

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 2018

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



ENVIRONMENTAL IMPACT ASSESSMENT (EIA) ORDINANCE, CAP. 499

ENVIRONMENTAL PERMIT NO. EP-071/2000/C

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

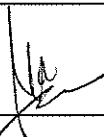

Report Title	Lamma Power Station Extension – Unit L10 & L11 Monthly EM&A Report (December 2018)
Date	14 January 2019
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EXECUTIVE SUMMARY

This is the 104th 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 2018.

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

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

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

Construction Activities Undertaken

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

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

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

Site audits were carried out on a weekly basis to monitor environmental issues on the construction site. The site conditions were generally satisfactory. The IEC conducted a site inspection on 7/12/2018. All required mitigation measures were implemented.

Environmental Licensing and Permitting

Description	Permit No.	Valid Period		Issued To	Date of Issuance
		From	To		
Varied Environmental Permit	EP-071/2000/C	18/05/05	-	HK Electric	18/05/05
Construction Noise Permit	GW-RS0789-18	05/09/18	02/03/19	Contractor	03/09/18
Construction Noise Permit	GW-RS0495-18	01/07/18	31/12/18	Contractor	14/06/18
WPCO Discharge Licence	WT00027316-2017	01/03/17	31/03/22	Contractor	01/03/17
Registration of Chemical Waste Producer	WPN5113-912-S3180-19	21/01/16	-	Contractor	21/01/16
Registration of Chemical Waste Producer	WPN5213-912-P2781-22	22/02/16	-	Contractor	22/02/16
Registration of Chemical Waste Producer	WPN5113-912-S3180-20	11/01/17	-	Contractor	11/01/17
Waste Disposal Billing Account	Account No.: 7026035	06/10/16	-	Contractor	06/12/16
Waste Disposal Billing Account	Account No.: 7026793	28/12/16	-	Contractor	28/12/16
Waste Disposal Billing Account	Account No.: 7027632	20/04/17	-	Contractor	20/04/17
Waste Disposal Billing Account	Account No.: 7031135	21/06/18	-	Contractor	21/06/18

Implementation Status of Environmental Mitigation Measures

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

Environmental Complaints

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

Future Key Issues

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

Unit L10 Civil and Building Works

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

Concluding Remarks

The environmental performance of the project was generally satisfactory.

1. INTRODUCTION

1.1 Background

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

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

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

This report summarizes the environmental monitoring and audit work for the Project for the month of December 2018.

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, CW pipe installation, formwork, steel fixing and concreting), and for Cable Trench. Construction activities for Unit L10 mechanical erection were condenser installation, HRSG installation and turbine block installation. Construction activity for Unit L10 electrical, instrumentation & control erection was cable installation. Construction activities for Unit L11 civil and building works were

ground treatment works, 275kV station building extension works and Main Station Building. 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, CW pipe installation, formwork, steel fixing and concreting)	<p>Air</p> <ul style="list-style-type: none"> - All regulated machine attached with valid exception/approval NRMM labels. - Water truck was used for water spraying of the haul road. - Water spraying for concrete breaking of pile head. - Excavated slope covered with cement or tarpaulin. - Backfilled surface was compacted. - Wheel washing facilities was provided. - Provision of shelter with three sides and top cover for fendolite mixer and fendolite stock should be covered. <p>Noise</p> <ul style="list-style-type: none"> - Works conducted during holiday should comply with the valid CNP. <p>Wastewater</p> <ul style="list-style-type: none"> - Wastewater should be treated in sedimentation pit and tanks before discharge. Solution should be added to speed up the sedimentation process. Sediment in pit and tanks must be removed regularly. <p>Waste Management</p> <ul style="list-style-type: none"> - Excavated soil was temporary stored for backfilling. - Scrape metal will be recycled. - Timber will be reused as much as possible.

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

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

1.4 Summary of EM&A Requirements

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

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

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

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

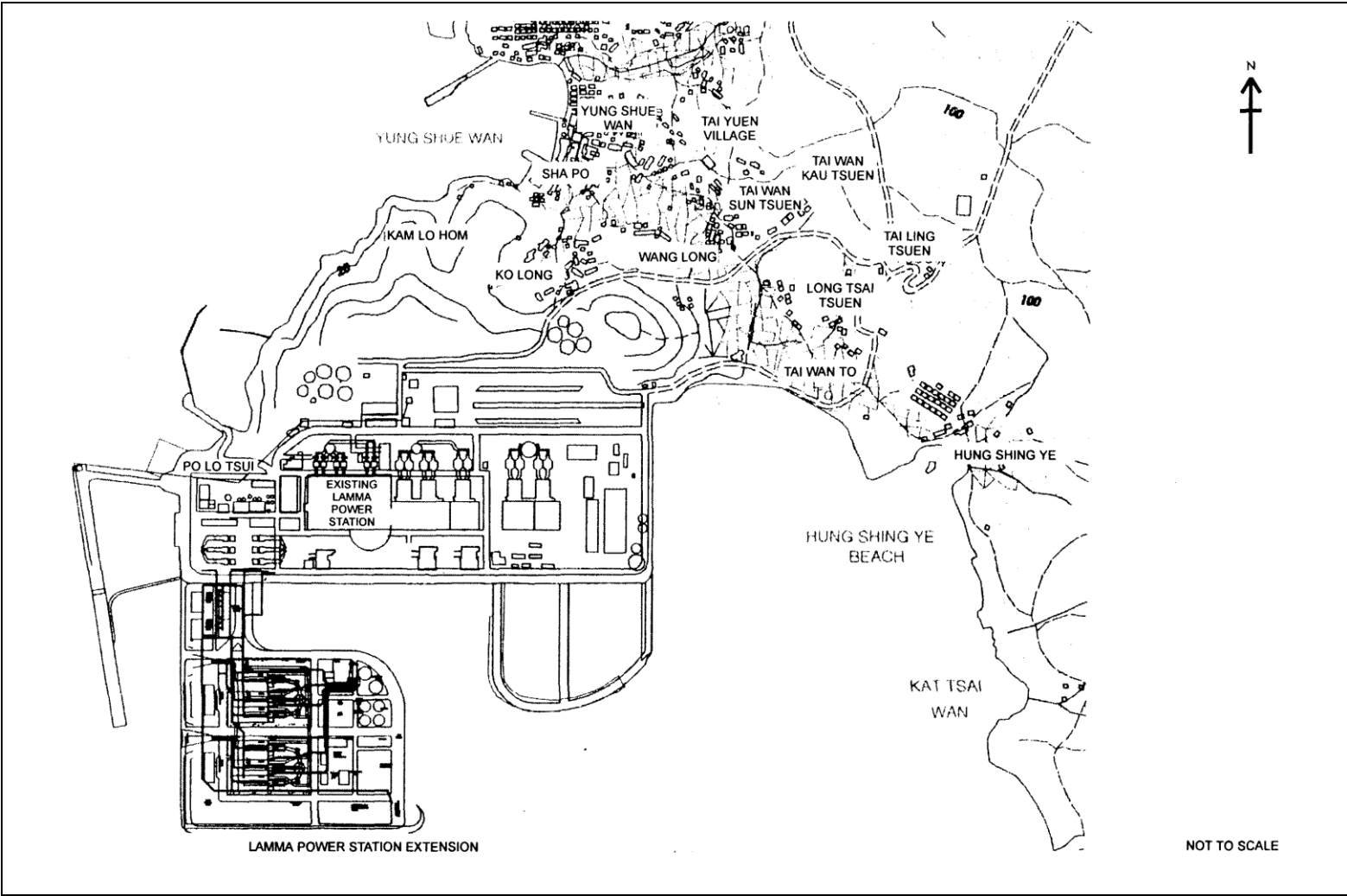


Figure 1.1 Layout of Work Site

2. AIR QUALITY

2.1 Monitoring Requirements

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

2.2 Monitoring Locations

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

Table 2.1 Air Quality Monitoring Locations

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

2.3 Monitoring Equipment

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

Table 2.2 Air Quality Monitoring Equipment

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

2.4 Monitoring Parameters, Frequency and Duration

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

Table 2.3 Air Quality Monitoring Parameter, Duration and Frequency

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

2.5 Monitoring Procedures and Calibration Details

MINIVOL (24- hour TSP Monitoring):

Preparation of Filter Papers

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

Field Monitoring

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

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

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

Maintenance & Calibration

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

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

2.6 Results and Observations

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

1-hour TSP

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

24-hour TSP

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

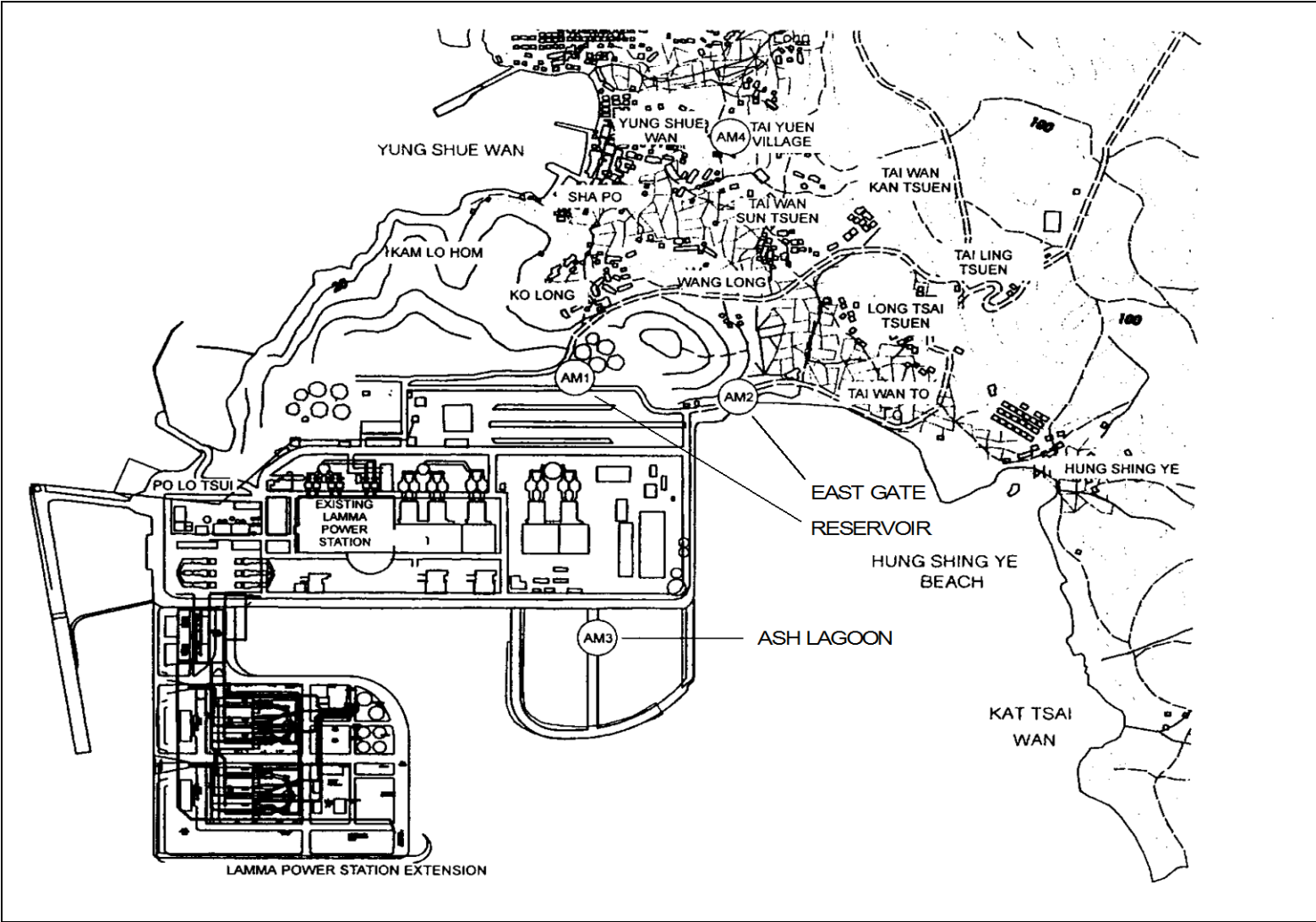


Figure 2.1 Location of Air Quality Monitoring Stations

3. NOISE

3.1 Monitoring Requirements

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

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

3.2 Monitoring Locations

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

3.3 Monitoring Equipment

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

Table 3.1 Noise Monitoring Equipment

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

3.4 Monitoring Parameters, Frequency and Duration

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

Table 3.2 Noise Monitoring Duration and Parameter

Location	Time Period	Frequency	Parameter
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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 next on-site calibrations for Ash Lagoon and Ching Lam noise monitoring stations would be carried out in February and March 2019 respectively.

3.6 Results and Observations

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

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

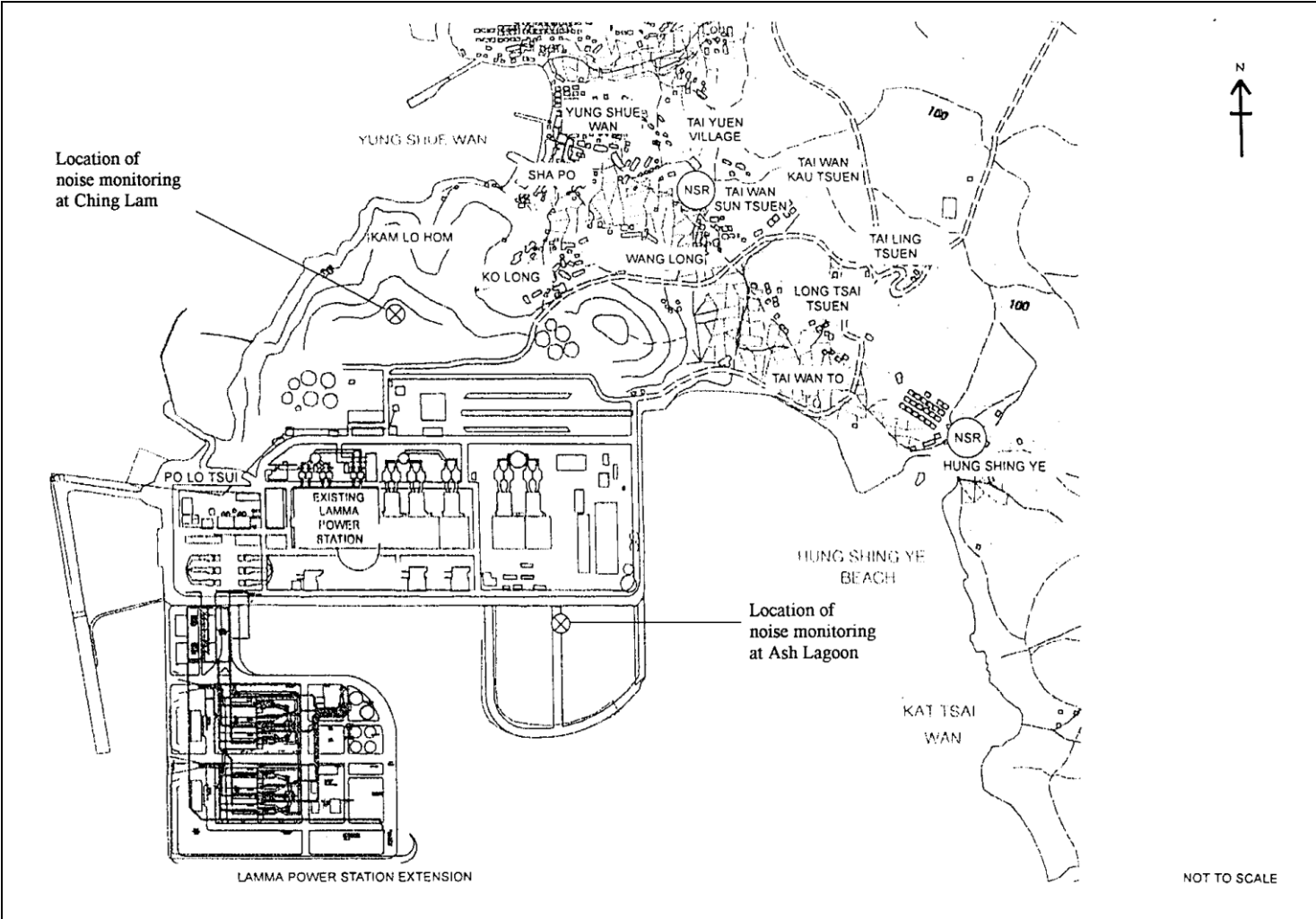


Figure 3.1 Location of Noise Monitoring Stations

4. ENVIRONMENTAL AUDIT

4.1 Review of Environmental Monitoring Procedures

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

4.2 Assessment of Environmental Monitoring Results

Monitoring results for Air Quality and Noise

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

Table 4.1 Summary of AL Level Exceedances on Monitoring Parameters

Item	Parameter Monitored	Monitoring Period	No. of Exceedances In		Event/Action Plan Implementation Status and Results
			Action Level	Limit Level	
Air					
1	Ambient TSP (24-hour)	01/12/18-31/12/18	0	0	
2	Ambient TSP (1-hour)	01/12/18-31/12/18	0	0	
Noise					
1	Noise level at the critical NSR's predicted by the noise alarm monitoring system	01/12/18-31/12/18	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 2018 are shown in [Table 4.2](#).

Table 4.2 Estimated Amounts of Waste in December 2018

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

0 Tonnes	10.64 Tonnes	19.69 Tonnes	0 Litres
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The monthly waste flow tables prepared by the contractors are attached in [Appendix K](#)

4.4 Site Environmental Audit

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 IEC conducted a site inspection on 7/12/2018. The site audit findings for the reporting month are summarized in [Appendix H](#). The site conditions were generally satisfactory. All required mitigation measures were implemented.

4.5 Status of Environmental Licensing and Permitting

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

Table 4.3 Summary of Environmental Licensing and Permit Status

Description	Permit No.	Valid Period		Highlights	Status
		From	To		
Varied Environmental Permit	EP-071/2000/C	18/05/05	-	The whole construction work site	Valid
Construction Noise Permit	GW-RS0789-18	05/09/18	02/03/19	Civil and Building Works for Unit L10. Operation of PME during restricted hours	Valid
Construction Noise Permit	GW-RS0495-18	01/07/18	31/12/18	Power Block Facilities works for Unit L10. Operation of PME during restricted hours	Valid
WPCO Discharge Licence#	WT00027316-2017	01/03/17	31/03/22	Civil and Building Works for Unit L10	Valid
Registration of Chemical Waste Producer	WPN5113-912-S3180-19	21/01/16	-	Foundation works for Unit L10	Valid
Registration of Chemical Waste Producer	WPN5213-912-P2781-22	22/02/16	-	Civil and Building Works for Unit L10	Valid
Registration of Chemical Waste Producer	WPN5113-912-S3180-20	11/01/17	-	Foundation works for Unit L11	Valid
Waste Disposal Billing Account	Account No.: 7026035	06/10/16	-	Civil and Building Works for Unit L10	Valid

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

Notes: # - Water quality monitoring was carried out in November 2018 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 2018, no complaint against the construction activities was received.

Table 4.4 Environmental Complaints Received in December 2018

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

Table 4.5 Outstanding Environmental Complaints Carried Over

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

5. FUTURE KEY ISSUES

5.1 Key Issues for the Coming Month

Key issues to be considered in the coming month include:

Unit L10 Civil and Building Works

Noise Impact

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

Air Impact

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

Water Impact

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

5.2 Monitoring Schedules for the Next 3 Months

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

5.3 Construction Program for the Next 3 Months

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

6. CONCLUSION

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

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

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

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

The environmental performance of the Project was generally satisfactory.

Appendix A Organization Chart

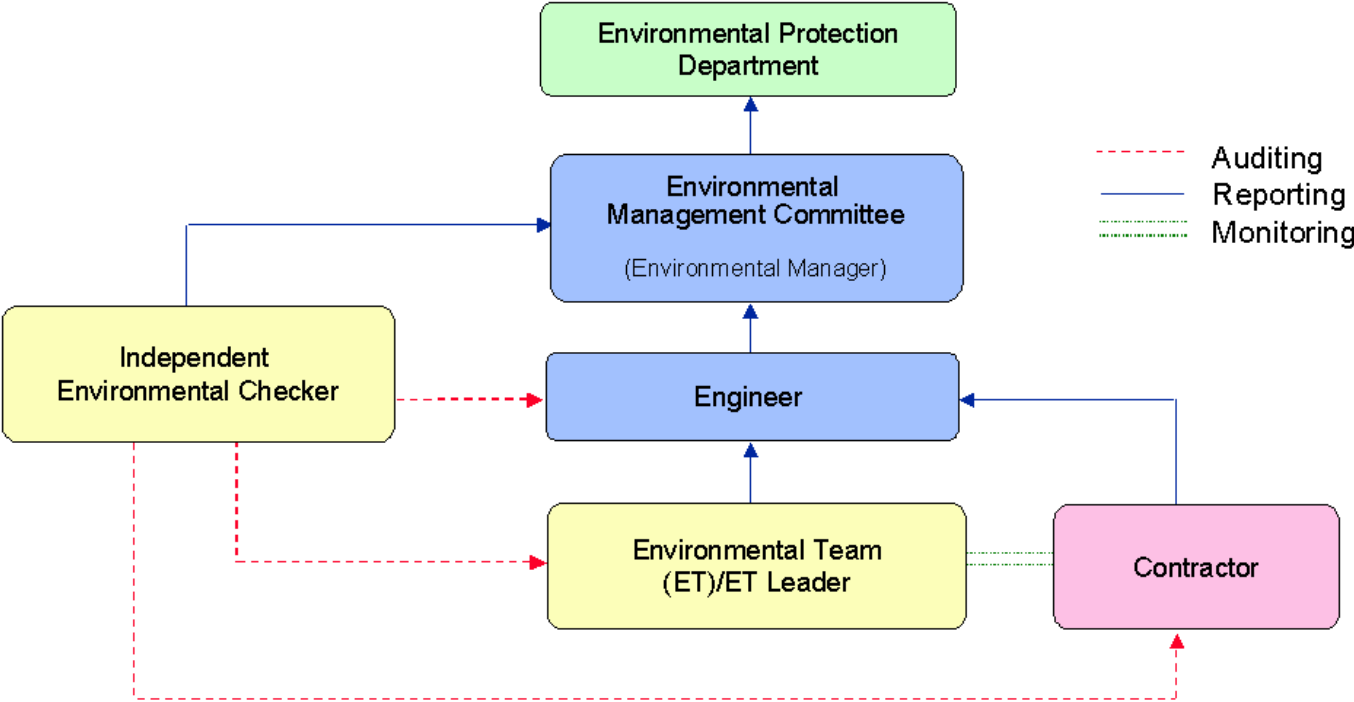


Figure A.1 Organisation of EM&A Programme at Construction Phase

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

B.1. Air

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

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

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

B.2. Noise

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

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

Appendix C Environmental Monitoring Schedule

Table C.1 Monitoring schedule for 24hr and 1hr TSP monitoring for Lamma Extension Construction (December 2018 to March 2019)

24hr TSP Monitoring	1hr TSP Monitoring
01/December/2018	01/December/2018 1500hr to 1800hr
07/December/2018	07/December/2018 1500hr to 1800hr
13/December/2018	13/December/2018 1500hr to 1800hr
19/December/2018	19/December/2018 1500hr to 1800hr
25/December/2018	25/December/2018 1500hr to 1800hr
31/December/2018	31/December/2018 1500hr to 1800hr
06/January/2019	06/January/2019 1500hr to 1800hr
12/January/2019	12/January/2019 1500hr to 1800hr
18/January/2019	18/January/2019 1500hr to 1800hr
24/January/2019	24/January/2019 1500hr to 1800hr
30/January/2019	30/January/2019 1500hr to 1800hr
05/February/2019	05/February/2019 1500hr to 1800hr
11/February/2019	11/February/2019 1500hr to 1800hr
17/February/2019	17/February/2019 1500hr to 1800hr
23/February/2019	23/February/2019 1500hr to 1800hr
01/March/2019	01/March/2019 1500hr to 1800hr
07/March/2019	07/March/2019 1500hr to 1800hr
13/March/2019	13/March/2019 1500hr to 1800hr
19/March/2019	19/March/2019 1500hr to 1800hr
25/March/2019	25/March/2019 1500hr to 1800hr
31/March/2019	31/March/2019 1500hr to 1800hr

APPENDIX D AIR QUALITY MONITORING RESULTS

Site: Lamma Power Station Extension

Month: December 2018

24 hour TSP Measurement:-

Date	TSP concentration ($\mu\text{g}/\text{m}^3$)				Weather Information (From Hong Kong Observatory)		
	Reservoir (AM1)	East Gate (AM2)	Ash Lagoon (AM3)	Tai Yuen Village (AM4)	Mean Wind Speed (km/hr)	Prevailing Wind Dir. ($^{\circ}$)	Mean R.H. (%)
1/12/2018	55	29*(4/12)	51	69	27.7	060	78
7/12/2018	28	33	29	33	34.3	070	88
13/12/2018	51	50	48	42	27.8	360	68
19/12/2018	68	53	56	64	31.5	060	78
25/12/2018	33	31	31	26	25.8	060	81
31/12/2018	61	72	57	83	26.8	360	68

* - TSP monitoring at AM2 (East Gate) was suspended on 01/12/2018 due to the maintenance of the TEOM. Make-up 24-hr TSP sampling at AM2 was conducted on 04/12/2018.

1 hour TSP Measurement:-

Date	Time	TSP concentration ($\mu\text{g}/\text{m}^3$)		
		Reservoir (AM1)	East Gate (AM2)	Ash Lagoon (AM3)
1/12/2018	15:00 - 15:59	27	16*(4/12)	45
	16:00 - 16:59	38	17*(4/12)	49
	17:00 - 17:59	50	17*(4/12)	49
7/12/2018	15:00 - 15:59	26	28	28
	16:00 - 16:59	24	34	29
	17:00 - 17:59	19	38	28
13/12/2018	15:00 - 15:59	74	117	76
	16:00 - 16:59	87	120	82
	17:00 - 17:59	74	99	80
19/12/2018	15:00 - 15:59	66	50	54
	16:00 - 16:59	67	54	56
	17:00 - 17:59	71	59	60
25/12/2018	15:00 - 15:59	43	39	37
	16:00 - 16:59	45	42	39
	17:00 - 17:59	46	41	40
31/12/2018	15:00 - 15:59	75	146	81
	16:00 - 16:59	87	188	89
	17:00 - 17:59	87	138	89

* - TSP monitoring at AM2 (East Gate) was suspended on 01/12/2018 due to the maintenance of the TEOM. Make-up 24-hr TSP sampling at AM2 was conducted on 04/12/2018.

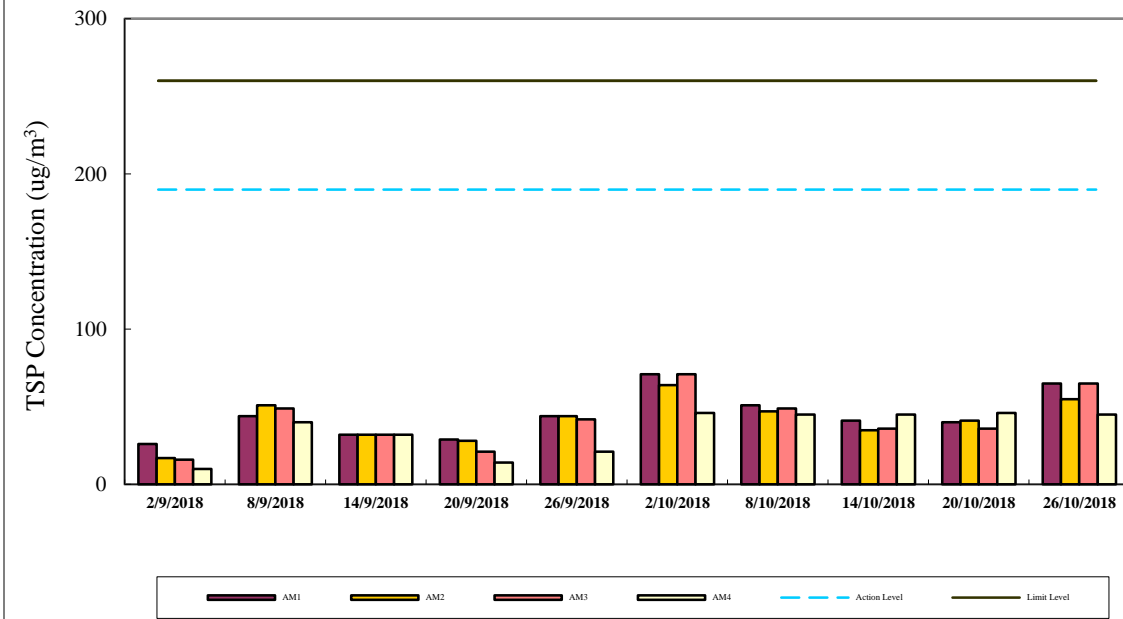
	1-hr TSP ($\mu\text{g}/\text{m}^3$)	24-hr TSP ($\mu\text{g}/\text{m}^3$)
Action Level	340	190
Limit Level	500	260

Calibration: Calibration details are shown in appendix F.

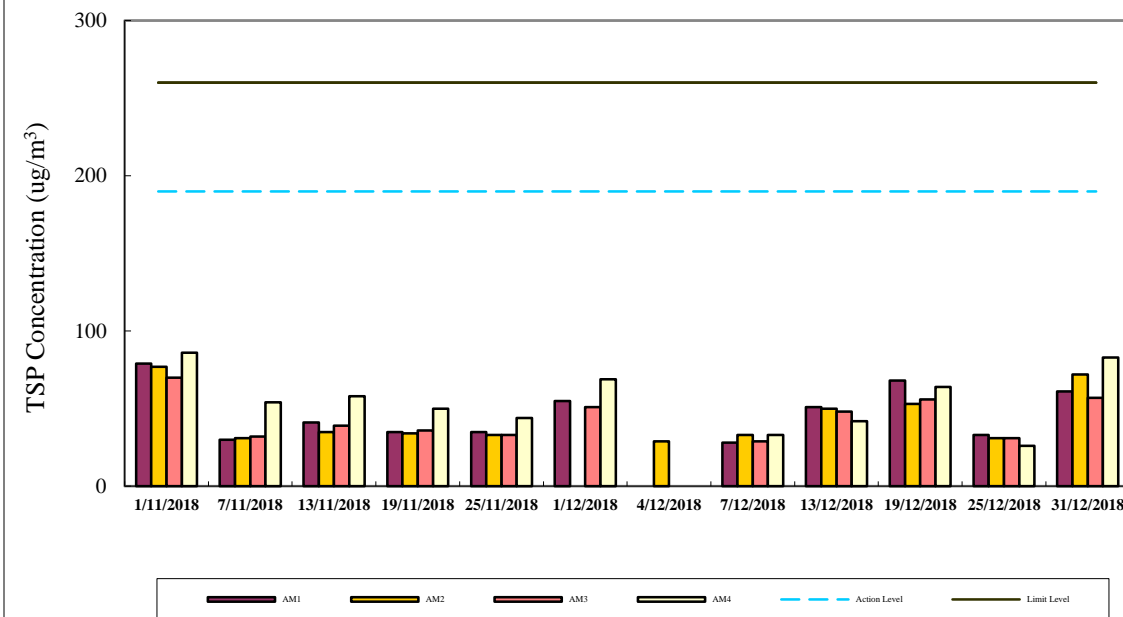
Equipment used:

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

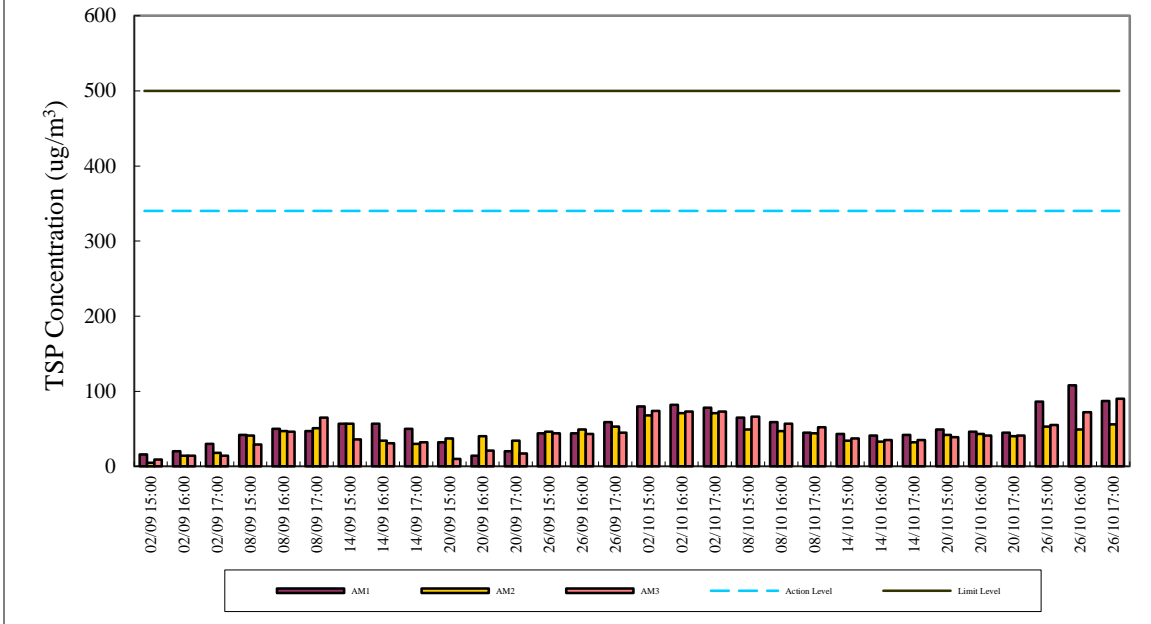
24-hr TSP Air Monitoring Data (September 2018 - October 2018)



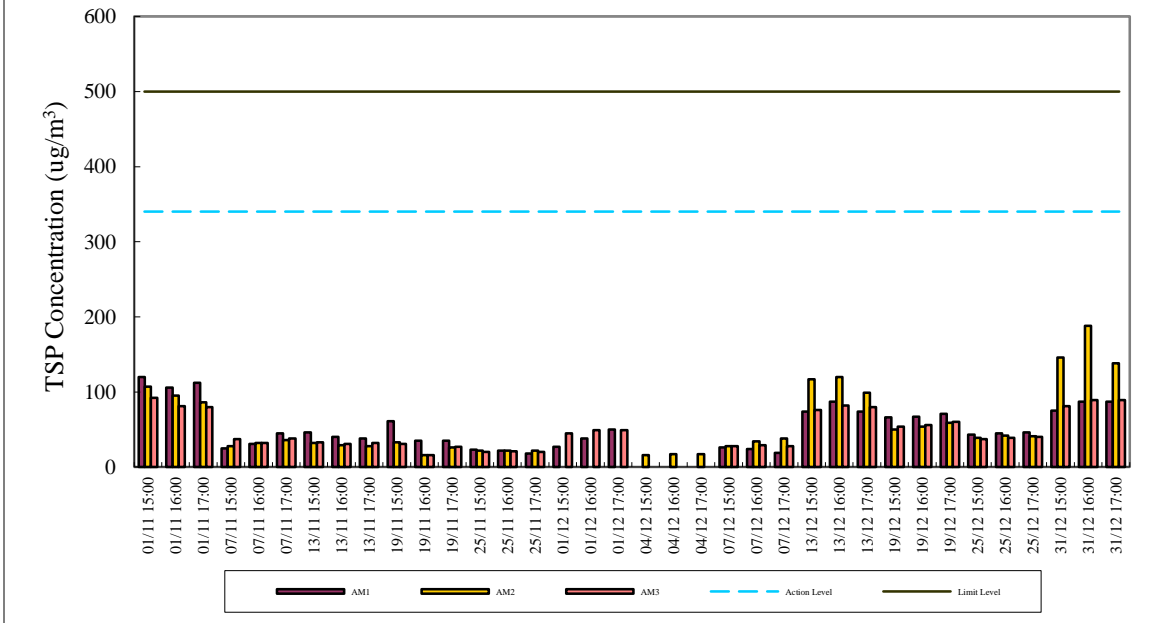
24-hr TSP Air Monitoring Data (November 2018 - December 2018)



1-hr TSP Air Monitoring Data (September 2018 - October 2018)



1-hr TSP Air Monitoring Data (November 2018 - December 2018)



Appendix E

Continuous Noise Monitoring Results for December 2018

Site: Lamma Power Station Extension Construction
 Measurement Location: Ash Lagoon and Ching Lam
 Measurement Parameter: 30-min Leq (07:00-19:00 hrs on normal weekdays)
 5-min Leq (07:00-23:00 hrs on holidays and
 19:00-23:00 hrs on all other days, and 23:00-
 07:00 hrs of next day)
 Noise Equipment: B&K 2250 sound level meters and B&K 4231 sound
 level calibrator
 Lab. Calibration Date: B&K 2250 sound level meters - 21/06/2018 (Ash Lagoon)
 02/11/2017 (Ching Lam)
 B&K 4231 calibrator - 23/04/2018

Date	Time	Calculated Noise Level at NSR at Long Tsai Tsuen/Hung Shing Ye (dB(A))		Limit Noise Level (dB(A))	Calculated Noise Level at NSR at the school within Tai Wan San Tsuen (dB(A))		Limit Noise Level (dB(A))
		Max	Avg		Max	Avg	
01/12/2018	07:00-19:00	---	---	75	39	39	70
01/12/2018	19:00-23:00	---	---	60	48	37	60
01/12/2018	23:00-07:00	---	---	45	43	36	45
02/12/2018	07:00-23:00	47	38	60	48	33	60
02/12/2018	23:00-07:00	45	40	45	45	35	45
03/12/2018	07:00-19:00	---	---	75	39	32	70
03/12/2018	19:00-23:00	34	34	60	42	38	60
03/12/2018	23:00-07:00	45	35	45	42	36	45
04/12/2018	07:00-19:00	---	---	75	57	45	70
04/12/2018	19:00-23:00	23	23	60	41	37	60
04/12/2018	23:00-07:00	45	38	45	43	36	45
05/12/2018	07:00-19:00	---	---	75	45	40	70
05/12/2018	19:00-23:00	36	36	60	46	42	60
05/12/2018	23:00-07:00	45	35	45	45	40	45
06/12/2018	07:00-19:00	---	---	75	38	38	70
06/12/2018	19:00-23:00	---	---	60	43	39	60
06/12/2018	23:00-07:00	45	38	45	43	35	45
07/12/2018	07:00-19:00	---	---	75	42	34	70
07/12/2018	19:00-23:00	---	---	60	36	32	60
07/12/2018	23:00-07:00	---	---	45	39	33	45
08/12/2018	07:00-19:00	---	---	75	40	38	70
08/12/2018	19:00-23:00	22	20	60	42	38	60
08/12/2018	23:00-07:00	40	29	45	43	37	45
09/12/2018	07:00-23:00	47	35	60	48	36	60
09/12/2018	23:00-07:00	39	32	45	44	37	45
10/12/2018	07:00-19:00	---	---	75	38	34	70
10/12/2018	19:00-23:00	36	31	60	38	30	60
10/12/2018	23:00-07:00	44	34	45	42	36	45
11/12/2018	07:00-19:00	---	---	75	---	---	70
11/12/2018	19:00-23:00	---	---	60	---	---	60
11/12/2018	23:00-07:00	43	37	45	43	36	45
12/12/2018	07:00-19:00	---	---	75	50	39	70
12/12/2018	19:00-23:00	---	---	60	41	36	60
12/12/2018	23:00-07:00	42	30	45	43	36	45
13/12/2018	07:00-19:00	---	---	75	41	36	70
13/12/2018	19:00-23:00	---	---	60	43	39	60

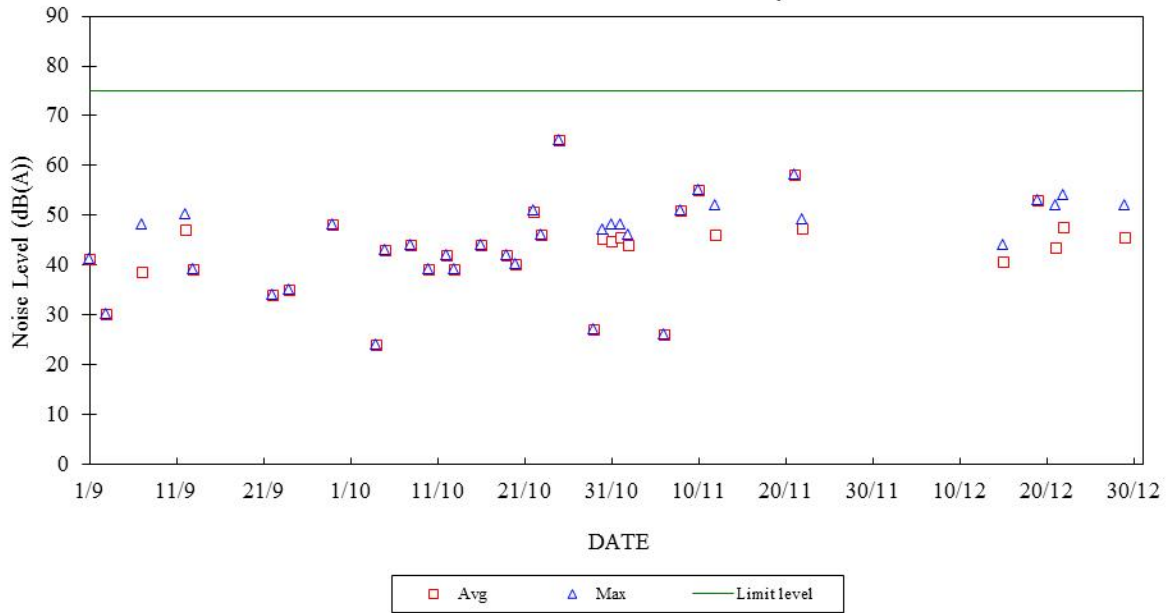
13/12/2018	23:00-07:00	39	32	45	42	36	45
14/12/2018	07:00-19:00	---	---	75	44	37	70
14/12/2018	19:00-23:00	37	31	60	42	33	60
14/12/2018	23:00-07:00	36	36	45	41	34	45
15/12/2018	07:00-19:00	44	41	75	40	34	70
15/12/2018	19:00-23:00	---	---	60	40	36	60
15/12/2018	23:00-07:00	41	31	45	42	36	45
16/12/2018	07:00-23:00	45	34	60	43	34	60
16/12/2018	23:00-07:00	35	28	45	44	37	45
17/12/2018	07:00-19:00	---	---	75	45	37	70
17/12/2018	19:00-23:00	---	---	60	44	41	60
17/12/2018	23:00-07:00	44	32	45	41	36	45
18/12/2018	07:00-19:00	---	---	75	40	33	70
18/12/2018	19:00-23:00	39	39	60	46	41	60
18/12/2018	23:00-07:00	45	40	45	40	34	45
19/12/2018	07:00-19:00	53	53	75	54	39	70
19/12/2018	19:00-23:00	32	32	60	38	33	60
19/12/2018	23:00-07:00	45	41	45	43	37	45
20/12/2018	07:00-19:00	---	---	75	42	37	70
20/12/2018	19:00-23:00	---	---	60	47	36	60
20/12/2018	23:00-07:00	43	38	45	45	36	45
21/12/2018	07:00-19:00	52	44	75	37	37	70
21/12/2018	19:00-23:00	32	32	60	---	---	60
21/12/2018	23:00-07:00	45	40	45	44	38	45
22/12/2018	07:00-19:00	54	48	75	49	45	70
22/12/2018	19:00-23:00	23	23	60	42	38	60
22/12/2018	23:00-07:00	---	---	45	42	37	45
23/12/2018	07:00-23:00	39	36	60	35	31	60
23/12/2018	23:00-07:00	45	40	45	45	37	45
24/12/2018	07:00-19:00	---	---	75	34	34	70
24/12/2018	19:00-23:00	49	41	60	48	37	60
24/12/2018	23:00-07:00	---	---	45	43	39	45
25/12/2018	07:00-23:00	48	36	60	43	36	60
25/12/2018	23:00-07:00	---	---	45	44	38	45
26/12/2018	07:00-23:00	51	37	60	32	30	60
26/12/2018	23:00-07:00	45	39	45	41	34	45
27/12/2018	07:00-19:00	---	---	75	36	36	70
27/12/2018	19:00-23:00	44	40	60	40	28	60
27/12/2018	23:00-07:00	45	42	45	42	36	45
28/12/2018	07:00-19:00	---	---	75	---	---	70
28/12/2018	19:00-23:00	53	45	60	39	35	60
28/12/2018	23:00-07:00	45	37	45	38	30	45
29/12/2018	07:00-19:00	52	46	75	35	31	70
29/12/2018	19:00-23:00	17	17	60	40	32	60
29/12/2018	23:00-07:00	43	43	45	41	36	45
30/12/2018	07:00-23:00	58	42	60	44	35	60
30/12/2018	23:00-07:00	39	31	45	42	34	45
31/12/2018	07:00-19:00	---	---	75	37	34	70
31/12/2018	19:00-23:00	38	32	60	40	30	60
31/12/2018	23:00-07:00	37	29	45	42	34	45

Note:

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

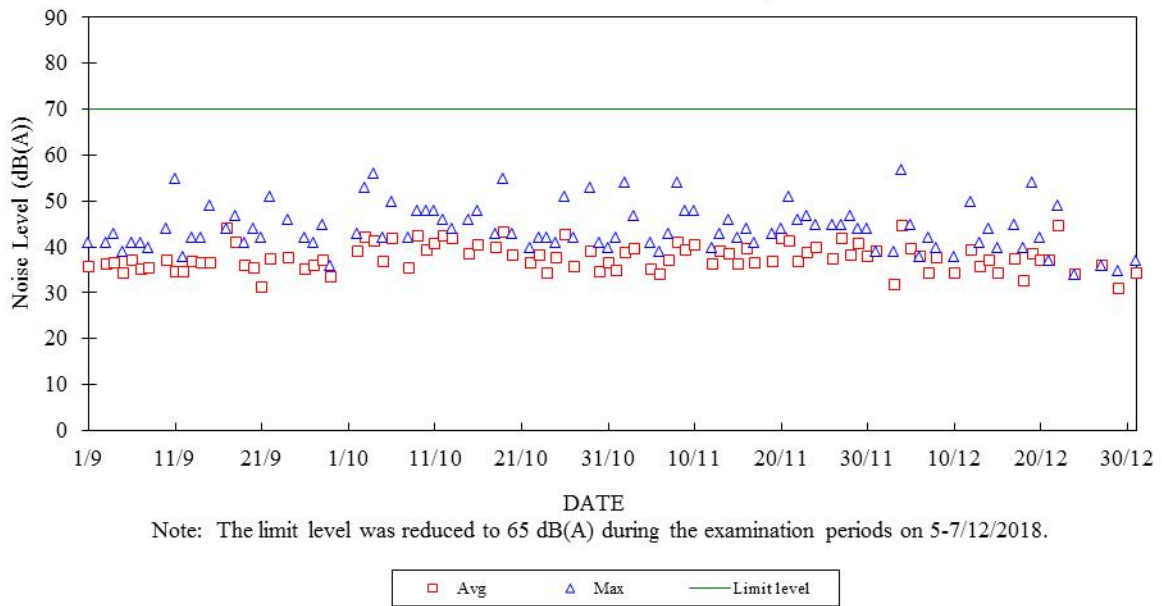
Construction Noise Monitoring in September - December 2018

NSR at Long Tsai Tsuen/Hung Shing Ye
07:00-19:00 hrs on Normal Weekdays

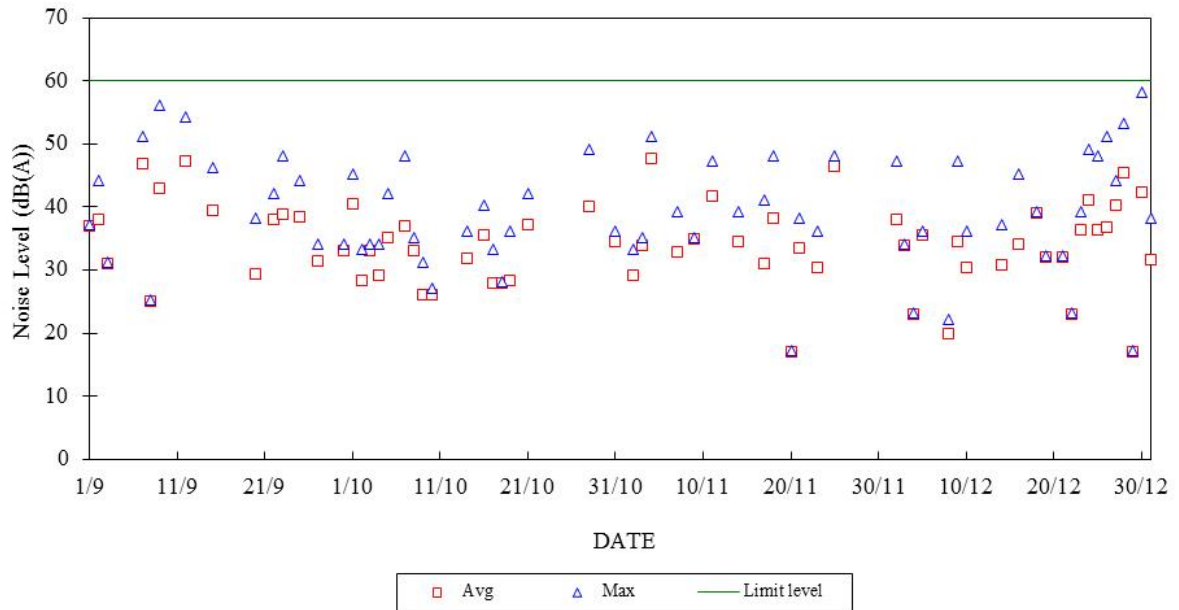


Construction Noise Monitoring in September - December 2018

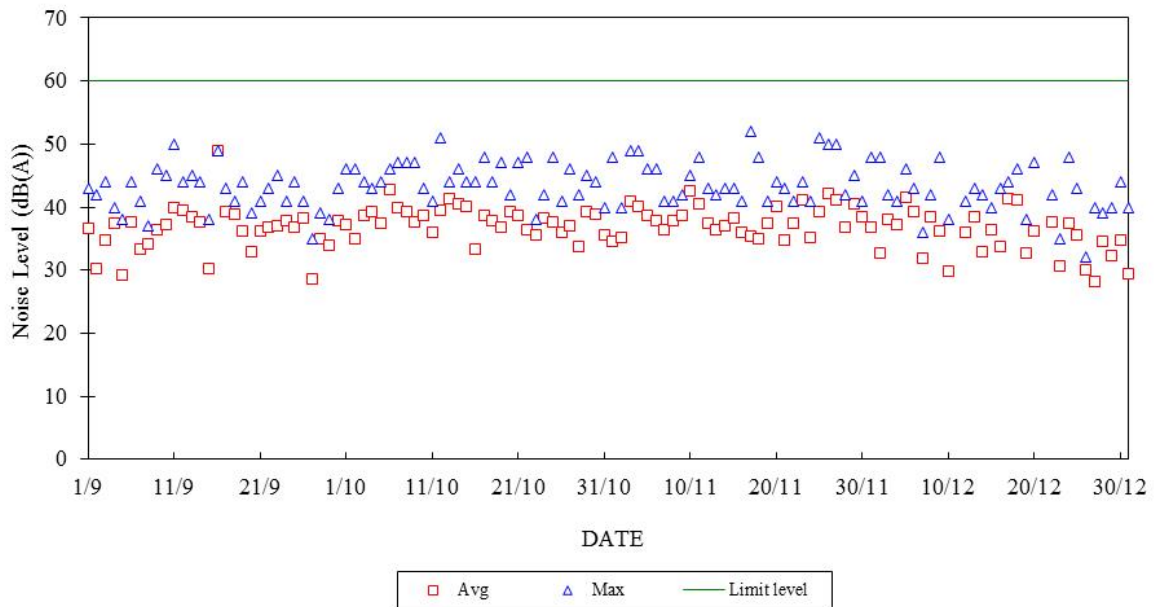
NSR at School within Tai Wan San Tsuen
07:00-19:00 hrs on Normal Weekdays



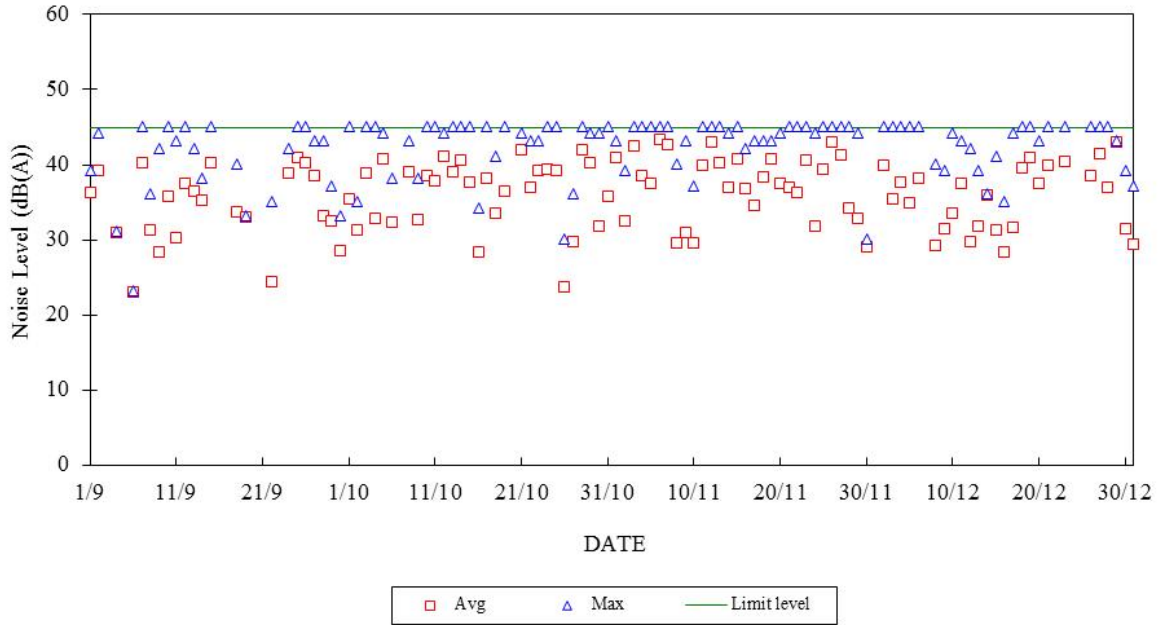
Construction Noise Monitoring in September - December 2018
 NSR at Long Tsai Tsuen/Hung Shing Ye
 07:00-23:00 hrs on Holidays and 19:00-23:00 hrs on All Other Days



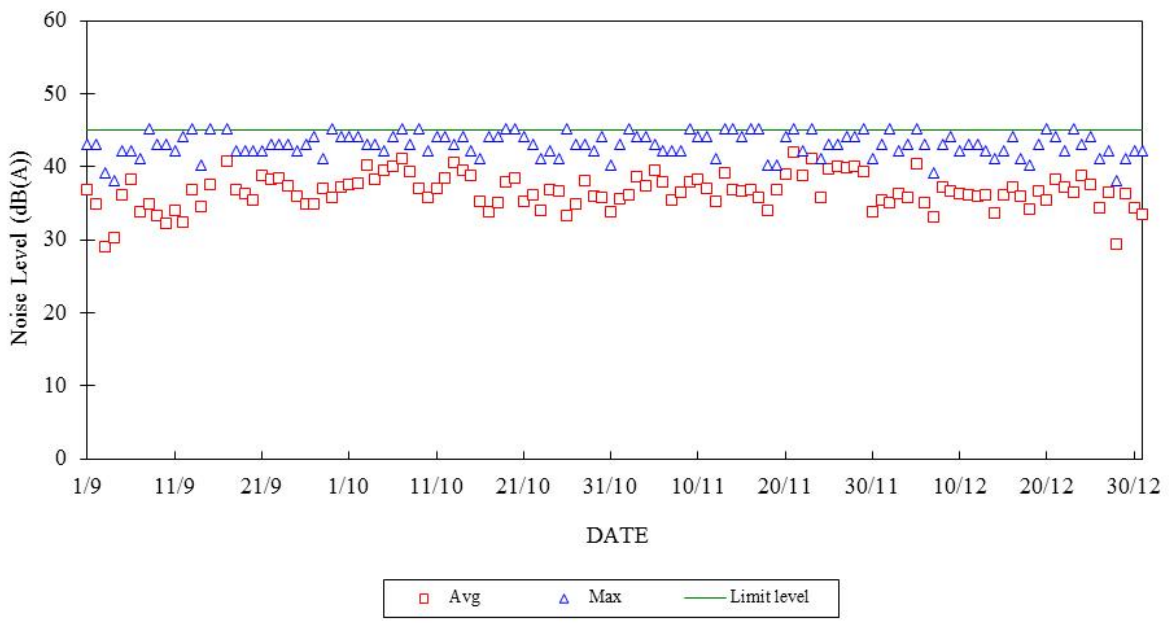
Construction Noise Monitoring in September - December 2018
 NSR at School within Tai Wan San Tsuen
 07:00-23:00 hrs on Holidays and 19:00-23:00 hrs on All Other Days



Construction Noise Monitoring in September - December 2018
NSR at Long Tsai Tsuen/Hung Shing Ye
23:00-07:00 hrs of Next Day



Construction Noise Monitoring in September - December 2018
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: 12 Year: 2018

Reservoir (AM1)				
Date	Frequency (Hz) (240 - 275)	Operation Mode (Mode 4)	Main Flow (l/min) (2.70 - 3.30)	Bypass Flow (l/min) (12.30 - 15.04)
01/12/2018	267.443	4	2.92	13.32
07/12/2018	266.924	4	2.95	13.45
13/12/2018	266.228	4	3.01	13.73
19/12/2018	265.457	4	2.83	13.41
25/12/2018	272.472	4	3.09	14.07
31/12/2018	271.786	4	3.18	14.49

East Gate (AM2)				
Date	Frequency (Hz) (240 - 275)	Operation Mode (Mode 4)	Main Flow (l/min) (2.70 - 3.30)	Bypass Flow (l/min) (12.30 - 15.04)
01/12/2018	259.711 *(4/12)	4 *(4/12)	2.96 *(4/12)	13.50 *(4/12)
07/12/2018	259.498	4	3.02	13.83
13/12/2018	259.586	4	3.10	14.13
19/12/2018	258.722	4	2.72	13.79
25/12/2018	259.536	4	2.76	14.00
31/12/2018	271.786	4	2.81	14.09

Ash Lagoon (AM3)				
Date	Frequency (Hz) (240 - 275)	Operation Mode (Mode 4)	Main Flow (l/min) (2.70 - 3.30)	Bypass Flow (l/min) (12.30 - 15.04)
01/12/2018	258.224	4	3.00	13.67
07/12/2018	257.732	4	3.00	13.67
13/12/2018	257.204	4	3.00	13.67
19/12/2018	256.449	4	3.00	13.66
25/12/2018	255.974	4	3.00	13.67
31/12/2018	258.682	4	3.00	13.67

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

Remarks:

* TSP monitoring at AM2 (East Gate) was suspended on 01/12/2018 due to the maintenance of the TEOM. Make-up 24-hr TSP sampling at AM2 was conducted on 04/12/2018.

Prepared by: HY Chan

Checked by: HY Ho

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
14/12/2018 / 13:30	WM Tam / SM Hon

Equipment / Item

Equipment / Item	Serial No. / No.
MINIVOL	5580
Used filter paper no.	MP89
New filter paper no.	MP90

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: 5.074
After: 5.015

- 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 / SM Hon

Checked by: SM Hon

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

Date	Location: Ash Lagoon		Location: Ching Lam	
	Calibration Results	Deviation from Reference (dB)	Calibration Results	Deviation from Reference (dB)
01/12/2018	Passed	-0.04	Passed	-0.01
02/12/2018	Passed	-0.03	Passed	-0.01
03/12/2018	Passed	-0.02	Passed	0.00
04/12/2018	Passed	-0.01	Passed	0.00
05/12/2018	Passed	-0.09	Passed	-0.03
06/12/2018	Passed	-0.03	Passed	-0.04
07/12/2018	Passed	-0.08	Passed	-0.05
08/12/2018	Passed	-0.09	Passed	-0.06
09/12/2018	Passed	-0.10	Passed	-0.06
10/12/2018	Passed	-0.09	Passed	-0.08
11/12/2018	Passed	-0.09	Passed	-0.06
12/12/2018	Passed	-0.11	Passed	-0.08
13/12/2018	Passed	-0.10	Passed	-0.10
14/12/2018	Passed	-0.09	Passed	-0.06
15/12/2018	Passed	-0.06	Passed	-0.06
16/12/2018	Passed	-0.05	Passed	-0.08
17/12/2018	Passed	-0.08	Passed	-0.02
18/12/2018	Passed	-0.07	Passed	-0.04
19/12/2018	Passed	-0.06	Passed	-0.01
20/12/2018	Passed	-0.04	Passed	-0.02
21/12/2018	Passed	-0.03	Passed	-0.04
22/12/2018	Passed	-0.03	Passed	-0.03
23/12/2018	Passed	-0.08	Passed	-0.07
24/12/2018	Passed	-0.08	Passed	-0.07
25/12/2018	Passed	-0.07	Passed	-0.05
26/12/2018	Passed	-0.05	Passed	-0.04
27/12/2018	Passed	-0.06	Passed	-0.02
28/12/2018	Passed	-0.10	Passed	-0.08
29/12/2018	Passed	-0.11	Passed	-0.11
30/12/2018	Passed	-0.13	Passed	-0.11
31/12/2018	Passed	-0.16	Passed	-0.09

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>		implemented mitigation measures.	<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: 04/12/2018, 07/12/2018, 11/12/2018, 18/12/2018 and 27/12/2018

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: 06/12/2018, 07/12/2018, 14/12/2018, 21/12/2018 and 28/12/2018.

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: 04/12/2018, 07/12/2018, 11/12/2018, 18/12/2018 and 27/12/2018.

Summary of Findings

General

- No environmental deficiency identified.

Air Quality

- No environmental deficiency identified.

Noise

- No environmental deficiency identified.

Water Quality

- No environmental deficiency identified.

Waste Management

- No environmental deficiency identified.

Summary of EMIS

Power Station – (Part B of EIA Report)

Construction Phase Mitigation Measures and their Implementation

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

EM&A Log Ref.	Mitigation Measures	Implementation Status
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. 	 N/A N/A N/A N/A N/A N/A N/A N/A
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	General noise mitigation measures shall be employed at all work sites throughout the construction phase.	C
C2	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.	C
C3	Mitigate against night time noise from dredging equipment, with silencers or mufflers. **	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. 	 C C C C

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

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

Remarks:

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

ID	Task Name	Duration	Start	Finish	Gantt Chart		
					January 2019	February 2019	March 2019
1	Contract Key Date	1308 days	01/11/16	31/05/20			
2	Possession Date	1308 days	01/11/16	31/05/20			
3	Contract Commencement Date	0 days	01/11/16	01/11/16			
4	Section A1 - Modify Plinth at Ext. GRS	61 days	01/11/16	31/12/16			
5	Section A2 - LPS Site Office Building	410 days	18/12/16	31/01/18			
6	Section B1 - Area C1&2 incl. all UG structures & Temp. Access for Empolyer's Specialis	426 days	12/12/16	10/02/18			
7	Section B2 - Surcharge relocation & assoicated top-up works	122 days	01/09/17	31/12/17			
8	Section C - Area C3, HRSG & MSBU10 for Empolyer's Specialist	457 days	13/12/16	14/03/18			
9	Section D - Remaining of MSBU10, HRSG, A&A at L9 & L8, Ext. & Demolish Site Toilet	516 days	22/12/16	21/05/18			
10	Section D - CW Pump Equip. Rm No. 4	365 days	01/04/17	31/03/18			
11	Section E - Middel Rd & South of L10. Expose & Construction New 275kV Trench at LM	577 days	01/11/16	31/05/18			
12	Section F -Urea Storage & Handling Facilities	488 days	01/05/17	31/08/18			
13	Section G - Demin. Plant Road & No.3 Outfall	273 days	01/01/18	30/09/18			
14	Section G - Modification at No. 4 CW Intake	122 days	01/06/18	30/09/18			
15	Section H1 - Gas Support foundation & trench at Area C11	745 days	01/11/16	15/11/18			
16	Section H2 - GRS Improvement work at Area C10	441 days	01/09/17	15/11/18			
17	Section H3 - L10 Chimney Flue and A&A L9 & pipe rack formation	319 days	01/01/18	15/11/18			
18	Section I1 - Link Bridge & associated A&A	455 days	06/01/17	05/04/18			
19	Section I2 - Shunt Reactor SR4 Foundation	90 days	01/01/19	31/03/19			
20	Section I3 - All remaining work except deferred works	417 days	08/02/18	31/03/19			
21	Section J - Cable Route CPX1&2 cable diversion & whole of work except deferred works to be carried out in DLP	790 days	01/11/16	30/12/18	Section J - Cable Route CPX1&2 cable diversion & whole of work except deferred works to be carried out in DLP		
22	Deferred works during DLP	336 days	01/07/19	31/05/20			
23	General & Preliminary	552 days	01/11/16	06/05/18			
24	Set up Temporary Site Office and Utilities	30 days	01/11/16	30/11/16			
25	Full Mobilization	14 days	01/11/16	14/11/16			
26	Permit Applications & Statuary Submissions	45 days	08/11/16	22/12/16			
27	Existing Utilities scanning & Excavation Permit	45 days	01/11/16	15/12/16			
28	Foundation of Tower Crane Construction	7 days	05/04/17	11/04/17			
29	Tower Crane Erection	5 days	12/04/17	16/04/17			
30	Removal of Tower Crane (Including Foundation)	14 days	23/04/18	06/05/18			
31	L10 MSB External Scaffolding erection	120 days	12/09/17	09/01/18			
32	L10 MSB External Scaffolding Removal	14 days	09/04/18	22/04/18			
33	Submission and Approval	450 days	01/11/16	24/01/18			
34	Method Statement / Temp Work Submission & Approval from HEC for General Works	240 days	01/11/16	28/06/17			
35	BD Approval & Consent (If required)	90 days	01/12/16	28/02/17			
36	BIM Model, CSD & CBWD Submission & Approval from HEC	200 days	01/12/16	18/06/17			
37	Structure Steelwork Connection Design Submission & BD Approval	30 days	31/12/16	29/01/17			
38	Structure Steelwork Shop Drawing & Approval	30 days	30/01/17	28/02/17			
39	Metal Cladding, louvre & windows submission & BD Approval	60 days	30/01/17	30/03/17			
40	Metal Cladding, louvre & windows shop drawing submission	45 days	14/02/17	30/03/17			
41	Order, Off Site Fabrication and Delivery (S. Steel & Cladding & louvres)	180 days	31/03/17	26/09/17			
42	CW Culvert (Inlet) ELS BD approval & consent	90 days	31/03/17	28/06/17			
43	Sumission & Approval of Steel Flue Assessment Report and Design Drawings	210 days	31/12/16	28/07/17			
44	Submission and Approval of Steel Flue Design from BD	90 days	29/07/17	26/10/17			
45	Material Fabrication & Delivery for L10 Flue	100 days	27/09/17	04/01/18			
46	Folding Shutters Shop Drawing Submission & Approval	120 days	01/03/17	28/06/17			
47	Fabrication & Delivery of Foldering Shutters	150 days	29/06/17	25/11/17			
48	Sewage Pump System Design submission & Approval	45 days	13/08/17	26/09/17			
49	Fabrication & Delivery of Sewage Pump	120 days	27/09/17	24/01/18			
50	Other Material Submission & Approval & Deliverys	240 days	31/03/17	25/11/17			
51	Coordination with the Employer's Specialist Contractors	480 days	09/07/17	31/10/18			
52	Outlet Culvert Box Verical Puddle Pipes Installation	7 days	09/07/17	15/07/17			
53	Inlet Culvert Box Verical Puddle Pipes Installation	7 days	05/09/17	11/09/17			
54	Template setting in at L10 Turbo Block Foundation	45 days	12/10/17	25/11/17			

ID	Task Name	Duration	Start	Finish	Month		
					January 2019	February 2019	March 2019
55	Template setting of holding down bolts at HRSG Column Base	45 days	16/08/17	29/09/17			
56	I-beam/ Channel Base Installation on top of Transformer Foundations at Transformer A	32 days	12/10/17	12/11/17			
57	Overhead crane rail installation	14 days	15/01/18	28/01/18			
58	Overhead Crane Erection at Turbine Hall using Access through a Temporary Opening at L10 MSB Roof between GL 10-G to 10-H and 10-2 and 10-6	21 days	29/01/18	18/02/18			
59	Condenser Assembly and Erection using Access through a Temporary Opening at L10 MSB below 1/F along GL 10-6 from GL 10-B to 10-C including a Clear Space below 1/F between GL 10-B to 10-C	89 days	01/02/18	30/04/18			
60	Installation of Power Train Equipment including Air Inlet Duct using Access through a Temporary Façade Opening at L10 MSB below 1/F along GL 10-6 from GL 10-F to 10-H including a Clear Space below 1/F of the above Area	89 days	07/02/18	06/05/18			
61	Installation of Equipment in L10 HRSG Area after the Temporary Paving was Removed to Expose the Respective Foundations by the Contractor	78 days	15/08/18	31/10/18			
62	Installation of Embedded Materials such as Holding Down Bolts for Equipment Foundati	200 days	30/07/17	14/02/18			
63	Section A1 - Modify Plinth at Ext. GRS	61 days	01/11/16	31/12/16			
64	Existing Plinth Removal	18 days	01/11/16	18/11/16			
65	Wall Base & Plinth Construction	45 days	17/11/16	31/12/16			
66	Pipe Rcak at Unit 9 North (VO under EI No. 6)	197 days	29/01/17	14/08/17			
67	Consent and BA10 Submissions	0 days	29/01/17	29/01/17			
68	Hoarding & Plant Load Test	18 days	30/01/17	16/02/17			
69	Footing Construction & Reinstatement	120 days	17/02/17	16/06/17			
70	Structural Steel Fabrication, Delivery & Erection	60 days	16/06/17	14/08/17			
71	Section A2 - LPS Site Office Building	457 days	01/11/16	31/01/18			
72	Submissions of Shop Drawings and Approval	90 days	01/11/16	29/01/17			
73	Submisson & Approval of CSD & CBWD	60 days	15/01/17	15/03/17			
74	Complete site clearance by HKE	0 days	01/11/16	01/11/16			
75	Demolish of existing site office	21 days	01/11/16	21/11/16			
76	BA 10 Application	0 days	01/11/16	01/11/16			
77	Erection of Hording	7 days	01/11/16	07/11/16			
78	Plate Load Test	7 days	08/11/16	14/11/16			
79	Installation of Earthing Grid	18 days	15/11/16	02/12/16			
80	Construction of pad footing, bearing wall, columns up to G/F	45 days	03/12/16	16/01/17			
81	Chinese New Year	10 days	27/01/17	05/02/17			
82	Backfill & UG Drainage within Building	75 days	17/01/17	01/04/17			
83	Backfill & Blinding	4 days	02/04/17	05/04/17			
84	Construct G/F on-grade slab & External Scaffold Erection	12 days	06/04/17	17/04/17			
85	RC Walls, Columns and Slab up to 1/F	100 days	18/04/17	26/07/17			
86	RC Walls, Columns and Slab up to R/F	40 days	13/07/17	21/08/17			
87	Parapet Wall, FS Water Tank, Top Roofs + RC curb, hatch door etc	21 days	22/08/17	11/09/17			
88	Waterproofing for Liift pit + Water test	14 days	15/08/17	28/08/17			
89	G/F Window, Louvre, Doors Frame & Shutter Frame	30 days	26/08/17	24/09/17			
90	G/F Finishing Works	45 days	09/09/17	23/10/17			
91	G/F Plumbing & Drainage Works	30 days	09/10/17	07/11/17			
92	G/F Sanitary Fitting and Cubicles	30 days	30/10/17	28/11/17			
93	G/F Other sundry metal, railing, etc	45 days	24/10/17	07/12/17			
94	G/F Placing Furnitures	10 days	21/01/18	30/01/18			
95	1/F Window, Louvre & Door Frames	30 days	21/09/17	20/10/17			
96	1/F Finishing Works	45 days	05/10/17	18/11/17			
97	1/F Plumbing, Sanitary Fittings & Drainage Works	21 days	04/11/17	24/11/17			
98	1/F Other sundry metal, railing, etc	60 days	21/10/17	19/12/17			
99	R+UR/F Waterproofing Installation + Testing	45 days	03/10/17	16/11/17			
100	R/F Finishing Works (incl. Water Tank & FS Pump Room)	45 days	03/10/17	16/11/17			
101	R/F Plumbing Works	14 days	17/11/17	30/11/17			
102	R/F Sundry Metal, Handrail & Glazed Railing	30 days	17/11/17	16/12/17			
103	Installation of Door a& Shutter leafs	30 days	17/11/17	16/12/17			
104	Handover of lift shaft	0 days	28/08/17	28/08/17			
105	Lift Installation + EMSD Inspection + Issue of Lift Cert	90 days	29/08/17	26/11/17			

ID	Task Name	Duration	Start	Finish	Month		
					January 2019	February 2019	March 2019
106	Electrial Installation	85 days	24/10/17	16/01/18			
107	Fire Service Installation	85 days	24/10/17	16/01/18			
108	MVAC Installation	85 days	24/10/17	16/01/18			
109	Testing & Commissioning Works	10 days	07/01/18	16/01/18			
110	External Wall Finishing Works	45 days	03/10/17	16/11/17			
111	Removal of Scaffolding	14 days	17/11/17	30/11/17			
112	External UG P&D and Road Works	100 days	22/08/17	29/11/17			
113	WVO046 Completion	0 days	29/11/17	29/11/17			
114	FSD Inspection	0 days	16/01/18	16/01/18			
115	Submit BA 13 Inspection	14 days	17/01/18	30/01/18			
116	Expected OP Issue	0 days	31/01/18	31/01/18			
117	Section B1 - Area C1&2 incl. all UG structures & Temp. Access for Empolyer's Specialist	277 days	10/05/17	10/02/18			
118	C.W. Culvert System (Area C1 & C2) (~160m)	277 days	10/05/17	10/02/18			
119	Excavation to Formation Level (+1.1mPD)	18 days	10/05/17	27/05/17			
120	Construction of Binding & Plinth	14 days	19/05/17	01/06/17			
121	Pile Laying	14 days	02/06/17	15/06/17			
122	Thrust Box + Manhole Construction	14 days	16/06/17	29/06/17			
123	Water Test	4 days	30/06/17	03/07/17			
124	Backfill	7 days	04/07/17	10/07/17			
125	Return area to Sunley for L11 piling	120 days	11/07/17	07/11/17			
126	Cutting Sheet pile	14 days	08/11/17	21/11/17			
127	All underground Utilities	60 days	22/11/17	20/01/18			
128	Backfill & Reinstatement & Formation of Access	60 days	13/12/17	10/02/18			
129	Supporting Structure for Overhead Crane	30 days	16/12/17	14/01/18			
130	Section B2 - Surcharge relocation & assoicated top-up works	229 days	17/05/17	31/12/17			
131	Roadworks and External Works	229 days	17/05/17	31/12/17			
132	Surface Drainage Modification	60 days	17/05/17	15/07/17			
133	Remove of Surcharge Fill (~21500 m3)@ Area C2, C10 & C15 to Area B1, B2, D2, D3 and D4	45 days	01/09/17	15/10/17			
134	Construction of Access Road	60 days	16/10/17	14/12/17			
135	Existing Band Drains Cut-down (2520 nos)	90 days	03/10/17	31/12/17			
136	Section C - Area C3, HRSG & MSBU10 for Empolyer's Specialist	499 days	01/11/16	14/03/18			
137	HRSG Area Equipment Rm & Fdn - South (Area C7)	201 days	02/07/17	18/01/18			
138	Excavation to Formation Level	14 days	02/07/17	15/07/17			
139	Pile Head Treatment	14 days	16/07/17	29/07/17			
140	Pile Cap & Tie Beam - GL 10-H to 10H-H, 10-H5 to 10-9	60 days	23/07/17	20/09/17			
141	Pit Constructions	30 days	22/08/17	20/09/17			
142	All Underground Utilities	60 days	21/09/17	19/11/17			
143	Backfill & Reinstatement & Formation of Access Road	60 days	20/11/17	18/01/18			
144	HRSG Equipment Room	175 days	21/09/17	14/03/18			
145	Plate Load Test	10 days	21/09/17	30/09/17			
146	Underground Drainage	14 days	01/10/17	14/10/17			
147	HRSG Equipment RM Foundation + Backfill	18 days	15/10/17	01/11/17			
148	Construct G/F	14 days	02/11/17	15/11/17			
149	Roof Construction	24 days	16/11/17	09/12/17			
150	Parapet Wall	14 days	10/12/17	23/12/17			
151	ABWF Works	30 days	14/01/18	12/02/18			
152	Building Service Installations	30 days	13/02/18	14/03/18			
153	Ready for BA 13 Application	0 days	14/03/18	14/03/18			
154	Main Station Building Fdn, G/F & 1/F	409 days	01/11/16	14/12/17			
155	Installation of Dewatering Well & King Post for Type A	14 days	01/11/16	14/11/16			
156	BD Consent for ELS Phase I MSBU10 Foundation	0 days	23/12/16	23/12/16			
157	BD Consent for ELS Phase II MSBU10 Foundation	0 days	13/01/17	13/01/17			
158	Turbo Block (Col portion)	21 days	22/08/17	11/09/17			
159	Turbo Block (Upper Portion) for handover to erection contractor	30 days	12/09/17	11/10/17			

ID	Task Name	Duration	Start	Finish	Month		
					January 2019	February 2019	March 2019
160	Substructure & G/F- GL SC1 to 10-F, 10-1 to 10-6	307 days	24/12/16	26/10/17			
161	Excavation to Formation Level (Tx Bay Area + upto 10-D)	14 days	24/12/16	06/01/17			
162	Cut-down Pile Head & treatment	45 days	28/12/16	10/02/17			
163	Construction of Transformer Bay Foundations	60 days	11/02/17	11/04/17			
164	Pile Cap & Tie Beam, Pits Construction	60 days	12/04/17	10/06/17			
165	Bearing Wall, Column Post and G/F Plinths	60 days	11/06/17	09/08/17			
166	Excavation, Waling & Struct (Type A & Type C)	60 days	26/04/17	24/06/17			
167	CEP Drain Pit /Sump Pit Construction	14 days	25/06/17	08/07/17			
168	Arrival of CW Culvert piping materials incl. flexible joint & other cast in materials	0 days	30/12/16	30/12/16			
169	Construction of Culvert Outlet Box (1st pour)	18 days	25/06/17	12/07/17			
170	Construction of Tie Beam/ Ground Beam + Outlet Box 2nd Pour	40 days	13/07/17	21/08/17			
171	Construction of Culvert Inlet Box & Ground Beams	45 days	22/08/17	05/10/17			
172	Backfill + Slabs & Drainage at G/F Area	21 days	06/10/17	26/10/17			
173	Turbo Block Foundation (1st portion) + Temp work	35 days	18/07/17	21/08/17			
174	Substructure & G/F- GL 10-F to 10-H, 10-1 to 10-6	278 days	07/01/17	11/10/17			
175	Excavation to Formation Level (+2.425mPD & 5.025mPD)	60 days	07/01/17	07/03/17			
176	Existing Sheet Pile Cut-down	7 days	08/03/17	14/03/17			
177	Pile Head Treatment	14 days	15/03/17	28/03/17			
178	Pile Cap & Tie Beam Construction	90 days	29/03/17	26/06/17			
179	Complete excavation at Type B & Plate Load Test	65 days	15/03/17	18/05/17			
180	Blow Down Sump (1st pour) + Mass Concrete for tie beams	50 days	27/06/17	15/08/17			
181	Remaining Tie Beams + Column Post at North of Turbo Block	30 days	16/08/17	14/09/17			
182	Backfill, Bearing Wall, Drainage and G/F Slab Construction	21 days	15/09/17	05/10/17			
183	Pile Caps & Tie Beam at South of Turbo Block	30 days	22/08/17	20/09/17			
184	Turbo Block Foundation (GL 10-F to H)	21 days	21/09/17	11/10/17			
185	G/F & 1/F & Maintenance Floor	115 days	22/08/17	14/12/17			
186	Steel Column & Beam Erections (other than for roof truss)	70 days	22/08/17	30/10/17			
187	R.C. Structure Construction	45 days	31/10/17	14/12/17			
188	Transformer Area	95 days	10/08/17	12/11/17			
189	Fire Wall Construction	50 days	10/08/17	28/09/17			
190	Slab & Plinths Construction + Backfill	45 days	29/09/17	12/11/17			
191	C.W. Culvert System (Area C3)	202 days	11/06/17	29/12/17			
192	Excavation to Formation Level	14 days	11/06/17	24/06/17			
193	Construction of Binding & Plinth	3 days	25/06/17	27/06/17			
194	CW Pipe Laying	14 days	28/06/17	11/07/17			
195	Thrust Box Construction	14 days	12/07/17	25/07/17			
196	Water Test	10 days	26/07/17	04/08/17			
197	Backfill	14 days	05/08/17	18/08/17			
198	Pile Cap & Tie Beam + Underground UU + Backfill	60 days	31/10/17	29/12/17			
199	Section D - Remaining of MSBU10, HRSG, A&A at L9 & L8, CW Pump Equip. Rm No. 4 Ext. & Demolish Site Toilet	419 days	29/03/17	21/05/18			
200	C.W Culvert System (Area C5)	142 days	30/12/17	20/05/18			
201	Excavation to Formation Level (-2.8mPD) with ELS Installation	30 days	30/12/17	28/01/18			
202	Construction of Binding & Plinth	7 days	29/01/18	04/02/18			
203	Penstock Trial & Preparation for connection to existing outlet pipe	0 days	04/02/18	04/02/18			
204	Pipe Laying (2 Pipes)	21 days	05/02/18	25/02/18			
205	Water Test	10 days	26/02/18	07/03/18			
206	Backfill	14 days	08/03/18	21/03/18			
207	All underground Utilities	60 days	22/03/18	20/05/18			
208	Backfill & Reinstatement & Formation of Access	60 days	22/03/18	20/05/18			
209	HRSG Area Fdn - North (Area C6)	356 days	29/03/17	19/03/18			
210	Excavation to Formation Level	21 days	29/03/17	18/04/17			
211	Pile Head Treatment	14 days	19/04/17	02/05/17			
212	Fdn North of HRSG Area GL 10-H to 10H-H, 10-1to 10H-5	60 days	03/05/17	01/07/17			
213	Pit Constructions	30 days	21/09/17	20/10/17			
214	Backfill	60 days	21/10/17	19/12/17			

ID	Task Name	Duration	Start	Finish	Gantt Chart		
					January 2019	February 2019	March 2019
215	Underground UU & Formation of Access	90 days	20/12/17	19/03/18			
216	Main Station Building - Unit L10 Superstructure	229 days	05/10/17	21/05/18			
217	2/F	28 days	31/10/17	27/11/17			
218	Steel Beam Erection	18 days	31/10/17	17/11/17			
219	R.C. Structure Construction	10 days	18/11/17	27/11/17			
220	3/F	20 days	18/11/17	07/12/17			
221	Steel Beam Erection	18 days	18/11/17	05/12/17			
222	R.C. Structure Construction	10 days	28/11/17	07/12/17			
223	4/F	18 days	06/12/17	23/12/17			
224	Steel Beam Erection	18 days	06/12/17	23/12/17			
225	R.C. Structure Construction	10 days	08/12/17	17/12/17			
226	5/F & Roof except GL 10-G to 10-H and 10-2 to 10-6	168 days	05/10/17	21/03/18			
227	Steel Roof Truss Preparation	60 days	05/10/17	03/12/17			
228	Steel Roof Truss Erection + 2d Truss Bolt & Nut	35 days	04/12/17	07/01/18			
229	Steel Roof & Crane Rail Erection	21 days	25/12/17	14/01/18			
230	Slab Construction	45 days	18/12/17	31/01/18			
231	Upper Roof - Steel Roof Erection	21 days	15/01/18	04/02/18			
232	Upper roof RC construction	45 days	05/02/18	21/03/18			
233	Staircase Constructions	75 days	31/10/17	13/01/18			
234	Ceiling Scaffolding & Fendolite Installation to S. Steel Works	120 days	20/12/17	18/04/18			
235	External Metal Cladding Installation	120 days	24/12/17	22/04/18			
236	Internal ABWF Works	150 days	14/11/17	12/04/18			
237	BS Installation	175 days	28/11/17	21/05/18			
238	275kV Cable Trench (Area C5 & C6)	61 days	22/03/18	21/05/18			
239	Cable & Pipe Trench (C5 Area)	45 days	22/03/18	05/05/18			
240	Cable Trench (C6 Area)	45 days	07/04/18	21/05/18			
241	MSB UnitL9 - A&A	105 days	08/01/18	22/04/18			
242	Hack-off Lean Concrete	60 days	08/01/18	08/03/18			
243	Pipe Rack Support Construction	45 days	09/03/18	22/04/18			
244	MSB UnitL8 - A&A	120 days	02/09/17	30/12/17			
245	A&A Works	120 days	02/09/17	30/12/17			
246	C.W. Pump Equipment Room	276 days	28/06/17	31/03/18			
247	BA 10 Application	0 days	28/06/17	28/06/17			
248	Removal of RC fin from existing CW Pump Room	14 days	29/06/17	12/07/17			
249	Tree Transplant & falling	30 days	13/07/17	11/08/17			
250	Excavation & Raft Footing	45 days	12/08/17	25/09/17			
251	Underground Drainage + Backfill	18 days	26/09/17	13/10/17			
252	Construct G/F	14 days	14/10/17	27/10/17			
253	Roof Construction	45 days	28/10/17	11/12/17			
254	Parapet Wall	18 days	12/12/17	29/12/17			
255	ABWF Works	40 days	11/01/18	19/02/18			
256	Building Service Installations	40 days	20/02/18	31/03/18			
257	Extenal Pipe Rack Extension & Reinstatement Works	150 days	28/10/17	26/03/18			
258	Ready for BA 13 Application	0 days	31/03/18	31/03/18			
259	Demolition Work - Temporary Site Toilet	60 days	31/01/18	31/03/18			
260	Demolition of Temp. Site Toilet	60 days	31/01/18	31/03/18			
261	Section E - Middel Rd & South of L10. Expose & Construction New 275kV Trench at LMX	337 days	29/06/17	31/05/18			
262	275kV Cable Trench	120 days	29/01/18	28/05/18			
263	275kV Cable Trench Re-excavation (~172m)	120 days	29/01/18	28/05/18			
264	C.W. Culvert System (Area C9a & C15)	337 days	29/06/17	31/05/18			
265	Removal of existing paving block	8 days	29/06/17	06/07/17			
266	Install ELS Phase 1 + consent	60 days	07/07/17	04/09/17			
267	Excavation & Blinding & Construct Plinth	30 days	05/09/17	04/10/17			
268	Pipe Laying & Thrust Box	60 days	05/10/17	03/12/17			
269	Water Test and Backfill	14 days	04/12/17	17/12/17			

ID	Task Name	Duration	Start	Finish	Month		
					January 2019	February 2019	March 2019
270	Underground UU and Reinstatement	120 days	18/12/17	16/04/18			
271	Install ELS Phase 2 + consent	21 days	15/08/17	04/09/17			
272	Blinding & Concrete Plinth	30 days	05/09/17	04/10/17			
273	Pipe Laying and Thrust Box	45 days	04/12/17	17/01/18			
274	Water Test & Backfill	14 days	18/01/18	31/01/18			
275	Underground UU and Reinstatement	120 days	01/02/18	31/05/18			
276	Section F -Urea Storage & Handling Facilities	488 days	01/05/17	31/08/18			
277	Urea Handling & Storage Plant House, Electrical Room & Pipe Rack	488 days	01/05/17	31/08/18			
278	BA 10 Application	7 days	01/05/17	07/05/17			
279	Excavation to Formation Level	10 days	26/09/17	05/10/17			
280	Plate Load Test	14 days	06/10/17	19/10/17			
281	Raft Foundation (Urea Handling Rm + Ele Rm)	30 days	20/10/17	18/11/17			
282	Backfill	21 days	19/11/17	09/12/17			
283	Construct G/F	21 days	10/12/17	30/12/17			
284	Roof Construction	90 days	31/12/17	30/03/18			
285	Parapet Wall	14 days	31/03/18	13/04/18			
286	ABWF Works	60 days	14/04/18	12/06/18			
287	Building Service Installations	80 days	13/06/18	31/08/18			
288	Ready for BA 13 Application	0 days	31/08/18	31/08/18			
289	Plate Load Test	14 days	06/10/17	19/10/17			
290	Pipe Rack Foundation	28 days	20/10/17	16/11/17			
291	Supporting Tower (4 no.) (9.55m in Height)	60 days	17/11/17	15/01/18			
292	Pipe Rack Truss (3 no.) 17.3m Span	60 days	16/01/18	16/03/18			
293	Section G - Demin. Plant Road & Modification at No. 4 CW Intake	273 days	01/01/18	30/09/18			
294	C.W Culvert System (Area C9b)	273 days	01/01/18	30/09/18			
295	Site possession	0 days	01/01/18	01/01/18			
296	Removal of paving block & ELS Installation + consent	60 days	01/01/18	01/03/18			
297	Excavation to Formation Level with ELS Installation	30 days	02/03/18	31/03/18			
298	Construction of Blinding & Plinth	21 days	01/04/18	21/04/18			
299	Pipe Laying (2 pipes x ~45m)	30 days	22/04/18	21/05/18			
300	Construction of Thrust Box	14 days	22/05/18	04/06/18			
301	Water Test	7 days	05/06/18	11/06/18			
302	Backfill	16 days	12/06/18	27/06/18			
303	All underground Utilities	50 days	28/06/18	16/08/18			
304	Backfill & Reinstatement & Formation of Access	45 days	17/08/18	30/09/18			
305	Modification Works - No. 4 C.W. Intake & No.3 C.W. Outfall	183 days	01/04/18	30/09/18			
306	No. 3 C.W. Outfall Modification	90 days	01/04/18	29/06/18			
307	No. 4 C.W. Intake Modification	90 days	03/07/18	30/09/18			
308	Section H1 - Gas Support foundation & trench at Area C11	179 days	21/05/18	15/11/18			
309	GRS Support Foundation	179 days	21/05/18	15/11/18			
310	Temporary Protection, advance work etc	14 days	21/05/18	03/06/18			
311	Gas Pipe Footing	165 days	04/06/18	15/11/18			
312	Gas Pipe Trench	90 days	18/08/18	15/11/18			
313	Section H2 - GRS Improvement work at Area C10	441 days	01/09/17	15/11/18			
314	GRS Area Improvement Works	441 days	01/09/17	15/11/18			
315	Retaining Wall Construction	90 days	01/09/17	29/11/17			
316	Removal of Surcharge and Backfill	45 days	30/11/17	13/01/18			
317	Footing Construction	240 days	14/01/18	10/09/18			
318	Topping up, finish and Misc. Works	66 days	11/09/18	15/11/18			
319	Section H3 - L10 Chimney Flue and A&A L9	318 days	01/01/18	15/11/18			
320	No.4 Chimney Steel Flue	318 days	01/01/18	15/11/18			
321	Consent, documentation and site preparation	0 days	01/01/18	01/01/18			
322	Steel Flue Preparation & installation	150 days	02/01/18	31/05/18			
323	Install Steel Cover at Windshield	45 days	01/06/18	15/07/18			
324	Install Steel Cover at Roof	30 days	16/07/18	14/08/18			
325	Modification & Reinstatement Works	55 days	15/08/18	08/10/18			

ID	Task Name	Duration	Start	Finish	Gantt Chart		
					January 2019	February 2019	March 2019
326	E & M Installation	38 days	09/10/18	15/11/18			
327	L9 A&A	120 days	19/07/18	15/11/18			
328	Section I1 - Link Bridge & associated A&A	94 days	01/01/18	05/04/18			
329	Link Bridge	94 days	01/01/18	05/04/18			
330	Design & Shop Drawings	0 days	01/01/18	01/01/18			
331	Site preparation	14 days	02/01/18	15/01/18			
332	Link Bridge between Unit L9 & L10	60 days	05/02/18	05/04/18			
333	Section I2 - Shunt Reactor SR4 Foundation	90 days	01/01/19	31/03/19			
334	Shunt Reactor Compound SR4	90 days	01/01/19	31/03/19			
335	Modification Work at Shunt Reactor SR4	90 days	01/01/19	31/03/19			
336	Section I3 - All remaining work except deferred works	417 days	08/02/18	31/03/19			
337	Remaining Works	417 days	08/02/18	31/03/19			
338	Demolition of Canopy @ Jetty Guard Hose & Toilet)	30 days	02/08/18	31/08/18			
339	Demolition of Existing Contractor Shed	60 days	01/09/18	30/10/18			
340	Security Fence Erection	20 days	31/10/18	19/11/18			
341	All External Works & Road Works	417 days	08/02/18	31/03/19			
342	Deferred Works - L10 MSB and HRSG	395 days	02/03/18	31/03/19			
343	Construction of L10 MSB Roof Between GL 10-G to 10-H and 10-2 to 10-6 After the Overhead Crane Installation	30 days	02/03/18	31/03/18			
344	Construction of Walls and Ceilings of Lube Oil Tank Room at L10 MSB	92 days	01/05/18	31/07/18			
345	Construction of Walls of L10 MSB Below Level +18mPD along GL10-6 from GL10-F to 10-H and Walls of L10 MSB along GL10-H from GL10-5 to 10-6 including the associated Building Elements	92 days	01/05/18	31/07/18			
346	Construction of Walls of L10 MSB Below 1/F along GL10-6 from GL10-B to 10-C and the associated Staircases including the Enclosure Walls between G/F and 1/F.	184 days	01/05/18	31/10/18			
347	Construction of Internal Partition Wall at 1/F of L10 MSB along GL10-C from GL10-2 to 10-3	32 days	15/05/18	15/06/18			
348	Removal of Temporary Paving Within L10 HRSG Area to Expose all respective Equipment Foundations	14 days	01/08/18	14/08/18			
349	Construction of Foundation Plinths and Walls of Lube Oil Storage Tank	93 days	15/08/18	15/11/18			
350	Construction of Metal Fence and the associated Fire Services Installations and Installation of Removable Shelter Transformer Area	121 days	01/12/18	31/03/19			
351	Deferred Works - External Works	182 days	01/10/18	31/03/19			
352	Final Reinstatement of Access Roads and Pavement Surrounding and within L10 MSB and L10 HRSG Area	151 days	01/10/18	28/02/19			
353	FSD Inspection	14 days	02/03/19	15/03/19			
354	BD OP Inspection	14 days	18/03/19	31/03/19			
355	Section J - Cable Route CPX1&2 cable diversion & whole of work except deferred works to be carried out in DLP	1127 days	01/05/17	31/05/20			
356	275kV Cable Diversion	1127 days	01/05/17	31/05/20			
357	Part I (1km in Length, 1.1m to 1.5m Deep) (Works in existing Trench)	426 days	01/05/17	30/06/18			
358	Tentative Commencement Date Of Civil Works	0 days	01/05/17	01/05/17			
359	Trail Pit & Trench at Joint Bay	120 days	01/05/17	28/08/17			
360	Implementation of TTA	7 days	22/08/17	28/08/17			
361	Remove the Concrete Road Cover	60 days	29/08/17	27/10/17			
362	Cable Trench Re-excavation (by Mechanical Method)	120 days	03/09/17	31/12/17			
363	Completion Date of Trench Excavation for Site Handover	0 days	31/12/17	31/12/17			
364	Tentative Period for Backfilling and Road Reinstatement (Excluding Joint Bay and Trench at Station Road)	91 days	01/04/18	30/06/18			
365	Part II (630m in Length, 1.1m to 1.5m Deep) (Works in existing Trench)	485 days	01/11/17	28/02/19			
366	Tentative Commencement Date Of Civil Works	0 days	01/11/17	01/11/17			
367	Implementation of TTA	9 days	01/11/17	09/11/17			
368	Remove the Concrete Road Cover	60 days	10/11/17	08/01/18			
369	Trench Excavation and Installation of Road Decking at Joint Bay (Including Part I & II)	145 days	09/01/18	02/06/18			
370	Cable Trench Re-excavation (by Mechanical Method)	90 days	03/06/18	31/08/18			
371	Completion Date of Trench Excavation for Site Handover	0 days	31/08/18	31/08/18			

ID	Task Name	Duration	Start	Finish	Gantt Chart		
					January 2019	February 2019	March 2019
372	Tentative Period for Backfilling and Road Reinstatement (Including Joint Bay at Part I, but excluding Joint Bay SJ3)	90 days	01/12/18	28/02/19			
373	Part III (400m in Length, 1.3m to 1.5m Deep) (Works in New Trench)	518 days	01/07/18	30/11/19			
374	Tentative Commencement Date Of Civil Works	0 days	01/07/18	01/07/18			
375	Implementation of TTA	9 days	01/07/18	09/07/18			
376	Remove the Concrete Road Cover	90 days	10/07/18	07/10/18			
377	Cable Trench Excavation with shoring	260 days	31/07/18	16/04/19			
378	Construction of New Joint Bay	45 days	17/04/19	31/05/19			
379	Completion Date of Trench Excavation for Site Handover	0 days	31/05/19	31/05/19			
380	Tentative Period for Backfilling and Road Reinstatement (excluding new slab but including SJ3)	91 days	01/09/19	30/11/19			
381	Part IV (Hand Dig Tunnel) + Defer portion	701 days	01/07/18	31/05/20			
382	Tentative Commencement Date Of Civil Works	0 days	01/07/18	01/07/18			
383	Trial Pits / Trenches	30 days	01/07/18	30/07/18			
384	Existing Drainage Diversion, if any	20 days	31/07/18	19/08/18			
385	Formation of Temp. Cable Pit	90 days	20/08/18	17/11/18			
386	Hand Dig Tunnel (15m)	150 days	18/11/18	16/04/19			
387	Excavation for new RC Works	90 days	17/01/19	16/04/19			
388	Construction of new RC Works	45 days	17/04/19	31/05/19			
389	Backfill & reinstatement except new trench	30 days	01/06/19	30/06/19			
390	Completion Date of Trench for Site Handover	0 days	30/06/19	30/06/19			
391	Deferred Works - Cable Diversion CPX1 and CPX2 (during DLP)	274 days	01/09/19	31/05/20			
392	Formation of Wall Opening between existing trench CPX1 and new Joint Bay	7 days	01/09/19	07/09/19			
393	Breaking up for Road Paving and Excavation down to Cable Tiles of Existing Trench CPX2	31 days	01/12/19	31/12/19			
394	Demolition of Existing Trench CPX1 and CPX2	30 days	01/04/20	30/04/20			
395	Final Reinstatement of the CPX1 and CPX2 Areas	31 days	01/05/20	31/05/20			
396	Deferred Works - Shunt Reactor Compound SR4 (during DLP)	153 days	01/07/19	30/11/19			
397	Trench Re-excavation and Cable Supports Installation for Shunt Reactor Compound SR4	62 days	01/07/19	31/08/19			
398	Backfilling and Road Re-instatement of Shunt Reactor SR4 and Associated Trench	30 days	01/11/19	30/11/19			

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

Appendix J



No.	Description	2019		
		Jan	Feb	Mar
	Erection Key Date	 H/T 31-Jan		
		 CW In Ser		
A	HRSG PORTION			
A-01	Install Casing (Bottom/Side/Top) with Structure	 Bottom/Side/Top Casing Install		
A-02	Upper/Lower Connection Pipe	 Dismantle		
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			

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Appendix J



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

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Appendix J



No.	Description	2019		
		Jan	Feb	Mar
	Erection Key Date			
		<p>H/T 31-Jan</p> <p>CW In Ser</p>		
	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	<p>Install</p> <p>Final</p>		

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 Lamma Power Station Extension - Unit 10
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Appendix J



No.	Description	2019		
		Jan	Feb	Mar
	Erection Key Date			
		<p>H/T 31-Jan</p>		
		<p>CW In Ser</p>		
B-4	Install GEN	<p>Lube Oil FI</p> <p>Final Alignment</p> <p>Prepare</p>		
B-5	Install GT	<p>Lube Oil FI</p> <p>Final Alignment</p> <p>P/T</p>		

SCHEDULE C. Contract No. 16/2209
 Lamma Power Station Extension - Unit 10
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Appendix J





No.	Description	2019		
		Jan	Feb	Mar
	Erection Key Date			
		<p>H/T 31-Jan</p> <p>CW In Ser</p>		
B-6	Aux Equipment	<p>Final Alignment / Fill u</p>		
B-7	Insulation			
B-8	Painting			
B-9	Switchgear/Hoist/Hoist for condenser			

SCHEDULE C. Contract No. 16/2209
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Appendix J










No.	Description	2019		
		Jan	Feb	Mar
	Erection Key Date	 H/T 31-Jan		
		 CW In Ser		
C	ERECTICAL & 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 &
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Appendix J



No.	Description	2019		
		Jan	Feb	Mar
	Erection Key Date	 H/T 31-Jan		
		 CW In Ser		
C-4	INSTRUMENTS, INSTR. PIPINGS & AIR TUBE			
	Local Instruments, Piping & Tubing			
	Instrument Calibration			
C-5	OTHER WORK			
	275kV Shunt Reactor Relocation			
	Turbine Overhead Crane, Hoist, Battery Power Supply			
	Existing CWP etc.			
	BOP & Other Works			
	Site Cleaning			
C-6	TESTING & COMMISSIONING			
	Testing & Commissioning			
	Commissioning Assistant			

ID	Task Name	Duration	Start	Finish	Gantt Chart		
					Jan '19	Feb '19	Mar '19
1	Unit 11 Building and Civil Works	1218 days	01/06/18	30/09/21			
2	Contract Key Dates	1096 days	01/06/18	31/05/21			
3	Contract Commencement Date	0 days	01/06/18	01/06/18			
4	Section A1 - Ground treatment installation works at Zone 1A	0 days	31/10/18	31/10/18			
5	Section A2 - Ground treatment installation works at Zone 1B	0 days	31/10/18	31/10/18			
6	Section A3 - Ground treatment installation works at Zone 2	0 days	04/02/19	04/02/19	◆ Section A3 - Ground treatment installation works at Zone 2		
7	Section A4 - Ground treatment installation works at Zone 3	0 days	11/03/19	11/03/19	◆ Section A4 - Ground treatment		
8	Section A5 (i) - Ground treatment installation works at Zone 4 - Band drain installation	0 days	10/04/19	10/04/19			
9	Section A5 (ii) - Ground treatment installation works at Zone 4 - Surcharge filling	0 days	30/09/19	30/09/19			
10	Section A6 (i) - A&A Works for No. 4 C.W. Outfall at Area E18	0 days	31/05/20	31/05/20			
11	Section A6 (ii) - External works at Area E15	0 days	31/05/20	31/05/20			
12	Section B1 (i) - Area south of L11 MSB and HRSG from GL11-F eastwards leading to Chimney Road at Area E1 & E2	0 days	31/12/19	31/12/19			
13	Section B1 (ii) - Supporting structures for overhead cranes of L11 MSB including the associated roof structure except the roof deferred works	0 days	04/12/19	04/12/19			
14	Section B1 (iii) - FSRU Civil works at Area E13	0 days	31/12/19	31/12/19			
15	Section B2 - Retractable Cover D at Area E22	0 days	31/12/19	31/12/19			
16	Section B3 - External works at Area B1, D2 and D4	0 days	31/12/19	31/12/19			
17	Section C1 - Area south of L11 MSB from GL11-F westwards leading to Station Road at Area E3(A) & E3(B)	0 days	15/07/20	15/07/20			
18	Section C2 - (i) Southern part of L11 HRSG area and its surrounding at Area E7 except the deferred works for Lube Oil Storage Tank	0 days	31/01/20	31/01/20			
19	Section C2 - (ii) L11 Turbo Block foundation including the L11 MSB ground floor together with the equipment foundations between GL 11-F to 11-H and 11-1 to 11-6 for the installation of power generator, air inlet duct and lube oil reservoir	0 days	31/01/20	31/01/20			
20	Section C2 - (iii) G/F of L11 MSB including the Condenser Pit, Circulating Water Pipe Pit and equipment foundations between GL 11-B to 11-C and 11-1 to 11-6 for the installation of condenser	0 days	31/01/20	31/01/20			
21	Section D - (i) Roads and external grounds surrounding L11 MSB and L11 HRSG in addition to the southern & eastern areas mentioned above in Area E5 and E6	0 days	15/02/20	15/02/20			
22	Section D - (ii) Remaining northern part of L11 HRSG area and its surrounding in Area E6	0 days	15/02/20	15/02/20			
23	Section D - (iii) Whole of L11 MSB including the pipe and cable rack along south façade of L11 MSB with all underground utilities at Area E4 including C.W. Inlet and Outlet Culvert except the deferred works	0 days	15/02/20	15/02/20			

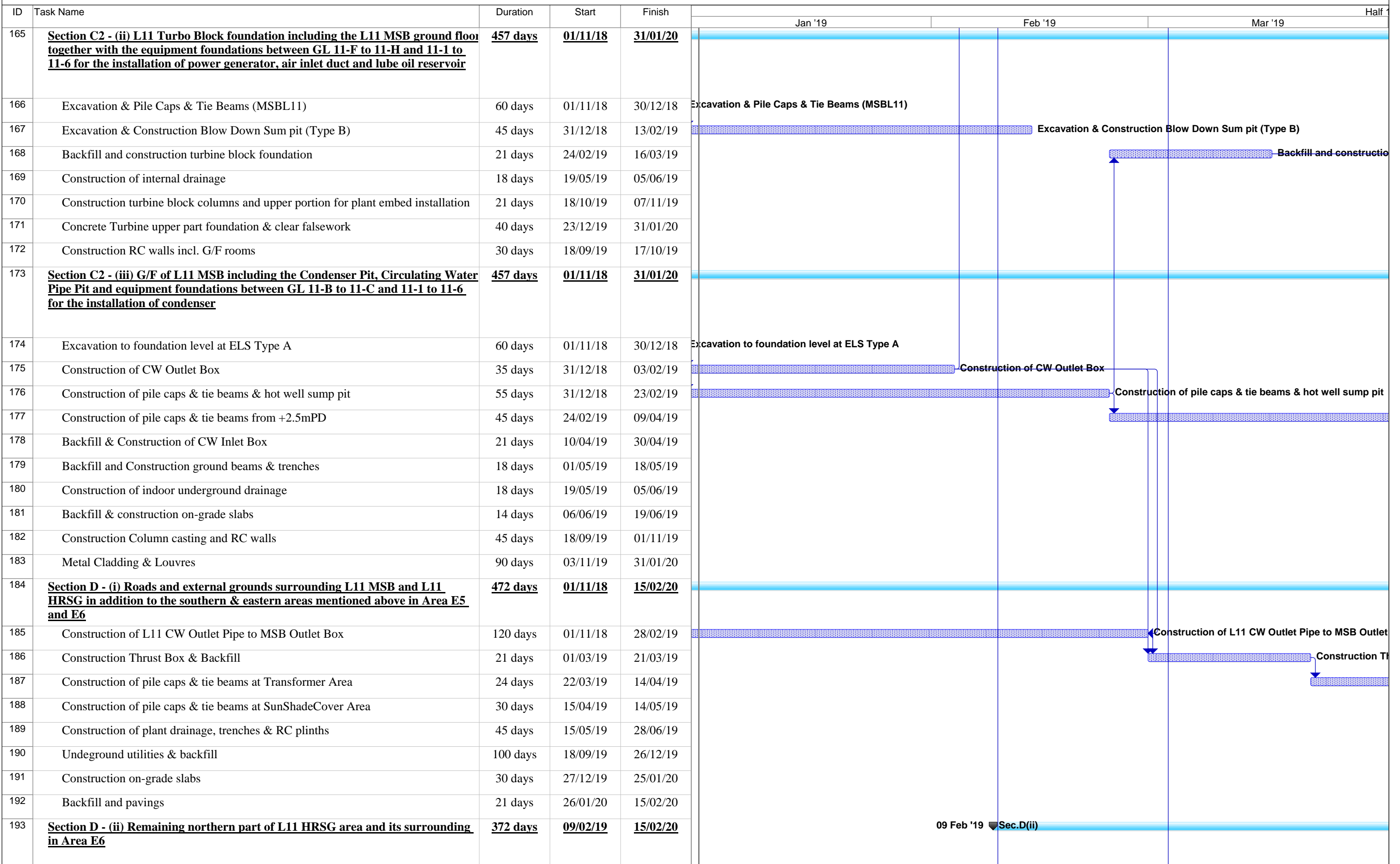
ID	Task Name	Duration	Start	Finish	Gantt Chart		
					Jan '19	Feb '19	Mar '19
24	Section D - (iv) Link Bridge between L10 and L11 MSB and at the south of L11 MSB including their associated alternations & additions (A&A) Works at L10 MSB	0 days	15/02/20	15/02/20			
25	Section D - (v) Gas Duct Foundation, Pipe and Cable Rack and associated trench in Area E20	0 days	15/02/20	15/02/20			
26	Section E1 - (i) Link BrIdge and Pipe and Cable Rack connecting L11 MSB to the western area of L11 MSB at Area E3	0 days	31/08/20	31/08/20			
27	Section E1 - (ii) Gas Receiving Station and L11 Gas Receiving Station Equipment Room (GRS) Area Extension at Area E16	0 days	31/08/20	31/08/20			
28	Section E1 - (iii) External Works at Area E15 (C)	0 days	31/08/20	31/08/20			
29	Section E2 - Pipe and Cable Rack and trench at west of Chimney Road and Pipe and Cable Rack at south of Middle Road at Area E8 and E19	0 days	30/06/20	30/06/20			
30	Section E3 - Gas Pipe Support Foundation and Pipe Trench and associated external works at Area E14, E15 (A) and E15 (B)	0 days	30/06/20	30/06/20			
31	Section E4 - 275kV cable trenching works connecting the 275kV Switching Station Extension and L11 MSB at Area E9 (A)	0 days	30/06/20	30/06/20			
32	Section F - 275kV Station Building Extension and associated works at Area E17	0 days	15/05/20	15/05/20			
33	Section G - A&A Works at No. 4 C.W. Intake at Area E12	0 days	31/05/20	31/05/20			
34	Section H - L11 Steel flue liner at No. 4 Chimney	0 days	16/06/19	16/06/19			
35	Section I - (i) 275kV cable trenching works connecting the 275kV Switching Station Extension and L11 MSB at Area E9 (B)	0 days	31/03/21	31/03/21			
36	Section I - (ii) Interconnector 2 Trench Modification Works at Area E10	0 days	31/03/21	31/03/21			
37	Section J - (i) Demolition of Retractable Cover A&B & (ii) Foundation of LMX Light Oil Storage Tank Nos. 3 & 4 and A&A for Existing Bund Wall at Area E21	0 days	30/04/21	30/04/21			
38	Section K1 - External works at Area 15 (E) and 15(F)	0 days	31/05/21	31/05/21			
39	Section K2 - Removal of Southern Bund and External Works at Area D5, D6 and D	0 days	31/05/21	31/05/21			
40	Section K3 - All remaining works shall be completed for reporting completion to BD and ready for OP inspection	0 days	31/05/21	31/05/21			
41	Deferred Works in Respective Sections	640 days	31/12/19	30/09/21			
42	Item 1 - Construction of L11 MSB roof between GL11-G to 11-H and 11-2 to 11-6 after the overhead crane installation by the Employer's Specialist Contractors	1 day	31/12/19	31/12/19			
43	Item 2 - (i) Construction of walls and ceilings of Lube Oil Tank Room at L11 MSB	92 days	01/05/20	31/07/20			
44	Item 2 - (ii) Construction of walls of L11 MSB below level +18mPD along GL11-6 from GL11-F to 11-H and walls of L11 MSB along GL 11-H from GL11-5 to 11-6 including the associated building elements	92 days	01/05/20	31/07/20			
45	Item 3 - Construction of walls of L11 MSB below 1/F along GL 11-6 from GL11-B to 11-C and the associated staircases including the enclosure walls between G/F and 1/F.	184 days	01/05/20	31/10/20			

ID	Task Name	Duration	Start	Finish	Gantt Chart		
					Jan '19	Feb '19	Mar '19
46	Item 4 - Construction of internal partition wall at 1/F of L11 MSB along GL 11-C from GL 11-2 to 11-3	32 days	15/05/20	15/06/20			
47	Item 5- Removal of temporary paving within L11 HRSG area to expose all respective equipment foundations	14 days	01/08/20	14/08/20			
48	Item 6 - Construction of foundation plinths and bund walls of Lube Oil Storage Tank	93 days	15/08/20	15/11/20			
49	Item 7 - Construction of metal fence and the associated Fire Service (F.S.) installations and installation of removable shelter at Transformer Area	121 days	01/12/20	31/03/21			
50	Item 8 - Final reinstatement of access roads and pavement surrounding and within L11 MSB and L11 HRSG area at Area E1, E2 & E3 (B)	121 days	01/12/20	31/03/21			
51	Item 9 - Installation of trench cover and road re-instatement of gas pipe and cable trenches within Area E3 (A), E3 (C), E8, E14, E16 and E20	151 days	01/01/21	31/05/21			
52	Item 10 - Backfilling and road re-instatement of 275kV cable trenches and Interconnector 2 modification works within Area E5, E9 (A), E9(B) and E10	122 days	01/06/21	30/09/21			
53	General & Preliminary	194 days	01/06/18	11/12/18			
54	Set up Temporary Site Office and Utilities	60 days	01/06/18	30/07/18			
55	Full Mobilization	14 days	31/07/18	13/08/18			
56	Permit Applications & Statuary Submissions	120 days	14/08/18	11/12/18	Submissions		
57	Existing Utilities scanning & Excavation Permit	45 days	28/10/18	11/12/18	Excavation Permit		
58	Submission and Approval	554 days	01/06/18	06/12/19			
59	Method Statement / Temp Work Submission & Approval from HEC for General Works	240 days	01/06/18	26/01/19	Method Statement / Temp Work Submission & Approval from HEC for General Works		
60	BD Approval & Consent (If required)	120 days	01/06/18	28/09/18			
61	BIM Model, CSD & CBWD Submission & Approval from HEC	200 days	29/09/18	16/04/19			
62	Structure Steelwork Connection Design Submission & BD Approval	60 days	29/09/18	27/11/18	BD Approval		
63	Structure Steelwork Shop Drawing & Approval	60 days	13/10/18	11/12/18	Design & Approval		
64	Metal Cladding, louvre & windows submission & BD Approval	60 days	28/11/18	26/01/19	Metal Cladding, louvre & windows submission & BD Approval		
65	Metal Cladding, louvre & windows shop drawing submission	60 days	12/12/18	09/02/19	Metal Cladding, louvre & windows shop drawing submission		
66	Order, Off Site Fabrication and Delivery (S. Steel & Cladding & louvres)	180 days	27/10/18	24/04/19			
67	Retractable Cover D BD Submission & Approval	120 days	26/12/18	24/04/19			
68	No. 4 C.W. Outfall A&A BD approval & consent	120 days	30/08/18	27/12/18	C.W. Outfall A&A BD approval & consent		
69	Submission & Approval of Steel Flue Assessment Report and Design Drawings	60 days	30/09/18	28/11/18	Report and Design Drawings		
70	Submission and Approval of Steel Flue Design from BD	60 days	30/09/18	28/11/18	BD		
71	Material Fabrication & Delivery for L11 Flue	100 days	15/10/18	22/01/19	Material Fabrication & Delivery for L11 Flue		
72	Folding Shutters Shop Drawing Submission & Approval	120 days	10/02/19	09/06/19			
73	Fabrication & Delivery of Folding Shutters	150 days	10/06/19	06/11/19			

ID	Task Name	Duration	Start	Finish	Gantt Chart		
					Jan '19	Feb '19	Mar '19
74	Sewage Pump System Design submission & approval	90 days	12/03/19	09/06/19			
75	Fabrication & Delivery of Sewage Pump	180 days	10/06/19	06/12/19			
76	Other material submission & approval & delivery	300 days	31/07/18	26/05/19			
77	Coordination with the Employer's Specialist Contractors	657 days	14/01/19	31/10/20	14 Jan '19 TDK		
78	Installation of Puddle Pipes at C.W. outlet Culvert	7 days	14/01/19	20/01/19	Installation of Puddle Pipes at C.W. outlet Culvert		
79	Installation of Puddle Pipes at C.W. Inlet Culvert	7 days	10/04/19	16/04/19			
80	Template setting at L11 Turbo Block Foundation	45 days	08/11/19	22/12/19			
81	Template setting of holding down bolts at HRSB column base	46 days	05/08/19	19/09/19			
82	I-beam / channel base installation on top of transformer foundations at Transformer Area	32 days	28/05/19	28/06/19			
83	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	38 days	04/12/19	10/01/20			
84	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	90 days	01/02/20	30/04/20			
85	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	90 days	01/02/20	30/04/20			
86	Installation of equipment in L11 HRSB area after the temporary paving was removed to expose the respective foundations by the Contractor	78 days	15/08/20	31/10/20			
87	Installation of embedded materials such as holding down bolts for equipment foundations - Commencement	0 days	31/03/19	31/03/19			
88	Section A1 & A2 - Ground treatment at Zone 1A & 1B	92 days	01/08/18	31/10/18			
89	Plant establishment for earthworks	7 days	01/08/18	07/08/18			
90	Backfilling and compaction from existing ground +4.5mPD to +5.5mPD	45 days	08/08/18	21/09/18			
91	Delivery of band drain	5 days	23/08/18	27/08/18			
92	Plant establishment for band drain (1st rig)	7 days	28/08/18	03/09/18			
93	Vert. Band drain installation (472 nos. x 44m)	50 days	04/09/18	23/10/18			
94	Deposition of surcharge up to +8.3mPD	50 days	12/09/18	31/10/18			
95	Section A3 - Ground treatment installation works at Zone 2	157 days	01/09/18	04/02/19	c.A3 04 Feb '19		
96	Backfilling and compaction from existing ground +4.5mPD to +5.5mPD	30 days	01/09/18	30/09/18			
97	Delivery of band drain	5 days	26/09/18	30/09/18			
98	Plant establishment for band drain (2nd rig)	10 days	08/10/18	17/10/18			
99	Vert. Band drain installation (4047 nos. x 44m)	85 days	18/10/18	10/01/19	Vert. Band drain installation (4047 nos. x 44m)		
100	Deposition of surcharge up to +8.3mPD	85 days	12/11/18	04/02/19	Deposition of surcharge up to +8.3mPD		

ID	Task Name	Duration	Start	Finish	
101	Section A4 - Ground treatment installation works at Zone 3	162 days	01/10/18	11/03/19	
102	Backfilling and compaction from existing ground +4.5mPD to +5.5mPD	21 days	01/10/18	21/10/18	
103	Vert. Band drain installation (2007 nos. x 44m)	45 days	11/01/19	24/02/19	
104	Deposition of surcharge up to +8.3mPD	50 days	21/01/19	11/03/19	
105	Section A5 (i) - Ground treatment installation works at Zone 4	131 days	01/12/18	10/04/19	
106	Site Preparation for Vertical Band Drain	30 days	01/12/18	30/12/18	
107	Band drain installation (2077 nos. x 44m)	45 days	25/02/19	10/04/19	
108	Section A5 (ii) - Surcharge works at Zone 4	30 days	01/09/19	30/09/19	
109	Deposition of surcharge up to +8.3mPD	30 days	01/09/19	30/09/19	
110	Section A6 (i) - A&A Works for No. 4 C.W. Outfall at Area E18	426 days	01/04/19	31/05/20	
111	Mobilization after obtain approval & consent	0 days	01/04/19	01/04/19	
112	Manhole extension at Outfall no. 4	180 days	02/04/19	28/09/19	
113	Construction of jacking pit	150 days	02/04/19	29/08/19	
114	Sheet pile for future extension	30 days	01/06/19	30/06/19	
115	Pipe Jacking set up & ground strengthening	60 days	30/08/19	28/10/19	
116	Allow modify existing outfall manhole for pipe jacking receiving	90 days	29/09/19	27/12/19	
117	Pipe Jacking x 3 nos.	135 days	29/10/19	11/03/20	
118	Culvert Pipe Intallation & water test	120 days	13/12/19	10/04/20	
119	Thrust Box Construction	21 days	11/04/20	01/05/20	
120	Reinstatement	30 days	02/05/20	31/05/20	
121	Section A6 (ii) - External works at Area E15	427 days	01/04/19	31/05/20	
122	Underground Utilities	180 days	01/04/19	27/09/19	
123	RoadWorks	150 days	28/09/19	24/02/20	
124	Surface Utilities	120 days	02/02/20	31/05/20	
125	Section B1 (i) - Area south of L11 MSB and HRSG from GL11-F eastwards leading to Chimney Road at Area E1 & E2	426 days	01/11/18	31/12/19	
126	Excavation for CW Inlet Culvert (work parallel & after MSB ELS phase 1)	100 days	01/11/18	08/02/19	
127	Installation CW Inlet Culvert pipe (South of L11)	100 days	09/02/19	19/05/19	
128	Construction of Thrust Box & Manholes,etc	30 days	20/05/19	18/06/19	
129	Backfill	31 days	19/06/19	19/07/19	
130	Install underground utilities	100 days	20/07/19	27/10/19	
131	Backfill and construction temporary paving	65 days	28/10/19	31/12/19	
132	Section B1 (ii) - Supporting structures for overhead cranes of L11 MSB including the associated roof structure except the roof deferred works	77 days	17/09/19	04/12/19	
133	Erection of turbine hall roof except defer work	0 days	17/09/19	17/09/19	

ID	Task Name	Duration	Start	Finish	Jan '19			Feb '19			Mar '19					
134	Installation of crane griders	21 days	18/09/19	08/10/19												
135	Turbine hall wall claddings	0 days	04/12/19	04/12/19												
136	Section B1 (iii) - FSRU Civil works at Area E13	426 days	01/11/18	31/12/19												
137	Submission and approval for consent to work	75 days	01/11/18	14/01/19	Submission and approval for consent to work											
138	Construction of foundations and trenches	180 days	15/01/19	13/07/19												
139	Erection of steel rack	61 days	14/07/19	12/09/19												
140	Ground reinstatement	110 days	13/09/19	31/12/19												
141	Section B2 - Retractable Cover D at Area E22	365 days	01/01/19	31/12/19	Sec.B2											
142	Demolition and clearance work	60 days	01/01/19	01/03/19	Demolition and clearance work											
143	Foundation construction	75 days	02/03/19	15/05/19												
144	Backfill & Ground statement	20 days	16/05/19	04/06/19												
145	Superstructure fabrication & delivery	110 days	25/04/19	12/08/19												
146	Superstructure erection	90 days	13/08/19	10/11/19												
147	E&M Installation and T&C	51 days	11/11/19	31/12/19												
148	Section B3 - External works at Area B1, D2 and D4	365 days	01/01/19	31/12/19	Sec.B3											
149	Receive Area from HKE	0 days	01/01/19	01/01/19	Receive Area from HKE											
150	Removal of existing paving for band drain under Section A5(i)	30 days	01/01/19	30/01/19	Removal of existing paving for band drain under Section A5(i)											
151	Complete Vert. Band drain under Section A5(i)	0 days	10/04/19	10/04/19												
152	Ground preparation for B1, D2 & D4	265 days	11/04/19	31/12/19												
153	Section C1 - Area south of L11 MSB from GL11-F westwards leading to Station Road at Area E3(A) & E3(B)	96 days	10/04/20	15/07/20												
154	Construction CW Outlet pipe (Future) (refer to Section A6(i))	0 days	10/04/20	10/04/20												
155	Construction of Thrust Box & Manholes,etc	0 days	01/05/20	01/05/20												
156	Backfill and construct underground utilities	45 days	17/04/20	31/05/20												
157	Backfill and construction temporary paving	45 days	01/06/20	15/07/20												
158	Section C2 - (i) Southern part of L11 HRSG area and its surrounding at Area E7 except the deferred works for Lube Oil Storage Tank	335 days	03/03/19	31/01/20	03 Mar '19 Sec.C2(i)											
159	Excavation & Pile Caps & Tie Beams (HRSG South Area)	45 days	03/03/19	16/04/19												
160	Construction RC foundations	30 days	17/04/19	16/05/19												
161	Construction RC plinths & internal drainage	80 days	17/05/19	04/08/19												
162	Backfill & Construction on-grade slabs	30 days	05/08/19	03/09/19												
163	Construction underground utilities	110 days	18/09/19	05/01/20												
164	Backfill and Temporary paving	26 days	06/01/20	31/01/20												



ID	Task Name	Duration	Start	Finish	Jan '19	Feb '19	Mar '19	Half '19
194	Excavation & Pile Caps & Tie Beams (HRSG north Area)	22 days	09/02/19	02/03/19				
195	Construction RC foundations	60 days	03/03/19	01/05/19				
196	Construction RC plints & HRSG Lift Pit & internal drainage	90 days	02/05/19	30/07/19				
197	Backfill Construction on-grade slabs	30 days	31/07/19	29/08/19				
198	Construction underground utilities	140 days	30/08/19	16/01/20				
199	Backfill and Temporary paving	30 days	17/01/20	15/02/20				
200	<u>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</u>	<u>241 days</u>	<u>20/06/19</u>	<u>15/02/20</u>				
201	Structural Delivery & Erection (Equipment floor portion)	60 days	20/06/19	18/08/19				
202	Structural Delivery & Erection (Air filter inlet & Turbine Hall Portion)	30 days	19/08/19	17/09/19				
203	Structural Delivery & Erection (Pipe & Cable rack at south of L11)	21 days	18/09/19	08/10/19				
204	Fendolite Application	130 days	19/08/19	26/12/19				
205	External Scaffolding Erection	45 days	19/08/19	02/10/19				
206	Construction 1/F RC Slab	14 days	19/08/19	01/09/19				
207	Construction M/F RC Slab	7 days	02/09/19	08/09/19				
208	Construction 2/F RC Slab	14 days	09/09/19	22/09/19				
209	Construction 3/F RC Slab	14 days	23/09/19	06/10/19				
210	Construction 4/F RC Slab	14 days	07/10/19	20/10/19				
211	Construction 5/F RC Slab	14 days	21/10/19	03/11/19				
212	Construction Roof RC Slab (except defer portion)	30 days	04/11/19	03/12/19				
213	Construction Upper Roof RC Slab	14 days	04/11/19	17/11/19				
214	Construction Defer Roof RC Slab (G.L. G-H)	14 days	18/12/19	31/12/19				
215	Construction of Staircase ST-01 & lift shaft & machine room	90 days	18/09/19	16/12/19				
216	Construction of Staircase ST-02 except defer work	75 days	02/09/19	15/11/19				
217	Construction of RC plinth, kerbs & parapet Walls	24 days	04/11/19	27/11/19				
218	Erection of Skylight & Roof Features	55 days	18/11/19	11/01/20				
219	Waterproofing	30 days	12/01/20	10/02/20				
220	ABFW Works from 1/F to 5/F equipment rooms	135 days	09/09/19	21/01/20				
221	Building Services E&M Access & Installation	120 days	09/10/19	05/02/20				
222	Metal Cladding, Windows and Louvres incl. roof feature	120 days	09/09/19	06/01/20				
223	Removal of external scaffolding	35 days	12/01/20	15/02/20				
224	<u>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</u>	<u>170 days</u>	<u>30/08/19</u>	<u>15/02/20</u>				

ID	Task Name	Duration	Start	Finish	Gantt Chart		
					Jan '19	Feb '19	Mar '19
225	A&A works at South of L10 MSB	60 days	30/08/19	28/10/19			
226	Erection of link bridge structural steel	7 days	29/10/19	04/11/19			
227	Casting of bridge deck	7 days	05/11/19	11/11/19			
228	Metal roofing installation	21 days	12/11/19	02/12/19			
229	ABWF work	30 days	03/12/19	01/01/20			
230	Form new opening at MSB for final connection	10 days	02/01/20	11/01/20			
231	E&M Work	35 days	12/01/20	15/02/20			
232	<u>Section D - (v) Gas Duct Foundation, Pipe and Cable Rack and associated trench in Area E20</u>	380 days	01/02/19	15/02/20			
233	Sheet pile installation & submit as-built	30 days	01/02/19	02/03/19			
234	Consent for excavation	30 days	03/03/19	01/04/19			
235	Excavation & plate load test	45 days	30/08/19	13/10/19			
236	Construction of foundation	45 days	14/10/19	27/11/19			
237	Backfill & Erection Pipe & cable rack	80 days	28/11/19	15/02/20			
238	<u>Section E1 - (i) Link Bridge and Pipe and Cable Rack connecting L11 MSB to the western area of L11 MSB at Area E3</u>	244 days	01/01/20	31/08/20			
239	Excavation & construction of new foundation	60 days	01/01/20	29/02/20			
240	Backfill	18 days	01/03/20	18/03/20			
241	Erection of Structural steel	45 days	19/03/20	02/05/20			
242	Ground Reinstatement	121 days	03/05/20	31/08/20			
243	<u>Section E1 - (ii) Gas Receiving Station and L11 Gas Receiving Station Equipment Room (GRS) Area Extension at Area E16</u>	244 days	01/01/20	31/08/20			
244	Removal of Surcharge and excavation	18 days	01/01/20	18/01/20			
245	Modification of Site Drainage	45 days	19/01/20	03/03/20			
246	Construction of new RC for GRS Equipment Room	90 days	19/01/20	17/04/20			
247	ABWF for GRS Equipment room	45 days	18/04/20	01/06/20			
248	E&M Installation	45 days	02/06/20	16/07/20			
249	Construction of new Gas pipe plinths & racks	45 days	19/04/20	02/06/20			
250	Backfill and construction site drainage	30 days	03/06/20	02/07/20			
251	Eternal Paving and install new fencing	60 days	03/07/20	31/08/20			
252	<u>Section E1 - (iii) External Works at Area E15 (C)</u>	226 days	19/01/20	31/08/20			
253	Removal of Surcharge and excavation	18 days	19/01/20	05/02/20			
254	Underground drianage, Utilities and RC plinths	75 days	04/03/20	17/05/20			
255	Backfill and install surface utilities	61 days	18/05/20	17/07/20			
256	Roadwork	45 days	18/07/20	31/08/20			

01 Feb '19 Sec.D(v)

Sheet pile installation & submit as-built

ID	Task Name	Duration	Start	Finish	Gantt Chart		
					Jan '19	Feb '19	Mar '19
257	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	608 days	01/11/18	30/06/20	[Gantt bar: 01/11/18 to 30/06/20]		
258	BD consent	0 days	01/11/18	01/11/18	[Gantt bar: 01/11/18 to 01/11/18]		
259	Excavation & plate load test	180 days	01/11/18	29/04/19	[Gantt bar: 01/11/18 to 29/04/19]		
260	Construction of foundations & trenches	180 days	08/05/19	03/11/19	[Gantt bar: 08/05/19 to 03/11/19]		
261	Backfill & underground utilities	120 days	04/11/19	02/03/20	[Gantt bar: 04/11/19 to 02/03/20]		
262	Pipe & cable rack Erection	60 days	03/03/20	01/05/20	[Gantt bar: 03/03/20 to 01/05/20]		
263	Ground reinstatement	60 days	02/05/20	30/06/20	[Gantt bar: 02/05/20 to 30/06/20]		
264	Section E3 - Gas Pipe Support Foundation and Pipe Trench and associated external works at Area E14, E15 (A) and E15 (B)	366 days	01/07/19	30/06/20	[Gantt bar: 01/07/19 to 30/06/20]		
265	Removal of surcharge / site clearance	21 days	01/07/19	21/07/19	[Gantt bar: 01/07/19 to 21/07/19]		
266	Excavation & construction of pipe trench	90 days	22/07/19	19/10/19	[Gantt bar: 22/07/19 to 19/10/19]		
267	Construction of gas pipe support foundation	90 days	20/10/19	17/01/20	[Gantt bar: 20/10/19 to 17/01/20]		
268	Construction of underground drainage and utilities	120 days	18/01/20	16/05/20	[Gantt bar: 18/01/20 to 16/05/20]		
269	Backfill & road work	45 days	17/05/20	30/06/20	[Gantt bar: 17/05/20 to 30/06/20]		
270	Section E4 - 275kV cable trenching works connecting the 275kV Switching Station Extension and L11 MSB at Area E9 (A)	182 days	01/01/20	30/06/20	[Gantt bar: 01/01/20 to 30/06/20]		
271	Obtain Permit to work & Road close permit	2 days	01/01/20	02/01/20	[Gantt bar: 01/01/20 to 02/01/20]		
272	Excavation & construction new cable trench	180 days	03/01/20	30/06/20	[Gantt bar: 03/01/20 to 30/06/20]		
273	Re-excavate cable trench for cable laying	180 days	03/01/20	30/06/20	[Gantt bar: 03/01/20 to 30/06/20]		
274	Section F - 275kV Station Building Extension and associated works at Area E17	715 days	01/06/18	15/05/20	[Gantt bar: 01/06/18 to 15/05/20]		
275	Installation of ELS for 275kV Switching Station near Staircase ST-3 and ST-6	14 days	01/06/18	14/06/18	[Gantt bar: 01/06/18 to 14/06/18]		
276	Construction of Staircase ST-3	90 days	15/06/18	12/09/18	[Gantt bar: 15/06/18 to 12/09/18]		
277	OP inspection of Staircase ST-3	0 days	12/09/18	12/09/18	[Gantt bar: 12/09/18 to 12/09/18]		
278	Consent & BA10 for demolition of existing staircase	0 days	10/10/18	10/10/18	[Gantt bar: 10/10/18 to 10/10/18]		
279	Demolition of existing staircase and submit BA14	18 days	11/10/18	28/10/18	[Gantt bar: 11/10/18 to 28/10/18]		
280	Consent & BA10 for new foundation work	21 days	25/10/18	14/11/18	[Gantt bar: 25/10/18 to 14/11/18]		
281	Pile Cap & Tie Beam construction incl. basement trench	60 days	15/11/18	13/01/19	[Gantt bar: 15/11/18 to 13/01/19]		
282	RC Construction up to 1/F	100 days	14/01/19	23/04/19	[Gantt bar: 14/01/19 to 23/04/19]		
283	Construction of staircase ST6	60 days	24/04/19	22/06/19	[Gantt bar: 24/04/19 to 22/06/19]		
284	Structural Steel Delivery & Erection	90 days	24/04/19	22/07/19	[Gantt bar: 24/04/19 to 22/07/19]		
285	Scaffolding erection	21 days	23/07/19	12/08/19	[Gantt bar: 23/07/19 to 12/08/19]		
286	Construction of 2/F RC slab	21 days	06/08/19	26/08/19	[Gantt bar: 06/08/19 to 26/08/19]		

ID	Task Name	Duration	Start	Finish	Gantt Chart		
					Jan '19	Feb '19	Mar '19
287	Construction of R/F RC slab	21 days	27/08/19	16/09/19			
288	Construction of UR/F RC slab	14 days	17/09/19	30/09/19			
289	Construction of GIS Hall Floor	45 days	27/08/19	10/10/19			
290	Construction of staircase ST4	70 days	23/07/19	30/09/19			
291	Construction of staircase ST5 & Lift Shaft	90 days	06/08/19	03/11/19			
292	Concrete of RC walls, plinths, kerb and parapet walls	60 days	01/10/19	29/11/19			
293	ABFW Works from UB/F to 2/F equipment rooms	210 days	08/06/19	03/01/20			
294	Building Services E&M Access & Installation	210 days	08/07/19	02/02/20			
295	Metal Cladding, Windows and Louvres incl. roof feature	100 days	13/08/19	20/11/19			
296	Removal of external scaffolding	21 days	21/11/19	11/12/19			
297	External Underground drainage and Utilities works	75 days	12/12/19	24/02/20			
298	Road & Paving reinstatement	45 days	25/02/20	09/04/20			
299	FSD inspection	18 days	10/04/20	27/04/20			
300	OP inspection	18 days	28/04/20	15/05/20			
301	Section G - A&A Works at No. 4 C.W. Intake at Area E12	152 days	01/01/20	31/05/20			
302	Permit to work	0 days	01/01/20	01/01/20			
303	Erection of temp. platform	30 days	01/01/20	30/01/20			
304	Demolition work	60 days	31/01/20	30/03/20			
305	Modify existing slab openings	45 days	31/03/20	14/05/20			
306	Removal of platform	18 days	14/05/20	31/05/20			
307	Section H - L11 Steel flue liner at No. 4 Chimney	214 days	15/11/18	16/06/19			
308	Complete erection of L10 Steel flue	0 days	15/11/18	15/11/18			
309	Modification of erection equipment	45 days	15/11/18	29/12/18			
310	Erection temp. platform and demolition work	30 days	30/12/18	28/01/19			
311	Structural steel delivery & Erection	85 days	29/01/19	23/04/19			
312	Removal of temp. work	30 days	24/04/19	23/05/19			
313	Reinstate G/F louvre wall and access door	24 days	24/05/19	16/06/19			
314	Section I - (i) 275kV cable trenching works connecting the 275kV Switching Station Extension and L11 MSB at Area E9 (B)	273 days	01/07/20	31/03/21			
315	Obtain Permit to work & Road close permit	0 days	01/07/20	01/07/20			
316	Excavation & construction new cable trench	150 days	02/07/20	28/11/20			
317	Re-excavate cable trench for cable laying	150 days	02/11/20	31/03/21			
318	Section I - (ii) Interconnector 2 Trench Modification Works at Area E10	273 days	01/07/20	31/03/21			
319	Obtain Permit to work & Road close permit	0 days	01/07/20	01/07/20			



ID	Task Name	Duration	Start	Finish	Half 1		
					Jan '19	Feb '19	Mar '19
320	Re-excavate & new cable trench for cable laying	273 days	02/07/20	31/03/21			
321	<u>Section J - (i) Demolition of Retractable Cover A&B & (ii) Construction of new LOT 3 & 4</u>	<u>426 days</u>	<u>01/03/20</u>	<u>30/04/21</u>			
322	Obtain permit to work & Road close permit	0 days	01/03/20	01/03/20			
323	Erection of Hoarding	21 days	01/03/20	21/03/20			
324	Removal of existing cover & structural steel	30 days	22/03/20	20/04/20			
325	Demolish of existing bund wall and staircases	45 days	21/04/20	04/06/20			
326	Demolish of existing slab & foundation	60 days	05/06/20	03/08/20			
327	Consent for new work	30 days	04/08/20	02/09/20			
328	Construction of new bund wall and foundation	100 days	03/09/20	11/12/20			
329	Construction of new oil separator	80 days	23/09/20	11/12/20			
330	Construct underground drainage and surface channel	40 days	12/12/20	20/01/21			
331	Construction on-grade slab	60 days	21/01/21	21/03/21			
332	Removal of hoarding and ground reinstatement	40 days	22/03/21	30/04/21			
333	<u>Section K1 - External works at Area 15 (E) and 15(F)</u>	<u>365 days</u>	<u>01/06/20</u>	<u>31/05/21</u>			
334	Removal of surcharge	30 days	01/06/20	30/06/20			
335	Construct new drainage and utilities work	200 days	01/07/20	16/01/21			
336	Road & Paving	135 days	17/01/21	31/05/21			
337	<u>Section K2 - Removal of Southern Bund and External Works at Area D5, D6 and D7</u>	<u>365 days</u>	<u>01/06/20</u>	<u>31/05/21</u>			
338	Demolition work	30 days	01/06/20	30/06/20			
339	Construct new drainage and utilities work	200 days	01/07/20	16/01/21			
340	Road & Paving	135 days	17/01/21	31/05/21			
341	<u>Section K3 - All remaining works shall be completed for reporting completion to BD and ready for OP inspection</u>	<u>0 days</u>	<u>31/05/21</u>	<u>31/05/21</u>			

Monthly Waste Flow Table for December 2018

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

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 ^(1,3,4)	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 '000L)	(in '000kg)	
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	
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	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	0.20	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	
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	
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	
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	
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	
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	
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	
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	
Oct-17	1963.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.20	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	
Dec-17	3011.55	0.00	0.00	0.00	0.00	0.00	0.00	0.00	12.41	0.00	0.00	0.00	0.00	
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	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	0.20	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	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	
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	
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	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	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	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	
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	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	0.60	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	1.79	
Total	21057.60	1.43	0.00	0.00	0.00	0.00	0.00	0.00	273.40	0.00	0.00	0.00	1.20	279.26

Total Inert C&D Waste Materials Generated	Non-inert C&D Materials		
	C&D Materials Recycled	C&D Waste Disposed of at Landfill	Chemical Waste
21059.03 tonnes	273.40 tonnes	279.26 tonnes	1200 Liters

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

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

(c) 10640 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 2018

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: 2018

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)							
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	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	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	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	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	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	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	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	0.00	*0.06	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	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	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	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	0.00	7.23	
Total	0.00	0.00	0.00	0.00	0.00	0.00	8.43	7.53	0.00	0.00	0.00	0.00	*0.06	227.27	

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	227.27 tonnes	*0.06 tonnes

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 Contractt.

(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.

* Actual Quantities of Chemical waste (*000 kg) was updated in August 2018.

Monthly Waste Flow Table for December 2018

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

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														
Feb 2019														
Mar 2019														
Apr 2019														
May 2019														
Jun 2019														
Jul 2019														
Aug 2019														
Sep 2019														
Oct 2019														
Nov 2019														
Dec 2019														
Total	3160.23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	19.54

Total Inert C&D Waste Materials Generated	Non-inert C&D Materials		
	C&D Materials Recycled	C&D Waste Disposed of at Landfill	Chemical Waste
3160.23 tonnes	0.00 tonnes	19.54 tonnes	0 Liters

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