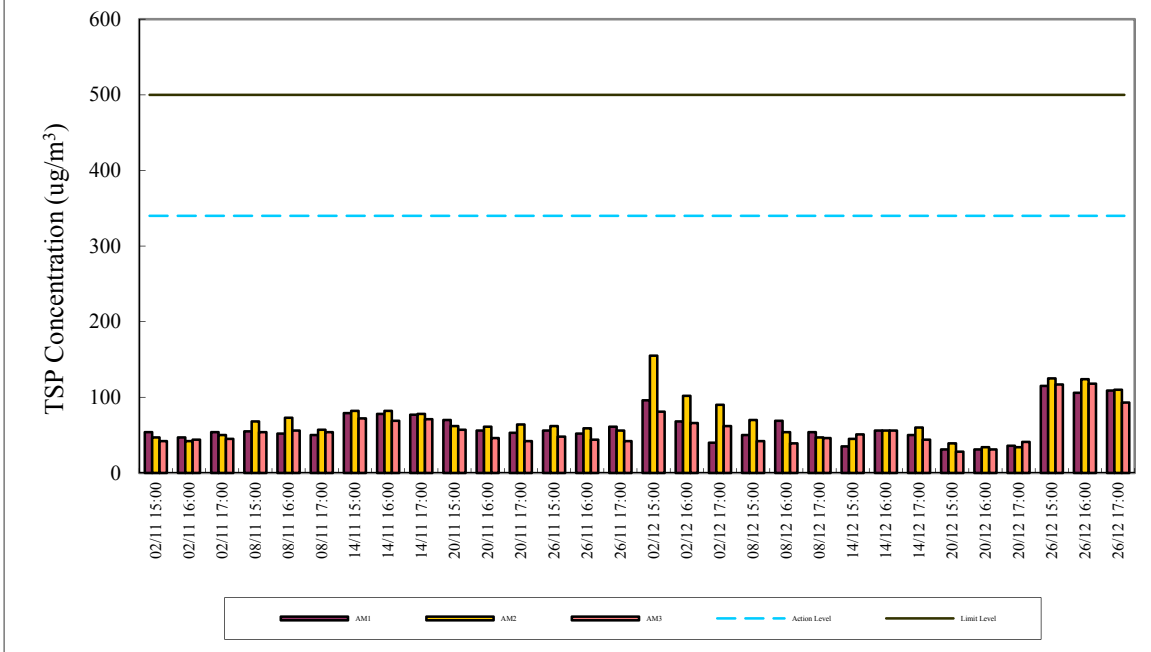
24-hr TSP Air Monitoring Data (November 2019 - December 2019)



1-hr TSP Air Monitoring Data (September 2019 - October 2019)



1-hr TSP Air Monitoring Data (November 2019 - December 2019)



Appendix E

Continuous Noise Monitoring Results for December 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)
 19/08/2019 (Ching Lam)
 B&K 4231 calibrator - 02/10/2019

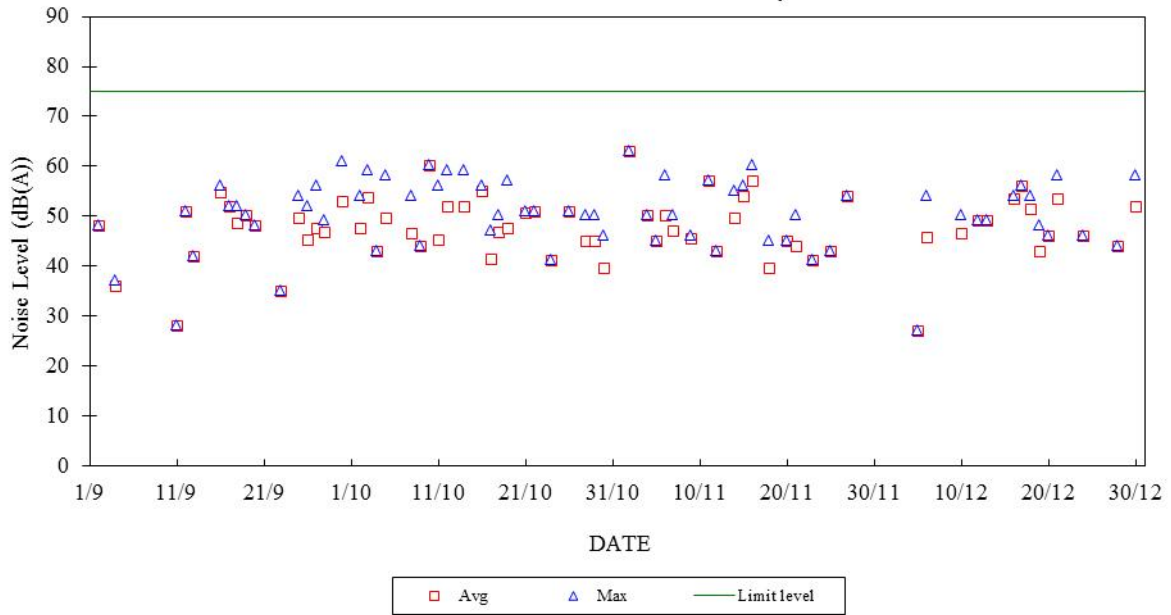
Date	Time	Calculated Noise Level at NSR at Long Tsai Tsuen/Hung Shing Ye (dB(A))		Limit Noise Level (dB(A))	Calculated Noise Level at NSR at the school within Tai Wan San Tsuen (dB(A))		Limit Noise Level (dB(A))
		Max	Avg		Max	Avg	
01/12/2019	07:00-23:00	53	48	60	46	39	60
01/12/2019	23:00-07:00	42	33	45	45	40	45
02/12/2019	07:00-19:00	---	---	75	40	35	70
02/12/2019	19:00-23:00	---	---	60	41	36	60
02/12/2019	23:00-07:00	45	42	45	45	39	45
03/12/2019	07:00-19:00	---	---	75	---	---	70
03/12/2019	19:00-23:00	---	---	60	39	33	60
03/12/2019	23:00-07:00	45	41	45	41	35	45
04/12/2019	07:00-19:00	---	---	75	---	---	70
04/12/2019	19:00-23:00	---	---	60	---	---	60
04/12/2019	23:00-07:00	45	40	45	44	35	45
05/12/2019	07:00-19:00	27	27	75	50	50	70
05/12/2019	19:00-23:00	32	31	60	41	34	60
05/12/2019	23:00-07:00	43	34	45	43	36	45
06/12/2019	07:00-19:00	54	46	75	---	---	70
06/12/2019	19:00-23:00	---	---	60	44	38	60
06/12/2019	23:00-07:00	45	38	45	41	36	45
07/12/2019	07:00-19:00	---	---	75	57	51	70
07/12/2019	19:00-23:00	39	33	60	38	32	60
07/12/2019	23:00-07:00	45	44	45	39	35	45
08/12/2019	07:00-23:00	52	45	60	42	37	60
08/12/2019	23:00-07:00	36	30	45	42	37	45
09/12/2019	07:00-19:00	---	---	75	44	38	65
09/12/2019	19:00-23:00	30	30	60	45	42	60
09/12/2019	23:00-07:00	43	34	45	45	40	45
10/12/2019	07:00-19:00	50	47	75	43	39	65
10/12/2019	19:00-23:00	---	---	60	45	41	60
10/12/2019	23:00-07:00	37	31	45	45	40	45
11/12/2019	07:00-19:00	---	---	75	47	39	65
11/12/2019	19:00-23:00	---	---	60	44	41	60
11/12/2019	23:00-07:00	44	38	45	45	39	45
12/12/2019	07:00-19:00	49	49	75	41	34	70
12/12/2019	19:00-23:00	30	30	60	51	40	60
12/12/2019	23:00-07:00	45	37	45	44	37	45
13/12/2019	07:00-19:00	49	49	75	41	34	70
13/12/2019	19:00-23:00	46	36	60	42	35	60

13/12/2019	23:00-07:00	45	39	45	41	35	45
14/12/2019	07:00-19:00	---	---	75	40	39	70
14/12/2019	19:00-23:00	---	---	60	40	38	60
14/12/2019	23:00-07:00	45	38	45	41	36	45
15/12/2019	07:00-23:00	44	37	60	45	37	60
15/12/2019	23:00-07:00	42	31	45	44	37	45
16/12/2019	07:00-19:00	54	54	75	43	38	70
16/12/2019	19:00-23:00	---	---	60	41	40	60
16/12/2019	23:00-07:00	45	42	45	43	36	45
17/12/2019	07:00-19:00	56	56	75	52	39	70
17/12/2019	19:00-23:00	---	---	60	44	40	60
17/12/2019	23:00-07:00	41	33	45	44	41	45
18/12/2019	07:00-19:00	54	52	75	40	36	70
18/12/2019	19:00-23:00	---	---	60	41	37	60
18/12/2019	23:00-07:00	45	41	45	40	37	45
19/12/2019	07:00-19:00	48	43	75	40	35	70
19/12/2019	19:00-23:00	42	33	60	43	33	60
19/12/2019	23:00-07:00	45	35	45	42	34	45
20/12/2019	07:00-19:00	46	46	75	42	37	70
20/12/2019	19:00-23:00	---	---	60	49	39	60
20/12/2019	23:00-07:00	44	41	45	42	38	45
21/12/2019	07:00-19:00	58	54	75	40	36	70
21/12/2019	19:00-23:00	---	---	60	43	42	60
21/12/2019	23:00-07:00	36	29	45	43	37	45
22/12/2019	07:00-23:00	54	42	60	49	37	60
22/12/2019	23:00-07:00	45	33	45	38	29	45
23/12/2019	07:00-19:00	---	---	75	40	40	70
23/12/2019	19:00-23:00	---	---	60	42	37	60
23/12/2019	23:00-07:00	45	39	45	44	38	45
24/12/2019	07:00-19:00	46	46	75	42	38	70
24/12/2019	19:00-23:00	---	---	60	43	40	60
24/12/2019	23:00-07:00	32	30	45	44	39	45
25/12/2019	07:00-23:00	45	37	60	43	37	60
25/12/2019	23:00-07:00	40	39	45	43	39	45
26/12/2019	07:00-23:00	51	43	60	43	37	60
26/12/2019	23:00-07:00	45	32	45	44	36	45
27/12/2019	07:00-19:00	---	---	75	43	40	70
27/12/2019	19:00-23:00	---	---	60	47	40	60
27/12/2019	23:00-07:00	45	38	45	43	39	45
28/12/2019	07:00-19:00	44	44	75	55	37	70
28/12/2019	19:00-23:00	45	39	60	43	35	60
28/12/2019	23:00-07:00	38	31	45	43	36	45
29/12/2019	07:00-23:00	60	42	60	59	38	60
29/12/2019	23:00-07:00	43	40	45	43	37	45
30/12/2019	07:00-19:00	58	52	75	45	37	70
30/12/2019	19:00-23:00	---	---	60	45	43	60
30/12/2019	23:00-07:00	37	37	45	45	39	45
31/12/2019	07:00-19:00	---	---	75	45	39	70
31/12/2019	19:00-23:00	29	26	60	45	39	60
31/12/2019	23:00-07:00	---	---	45	41	39	45

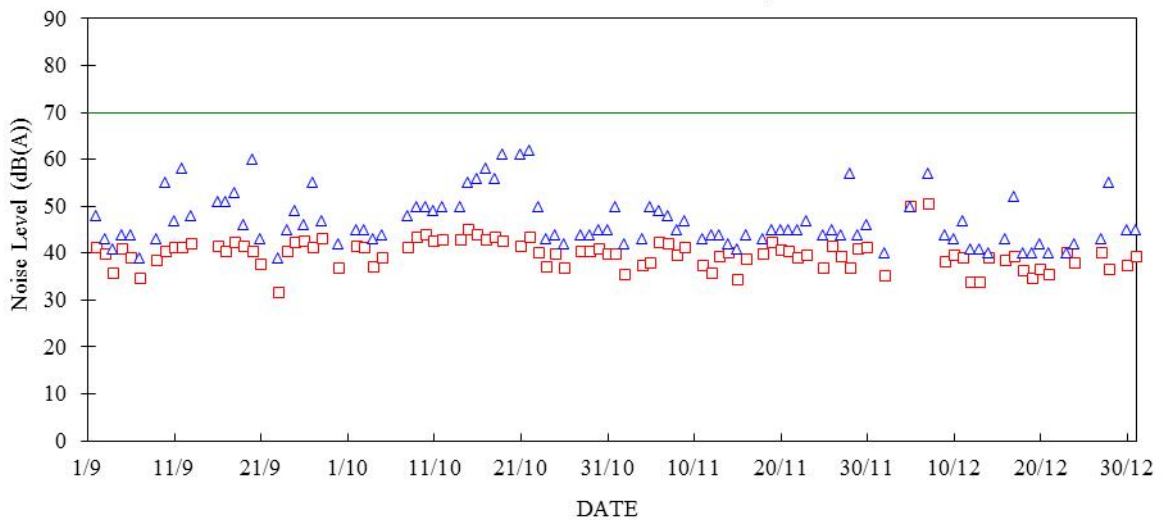
Note:

- a. "----" represents the measured noise monitoring data lower than the established notional background level/discarded under strong wind.
- b. Continuous noise monitoring was also 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) with construction noise permit.

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

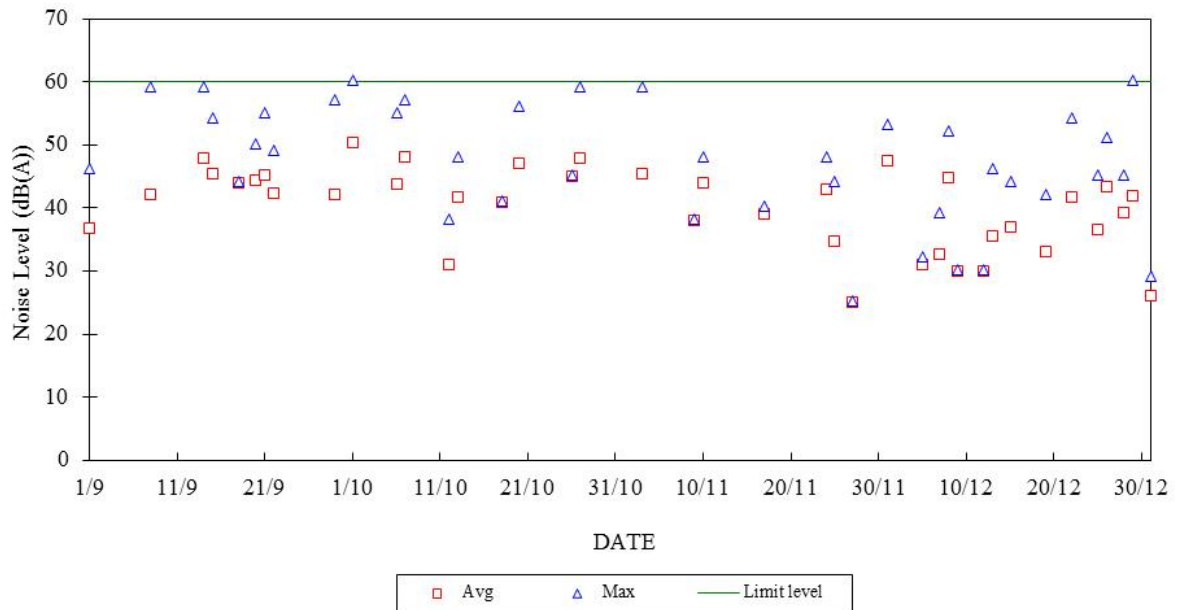


Construction Noise Monitoring in September - December 2019
 NSR at School within Tai Wan San Tsuen
 07:00-19:00 hrs on Normal Weekdays

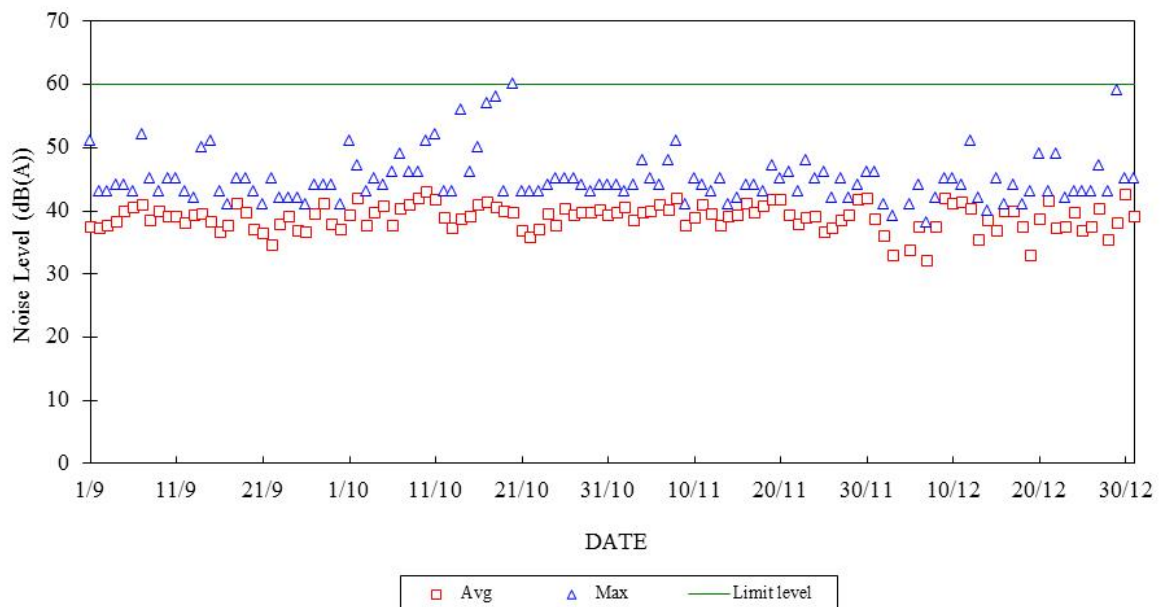


Note: The limit level was reduced to 65 dB(A) during the examination periods on 9-11/12/2019.

Construction Noise Monitoring in September - December 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



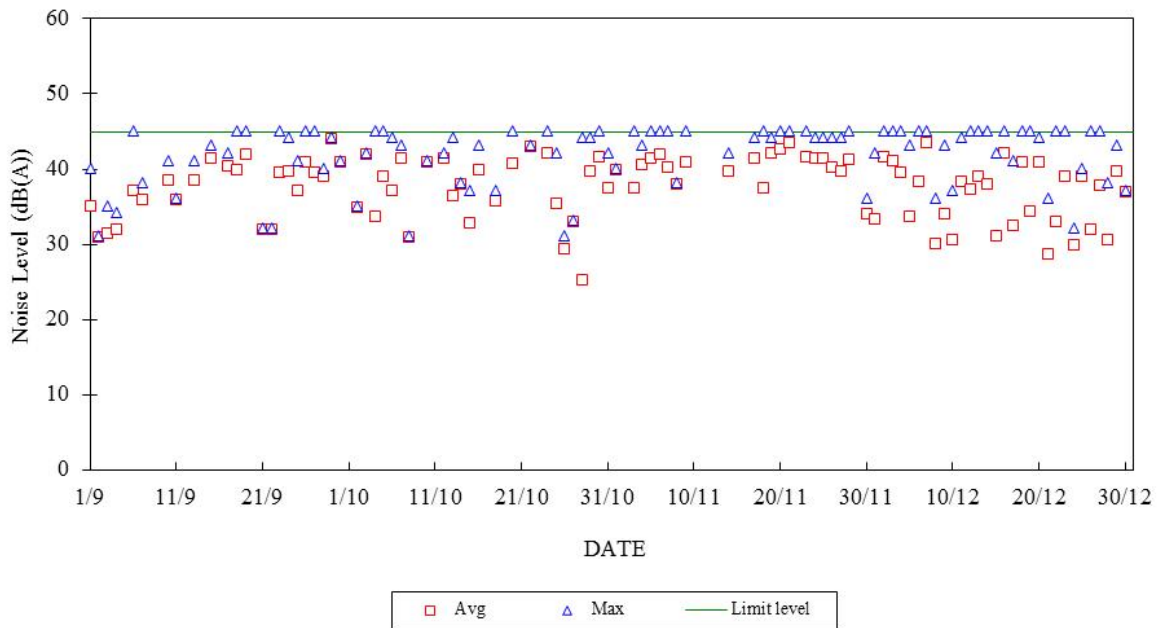
Construction Noise Monitoring in September - December 2019
 NSR at School within Tai Wan San Tsuen
 07:00-23:00 hrs on Holidays and 19:00-23:00 hrs on All Other Days



Construction Noise Monitoring in September - December 2019

NSR at Long Tsai Tsuen/Hung Shing Ye

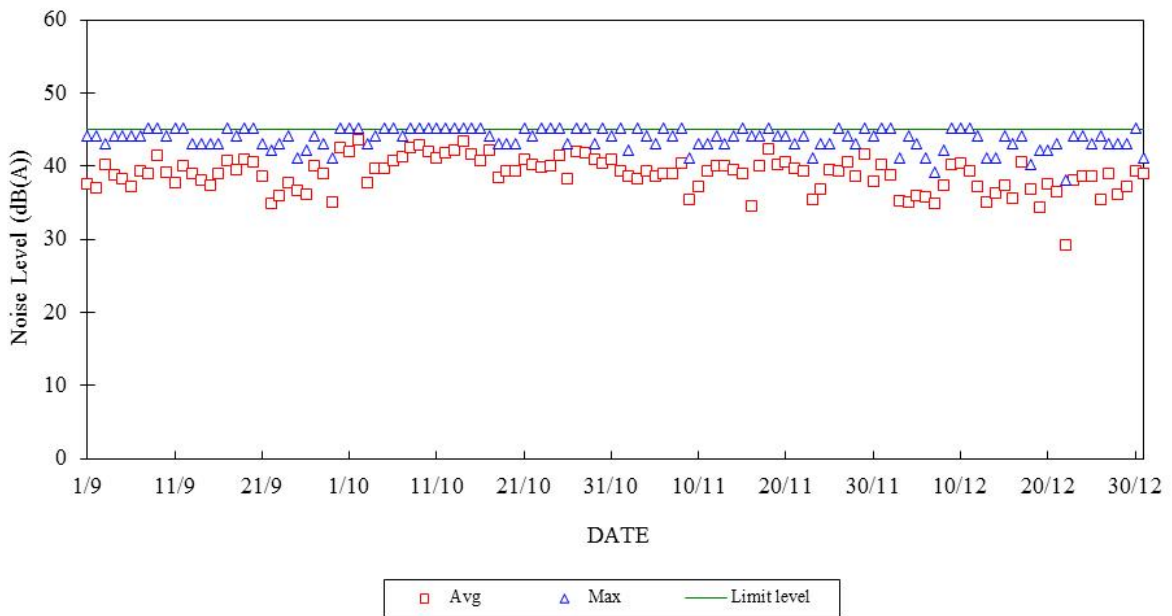
23:00-07:00 hrs of Next Day



Construction Noise Monitoring in September - December 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
TEOM Continuous Dust Monitor
Data Quality Assurance Log Sheet

Month: December 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)
02/12/2019	266.105	4	3.00	13.65
08/12/2019	265.445	4	3.02	13.76
14/12/2019	268.760	4	2.98	13.60
20/12/2019	268.225	4	2.99	13.63
26/12/2019	267.698	4	2.93	13.35

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)
02/12/2019	255.358	4	3.07	13.94
08/12/2019	254.454	4	3.09	14.08
14/12/2019	256.911	4	3.03	13.83
20/12/2019	256.426	4	3.05	13.86
26/12/2019	256.813	4	3.00	13.69

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)
02/12/2019	255.401	4	3.00	13.67
08/12/2019	254.765	4	3.00	13.67
14/12/2019	254.165	4	3.00	13.67
20/12/2019	256.486	4	3.00	13.67
26/12/2019	256.042	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			
Leak Check			
Flow audit			
Flow Controller Calibration			
A/C filter cleaning	✓	✓	✓

Remarks:

Prepared by: Chris Chan

Checked by: HY Chan

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
16/12/2019 / 09:45	WM Tam / TK Ku

Equipment / Item

Equipment / Item	Serial No. / No.
MINIVOL	5580
Used filter paper no.	MQ51
New filter paper no.	MQ52

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: 5.063
After: 5.023

- 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

Conducted by: WM Tam / TK Ku

Checked by: SM Hon

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

Location: Ash Lagoon

Date/Time	Staff Attended
05/12/2019 / 11:20	WM Tam / TL Chu

Equipment	Serial No.
B&K 2250	3024699

1. Calibration

Acoustic calibrator: B&K 4231 (S/N: 3014754)

Noise level measured in calibration: 93.9 (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.
Lamma Power Station Extension
Noise Monitoring Station
Daily Calibration Record

Date	Location: Ching Lam	
	Calibration Results	Deviation from Reference (dB)
01/12/2019	Passed	-0.08
02/12/2019	Passed	-0.09
03/12/2019	Passed	-0.09
04/12/2019	Passed	-0.05
05/12/2019	Passed	-0.11
06/12/2019	Passed	-0.09
07/12/2019	Passed	-0.09
08/12/2019	Passed	-0.07
09/12/2019	Passed	-0.07
10/12/2019	Passed	-0.05
11/12/2019	Passed	-0.06
12/12/2019	Passed	-0.08
13/12/2019	Passed	-0.06
14/12/2019	Passed	-0.06
15/12/2019	Passed	-0.05
16/12/2019	Passed	-0.02
17/12/2019	Passed	-0.03
18/12/2019	Passed	-0.04
19/12/2019	Passed	-0.07
20/12/2019	Passed	-0.05
21/12/2019	Passed	-0.09
22/12/2019	Passed	-0.08
23/12/2019	Passed	-0.07
24/12/2019	Passed	-0.04
25/12/2019	Passed	-0.05
26/12/2019	Passed	-0.09
27/12/2019	Passed	-0.09
28/12/2019	Passed	-0.08
29/12/2019	Passed	-0.07
30/12/2019	Passed	-0.06
31/12/2019	Passed	-0.11

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: 3/12/2019, 10/12/2019, 17/12/2019, 24/12/2019 and 31/12/2019

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: 5/12/2019, 10/12/2019, 18/12/2019 and 27/12/2019.

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: 3/12/2019, 10/12/2019, 17/12/2019, 24/12/2019 and 31/12/2019.

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 Mechanical, Electrical, Instrumentation & Control Erection Work

Dates of Inspection: 5/12/2019, 10/12/2019, 18/12/2019 and 27/12/2019.

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.

L12 Piling Foundation Work

Dates of Inspection: 3/12/2019, 10/12/2019, 17/12/2019, 24/12/2019 and 31/12/2019

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. 	C C C C
	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
B7	<p>In addition to the above specific measures the following general working procedures shall be adopted. **</p> <ul style="list-style-type: none"> • fully-enclosed or watertight grabs shall be used to minimise loss of sediment during the raising of loaded grabs through the water column; • the descent speed of grabs shall be controlled to minimise the seabed impact speed and to reduce the volume of over dredging; • barges shall be loaded carefully to avoid splashing of material; • all barges used for the transport of dredged materials shall be fitted with tight bottom seals in order to prevent leakage of material during loading and transport; • all barges shall be filled to a level which ensures that material does not spill over during loading and transport to the disposal site and that adequate freeboard is maintained to ensure that the decks are not washed by wave action; • the speed of trailer dredgers shall be controlled to prevent propeller wash from stirring up the sea bed sediments; • "rainbowing" sand fill from trailer dredgers shall not be permitted; and • the works shall cause no visible foam, oil, grease or litter or other objectionable matter to be present in the water within and adjacent to the dredging site and along the route to the disposal site. 	
B8	<p>Cumulative impacts shall be assessed through EM&A. Co-ordination with the EM&A consultants for other projects to determine if any exceedances are caused by the other projects or by HEC's activities. Should monitoring results indicate exceedances at sensitive receivers due to HEC's activities, then the above described mitigation measures shall be implemented until impacts reduce to acceptable levels. **</p>	N/A
NOISE		
C1	<p>General noise mitigation measures shall be employed at all work sites throughout the construction phase.</p>	C
C2	<p>Mitigate against general construction noise during Sunday's and public holidays, either at source with portable noise barriers, or by rescheduling of some PME's to less sensitive time periods.</p>	C
C3	<p>Mitigate against night time noise from dredging equipment, with silencers or mufflers. **</p>	N/A
LANDSCAPE & VISUAL IMPACTS		
D1	<p>The following mitigation measures shall be allowed for landscape and visual improvement:</p> <ul style="list-style-type: none"> • Use rubble mound seawall along south and west edges of the reclamation to provide a more natural look. • Break the mass of main buildings by varying the height/division into smaller units. • Plant trees and vegetation for screening. • Adopt colour scheme to blend the buildings into the scenery. 	

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. 	C
<ul style="list-style-type: none"> • 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

ID	Task Name	Duration	Start	Finish	Gantt Chart																														
					January 2020							February 2020							March 2020																
1	16/8002 Unit 10 Outstanding Work Programme	368 days	Sat 1/12/18	Fri 13/12/19	[Gantt bars for each task]																														
2	Unit 10 MSB & HRSG	368 days	Sat 1/12/18	Fri 13/12/19	[Gantt bars for each task]																														
3	Superstructure	340 days	Sat 1/12/18	Fri 15/11/19	[Gantt bars for each task]																														
53	External Works	15 days	Fri 1/11/19	Fri 15/11/19	[Gantt bars for each task]																														
54	EVA North MSB & HRSG	15 days	Fri 1/11/19	Fri 15/11/19	[Gantt bars for each task]																														
55	Curb surrounding Feed Water Pump	6 days	Mon 4/11/19	Sat 9/11/19	[Gantt bars for each task]																														
56	Road base near West & along cable trench	7 days	Fri 1/11/19	Thu 7/11/19	[Gantt bars for each task]																														
57	Road paving near West & along cable trench	12 days	Mon 4/11/19	Fri 15/11/19	[Gantt bars for each task]																														
58	Conduits for streetlight and fs signal	5 days	Mon 4/11/19	Fri 8/11/19	[Gantt bars for each task]																														
59	Road base near East	2 days	Sat 9/11/19	Sun 10/11/19	[Gantt bars for each task]																														
60	Road paving near East	5 days	Mon 11/11/19	Fri 15/11/19	[Gantt bars for each task]																														
61	EVA West MSB	7 days	Fri 8/11/19	Thu 14/11/19	[Gantt bars for each task]																														
62	Road base near South	2 days	Fri 8/11/19	Sat 9/11/19	[Gantt bars for each task]																														
63	Road paving	2 days	Sun 10/11/19	Mon 11/11/19	[Gantt bars for each task]																														
64	Relocate hoarding and Gate 39	3 days	Tue 12/11/19	Thu 14/11/19	[Gantt bars for each task]																														
65	EVA South MSB & HRSG	12 days	Mon 4/11/19	Fri 15/11/19	[Gantt bars for each task]																														
66	Road base near West	2 days	Fri 8/11/19	Sat 9/11/19	[Gantt bars for each task]																														
67	Road paving near West	2 days	Sun 10/11/19	Mon 11/11/19	[Gantt bars for each task]																														
68	Conduits for streetlight and fs signal near East	4 days	Mon 4/11/19	Thu 7/11/19	[Gantt bars for each task]																														
69	Road base near East	3 days	Fri 8/11/19	Sun 10/11/19	[Gantt bars for each task]																														
70	Road paving near East	3 days	Mon 11/11/19	Wed 13/11/19	[Gantt bars for each task]																														
71	Extend hoarding to the East	2 days	Thu 14/11/19	Fri 15/11/19	[Gantt bars for each task]																														
72	EVA East HRSG	14 days	Sat 2/11/19	Fri 15/11/19	[Gantt bars for each task]																														
73	Surface channel outside HRSG Equipment Room	4 days	Mon 4/11/19	Thu 7/11/19	[Gantt bars for each task]																														
74	Remaining on-grade slab at HRSG	6 days	Fri 8/11/19	Wed 13/11/19	[Gantt bars for each task]																														
75	300mm dia. drain to new surface channel	5 days	Sat 2/11/19	Wed 6/11/19	[Gantt bars for each task]																														
76	New surface drain u channel	5 days	Mon 4/11/19	Fri 8/11/19	[Gantt bars for each task]																														
77	Conduits for streetlight and fs signal	3 days	Wed 6/11/19	Fri 8/11/19	[Gantt bars for each task]																														
78	Road base	2 days	Sat 9/11/19	Sun 10/11/19	[Gantt bars for each task]																														
79	Road paving	5 days	Mon 11/11/19	Fri 15/11/19	[Gantt bars for each task]																														
80	Erect hoarding and gate	2 days	Thu 14/11/19	Fri 15/11/19	[Gantt bars for each task]																														
81	Installation of pole for traffic sign@EVA	8 days	Wed 6/11/19	Wed 13/11/19	[Gantt bars for each task]																														

16/8002 Outstanding Work Programme					16-8002 OS Work Prog (04 Nov 19)_BC												Mon 4/11/19												
ID	Task Name	Duration	Start	Finish	Gantt Chart																								
					January 2020				February 2020				March 2020																
					T	W	T	F	S	T	W	T	F	S	T	W	T	F	S	T	W	T	F	S	T	W	T	F	S
82	Cleaning and complete remaining works inside manholes@EVA	14 days	Wed 30/10/19	Tue 12/11/19																									
83	Street lighting	12 days	Mon 4/11/19	Fri 15/11/19																									
84	Lift @ HRSG Installation (Temporary)	30 days	Fri 1/11/19	Sat 30/11/19																									
85	Statutory Submissions & Inspection (Incl. HRSG)	368 days	Sat 1/12/18	Fri 13/12/19																									
96	C.W. Pump, Intake and Urea Plant and Outstanding External Works	34 days	Mon 28/10/19	Sat 30/11/19																									
97	C.W. Pump Area incl. Chlorination Area	18 days	Mon 4/11/19	Thu 21/11/19																									
98	Conduits for streetlight and fs signal@ footpath	5 days	Mon 4/11/19	Fri 8/11/19																									
99	Road Reinstatement at Demin. Plant Road	8 days	Sat 9/11/19	Sat 16/11/19																									
100	Relocation Hoarding to middle road and return area to GEN	5 days	Sun 17/11/19	Thu 21/11/19																									
101	Urea Plant + Middle Road	29 days	Sat 2/11/19	Sat 30/11/19																									
102	Storm drain to Gully@ MH837	6 days	Mon 4/11/19	Sat 9/11/19																									
103	Storm drain MH831 to MH832	6 days	Wed 6/11/19	Mon 11/11/19																									
104	FS pipes at Junction of Intake Road and Middle Road	4 days	Tue 5/11/19	Fri 8/11/19																									
105	New Oily Drain installation and diversion of FS & foam pipe	3 days	Sat 9/11/19	Mon 11/11/19																									
106	Road Base@ Intake Road	3 days	Tue 12/11/19	Thu 14/11/19																									
107	Paving@ Intake Road	3 days	Fri 15/11/19	Sun 17/11/19																									
108	Reinstatement of irrigation pipes	3 days	Wed 6/11/19	Fri 8/11/19																									
109	Ramp of Urea Shelter at North	3 days	Thu 7/11/19	Sat 9/11/19																									
110	Conduits for streetlight and fs signal@ Middle Road & junction of Demin. Plant Road	14 days	Mon 4/11/19	Sun 17/11/19																									
111	Road Kerb	12 days	Sat 2/11/19	Wed 13/11/19																									
112	Road Base	5 days	Thu 14/11/19	Mon 18/11/19																									
113	Road Paving	8 days	Tue 19/11/19	Tue 26/11/19																									
114	Installation of pole for traffic sign@EVA	3 days	Sun 24/11/19	Tue 26/11/19																									
115	Erect hoarding and gate	4 days	Wed 27/11/19	Sat 30/11/19																									
116	Other & External works	14 days	Mon 28/10/19	Sun 10/11/19																									

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

No.	Description	2020	2020	2020
		Jan	Feb	Mar
	Erection Key Date	□ T/O 1-		
A	HRSG PORTION			
A-01	Install Casing (Bottom/Side/Top) with Structure			
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

No.	Description	2020	2020	2020
		Jan	Feb	Mar
	Erection Key Date	□ T/O 1-		
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			
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

No.	Description	2020	2020	2020
		Jan	Feb	Mar
	Erection Key Date	□ T/O 1-		
	Installation of Temporary piping, Support & Silencer Exception of Steam blowing out Dismantle of Temporary piping, Support & Silencer Exception 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

No.	Description	2020	2020	2020
		Jan	Feb	Mar
	Erection Key Date	<div style="border: 1px solid black; width: 10px; height: 10px; margin: 0 auto;"></div> T/O 1-		
B-4	Install GEN			
B-5	Install GT			

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

No.	Description	2020	2020	2020
		Jan	Feb	Mar
	Erection Key Date	□ T/O 1-		
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

No.	Description	2020	2020	2020
		Jan	Feb	Mar
	Erection Key Date	□ T/O 1-		
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

No.	Description	2020	2020	2020
		Jan	Feb	Mar
	Erection Key Date	□ T/O 1-		
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	Timeline		
					January 2020	February 2020	March 2020
1	Civil and Building Works for Unit 11 and Associated Works	1197 days	Fri 1/6/18	Thu 30/9/21			
2	Contract Key Dates	1197 days	Fri 1/6/18	Thu 30/9/21			
3	Contract Commencement Date	0 days	Fri 1/6/18	Fri 1/6/18			
4	Completion Dates	1044 days	Wed 31/10/18	Thu 30/9/21			
5	Section A1 - Ground treatment installation works at Zone 1A	0 days	Wed 31/10/18	Wed 31/10/18			
6	Section A2 - Ground treatment installation works at Zone 1B	0 days	Wed 31/10/18	Wed 31/10/18			
7	Section A3 - Ground treatment installation works at Zone 2	0 days	Sun 17/3/19	Sun 17/3/19			
8	Section A4 - Ground treatment installation works at Zone 3	0 days	Thu 21/3/19	Thu 21/3/19			
9	Section A5 (i) - Ground treatment installation works at Zone 4 - Band drain installation	0 days	Thu 28/3/19	Thu 28/3/19			
10	Section A5 (ii) - Ground treatment installation works at Zone 4 - Surcharge filling	0 days	Wed 30/9/20	Wed 30/9/20			
11	Section A6 (i) - A&A Works for No. 4 C.W. Outfall at Area E18	0 days	Sat 28/3/20	Sat 28/3/20			
12	Section A6 (ii) - External works at Area E15	0 days	Sat 15/2/20	Sat 15/2/20			
13	Section B1 (i) - Area south of L11 MSB and HRSG from GL11-F eastwards leading to Chimney Road at Area E1 & E2	0 days	Sun 1/3/20	Sun 1/3/20			
14	Section B1 (ii) - Supporting structures for overhead cranes of L11 MSB including the associated roof structure except the roof deferred works	0 days	Tue 17/3/20	Tue 17/3/20			
15	Section B1 (iii) - FSRU Civil works at Area E13	0 days	Mon 31/5/21	Mon 31/5/21			
16	Section B2 - Retractable Cover D at Area E22	0 days	Tue 31/3/20	Tue 31/3/20			
17	Section B3 - External works at Area B1, D2 and D4	0 days	Thu 30/4/20	Thu 30/4/20			
18	Section C1 - Area south of L11 MSB from GL11-F westwards leading to Station Road at Area E3(A) & E3(B)	0 days	Sun 1/3/20	Sun 1/3/20			
19	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	Sun 1/12/19	Sun 1/12/19			
20	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	Thu 30/4/20	Thu 30/4/20			
21	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	Sun 1/3/20	Sun 1/3/20			
22	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	Tue 31/12/19	Tue 31/12/19			
23	Section D - (ii) Remaining northern part of L11 HRSG area and its surrounding in Area E6	0 days	Sun 1/3/20	Sun 1/3/20			
24	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	Thu 30/4/20	Thu 30/4/20			
25	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	Thu 30/4/20	Thu 30/4/20			
26	Section D - (v) Gas Duct Foundation, Pipe and Cable Rack and associated trench in Area E20	0 days	Sat 1/2/20	Sat 1/2/20			
27	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	Mon 28/9/20	Mon 28/9/20			
28	Section E1 - (ii) Gas Receiving Station and L11 Gas Receiving Station Equipment Room (GRS) Area Extension at Area E16	0 days	Tue 30/6/20	Tue 30/6/20			
29	Section E1 - (iii) External Works at Area E15 (C)	0 days	Sun 28/2/21	Sun 28/2/21			
30	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	Thu 17/9/20	Thu 17/9/20			
31	Section E3 - Gas Pipe Support Foundation and Pipe Trench and associated external works at Area E14, E15 (A) and E15 (B)	0 days	Tue 30/6/20	Tue 30/6/20			
32	Section E4 - 275kV cable trenching works connecting the 275kV Switching Station Extension and L11 MSB at Area E9 (A)	0 days	Sun 15/9/19	Sun 15/9/19			
33	Section F - 275kV Station Building Extension and associated works at Area E17	0 days	Sat 30/5/20	Sat 30/5/20			
34	Section G - A&A Works at No. 4 C.W. Intake at Area E12	0 days	Sun 31/5/20	Sun 31/5/20			
35	Section H - L11 Steel flue liner at No. 4 Chimney	0 days	Mon 15/7/19	Mon 15/7/19			

ID	Task Name	Duration	Start	Finish	2020		
					January	February	March
36	Section I - (i) 275kV cable trenching works connecting the 275kV Switching Station Extension and L11 MSB at Area E9 (B)	0 days	Fri 15/5/20	Fri 15/5/20			
37	Section I - (ii) Interconnector 2 Trench Modification Works at Area E10	0 days	Fri 15/5/20	Fri 15/5/20			
38	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	0 days	Fri 30/4/21	Fri 30/4/21			
39	Section K1 - External works at Area 15 (E) and 15(F)	0 days	Mon 31/5/21	Mon 31/5/21			
40	Section K2 - Removal of Southern Bund and External Works at Area D5, D6 and D7	0 days	Mon 31/5/21	Mon 31/5/21			
41	Section K3 - All remaining works shall be completed for reporting completion to BD and ready for OP inspection	0 days	Thu 30/9/21	Thu 30/9/21			
42	General & Preliminary	318 days	Fri 1/6/18	Wed 24/4/19			
43	Set up Temporary Site Office and Utilities	90 days	Fri 1/6/18	Wed 29/8/18			
44	Permit Applications & Statuary Submissions	120 days	Thu 30/8/18	Thu 27/12/18			
45	Existing Utilities scanning & Excavation Permit	45 days	Tue 13/11/18	Thu 27/12/18			
46	Tower Crane erection 2@MSB, 1@ 275	50 days	Wed 6/3/19	Wed 24/4/19			
47	Submission and Approval	554 days	Fri 1/6/18	Mon 16/12/19			
48	Method Statement / Temp Work Submission & Approval from HEC for General Works	240 days	Fri 1/6/18	Sat 26/1/19			
49	BD Approval & Consent (If required)	120 days	Fri 1/6/18	Fri 28/9/18			
50	BIM Model, CSD & CBWD Submission & Approval from HEC	200 days	Sat 29/9/18	Fri 26/4/19			
51	Structure Steelwork Connection Design Submission & BD Approval	60 days	Sat 29/9/18	Tue 27/11/18			
52	Structure Steelwork Shop Drawing & Approval	60 days	Sat 13/10/18	Tue 11/12/18			
53	Metal Cladding, louvre & windows submission & BD Approval	60 days	Wed 28/11/18	Sat 26/1/19			
54	Metal Cladding, louvre & windows shop drawing submission	60 days	Wed 12/12/18	Tue 19/2/19			
55	Order, Off Site Fabrication and Delivery (S. Steel & Cladding & louvres)	180 days	Sat 27/10/18	Sat 4/5/19			
56	Retractable Cover D BD Submission & Approval	90 days	Wed 20/2/19	Mon 20/5/19			
57	No. 4 C.W. Outfall A&A BD 1st Submission	90 days	Thu 30/8/18	Tue 27/11/18			
58	Submission & Approval of Steel Flue Assessment Report and Design Drawings	60 days	Sun 30/9/18	Wed 28/11/18			
59	Submission and Approval of Steel Flue Design from BD	60 days	Sun 30/9/18	Wed 28/11/18			
60	Material Fabrication & Delivery for L11 Flue	100 days	Mon 15/10/18	Tue 22/1/19			
61	Folding Shutters Shop Drawing Submission & Approval	120 days	Wed 20/2/19	Wed 19/6/19			
62	Fabrication & Delivery of Folding Shutters	150 days	Thu 20/6/19	Sat 16/11/19			
63	Sewage Pump System Design submission & approval	90 days	Fri 22/3/19	Wed 19/6/19			
64	Fabrication & Delivery of Sewage Pump	180 days	Thu 20/6/19	Mon 16/12/19	Sewage Pump		
65	Other material submission & approval & delivery	300 days	Thu 30/8/18	Fri 5/7/19			
66	Coordination with the Employer's Specialist Contractors	478 days	Mon 20/5/19	Sat 19/9/20			
67	Installation of Puddle Pipes at C.W. outlet Culvert	7 days	Mon 20/5/19	Sun 26/5/19			
68	Installation of Puddle Pipes at C.W. Inlet Culvert	7 days	Sun 7/7/19	Sat 13/7/19			
69	Template setting at L11 Turbo Block Foundation	60 days	Wed 1/1/20	Mon 9/3/20			Template setting at L11 Turbo Block F
70	Template setting of holding down bolts at HRSG column base	46 days	Tue 23/7/19	Fri 6/9/19			
71	I-beam / channel base installation on top of transformer foundations at Transformer Area	30 days	Fri 17/4/20	Sat 16/5/20			
72	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	Sun 1/12/19	Tue 7/1/20	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		
73	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	Sun 1/3/20	Sun 5/7/20			
74	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	Fri 1/5/20	Sat 19/9/20			
75	Installation of embedded materials such as holding down bolts for equipment foundations - Commencement	30 days	Sun 23/6/19	Mon 22/7/19			
76	Section A1 & A2 - Ground treatment at Zone 1A & 1B	92 days	Wed 1/8/18	Wed 31/10/18			
77	Plant establishment for earthworks	7 days	Wed 1/8/18	Tue 7/8/18			
78	Backfilling and compaction from existing ground +4.5mPD to +5.5mPD	45 days	Wed 8/8/18	Fri 21/9/18			
79	Delivery of band drain	5 days	Wed 29/8/18	Sun 2/9/18			
80	Plant establishment for band drain (1st rig)	10 days	Mon 3/9/18	Wed 12/9/18			
81	Plant establishment for band drain (2nd rig)	7 days	Thu 20/9/18	Wed 26/9/18			
82	Plant establishment for band drain (3rd rig)	7 days	Thu 11/10/18	Wed 17/10/18			

ID	Task Name	Duration	Start	Finish	January 2020	February 2020	March 2020
83	Vert. Band drain installation (1023 nos. x 44m)	45 days	Thu 13/9/18	Sat 27/10/18			
84	Deposition of surcharge up to +8.3mPD	45 days	Mon 17/9/18	Wed 31/10/18			
85	Section A3 - Ground treatment installation works at Zone 2	158 days	Mon 1/10/18	Sun 17/3/19			
86	Backfilling and compaction from existing ground +4.5mPD to +5.5mPD	30 days	Mon 1/10/18	Tue 30/10/18			
87	Delivery of band drain	6 days	Thu 18/10/18	Tue 23/10/18			
88	Vert. Band drain installation (1787 nos. x 44m)	50 days	Wed 24/10/18	Wed 12/12/18			
89	Deposition of surcharge up to +8.3mPD	60 days	Mon 3/12/18	Thu 31/1/19			
90	Additional Concrete Blocks + Extra Surcharge	60 days	Mon 7/1/19	Sun 17/3/19			
91	Section A4 - Ground treatment installation works at Zone 3	131 days	Thu 1/11/18	Thu 21/3/19			
92	Backfilling and compaction from existing ground +4.5mPD to +5.5mPD	12 days	Thu 1/11/18	Mon 12/11/18			
93	Vert. Band drain installation	60 days	Fri 9/11/18	Mon 7/1/19			
94	Deposition of surcharge up to +8.3mPD	45 days	Tue 18/12/18	Thu 31/1/19			
95	Possession of Part 1 Defer portion at Zone 3	0 days	Wed 20/2/19	Wed 20/2/19			
96	Vert. Band drain installation	10 days	Wed 20/2/19	Fri 1/3/19			
97	Possession of Part 2 Defer portion at Zone 3	0 days	Fri 1/3/19	Fri 1/3/19			
98	Vert. Band drain installation	7 days	Fri 1/3/19	Thu 7/3/19			
99	Surcharge at deferred portion	14 days	Fri 8/3/19	Thu 21/3/19			
100	Section A5 (i) - Ground treatment installation works at Zone 4	83 days	Wed 26/12/18	Thu 28/3/19			
101	Site Preparation for Vertical Band Drain	3 days	Tue 1/1/19	Thu 3/1/19			
102	Band drain installation	21 days	Wed 26/12/18	Tue 15/1/19			
103	Possession of Defer portion at Zone 4	0 days	Fri 1/3/19	Fri 1/3/19			
104	Vert. Band drain installation	28 days	Fri 1/3/19	Thu 28/3/19			
105	Section A5 (ii) - Surcharge works at Zone 4	30 days	Tue 1/9/20	Wed 30/9/20			
106	Deposition of surcharge up to +8.3mPD	30 days	Tue 1/9/20	Wed 30/9/20			
107	Section A6 (i) - A&A Works for No. 4 C.W. Outfall at Area E18	493 days	Thu 1/11/18	Sat 28/3/20			
108	BD Amendment, resubmission & approval for Jacking Pit	170 days	Thu 1/11/18	Mon 29/4/19			
109	Consent for Jacking Pit ELS	28 days	Sat 20/4/19	Fri 17/5/19			
110	Mobilization	0 days	Sat 15/12/18	Sat 15/12/18			
111	Jacking Pit Sheetpile Installation (incl. Stop work notice + CNY)	60 days	Sun 16/12/18	Sat 23/2/19			
112	Protective screen and preventive measure for U9 gas pipeline (VO)	28 days	Sun 24/2/19	Sat 23/3/19			
113	Provision of temp support for U10 gas pipeline (VO) upon RMA allow access	28 days	Sun 14/4/19	Sat 11/5/19			
114	ELS of jacking pit	30 days	Sat 18/5/19	Sun 16/6/19			
115	Pipe Jacking set up & ground strengthening	18 days	Mon 17/6/19	Thu 4/7/19			
116	Pipe Jacking	90 days	Tue 10/9/19	Sun 8/12/19			
117	Receiving Pit BD Approval	170 days	Sun 25/11/18	Thu 23/5/19			
118	Consent for Pipe & Sheet pile	28 days	Tue 14/5/19	Mon 10/6/19			
119	Receiving Pit Pipe & Sheet pile installation	30 days	Tue 11/6/19	Wed 10/7/19			
120	Consent for Receiving Pit ELS	28 days	Thu 4/7/19	Wed 31/7/19			
121	ELS of Receiving pit	40 days	Thu 1/8/19	Mon 9/9/19			
122	Allow modify existing outfall manhole for pipe jacking receiving	18 days	Tue 10/9/19	Fri 27/9/19			
123	Culvert Pipe Intallation & water test	55 days	Mon 9/12/19	Wed 12/2/20			
124	Inspection Manhole at Jacking Pit + backfill (Area E3(A))	18 days	Thu 13/2/20	Sun 1/3/20			
125	Manhole extension at Outfall no. 4 + backfill + Reinstate of Outfall Rd	45 days	Thu 13/2/20	Sat 28/3/20			
126	Sheetpile for L12 Outlet culvert (Connection to Jacking Pit)	45 days	Mon 15/7/19	Wed 28/8/19			
127	Consent + ELS for remaining jacking pit	75 days	Thu 29/8/19	Mon 11/11/19			
128	Outlet Culvert pipe installation + Thrust Box (remaining portion at A1 Area)	45 days	Tue 12/11/19	Sat 28/12/19			
129	Sheet pile for future extension along GRS	60 days	Thu 29/8/19	Sun 27/10/19			
130	Section A6 (ii) - External works at Area E15(D)	37 days	Wed 1/1/20	Sat 15/2/20			
131	Area possession & Clearance	6 days	Wed 1/1/20	Mon 6/1/20			
132	Road & Surface Works	31 days	Tue 7/1/20	Sat 15/2/20			
133	Section B1 (i) - Area south of L11 MSB and HRSG from GL11-F eastwards leading to Chimney Road at Area E1 & E2	375 days	Thu 31/1/19	Sun 1/3/20			
134	Area Possession & Clearance	0 days	Thu 31/1/19	Thu 31/1/19			
135	Excavation for CW Inlet Culvert (South of L11 HRSG)	21 days	Tue 16/4/19	Mon 6/5/19			
136	Installation CW Inlet Culvert pipe	30 days	Tue 7/5/19	Wed 5/6/19			
137	Construction of Thrust Box & Manholes,etc	14 days	Thu 6/6/19	Wed 19/6/19			
138	Backfill	21 days	Thu 20/6/19	Wed 10/7/19			
139	Install underground utilities	45 days	Mon 30/9/19	Wed 13/11/19			
140	Backfill and Temporary paving for Condensor Move in (E1)	14 days	Mon 17/2/20	Sun 1/3/20			
141	Backfill and Temporary paving for Condensor Move in (others)	30 days	Sat 1/2/20	Sun 1/3/20			
142	Section B1 (ii) - Supporting structures for overhead cranes of L11 MSB including the associated roof structure except the roof deferred works	482 days	Thu 1/11/18	Tue 17/3/20			
143	Area possession & Clearance	0 days	Thu 1/11/18	Thu 1/11/18			

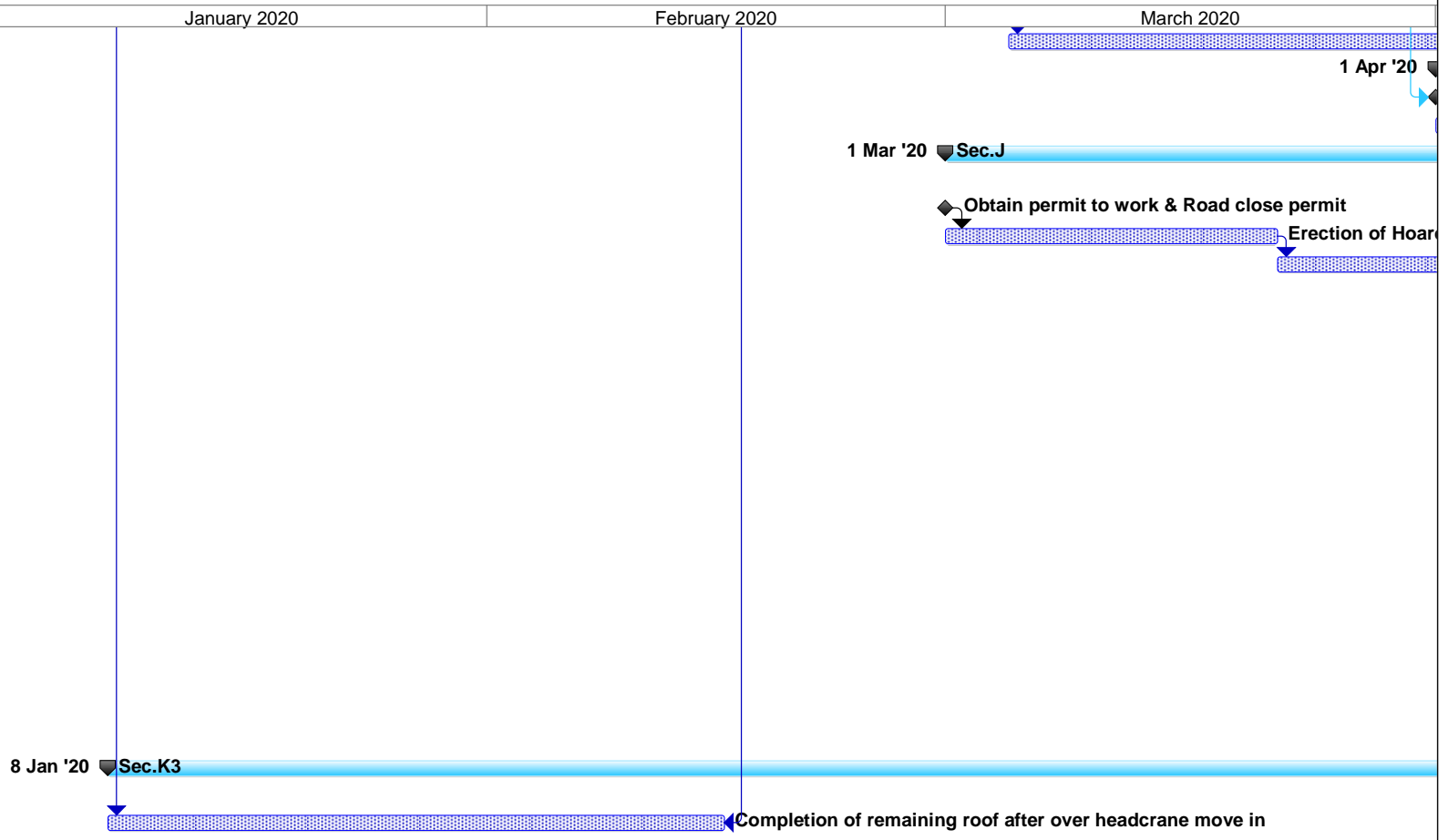
ID	Task Name	Duration	Start	Finish	January 2020	February 2020	March 2020
144	Erection of turbine hall roof except defer work	0 days	Wed 13/11/19	Wed 13/11/19			
145	Installation of crane griders	21 days	Mon 11/11/19	Sun 1/12/19			
146	Turbine hall wall claddings	60 days	Thu 9/1/20	Tue 17/3/20			
147	Section B1 (iii) - FSRU Civil works at Area E13 (GRS)	151 days	Fri 1/1/21	Mon 31/5/21			
148	Submission and approval for consent to work	0 days	Fri 1/1/21	Fri 1/1/21			
149	Civil & Building Works	130 days	Fri 1/1/21	Mon 10/5/21			
150	Ground reinstatement	21 days	Tue 11/5/21	Mon 31/5/21			
151	Section B2 - Retractable Cover D at Area E22	435 days	Tue 1/1/19	Tue 31/3/20			
152	Area Possession, Demolition and clearance work	60 days	Tue 1/1/19	Mon 11/3/19			
153	Revise Structural Form and BD resubmission & approval	150 days	Tue 12/3/19	Thu 8/8/19			
154	Foundation construction	60 days	Fri 9/8/19	Mon 7/10/19			
155	Backfill & Ground reinstatement	30 days	Tue 8/10/19	Wed 6/11/19			
156	Superstructure fabrication & delivery	90 days	Fri 9/8/19	Wed 6/11/19			
157	Superstructure erection	90 days	Thu 7/11/19	Sat 15/2/20			
158	E&M Installation and T&C	45 days	Sun 16/2/20	Tue 31/3/20			
159	Section B3 - External works at Area B1, D2 and D4	416 days	Fri 1/3/19	Thu 30/4/20			
160	Receive Area from HKE, Area Possession & Clearance	0 days	Fri 1/3/19	Fri 1/3/19			
161	Removal of existing paving for band drain under Section A5(i)	30 days	Fri 1/3/19	Sat 30/3/19			
162	Complete Vert. Band drain under Section A5(i)	0 days	Thu 28/3/19	Thu 28/3/19			
163	Ground preparation for B1, D2 & D4 for handover to Plant contractor	90 days	Sat 1/2/20	Thu 30/4/20			
164	Section C1 - Area south of L11 MSB from GL11-F westwards leading to Station Road at Area E3(A) & E3(B)	466 days	Thu 1/11/18	Sun 1/3/20			
165	Area Possession & Clearance	0 days	Thu 1/11/18	Thu 1/11/18			
166	Excavation for Type C (Area E3A)	21 days	Tue 26/3/19	Mon 15/4/19			
167	Installation CW Outlet Culvert Pipe connect to Type C1	21 days	Tue 16/4/19	Mon 6/5/19			
168	Installation CW Inlet Culvert pipe (South of L11 Condensor)	21 days	Mon 20/5/19	Sun 9/6/19			
169	Construction of Thrust Box	10 days	Mon 10/6/19	Wed 19/6/19			
170	Construction of Access Manhole	21 days	Mon 10/6/19	Sun 30/6/19			
171	Backfill	14 days	Mon 1/7/19	Sun 14/7/19			
172	Construction of Underground drainage and utilities	60 days	Thu 7/11/19	Tue 7/1/20			
173	Construct Temp Paving for Condenser move in	45 days	Wed 8/1/20	Sun 1/3/20			
174	Section C2 - (i) Southern part of L11 HRSG area and its surrounding at Area E7 (No Defer Foundations)	295 days	Thu 31/1/19	Sun 1/12/19			
175	Area Possession & Clearance	0 days	Thu 31/1/19	Thu 31/1/19			
176	Excavation & Pile Caps & Tie Beams (HRSG South Area E7)	45 days	Sun 19/5/19	Tue 2/7/19			
177	Construction RC foundations	45 days	Tue 9/7/19	Thu 22/8/19			
178	Construction RC plinths	30 days	Fri 23/8/19	Sat 21/9/19			
179	Construction underground utilities	45 days	Fri 23/8/19	Sun 6/10/19			
180	Backfill & Construction on-grade slabs	35 days	Mon 7/10/19	Sun 10/11/19			
181	Backfill and Temporary paving	21 days	Mon 11/11/19	Sun 1/12/19			
182	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	496 days	Sat 1/12/18	Thu 30/4/20			
183	Area Possession & Clearance	0 days	Sat 1/12/18	Sat 1/12/18			
184	Excavation & Pile Caps & Tie Beams (MSBL11 - Turbo Block North)	70 days	Mon 14/1/19	Wed 3/4/19			
185	Excavation & Pile Caps & Tie Beams (MSBL11 - Turbo Block South)	30 days	Wed 10/7/19	Thu 8/8/19			
186	Backfill and construction turbine block foundations	21 days	Fri 9/8/19	Thu 29/8/19			
187	Construction of internal drainage	60 days	Fri 9/8/19	Mon 7/10/19			
188	Construction RC walls incl. G/F rooms	90 days	Tue 8/10/19	Tue 7/1/20			
189	Construction turbine block columns and upper portion for plant embed installation	21 days	Mon 9/9/19	Sun 29/9/19			
190	Concrete Turbine upper part foundation & clear falsework	52 days	Tue 10/3/20	Thu 30/4/20			
191	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	466 days	Thu 1/11/18	Sun 1/3/20			
192	Area Possession & Clearance	0 days	Thu 1/11/18	Thu 1/11/18			
193	Excavation to foundation level at ELS Type A	18 days	Sat 13/4/19	Tue 30/4/19			
194	Construction of CW Outlet Box + lowest tie beam & caps	40 days	Wed 1/5/19	Sun 9/6/19			
195	Construction of pile caps & tie beams & hot well sump pit up to +2.5mPD	30 days	Mon 10/6/19	Tue 9/7/19			
196	Backfill & Construction of CW Inlet Box + tie beams	18 days	Wed 10/7/19	Sat 27/7/19			

ID	Task Name	Duration	Start	Finish	January 2020	February 2020	March 2020
197	Backfill and Construction ground beams & trenches	18 days	Sun 28/7/19	Wed 14/8/19			
198	Construction of indoor underground drainage	12 days	Thu 15/8/19	Mon 26/8/19			
199	Backfill & construction on-grade slabs	10 days	Tue 27/8/19	Thu 5/9/19			
200	Construction Column casting and RC walls	30 days	Mon 30/9/19	Tue 29/10/19			
201	Metal Cladding & Louvres for GLB-C/1-6	60 days	Thu 28/11/19	Thu 6/2/20			
202	Mis. Works for plant erection	24 days	Fri 7/2/20	Sun 1/3/20			
203	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	414 days	Thu 1/11/18	Tue 31/12/19			
204	Area Possession & Clearance	14 days	Thu 1/11/18	Wed 14/11/18			
205	Excavation for Type C1 and open sheet pile	75 days	Mon 14/1/19	Mon 8/4/19			
206	Install CW Outlet pipe & connect to previous	21 days	Tue 16/4/19	Mon 6/5/19			
207	Backfill	10 days	Tue 7/5/19	Thu 16/5/19			
208	Underground utilities and trenches	60 days	Wed 3/7/19	Sat 31/8/19			
209	Construction of plant drainage, trenches & RC plinths	45 days	Sun 1/9/19	Tue 15/10/19			
210	Remaining Underground utilities & backfill (West of Tx Bay)	75 days	Wed 16/10/19	Tue 31/12/19			
211	Section D - (ii) Remaining northern part of L11 HRSG area and its surrounding in Area E6	375 days	Thu 31/1/19	Sun 1/3/20			
212	Area Possession & Clearance	0 days	Thu 31/1/19	Thu 31/1/19			
213	Excavation & Pits & Pile Caps & Tie Beams (HRSG north Area E6)	45 days	Thu 4/4/19	Sat 18/5/19			
214	Construction RC foundations	45 days	Sun 19/5/19	Tue 2/7/19			
215	Construction RC plinths & HRSG Lift Pit & internal drainage	60 days	Sun 9/6/19	Wed 7/8/19			
216	Backfill Construction on-grade slabs	28 days	Thu 8/8/19	Wed 4/9/19			
217	Construction underground utilities	45 days	Thu 5/9/19	Sat 19/10/19			
218	Backfill, Remaining utilities and temporary paving	85 days	Thu 14/11/19	Mon 17/2/20			
219	Touch up and site clearance	13 days	Tue 18/2/20	Sun 1/3/20			
220	Section D - (iii) Whole of L11 MSB including the pipe and cable rack along south facade of L11 MSB with all underground utilities at Area E4 including C.W. Inlet and Outlet Culvert except the deferred works	526 days	Thu 1/11/18	Thu 30/4/20			
221	Area Possession & Clearance	0 days	Thu 1/11/18	Thu 1/11/18			
222	Construction of pile caps & tie beams at Transformer Area	60 days	Thu 15/11/18	Sun 13/1/19			
223	Excavation & Construction Blow Down Sum pit (Type B)	45 days	Thu 4/4/19	Sat 18/5/19			
224	Construction of pile caps & tie beams at SunShadeCover Area	45 days	Wed 10/7/19	Fri 23/8/19			
225	Preparation for S.Steelwork Erection	14 days	Wed 3/7/19	Tue 16/7/19			
226	Structural Delivery & Erection (Turbine Hall North fr G.L. 1-3/H->B)	30 days	Wed 17/7/19	Thu 15/8/19			
227	Structural Delivery & Erection (Equipment Floors)	45 days	Fri 16/8/19	Sun 29/9/19			
228	Structural Delivery & Erection (Turbine Hall South)	45 days	Mon 30/9/19	Wed 13/11/19			
229	Fire Coating Application at Joint	120 days	Fri 16/8/19	Fri 13/12/19			
230	External Scaffolding Erection	150 days	Wed 31/7/19	Sun 29/12/19			
231	Construction 1/F RC Slab	14 days	Mon 30/9/19	Sun 13/10/19			
232	Construction M/F RC Slab	7 days	Mon 14/10/19	Sun 20/10/19			
233	Construction 2/F RC Slab	14 days	Mon 14/10/19	Sun 27/10/19			
234	Construction 3/F RC Slab	14 days	Mon 28/10/19	Sun 10/11/19			
235	Construction 4/F RC Slab	14 days	Mon 11/11/19	Sun 24/11/19			
236	Construction 5/F RC Slab (Roof of turbine hall, except defer portion)	30 days	Mon 25/11/19	Tue 24/12/19			
237	Construction Roof RC Slab	14 days	Mon 9/12/19	Sun 22/12/19			
238	Construction Upper Roof RC Slab	12 days	Fri 27/12/19	Tue 7/1/20			
239	Construction Defer Roof RC Slab (G.L. G-H)	30 days	Wed 8/1/20	Sat 15/2/20			
240	Construction of Staircase ST-01 & lift shaft & machine room	120 days	Fri 30/8/19	Sun 29/12/19			
241	Construction of Staircase ST-02 except defer work	76 days	Mon 28/10/19	Mon 13/1/20			
242	Construction of RC plinth, kerbs & parapet Walls	30 days	Fri 7/2/20	Sat 7/3/20			
243	Erection of Skylight & Roof Features	45 days	Fri 21/2/20	Sun 5/4/20			
244	Waterproofing & Flooring at Roof	60 days	Wed 8/1/20	Mon 16/3/20			
245	ABFW Works from 1/F to 5/F equipment rooms	150 days	Mon 21/10/19	Sun 29/3/20			
246	Metal Cladding, Windows and Louvres incl. roof feature	100 days	Thu 28/11/19	Tue 17/3/20			
247	Removal of external scaffolding	60 days	Mon 17/2/20	Thu 16/4/20			
248	Building Services E&M Access & Installation	150 days	Mon 4/11/19	Sun 12/4/20			
249	Remaining and Mis. works for Plant erection Full Access	18 days	Mon 13/4/20	Thu 30/4/20			
250	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	526 days	Thu 1/11/18	Thu 30/4/20			

ID	Task Name	Duration	Start	Finish	Timeline		
					January 2020	February 2020	March 2020
251	Area Possession & Clearance	0 days	Thu 1/11/18	Thu 1/11/18			
252	A&A works at South of L10 MSB	60 days	Thu 28/11/19	Fri 7/2/20	A&A works at South of L10 MSB		
253	Erection of link bridge structural steel	21 days	Fri 7/2/20	Thu 27/2/20		Erection of link bridge structural steel	
254	Casting of bridge deck	7 days	Fri 28/2/20	Thu 5/3/20		Casting of bridge deck	
255	Metal roofing installation	14 days	Fri 6/3/20	Thu 19/3/20		Metal roofing install	
256	ABWF work	21 days	Fri 20/3/20	Thu 9/4/20			
257	Form new opening at MSB for final connection	14 days	Fri 27/3/20	Thu 9/4/20			
258	E&M Work for completion	21 days	Fri 10/4/20	Thu 30/4/20			
259	Section D - (v) Gas Duct Foundation, Pipe and Cable Rack and associated trench in Area E20	345 days	Mon 11/2/19	Sat 1/2/20	c.D(v) 1 Feb '20		
260	Area Possession & Clearance + CNY	0 days	Mon 11/2/19	Mon 11/2/19			
261	Sheet pile installation & submit as-built	75 days	Mon 11/2/19	Fri 26/4/19			
262	Consent for excavation	28 days	Sat 27/4/19	Fri 24/5/19			
263	Excavation & plate load test	45 days	Sat 1/6/19	Mon 15/7/19			
264	Construction of foundation	45 days	Tue 16/7/19	Thu 29/8/19			
265	Backfill & Underground utiitiies	30 days	Fri 30/8/19	Sat 28/9/19			
266	Remaining Pipe & cable rack and associated trenches in Area E20	115 days	Sun 29/9/19	Sat 1/2/20	Remaining Pipe & cable rack and associated trenches in Area E20		
267	Section E1 - (i) Link BrIdge and Pipe and Cable Rack connecting L11 MSB to the western area of L11 MSB at Area E3	263 days	Wed 1/1/20	Mon 28/9/20	Sec.E1(i)		
268	Area Possession	0 days	Wed 1/1/20	Wed 1/1/20	Area Possession		
269	Excavation & construction of new foundation	40 days	Wed 1/1/20	Tue 18/2/20	Excavation & construction of new foundation		
270	Backfill	10 days	Wed 19/2/20	Fri 28/2/20	Backfill		
271	Erection of Structural steel	30 days	Mon 6/7/20	Tue 4/8/20			
272	Backfill & Ground works	55 days	Wed 5/8/20	Mon 28/9/20			
273	Section E1 - (ii) Gas Receiving Station and L11 Gas Receiving Station Equipment Room (GRS) Area Extension at Area E16	173 days	Wed 1/1/20	Tue 30/6/20	Sec.E1(ii)		
274	Area Possession	0 days	Wed 1/1/20	Wed 1/1/20	Area Possession		
275	Removal of Surcharge and excavation	14 days	Wed 1/1/20	Tue 14/1/20	Removal of Surcharge and excavation		
276	Modification of Site Drainage	45 days	Wed 15/1/20	Sun 8/3/20	Modification of Site Drainage		
277	Construction of new RC for GRS Equipment Room	75 days	Tue 14/1/20	Mon 6/4/20			
278	ABWF for GRS Equipment room	45 days	Tue 7/4/20	Thu 21/5/20			
279	E&M Installation	45 days	Sun 17/5/20	Tue 30/6/20			
280	Construction of new Gas pipe plinths & racks	45 days	Sat 22/2/20	Mon 6/4/20			
281	Backfill and construction site drainage	21 days	Tue 7/4/20	Mon 27/4/20			
282	External Paving and install new fencing	60 days	Sat 2/5/20	Tue 30/6/20			
283	Section E1 - (iii) External Works at Area E15 (C)	273 days	Mon 1/6/20	Sun 28/2/21			
284	Removal of Surcharge and excavation	45 days	Mon 1/6/20	Wed 15/7/20			
285	Underground drianage, Utilities and RC plinths	123 days	Thu 16/7/20	Sun 15/11/20			
286	Backfill and install surface utilities	45 days	Mon 16/11/20	Wed 30/12/20			
287	Roadwork	60 days	Thu 31/12/20	Sun 28/2/21			
288	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	495 days	Wed 1/5/19	Thu 17/9/20	c.E2		
289	BD consent + Site Possession @ Area E8	0 days	Wed 1/5/19	Wed 1/5/19			
290	Excavation & Plate load test	60 days	Wed 1/5/19	Sat 29/6/19			
291	Foundation and Trench constructions	90 days	Sun 30/6/19	Fri 27/9/19			
292	Backfill & underground utitiles + temp paving	60 days	Sat 28/9/19	Tue 26/11/19			
293	Excavation & plate load test @ E19	60 days	Wed 27/11/19	Wed 5/2/20	Excavation & plate load test @ E19		
294	Construction of foundations & trenches	45 days	Thu 6/2/20	Sat 21/3/20		Construction of f	
295	Backfill & underground utitiles	60 days	Sun 22/3/20	Wed 20/5/20			
296	Pipe & cable rack Erection	60 days	Thu 21/5/20	Sun 19/7/20			
297	Ground reinstatement	60 days	Mon 20/7/20	Thu 17/9/20			
298	Section E3 - Gas Pipe Support Foundation and Pipe Trench and associated external works at Area E14, E15 (A) and E15 (B)	173 days	Wed 1/1/20	Tue 30/6/20	Sec.E3		
299	Removal of surcharge / site clearance	21 days	Wed 1/1/20	Tue 21/1/20	Removal of surcharge / site clearance		
300	Excavation & construction of pipe trench	30 days	Wed 22/1/20	Sat 29/2/20		Excavation & construction of pipe trench	
301	Construction of gas pipe support foundation	30 days	Sun 1/3/20	Mon 30/3/20			
302	Construction of underground drainage and utilities	60 days	Tue 31/3/20	Fri 29/5/20			
303	Backfill & road work	32 days	Sat 30/5/20	Tue 30/6/20			
304	Section E4 - 275kV cable trenching works connecting the 275kV Switching Station Extension and L11 MSB at Area E9 (A)	185 days	Fri 15/3/19	Sun 15/9/19			
305	Site possession	0 days	Fri 15/3/19	Fri 15/3/19			

ID	Task Name	Duration	Start	Finish	January 2020	February 2020	March 2020
306	Obtain Permit to work & Road close permit	10 days	Fri 15/3/19	Sun 24/3/19			
307	Excavation & construction new cable trench to 275kV	45 days	Mon 25/3/19	Wed 8/5/19			
308	Excavation & construction new cable trench to L11MSB	130 days	Thu 9/5/19	Sun 15/9/19			
309	Section F - 275kV Station Building Extension and associated works at Area E17	709 days	Fri 1/6/18	Sat 30/5/20	c.F		
310	Installation of ELS for 275kV Switching Station near Staircase ST-3 and ST-6	14 days	Fri 1/6/18	Thu 14/6/18			
311	Construction of Staircase ST-3	110 days	Fri 15/6/18	Tue 2/10/18			
312	BD Amendment Approval on A&A	0 days	Mon 17/12/18	Mon 17/12/18			
313	BD Amendment Approval on A&A ST3 & Drainage	0 days	Mon 4/2/19	Mon 4/2/19			
314	OP inspection of Staircase ST-3	14 days	Mon 11/2/19	Sun 24/2/19			
315	Consent of New Foundation Works (Stage 1)	0 days	Fri 19/10/18	Fri 19/10/18			
316	Consent & BA10 for Demolition of Existing Staircase	0 days	Fri 8/3/19	Fri 8/3/19			
317	Demolition of Existing Staircase and Submit BA14A	14 days	Sat 9/3/19	Fri 22/3/19			
318	BD inspection for BA14A & Issue OP	28 days	Sat 23/3/19	Fri 19/4/19			
319	Consent & BA10 for New Foundation Work (Stage 2)	28 days	Sat 13/4/19	Fri 10/5/19			
320	Hoarding Modification	7 days	Fri 19/10/18	Thu 25/10/18			
321	Pile Cap & Tie Beam Construction (Stage 1)	98 days	Fri 26/10/18	Thu 31/1/19			
322	Erection of Tower Crane	40 days	Mon 11/2/19	Fri 22/3/19			
323	Pile Cap and Tie Beam (Stage 2)	21 days	Sat 11/5/19	Fri 31/5/19			
324	RC Construction up to 1/F (Stage 1)	30 days	Sat 11/5/19	Sun 9/6/19			
325	RC Construction up to 1/F (Stage 2)	75 days	Sat 1/6/19	Wed 14/8/19			
326	Construction of Staircase ST6	90 days	Sun 15/9/19	Fri 13/12/19			
327	Shop Drawing Submission & Approval of Structural Steel	45 days	Wed 27/2/19	Fri 12/4/19			
328	Structural Steel fabrication & Delivery	60 days	Sat 13/4/19	Tue 11/6/19			
329	Erection of Structural Steel GL 17-18	30 days	Fri 16/8/19	Sat 14/9/19			
330	Erection of Structural Steel GL 8-17	60 days	Sun 15/9/19	Wed 13/11/19			
331	Metal Cladding Delivery	60 days	Wed 7/8/19	Sat 5/10/19			
332	Metal Door, Window & Louvre Delivery	45 days	Sun 6/10/19	Tue 19/11/19			
333	Erection of Working Platform and Scaffold	150 days	Mon 1/7/19	Wed 27/11/19			
334	Install Decking	60 days	Wed 9/10/19	Sat 7/12/19			
335	RC Walls from 1/F @ GIS Hall	40 days	Thu 31/10/19	Mon 9/12/19			
336	Construction of 2/F RC slab	14 days	Tue 10/12/19	Mon 23/12/19	of 2/F RC slab		
337	Construction of R/F RC slab	21 days	Tue 24/12/19	Wed 15/1/20	Construction of R/F RC slab		
338	Construction of UR/F RC slab	14 days	Thu 16/1/20	Fri 7/2/20	Construction of UR/F RC slab		
339	Construction of GIS Hall Floor	60 days	Tue 24/12/19	Tue 3/3/20	Construction of GIS Hall Floor		
340	Installation of Overhead Crane (By JEC)	60 days	Wed 4/3/20	Sat 2/5/20			
341	Construction of staircase ST4, ST5, Lift Shaft & Equip Floors	150 days	Sun 15/9/19	Sat 22/2/20	Construction of staircase ST4, ST5, Lift Shaft & Equip Floors		
342	Lift Installation	90 days	Sun 23/2/20	Fri 22/5/20			
343	Concrete of RC walls, plinths, kerb & parapet walls & New trench for LV Power	30 days	Tue 24/12/19	Sun 2/2/20	Concrete of RC walls, plinths, kerb & parapet walls & New trench for LV Power		
344	ABWF Works @ G/F	50 days	Mon 14/10/19	Mon 2/12/19			
345	ABWF Works @ 1/F	50 days	Wed 13/11/19	Fri 3/1/20	ABWF Works @ 1/F		
346	ABWF Works @ 2/F	75 days	Fri 13/12/19	Sat 7/3/20			
347	ABWF Works @ R/F	30 days	Tue 14/1/20	Fri 21/2/20			
348	ABWF Works @ UR/F	21 days	Mon 3/2/20	Sun 23/2/20			
349	Waterproofing Works at R/F & UR/F	45 days	Thu 16/1/20	Mon 9/3/20			
350	Building Services E&M Access & Installation & T&C	150 days	Wed 13/11/19	Tue 21/4/20			
351	Metal Cladding, Windows and Louvres incl. Roof Feature	90 days	Tue 24/12/19	Thu 2/4/20			
352	Shutter Erection	30 days	Fri 3/4/20	Sat 2/5/20			
353	Removal of External Scaffolding + Tower Crane	35 days	Fri 3/4/20	Thu 7/5/20			
354	External Underground Drainage and Utilities	30 days	Fri 17/4/20	Sat 16/5/20			
355	Road & Paving Reinstatement	30 days	Fri 1/5/20	Sat 30/5/20			
356	Ready for FSD & OP Inspection	0 days	Sat 30/5/20	Sat 30/5/20			
357	Section G - A&A Works at No. 4 C.W. Intake at Area E12	143 days	Wed 1/1/20	Sun 31/5/20	c.G		
358	Permit to work	0 days	Wed 1/1/20	Wed 1/1/20	Permit to work		
359	Erection of temp. platform	14 days	Wed 1/1/20	Tue 14/1/20	Erection of temp. platform		
360	Demolition work	30 days	Wed 15/1/20	Sat 22/2/20	Demolition work		
361	Modify existing slab openings	75 days	Sun 23/2/20	Thu 7/5/20			
362	Curing + Removal of platform	24 days	Fri 8/5/20	Sun 31/5/20			
363	Section H - L11 Steel flue liner at No. 4 Chimney	186 days	Tue 1/1/19	Mon 15/7/19	c.H		
364	Complete erection of L10 Steel flue	0 days	Tue 1/1/19	Tue 1/1/19			
365	Modification of erection equipment	21 days	Tue 1/1/19	Mon 21/1/19			
366	Erection temp. platform and demolition work	30 days	Tue 22/1/19	Sat 2/3/19			
367	Structural steel delivery & Erection	85 days	Sun 3/3/19	Sun 26/5/19			
368	Removal of temp. work	5 days	Mon 27/5/19	Fri 31/5/19			
369	Reinstate G/F louvre wall and access door	45 days	Sat 1/6/19	Mon 15/7/19			
370	Section I - (i) 275kV cable trenching works connecting the 275kV Switching Station Extension and L11 MSB at Area E9 (B)	232 days	Sun 15/9/19	Fri 15/5/20	c.I(i)		
371	Obtain Permit to work & Road close permit	0 days	Sun 15/9/19	Sun 15/9/19			
372	Excavation & construction new cable trench	160 days	Mon 16/9/19	Wed 4/3/20			

ID	Task Name	Duration	Start	Finish	January 2020	February 2020	March 2020
373	Re-excavate cable trench for cable laying	72 days	Thu 5/3/20	Fri 15/5/20			
374	Section I - (ii) Interconnector 2 Trench Modification Works at Area E10	275 days	Wed 1/4/20	Thu 31/12/20			
375	Obtain Permit to work & Road close permit	0 days	Wed 1/4/20	Wed 1/4/20			
376	Re-excavate & new cable trench for cable laying	275 days	Wed 1/4/20	Thu 31/12/20			
377	Section J - (i) Demolition of Retractable Cover A&B & (ii) Construction of new LOT 3 & 4	426 days	Sun 1/3/20	Fri 30/4/21			
378	Obtain permit to work & Road close permit	0 days	Sun 1/3/20	Sun 1/3/20			
379	Erection of Hoarding	21 days	Sun 1/3/20	Sat 21/3/20			
380	Removal of existing cover & structural steel	30 days	Sun 22/3/20	Mon 20/4/20			
381	Demolish of existing bund wall and staircases	45 days	Tue 21/4/20	Thu 4/6/20			
382	Demolish of existing slab & foundation	60 days	Fri 5/6/20	Mon 3/8/20			
383	Consent for new work	30 days	Tue 4/8/20	Wed 2/9/20			
384	Construction of new bund wall and foundation	100 days	Thu 3/9/20	Fri 11/12/20			
385	Construction of new oil separator	80 days	Wed 23/9/20	Fri 11/12/20			
386	Construct underground drainage and surface channel	40 days	Sat 12/12/20	Wed 20/1/21			
387	Construction on-grade slab	60 days	Thu 21/1/21	Sun 21/3/21			
388	Removal of hoarding and ground reinstatement	40 days	Mon 22/3/21	Fri 30/4/21			
389	Section K1 - External works at Area 15 (E) and 15(F)	365 days	Mon 1/6/20	Mon 31/5/21			
390	Removal of surcharge	30 days	Mon 1/6/20	Tue 30/6/20			
391	Construct new drainage and utilities work	200 days	Wed 1/7/20	Sat 16/1/21			
392	Road & Paving	135 days	Sun 17/1/21	Mon 31/5/21			
393	Section K2 - Removal of Southern Bund and External Works at Area D5, D6 and D7	365 days	Mon 1/6/20	Mon 31/5/21			
394	Demolition work	30 days	Mon 1/6/20	Tue 30/6/20			
395	Construct new drainage and utilities work	200 days	Wed 1/7/20	Sat 16/1/21			
396	Road & Paving	135 days	Sun 17/1/21	Mon 31/5/21			
397	Section K3 - All remaining works shall be completed for reporting completion to BD and ready for OP inspection (PS1.4.4)	623 days	Wed 8/1/20	Thu 30/9/21			
398	Completion of remaining roof after over headcrane move in	30 days	Wed 8/1/20	Sat 15/2/20			
399	Construction of G/F Lube Oil Tank Room (BY TDK)	61 days	Tue 6/10/20	Sat 5/12/20			
400	Construction of wall and staircase at G/F after Condensor Move in	90 days	Mon 6/7/20	Sat 3/10/20			
401	Construction of Durasteel Steel wall panel after IBP installation	30 days	Sun 20/9/20	Mon 19/10/20			
402	Construction of Transformer fence wall, cladding & associated FS services	122 days	Tue 1/9/20	Thu 31/12/20			
403	Final restatement of road & paving around MSB & HRSG	122 days	Tue 1/9/20	Thu 31/12/20			
404	Installation of trench covers and gratings after plant installation	151 days	Thu 1/10/20	Sun 28/2/21			
405	Backfill and reinstatement after 275kV cable laying	122 days	Tue 1/6/21	Thu 30/9/21			



Schedule of U11 Construction

Task No.	Task Name	Start Date	End Date
1	Key Date		
2	H/O HRSG Foundation		
3	H/O OHC Installation		
4	H/O Condenser foundation		
5	H/O Aux. equipment foundation of HRSG north side		
6	H/O HRSG Exhaust duct		
7	H/O GT Exhaust duct foundation		
8	H/O MSB building		
9	H/O Foundation around CCW-Cooler		
10	Hydrostatic test		
11	Receiving Lubo oil		
12	Synchronization		
14	HRSG		
76	HRSG Exhaust duct		
92	Over Head Crane		
103	Condenser		
129	GT/ST/Generator		
162	GT Air inlet		
176	Auxiliary Equipment (O/B)		
248	Sea water intake area		
261	Transformer area		
269	Building structure		
277	Piping		
286	Crane		
304			
305	Equipment for heavy lifting		

2020年 第1四半期
 2020年01月 2020年02月 2020年03月
 上旬中旬下旬 上旬中旬下旬 上旬中旬下旬

Condenser foundation → 03/02
 Foundation of HRSG north side → 03/02
 HRSG Exhaust duct → 03/02
 H/O GT Exhaust duct f...
 H/O MS
 H/I

HRSG

HRSG Exhaust duct

Over Head Crane

Condenser

GT/ST/C

Auxiliary Equipment (O/B)

Building structure

SUNLEY ENGINEERING & CONSTRUCTION CO., LTD.

Contract No. 18/8004 - Lamma Power Station Extension Foundation Works for Unit L12

Master Programme

ID	Task Name	Duration	Start	Finish	2019年												2020年		
					[Gantt Chart Area]												M12 一月	M13 二月	M14 三月
1	Key Date	416 days	3月12日星期二	4月30日星期四															
2	Commencement date	0 days	3月12日星期二	3月12日星期二															
3	Duration of works	416 days	3月12日星期二	4月30日星期四															
4	Site possession date	0 days	3月12日星期二	3月12日星期二															
5	Completion of the Contract	0 days	4月30日星期四	4月30日星期四															
6																			
7	Total Contract Period	455 days	2月1日星期五	4月30日星期四															
8																			
9	Preliminaries	21 days	3月12日星期二	4月1日星期一															
10	Coordination with utility companies	14 days	3月12日星期二	3月25日星期一															
11	Pre-construction condition survey	14 days	3月12日星期二	3月25日星期一															
12	Notification of commencement of works to Labour Department	7 days	3月12日星期二	3月18日星期一															
13	Notification of air pollution control for commencement of works to EPD	7 days	3月12日星期二	3月18日星期一															
14	Application of water discharge licence from EPD	7 days	3月12日星期二	3月18日星期一															
15	Application for billing account for disposal of construction waste from EPD	7 days	3月12日星期二	3月18日星期一															
16	CCTV for existing underground drainage pipe around site boundary	21 days	3月12日星期二	4月1日星期一															
17	Utility detection for existing underground cables	21 days	3月12日星期二	4月1日星期一															
18	Site clearance	21 days	3月12日星期二	4月1日星期一															
19	Set up contractor's site office	21 days	3月12日星期二	4月1日星期一															
20	Installation of monitoring checkpoints	20 days	3月12日星期二	3月31日星期日															
21	Submission of BA10 for ELS & foundation works	7 days	3月12日星期二	3月18日星期一															
22																			
23	Predrilling Works for Section of A1 to A3 (Area P1 to P3)	96 days	2月1日星期五	5月7日星期二															
24	Drilling rigs mobilization	10 days	2月1日星期五	2月10日星期日															
25	Predrilling works (46 holes) (8 rigs)	81 days	2月11日星期一	5月2日星期四															
26	Submission of predrill logs	71 days	2月26日星期二	5月7日星期二															
27	Completion of predrilling works	0 days	5月7日星期二	5月7日星期二															
28																			
29	Plant Mobilization for Bored Pile Construction	150 days	3月19日星期二	8月15日星期四															
30	Crawler Crane	136 days	3月19日星期二	8月1日星期四															
31	1st & 2nd set	21 days	3月19日星期二	4月8日星期一															
32	3rd set	21 days	4月10日星期三	4月30日星期二															
33	4th & 5th set	21 days	6月14日星期五	7月4日星期四															
34	6th set	21 days	7月12日星期五	8月1日星期四															
35	Oscillator	136 days	3月19日星期二	8月1日星期四															
36	1st & 2nd set	21 days	3月19日星期二	4月8日星期一															
37	3rd set	21 days	4月10日星期三	4月30日星期二															
38	4th & 5th set	21 days	6月14日星期五	7月4日星期四															
39	6th set	21 days	7月12日星期五	8月1日星期四															
40	RCD	129 days	4月9日星期二	8月15日星期四															
41	1st & 2nd set	14 days	4月9日星期二	4月22日星期一															
42	3rd set	14 days	5月1日星期三	5月14日星期二															
43	4th & 5th set	14 days	7月5日星期五	7月18日星期四															
44	6th set	14 days	8月2日星期五	8月15日星期四															
45	Completion of plant mobilization for bored pile construction	0 days	8月15日星期四	8月15日星期四															
46																			
47	Delivery of Temporary Steel Casing for Bored Pile Construction	150 days	3月19日星期二	8月15日星期四															
48	Duration for delivery of temporary steel casing	150 days	3月19日星期二	8月15日星期四															
49	Completion of delivery of temporary steel casing for bored pile construction	0 days	8月15日星期四	8月15日星期四															
50																			
51	Delivery of Permanent Casing & Double Wall Liner	369 days	3月18日星期一	3月20日星期五															
52	Testing for double wall liner	45 days	3月18日星期一	5月1日星期三															
53	Duration for delivery of permanent casing & double wall liner	325 days	5月1日星期三	3月20日星期五															
54																			
55	Section A1	320 days	3月18日星期一	1月31日星期五															

Master Programme

Task Critical Task Milestone Summary

SUNLEY ENGINEERING & CONSTRUCTION CO., LTD.

Contract No. 18/8004 - Lamma Power Station Extension Foundation Works for Unit L12

Master Programme

ID	Task Name	Duration	Start	Finish	2019年												2020年		
					[Gantt Chart Area]												M12 一月	M13 二月	M14 三月
56	Bored Pile Construction at P1 (17 piles)	296 days	4月11日 星期四	1月31日 星期五	[Gantt Bar]														
57	1st set plant - BP13 > BP5 > BP9 > BP26 > BP1 > BP12 > BP8 > BP4 > G2 > G4 > G6	273 days	4月11日 星期四	1月8日 星期三	[Gantt Bar]														
58	3rd set plant - G8	45 days	4月22日 星期一	6月5日 星期三	[Gantt Bar]														
59	3rd set plant - BPC3 > BPC4 > BPC5 > BPC6 > BPC7	135 days	8月30日 星期五	1月11日 星期六	[Gantt Bar]														
60	Interface & sonic test	28 days	1月4日 星期六	1月31日 星期五	[Gantt Bar]														
61	Completion of bored pile construction at P1	0 days	1月31日 星期五	1月31日 星期五	[Gantt Bar]														
62					[Gantt Bar]														
63	Sheet Pile at P1	215 days	7月1日 星期一	1月31日 星期五	[Gantt Bar]														
64	Delivery of sheet pile material	14 days	7月1日 星期一	7月14日 星期日	[Gantt Bar]														
65	Installation of sheet pile (approx. 57 piles) (1 rig)	10 days	7月17日 星期三	7月26日 星期五	[Gantt Bar]														
66	Installation of sheet pile (approx. 254 piles) (1 rig)	38 days	12月17日 星期二	1月23日 星期四	[Gantt Bar]														
67	Prepare & submit as-built record plan	7 days	1月24日 星期五	1月30日 星期四	[Gantt Bar]														
68	Submission of BA14	1 day	1月31日 星期五	1月31日 星期五	[Gantt Bar]														
69	Completion of sheet pile at P1	0 days	1月31日 星期五	1月31日 星期五	[Gantt Bar]														
70					[Gantt Bar]														
71	Cone Penetration Test	104 days	3月18日 星期一	6月29日 星期六	[Gantt Bar]														
72	Plant mobilization	14 days	3月18日 星期一	3月31日 星期日	[Gantt Bar]														
73	Carry out CPTU testing (9 nos.) (1 rig)	90 days	4月1日 星期一	6月29日 星期六	[Gantt Bar]														
74	Completion of cone penetration test	0 days	6月29日 星期六	6月29日 星期六	[Gantt Bar]														
75	Completion of section A1	0 days	1月31日 星期五	1月31日 星期五	[Gantt Bar]														
76					[Gantt Bar]														
77	Section A2	197 days	4月8日 星期一	10月21日 星期一	[Gantt Bar]														
78	Bored Pile Construction at P2 (11 piles)	197 days	4月8日 星期一	10月21日 星期一	[Gantt Bar]														
79	2nd set plant - BP27 > BP24 > BP23 > BP16 > BP20 > BP17	161 days	4月8日 星期一	9月15日 星期日	[Gantt Bar]														
80	3rd set plant - G10 > BP21 > BPC8 > BPC1 > BPC2	135 days	5月12日 星期日	9月23日 星期一	[Gantt Bar]														
81	Interface & sonic test	28 days	9月24日 星期二	10月21日 星期一	[Gantt Bar]														
82	Completion of bored pile construction at P2	0 days	10月21日 星期一	10月21日 星期一	[Gantt Bar]														
83	Completion of section A2	0 days	10月21日 星期一	10月21日 星期一	[Gantt Bar]														
84					[Gantt Bar]														
85	Section A3	331 days	5月18日 星期六	4月12日 星期日	[Gantt Bar]														
86	Bored Pile Construction at P3 (18 piles)	283 days	7月5日 星期五	4月12日 星期日	[Gantt Bar]														
87	4th set plant - G1 > G3 > G5 > G7 > G9	225 days	7月5日 星期五	2月14日 星期五	[Gantt Bar]														
88	5th set plant - BP15 > BP19 > BP22 > BP25 > BP28	225 days	7月5日 星期五	2月14日 星期五	[Gantt Bar]														
89	6th set plant - BP3 > BP6 > BP7 > BP11 > BP2 > BP10 > BP14 > BP18	203 days	8月2日 星期五	2月20日 星期四	[Gantt Bar]														
90	Interface & sonic test	28 days	2月21日 星期五	3月19日 星期四	[Gantt Bar]														
91	Prepare & submit as-built record plan	7 days	3月13日 星期五	3月19日 星期四	[Gantt Bar]														
92	Submission of BA14	1 day	3月19日 星期四	3月19日 星期四	[Gantt Bar]														
93	Allow 14 days for selection of pile for concrete full core test	14 days	3月20日 星期五	4月2日 星期日	[Gantt Bar]														
94	Concrete full core test	10 days	4月3日 星期五	4月12日 星期日	[Gantt Bar]														
95	Completion of bored pile construction at P3	0 days	4月12日 星期日	4月12日 星期日	[Gantt Bar]														
96					[Gantt Bar]														
97	Sheet Pile at P3	60 days	5月18日 星期六	7月16日 星期二	[Gantt Bar]														
98	Plant mobilization	7 days	5月25日 星期六	5月31日 星期五	[Gantt Bar]														
99	Delivery of sheet pile material	14 days	5月18日 星期六	5月31日 星期五	[Gantt Bar]														
100	Installation of sheet pile (approx. 626 piles) (2 rigs)	46 days	6月1日 星期六	7月16日 星期二	[Gantt Bar]														
101	Completion of sheet pile at P3	0 days	7月16日 星期二	7月16日 星期二	[Gantt Bar]														
102	Completion of section A3	0 days	4月12日 星期日	4月12日 星期日	[Gantt Bar]														
103					[Gantt Bar]														
104	Section B	305 days	7月1日 星期一	4月30日 星期四	[Gantt Bar]														
105	Shunt Reactor	121 days	1月1日 星期三	4月30日 星期四	[Gantt Bar]														
106	Site possession date	0 days	1月1日 星期三	1月1日 星期三	[Gantt Bar]														
107	Predrilling Works for Bored Pile	34 days	1月1日 星期三	2月3日 星期一	[Gantt Bar]														
108	Drilling rigs mobilization	7 days	1月1日 星期三	1月7日 星期二	[Gantt Bar]														
109	Predrilling works (4 holes) (2 rigs)	25 days	1月8日 星期三	2月1日 星期六	[Gantt Bar]														
110	Submission of predrill logs	15 days	1月20日 星期一	2月3日 星期一	[Gantt Bar]														

Master Programme

Task Critical Task Milestone Summary

SUNLEY ENGINEERING & CONSTRUCTION CO., LTD.

Contract No. 18/8004 - Lamma Power Station Extension Foundation Works for Unit L12

Master Programme

ID	Task Name	Duration	Start	Finish	2019年			2020年		
					一月	二月	三月	M12	M13	M14
111	Completion of predrilling works	0 days	2月3日 星期一	2月3日 星期一						
112										
113	Bored Pile Construction (4 piles)	113 days	1月9日 星期四	4月30日 星期四						
114	Plant mobilization	15 days	1月9日 星期四	1月23日 星期四						
115	1st set plant - BPR-B4 > BPR-E2	65 days	1月16日 星期四	3月20日 星期五						
116	3rd set plant - BPR-E6 > BPR-E5	65 days	1月24日 星期五	3月28日 星期六						
117	Interface & sonic test	14 days	3月24日 星期二	4月6日 星期一						
118	Prepare & submit as-built record plan	7 days	3月31日 星期二	4月6日 星期一						
119	Submission of BA14	1 day	4月6日 星期一	4月6日 星期一						
120	Allow 14 days for selection of pile for concrete full core test	14 days	4月7日 星期二	4月20日 星期一						
121	Concrete full core test	10 days	4月21日 星期二	4月30日 星期四						
122	Completion of bored pile construction	0 days	4月30日 星期四	4月30日 星期四						
123	Completion of shunt reactor	0 days	4月30日 星期四	4月30日 星期四						
124										
125	Cable Bridge	267 days	7月1日 星期一	3月23日 星期一						
126	Site possession date	0 days	7月1日 星期一	7月1日 星期一						
127	Predrilling Works for Bored Pile	55 days	7月1日 星期一	8月24日 星期六						
128	Drilling rigs mobilization	7 days	7月1日 星期一	7月7日 星期日						
129	Predrilling works (8 holes) (2 rig)	46 days	7月8日 星期一	8月22日 星期四						
130	Submission of predrill logs	30 days	7月26日 星期五	8月24日 星期六						
131	Completion of predrilling works	0 days	8月24日 星期六	8月24日 星期六						
132										
133	Bored Pile Construction (6 piles)	178 days	9月16日 星期一	3月11日 星期三						
134	Plant mobilization	14 days	9月16日 星期一	9月29日 星期日						
135	2nd set plant - CP6-1 > CP6-3 > CP6-6 > CP6-8 > CP6-5 > CP6-2 > CP6-7 > CP6-4	150 days	9月30日 星期一	2月26日 星期三						
136	Interface & sonic test	14 days	2月27日 星期四	3月11日 星期三						
137	Completion of bored pile construction	0 days	3月11日 星期三	3月11日 星期三						
138										
139	Temporary Working Platform for Socketted H-Pile Construction	74 days	7月1日 星期一	9月12日 星期四						
140	Material delivery for temporary working platform erection	14 days	7月1日 星期一	7月14日 星期日						
141	Erection of temporary working platform	60 days	7月15日 星期一	9月12日 星期四						
142	Completion of temporary working platform	0 days	9月12日 星期四	9月12日 星期四						
143										
144	Predrilling Works for Socketted H-pile	27 days	9月13日 星期五	10月9日 星期三						
145	Drilling rigs mobilization	7 days	9月13日 星期五	9月19日 星期四						
146	Predrilling works (6 holes) (2 rigs)	18 days	9月20日 星期五	10月7日 星期一						
147	Submission of predrill logs	13 days	9月27日 星期五	10月9日 星期三						
148	Completion of predrilling works	0 days	10月9日 星期三	10月9日 星期三						
149										
150	Socketted H-Pile Construction (30 piles)	168 days	10月8日 星期二	3月23日 星期一						
151	Plant mobilization	14 days	10月8日 星期二	10月21日 星期一						
152	Trial pile installation (1 pile)	14 days	10月22日 星期二	11月4日 星期一						
153	Socketted H-pile installation (16 piles) (1 set plant)	65 days	11月5日 星期二	1月8日 星期三						
154	Post drill	5 days	1月9日 星期四	1月13日 星期一						
155	Prepare & submit as-built record plan	28 days	1月9日 星期四	2月5日 星期三						
156	Submission of BA14	1 day	2月6日 星期四	2月6日 星期四						
157	Allow 14 days for selection of pile for loading test	14 days	2月7日 星期五	2月20日 星期四						
158	Set up loading test platform for 1st pile testing	12 days	2月21日 星期五	3月3日 星期二						
159	Loading test for 1st pile	4 days	3月4日 星期三	3月7日 星期六						
160	Set up loading test platform for 2nd pile testing	12 days	3月8日 星期日	3月19日 星期四						
161	Loading test for 2nd pile	4 days	3月20日 星期五	3月23日 星期一						
162	Completion of socketted H-pile construction	0 days	3月23日 星期一	3月23日 星期一						
163	Completion of cable bridge	0 days	3月23日 星期一	3月23日 星期一						
164	Completion of section B	0 days	4月30日 星期四	4月30日 星期四						
165	Contract completion	0 days	4月30日 星期四	4月30日 星期四						

Master Programme

Task Critical Task Milestone Summary

Monthly Waste Flow Table for December 2019

Project: Lamma 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) (2)	Paper / cardboard packaging (3)	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						
Jan-2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Feb-2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Mar-2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-
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	3011.56	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
Apr-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
May-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	3.11
Jun-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	38.63
Jul-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	37.28
Aug-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	6.92
Sep-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	17.82
Oct-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	91.07
Nov-19	0.00	5.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	20.70
Dec-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	6.93	0.00	0.00	0.00	0.00	0.00	0.00	282.34	0.00	0.00	0.00	1.20	520.36

Total Inert C&D Waste Materials Generated	Non-inert C&D Materials		
	C&D Materials Recycled	C&D Wastes Disposed of at Landfill	Chemical Waste
21064.53 tonnes	282.34 tonnes	520.36 tonnes	1200 Liters

Where (A) Inert C&D materials include bricks, concrete, building debris, rubble and excavated spoil. In total, 21064.53 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 21064.53 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 December 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 '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	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	
May 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	9.13	
Jun 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	16.56	
Jul 2019	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	44000	17.99	
Aug 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	38.40	
Sep 2019	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10000	22.71	
Oct 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	13.85	
Nov 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	12.64	
Dec 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	2.10	
Total	0.00	0.00	0.00	0.00	0.00	0.00	8.43	7.53	0.00	0.00	0.00	54120	388.73	

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	388.73 tonnes	54120 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 December 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	0.00	4.66	0.00	0.00	0.00	0.60	
Mar 2019	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	19.05	0.00	0.00	0.00	0.00	
Apr 2019	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.08	0.00	0.00	0.00	19.09	
May 2019	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.63	0.00	0.00	0.00	59.75	
Jun 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	14.64	
Jul 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	2.66	
Aug 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	
Sep 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	27.31	
Oct 2019	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.109	0.00	4.76	
Nov 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	0.60	4.87	
Dec 2019	0.00	0.00	0.00	0.00	0.00	10226.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	18.19	
Total	3160.23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	35.42	0.00	0.109	0.00	1.20	170.81

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	35.53 tonnes	170.81 tonnes	1200 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 10226.2 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) 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 December 2019

Project: LAMMA POWER STATION EXTENSION – Unit 11 Complete Erection, Inspection, Testing & Commissioning of Power Block Facilities
 Contractor: Taihei Dengyo Kaisha, Ltd.
 Record by: Stephen Sin
 Year of Record: 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 L)	(in '000kg)	
Nov 2019	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	
Dec 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	
Total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0	0.00	

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
0.00 tonnes	0.00 tonnes	0.00 tonnes	0 Liters

- Where (A) Inert C&D materials include bricks, concrete, building debris, rubble and excavated spoil. In total, 0.00 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 0.00 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 December 2019

Project: Foundation Works for Lamma Power Station Extension Unit L12
 Contractor: Sunley Engineering & Construction Co Ltd
 Record by: Eric Liu
 Year of Record: 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 tonne)	(in tonne)	(in tonne)	(in tonne)	(in tonne)	(in tonne)	(in tonne)	(in tonne)	(in tonne)	(in tonne)	(in tonne)	(in tonne)	(in L)	(in tonne)	
Apr/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
May/2019	7417.96	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/2019	8470.29	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/2019	5056.58	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.29
Aug/2019	9705.48	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	9.51
Sep/2019	5432.32	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	400.00	2.96	
Oct/2019	10767.96	0.00	0.00	0.00	0.00	0.00	0.00	0.00	55.79	0.00	0.00	0.00	0.00	0.00
Nov/2019	8646.72	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	400.00	4.75	
Dec/2019	11100.40	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	66597.71	0.00	0.00	0.00	0.00	0.00	0.00	0.00	55.79	0.00	0.00	0.00	800.00	20.51

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
66597.71 tonnes	55.79 tonnes	20.51 tonnes	800.00 liter

- Where (A) Inert C&D materials include bricks, concrete, building debris, rubble and excavated spoil. In total, 66597.71 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 66597.71 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) 55.79 tonne of metals, 0 tonne of papers/ cardboard packing ; 0 tonne 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.
- (7) Quantity of metal recycled is revised.