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.



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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)
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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.

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

Environmental Licensing and Permitting

Description	Permit No.	Valid Period		Issued To	Date of
		From	То		Issuance
Waste Disposal	Account No .:	06/10/16	-	Contractor	06/12/16
Billing Account	7026035				
Waste Disposal	Account No .:	28/12/16	-	Contractor	28/12/16
Billing Account	7026793				
Waste Disposal	Account No .:	20/04/17	-	Contractor	20/04/17
Billing Account	7027632				

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.

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Item	Construction Activities	Environmental Mitigation Measures
Unit L1	0 Civil and Buildir	ng Works
1.	Main Station Building (trench excavation and backfilling, installation of columns and beams, installation of pipes, formwork, steel fixing and concreting)	 Air 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. Noise Works conducted during holiday should comply with the valid CNP. Wastewater Wastewater should be treated in sedimentation pite
		and tanks before discharge. Solution should be added to speed up the sedimentation process. Sediment in pit and tanks must be removed regularly.
		Waste Management
		 Excavated soil was temporary stored for

 Table 1.1
 Construction Activities and Their Corresponding Environmental Mitigation Measures

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,	Air – All regulated machine attached with valid exception/approval NRMM labels.	
	water proofing)	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	
		 An 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 L1	0 Mechanical Erec	tion	
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 L1	0 Electrical, Instru	imentation & Control Erection
5.	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.
Unit L1	1 Piling Works – 1	No.3 Control Building
6.	Bored pile construction	 Air Dust suppression in the main haul road. Using ULSD for PMEs. Cover dusty stockpile with tarpaulin and water spraying. Noise General noise mitigation measures employed at all work sites throughout the construction phase. Waste Management Waste Management Plan submitted and implemented. Water All wastewater will be pumped to the sedimentation ponds for desilting process. After that, wasterwater 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.

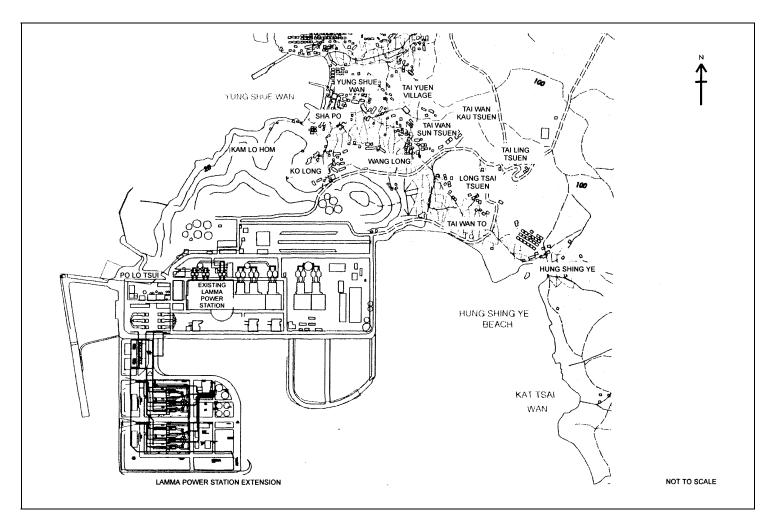


Figure 1.1 Layout of Work Site

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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.

-	-
Location I.D.	Description
AM1	Reservoir
AM2	East Gate
AM3	Ash Lagoon

 Table 2.1
 Air Quality Monitoring Locations

2.3 Monitoring Equipment

AM4

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.

Tai Yuen Village

Equipment	Model and Make
24-hour sampling:	
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.

Monitoring Stations	Parameter	Duration	Frequency
AM1	1-hour TSP	1	3 hourly samples every 6 days
AIVII	24-hour TSP	24	Once every 6 days
AM2	1-hour TSP	1	3 hourly samples every 6 days
AM2	24-hour TSP	24	Once every 6 days
4 1 4 2	1-hour TSP	1	3 hourly samples every 6 days
AM3	24-hour TSP	24	Once every 6 days
AM4	24-hour TSP	24	Once every 6 days

 Table 2.3
 Air Quality Monitoring Parameter, Duration and Frequency

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

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- 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:
 - o Operation Mode;
 - Frequency of the tapered element;
 - o Main flow;
 - o 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.

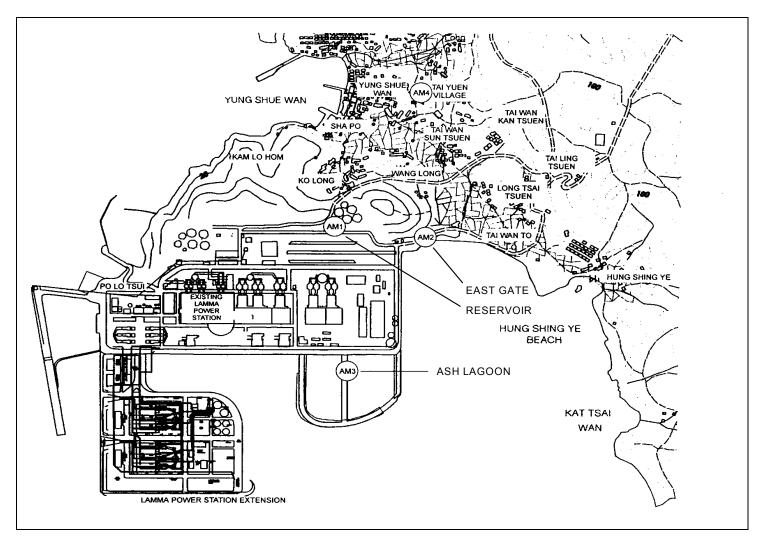


Figure 2.1 Location of Air Quality Monitoring Stations

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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.

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 3.2Noise Monitoring Duration and Parameter

Location Time Period Fre	uency Parameter
--------------------------	-----------------

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	Day-time: 0700-1900 hrs on normal weekdays	Day-time: 30 minutes	30-min L _{Aeq}
Ash Lagoon			
Chine Leve	Evening-time & holidays: 0700-2300 hrs on holidays; and 1900-2300 hrs on all	Evening-time & holidays: 5 minutes	5-min L _{Aeq}
Ching Lam	other days		
	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.

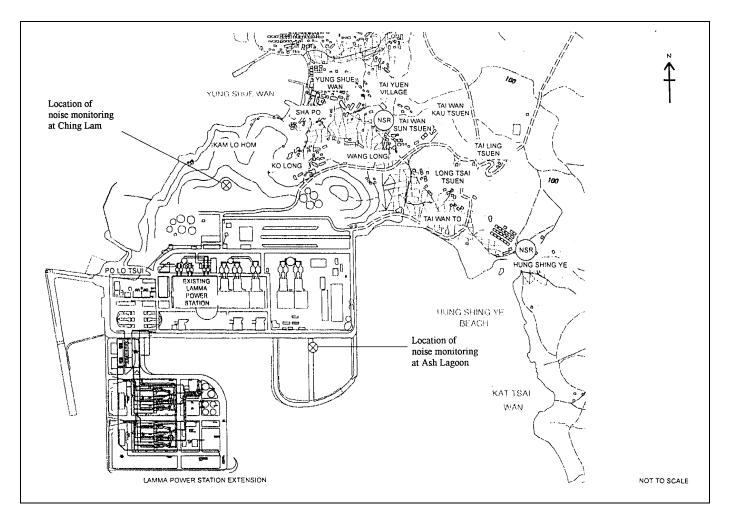


Figure 3.1 Location of Noise Monitoring Stations

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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.

Item	Parameter Monitored	Monitoring Period		No. ofEvent/Action Plceedances InImplementation	
			Action Level	Limit Level	and Results
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	

 Table 4.1
 Summary of AL Level Exceedances on Monitoring Parameters

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.

	Non-inert C&D Materials				
Total Inert C&D Waste 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		

Table 1.2	Estimated Amounts of Waste in December 201	7
Table 4.2	Estimated Amounts of waste in December 201	. /

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.

Description	escription Permit No. Valid Period		Highlights	Status	
-		From	То		
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

 Table 4.3
 Summary of Environmental Licensing and Permit Status

Description	Permit No.	Valid Period		Highlights	Status
I		From	То		
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.

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

Table 4.4Environmental Complaints Received in December 2017

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

1217allemna.doc

• 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

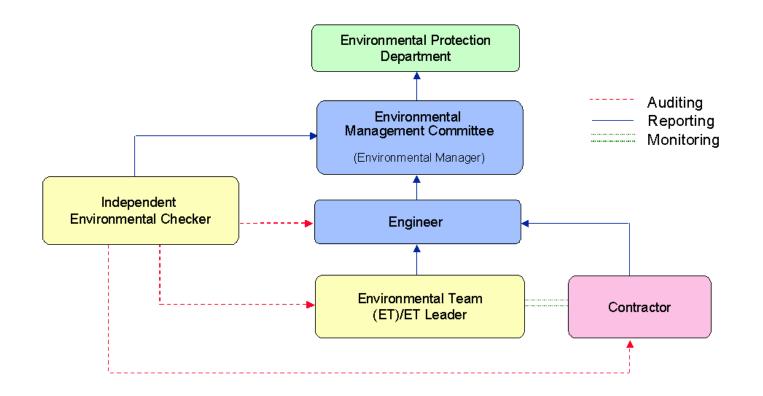


Figure A.1 Organisation of EM&A Programme at Construction Phase

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 Table
--

	Action Level, µg/m ³	Limit Level, µg/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 Pe	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 Manual noise monitoring at the nearest Pak Kok Tsui residences to cable landing points N4 and N5	When one or more documented complaints are received	 a. 75 dB(A) in L_{Aeq,30 min} (07:00-19:00 hrs on normal weekdays) (Note 1) 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 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 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

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

Table C.1Monitoring schedule for 24hr and 1hr TSP monitoring for Lamma
Extension Construction (December 2017 to March 2018)

APPENDIX D AIR QUALITY MONITORING RESULTS

Site: Lamma Power Station Extension

Month: December 2017

24 hour TSP Measurement:-

	TSP concentration ($\mu g/m^3$)				ather Informations of the second s		
Date	Reservoir (AM1)	East Gate (AM2)	Ash Lagoon (AM3)	Tai Yuen Village (AM4)	Mean Wind Speed (km/hr)	Prevailing Wind Dir. (°)	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.

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

1 hour TSP Measurement:-

Note:

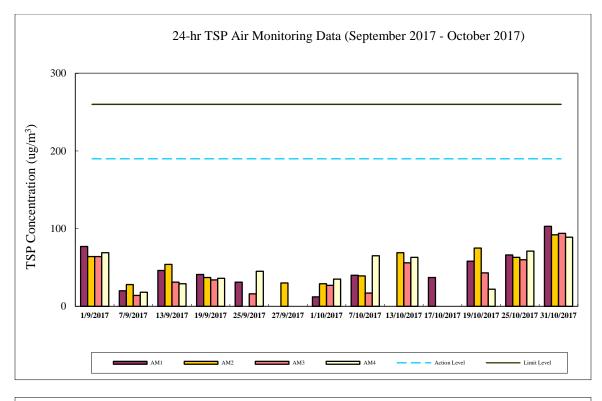
* - TSP monitoring at AM2 (East Gate) was suspended on 12/12/2017 due to the breakdown of the TEOM TSP sampler. Make-up 1-hr TSP sampling at AM2 was conducted on 14/12/2017.

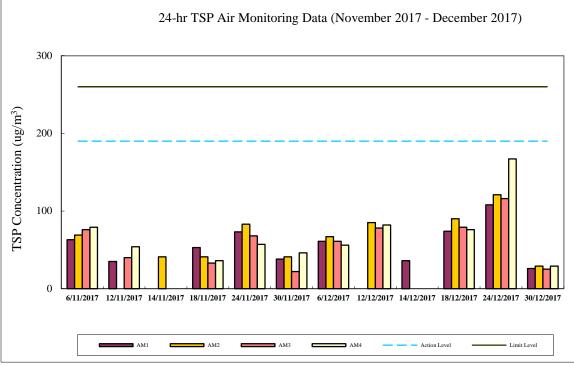
	1-hr TSP	24-hr TSP	
	$(\mu g/m^3)$	$(\mu g/m^3)$	
Action Level	340	190	
Limit Level	500	260	

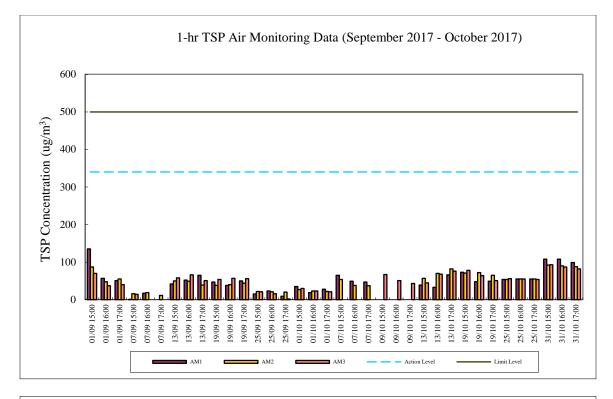
Calibration: Calibration details are shown in appendix F.

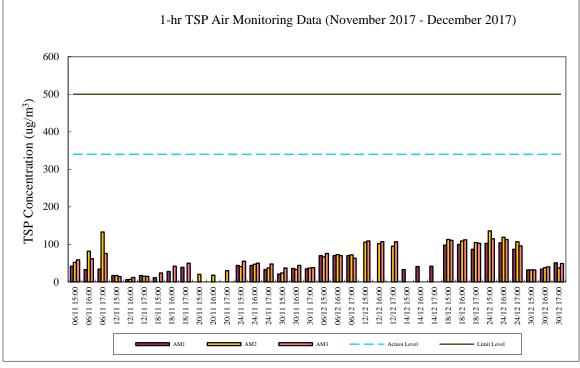
Equipment used:

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









Appendix E Continuous Noise Monitoring Results for December 2017

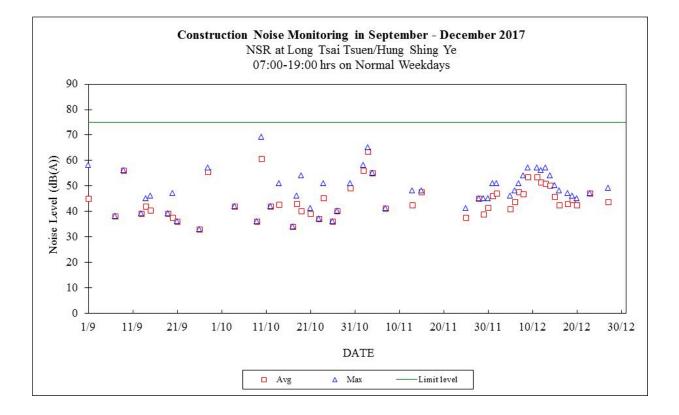
Site:	Lamma Power Station Extension Construction				
Measurement Location:	Ash Lagoon and Ching Lam				
Measurement Parameter:	30-min Leq (07:00-19:00 hrs on normal weekdays)				
	5-min Leq (07:00-23:00 hrs on holidays and				
	19:00-23:00 hrs on all other days, and 23:00-				
	07:00 hrs of next day)				
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)				

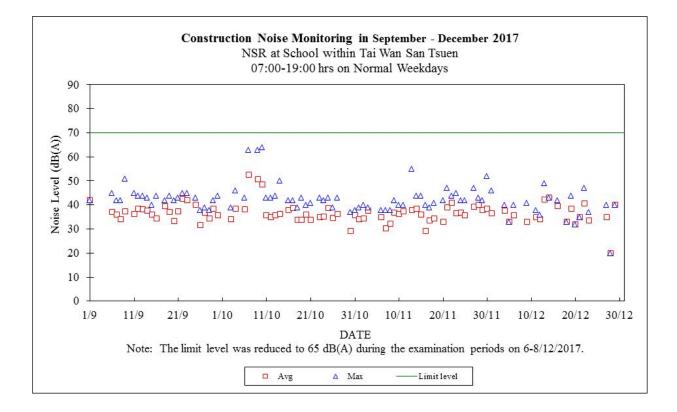
					Calcula	ated	
		Calcula	ated		Noise		
		Noise			Level a	at	
		Level a		Limit	NSR at	the	Limit
		NSR at	Long	Noise	school		Noise
Date	Time	Tsai	-	Level	within	Tai	Level
		Tsuen/H	-	(dB(A))	Wan Sar	ı	(dB(A))
		Shing Y (dB(A))			Tsuen		
		(UB(A)))		(dB(A))	1	
		Max	Avg		Max	Avg	
01/12/2017	07:00-19:00	51	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

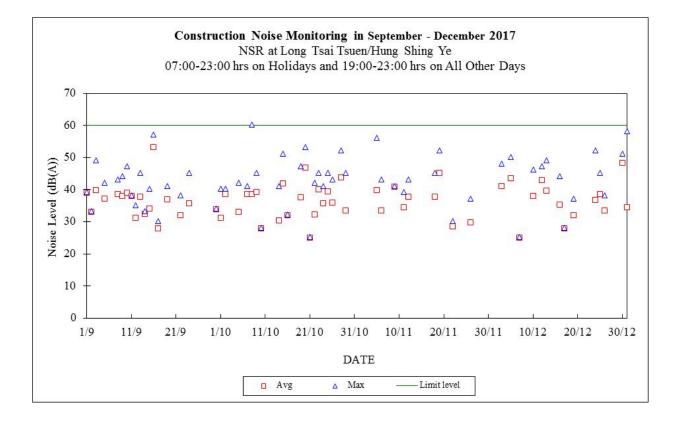
10/10/0017	10.00 00.00	4 17	4.2	60	41	24	60
12/12/2017	19:00-23:00	47	43	60	41	34	60
12/12/2017	23:00-07:00	45	37	45	42	34	45
13/12/2017	07:00-19:00	57	51	75	49	42	70
13/12/2017	19:00-23:00	49	40	60	40	36	60
13/12/2017	23:00-07:00	45	41	45	43	37	45
14/12/2017	07:00-19:00	54	50	75	43	43	70
14/12/2017	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			45 75	40	40	70
						-	
29/12/2017	19:00-23:00			60	36	31	60 45
29/12/2017	23:00-07:00	44	37	45	39	31	-
30/12/2017	07:00-19:00	 F 1		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

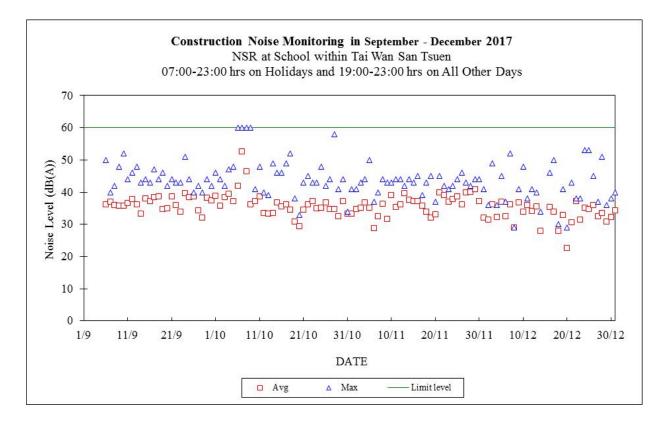
Note:

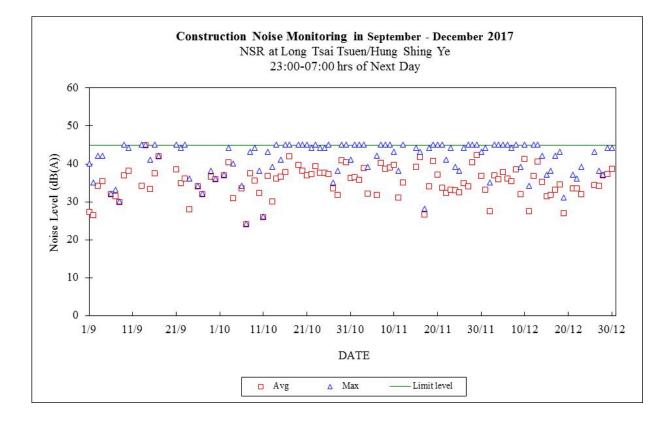
- a. "---" represents the measured noise monitoring data lower than the established notional background level/discarded under strong wind.
- b. Continuous noise monitoring was carried out at holidays & evening-time (07:00-23:00 hrs on holidays and 19:00-23:00 hrs on all other days) and night-time (23:00-07:00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

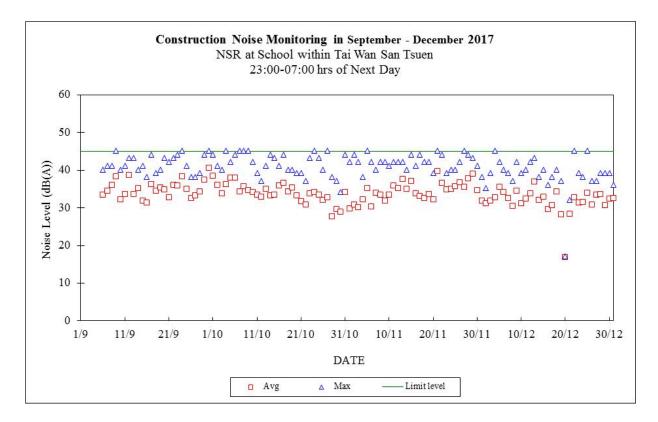












Appendix F

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		0	
		Reservoir (AM	1)	
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 (I/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	1	1	1				
Clean TSP Inlet	1	1	1				
Replace flow in-line filter	×	×	×				
Pump Repair	×	×	×				
Leak Check	×	×	×				
Flow audit	×	×	×				
Flow Controller Calibration	1	1	1				
A/C filter cleaning	1	✓	1				

Remarks:

<u>NA</u>

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:	<u>5.12</u>
After:	5.03

II. General Services

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

<u>Remarks</u>

Conducted by: WH MAN

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	Calibration Results	Deviation from
		Reference (dB)		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

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		

Table G.1Event and Action Plans for Air Quality

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

Table G.2Event and Action Plans for Construction Noise
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Exceedance	ET Leader	IEC	Engineer	Contractor
Action Level	I 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	Review Contractor's remedial actions / measures to ensure their effectiveness	Check Contractor's working methods and advise IEC and ET accordingly.	Submit proposals for remedial actions to Engineer.
		and advise the Engineer and ET accordingly.	Discuss with Contractor the remedial actions to be implemented.	Amend proposals if required by the Engineer.
	Discuss remedial actions required with	Verify the implementation of the remedial measures	Keep the Contractor informed of the efficacy of remedial actions.	Implement remedial actions immediately upon instruction from the Engineer.
	Engineer.		If the exceedance continues, consider what portion of the work is responsible and instruct the	If the exceedance continues, consider what portion of the work is responsible
	Increase manual monitoring frequency to assess efficacy of remedial measures.		Contractor to stop the portion of work until the exceedance is abated	and, as instructed by the Engineer, stop the portion of work until the exceedance is abated

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

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:	
	• the haul roads shall be sprayed with water to keep the entire road surface wet.	С
	• the load carried by vehicle shall be covered by impervious sheeting to ensure no leakage of dusty materials from the vehicle.	С
	• the heights from which fill materials are dropped shall be controlled to a practical level to minimise the fugitive dust arising from unloading.	С
A2	For the concrete batching plant, the following control measures are recommended:	
	• loading, unloading, handling, transfer or storage or any dusty materials shall be carried out in a totally enclosed system.	С
	• The materials which may generate airborne dust emissions shall be wetted by water spray system.	С
	• All receiving hoppers shall be enclosed on three sides up to 3m above unloading point.	С
	All conveyor transfer points shall be totally enclosed.	С
	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
В5	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: **	N/A
	 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. 	

EM&A Log Ref.	Mitigation Measures	Implementation Status
B7	In addition to the above specific measures the following general working procedures shall be adopted. **	
	• fully-enclosed or watertight grabs shall be used to minimise loss of sediment during the raising of loaded grabs through the water column;	N/A
	• the descent speed of grabs shall be controlled to minimise the seabed impact speed and to reduce the volume of over dredging;	N/A
	• barges shall be loaded carefully to avoid splashing of material;	N/A
	• 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;	N/A
	• 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;	N/A
	• the speed of trailer dredgers shall be controlled to prevent propeller wash from stirring up the sea bed sediments;	N/A
	• "rainbowing" sand fill from trailer dredgers shall not be permitted; and	N/A
	• the works shall cause no visible foam, oil, grease or litter or other objectionable matter to be present in the water within and adjacent to the dredging site and along the route to the disposal site.	N/A
B8	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.	N/A
	NOISE	
C1	General noise mitigation measures shall be employed at all work sites throughout the construction phase.	С
C2	Mitigate against general construction noise during Sunday's and public holidays, either at source with portable noise barriers, or by rescheduling of some PMEs to less sensitive time periods.	С
C3	Mitigate against night time noise from dredging equipment, with silencers or mufflers. **	N/A
		Γ
	LANDSCAPE & VISUAL IMPACTS	
D1	The following mitigation measures shall be allowed for landscape and visual improvement:	
	• Use rubble mound seawall along south and west edges of the reclamation to provide a more natural look.	С
	• Break the mass of main buildings by varying the height/division into smaller units.	С
	Plant trees and vegetation for screening.	C C

		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.	С
	Dredging Waste	
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
	Storage, Collection and Transport of Waste	
E3	• Minimise windblown litter and dust during transportation by either covering trucks or transporting wastes in enclosed containers.	С
	• 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
	• Disposal of waste at Licensed sites;	С
	• 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;	С
	 Segregate and sort the waste materials into 3 categories: public fill (e.g. concrete and rubble) for re-use on-site or disposal at a public filling area; 	С
	 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.	С
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	С
	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
С	-	Compliance with mitigation measure
NC	-	Non-compliance with mitigation measure
N/A	-	Not Applicable

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

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Appendix J

	01/08/17
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ice Building B1 - Area C1&2 incl. all UG structures	s & Tamp Access for Empolver's

ID	Task Name	Duration	Start	Finish	-		_ ·
55	Template setting of holding down bolts at HRSG Column Base	45 days	16/08/17	29/09/17	Jan		Feb
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			
30	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			
51	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 El No. 6)	197 days	29/01/17	14/08/17			
67	Consent and BA10 Submissions	0 days	29/01/17	29/01/17			
58	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			
'4	Complete site clearance by HKE	0 days	01/11/16	01/11/16			
'5	Demolish of existing site office	21 days	01/11/16	21/11/16			
6	BA 10 Application	0 days	01/11/16	01/11/16			
7	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			
0	Construction of pad footing, bearing wall, columns up to G/F	45 days	03/12/16	16/01/17			
31	Chinese New Year	10 days	27/01/17	05/02/17			
32	Backfill & UG Drainage within Building	75 days	17/01/17	01/04/17			
3	Backfill & Blinding	4 days	02/04/17	05/04/17			
34	Construct G/F on-grade slab & External Scaffold Erection	12 days	06/04/17	17/04/17			
35	RC Walls, Columns and Slab up to 1/F	100 days	18/04/17	26/07/17			
36	RC Walls, Columns and Slab up to R/F	40 days	13/07/17	21/08/17			
57 10	Parapet Wall, FS Water Tank, Top Roofs + RC curb, hatch door etc	21 days	22/08/17	11/09/17			
8	Waterproofing for Liift pit + Water test	14 days	15/08/17	28/08/17			
9	G/F Window, Louvre, Doors Frame & Shutter Frame	30 days	26/08/17	24/09/17			
0	G/F Finishing Works	45 days	09/09/17	23/10/17			
)1	G/F Plumbing & Drainage Works	30 days	09/10/17	07/11/17			
2	G/F Sanitary Fitting and Cubicles	30 days	30/10/17	28/11/17			
)3	G/F Other sundry metal, railing, etc	45 days	24/10/17	07/12/17	(10000000000000000000000000000000000000		
94	G/F Placing Furnitures	10 days	21/01/18	30/01/18			
95 96	1/F Window, Louvre & Door Frames	30 days	21/09/17	20/10/17			
	1/F Finishing Works	45 days	05/10/17	18/11/17			
97 98	1/F Plumbing, Sanitary Fittings & Drainage Works	21 days	04/11/17	24/11/17			
98 99	1/F Other sundry metal, railing, etc	60 days	21/10/17	19/12/17			
99 00	R+UR/F Waterproofing Installation + Testing	45 days	03/10/17	16/11/17			
00	R/F Finishing Works (incl. Water Tank & FS Pump Room) R/F Plumbing Works	45 days	03/10/17	16/11/17 30/11/17			
01	R/F Plumbing Works R/F Sundry Metal, Handrail & Glazed Railing	14 days 30 days	17/11/17	30/11/17			
02 03	Installation of Door a& Shutter leafs	-	17/11/17				
03 04	Handover of lift shaft	30 days	28/08/17	16/12/17 28/08/17			
04	Lift Installation + EMSD Inspection + Issue of Lift Cert	0 days	28/08/17	26/08/17			
		90 days	29/00/17	20/11/17	Π h		<u> </u>
6_8	Critical Split Task	Split		Mile	estone 🔶 Summary 🖵		

Appendix J

	01/08/17
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IV	

<i>.</i>	Task Name	Duration	Start	Finish		
3	Electrial Installation	85 days	24/10/17	16/01/18		
	Fire Service Installation	85 days	24/10/17	16/01/18		
_	MVAC Installation	85 days	24/10/17	16/01/18		
	Testing & Commissioning Works	10 days	07/01/18	16/01/18		
_	External Wall Finishing Works	45 days	03/10/17	16/11/17		
	Removal of Scaffolding	14 days	17/11/17	30/11/17		
	External UG P&D and Road Works	100 days	22/08/17	29/11/17		
	WWO046 Completion	0 days	22/00/17	29/11/17		
		-	16/01/18	16/01/18	16/01	
	FSD Inspection	0 days	17/01/18			
	Submit BA 13 Inspection	14 days		30/01/18	31/01	
) ,	Expected OP Issue	0 days	31/01/18	31/01/18	- 31/01	
7	Section B1 - Area C1&2 incl. all UG structures & Temp. Access for Empolyer's Specialist	277 days	10/05/17	10/02/18		
3	C.W. Culvert System (Area C1 & C2) (~160m)	277 days	10/05/17	10/02/18	-	
	Excavation to Formation Level (+1.1mPD)	18 days	10/05/17	27/05/17		
	Construction of Binding & Plinth	14 days	19/05/17	01/06/17		
	Pile Laying	14 days	02/06/17	15/06/17		
	Thrust Box + Manhole Construction	14 days 14 days	16/06/17	29/06/17		
	Water Test	-	30/06/17	29/06/17		
	Backfill	4 days	04/07/17	10/07/17	-	
		7 days			-	
_	Return area to Sunley for L11 piling	120 days	11/07/17 08/11/17	07/11/17 21/11/17		
	Cutting Sheet pile	14 days				
	All underground Utilities	60 days	22/11/17	20/01/18		
3	Backfill & Reinstatement & Formation of Access	60 days	13/12/17	10/02/18		
9	Supporting Structure for Overhead Crane	30 days	16/12/17	14/01/18		
)	Section B2 - Surcharge relocation & assoicated top-up works	229 days	17/05/17	31/12/17		
1	Roadworks and External Works	229 days	17/05/17	31/12/17		
2	Surface Drainage Modification	60 days	17/05/17	15/07/17		
3	Remove of Surcharge Fill (~21500 m3)@ Area C2, C10 & C15 to Area B1, B2, D2, D3 and D4	45 days	01/09/17	15/10/17		
84	Construction of Access Road	60 days	16/10/17	14/12/17		
5	Existing Band Drains Cut-down (2520 nos)	90 days	03/10/17	31/12/17		
6	Section C - Area C3, HRSG & MSBU10 for Empolyer's Specialist	499 days	01/11/16	14/03/18		
7	HRSG Area Equipment Rm & Fdn - South (Area C7)	201 days	02/07/17	18/01/18		
8	Excavation to Formation Level	14 days	02/07/17	15/07/17		
9	Pile Head Treatment	14 days	16/07/17	29/07/17		
0	Pile Cap & Tie Beam - GL 10-H to 10H-H, 10-H5 to 10-9	60 days	23/07/17	20/09/17		
1	Pit Constructions	30 days	22/08/17	20/09/17		
2	All Underground Utilities	60 days	21/09/17	19/11/17		
3	Backfill & Reinstatement & Formation of Access Road	60 days	20/11/17	18/01/18		
4	HRSG Equipment Room	175 days	21/09/17	14/03/18		
5	Plate Load Test	10 days	21/09/17	30/09/17		
.0 .6	Underground Drainage	14 days	01/10/17	14/10/17		
0 7		•	15/10/17	01/11/17	-	
7 8	HRSG Equipment RM Foundation + Backfill	18 days			-	
	Construct G/F	14 days	02/11/17	15/11/17	-	
9	Roof Construction	24 days	16/11/17	09/12/17		
0	Parapet Wall	14 days	10/12/17	23/12/17		
1	ABWF Works	30 days	14/01/18	12/02/18		
2	Building Service Installations	30 days	13/02/18	14/03/18		(
3	Ready for BA 13 Application	0 days	14/03/18	14/03/18		
1	Main Station Building Fdn, G/F &1/F	409 days	01/11/16	14/12/17		
5	Installation of Dewatering Well & King Post for Type A	14 days	01/11/16	14/11/16		
6	BD Consent for ELS Phase I MSBU10 Foundation	0 days	23/12/16	23/12/16		
7	BD Consent for ELS Phase II MSBU10 Foundation	0 days	13/01/17	13/01/17		
8	Turbo Block (Col portion)	21 days	22/08/17	11/09/17		
	Turbo Block (Upper Portion) for handover to erection contractor	30 days	12/09/17	11/10/17		

Appendix J 01/08/17 Mar Ready for BA 13 Applicati

laot	No. 16/8002 Lamma Power Station Extension Civil and Building Unit L10		16_8002 Rev4	Master Progra
ID Tas	sk Name	Duration	Start	Finish
60	Substructure & G/F- GL SC1 to 10-F, 10-1 to 10-6	307 days	24/12/16	26/10/17
61	Excavation to Formation Level (Tx Bay Area + upto 10-D)	14 days	24/12/16	06/01/17
62	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
64	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
167 168	CEP Drain Pit /Sump Pit Construction	14 days	25/06/17	08/07/17
169	Arrival of CW Culvert piping materials incl. flexible joint & other cast in materials Construction of Culvert Outlet Box (1st pour)	0 days	30/12/16 25/06/17	30/12/16 12/07/17
170	Construction of Tie Beam/ Ground Beam + Outlet Box 2nd Pour	18 days	13/07/17	21/08/17
171	Construction of Culvert Inlet Box & Ground Beams	40 days 45 days	22/08/17	05/10/17
172		-	06/10/17	26/10/17
173	Backfill + Slabs & Drainage at G/F Area Turbo Block Foundation (1st portion) + Temp work	21 days 35 days	18/07/17	26/10/17 21/08/17
73	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	07/01/17	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
	Section D - Remaining of MSBU10, HRSG, A&A at L9 & L8, CW Pump Equip. Rm No.	419 days	29/03/17	21/05/18
	4 Ext. & Demolish Site Toilet			
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
0.000	2 Rev4 Master Progra Critical Split	Split		Mil
				IV/III

10 Underground IU/A Screentor of Access 20 doing 207/17 1000016 Wins Stauding - Unit LO Superstructure 26 days 00/10/17 27/11/17 1000016 10000016 1000016 1000	ID T	ask Name	Duration	Start	Finish				
101 Main Station Building- Unit Lt0 Superstructure 228 days 0.991/017 2100076 201 Steel Beam Erstoln 19 days 311/0177 771/1177 201 Steel Beam Erstoln 10 days 181/0177 771/1177 201 Steel Beam Erstoln 10 days 181/1177 771/1177 201 Steel Beam Erstoln 10 days 181/1177 771/1177 202 Steel Beam Erstoln 10 days 081/1177 771/1177 202 Steel Beam Erstoln 10 days 081/1177 771/1177 202 Steel Beam Erstoln 10 days 081/117 771/1177 203 Steel Beam Erstoln 10 days 061/117 771/1177 204 Steel Beam Erstoln 10 days 061/117 771/117 203 Steel Roof Trues Restol to 104 and 10-21 to 10-4 60 days 061/117 171/117 203 Steel Roof Trues Restol to 21 rans Bit & Nut 21 days 21 days <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th>Jan</th> <th></th> <th>Feb</th>							Jan		Feb
20/F		-	-						
P29 Steel Beam Encation 10 days 91/01/1 27/11/1 P20 R.C. Structure Construction 10 days 191/11/1 07/21/11 P21 Steel Beam Encation 10 days 291/11/1 07/21/11 P22 Arr. Steel Beam Encation 10 days 291/11/1 07/21/11 P22 Arr. Beam Encation 10 days 291/11/1 07/21/11 07/21/11 P23 Steel Beam Encation 10 days 091/21/1 291/11/1 07/21/11 07/21/11 P24 Arr. Beam Encation 10 days 091/21/1 291/11/1 07/21/11 P25 Steel Roof Trues Encation 60 days 09/01/1 27/01/11 07/01/11 07/01/11 P26 Steel Roof Trues Encation 21 days 12/11/11 10/01/11 07/01/11 0			-			-			
191 R. C. Structure Conservation 10 drays 1911/117 2771/17 292 Sile Beam Fraction 15 drays 1911/17 0971/17 293 Sile Beam Fraction 15 drays 001/17 2911/17 203 AF 18 drays 002/17 2911/17 203 AF 18 drays 002/17 2911/17 203 AF 18 drays 002/17 2911/17 204 Size Beam Erection 16 drays 002/17 1911/17 205 Size Roof Trace Fraction and the 10-2 to 10-6 16 drays 2011/17 1001/16 205 Size Roof Trace Fraction + 2d Trace Board 24 drays 2011/17 1401/16 1000000000000000000000000000000000000		-				_			
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2020 SFR Red except CL 10-Go 10 Hand 10-2 to 10-G 168 days 05/10/17 03/12/17 2021 Stead Root Truss Floation + 2d Truss Bit 8 Aut 25 days 04/12/17 70/11/8 2023 Stead Root Truss Floation + 2d Truss Bit 8 Aut 25 days 04/12/17 70/11/8 2023 Stead Root A Carne Rane Elevation 21 days 25/12/17 14/01/18 2024 Stead Construction 45 days 10/11/17 13/01/18 2025 Upper root RC construction 45 days 05/01/18 04/02/18 2026 Deper root RC construction 45 days 05/01/18 04/02/18 2026 External Root Free/ine Installation to S. Steel Works 120 days 20/12/17 13/01/18 2027 Otabe Transhot 120 days 20/12/17 12/04/18 10/04/18 2028 External Root Free/ine Installation 15/0 days 20/12/17 12/04/18 10/04/18 2038 External Root A Carne Root Root Root Root Root Root Root Roo			•			-			
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229 Sheel Roof & Crane Ruil Erection 21 days 24 days 1401/16 230 Sub Construction 21 days 187/217 31/01/16 231 Upper Roof - Steel Roof Erection 21 days 05/02/18 21/03/18 232 Upper Roof - Steel Roof Erection 21 days 05/02/18 21/03/18 232 Calling Sortidoling A Fandoline Installation to S. Steel Works 12 days 20/12/17 18/01/18 233 Calling Sortidoling A Fandoline Installation to S. Steel Works 12 days 20/12/17 22/04/18 234 Calling Sortidoling A Fandoline Installation to S. Steel Works 15 ddays 24/01/17 21/04/18 235 Destallation 15 ddays 24/01/17 21/04/18 21/04/18 236 Calling Sortidoling A Fandoline Installation to S. Steel Works 15 ddays 22/04/18 05/05/18 236 Cable & Pipe Trach (26 Arces) 45 days 22/04/18 05/05/18 05/05/18 236 Ack Works 10 days 02/09/17 23/04/18 20/04/18 02/04/18 237 MSb Unitl.3 - AA 12 days 23/06/17 23/04/17 23/04/17 <td></td> <td>·</td> <td>-</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>		·	-						
220 Sibb Construction 45 days 18/17/1 3/10/1/8 221 Upper roof Roof Tection 12 days 15/01/18 400/18 2/10/18 222 Upper roof RC construction 15 days 0/16/18 2/10/18 400/18 223 Staircase Constructions 17 days 2/10/17 13/0/18 400/18 224 Celling Scaffolding & Fencialle Installation to S. Steel Works 120 days 2/11/17 12/04/18 400/18 225 External ABWE Vorks 150 days 14/11/7 12/04/18 400/18 400/18 400/18 226 Cable Streach (read CS Aco) 61 days 2203/18 0/16/18 21/06/18 400/18 21/06/18 400/18 400/18 21/06/18 400/18 21/06/18 400/18 21/06/18 400/18 21/06/18 400/18 21/06/18 400/18 21/06/18 400/18 </td <td></td> <td></td> <td>-</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>			-						
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223 Upor or off C construction 45 days 6.210.011 2.100.018 1			-					9	
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228 Internal ABAP Works 150 days 24111/7 1204/18 100 100 238 BS Installation 175 days 22103/18 2106/18 2106/18 100 100 239 BS Installation 175 days 22103/18 2105/18 2105/18 0505/18 244 Cable R Pipe Trench (CS Area) 45 days 07/04/18 2105/18 0505/18 244 Hack-off Lan Concrete 60 days 0800/18 2204/18 0400/18 0400/18 243 Pipe Rack Support Construction 45 days 0200/17 30/12/17 30/12/17 244 Mack-off Lan Concrete 00 days 2200/18 0200/17 30/12/17 245 A&A Works 120 days 0200/17 30/12/17 20/06/17 30/02/17 246 CW. Pump Equipment Roon 14 days 29/06/17 11/06/17 21/01/17 247 France Ratal Stalling 00 days 13/00/17 11/06/17 21/01/17 248 Tree Transplant Stalling 00 days 13/00/17 11/06/17 11/06/17 250 Rowte Stalling stal			-						
329 Binstallation 175 days 22/03/18 20/03/18 20/03/18 328 275kV Cable Trench (Cs Area) 45 days 22/03/18 25/03/18 25/03/18 20/03/17 20/03/17			-						
239 275KV Cable Trench (Area CS AC6) 61 days 22/03/18 21/05/18 240 Cable S Pipe Trench (Area CS Area) 45 days 22/03/18 21/05/18 240 Cable Tranch (CS Area) 45 days 07/01/18 22/03/18 21/05/18 241 MSB UnitL3 - ASA 106 days 08/01/18 22/03/18 22/03/18 21/05/18 242 Hack-Off Lan Concrete 60 days 08/01/18 22/04/18 08/01/18 08/01/18 08/01/18 08/01/18 08/01/18 08/01/18 08/01/18 08/01/18 08/01/18 08/01/18 08/01/18 08/01/18 08/01/18 08/01/18 08/01/17 08/01/18 08/01/17 01/01/18 08/01/17 01/01/01/17 01/01/01/17 01/01			-						
239 Cable & Pipe Trench (C5 Area) 45 days 2203/18 05/05/18 240 Cable Trench (C6 Area) 45 days 07/04/18 21/05/18 241 MSB Unit12 - A&A 105 days 08/01/18 22/04/18 242 Hack-oft Lean Concrete 60 days 08/01/18 08/03/18 22/04/18 242 Hack-oft Lean Concrete 60 days 02/09/17 30/12/17 30/12/17 244 MSB Unit12 - A&A 120 days 02/09/17 30/12/17 30/12/17 245 AAA Works 120 days 02/09/17 30/12/17 30/12/17 246 Removal of RC fin from existing CW Pump Room 14 days 28/06/17 12/07/17 247 BA 10 Application 0 days 13/07/17 11/08/17 12/08/17 12/07/17 249 Tree Transplant & falling 30 days 13/07/17 11/08/17 13/00/17 13/00/17 13/00/17 250 Excavation & Raft Footing 45 days 12/01/17 11/02/17 11/02/17 11/02/17 11/02/17 11/02/17 11/02/17 11/02/17 11/02/17 12/02/17 12/			-						
240 Cabio Trench (C6 Area) 45 days 07/04/18 21/05/18 241 MSB UnitL9 - A&A 105 days 08/01/18 22/04/18 242 Hack-oft Lean Concreta 60 days 08/01/18 22/04/18 243 Pipe Rack Support Construction 45 days 09/03/18 22/04/18 244 MSB UnitL3 - A&A 120 days 02/09/17 30/12/17 245 AAA Works 120 days 02/09/17 30/12/17 246 C.W. Pump Equipment Room 14 days 28/06/17 12/07/17 247 BA 10 Application 0 days 28/06/17 12/07/17 248 Removal of RC fin from existing CW Pump Room 14 days 12/07/17 11/08/17 250 Excavation & Raft Footing 25 days 12/07/17 13/07/17 11/08/17 251 Underground Drainage + Backfill 18 days 12/07/17 13/01/17 13/01/17 252 Construct G/F 14 days 14/01/17 13/01/17 13/01/17 13/01/17 253 ABWF Works 40 days 21/01/17 13/01/18 13/03/18 13/03/18			-			-			
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268 Pipe Laying & Thrust Box 60 days 05/10/17 03/12/17	266	Install ELS Phase 1 + consent	60 days	07/07/17	04/09/17	1			
	267	Excavation & Blinding & Construct Plinth	-	05/09/17	04/10/17	1			
	268	-	-	05/10/17	03/12/17	1			
	269	Water Test and Backfill	14 days	04/12/17	17/12/17	1			

Appendix J

	01/08/17
 Mar	

ID	Task Name	Duration	Start	Finish	
70	Underground UU and Reinstatement	120 days	18/12/17	16/04/18	Jan Feb
71	Install ELS Phase 2 + consent	21 days	15/08/17	04/09/17	
72	Blinding & Concrete Plinth	30 days	05/09/17	04/10/17	
73	Pipe Laying and Thrust Box	45 days	04/12/17	17/01/18	
74	Water Test & Backfill	14 days	18/01/18	31/01/18	
75	Underground UU and Reinstatement	120 days	01/02/18	31/05/18	
76	Section F - Urea Storage & Handling Factilies	488 days	01/05/17	31/08/18	
77	Urea Handling & Storage Plant House, Electrical Room & Pipe Rack	488 days	01/05/17	31/08/18	
78	BA 10 Application	7 days	01/05/17	07/05/17	
79	Excavation to Formation Level	10 days	26/09/17	05/10/17	_
80	Plate Load Test	14 days	06/10/17	19/10/17	-
81 82	Raft Foundation (Urea Handlng Rm + Ele Rm)	30 days	20/10/17	18/11/17	
62 83	Backfill Construct G/F	21 days 21 days	19/11/17 10/12/17	09/12/17 30/12/17	
63 84	Roof Construction	90 days	31/12/17	30/12/17	
85	Parapet Wall	14 days	31/03/18	13/04/18	
86	ABWF Works	60 days	14/04/18	12/06/18	-
87	Building Service Installations	80 days	13/06/18	31/08/18	-
88	Ready for BA 13 Application	0 days	31/08/18	31/08/18	-
89	Plate Load Test	14 days	06/10/17	19/10/17	
90	Pipe Rack Foundation	28 days	20/10/17	16/11/17	
91	Supporting Tower (4 no.) (9.55m in Height)	60 days	17/11/17	15/01/18	
92	Pipe Rack Truss (3 no.)17.3m Span	60 days	16/01/18	16/03/18	
93	Section G - Demin. Plant Road & Modification at No. 4 CW Intake	273 days	01/01/18	30/09/18	
94	C.W Culvert System (Area C9b)	273 days	01/01/18	30/09/18	
95	Site possession	0 days	01/01/18	01/01/18	01/01
96	Removal of paving block & ELS Installation + consent	60 days	01/01/18	01/03/18	
97	Excavation to Formation Level with ELS Installation	30 days	02/03/18	31/03/18	
98	Construction of Blinding & Plinth	21 days	01/04/18	21/04/18	
99	Pipe Laying (2 pipes x ~45m)	30 days	22/04/18	21/05/18	
00	Construction of Thrust Box	14 days	22/05/18	04/06/18	
01	Water Test	7 days	05/06/18	11/06/18	
02	Backfill	16 days	12/06/18	27/06/18	_
03	All underground Utilities	50 days	28/06/18	16/08/18	
)4)5	Backfill & Reinstatement & Formation of Access	45 days	17/08/18	30/09/18	
)5)C	Modification Works - No. 4 C.W. Intake & No.3 C.W. Outfall	183 days	01/04/18	30/09/18	-
06 07	No. 3 C.W. Outfall Modification	90 days	01/04/18	29/06/18	
)//)8	No. 4 C.W. Intake Modification	90 days	03/07/18 21/05/18	30/09/18 15/11/18	
)9	Section H1 - Gas Support foundation & trench at Area C11 GRS Support Foundation	179 days 179 days	21/05/18	15/11/18	-
10	Temporary Protection, advance work etc	14 days	21/05/18	03/06/18	
1	Gas Pipe Footing	165 days	04/06/18	15/11/18	-
2	Gas Pipe Trench	90 days	18/08/18	15/11/18	-
3	Section H2 - GRS Improvement work at Area C10	441 days	01/09/17	15/11/18	
4	GRS Area Improvement Works	441 days	01/09/17	15/11/18	
5	Retaining Wall Construction	90 days	01/09/17	29/11/17	
16	Removal of Surcharge and Backfill	45 days	30/11/17	13/01/18	
17	Footing Construction	240 days	14/01/18	10/09/18	-
18	Topping up, finish and Misc. Works	66 days	11/09/18	15/11/18	
19	Section H3 - L10 Chimney Flue and A&A L9	318 days	01/01/18	15/11/18	
20	No.4 Chimney Steel Flue	318 days	01/01/18	15/11/18	
21	Consent, documentation and site preparation	0 days	01/01/18	01/01/18	01/01
22	Steel Flue Preparation & installation	150 days	02/01/18	31/05/18	
23	Install Steel Cover at Windshield	45 days	01/06/18	15/07/18	
24	Install Steel Cover at Roof	30 days	16/07/18	14/08/18	
25	Modification & Reinstatement Works	55 days	15/08/18	08/10/18	

Appendix J

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עו	Fask Name	Duration	Start	Finish	Jan Feb
326	E & M Installation	38 days	09/10/18	15/11/18	Jan Peb
327	L9 A&A	120 days	19/07/18	15/11/18	
328	Section I1 - Link Bridge & associated A&A	94 days	01/01/18	05/04/18	
329	Link Bridge	94 days	01/01/18	05/04/18	
330	Design & Shop Drawings	0 days	01/01/18	01/01/18	01/01
331	Site preparation	14 days	02/01/18	15/01/18	
332	Link Bridge between Unit L9 & L10	60 days	05/02/18	05/04/18	
333	Section I2 - Shunt Reactor SR4 Foundation	90 days	01/01/19	31/03/19	_
334	Shunt Reactor Compound SR4	90 days	01/01/19	31/03/19	
335 336	Modification Work at Shunt Reactor SR4 Section I3 - All remaining work except deferred works	90 days 417 days	01/01/19 08/02/18	31/03/19 31/03/19	
337	Remaining Works	417 days 417 days	08/02/18	31/03/19	
338	Demolition of Canopy @ Jetty Guard Hose & Toilet)	30 days	02/08/18	31/03/19	_
339	Demolition of Existing Contractor Shed	60 days	02/08/18	30/10/18	-
340	Seurity Fence Erection	20 days	31/10/18	19/11/18	
341	All External Works & Road Works	417 days	08/02/18	31/03/19	
342	Deferred Works - L10 MSB and HRSG	395 days	02/03/18	31/03/19	
343	Construction of L10 MSB Roof BetweenGL 10-G to 10-H and 10-2 to 10-6 After the Overhead Crane Installation	30 days	02/03/18	31/03/18	
344	Construction of Walls and Ceilings of Lube Oil Tank Room at L10 MSB	92 days	01/05/18	31/07/18	
345	Construction of Walls of L10 MSB Below Level +18mPD along GL10-6 form GL10-F to 10-H and Walls of L10 MSB along GL10-H from GL10-5 to 10-6 including the associated Building Elements	92 days	01/05/18	31/07/18	
346	Construction of Walls of L10 MSB Below 1/F along GL10-6 from GL10-B to10-C and the associated Staircases including the Enclosure Walls between G/F and 1/F.	184 days	01/05/18	31/10/18	
347	Construction of Internal Partition Wall at 1/F of L10 MSB along GL10-C from GL10-2 to 10-3	32 days	15/05/18	15/06/18	
348	Removal of Temporary Paving Within L10 HRSG Area to Expose all respective Equipment Foundations	14 days	01/08/18	14/08/18	
349	Construction of Foundation Plinths and Walls of Lube Oil Storage Tank	93 days	15/08/18	15/11/18	
350	Construction of Metal Fence and the associated Fire Services Installations and Installation of Removable Shelter Transformer Area	121 days	01/12/18	31/03/19	
351	Deferred Works - External Works	182 days	01/10/18	31/03/19	
352	Final Reinstatement of Access Roads and Pavement Surrounding and within L10 MSB and L10 HRSG Area	151 days	01/10/18	28/02/19	
353	FSD Inspection	14 days	02/03/19	15/03/19	
354 355	BD OP Inspection Section J - Cable Route CPX1&2 cable diversion & whole of work except deferred works to be carried out in DLP	14 days 1127 days	18/03/19 01/05/17	31/03/19 31/05/20	
356	275kV Cable Diversion	1127 days	01/05/17	31/05/20	
357	Part I (1km in Length, 1.1m to 1.5m Deep) (Works in existing Trench)	426 days	01/05/17	30/06/18	
358	Tentative Commencement Date Of Civil Works	0 days	01/05/17	01/05/17	
359	Trail Pit & Trench at Joint Bay	120 days	01/05/17	28/08/17	
360	Implementation of TTA	7 days	22/08/17	28/08/17	
361	Remove the Concrete Road Cover	60 days	29/08/17	27/10/17	
362	Cable Trench Re-excavation (by Mechanical Method)	120 days	03/09/17	31/12/17	
363	Completion Date of Trench Excavation for Site Handover	0 days	31/12/17	31/12/17	Completion Date of Trench Excavation for Site Handover
364	Tentative Period for Backfilling and Road Reinstatement (Excluding Joint Bay and Trench at Station Road)	91 days	01/04/18	30/06/18	
365	Part II (630m in Length, 1.1m to 1.5m Deep) (Works in existing Trench)	485 days	01/11/17	28/02/19	
366	Tentative Commencement Date Of Civil Works	0 days	01/11/17	01/11/17	
367	Implementation of TTA	9 days	01/11/17	09/11/17	
368	Remove the Concrete Road Cover	60 days	10/11/17	08/01/18	
369	Trench Excavation and Installation of Road Decking at Joint Bay (Including Part I & II)	145 days	09/01/18	02/06/18	
370	Cable Trench Re-excavation (by Mechanical Method)	90 days	03/06/18	31/08/18	
371	Completion Date of Trench Excavation for Site Handover	0 days	31/08/18	31/08/18	
16_8	002 Rev4 Master Progra Critical Split	Split		Page 7	, ,

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ID Tas	sk Name	Duration	Start	Finish
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

16_8002 Rev4 Master Progra

Critical Split Task

Split Milestone ♦ Summary 🛡

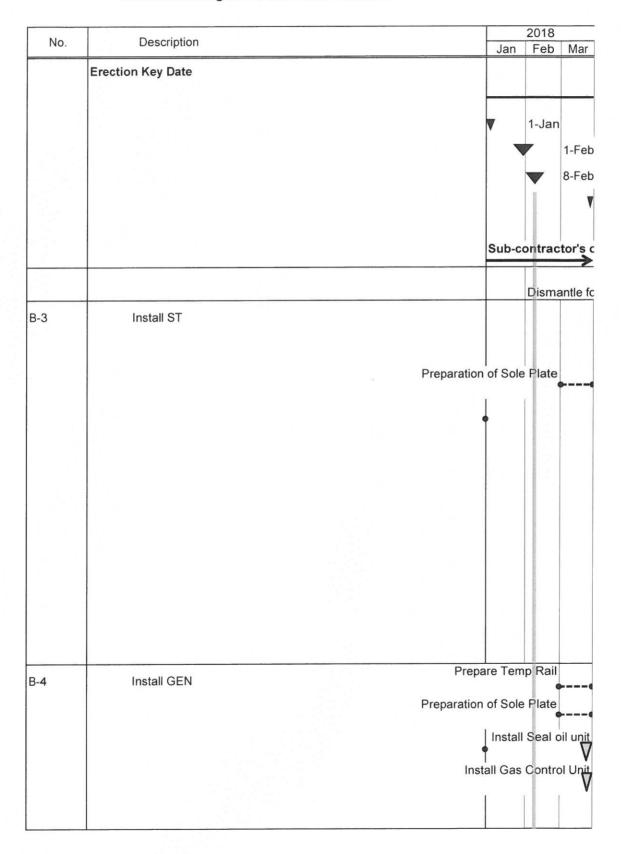
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No.	Description		2018		
	Erection Key Date	Jan	Feb	Mar	
		•	1-Jan		
				1-Fet 8-Fet	
		Sub-c	ontrac	tor's	
A A-01	HRSG PORTION Install Casing (Bottom/Side/Top) with Structure				
			Cable	G-As Weld	
A-02	Upper/Lower Connection Pipe Lower Pipe Temp.	Install	2	7	
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)				
	Other piping				
A-07					

No.	Description		2018		
		Jan	Feb	Mar	
	Erection Key Date				
		V	1-Jan		
				1-Feb	
				8-Feb	
				V	
		Sub-c	ontrac	tor's	
A-09	Inside Baffle Plate & Seismic Tie Adjust / Setting				
A-10	SCR System		7	7	
A-11	Inlet Duct Structure / Include Pipe Rack (U9-U10 Connection)				
A-12	Inlet Duct			V	
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				
	Reserve leed water Fairk				
A-16	Insulation			V	

No.	Description	2018				
110.		Jan	Feb	Mar		
	Erection Key Date					
			1-Jan			
				1-Fe		
				8-Fe		
				0-1 6		
		Sub-c	ontrac	tor's		
A-17	Painting		7	7		
				×		
A-18	Install Catalyst					
A-19	Steam Blowing out(other scope) & alkaline boiling out					
	Installation of Temporary piping, Support & Silencer					
	Excection of Steam blowing out					
	Dismantle of Temporary iping, Support & Silencer					
	Excection of Steam boiling out					
В	GT/ST/GEN PORTION		01:01			
B-1	Turbine O/H Crane	G-Ass	y&Liftir	ıg→Ir		
3-2	Condenser Prepare 7	emp. Rail	Pull In	Shel		
5-2	Condensei	•	•	-4 01		
			Ass'y	OT SK		
		Pull In	Conde	nser		
			Body /			
			Body /	-155 y		
			Water	box s		
			Water	box s		



No.	Description		2018	
		Jan	Feb	Mar
	Erection Key Date			
			1-Jan	
			-	1-Fe
			$\mathbf{\nabla}$	8-Fe
			1	
		Sub-co	ontrac	tor's
		Prepare Tem	p Rail	\rightarrow
B-5	Install GT		•	
		Preparation of Sole	Plate	
			Block	No 5
		•	DICON	V
B-6	Aux Equipment			
50				
			Disma	intle o
)
3-7	Insulation			
3-8	Painting			
		Install H	loist /	Load
3-9	Switchgear/Hoist/Hoist for condenser	•		
		Hoist/H		V

Description rection Key Date	Jan	Feb	Mar
rection Key Date			
		1-Jan	
			1-Feb
			8-Feb
	Sub-c	ontrac	tor's
		Sub-cr	\bullet

No.	Description		2018	
	Erection Key Date	Jan	Feb	Mar
			1-Jan	
				1-Fe
				8-Fe
		Suba	ontrac	torio
0	ERECTRICAL & INSTRUMENTATION PORTION	Sub-c	ontrac	tors
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	-		
0-3	CABLING SYSTEM INSTALLATION			
	Cable Ladder / Tray Installation	_		
	Conduit Pipe Installation	_		
	Earthing Installation			
	Cable Laying & Termination			
	Fire Resistant Sealing			
	Cable Trench Opening & Transportation			

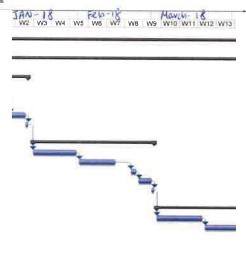
No.	Description		2018	
	Erection Key Date	Jan	Feb	Mai
			1-Jan	
				1-Fe 8-Fe
		Sub-c	ontrac	tor's
C-4	INSTRUMENTS, INSTR. PIPINGS & AIR TUBE			
	Local Instruments, Piping & Tubing			
	Instrument Calibration			_
C-5	OTHER WORK			_
	275kV Shunt Reactor Relocation			
	Turbine Overhead Crane, Hoist, Battery Power Supply			
	Existing CWP etc.			
	BOP & Other Works			
	Site Cleaning			
C-6	TESTING & COMMISSIONING			
	Testing & Commissioning			
	Commissioning Assistant			

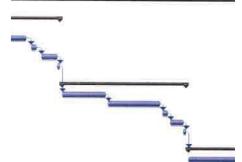
Appendix J

SUNLEY ENGINEERING & CONSTRUCTION CO., LTD.

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

				Tentative
	Task Name	Duration	Start	Finish
	Bored Pile Construction	164 days	2017/11/29	2018/6/16
		-		
	Rig 1	116 days	2017/11/29	2018/4/20
	BP6	38 days	2017/11/29	2018/1/13
	Excavation	13 days	2017/11/29	2017/12/14
	RCD Drilling	14 days	2017/12/15	2018/1/2
	Airlifting & koden lest	2 days	2018/1/3	2018/1/5
)	Rebar cage installation	5 days	2018/1/6	2018/1/12
	Concreting	1 day	2018/1/12	2018/1/12
2	e e res e trig	1 Gay	2010/1/12	2010/1/13
3	BP5	38 days	2049/4/48	0040/0/0
1	Excavation	15 days	2018/1/15 2018/1/15	2018/3/2
5	RCD Drilling			2018/1/31
5	Arlifting & koden test	12 days	2018/2/1	2018/2/15
,	Rebar cage installation	2 days	2018/2/21	2018/2/23
3		4 days	2018/2/24	2018/3/1
	Concreting	1 day	2018/3/1	2018/3/2
	224			
-	BP1	38 days	2018/3/3	2018/4/20
	Excavation	15 days	2018/3/3	2018/3/21
2	RCD Drilling	13 days	2018/3/22	2018/4/10
3	Airlifting & koden test	2 days	2018/4/11	2018/4/13
	Rebar cage installation	4 days	2018/4/14	2018/4/19
	Concreting	1 day	2018/4/19	2018/4/20
3				
7				
3				
	Rig 2	116 days	2017/12/11	2018/5/3
	-			
	BP2	39 days	2017/12/11	2018/1/25
	Excavation	14 days	2017/12/11	2017/12/27
	RCD Drilling	13 days	2017/12/28	2018/1/13
	Auflifung & koden test			
		2 days	2018/1/15	2018/1/17
	Rebar cage installation Concreting	5 days	2018/1/19	2018/1/24
	Concreting	1 day	2018/1/25	2018/1/25
3	BP3	38 days	2018/1/27	2018/3/15
ł	Excavation	14 days	2018/1/27	2018/2/12
	RCD Driling	14 days	2018/2/13	2018/3/5
	Airlifting & koden test	2 days	2018/3/6	2018/3/8
	Rebar cage installation	4 days	2018/3/9	2018/3/14
	Concreting	1 day	2018/3/14	2018/3/15
	BP4	37 days	2018/3/16	2018/5/3
	Excavation	15 days	2018/3/16	2018/4/8
	RCD Drilling	12 days	2018/4/7	2018/4/21
	Airlifting & koden test	2 days	2018/4/23	2018/4/25
	Rebar cage installation	4 days	2018/4/26	2018/5/2
	Concreting	1 day	2018/5/2	2018/5/2
	· · · · · · · · · · · · · · · · · · ·	1 449	20.0012	2010/0/0
	Interface Coring, Sonic Test & BD Full Coring	60 daug	2018/4/42	30404040
	menere voring, donie reer di bis r un odring	62 days	2018/4/16	2018/6/16
	No. 3 Control Building 6 piles			
	No. 3 Control Building 6 piles	52 days	2018/4/16	2018/6/16
	Interface Coring & Sonic Test (Coring after at least 8 days of plie cast)	26 days	2018/4/16	2018/5/17
	BA 14 Submission	7 days	2018/5/10	2018/5/18
	BD Selection of Full Coring Plies (14 days after BA14 Submission)	14 days	2018/5/18	2018/8/4
	- , , , , , , , , , , , , , , , , , , ,			=0.0.014
	Concrete Full Coring (2 piles)	10 dava	2018/6/5	2018/6/18





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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

Notes:

MM.YYYY		Actual Quantities of Inert C&D Materials Generated Monthly								Actual Quantities of Non-inert C&D Materials Generated Monthly					
	Exc	avated Mate	erials		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	
	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000L)	(in '000kg)	
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		Non-inert C&D Mate	rials
Generated	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, were generated from the Project, of which
 12903.89
 tonnes of inert C&D material

 12903.89
 tonnes were disposed as public fill to Fill Banks / Sorting Facilities.
 0
 tonnes detailing
 - (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) <u>12410</u> kg of metals, <u>0</u> kg of papers/ cardboard packing and <u>0</u> 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.

(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

Appendix K

MM.YYYY		Actual Q	uantities of	Inert C&D N	laterials (Generated	Monthly		Actual Q	uantities of M	on-inert C&D	Materials	Generated	Monthly
	Exca	avated Mate	erials		Non-exc	avated M	aterials							
	in Public Sorting Contract / Waste the other in Public in Sorting ba	Metals (steel bar / metal strip) ⁽¹⁾	bar / metal	Metals (aluminum can) ⁽¹⁾	Paper / cardboard packaging ⁽¹⁾	Plastics (1) & (4)	Chemical waste (wasted lubricant oil/oil container)	Other, e.g general refuse						
	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg
Jan 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	Non-inert C&D Materials					
Generated	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) _____kg of metals_____kg of papers/ cardboard packing and _____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:

metal, paper & plastic were collected by recycler
 The performance target of waste recycling are specified in the Contractt.

(3) The waste flow table shall also include C&D materials that are specified in the Contract to be imported for use at the Site.

(4) Plastics refer to plastic bottles/ containers, plastic/ foam from packaging material.

(5) Broken concrete for recycling into aggregates.

Monthly Waste Flow Table for December 2017

Project: Foundation Works for Lamma 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										
	Disposed in Public Fill	Disposed in Sorting Facilities	Others (e.g Reused in the Contract / Other Projects)		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
	(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	0.00	280.00	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	0.00	280.00	31.24

Total Inert C&D Waste Materials	Non-inert C&D Materials					
Generated	C&D Materials Recycled		te Disposed Landfill	Chemical Waste		
56931.77 tonnes		0 tonnes	31.24	tonnes	280L	

- - (b) Non-inert C&D materials (construction wastes) include metals, paper / cardboard packaging waste, plastics and other wastes such as general refuse. Metals generated from the Project were grouped into construction wastes as the materials were not disposed of with others at the public fill.
 - (c) 0 kg of metals, 0 kg of papers/ cardboard packing and 0 kg of plastics were sent to recyclers for recycling during the reporting period.
 - (d) Construction wastes other than metals, paper/cardboard packaging, plastics and chemicals were disposed of at Landfill.

Notes: (1) metal, paper & plastic were collected by recycler

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