

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 2017

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**

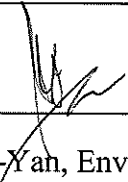

Report Title	Lamma Power Station Extension – Unit L10 & L11 Monthly EM&A Report (December 2017)
Date	11 January 2018
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TABLE OF CONTENT

EXECUTIVE SUMMARY

1.	INTRODUCTION.....	1
1.1	Background	1
1.2	Project Organisation	1
1.3	Construction Works undertaken during the Reporting Month	2
1.4	Summary of EM&A Requirements	4
2.	AIR QUALITY.....	7
2.1	Monitoring Requirements	7
2.2	Monitoring Locations	7
2.3	Monitoring Equipment	7
2.4	Monitoring Parameters, Frequency and Duration	8
2.5	Monitoring Procedures and Calibration Details	8
2.6	Results and Observations	9
3.	NOISE	11
3.1	Monitoring Requirements	11
3.2	Monitoring Locations	11
3.3	Monitoring Equipment	11
3.4	Monitoring Parameters, Frequency and Duration	11
3.5	Monitoring Procedures and Calibration Details	12
3.6	Results and Observations	12
4.	ENVIRONMENTAL AUDIT	15
4.1	Review of Environmental Monitoring Procedures	15
4.2	Assessment of Environmental Monitoring Results	15
4.3	Waste Management	15
4.4	Site Environmental Audit	16
4.5	Status of Environmental Licensing and Permitting	16
4.6	Implementation Status of Environmental Mitigation Measures	18
4.7	Implementation Status of Event/Action Plans	18
4.8	Implementation Status of Environmental Complaint Handling Procedures	18
5.	FUTURE KEY ISSUES.....	19
5.1	Key Issues for the Coming Month	19
5.2	Monitoring Schedules for the Next 3 Months	20
5.3	Construction Program for the Next 3 Months	20
6.	CONCLUSION	21

LIST OF TABLES

Table 1.1	Construction Activities and Their Corresponding Environmental Mitigation Measures
Table 2.1	Air Quality Monitoring Locations
Table 2.2	Air Quality Monitoring Equipment
Table 2.3	Air Quality Monitoring Parameter, Duration and Frequency
Table 3.1	Noise Monitoring Equipment
Table 3.2	Noise Monitoring Duration and Parameter
Table 4.1	Summary of AL Level Exceedances on Monitoring Parameters
Table 4.2	Estimated Amounts of Waste in December 2017
Table 4.3	Summary of Environmental Licensing and Permit Status
Table 4.4	Environmental Complaints Received in December 2017
Table 4.5	Outstanding Environmental Complaints Carried Over

LIST OF FIGURES

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

APPENDICES

Appendix A	Organization Chart
Appendix B	Action and Limit Levels for Air Quality and Noise
Appendix C	Environmental Monitoring Schedule
Appendix D	Air Quality Monitoring Results for December 2017
Appendix E	Noise Monitoring Results for December 2017
Appendix F	The QA/QC Procedures and Results
Appendix G	Event/Action Plans
Appendix H	Site Audit Summary
Appendix I	Summary of EMIS
Appendix J	Tentative Construction Programme
Appendix K	Monthly Waste Flow Table for December 2017

EXECUTIVE SUMMARY

This is the 92nd 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 2017.

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	Main Station Building (trench excavation and backfilling, installation of columns and beams, installation of pipes, formwork, steel fixing and concreting), Site Office Building (formwork, steel fixing, concreting and water proofing), and Join Bay
Unit L10 Mechanical Erection	Site preparation work
Unit L10 Electrical, Instrumentation & Control Erection	Site preparation work
Unit L11 Piling	Bored pile construction for No.3 Control Building

Environmental Monitoring Works

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

Air Quality

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

Noise

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

Site Environmental Audit

EPD officials from Regional Office (South) visited Lamma Power Station on 08/12/2017. EPD inspected the Lamma Extension Construction Site. There was no adverse comment from EPD regarding the construction site.

Site audits were carried out on a weekly basis to monitor environmental issues on the construction site. The site conditions were generally satisfactory. 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-RS0537-17	26/06/17	25/12/17	Contractor	23/06/17
Construction Noise Permit	GW-RS1131-17	20/12/17	18/06/18	Contractor	18/12/17
Construction Noise Permit	GW-RS0621-17	01/08/17	31/12/17	Contractor	24/07/17
Construction Noise Permit	GW-RS0754-17	12/09/17	11/03/18	Contractor	04/09/17
Construction Noise Permit	GW-RS0888-17	16/10/17	12/04/18	Contractor	13/10/17
Construction Noise Permit	GW-RS1148-17	23/12/17	22/06/18	Contractor	22/12/17
Construction Noise Permit	PP-RS0018-17	26/08/17	23/02/18	Contractor	24/08/17
WPCO Discharge Licence	WT00027040-2017	06/02/17	28/02/22	Contractor	06/02/17
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

Description	Permit No.	Valid Period		Issued To	Date of Issuance
		From	To		
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

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 Piling 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 recycle and reuse wastewater and to ensure compliance with the WPCO discharge licence already obtained.

Concluding Remarks

The environmental performance of the project was generally satisfactory.

1. INTRODUCTION

1.1 Background

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

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

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

This report summarizes the environmental monitoring and audit work for the Project for the month of December 2017.

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 (trench excavation and backfilling, , installation of columns and beams, installation of pipes, formwork, steel fixing and concreting), for Site Office Building (formwork, steel fixing and concreting, water proofing) and for Join Bay. Construction activity for Unit L10 mechanical erection was site preparation work. Construction activity for Unit L10 electrical, instrumentation & control erection was site preparation work. Construction activities for Unit L11 piling was bored pile construction for No.3 Control 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 (trench excavation and backfilling, installation of columns and beams, installation of pipes, 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. <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

Item	Construction Activities	Environmental Mitigation Measures
		backfilling. – Scrape metal will be recycled. – Timber will be reused as much as possible.
2.	Site Office Building (formwork, steel fixing and concreting, water proofing)	Air – All regulated machine attached with valid exception/approval NRMM labels. Waste Management – Scrape metal will be recycled. – Timber will be reused as much as possible.
3.	Join bay	Air – All regulated machine attached with valid exception/approval NRMM labels. – Water spraying for road surface breaking – Soil stock covered with tarpaulin. Waste Management – Excavated soil was temporary stored for backfilling. – Scrape metal will be recycled.
Unit L10 Mechanical Erection		
4.	Site Preparation Work	Air – Dust suppression in the main haul road. Noise – General noise mitigation measures employed at all work sites throughout the construction phase. Waste Management – Waste Management Plan submitted and implemented.

Item	Construction Activities	Environmental Mitigation Measures
Unit L10 Electrical, Instrumentation & Control Erection		
5.	Site Preparation Work	<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 Piling Works – No.3 Control Building		
6.	Bored pile construction	<p>Air</p> <ul style="list-style-type: none"> - Dust suppression in the main haul road. - Using ULSD for PMEs. - Cover dusty stockpile with tarpaulin and water spraying. <p>Noise</p> <ul style="list-style-type: none"> - General noise mitigation 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. <p>Water</p> <ul style="list-style-type: none"> - All wastewater will be pumped to the sedimentation ponds for desilting process. After that, wastewater will be re-used for construction activities or pumped for storage. Discharging to communal storm water drain is the last priority.

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.

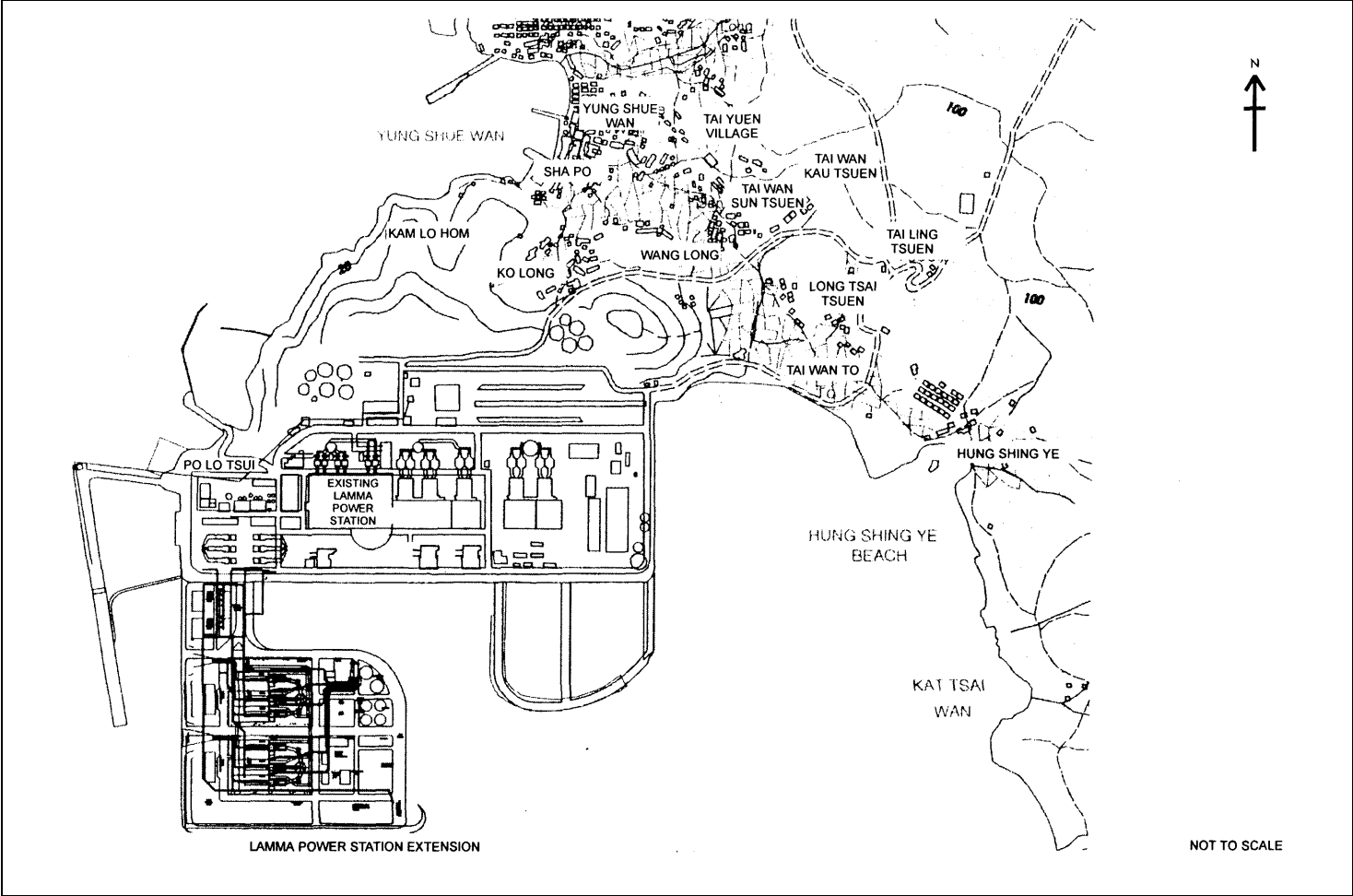


Figure 1.1 Layout of Work Site

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.

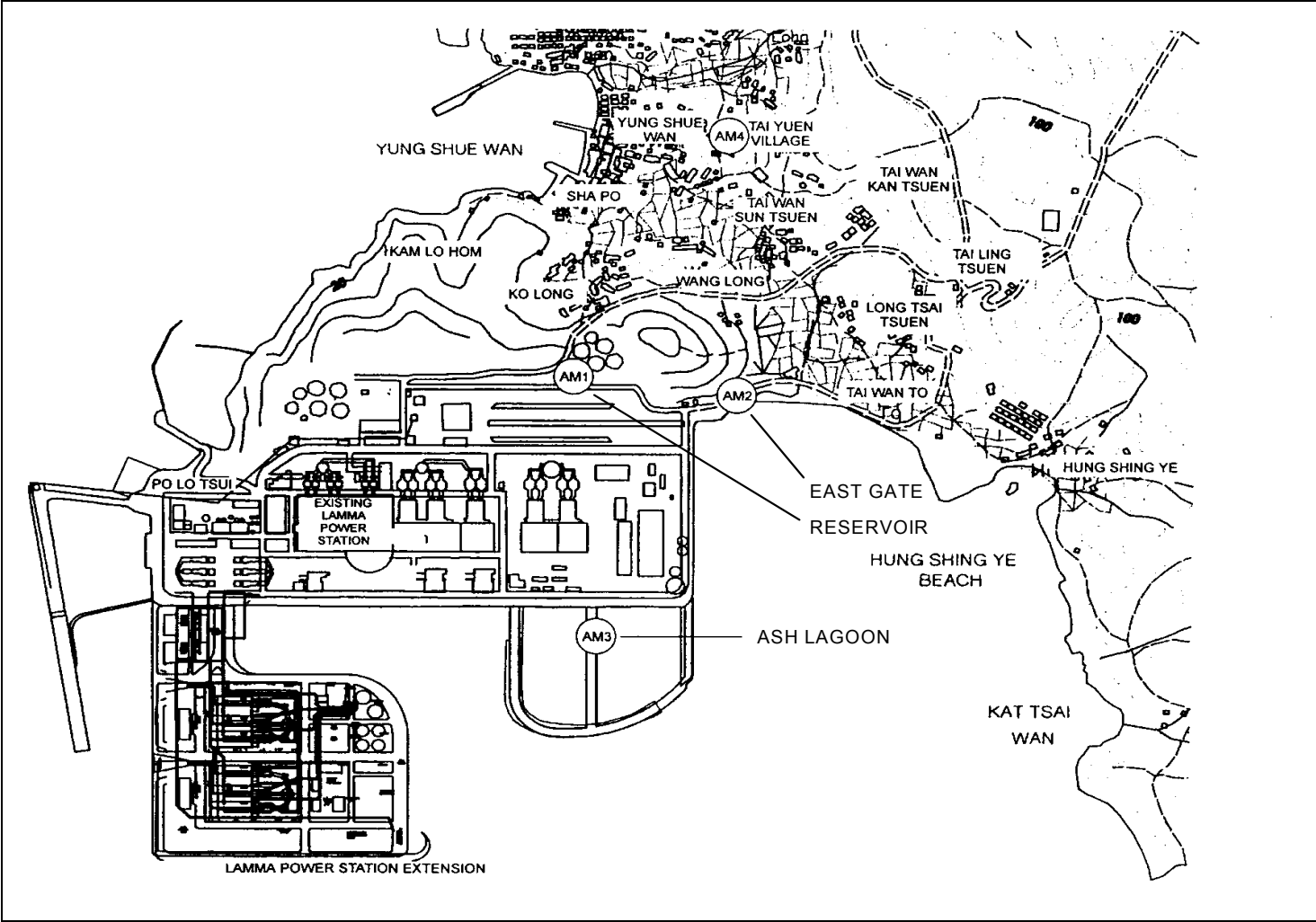


Figure 2.1 Location of Air Quality Monitoring Stations

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}
Ching Lam	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}
	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 calibration is scheduled in March 2018.

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.

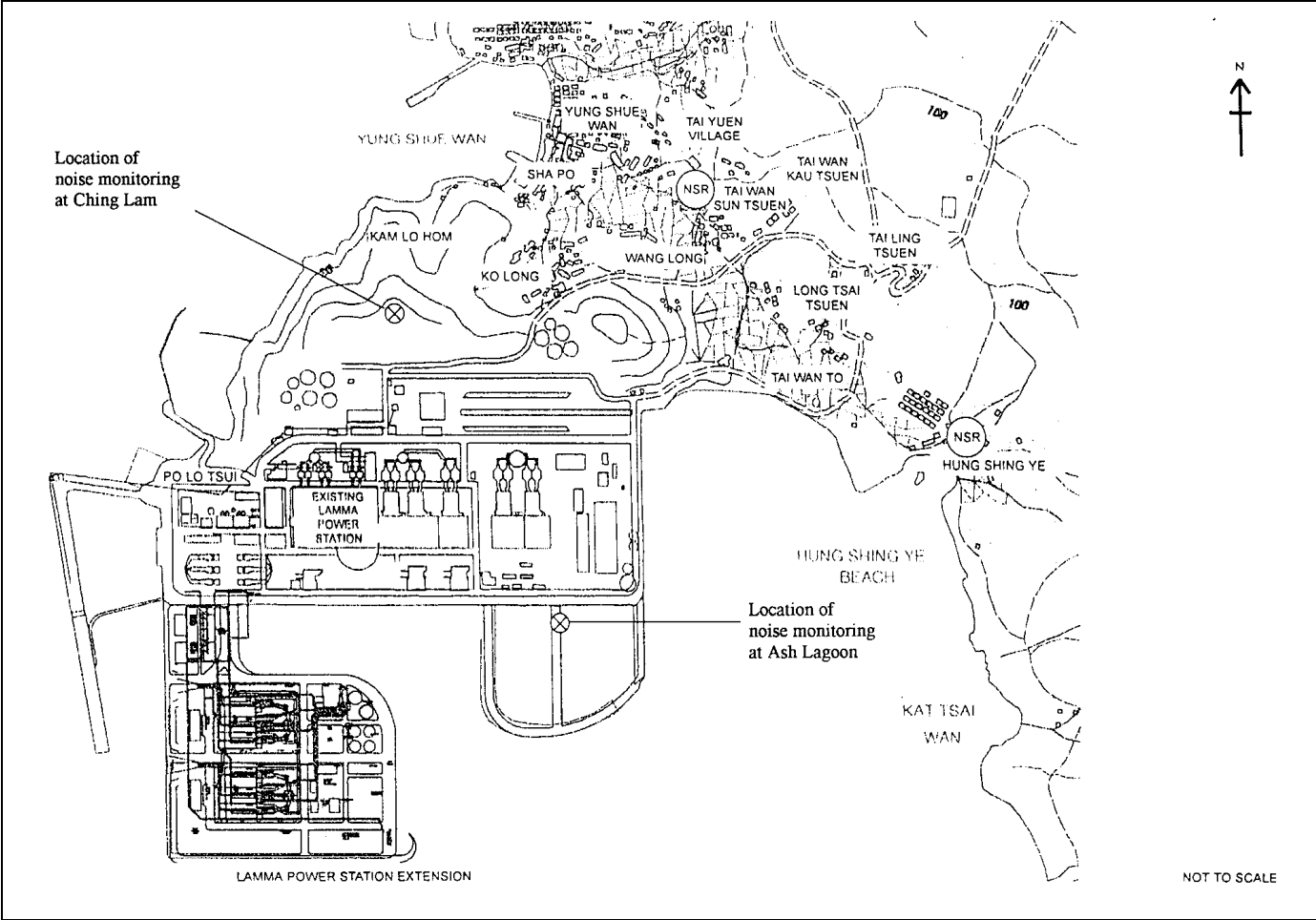


Figure 3.1 Location of Noise Monitoring Stations

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)	01/12/17-31/12/17	0	0	
2	Ambient TSP (1-hour)	01/12/17-31/12/17	0	0	
Noise					
1	Noise level at the critical NSR's predicted by the noise alarm monitoring system	01/12/17-31/12/17	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 2017 are shown in [Table 4.2](#).

Table 4.2 Estimated Amounts of Waste in December 2017

Total Inert C&D Waste Materials	Non-inert C&D Materials		
	C&D Materials Recycled	C&D Waste Disposed of at Landfill	Chemical Waste
4,758.70 Tonnes	12.41 Tonnes	0 Tonnes	0 Litres

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

4.4 Site Environmental Audit

EPD officials from Regional Office (South) visited Lamma Power Station on 08/12/2017. EPD inspected the Lamma Extension Construction Site. There was no adverse comment from EPD regarding the construction site.

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

4.5 Status of Environmental Licensing and Permitting

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

Table 4.3 Summary of Environmental Licensing and Permit Status

Description	Permit No.	Valid Period		Highlights	Status
		From	To		
Varied Environmental Permit	EP-071/2000/C	18/05/05	-	The whole construction work site	Valid
Construction Noise Permit	GW-RS0537-17	26/06/17	25/12/17	Civil and Building Works for Unit L10. Operation of PME during restricted hours.	Superseded by CNP no. GW-RS1131-17
Construction Noise Permit	GW-RS1131-17	20/12/17	18/06/18	Civil and Building Works for Unit L10. Operation of PME during restricted hours	Valid

Description	Permit No.	Valid Period		Highlights	Status
		From	To		
Construction Noise Permit	GW-RS0621-17	01/08/17	31/12/17	Power Block Facilities works for Unit L10. Operation of PME during restricted hours.	Valid
Construction Noise Permit	GW-RS0754-17	12/09/17	11/03/18	Foundation work for Unit L11. Operation of PME during restricted hours.	Superseded by CNP no. GW-RS0888-17
Construction Noise Permit	GW-RS0888-17	16/10/17	12/04/18	Foundation work for Unit L11. Operation of PME during restricted hours.	Superseded by CNP no. GW-RS1148-17
Construction Noise Permit	GW-RS1148-17	23/12/17	22/06/18	Foundation work for Unit L11. Operation of PME during restricted hours.	Valid
Construction Noise Permit	PP-RS0018-17	26/08/17	23/02/18	Percussive piling for foundation work of Unit L11.	Valid
WPCO Discharge Licence*	WT00027040-2017	06/02/17	28/02/22	Foundation works for Unit L11	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
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

Notes: * - Water quality monitoring was carried out in December 2017 and the result of which would be reported under a separate cover by the contractor.

- Water quality monitoring was carried out in November 2017 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 2017, no complaint against the construction activities was received.

Table 4.4 Environmental Complaints Received in December 2017

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 Piling 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 recycle and reuse wastewater and to ensure compliance in accordance with the WPCO discharge licence already obtained.

5.2 Monitoring Schedules for the Next 3 Months

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

5.3 Construction Program for the Next 3 Months

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

6. CONCLUSION

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

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

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

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

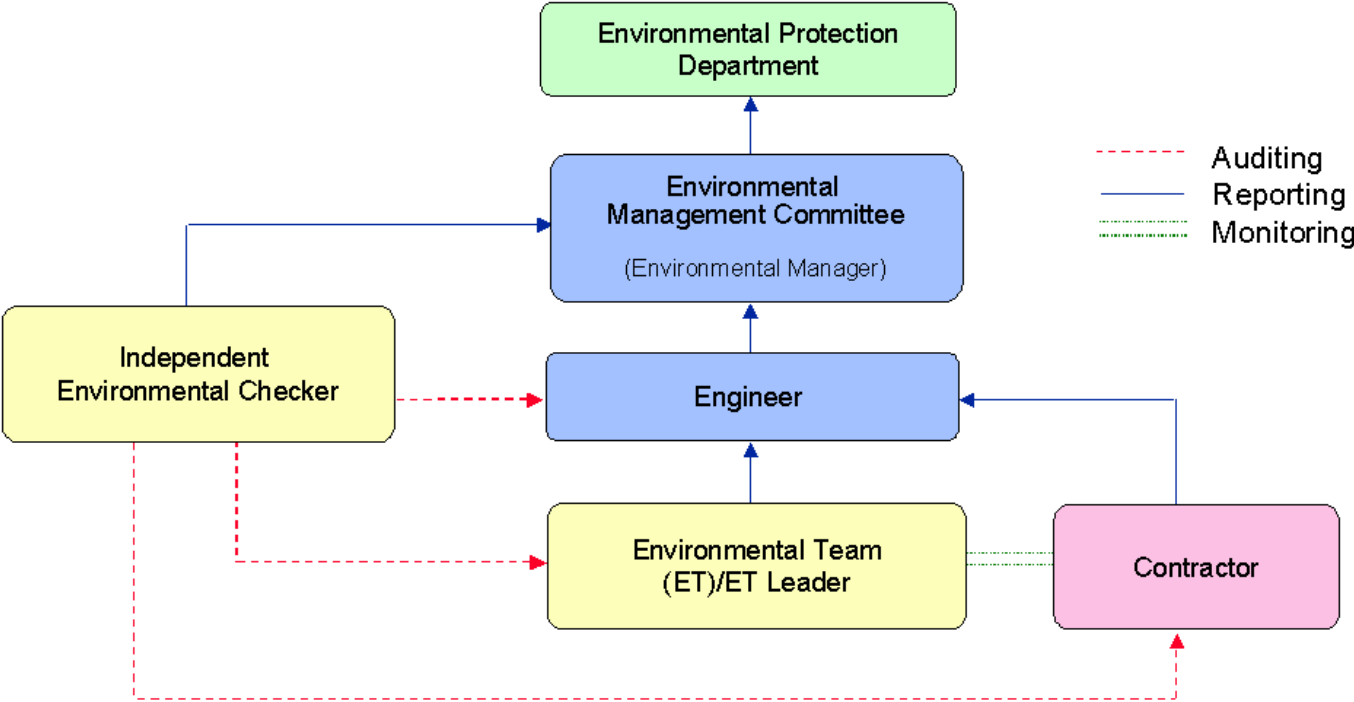


Figure A.1 Organisation of EM&A Programme at Construction Phase

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 2017 to March 2018)

24hr TSP Monitoring	1hr TSP Monitoring
06/December/2017	06/December/2017 1500hr to 1800hr
12/December/2017	12/December/2017 1500hr to 1800hr
18/December/2017	18/December/2017 1500hr to 1800hr
24/December/2017	24/December/2017 1500hr to 1800hr
30/December/2017	30/December/2017 1500hr to 1800hr
05/January/2018	05/January/2018 1500hr to 1800hr
11/January/2018	11/January/2018 1500hr to 1800hr
17/January/2018	17/January/2018 1500hr to 1800hr
23/January/2018	23/January/2018 1500hr to 1800hr
29/January/2018	29/January/2018 1500hr to 1800hr
04/February/2018	04/February/2018 1500hr to 1800hr
10/February/2018	10/February/2018 1500hr to 1800hr
16/February/2018	16/February/2018 1500hr to 1800hr
22/February/2018	22/February/2018 1500hr to 1800hr
28/February/2018	28/February/2018 1500hr to 1800hr
06/March/2018	06/March/2018 1500hr to 1800hr
12/March/2018	12/March/2018 1500hr to 1800hr
18/March/2018	18/March/2018 1500hr to 1800hr
24/March/2018	24/March/2018 1500hr to 1800hr
30/March/2018	30/March/2018 1500hr to 1800hr

APPENDIX D AIR QUALITY MONITORING RESULTS

Site: Lamma Power Station Extension

Month: December 2017

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. (%)
06/12/2017	61	67	61	56	28.2	70	73
12/12/2017	36 (14/12)*	85	78	82	36.3	70	70
18/12/2017	74	90	79	76	32.7	360	57
24/12/2017	108	121	116	167	22.8	360	60
30/12/2017	26	29	25	29	23.7	50	71

Note:

* - TSP monitoring at AM2 (East Gate) was suspended on 12/12/2017 due to the breakdown of TEOM TSP Sampler. Make-up 24-hr TSP sampling at AM2 was conducted on 14/12/2017.

1 hour TSP Measurement:-

Date	Time	TSP concentration ($\mu\text{g}/\text{m}^3$)		
		Reservoir (AM1)	East Gate (AM2)	Ash Lagoon (AM3)
06/12/2017	15:00 - 15:59	70	67	76
	16:00 - 16:59	70	73	70
	17:00 - 17:59	70	72	63
12/12/2017	15:00 - 15:59	33 (14/12)*	106	109
	16:00 - 16:59	41 (14/12)*	102	107
	17:00 - 17:59	42 (14/12)*	95	107
18/12/2017	15:00 - 15:59	98	113	111
	16:00 - 16:59	100	109	112
	17:00 - 17:59	87	105	103
24/12/2017	15:00 - 15:59	103	136	115
	16:00 - 16:59	104	119	113
	17:00 - 17:59	87	107	96
30/12/2017	15:00 - 15:59	32	32	32
	16:00 - 16:59	34	38	40
	17:00 - 17:59	51	37	49

Note:

* - TSP monitoring at AM2 (East Gate) was suspended on 12/12/2017 due to the breakdown of the TEOM TSP sampler. Make-up 1-hr TSP sampling at AM2 was conducted on 14/12/2017.

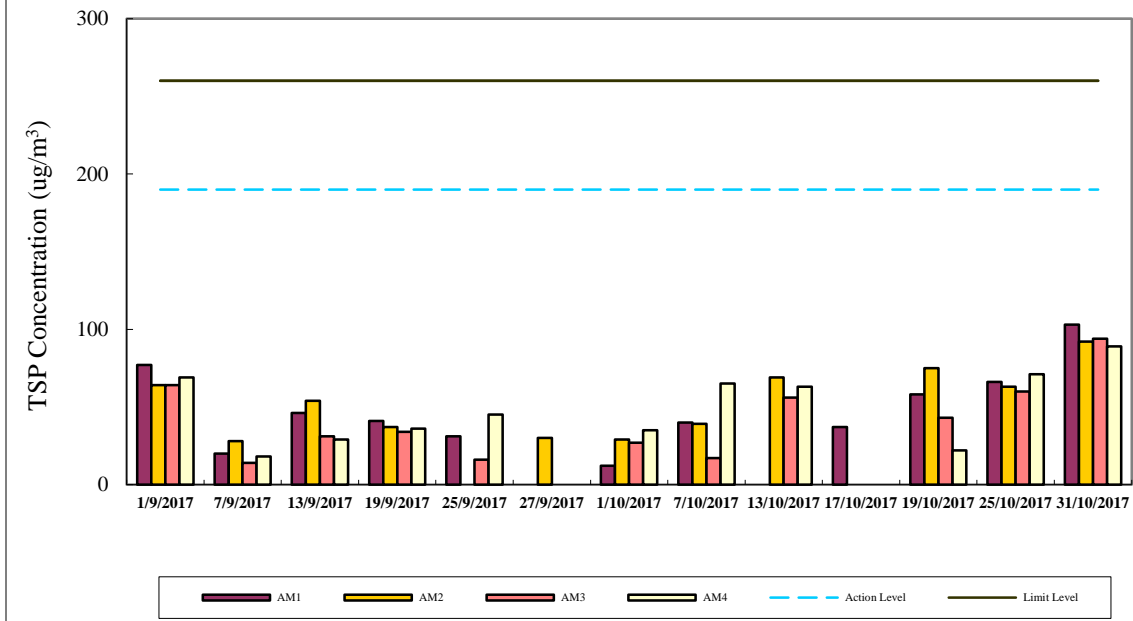
	1-hr TSP	24-hr TSP
	($\mu\text{g}/\text{m}^3$)	($\mu\text{g}/\text{m}^3$)
Action Level	340	190
Limit Level	500	260

Calibration: Calibration details are shown in appendix F.

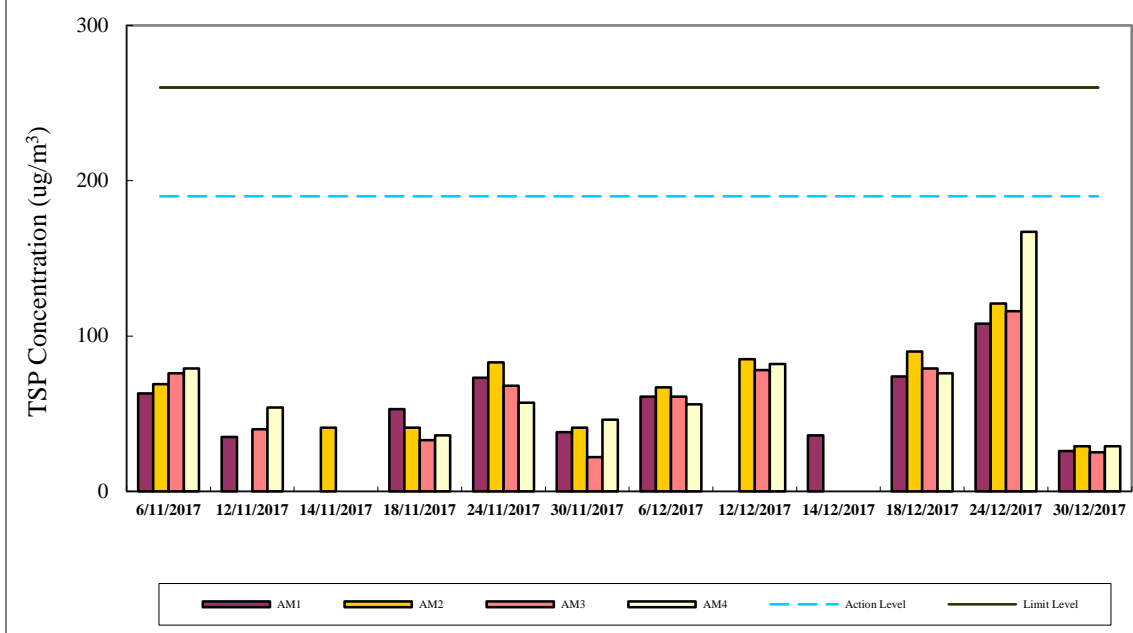
Equipment used:

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

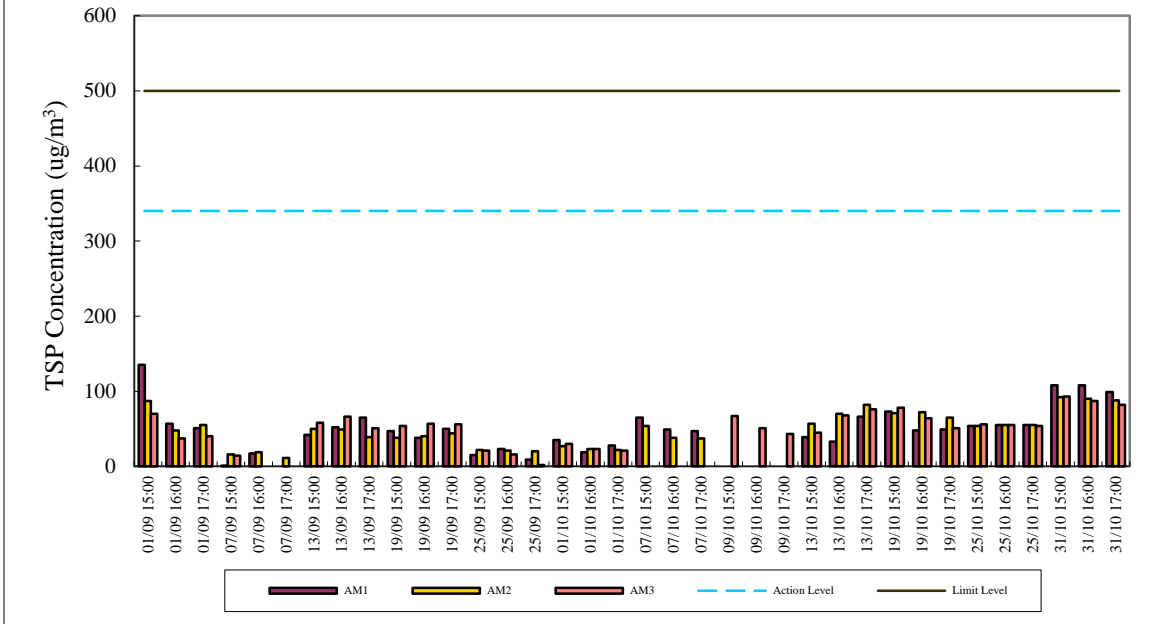
24-hr TSP Air Monitoring Data (September 2017 - October 2017)



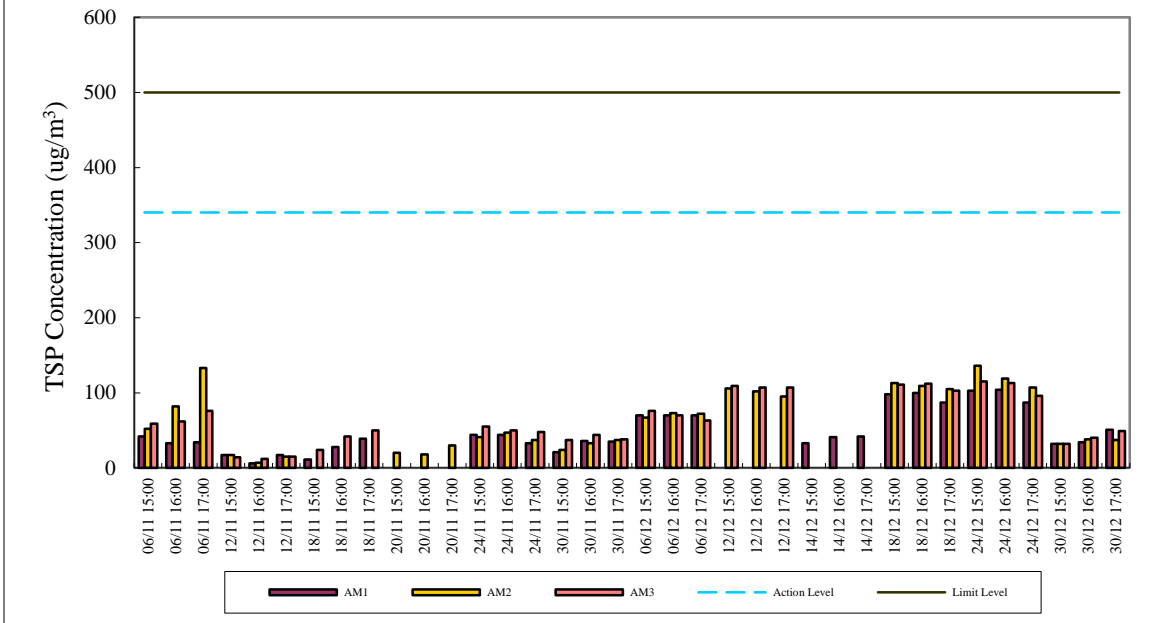
24-hr TSP Air Monitoring Data (November 2017 - December 2017)



1-hr TSP Air Monitoring Data (September 2017 - October 2017)



1-hr TSP Air Monitoring Data (November 2017 - December 2017)



Appendix E

Continuous Noise Monitoring Results for December 2017

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
 Laboratory Calibration Date of Noise Equipment:
 19/08/2016 (Ash Lagoon) and 02/11/2017 (Ching Lam)

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	
01/12/2017	07:00-19:00	51	46	75	46	37	70
01/12/2017	19:00-23:00	---	---	60	41	32	60
01/12/2017	23:00-07:00	44	33	45	38	32	45
02/12/2017	07:00-19:00	51	47	75	---	---	70
02/12/2017	19:00-23:00	---	---	60	36	32	60
02/12/2017	23:00-07:00	35	28	45	35	31	45
03/12/2017	07:00-23:00	48	41	60	49	36	60
03/12/2017	23:00-07:00	45	37	45	39	32	45
04/12/2017	07:00-19:00	---	---	75	40	38	70
04/12/2017	19:00-23:00	---	---	60	36	32	60
04/12/2017	23:00-07:00	45	36	45	45	33	45
05/12/2017	07:00-19:00	46	41	75	33	33	70
05/12/2017	19:00-23:00	50	44	60	45	37	60
05/12/2017	23:00-07:00	45	38	45	42	36	45
06/12/2017	07:00-19:00	48	44	75	40	36	65
06/12/2017	19:00-23:00	---	---	60	37	32	60
06/12/2017	23:00-07:00	45	36	45	40	34	45
07/12/2017	07:00-19:00	51	48	75	---	---	65
07/12/2017	19:00-23:00	25	25	60	52	36	60
07/12/2017	23:00-07:00	44	35	45	39	33	45
08/12/2017	07:00-19:00	54	47	75	---	---	65
08/12/2017	19:00-23:00	---	---	60	29	29	60
08/12/2017	23:00-07:00	45	39	45	37	31	45
09/12/2017	07:00-19:00	57	53	75	41	33	70
09/12/2017	19:00-23:00	---	---	60	41	37	60
09/12/2017	23:00-07:00	39	32	45	42	35	45
10/12/2017	07:00-23:00	46	38	60	48	34	60
10/12/2017	23:00-07:00	45	41	45	39	31	45
11/12/2017	07:00-19:00	57	53	75	38	35	70
11/12/2017	19:00-23:00	---	---	60	38	36	60
11/12/2017	23:00-07:00	34	28	45	40	32	45
12/12/2017	07:00-19:00	56	51	75	36	34	70

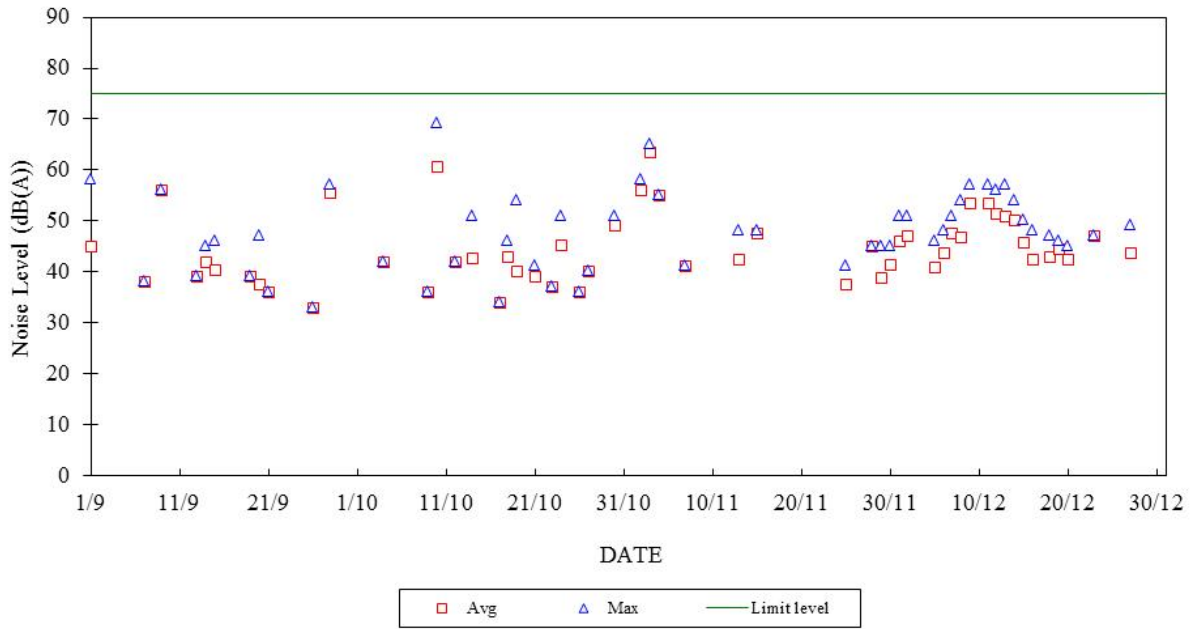
12/12/2017	19:00-23:00	47	43	60	41	34	60
12/12/2017	23:00-07:00	45	37	45	42	34	45
13/12/2017	07:00-19:00	57	51	75	49	42	70
13/12/2017	19:00-23:00	49	40	60	40	36	60
13/12/2017	23:00-07:00	45	41	45	43	37	45
14/12/2017	07:00-19:00	54	50	75	43	43	70
14/12/2017	19:00-23:00	---	---	60	34	28	60
14/12/2017	23:00-07:00	42	35	45	38	32	45
15/12/2017	07:00-19:00	50	46	75	---	---	70
15/12/2017	19:00-23:00	---	---	60	---	---	60
15/12/2017	23:00-07:00	37	31	45	40	33	45
16/12/2017	07:00-19:00	48	43	75	42	40	70
16/12/2017	19:00-23:00	44	35	60	46	35	60
16/12/2017	23:00-07:00	38	32	45	36	30	45
17/12/2017	07:00-23:00	28	28	60	50	34	60
17/12/2017	23:00-07:00	42	33	45	38	31	45
18/12/2017	07:00-19:00	47	43	75	33	33	70
18/12/2017	19:00-23:00	---	---	60	30	28	60
18/12/2017	23:00-07:00	43	35	45	40	34	45
19/12/2017	07:00-19:00	46	44	75	44	38	70
19/12/2017	19:00-23:00	37	32	60	41	33	60
19/12/2017	23:00-07:00	31	27	45	37	28	45
20/12/2017	07:00-19:00	45	42	75	32	32	70
20/12/2017	19:00-23:00	---	---	60	29	23	60
20/12/2017	23:00-07:00	---	---	45	17	17	45
21/12/2017	07:00-19:00	---	---	75	35	35	70
21/12/2017	19:00-23:00	---	---	60	43	31	60
21/12/2017	23:00-07:00	37	34	45	32	29	45
22/12/2017	07:00-19:00	---	---	75	47	41	70
22/12/2017	19:00-23:00	---	---	60	38	37	60
22/12/2017	23:00-07:00	36	34	45	45	33	45
23/12/2017	07:00-19:00	47	47	75	37	34	70
23/12/2017	19:00-23:00	---	---	60	38	32	60
23/12/2017	23:00-07:00	39	32	45	39	31	45
24/12/2017	07:00-23:00	52	37	60	53	35	60
24/12/2017	23:00-07:00	---	---	45	38	32	45
25/12/2017	07:00-23:00	45	39	60	53	35	60
25/12/2017	23:00-07:00	---	---	45	45	34	45
26/12/2017	07:00-23:00	38	33	60	45	36	60
26/12/2017	23:00-07:00	43	34	45	37	31	45
27/12/2017	07:00-19:00	49	44	75	40	35	70
27/12/2017	19:00-23:00	---	---	60	37	32	60
27/12/2017	23:00-07:00	38	34	45	37	34	45
28/12/2017	07:00-19:00	---	---	75	20	20	70
28/12/2017	19:00-23:00	---	---	60	51	34	60
28/12/2017	23:00-07:00	37	37	45	39	34	45
29/12/2017	07:00-19:00	---	---	75	40	40	70
29/12/2017	19:00-23:00	---	---	60	36	31	60
29/12/2017	23:00-07:00	44	37	45	39	31	45
30/12/2017	07:00-19:00	---	---	75	---	---	70
30/12/2017	19:00-23:00	51	48	60	38	32	60
30/12/2017	23:00-07:00	44	39	45	39	33	45
31/12/2017	07:00-23:00	58	34	60	40	34	60
31/12/2017	23:00-07:00	---	---	45	36	33	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.

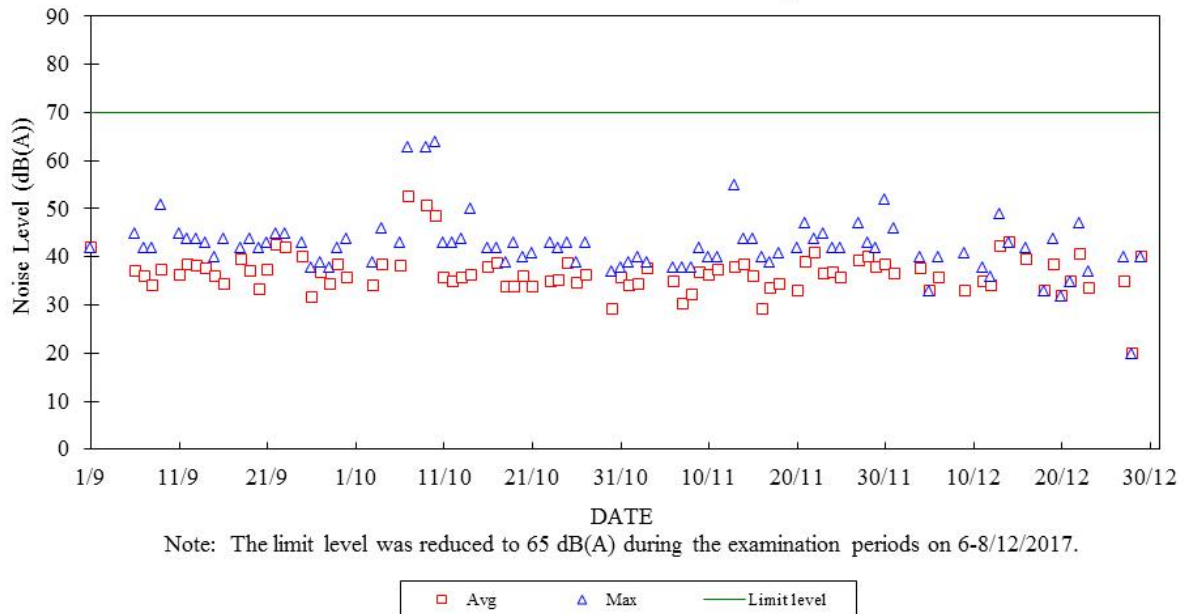
Construction Noise Monitoring in September - December 2017

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

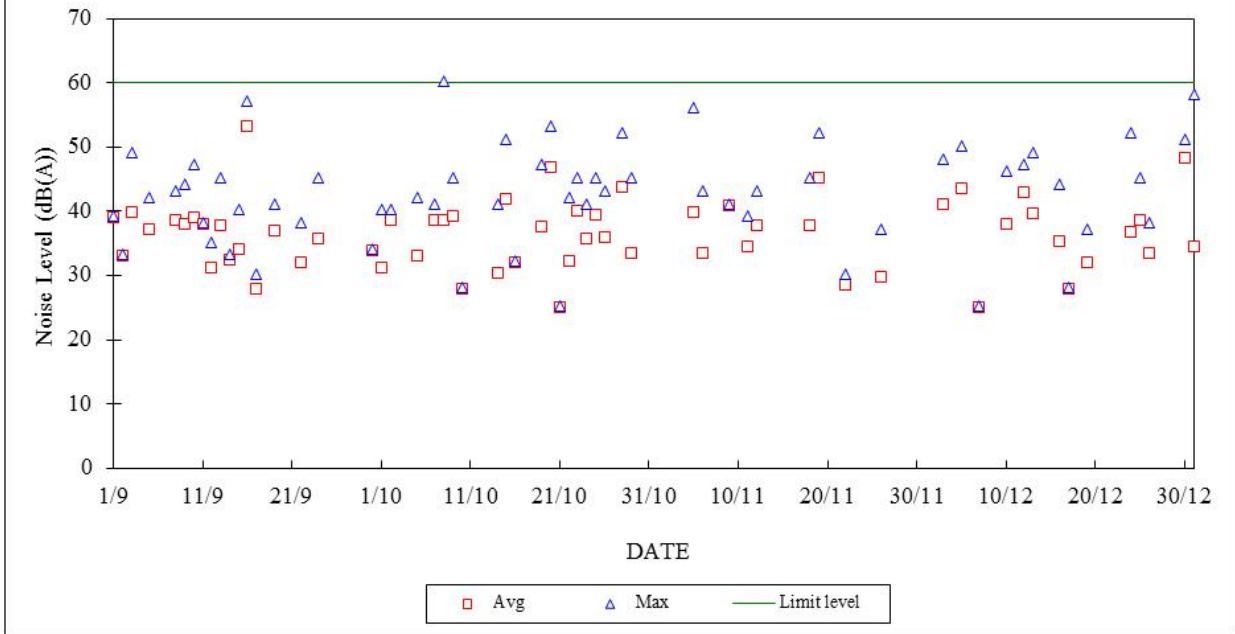


Construction Noise Monitoring in September - December 2017

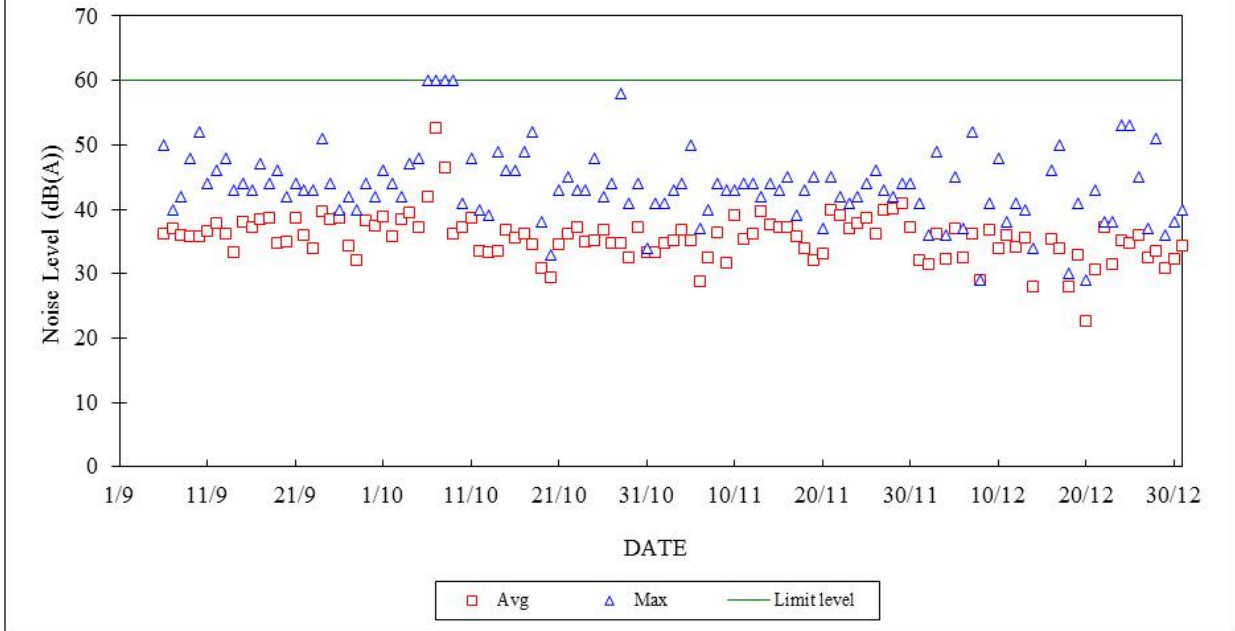
NSR at School within Tai Wan San Tsuen
07:00-19:00 hrs on Normal Weekdays



Construction Noise Monitoring in September - December 2017
 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



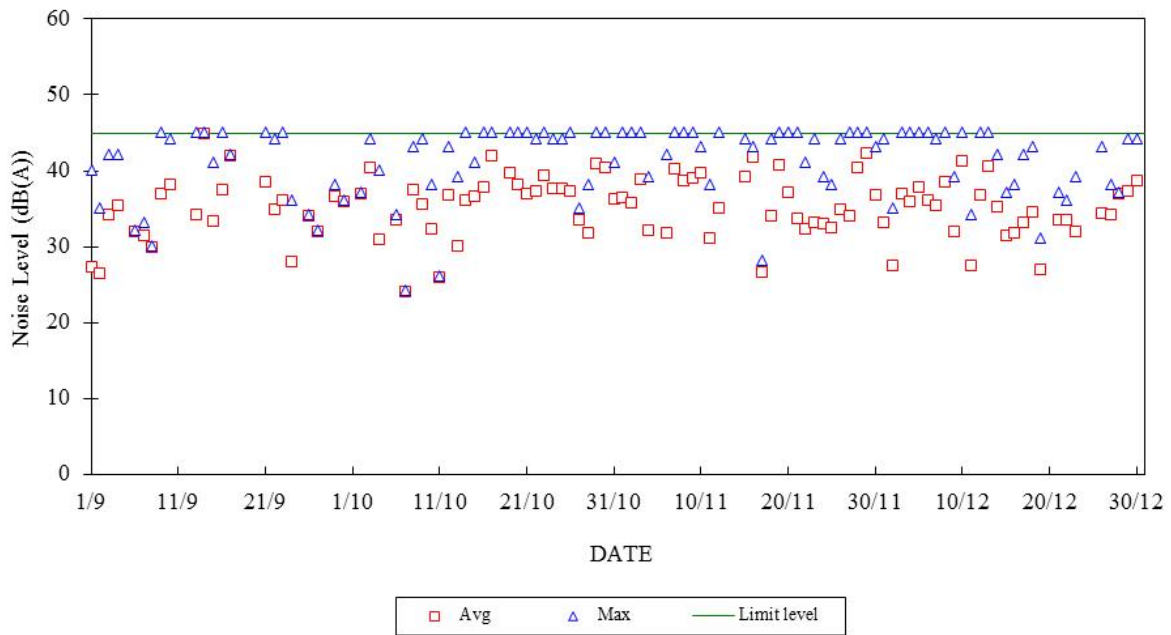
Construction Noise Monitoring in September - December 2017
 NSR at School within Tai Wan San Tsuen
 07:00-23:00 hrs on Holidays and 19:00-23:00 hrs on All Other Days



Construction Noise Monitoring in September - December 2017

NSR at Long Tsai Tsuen/Hung Shing Ye

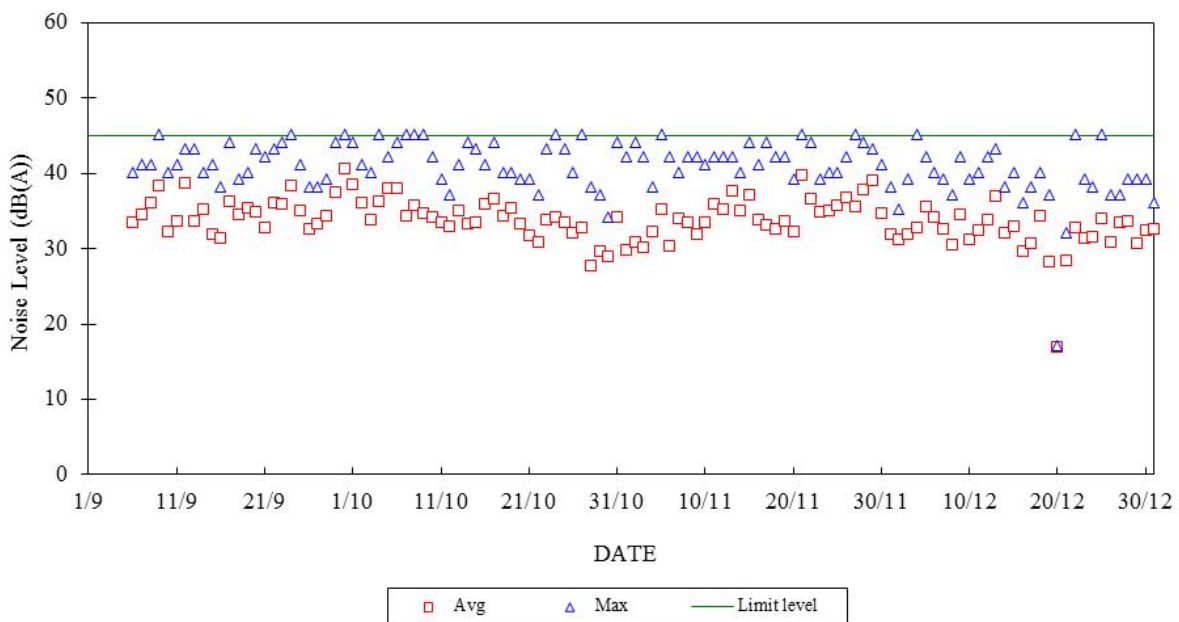
23:00-07:00 hrs of Next Day



Construction Noise Monitoring in September - December 2017

NSR at School within Tai Wan San Tsuen

23:00-07:00 hrs of Next Day



Appendix F

The QA/QC Procedures and Results

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

Month: December Year: 2017

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)
06/12/2017	270.041	4	3.06	13.96
12/12/2017	268.878	4	3.08	14.01
18/12/2017	271.308	4	3.16	14.41
24/12/2017	270.255	4	3.04	13.87
30/12/2017	269.300	4	3.08	14.01

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)
06/12/2017	257.866	4	3.05	13.91
12/12/2017	256.671	4	3.06	13.97
18/12/2017	255.947	4	3.16	14.39
24/12/2017	259.409	4	3.03	13.80
30/12/2017	258.499	4	3.06	13.95

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)
06/12/2017	263.855	4	3.04	13.86
12/12/2017	262.707	4	3.05	13.91
18/12/2017	262.093	4	3.13	14.25
24/12/2017	265.400	4	3.04	13.83
30/12/2017	264.551	3	3.07	13.96

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

Remarks:

NA

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
20/12/2017 / 10:00	WH MAN

Equipment / Item

Equipment / Item	Serial No. / No.
MINIVOL	5580
Used filter paper no.	29
New filter paper no.	30

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: 5.12
After: 5.03

- II. General Services

1. Clean Rotameter: No
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: WH MAN

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)
01/12/2017	Passed	0.02	Passed	-0.03
02/12/2017	Passed	0.01	Passed	-0.02
03/12/2017	Passed	0.02	Passed	-0.04
04/12/2017	Passed	0.02	Passed	-0.05
05/12/2017	Passed	-0.01	Passed	-0.06
06/12/2017	Passed	-0.02	Passed	-0.03
07/12/2017	Passed	0.02	Passed	-0.03
08/12/2017	Passed	0.01	Passed	-0.08
09/12/2017	Passed	-0.01	Passed	-0.08
10/12/2017	Passed	0.01	Passed	-0.04
11/12/2017	Passed	0.00	Passed	-0.04
12/12/2017	Passed	0.01	Passed	-0.03
13/12/2017	Passed	-0.01	Passed	-0.01
14/12/2017	Passed	0.01	Passed	-0.03
15/12/2017	Passed	0.01	Passed	-0.03
16/12/2017	Passed	-0.02	Passed	-0.08
17/12/2017	Passed	-0.03	Passed	-0.10
18/12/2017	Passed	-0.03	Passed	-0.08
19/12/2017	Passed	0.02	Passed	-0.06
20/12/2017	Passed	0.01	Passed	-0.07
21/12/2017	Passed	-0.02	Passed	-0.10
22/12/2017	Passed	0.00	Passed	-0.06
23/12/2017	Passed	0.03	Passed	-0.04
24/12/2017	Passed	0.06	Passed	-0.03
25/12/2017	Passed	-0.01	Passed	-0.05
26/12/2017	Passed	0.01	Passed	-0.07
27/12/2017	Passed	-0.01	Passed	-0.05
28/12/2017	Passed	0.00	Passed	-0.05
29/12/2017	Passed	-0.01	Passed	-0.03
30/12/2017	Passed	0.01	Passed	-0.03
31/12/2017	Passed	0.00	Passed	-0.05

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

Appendix H Summary of Site Audit Findings

L10 Civil & Building Superstructure Work

Dates of Inspection: 05/12/2017, 12/12/2017, 19/12/2017 and 29/12/2017.

Summary of Findings

General

- No environmental deficiency identified.

Air Quality

- No environmental deficiency identified.

Noise

- No environmental deficiency identified.

Water Quality

- No environmental deficiency identified.

Waste Management

- No environmental deficiency identified.

L10 Mechanical, Electrical, Instrumentation & Control Erection Work

Dates of Inspection: 01/12/2017, 7/12/2017, 15/12/2017, 22/12/2017 and 29/12/2017.

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 Piling Foundation Work

Dates of Inspection: 01/12/2017, 08/12/2017, 15/12/2017, 22/12/2017 and 29/12/2017.

Summary of Findings

General

- No environmental deficiency identified.

Air Quality

- No environmental deficiency identified.

Noise

- No environmental deficiency identified.

Water Quality

- No environmental deficiency identified.

Waste Management

- No environmental deficiency identified.

Summary of EMIS

Power Station – (Part B of EIA Report)

Construction Phase Mitigation Measures and their Implementation

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

EM&A Log Ref.	Mitigation Measures	Implementation Status
B7	<p>In addition to the above specific measures the following general working procedures shall be adopted. **</p> <ul style="list-style-type: none"> • fully-enclosed or watertight grabs shall be used to minimise loss of sediment during the raising of loaded grabs through the water column; • the descent speed of grabs shall be controlled to minimise the seabed impact speed and to reduce the volume of over dredging; • barges shall be loaded carefully to avoid splashing of material; • all barges used for the transport of dredged materials shall be fitted with tight bottom seals in order to prevent leakage of material during loading and transport; • all barges shall be filled to a level which ensures that material does not spill over during loading and transport to the disposal site and that adequate freeboard is maintained to ensure that the decks are not washed by wave action; • the speed of trailer dredgers shall be controlled to prevent propeller wash from stirring up the sea bed sediments; • "rainbowing" sand fill from trailer dredgers shall not be permitted; and • the works shall cause no visible foam, oil, grease or litter or other objectionable matter to be present in the water within and adjacent to the dredging site and along the route to the disposal site. 	
B8	<p>Cumulative impacts shall be assessed through EM&A. Co-ordination with the EM&A consultants for other projects to determine if any exceedances are caused by the other projects or by HEC's activities. Should monitoring results indicate exceedances at sensitive receivers due to HEC's activities, then the above described mitigation measures shall be implemented until impacts reduce to acceptable levels. **</p>	N/A
NOISE		
C1	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. 	

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		

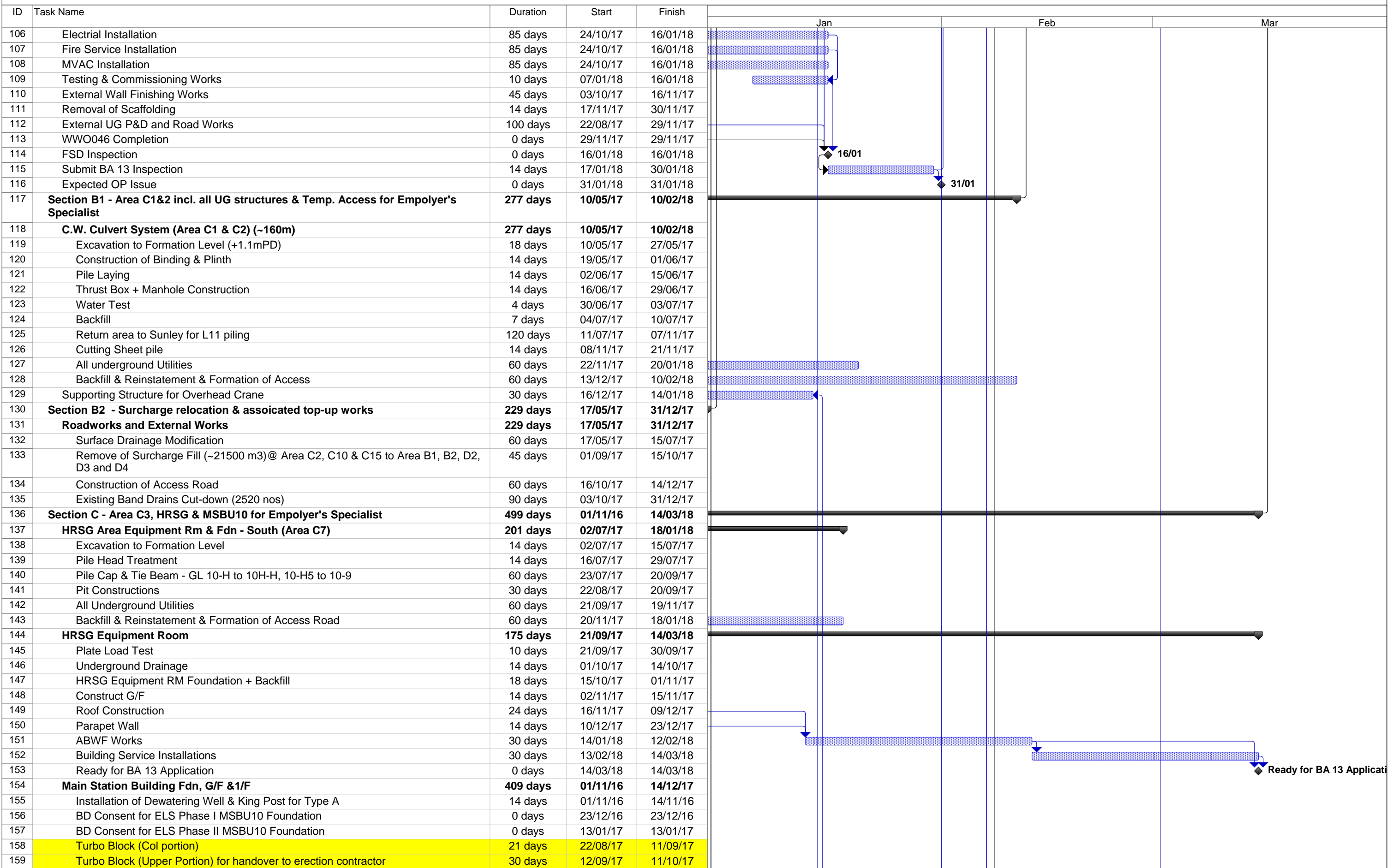
EM&A Log Ref.	Mitigation Measures	Implementation Status
G1	All percussive piling works shall be conducted on reclaimed land to avoid noise impact to marine mammals**	N/A
G2	All construction related vessels shall approach the extension site from the north and via the East Lamma Channel to avoid disturbance 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:

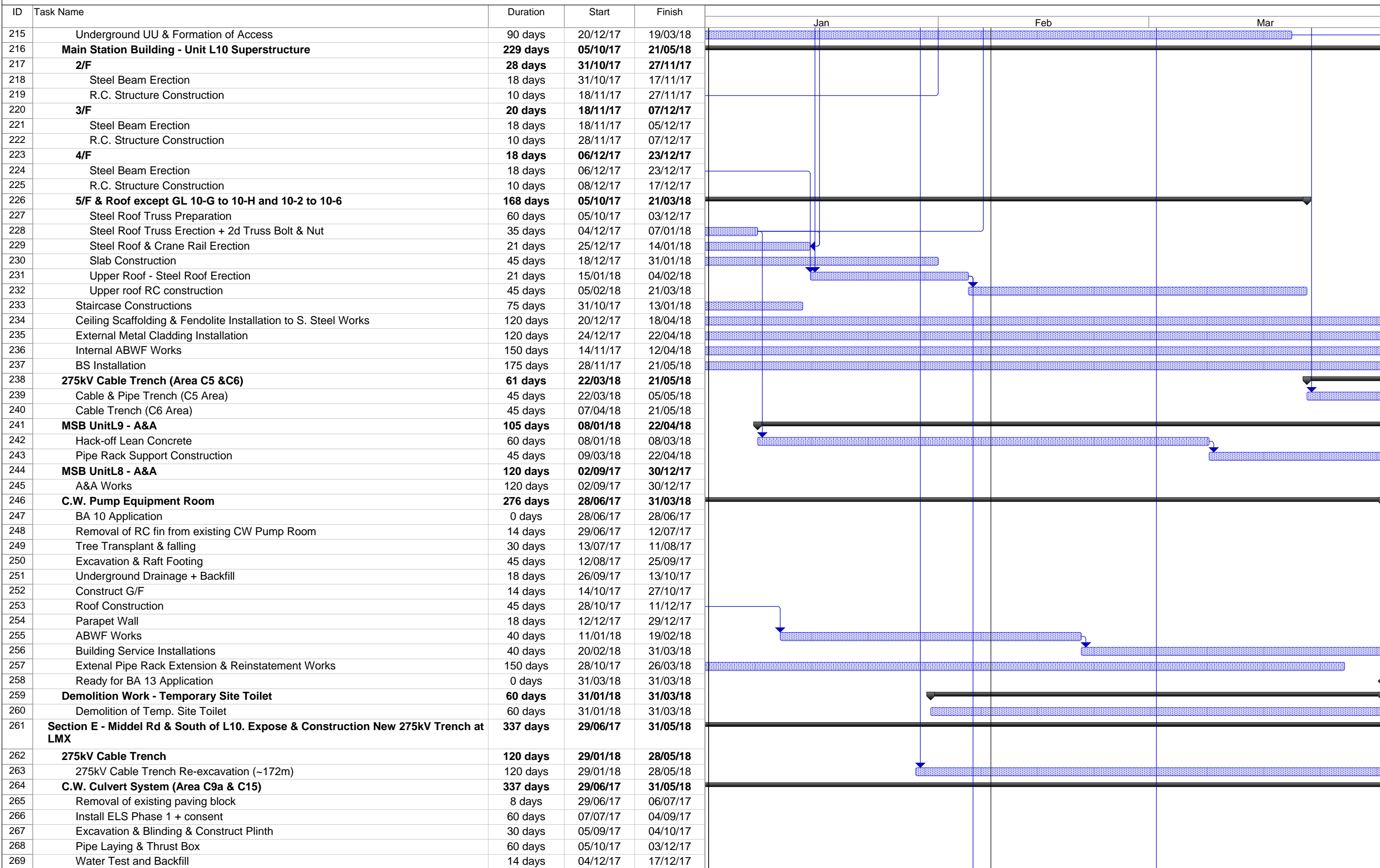
- ** - No dredging and reclamation work would be involved for L10 construction
- C - Compliance with mitigation measure
- NC - Non-compliance with mitigation measure
- N/A - Not Applicable

ID	Task Name	Duration	Start	Finish	Jan	Feb	Mar
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	← Section A2 - LPS Site Office Building		
6	Section B1 - Area C1&2 incl. all UG structures & Temp. Access for Employer's Specialist	426 days	12/12/16	10/02/18	← Section B1 - Area C1&2 incl. all UG structures & Temp. Access for Employer's		
7	Section B2 - Surcharge relocation & associated top-up works	122 days	01/09/17	31/12/17	← Section B2 - Surcharge relocation & associated top-up works		
8	Section C - Area C3, HRSG & MSBU10 for Employer's Specialist	457 days	13/12/16	14/03/18	← Section C - Area C3, HRSG		
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			
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	Submission & 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 Vertical Puddle Pipes Installation	7 days	09/07/17	15/07/17			
53	Inlet Culvert Box Vertical 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			

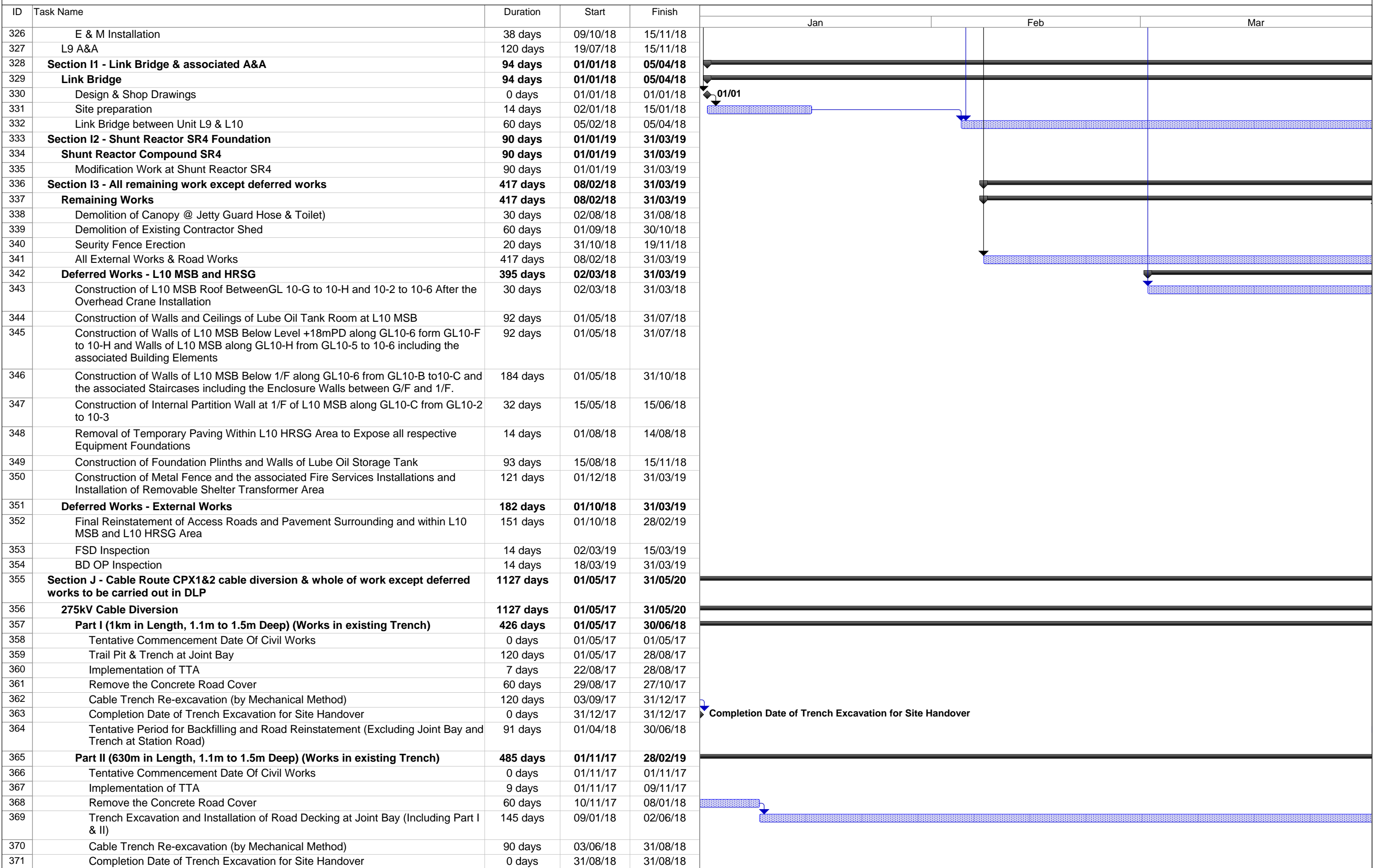
ID	Task Name	Duration	Start	Finish	Jan	Feb	Mar
55	Template setting of holding down bolts at HRSG Column Base	45 days	16/08/17	29/09/17			
56	I-beam/ Channel Base Installation on top of Transformer Foundations at Transformer A	32 days	12/10/17	12/11/17			
57	Overhead crane rail installation	14 days	15/01/18	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	Jan	Feb	Mar
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	Jan	Feb	Mar
270	Underground UU and Reinstatement	120 days	18/12/17	16/04/18	[Task bar spanning Jan, Feb, Mar]		
271	Install ELS Phase 2 + consent	21 days	15/08/17	04/09/17	[Task bar in Jan]		
272	Blinding & Concrete Plinth	30 days	05/09/17	04/10/17	[Task bar in Jan]		
273	Pipe Laying and Thrust Box	45 days	04/12/17	17/01/18	[Task bar in Jan]		
274	Water Test & Backfill	14 days	18/01/18	31/01/18	[Task bar in Jan]		
275	Underground UU and Reinstatement	120 days	01/02/18	31/05/18	[Task bar spanning Feb, Mar]		
276	Section F -Urea Storage & Handling Facilities	488 days	01/05/17	31/08/18	[Section bar spanning Jan, Feb, Mar]		
277	Urea Handling & Storage Plant House, Electrical Room & Pipe Rack	488 days	01/05/17	31/08/18	[Section bar spanning Jan, Feb, Mar]		
278	BA 10 Application	7 days	01/05/17	07/05/17	[Task bar in Jan]		
279	Excavation to Formation Level	10 days	26/09/17	05/10/17	[Task bar in Jan]		
280	Plate Load Test	14 days	06/10/17	19/10/17	[Task bar in Jan]		
281	Raft Foundation (Urea Handng Rm + Ele Rm)	30 days	20/10/17	18/11/17	[Task bar in Jan]		
282	Backfill	21 days	19/11/17	09/12/17	[Task bar in Jan]		
283	Construct G/F	21 days	10/12/17	30/12/17	[Task bar in Jan]		
284	Roof Construction	90 days	31/12/17	30/03/18	[Task bar spanning Jan, Feb]		
285	Parapet Wall	14 days	31/03/18	13/04/18	[Task bar in Feb]		
286	ABWF Works	60 days	14/04/18	12/06/18	[Task bar in Feb]		
287	Building Service Installations	80 days	13/06/18	31/08/18	[Task bar in Feb]		
288	Ready for BA 13 Application	0 days	31/08/18	31/08/18	[Task bar in Mar]		
289	Plate Load Test	14 days	06/10/17	19/10/17	[Task bar in Jan]		
290	Pipe Rack Foundation	28 days	20/10/17	16/11/17	[Task bar in Jan]		
291	Supporting Tower (4 no.) (9.55m in Height)	60 days	17/11/17	15/01/18	[Task bar in Jan]		
292	Pipe Rack Truss (3 no.) 17.3m Span	60 days	16/01/18	16/03/18	[Task bar in Feb]		
293	Section G - Demin. Plant Road & Modification at No. 4 CW Intake	273 days	01/01/18	30/09/18	[Section bar spanning Feb, Mar]		
294	C.W Culvert System (Area C9b)	273 days	01/01/18	30/09/18	[Section bar spanning Feb, Mar]		
295	Site possession	0 days	01/01/18	01/01/18	[Task bar in Feb]		
296	Removal of paving block & ELS Installation + consent	60 days	01/01/18	01/03/18	[Task bar in Feb]		
297	Excavation to Formation Level with ELS Installation	30 days	02/03/18	31/03/18	[Task bar in Feb]		
298	Construction of Blinding & Plinth	21 days	01/04/18	21/04/18	[Task bar in Feb]		
299	Pipe Laying (2 pipes x ~45m)	30 days	22/04/18	21/05/18	[Task bar in Feb]		
300	Construction of Thrust Box	14 days	22/05/18	04/06/18	[Task bar in Feb]		
301	Water Test	7 days	05/06/18	11/06/18	[Task bar in Feb]		
302	Backfill	16 days	12/06/18	27/06/18	[Task bar in Feb]		
303	All underground Utilities	50 days	28/06/18	16/08/18	[Task bar in Feb]		
304	Backfill & Reinstatement & Formation of Access	45 days	17/08/18	30/09/18	[Task bar in Feb]		
305	Modification Works - No. 4 C.W. Intake & No.3 C.W. Outfall	183 days	01/04/18	30/09/18	[Section bar spanning Feb, Mar]		
306	No. 3 C.W. Outfall Modification	90 days	01/04/18	29/06/18	[Task bar in Feb]		
307	No. 4 C.W. Intake Modification	90 days	03/07/18	30/09/18	[Task bar in Feb]		
308	Section H1 - Gas Support foundation & trench at Area C11	179 days	21/05/18	15/11/18	[Section bar spanning Feb, Mar]		
309	GRS Support Foundation	179 days	21/05/18	15/11/18	[Section bar spanning Feb, Mar]		
310	Temporary Protection, advance work etc	14 days	21/05/18	03/06/18	[Task bar in Feb]		
311	Gas Pipe Footing	165 days	04/06/18	15/11/18	[Task bar in Feb]		
312	Gas Pipe Trench	90 days	18/08/18	15/11/18	[Task bar in Feb]		
313	Section H2 - GRS Improvement work at Area C10	441 days	01/09/17	15/11/18	[Section bar spanning Jan, Feb, Mar]		
314	GRS Area Improvement Works	441 days	01/09/17	15/11/18	[Section bar spanning Jan, Feb, Mar]		
315	Retaining Wall Construction	90 days	01/09/17	29/11/17	[Task bar in Jan]		
316	Removal of Surcharge and Backfill	45 days	30/11/17	13/01/18	[Task bar in Jan]		
317	Footing Construction	240 days	14/01/18	10/09/18	[Task bar spanning Feb, Mar]		
318	Topping up, finish and Misc. Works	66 days	11/09/18	15/11/18	[Task bar in Feb]		
319	Section H3 - L10 Chimney Flue and A&A L9	318 days	01/01/18	15/11/18	[Section bar spanning Feb, Mar]		
320	No.4 Chimney Steel Flue	318 days	01/01/18	15/11/18	[Section bar spanning Feb, Mar]		
321	Consent, documentation and site preparation	0 days	01/01/18	01/01/18	[Task bar in Feb]		
322	Steel Flue Preparation & installation	150 days	02/01/18	31/05/18	[Task bar in Feb]		
323	Install Steel Cover at Windshield	45 days	01/06/18	15/07/18	[Task bar in Feb]		
324	Install Steel Cover at Roof	30 days	16/07/18	14/08/18	[Task bar in Feb]		
325	Modification & Reinstatement Works	55 days	15/08/18	08/10/18	[Task bar in Feb]		



ID	Task Name	Duration	Start	Finish			
					Jan	Feb	Mar
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 Tunel (15m)	150 days	18/11/18	16/04/19			
387	Excavtion 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

No.	Description	2018		
		Jan	Feb	Mar
	Erection Key Date			
			1-Jan	
				1-Feb
				8-Feb
		Sub-contractor's c		
A	HRSB PORTION			
A-01	Install Casing (Bottom/Side/Top) with Structure			
				G-Ass
				Weldi
				Cable Tray
A-02	Upper/Lower Connection Pipe		Lower Pipe Temp. Install	
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			

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

No.	Description	2018		
		Jan	Feb	Mar
	Erection Key Date		1-Jan	1-Feb 8-Feb
A-09	Inside Baffle Plate & Seismic Tie Adjust / Setting			
A-10	SCR System			
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			

Sub-contractor's c

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

No.	Description	2018		
		Jan	Feb	Mar
	Erection Key Date			
		▼	1-Jan ▼	1-Feb ▼ 8-Feb ▼
		Sub-contractor's c →		
A-17	Painting			▼
A-18	Install Catalyst			
A-19	Steam Blowing out(other scope) & alkaline boiling out Installation of Temporary piping, Support & Silencer Exection of Steam blowing out Dismantle of Temporary iping, Support & Silencer Exection of Steam boiling out			
B	GT/ST/GEN PORTION			
B-1	Turbine O/H Crane			G-Assy&Lifting→In
B-2	Condenser	Prepare Temp. Rail	Pull In Shell	
		Ass'y of Skir		
		Pull In Condenser v		
		Body Ass'y t		
		Water box s		
		Water box s		

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

No.	Description	2018		
		Jan	Feb	Mar
	Erection Key Date			
			1-Jan	
				1-Feb
				8-Feb
		Sub-contractor's c		
				Dismantle fc
B-3	Install ST			
				Preparation of Sole Plate
B-4	Install GEN			
				Prepare Temp Rail
				Preparation of Sole Plate
				Install Seal oil unit
				Install Gas Control Unit

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

No.	Description	2018		
		Jan	Feb	Mar
	Erection Key Date			
			1-Jan	
				1-Feb
				8-Feb
		Sub-contractor's c		
B-5	Install GT			
				Prepare Temp Rail
				Preparation of Sole Plate
				Block No.5.6
B-6	Aux Equipment			
				Dismantle of
B-7	Insulation			
B-8	Painting			
B-9	Switchgear/Hoist/Hoist for condenser			
				Install Hoist / Load
				Hoist/Hoist rail for C

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

No.	Description	2018		
		Jan	Feb	Mar
	Erection Key Date			
		▼	1-Jan	
			▼	1-Feb
			▼	8-Feb
				▼
		Sub-contractor's c →		

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

No.	Description	2018		
		Jan	Feb	Mar
	Erection Key Date			
		▼	1-Jan ▼	1-Feb ▼
			▼	8-Feb ▼
C	ERECTION & INSTRUMENTATION PORTION			
C-1	Transformer & Ancillaries (G Tx, U Tx, Ex Tx, SFC Tx)			Main SFC ▼
C-2	EQUIPMENT INSTALLATION			
	Generator & Ancillaries			
	Isolated Phase Busducts			
	Switchgear and Accessories			
	UPS, Batterys, Battery Charger System & DBs			
	Electrical Panels & Local Control Panels			
	Control Systems, Control Panels, Local Instrument Cubicle & Rack			
	Channel Base Installation	●—————●		
C-3	CABLING SYSTEM INSTALLATION			
	Cable Ladder / Tray Installation			●
	Conduit Pipe Installation			
	Earthing Installation			
	Cable Laying & Termination			
	Fire Resistant Sealing			
	Cable Trench Opening & Transportation			

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

No.	Description	2018		
		Jan	Feb	Mar
	Erection Key Date			
		▼	1-Jan ▼	1-Feb 8-Feb ▼
		Sub-contractor's c →		
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			

Contract No. 15/8009 - Lamma Power Station Extension Foundation Works for Unit L11 - No.3 Control Building
Tentative Piling Sequence Programme

ID	Task Name	Duration	Start	Finish	
1					JAN-18
2	Bored Pile Construction	164 days	2017/11/29	2018/6/16	W2 W3 W4 W5 W6 W7 W8 W9 W10 W11 W12 W13
3					
4	Rig 1	116 days	2017/11/29	2018/4/20	
5					
6	BP6	38 days	2017/11/29	2018/1/13	
7	Excavation	13 days	2017/11/29	2017/12/14	
8	RCD Drilling	14 days	2017/12/15	2018/1/2	
9	Airlifting & koden test	2 days	2018/1/3	2018/1/5	
10	Rebar cage installation	5 days	2018/1/6	2018/1/12	
11	Concreting	1 day	2018/1/12	2018/1/13	
12					
13	BP5	38 days	2018/1/15	2018/3/2	
14	Excavation	15 days	2018/1/15	2018/1/31	
15	RCD Drilling	12 days	2018/2/1	2018/2/15	
16	Airlifting & koden test	2 days	2018/2/21	2018/2/23	
17	Rebar cage installation	4 days	2018/2/24	2018/3/1	
18	Concreting	1 day	2018/3/1	2018/3/2	
19					
20	BP1	38 days	2018/3/3	2018/4/20	
21	Excavation	15 days	2018/3/3	2018/3/21	
22	RCD Drilling	13 days	2018/3/22	2018/4/10	
23	Airlifting & koden test	2 days	2018/4/11	2018/4/13	
24	Rebar cage installation	4 days	2018/4/14	2018/4/19	
25	Concreting	1 day	2018/4/19	2018/4/20	
26					
27					
28					
29	Rig 2	116 days	2017/12/11	2018/5/3	
30					
31	BP2	39 days	2017/12/11	2018/1/25	
32	Excavation	14 days	2017/12/11	2017/12/27	
33	RCD Drilling	13 days	2017/12/28	2018/1/13	
34	Airlifting & koden test	2 days	2018/1/15	2018/1/17	
35	Rebar cage installation	5 days	2018/1/19	2018/1/24	
36	Concreting	1 day	2018/1/25	2018/1/25	
37					
38	BP3	38 days	2018/1/27	2018/3/15	
39	Excavation	14 days	2018/1/27	2018/2/12	
40	RCD Drilling	14 days	2018/2/13	2018/3/5	
41	Airlifting & koden test	2 days	2018/3/6	2018/3/8	
42	Rebar cage installation	4 days	2018/3/9	2018/3/14	
43	Concreting	1 day	2018/3/14	2018/3/15	
44					
45	BP4	37 days	2018/3/16	2018/5/3	
46	Excavation	15 days	2018/3/16	2018/4/8	
47	RCD Drilling	12 days	2018/4/7	2018/4/21	
48	Airlifting & koden test	2 days	2018/4/23	2018/4/25	
49	Rebar cage installation	4 days	2018/4/26	2018/5/2	
50	Concreting	1 day	2018/5/2	2018/5/3	
51					
52					
53	Interface Coring, Sonic Test & BD Full Coring	62 days	2018/4/16	2018/6/16	
54					
55	No. 3 Control Building 6 piles	52 days	2018/4/16	2018/6/16	
56					
57	Interface Coring & Sonic Test (Coring after at least 8 days of pile cast)	26 days	2018/4/16	2018/5/17	
58					
59	BA 14 Submission	7 days	2018/5/10	2018/5/18	
60					
61	BD Selection of Full Coring Piles (14 days after BA14 Submission)	14 days	2018/5/18	2018/6/4	
62					
63	Concrete Full Coring (2 piles)	10 days	2018/6/5	2018/6/16	

Piling Sequence Programme
 (18-12-2017)



Monthly Waste Flow Table for December 2017

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

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										
	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	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
Jan 2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Feb 2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Mar-2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Apr-16	-	-	-	-	-	-	-	-	-	-	-	-	-	-
May-16	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Jun-16	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Jul-16	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Aug-16	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sep-16	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Oct-16	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nov-16	1779.48	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Dec-16	0.00	1.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	20.48
Jan-17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.20	0.00
Feb-17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mar-17	3160.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.17	0.00	0.00	0.00	0.00	0.00
Apr-17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	65.84	0.00	0.00	0.00	0.00	0.00
May-17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	23.41	0.00	0.00	0.00	0.00	0.00
Jun-17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Jul-17	2988.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	17.26	0.00	0.00	0.00	0.00	0.00
Aug-17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	47.61	0.00	0.00	0.00	0.00	0.00
Sep-17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.04	0.00	0.00	0.00	0.00	0.00
Oct-17	1963.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.20	0.00
Nov-17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.90	0.00	0.00	0.00	0.00	0.00
Dec-17	3011.55	0.00	0.00	0.00	0.00	0.00	0.00	0.00	12.41	0.00	0.00	0.00	0.00	0.00
Jan-18														
Total	12902.46	1.43	0.00	0.00	0.00	0.00	0.00	0.00	190.64	0.00	0.00	0.00	0.40	20.48

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
12903.89 tonnes	190.64 tonnes	20.48 tonnes	400 Liters

- Where (A) Inert C&D materials include bricks, concrete, building debris, rubble and excavated spoil. In total, 12903.89 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 12903.89 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) 12410 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 2017

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

Contractor: Taihei Dengyo Kaisha, Ltd.

Record by: Marco Yip / Jason Wong

Year of Record: 2017

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 2017	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Feb 2017	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Mar 2017	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Apr 2017	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
May 2017	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Jun 2017	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Jul 2017	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Aug 2017	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sep 2017	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Oct 2017	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Nov 2017	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Dec 2017	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

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

Where (A) Inert C&D materials include bricks, concrete, building debris, rubble and excavated spoil. In total, 0.00 tonnes of inert C&D material were generated from the Project, of which 0 tonnes were reused in this and other contracts, and the remaining 0.00 tonnes were disposed as public fill to Fill Banks.

(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.

Monthly Waste Flow Table for December 2017

Project: Foundation Works for Lamna Power Station Extension Unit L11

Contractor: Sunley Engineering & Construction Co Ltd

Record by: Andy Fan

Year of Record: 2017

MM.YYYY	Actual Quantities of Inert C&D Materials Generated Monthly								Actual Quantities of Non-inert C&D Materials Generated Monthly					
	Excavated Materials			Non-excavated Materials					Metals (steel bar / metal strip) ⁽¹⁾	Metals (aluminum can) ⁽¹⁾	Paper / cardboard packaging ⁽¹⁾	Plastics ^{(1) & (4)}	Chemical waste (wasted lubricant oil/oil container)	Other, e.g. general refuse
	Disposed in Public Fill	Disposed in Sorting Facilities	Others (e.g. Reused in the Contract / Other Projects)	Broken Concrete or Construction Waste Collected by Recycled Company	Reused in the Contract	Reused in other Projects	Disposed in Public Fill	Disposed in Sorting Facilities						
(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in L)	(in '000kg)	
Nov-2016	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
Dec-2016	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
Jan-2017	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Feb-17	2029.38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.63
Mar-17	2790.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.26
Apr-17	7481.83	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.36
May-17	7690.38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.16
Jun-17	8808.56	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.01
Jul-17	11622.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.83
Aug-17	9403.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.69
Sep-17	3511.8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.30
Oct-17	1847.23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	280.00	0.00	0.00
Nov-17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Dec-17	1747.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	56931.77	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	280.00	0.00	31.24

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
56931.77 tonnes	0 tonnes	31.24 tonnes	280L

Where (A) Inert C&D materials include bricks, concrete, building debris, rubble and excavated spoil. In total, 56931.77 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 56931.77 tonnes were disposed as public fill to Fill Banks.

(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.