

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



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

June 2021

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



ENVIRONMENTAL IMPACT ASSESSMENT (EIA) ORDINANCE, CAP. 499

ENVIRONMENTAL PERMIT NO. EP-071/2000/D

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

Report Title	Lamma Power Station Extension – Unit L11 & L12 Monthly EM&A Report (June 2021)
Date	14 July 2021
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EXECUTIVE SUMMARY

This is the 134th 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 June 2021.

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) L10 was commissioned for reliable operation in February 2020. The operational EM&A work for L9 and L10 is recorded in the separate monthly EM&A report for the Project “Operation of Lamma Power Station Extension”.

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

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

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

Construction Activities Undertaken

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

Item	Construction Activities
Unit L11 Civil and Building Works	275kV Station Building Extension works, Main Station Building external works, site formation works, pipe jacking and construction of receiving pit
Unit L11 Mechanical Erection	Condenser installation, HRSG installation and turbine block installation
Unit L11 Electrical, Instrumentation & Control Erection	Cable installation
Unit L12 Civil and Building Works	Installation of columns and beam for Main Station Building, construction of No. 5 Chimney, construction of superstructure for ACB, sheet piling for No. 5 C.W. Culvert, and modification of seawall and pile cap construction for Cable Bridge (South)

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

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 10/6/2021. There was no adverse comment from EPD regarding the construction site.

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

Environmental Licensing and Permitting

Description	Permit No.	Valid Period		Issued To	Date of Issuance
		From	To		
Varied Environmental Permit	EP-071/2000/D	28/09/20	-	HK Electric	28/09/20
Construction Noise Permit	GW-RS0966-20	01/01/21	30/06/21	Contractor	21/12/20
Construction Noise Permit	GW-RS0039-21	01/02/21	31/07/21	Contractor	29/01/21
Construction Noise Permit	GW-RS0072-21	08/02/21	07/08/21	Contractor	05/02/21
WPCO Discharge Licence	WT00034006-2019	08/08/19	31/08/24	Contractor	22/08/19
WPCO Discharge Licence	WT00037613-2021	15/04/21	30/04/26	Contractor	15/04/21
Registration of Chemical Waste Producer	WPN5213-912-P2781-22	22/02/16	-	Contractor	22/02/16
Registration of Chemical Waste Producer	WPN5517-912-T2007-02	17/03/05	-	Contractor	17/03/05
Waste Disposal Billing Account	Account No.: 7031135	21/06/18	-	Contractor	21/06/18
Waste Disposal Billing Account	Account No.: 7027672	24/04/17	-	Contractor	24/04/17
Waste Disposal Billing Account	Account No.: 7038672	27/10/20	-	Contractor	27/10/20
Waste Disposal Billing Account	Account No.: 7039272	08/01/21	-	Contractor	08/01/21

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 L11 Civil and Building Works

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

Unit L11 Mechanical Erection

- to continue 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 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 L12 Civil and Building Works

- 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;
- to provide silt curtain as preventive measures at Northern Cable Bridge area.

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/D, 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 June 2021.

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 L11 civil and building works were, 275kV Station Building Extension works, Main Station Building external works, site formation works, pipe jacking and construction of receiving pit. Construction activities for Unit L11 mechanical erection were condenser installation, HRSG installation and turbine block installation. Construction activity for Unit L11 electrical, instrumentation & control erection was cable installation. Construction activities for Unit L12 civil and building works were, installation of columns and beam for Main

Station Building, construction of No.5 Chimney, construction of superstructure for ACB, sheet piling for No. 5 C.W. Culvert, and modification of seawall and pile cap construction for Cable Bridge (South). Layout plan for construction site is shown in [Figure 1.1](#).

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

Table 1.1 Construction Activities and Their Corresponding Environmental Mitigation Measures

Item	Construction Activities	Environmental Mitigation Measures
Unit L11 Civil and Building Works		
1.	275kV Station Building Extension Works	<p>Air</p> <ul style="list-style-type: none"> – All regulated machine attached with valid exception/approval NRMM labels. – Water spraying on haul road. <p>Wastewater</p> <ul style="list-style-type: none"> – Wastewater should be treated in desilting pit and tanks for reuse on water spraying. <p>Waste Management</p> <ul style="list-style-type: none"> – Scrape metal would be recycled. – Chemical waste should be collected by licensed collector
2.	Main Station Building external works, site formation works, pipe jacking and construction of receiving pit	<p>Air</p> <ul style="list-style-type: none"> – All regulated machine attached with valid exception/approval NRMM labels. – Water truck and water sprinkler system was used. – Excavated slope and soil stock covered with cement or tarpaulin. – Backfilled surface was compacted. – Wheel washing facility was provided. <p>Wastewater</p> <ul style="list-style-type: none"> – Wastewater should be treated in desilting pit and tanks before discharge. Solution should be added to speed up the sedimentation process. Sediment in pit and tanks must be removed regularly. The frequency would be from every other day to weekly basis depends on the volume of sediment accumulated in order to maintain sufficient volume for wastewater treatment. <p>Waste Management</p>

Item	Construction Activities	Environmental Mitigation Measures
		<ul style="list-style-type: none"> – Excavated soil was temporary stored for backfilling. – Scrape metal would be recycled. – Timber would be reused as much as possible.
Unit L11 Mechanical Erection		
3.	Condenser installation HRSG installation Turbine block installation	<p>Air</p> <ul style="list-style-type: none"> – Dust suppression measures implemented according to the EMP. <p>Noise</p> <ul style="list-style-type: none"> – General noise mitigation measures employed at all work sites throughout the construction phase. <p>Waste Management</p> <ul style="list-style-type: none"> – Waste Management Plan submitted and implemented
Unit L11 Electrical, Instrumentation & Control Erection		
4.	Cable installation	<p>Air</p> <ul style="list-style-type: none"> – Dust suppression measures implemented according to the EMP. <p>Noise</p> <ul style="list-style-type: none"> – General noise mitigation measures employed at all work sites throughout the construction phase. <p>Waste Management</p> <ul style="list-style-type: none"> – Waste Management Plan submitted and implemented.
Unit L12 Civil and Building Works		
5.	<u>Unit L12 Main Station Building</u> Installation and Columns of beam Construction of No.5 Chimney <u>ACB</u> Construction of superstructure <u>No.5 C.W. Culvert</u>	<p>Air</p> <ul style="list-style-type: none"> – All regulated machine attached with valid exception/approval NRMM labels. – Water truck, and water sprinkler system would be used. – Water spraying for concrete breaking works. – Soil stock would be covered with cement or tarpaulin or keep the entire surface wet. – Wheel washing facility was provided. – <p>Noise</p> <ul style="list-style-type: none"> – Works conducted during restricted hours should

Item	Construction Activities	Environmental Mitigation Measures
	Sheet piling	<p>comply with the valid CNP.</p> <ul style="list-style-type: none"> - Noise emission label was provided for air compressor. <p>Wastewater</p> <ul style="list-style-type: none"> - Wastewater should be treated in desilting pit and tanks before discharge. Solution should be added to speed up the sedimentation process. Sediment in pit and tanks must be removed regularly. The frequency would be from every other day to weekly basis depends on the volume of sediment accumulated in order to maintain sufficient volume for wastewater treatment. <p>Waste Management</p> <ul style="list-style-type: none"> - Excavated soil was temporary stored for backfilling and reuse in other projects. - Scrape metal would be recycled. - Chemical waste should be collected by licensed collector.
6.	Cable Bridge (South): Modification of Seawall and Pile Cap Construction	<p>Air</p> <ul style="list-style-type: none"> - All regulated machine attached with valid exception/approval NRMM labels. - Soil stockpile covered with tarpaulin. - Wheel washing facilities was provided. - Water spraying on haul road and during concrete breaking. <p>Waste Management</p> <ul style="list-style-type: none"> - Excavated soil would be stored for backfilling. <p>Noise</p> <ul style="list-style-type: none"> - Works conducted during restricted hours should comply with the valid CNP. <p>Wastewater</p> <ul style="list-style-type: none"> - Wastewater would be treated in desilting tanks for reuse - Silt curtain was provided as preventive measures at Southern Cable Bridge area

1.4 Summary of EM&A Requirements

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

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

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

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

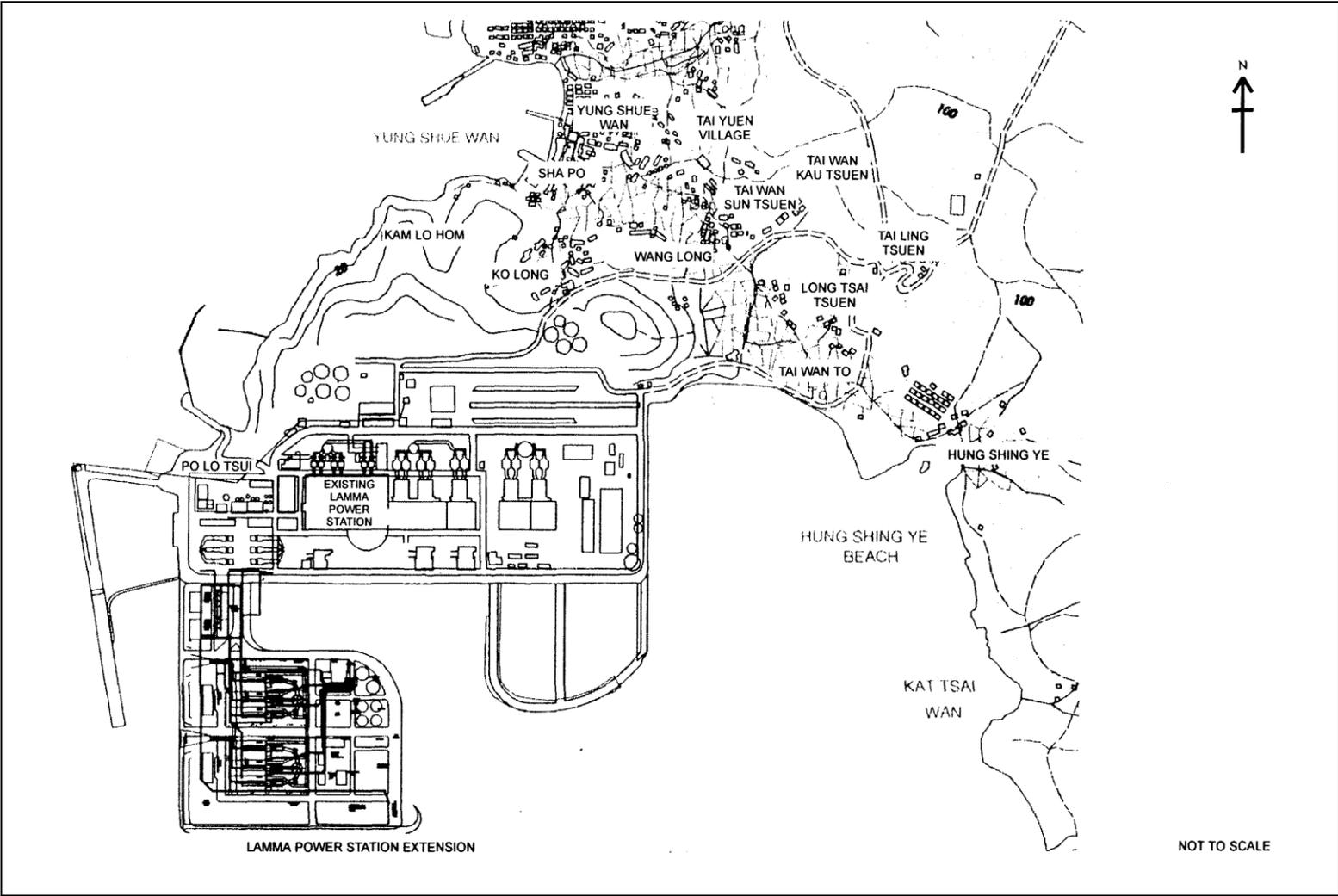


Figure 1.1 Layout of Work Site

2. AIR QUALITY

2.1 Monitoring Requirements

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

2.2 Monitoring Locations

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

Table 2.1 Air Quality Monitoring Locations

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

2.3 Monitoring Equipment

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

Table 2.2 Air Quality Monitoring Equipment

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

2.4 Monitoring Parameters, Frequency and Duration

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

Table 2.3 Air Quality Monitoring Parameter, Duration and Frequency

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

2.5 Monitoring Procedures and Calibration Details

MINIVOL (24- hour TSP Monitoring):

Preparation of Filter Papers

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

Field Monitoring

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

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

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

Maintenance & Calibration

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

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

2.6 Results and Observations

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

1-hour TSP

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

24-hour TSP

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

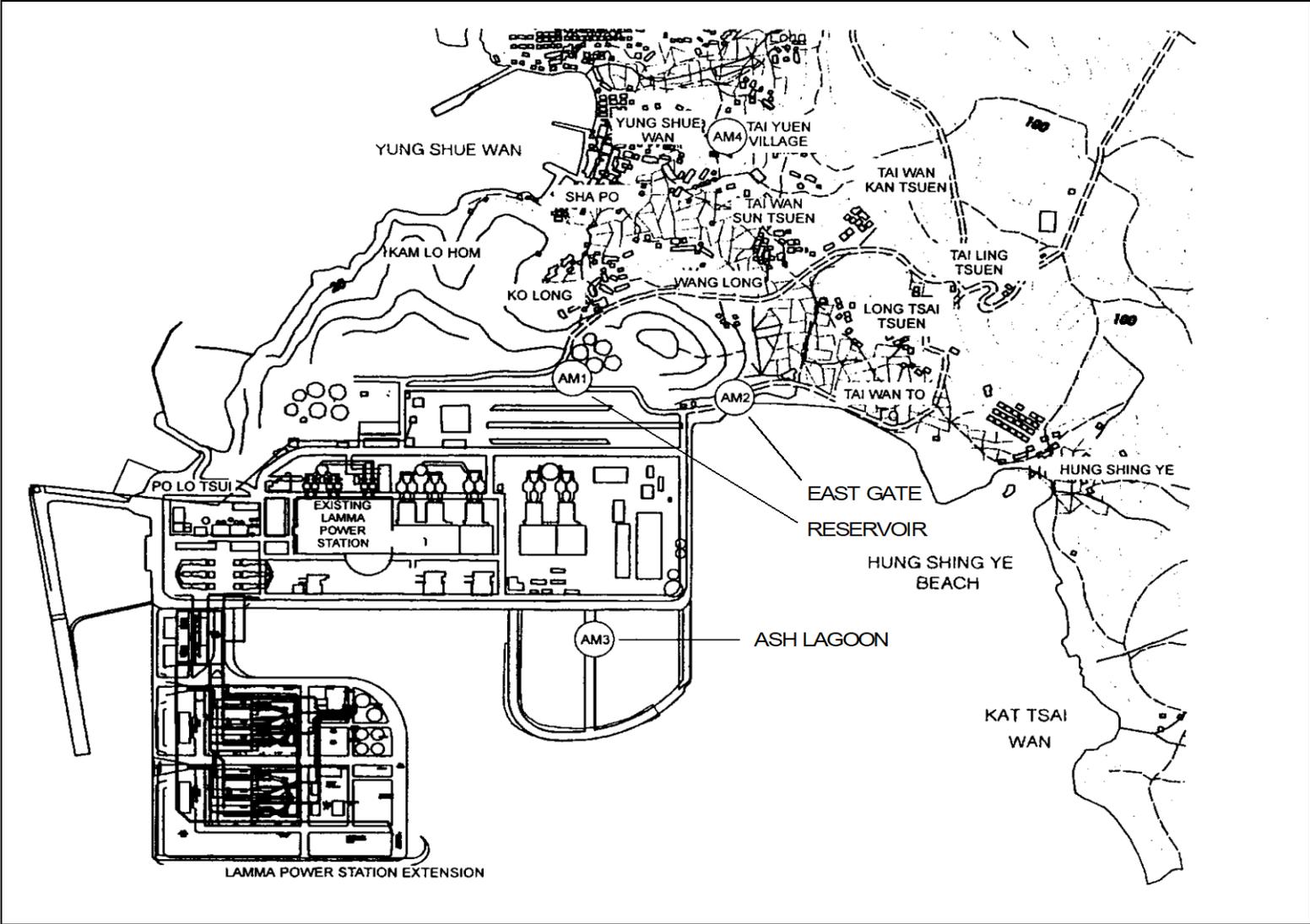


Figure 2.1 Location of Air Quality Monitoring Stations

3. NOISE

3.1 Monitoring Requirements

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

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

3.2 Monitoring Locations

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

3.3 Monitoring Equipment

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

Table 3.1 Noise Monitoring Equipment

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

3.4 Monitoring Parameters, Frequency and Duration

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

Table 3.2 Noise Monitoring Duration and Parameter

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

3.5 Monitoring Procedures and Calibration Details

Monitoring Procedures

Continuous Noise Monitoring for Lamma Extension Construction

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

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

Equipment Calibration

The sound level meters and calibrators were verified by the manufacturer or accredited laboratory. With the endorsement of the Independent Environmental Checker, the enhancement of calibration of sound level meter at the noise monitoring stations was implemented. The monthly manual on-site calibration using sound level calibrator was replaced by the daily auto charge injection calibration function of the sound level meter. For additional quality assurance, manual on-site calibration would still be conducted for the noise monitoring stations once every 6 months. The manual on-site calibrations for Ash Lagoon and Ching Lam noise monitoring stations were carried out in March and April 2021 respectively. The next calibrations for the two noise monitoring stations were scheduled in September and October 2021.

3.6 Results and Observations

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

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

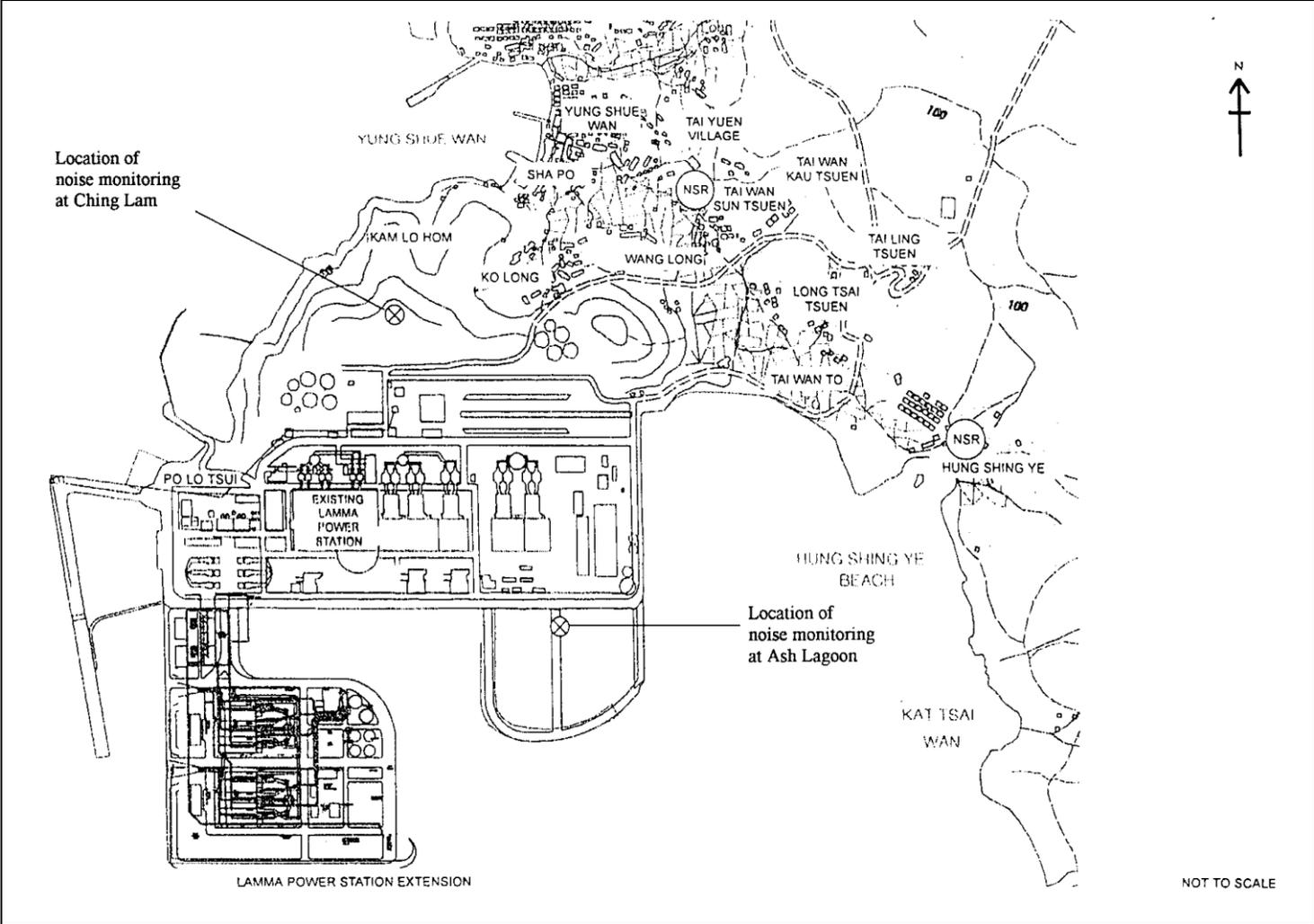


Figure 3.1 Location of Noise Monitoring Stations

4. ENVIRONMENTAL AUDIT

4.1 Review of Environmental Monitoring Procedures

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

4.2 Assessment of Environmental Monitoring Results

Monitoring results for Air Quality and Noise

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

Table 4.1 Summary of AL Level Exceedances on Monitoring Parameters

Item	Parameter Monitored	Monitoring Period	No. of Exceedances In		Event/Action Plan Implementation Status and Results
			Action Level	Limit Level	
Air					
1	Ambient TSP (24-hour)	01/06/2021-30/06/2021	0	0	
2	Ambient TSP (1-hour)	01/06/2021-30/06/2021	0	0	
Noise					
1	Noise level at the critical NSR's predicted by the noise alarm monitoring system	01/06/2021-30/06/2021	0	0	

4.3 Waste Management

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

Inert C&D material and non-inert C&D material disposed of in June 2021 are shown in [Table 4.2](#).

Table 4.2 Estimated Amounts of Waste in June 2021

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

0 Tonnes	0 Tonnes	53.22 Tonnes	0 Litres
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The monthly waste flow tables prepared by the contractors are attached in [Appendix K](#)

4.4 Site Environmental Audit

EPD officials from Regional Office (South) visited Lamma Power Station on 10/6/2021. There was no adverse comment from EPD regarding the construction site.

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

4.5 Status of Environmental Licensing and Permitting

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

Table 4.3 Summary of Environmental Licensing and Permit Status

Description	Permit No.	Valid Period		Highlights	Status
		From	To		
Varied Environmental Permit	EP-071/2000/D	28/09/20	-	The whole construction work site	Valid
Construction Noise Permit	GW-RS0966-20	01/01/21	30/06/21	Power Block Facilities works for Unit L11. Operation of PME during restricted hours	Valid
Construction Noise Permit	GW-RS0039-21	01/02/21	31/07/21	Construction site for Unit L12. Operation of PME during restricted hours	Valid
Construction Noise Permit	GW-RS0072-21	08/02/21	07/08/21	Civil and Building Works for Unit L12. Operation of PME during restricted hours	Valid
WPCO Discharge Licence#	WT00034006-2019	08/08/19	31/08/24	Civil and Building Works for Unit L11	Valid
WPCO Discharge Licence##	WT00037613-2021	15/04/21	30/04/26	Civil and Building Works for Unit L12 (No.5 C.W. Intake and Cable Bridge)	Valid
Registration of Chemical Waste Producer	WPN5213-912-P2781-22	22/02/16	-	Civil and Building Works	Valid

Description	Permit No.	Valid Period		Highlights	Status
		From	To		
Registration of Chemical Waste Producer	WPN5517-912-T2007-02	17/03/05	-	E&M Equipment Installation and Maintenance	Valid
Waste Disposal Billing Account	Account No.: 7031135	21/06/18	-	Civil and Building Works for Unit L11	Valid
Waste Disposal Billing Account	Account No.: 7027672	24/04/17	-	E&M Erection of Power Block Facilities – L11	Valid
Waste Disposal Billing Account	Account No.: 7038672	27/10/20	-	Civil works for Unit L12 No.5 C.W. intake and cable bridge	Valid
Waste Disposal Billing Account	Account No.: 7039272	08/01/21	-	Civil and building works for Unit L12	Valid

Notes: # - Water quality monitoring was carried out in May 2021 and the results of which had been reported separately by the contractor.
 ## - Water quality monitoring was carried out in May 2021 and the results of which had been reported separately 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 June 2021, no complaint against the construction activities was received.

Table 4.4 Environmental Complaints Received in June 2021

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

Table 4.5 Outstanding Environmental Complaints Carried Over

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

5. FUTURE KEY ISSUES

5.1 Key Issues for the Coming Month

Key issues to be considered in the coming month include:

Unit L11 Civil and Building Works

Noise Impact

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

Air Impact

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

Water Impact

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

Unit L11 Mechanical Erection

Noise Impact

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

Air Impact

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

Unit L11 Electrical, Instrumentation & Control Erection

Noise Impact

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

Air Impact

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

Unit L12 Civil and Building Works

Noise Impact

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

Air Impact

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

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.
- To provide silt curtain as preventive measures at Northern Cable Bridge area.

5.2 Monitoring Schedules for the Next 3 Months

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

5.3 Construction Program for the Next 3 Months

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

6. CONCLUSION

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

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

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

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

The environmental performance of the Project was generally satisfactory.

Appendix A Organization Chart

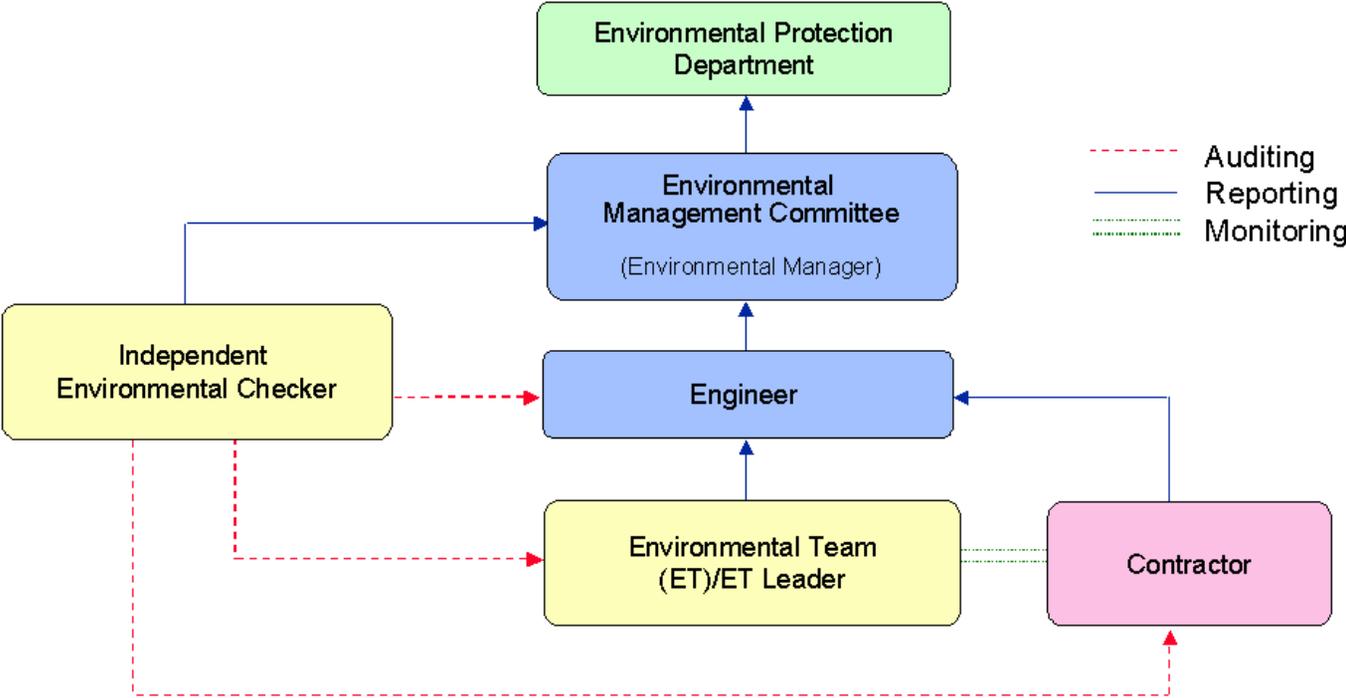


Figure A.1 Organisation of EM&A Programme at Construction Phase

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

B.1. Air

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

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

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

B.2. Noise

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

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

Appendix C Environmental Monitoring Schedule

Table C.1 Monitoring schedule for 24hr and 1hr TSP monitoring for Lamma Extension Construction (June 2021 to September 2021)

24hr TSP Monitoring	1hr TSP Monitoring
5/June/2021	5/June/2021 1500hr to 1800hr
11/June/2021	11/June/2021 1500hr to 1800hr
17/June/2021	17/June/2021 1500hr to 1800hr
23/June/2021	23/June/2021 1500hr to 1800hr
29/June/2021	29/June/2021 1500hr to 1800hr
4/July/2021	4/July/2021 1500hr to 1800hr
10/July/2021	10/July/2021 1500hr to 1800hr
16/July/2021	16/July/2021 1500hr to 1800hr
22/July/2021	22/July/2021 1500hr to 1800hr
28/July/2021	28/July/2021 1500hr to 1800hr
3/August/2021	3/August/2021 1500hr to 1800hr
9/August/2021	9/August/2021 1500hr to 1800hr
15/August/2021	15/August/2021 1500hr to 1800hr
21/August/2021	21/August/2021 1500hr to 1800hr
27/August/2021	27/August/2021 1500hr to 1800hr
2/September/2021	2/September/2021 1500hr to 1800hr
8/September/2021	8/September/2021 1500hr to 1800hr
14/September/2021	14/September/2021 1500hr to 1800hr
20/September/2021	20/September/2021 1500hr to 1800hr
26/September/2021	26/September/2021 1500hr to 1800hr

APPENDIX D AIR QUALITY MONITORING RESULTS

Site: Lamma Power Station Extension

Month: June 2021

24 hour TSP Measurement:-

Date	TSP concentration ($\mu\text{g}/\text{m}^3$)				Weather Information (From Hong Kong Observatory)		
	Reservoir (AM1)	East Gate (AM2)	Ash Lagoon (AM3)	Tai Yuen Village (AM4)	Mean Wind Speed (km/hr)	Prevailing Wind Dir. ($^{\circ}$)	Mean R.H. (%)
5/6/2021	36	43	36	31	9.9	270	73
11/6/2021	16	21	13	19	39.1	70	82
17/6/2021	31	40	23	15	24.9	230	77
23/6/2021	16	20	16	14	16.8	260	88
29/6/2021	42	44	33	26	32.2	220	82

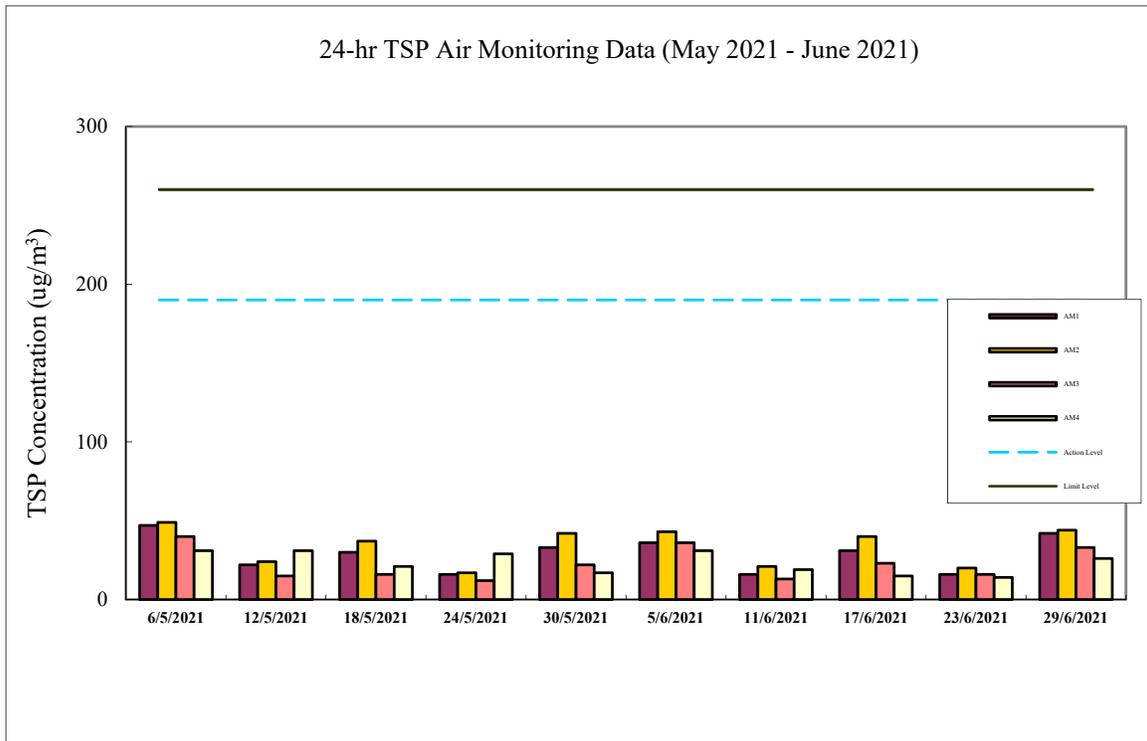
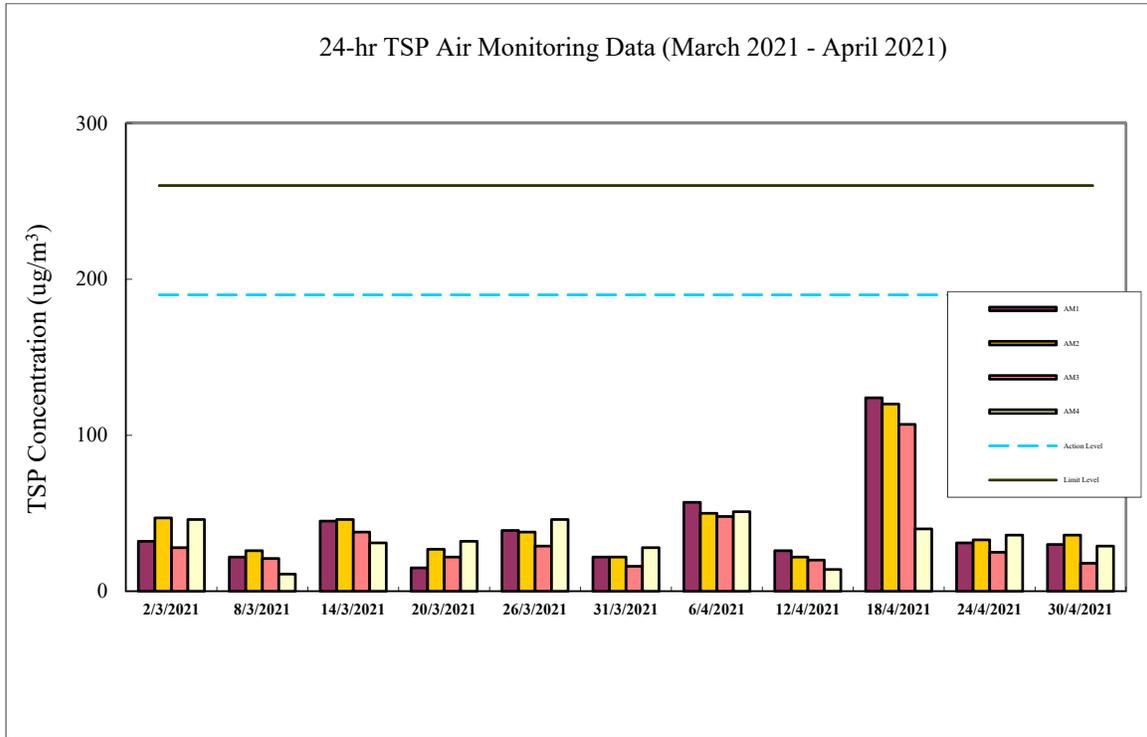
1 hour TSP Measurement:-

Date	Time	TSP concentration ($\mu\text{g}/\text{m}^3$)		
		Reservoir (AM1)	East Gate (AM2)	Ash Lagoon (AM3)
5/6/2021	15:00 - 15:59	41	56	36
	16:00 - 16:59	28	63	33
	17:00 - 17:59	28	63	47
11/6/2021	15:00 - 15:59	13	25	14
	16:00 - 16:59	23	24	15
	17:00 - 17:59	20	22	15
17/6/2021	15:00 - 15:59	33	60	25
	16:00 - 16:59	33	49	21
	17:00 - 17:59	37	43	20
23/6/2021	15:00 - 15:59	16	16	14
	16:00 - 16:59	14	11	9
	17:00 - 17:59	0	9	10
29/6/2021	15:00 - 15:59	42	50	33
	16:00 - 16:59	46	45	33
	17:00 - 17:59	46	46	35

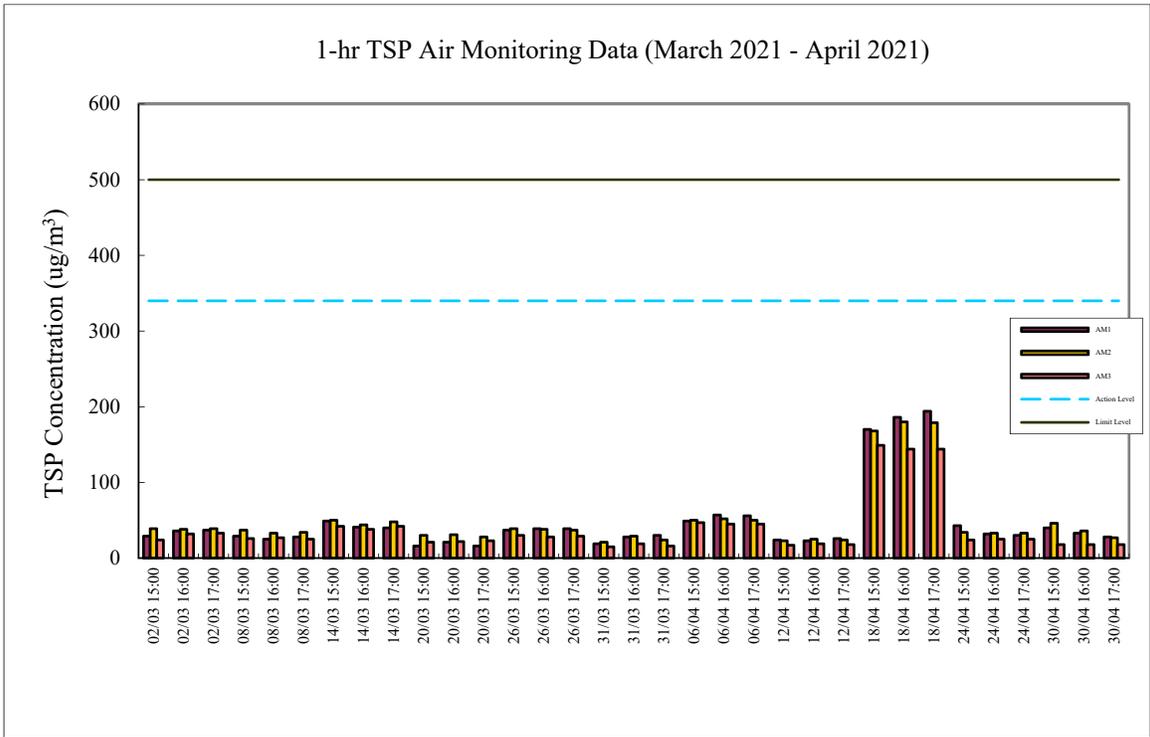
	1-hr TSP ($\mu\text{g}/\text{m}^3$)	24-hr TSP ($\mu\text{g}/\text{m}^3$)
Action Level	340	190
Limit Level	500	260
Calibration:	Calibration details are shown in appendix F.	

Equipment used:

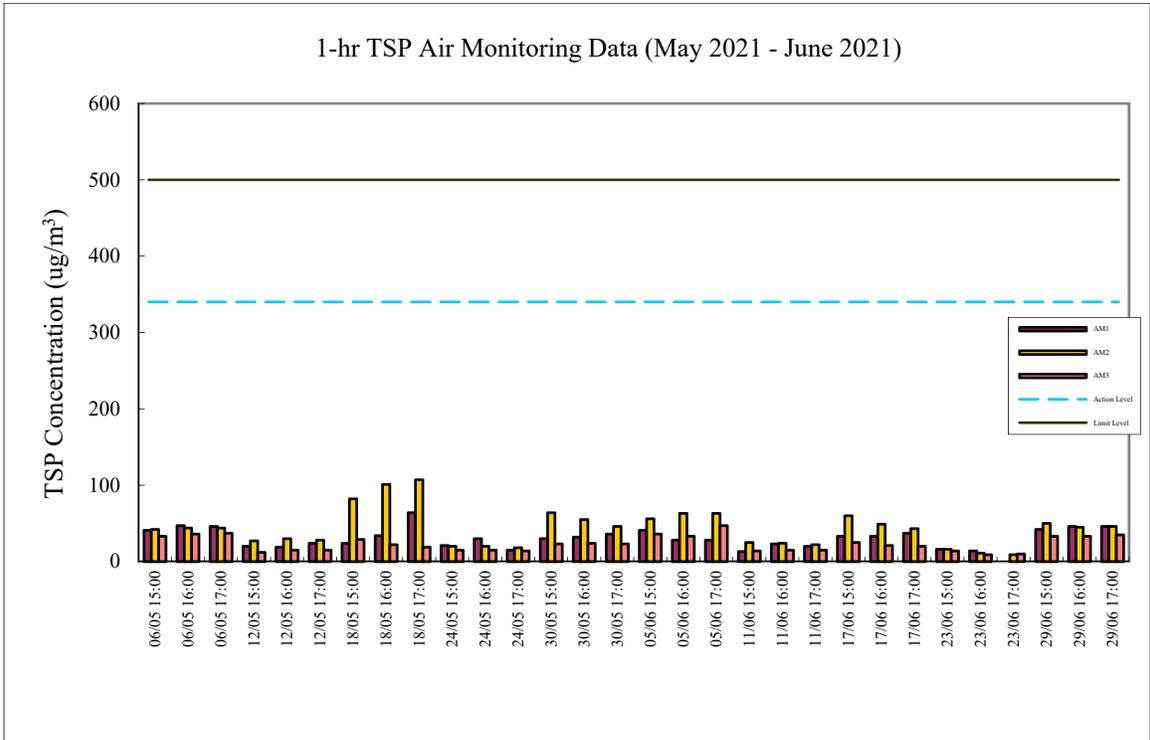
Location	1-hr TSP	24-hr TSP
Reservoir, East Gate and Ash Lagoon	TEOM	TEOM
Tai Yuen Village	-	MINIVOL Portable Sampler



1-hr TSP Air Monitoring Data (March 2021 - April 2021)



1-hr TSP Air Monitoring Data (May 2021 - June 2021)



Appendix E

Continuous Noise Monitoring Results for June 2021

Site: Lamma Power Station Extension Construction
 Measurement Location: Ash Lagoon and Ching Lam
 Measurement Parameter: 30-min Leq (07:00-19:00 hrs on normal weekdays)
 5-min Leq (07:00-23:00 hrs on holidays and
 19:00-23:00 hrs on all other days, and 23:00-
 07:00 hrs of next day)
 Noise Equipment: B&K 2250 sound level meters and B&K 4231 sound
 Level calibrator
 Lab. Calibration Date: B&K 2250 sound level meters - 28/06/2020 (Ash Lagoon)
 19/08/2019 (Ching Lam)
 B&K 4231 calibrator - 02/09/2020

Date	Time	Calculated Noise Level at NSR at Long Tsai Tsuen/Hung Shing Ye (dB(A))		Limit Noise Level (dB(A))	Calculated Noise Level at NSR at the school within Tai Wan San Tsuen (dB(A))		Limit Noise Level (dB(A))
		Max	Avg		Max	Avg	
01/06/2021	07:00-19:00	60	50	75	55	39	65
01/06/2021	19:00-23:00	35	27	60	31	31	60
01/06/2021	23:00-07:00	45	40	45	43	31	45
02/06/2021	07:00-19:00	55	50	75	43	32	65
02/06/2021	19:00-23:00	---	---	60	47	36	60
02/06/2021	23:00-07:00	45	39	45	41	34	45
03/06/2021	07:00-19:00	42	42	75	---	---	65
03/06/2021	19:00-23:00	---	---	60	44	39	60
03/06/2021	23:00-07:00	44	40	45	44	32	45
04/06/2021	07:00-19:00	---	---	75	52	43	65
04/06/2021	19:00-23:00	---	---	60	---	---	60
04/06/2021	23:00-07:00	---	---	45	30	30	45
05/06/2021	07:00-19:00	53	53	75	54	49	70
05/06/2021	19:00-23:00	---	---	60	40	40	60
05/06/2021	23:00-07:00	39	39	45	42	38	45
06/06/2021	07:00-23:00	50	40	60	45	37	60
06/06/2021	23:00-07:00	45	38	45	41	32	45
07/06/2021	07:00-19:00	43	43	75	66	47	70
07/06/2021	19:00-23:00	---	---	60	42	33	60
07/06/2021	23:00-07:00	43	39	45	43	38	45
08/06/2021	07:00-19:00	44	44	75	44	40	70
08/06/2021	19:00-23:00	---	---	60	49	37	60
08/06/2021	23:00-07:00	38	38	45	44	33	45
09/06/2021	07:00-19:00	48	48	75	45	40	70
09/06/2021	19:00-23:00	---	---	60	51	39	60
09/06/2021	23:00-07:00	25	25	45	44	32	45
10/06/2021	07:00-19:00	---	---	75	51	42	70
10/06/2021	19:00-23:00	---	---	60	45	42	60
10/06/2021	23:00-07:00	41	41	45	45	35	45
11/06/2021	07:00-19:00	---	---	75	49	37	70
11/06/2021	19:00-23:00	41	41	60	40	35	60
11/06/2021	23:00-07:00	37	35	45	44	38	45
12/06/2021	07:00-19:00	---	---	75	35	34	70
12/06/2021	19:00-23:00	---	---	60	45	35	60
12/06/2021	23:00-07:00	43	37	45	42	36	45
13/06/2021	07:00-23:00	---	---	60	---	---	60

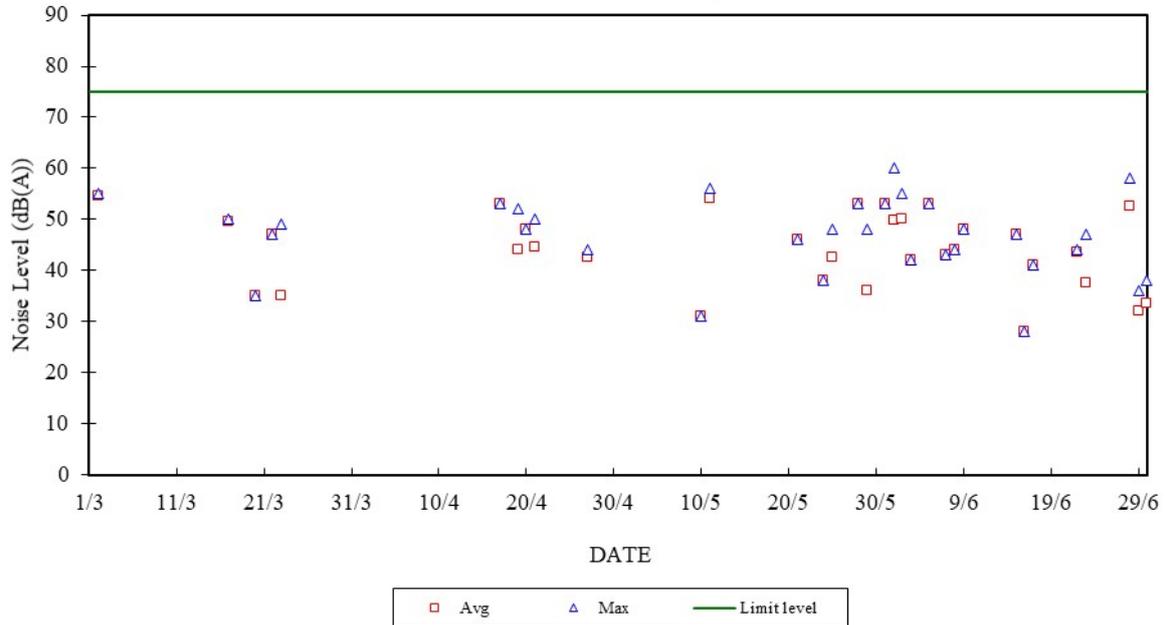
13/06/2021	23:00-07:00	---	---	45	33	28	45
14/06/2021	07:00-23:00	54	44	60	47	43	60
14/06/2021	23:00-07:00	40	33	45	45	28	45
15/06/2021	07:00-19:00	47	47	75	46	39	70
15/06/2021	19:00-23:00	---	---	60	50	40	60
15/06/2021	23:00-07:00	45	42	45	43	36	45
16/06/2021	07:00-19:00	28	28	75	51	45	70
16/06/2021	19:00-23:00	---	---	60	55	37	60
16/06/2021	23:00-07:00	45	44	45	45	37	45
17/06/2021	07:00-19:00	41	41	75	53	49	70
17/06/2021	19:00-23:00	---	---	60	53	47	60
17/06/2021	23:00-07:00	---	---	45	43	33	45
18/06/2021	07:00-19:00	---	---	75	51	42	70
18/06/2021	19:00-23:00	---	---	60	53	44	60
18/06/2021	23:00-07:00	39	39	45	43	31	45
19/06/2021	07:00-19:00	---	---	75	52	48	70
19/06/2021	19:00-23:00	---	---	60	54	42	60
19/06/2021	23:00-07:00	36	36	45	45	39	45
20/06/2021	07:00-23:00	49	42	60	54	46	60
20/06/2021	23:00-07:00	44	40	45	45	35	45
21/06/2021	07:00-19:00	---	---	75	53	47	70
21/06/2021	19:00-23:00	---	---	60	54	37	60
21/06/2021	23:00-07:00	38	37	45	44	38	45
22/06/2021	07:00-19:00	44	44	75	49	44	70
22/06/2021	19:00-23:00	43	43	60	48	38	60
22/06/2021	23:00-07:00	---	---	45	44	33	45
23/06/2021	07:00-19:00	47	38	75	43	42	70
23/06/2021	19:00-23:00	29	29	60	35	26	60
23/06/2021	23:00-07:00	45	33	45	41	29	45
24/06/2021	07:00-19:00	---	---	75	0	---	70
24/06/2021	19:00-23:00	---	---	60	39	38	60
24/06/2021	23:00-07:00	39	36	45	40	36	45
25/06/2021	07:00-19:00	---	---	75	39	35	70
25/06/2021	19:00-23:00	---	---	60	46	41	60
25/06/2021	23:00-07:00	43	37	45	36	29	45
26/06/2021	07:00-19:00	---	---	75	42	30	70
26/06/2021	19:00-23:00	42	42	60	46	31	60
26/06/2021	23:00-07:00	42	36	45	45	31	45
27/06/2021	07:00-23:00	59	41	60	48	35	60
27/06/2021	23:00-07:00	43	42	45	44	33	45
28/06/2021	07:00-19:00	58	53	75	53	45	70
28/06/2021	19:00-23:00	43	39	60	48	35	60
28/06/2021	23:00-07:00	38	30	45	45	35	45
29/06/2021	07:00-19:00	36	32	75	44	36	70
29/06/2021	19:00-23:00	---	---	60	49	40	60
29/06/2021	23:00-07:00	43	43	45	45	34	45
30/06/2021	07:00-19:00	38	34	75	44	36	70
30/06/2021	19:00-23:00	---	---	60	50	38	60
30/06/2021	23:00-07:00	---	---	45	45	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 also carried out at holidays & evening-time (07:00-23:00 hrs on holidays and 19:00-23:00 hrs on all other days) and night-time (23:00-07:00 hrs of next day).

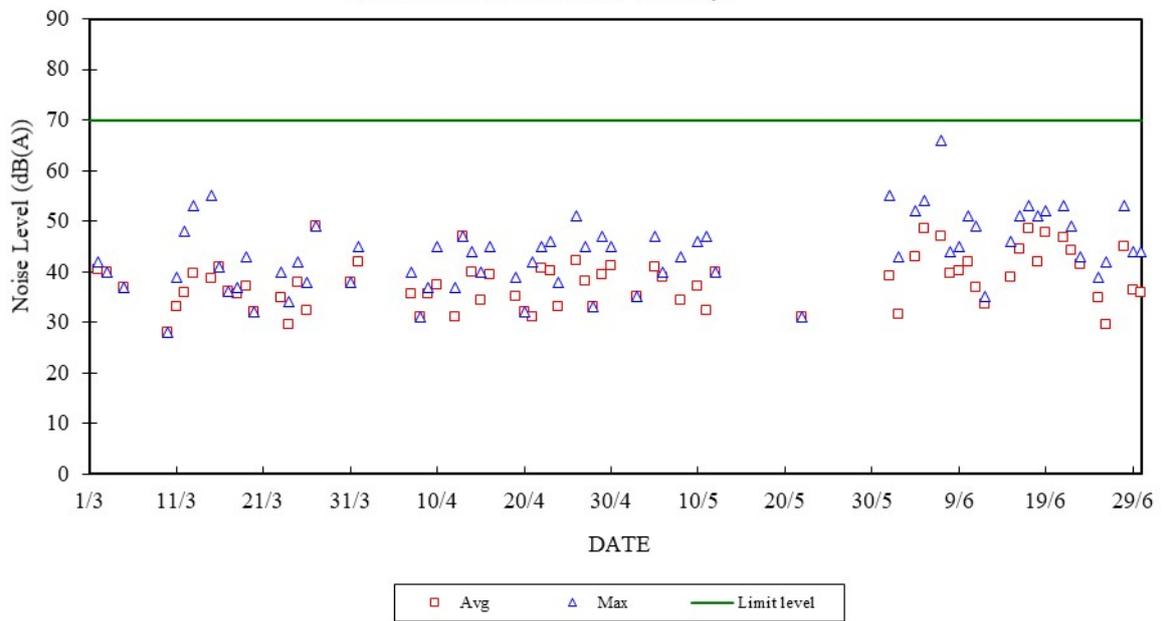
Construction Noise Monitoring in March - June 2021

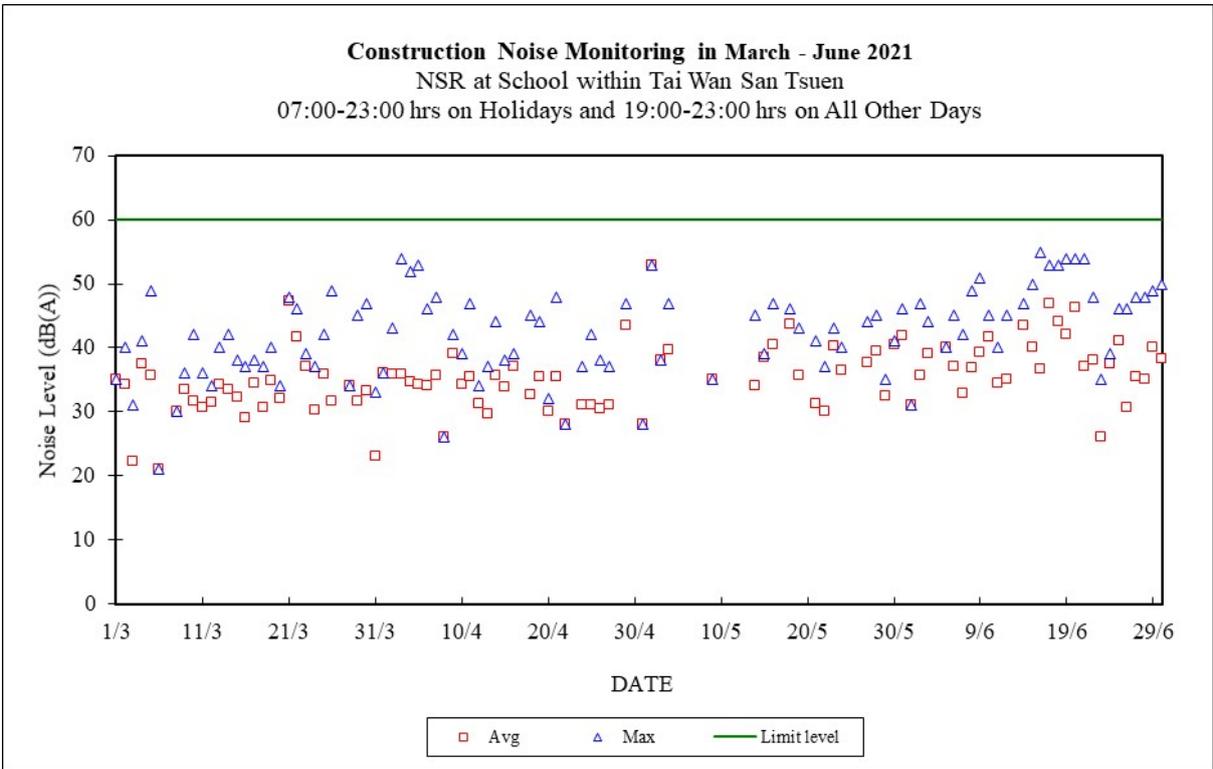
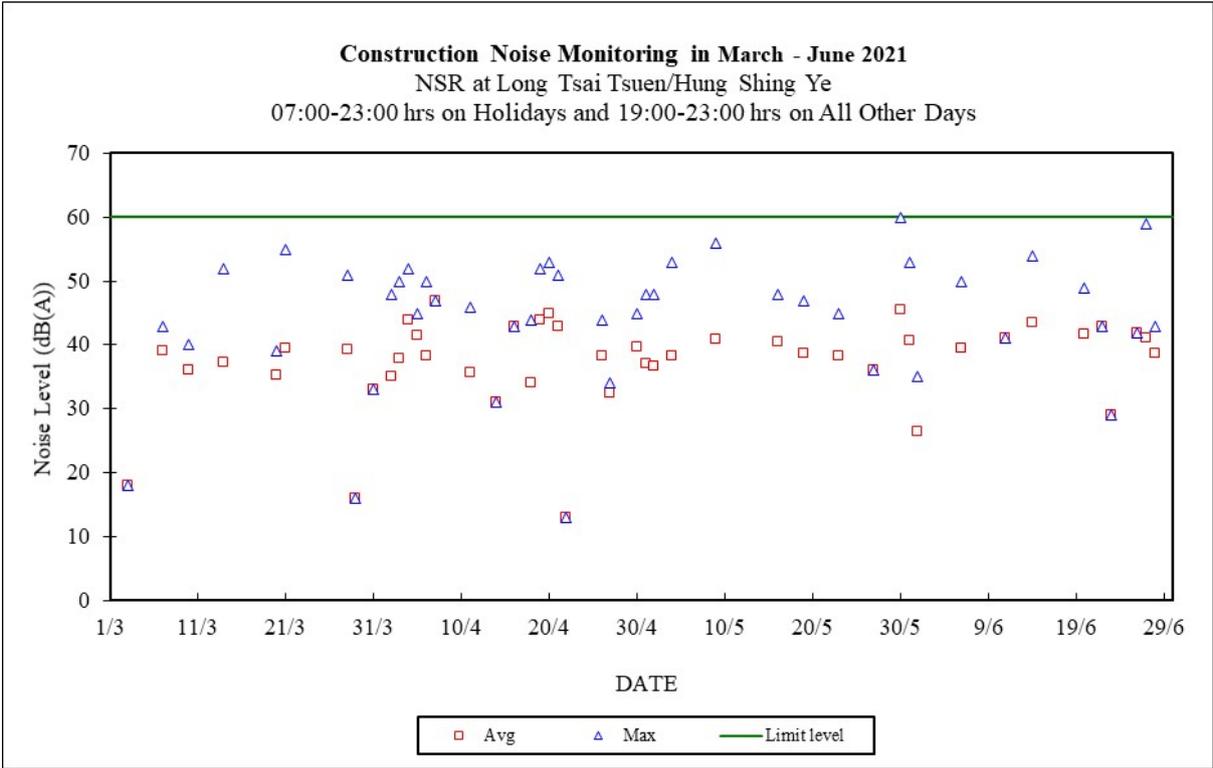
NSR at Long Tsai Tsuen/Hung Shing Ye
07:00-19:00 hrs on Normal Weekdays



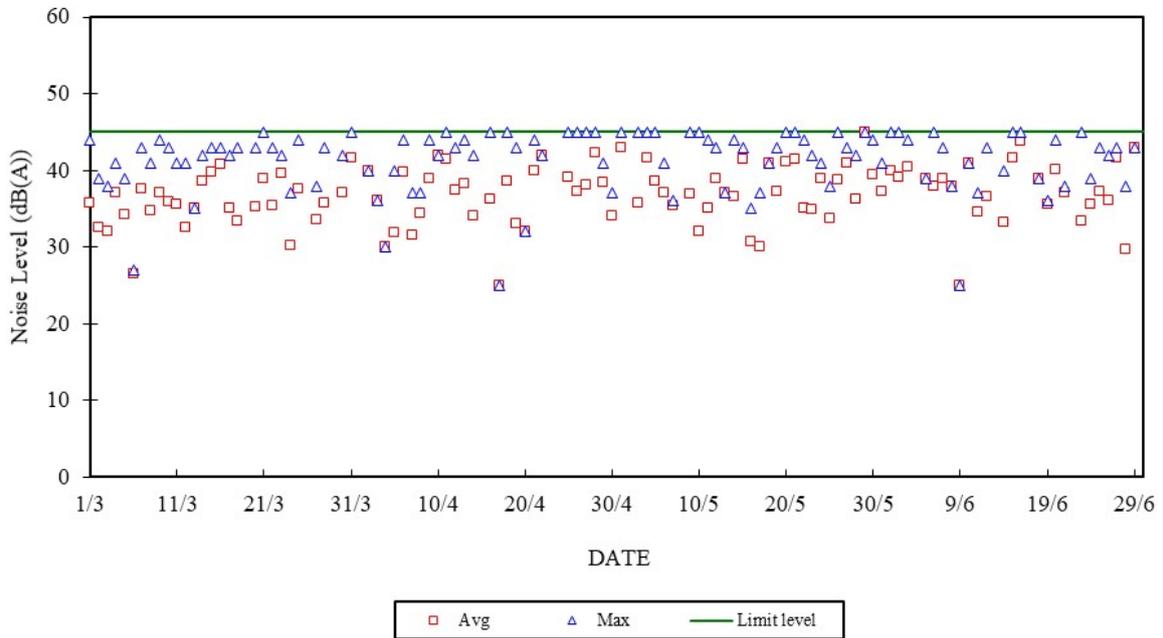
Construction Noise Monitoring in March - June 2021

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

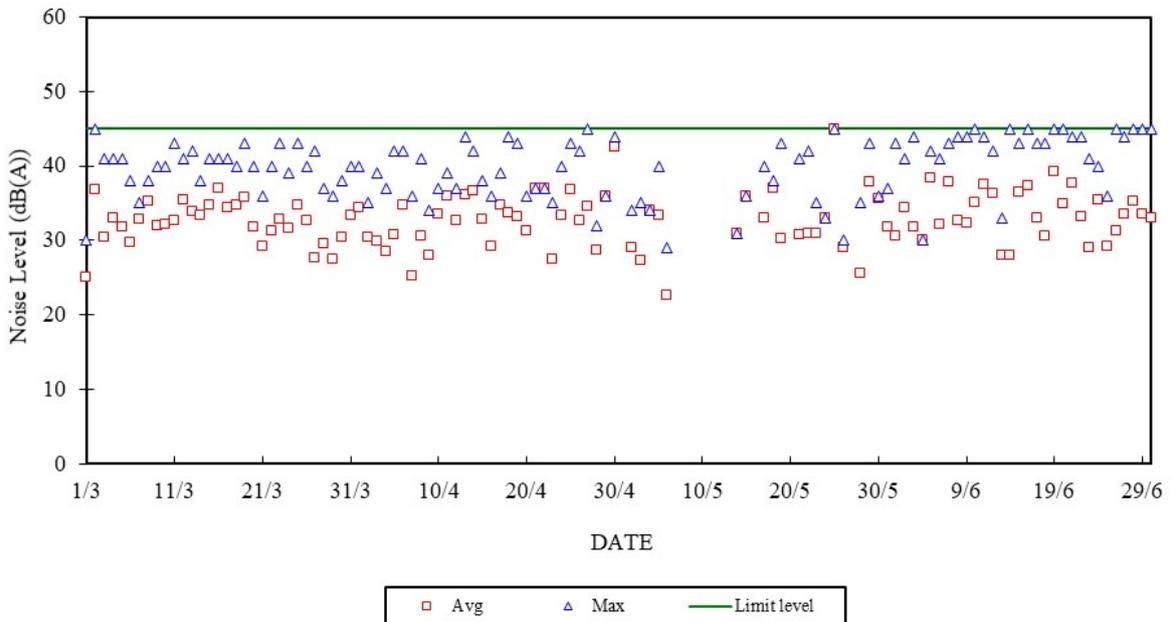




Construction Noise Monitoring in March - June 2021
NSR at Long Tsai Tsuen/Hung Shing Ye
23:00-07:00 hrs of Next Day



Construction Noise Monitoring in March - June 2021
NSR at School within Tai Wan San Tsuen
23:00-07:00 hrs of Next Day



Appendix F

The QA/QC Procedures and Results

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

Month: June Year: 2021

Reservoir (AM1)				
Date	Frequency (Hz) (240 - 275)	Operation Mode (Mode 4)	Main Flow (l/min) (2.70 - 3.30)	Bypass Flow (l/min) (12.30 - 15.04)
6/6/2021	269.002	4	2.97	13.30
12/6/2021	268.767	4	2.99	12.89
18/6/2021	268.415	4	2.93	13.14
24/6/2021	268.057	4	3.01	12.81
30/6/2021	267.611	4	2.95	13.45

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)
6/6/2021	251.789	4	2.94	13.42
12/6/2021	251.486	4	2.96	13.47
18/6/2021	251.025	4	2.90	13.26
24/6/2021	250.500	4	2.96	13.56
30/6/2021	249.984	4	2.93	13.36

Ash Lagoon (AM3)				
Date	Frequency (Hz) (240 - 275)	Operation Mode (Mode 4)	Main Flow (l/min) (2.70 - 3.30)	Bypass Flow (l/min) (12.30 - 15.04)
6/6/2021	256.178	4	3.00	13.68
12/6/2021	257.417	4	3.00	13.68
18/6/2021	257.156	4	3.00	13.68
24/6/2021	256.850	4	3.00	13.68
30/6/2021	256.528	4	3.00	13.68

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

Remarks:

Prepared by: Chris Chan

Checked by: HY Chan

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

Attendance Log _____

Site Name: Tai Yuen Village (AM4)

Date/Time	Staff Name
16/06/2021 / 10:45	WM Tam

Equipment / Item

Equipment / Item	Serial No. / No.
MINIVOL	5580
Used filter paper no.	MR42
New filter paper no.	MR43

Type of filter: Glass-fibre

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

Before: 5.037
After: 5.037 (No adjustment)

II. General Services

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

Remarks

N/A

Conducted by: WM Tam

Checked by: SM Hon

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

Date	Location: Ash Lagoon		Location: Ching Lam	
	Calibration Results	Deviation from Reference (dB)	Calibration Results	Deviation from Reference (dB)
01/06/2021	Passed	-0.03	Passed	0.13
02/06/2021	Passed	-0.02	Passed	0.16
03/06/2021	Passed	-0.03	Passed	0.14
04/06/2021	Passed	-0.04	Passed	0.15
05/06/2021	Passed	-0.03	Passed	0.14
06/06/2021	Passed	-0.03	Passed	0.16
07/06/2021	Passed	-0.03	Passed	0.17
08/06/2021	Passed	-0.03	Passed	0.15
09/06/2021	Passed	0.01	Passed	0.16
10/06/2021	Passed	0.01	Passed	0.15
11/06/2021	Passed	-0.04	Passed	0.14
12/06/2021	Passed	-0.01	Passed	0.15
13/06/2021	Passed	-0.01	Passed	0.15
14/06/2021	Passed	-0.01	Passed	0.16
15/06/2021	Passed	-0.01	Passed	0.15
16/06/2021	Passed	0.00	Passed	0.13
17/06/2021	Passed	-0.07	Passed	0.15
18/06/2021	Passed	-0.05	Passed	0.15
19/06/2021	Passed	-0.03	Passed	0.15
20/06/2021	Passed	-0.02	Passed	0.18
21/06/2021	Passed	-0.06	Passed	0.09
22/06/2021	Passed	-0.06	Passed	0.11
23/06/2021	Passed	-0.04	Passed	0.14
24/06/2021	Passed	-0.04	Passed	0.14
25/06/2021	Passed	-0.03	Passed	0.14
26/06/2021	Passed	-0.03	Passed	0.15
27/06/2021	Passed	-0.02	Passed	0.16
28/06/2021	Passed	-0.03	Passed	0.18
29/06/2021	Passed	-0.03	Passed	0.17
30/06/2021	Passed	-0.02	Passed	0.16

Remarks:

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

Appendix G Event/Action Plans

Table G.1 Event and Action Plans for Air Quality

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

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

Table G.2 Event and Action Plans for Construction Noise

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

Table G.3 Event and Action Plans for Water Quality

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

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

Appendix H Summary of Site Audit Findings

L11 Civil and Building Works

Dates of Inspection: 1/6/2021, 8/6/2021, 15/6/2021, 21/6/2021 and 29/6/2021.

Summary of Findings

General

- No environmental deficiency identified.

Air Quality

- No environmental deficiency identified.

Noise

- No environmental deficiency identified.

Water Quality

- No environmental deficiency identified.

Waste Management

- No environmental deficiency identified.

L11 Mechanical, Electrical, Instrumentation & Control Erection Works

Dates of Inspection: 3/6/2021, 10/6/2021, 17/6/2021 and 24/6/2021.

Summary of Findings

General

- No environmental deficiency identified.

Air Quality

- No environmental deficiency identified.

Noise

- No environmental deficiency identified.

Water Quality

- No environmental deficiency identified.

Waste Management

- No environmental deficiency identified.

L12 Civil and Building Works

Dates of Inspection: 1/6/2021, 8/6/2021, 15/6/2021, 21/6/2021 and 29/6/2021.

Summary of Findings

General

- No environmental deficiency identified.

Air Quality

- No environmental deficiency identified.

Noise

- No environmental deficiency identified.

Water Quality

- No environmental deficiency identified.

Waste Management

- No environmental deficiency identified.

Summary of EMIS

Power Station – (Part B of EIA Report)

Construction Phase Mitigation Measures and their Implementation

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

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

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

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

Remarks:

- ** - No dredging and reclamation work would be involved for L11 & L12 construction
- C - Compliance with mitigation measure
- NC - Non-compliance with mitigation measure
- N/A - Not Applicable

ID	Task Name	Duration	2021			
			Jul	Aug	Sep	
1	Civil and Building Works for Unit 11 and Associated Works	1197 days	▼ 30 Sep '21			
2	Contract Key Dates	1197 days				
3	Contract Commencement Date	0 days				
4	Completion Dates	1044 days	▼ 30 Sep '21			
5	Section A1 - Ground treatment installation works at Zone 1A	0 days				
6	Section A2 - Ground treatment installation works at Zone 1B	0 days				
7	Section A3 - Ground treatment installation works at Zone 2	0 days				
8	Section A4 - Ground treatment installation works at Zone 3	0 days				
9	Section A5 (i) - Ground treatment installation works at Zone 4 - Band drain installation	0 days				
10	Section A5 (ii) - Ground treatment installation works at Zone 4 - Surcharge filling	0 days				
11	Section A6 (i) - A&A Works for No. 4 C.W. Outfall at Area E18	0 days				
12	Section A6 (ii) - External works at Area E15	0 days				
13	Section B1 (i) - Area south of L11 MSB and HRSG from GL11-F eastwards leading to Chimney Road at Area E1 & E2	0 days				
14	Section B1 (ii) - Supporting structures for overhead cranes of L11 MSB including the associated roof structure except the roof deferred works	0 days				
15	Section B1 (iii) - FSRU Civil works at Area E13	0 days				
16	Section B2 - Retractable Cover D at Area E22	0 days				
17	Section B3 - External works at Area B1, D2 and D4	0 days				
18	Section C1 - Area south of L11 MSB from GL11-F westwards leading to Station Road at Area E3(A) & E3(B)	0 days				
19	Section C2 - (i) Southern part of L11 HRSG area and its surrounding at Area E7 except the deferred works for Lube Oil Storage Tank	0 days				
20	Section C2 - (ii) L11 Turbo Block foundation including the L11 MSB ground floor together with the equipment foundations between GL 11-F to 11-H and 11-1 to 11-6 for the installation of power generator, air inlet duct and lube oil reservoir	0 days				
21	Section C2 - (iii) G/F of L11 MSB including the Condenser Pit, Circulating Water Pipe Pit and equipment foundations between GL 11-B to 11-C and 11-1 to 11-6 for the installation of condenser	0 days				
22	Section D - (i) Roads and external grounds surrounding L11 MSB and L11 HRSG in addition to the southern & eastern areas mentioned above in Area E5 and E6	0 days				
23	Section D - (ii) Remaining northern part of L11 HRSG area and its surrounding in Area E6	0 days				
24	Section D - (iii) Whole of L11 MSB including the pipe and cable rack along south façade of L11 MSB with all underground utilities at Area E4 including C.W. Inlet and Outlet Culvert except the deferred works	0 days				
25	Section D - (iv) Link Bridge between L10 and L11 MSB and at the south of L11 MSB including their associated alternations & additions (A&A) Works at L10 MSB	0 days				
26	Section D - (v) Gas Duct Foundation, Pipe and Cable Rack and associated trench in Area E20	0 days				
27	Section E1 - (i) Link Bridge and Pipe and Cable Rack connecting L11 MSB to the western area of L11 MSB at Area E3	0 days				
28	Section E1 - (ii) Gas Receiving Station and L11 Gas Receiving Station Equipment Room (GRS) Area Extension at Area E16	0 days				
29	Section E1 - (iii) External Works at Area E15 (C)	0 days				
30	Section E2 - Pipe and Cable Rack and trench at west of Chimney Road and Pipe and Cable Rack at south of Middle Road at Area E8 and E19	0 days				
31	Section E3 - Gas Pipe Support Foundation and Pipe Trench and associated external works at Area E14, E15 (A) and E15 (B)	0 days				
32	Section E4 - 275kV cable trenching works connecting the 275kV Switching Station Extension and L11 MSB at Area E9 (A)	0 days				
33	Section F - 275kV Station Building Extension and associated works at Area E17	0 days				
34	Section G - A&A Works at No. 4 C.W. Intake at Area E12	0 days				
35	Section H - L11 Steel flue liner at No. 4 Chimney	0 days				

ID	Task Name	Duration	2021		
			Jul	Aug	Sep
36	Section I - (i) 275kV cable trenching works connecting the 275kV Switching Station Extension and L11 MSB at Area E9 (B)	0 days			
37	Section I - (ii) Interconnector 2 Trench Modification Works at Area E10	0 days			
38	Section J - (i) Demolition of Retractable Cover A&B & (ii) Foundation of LMX Light Oil Storage Tank Nos. 3 & 4 and A&A for Existing Bund Wall at	0 days	4 and A&A for Existing Bund Wall at Area E21		
39	Section K1 - External works at Area 15 (E) and 15(F)	0 days			
40	Section K2 - Removal of Southern Bund and External Works at Area D5, D6 and D7	0 days	1 Works at Area D5, D6 and D7		
41	Section K3 - All remaining works shall be completed for reporting completion to BD and ready for OP inspection	0 days			◆ Section K3 - All remain
42	General & Preliminary	318 days			
43	Set up Temporary Site Office and Utilities	90 days			
44	Permit Applications & Statuary Submissions	120 days			
45	Existing Utilities scanning & Excavation Permit	45 days			
46	Tower Crane erection 2@MSB, 1@ 275	50 days			
47	Submission and Approval	554 days			
48	Method Statement / Temp Work Submission & Approval from HEC for General Works	240 days			
49	BD Approval & Consent (If required)	120 days			
50	BIM Model, CSD & CBWD Submission & Approval from HEC	200 days			
51	Structure Steelwork Connection Design Submission & BD Approval	60 days			
52	Structure Steelwork Shop Drawing & Approval	60 days			
53	Metal Cladding, louvre & windows submission & BD Approval	60 days			
54	Metal Cladding, louvre & windows shop drawing submission	60 days			
55	Order, Off Site Fabrication and Delivery (S. Steel & Cladding & louvres)	180 days			
56	Retractable Cover D BD Submission & Approval	90 days			
57	No. 4 C.W. Outfall A&A BD 1st Submission	90 days			
58	Submission & Approval of Steel Flue Assessment Report and Design Drawings	60 days			
59	Submission and Approval of Steel Flue Design from BD	60 days			
60	Material Fabrication & Delivery for L11 Flue	100 days			
61	Folding Shutters Shop Drawing Submission & Approval	120 days			
62	Fabrication & Delivery of Folding Shutters	150 days			
63	Sewage Pump System Design submission & approval	90 days			
64	Fabrication & Delivery of Sewage Pump	180 days			
65	Other material submission & approval & delivery	300 days			
66	Coordination with the Employer's Specialist Contractors	478 days			
67	Installation of Puddle Pipes at C.W. outlet Culvert	7 days			
68	Installation of Puddle Pipes at C.W. Inlet Culvert	7 days			
69	Template setting at L11 Turbo Block Foundation	60 days			
70	Template setting of holding down bolts at HRSG column base	46 days			
71	I-beam / channel base installation on top of transformer foundations at Transformer Area	30 days			
72	Overhead crane erection at turbine hall using access through a temporary opening at L11 MSB roof between GL11-G to 11-H and 11-2 to 11-6	36 days			
73	Condenser assembly and erection using access through a temporary façade opening at L11 MSB below 1/F along GL 11-6 from GL11-B to 11-C including a clear space below 1/F between GL 11-B to 11-C	127 days			
74	Installation of power train equipment including air inlet duct using access through a temporary façade opening at L11 MSB below 1/F along GL 11-6 from GL11-F to 11-H including a clear space below 1/F of the above area	142 days			
75	Installation of embedded materials such as holding down bolts for equipment foundations - Commencement	30 days			
76	Section A1 & A2 - Ground treatment at Zone 1A & 1B	92 days			
77	Plant establishment for earthworks	7 days			
78	Backfilling and compaction from existing ground +4.5mPD to +5.5mPD	45 days			
79	Delivery of band drain	5 days			
80	Plant establishment for band drain (1st rig)	10 days			
81	Plant establishment for band drain (2nd rig)	7 days			
82	Plant establishment for band drain (3rd rig)	7 days			

ID	Task Name	Duration	2021		
			Jul	Aug	Sep
83	Vert. Band drain installation (1023 nos. x 44m)	45 days			
84	Deposition of surcharge up to +8.3mPD	45 days			
85	Section A3 - Ground treatment installation works at Zone 2	158 days			
86	Backfilling and compaction from existing ground +4.5mPD to +5.5mPD	30 days			
87	Delivery of band drain	6 days			
88	Vert. Band drain installation (1787 nos. x 44m)	50 days			
89	Deposition of surcharge up to +8.3mPD	60 days			
90	Additional Concrete Blocks + Extra Surcharge	60 days			
91	Section A4 - Ground treatment installation works at Zone 3	131 days			
92	Backfilling and compaction from existing ground +4.5mPD to +5.5mPD	12 days			
93	Vert. Band drain installation	60 days			
94	Deposition of surcharge up to +8.3mPD	45 days			
95	Possession of Part 1 Defer portion at Zone 3	0 days			
96	Vert. Band drain installation	10 days			
97	Possession of Part 2 Defer portion at Zone 3	0 days			
98	Vert. Band drain installation	7 days			
99	Surcharge at deferred portion	14 days			
100	Section A5 (i) - Ground treatment installation works at Zone 4	83 days			
101	Site Preparation for Vertical Band Drain	3 days			
102	Band drain installation	21 days			
103	Possession of Defer portion at Zone 4	0 days			
104	Vert. Band drain installation	28 days			
105	Section A5 (ii) - Surcharge works at Zone 4	30 days			
106	Deposition of surcharge up to +8.3mPD	30 days			
107	Section A6 (i) - A&A Works for No. 4 C.W. Outfall at Area E18	493 days			
108	BD Amendment, resubmission & approval for Jacking Pit	170 days			
109	Consent for Jacking Pit ELS	28 days			
110	Mobilization	0 days			
111	Jacking Pit Sheetpile Installation (incl. Stop work notice + CNY)	60 days			
112	Protective screen and preventive measure for U9 gas pipeline (VO)	28 days			
113	Provision of temp support for U10 gas pipeline (VO) upon RMA allow access	28 days			
114	ELS of jacking pit	30 days			
115	Pipe Jacking set up & ground strengthening	18 days			
116	Pipe Jacking	90 days			
117	Receiving Pit BD Approval	170 days			
118	Consent for Pipe & Sheet pile	28 days			
119	Receiving Pit Pipe & Sheet pile installation	30 days			
120	Consent for Receiving Pit ELS	28 days			
121	ELS of Receiving pit	40 days			
122	Allow modify existing outfall manhole for pipe jacking receiving	18 days			
123	Culvert Pipe Intallation & water test	55 days			
124	Inspection Manhole at Jacking Pit + backfill (Area E3(A))	18 days			
125	Manhole extension at Outfall no. 4 + backfill + Reinstate of Outfall Rd	45 days			
126	Sheetpile for L12 Outlet culvert (Connection to Jacking Pit)	45 days			
127	Consent + ELS for remaining jacking pit	75 days			
128	Outlet Culvert pipe installation + Thrust Box (remaining portion at A1 Area)	45 days			
129	Sheet pile for future extension along GRS	60 days			
130	Section A6 (ii) - External works at Area E15(D)	37 days			
131	Area possession & Clearance	6 days			
132	Road & Surface Works	31 days			
133	Section B1 (i) - Area south of L11 MSB and HRSG from GL11-F eastwards leading to Chimney Road at Area E1 & E2	375 days			
134	Area Possession & Clearance	0 days			
135	Excavation for CW Inlet Culvert (South of L11 HRSG)	21 days			
136	Installation CW Inlet Culvert pipe	30 days			
137	Construction of Thrust Box & Manholes,etc	14 days			
138	Backfill	21 days			
139	Install underground utilities	45 days			
140	Backfill and Temporary paving for Condensor Move in (E1)	14 days			
141	Backfill and Temporary paving for Condensor Move in (others)	30 days			
142	Section B1 (ii) - Supporting structures for overhead cranes of L11 MSB including the associated roof structure except the roof deferred works	482 days			
143	Area possession & Clearance	0 days			
144	Erection of turbine hall roof except defer work	0 days			

ID	Task Name	Duration	2021		
			Jul	Aug	Sep
145	Installation of crane griders	21 days			
146	Turbine hall wall claddings	60 days			
147	Section B1 (iii) - FSRU Civil works at Area E13 (GRS)	151 days			
148	Submission and approval for consent to work	0 days			
149	Civil & Building Works	130 days			
150	Ground reinstatement	21 days			
151	Section B2 - Retractable Cover D at Area E22	435 days			
152	Area Possession, Demolition and clearance work	60 days			
153	Revise Structural Form and BD resubmission & approval	150 days			
154	Foundation construction	60 days			
155	Backfill & Ground reinstatement	30 days			
156	Superstructure fabrication & delivery	90 days			
157	Superstructure erection	90 days			
158	E&M Installation and T&C	45 days			
159	Section B3 - External works at Area B1, D2 and D4	416 days			
160	Receive Area from HKE, Area Possession & Clearance	0 days			
161	Removal of existing paving for band drain under Section A5(i)	30 days			
162	Complete Vert. Band drain under Section A5(i)	0 days			
163	Ground preparation for B1, D2 & D4 for handover to Plant contractor	90 days			
164	Section C1 - Area south of L11 MSB from GL11-F westwards leading to Station Road at Area E3(A) & E3(B)	466 days			
165	Area Possession & Clearance	0 days			
166	Excavation for Type C (Area E3A)	21 days			
167	Installation CW Outlet Culvert Pipe connect to Type C1	21 days			
168	Installation CW Inlet Culvert pipe (South of L11 Condensor)	21 days			
169	Construction of Thrust Box	10 days			
170	Construction of Access Manhole	21 days			
171	Backfill	14 days			
172	Construction of Underaround drainage and utilities	60 days			
173	Construct Temp Paving for Condenser move in	45 days			
174	Section C2 - (i) Southern part of L11 HRSG area and its surrounding at Area E7 (No Defer Foundations)	295 days			
175	Area Possession & Clearance	0 days			
176	Excavation & Pile Caps & Tie Beams (HRSG South Area E7)	45 days			
177	Construction RC foundations	45 days			
178	Construction RC plinths	30 days			
179	Construction underground utilities	45 days			
180	Backfill & Construction on-grade slabs	35 days			
181	Backfill and Temporary paving	21 days			
182	Section C2 - (ii) L11 Turbo Block foundation including the L11 MSB ground floor together with the equipment foundations between GL 11-F to 11-H and 11-1 to 11-6 for the installation of power generator, air inlet duct and lube oil reservoir	496 days			
183	Area Possession & Clearance	0 days			
184	Excavation & Pile Caps & Tie Beams (MSBL11 - Turbo Block North)	70 days			
185	Excavation & Pile Caps & Tie Beams (MSBL11 - Turbo Block South)	30 days			
186	Backfill and construction turbine block foundations	21 days			
187	Construction of internal drainage	60 days			
188	Construction RC walls incl. G/F rooms	90 days			
189	Construction turbine block columns and upper portion for plant embed installation	21 days			
190	Concrete Turbine upper part foundation & clear falsework	52 days			
191	Section C2 - (iii) G/F of L11 MSB including the Condenser Pit, Circulating Water Pipe Pit and equipment foundations between GL 11-B to 11-C and 11-1 to 11-6 for the installation of condenser	466 days			
192	Area Possession & Clearance	0 days			
193	Excavation to foundation level at ELS Type A	18 days			
194	Construction of CW Outlet Box + lowest tie beam & caps	40 days			
195	Construction of pile caps & tie beams & hot well sump pit up to +2.5mPD	30 days			
196	Backfill & Construction of CW Inlet Box + tie beams	18 days			
197	Backfill and Construction ground beams & trenches	18 days			

ID	Task Name	Duration	2021		
			Jul	Aug	Sep
198	Construction of indoor underground drainage	12 days			
199	Backfill & construction on-grade slabs	10 days			
200	Construction Column casting and RC walls	30 days			
201	Metal Cladding & Louvres for GLB-C/1-6	60 days			
202	Mis. Works for plant erection	24 days			
203	Section D - (i) Roads and external grounds surrounding L11 MSB and L11 HRSG in addition to the southern & eastern areas mentioned above in Area E5 and E6	414 days			
204	Area Possession & Clearance	14 days			
205	Excavation for Type C1 and open sheet pile	75 days			
206	Install CW Outlet pipe & connect to previous	21 days			
207	Backfill	10 days			
208	Undeground utilities and trenches	60 days			
209	Construction of plant drainage, trenches & RC plinths	45 days			
210	Remaining Undeground utilities & backfill (West of Tx Bay)	75 days			
211	Section D - (ii) Remaining northern part of L11 HRSG area and its surrounding in Area E6	375 days			
212	Area Possession & Clearance	0 days			
213	Excavation & Pits & Pile Caps & Tie Beams (HRSG north Area E6)	45 days			
214	Construction RC foundations	45 days			
215	Construction RC plinths & HRSG Lift Pit & internal drainage	60 days			
216	Backfill Construction on-grade slabs	28 days			
217	Construction underground utilities	45 days			
218	Backfill, Remaining utilities and temporary paving	85 days			
219	Touch up and site clearance	13 days			
220	Section D - (iii) Whole of L11 MSB including the pipe and cable rack along south facade of L11 MSB with all underground utilities at Area E4 including C.W. Inlet and Outlet Culvert except the deferred works	526 days			
221	Area Possession & Clearance	0 days			
222	Construction of pile caps & tie beams at Transformer Area	60 days			
223	Excavation & Construction Blow Down Sum pit (Type B)	45 days			
224	Construction of pile caps & tie beams at SunShadeCover Area	45 days			
225	Preparation for S.Steelwork Erection	14 days			
226	Structural Delivery & Erection (Turbine Hall North fr G.L. 1-3/H->B)	30 days			
227	Structural Delivery & Erection (Equipment Floors)	45 days			
228	Structural Delivery & Erection (Turbine Hall South)	45 days			
229	Fire Coating Application at Joint	120 days			
230	External Scaffolding Erection	150 days			
231	Construction 1/F RC Slab	14 days			
232	Construction M/F RC Slab	7 days			
233	Construction 2/F RC Slab	14 days			
234	Construction 3/F RC Slab	14 days			
235	Construction 4/F RC Slab	14 days			
236	Construction 5/F RC Slab (Roof of turbine hall, except defer portion)	30 days			
237	Construction Roof RC Slab	14 days			
238	Construction Upper Roof RC Slab	12 days			
239	Construction Defer Roof RC Slab (G.L. G-H)	30 days			
240	Construction of Staircase ST-01 & lift shaft & machine room	120 days			
241	Construction of Staircase ST-02 except defer work	76 days			
242	Construction of RC plinth, kerbs & parapet Walls	30 days			
243	Erection of Skylight & Roof Features	45 days			
244	Waterproofing & Flooring at Roof	60 days			
245	ABFW Works from 1/F to 5/F equipment rooms	150 days			
246	Metal Cladding, Windows and Louvres incl. roof feature	100 days			
247	Removal of external scaffolding	60 days			
248	Building Services E&M Access & Installation	150 days			
249	Remaining and Mis. works for Plant erection Full Access	18 days			
250	Section D - (iv) Link Bridge between L10 and L11 MSB and at the south of L11 MSB including their associated alternations & additions (A&A) Works at L10 MSB	526 days			
251	Area Possession & Clearance	0 days			

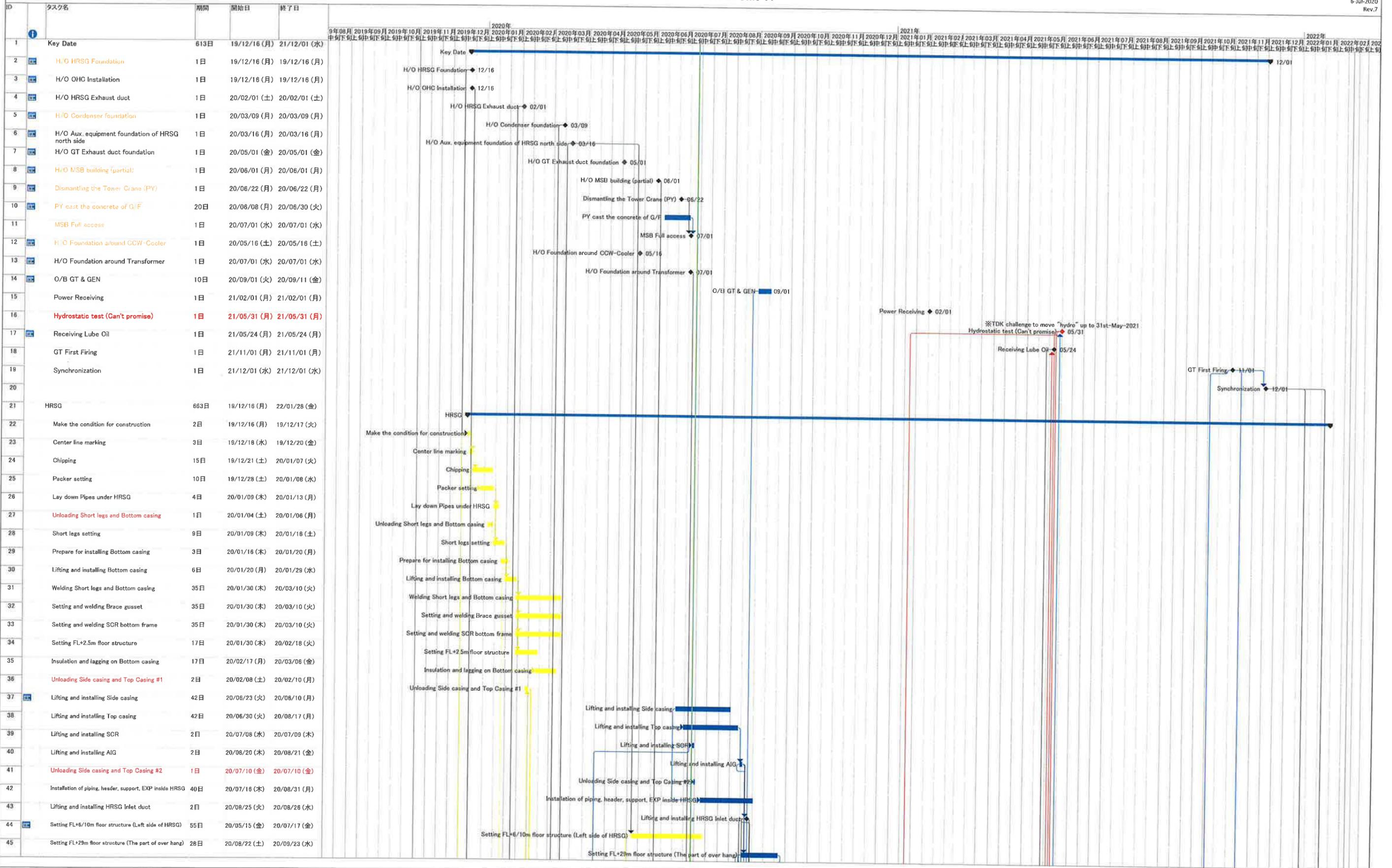
ID	Task Name	Duration	2021		
			Jul	Aug	Sep
252	A&A works at South of L10 MSB	60 days			
253	Erection of link bridge structural steel	21 days			
254	Casting of bridge deck	7 days			
255	Metal roofing installation	14 days			
256	ABWF work	21 days			
257	Form new opening at MSB for final connection	14 days			
258	E&M Work for completion	21 days			
259	Section D - (v) Gas Duct Foundation, Pipe and Cable Rack and associated trench in Area E20	345 days			
260	Area Possession & Clearance + CNY	0 days			
261	Sheet pile installation & submit as-built	75 days			
262	Consent for excavation	28 days			
263	Excavation & plate load test	45 days			
264	Construction of foundation	45 days			
265	Backfill & Underground utitiies	30 days			
266	Remaining Pipe & cable rack and associated trenches in Area E20	115 days			
267	Section E1 - (i) Link BrIdge and Pipe and Cable Rack connecting L11 MSB to the western area of L11 MSB at Area E3	263 days			
268	Area Possession	0 days			
269	Excavation & construction of new foundation	40 days			
270	Backfill	10 days			
271	Erection of Structural steel	30 days			
272	Backfill & Ground works	55 days			
273	Section E1 - (ii) Gas Receiving Station and L11 Gas Receiving Station Equipment Room (GRS) Area Extension at Area E16	173 days			
274	Area Possession	0 days			
275	Removal of Surcharge and excavation	14 days			
276	Modification of Site Drainage	45 days			
277	Construction of new RC for GRS Equipment Room	75 days			
278	ABWF for GRS Equipment room	45 days			
279	E&M Installation	45 days			
280	Construction of new Gas pipe plinths & racks	45 days			
281	Backfill and construction site drainage	21 days			
282	External Paving and install new fencing	60 days			
283	Section E1 - (iii) External Works at Area E15 (C)	273 days			
284	Removal of Surcharge and excavation	45 days			
285	Underground drianage, Utilities and RC plinths	123 days			
286	Backfill and install surface utilities	45 days			
287	Roadwork	60 days			
288	Section E2 - Pipe and Cable Rack and trench at west of Chimney Road and Pipe and Cable Rack at south of Middle Road at Area E8 and E19	495 days			
289	BD consent + Site Possession @ Area E8	0 days			
290	Excavation & Plate load test	60 days			
291	Foundation and Trench constructions	90 days			
292	Backfill & underground utitiles + temp paving	60 days			
293	Excavation & plate load test @ E19	60 days			
294	Construction of foundations & trenches	45 days			
295	Backfill & underground utitiles	60 days			
296	Pipe & cable rack Erection	60 days			
297	Ground reinstatement	60 days			
298	Section E3 - Gas Pipe Support Foundation and Pipe Trench and associated external works at Area E14, E15 (A) and E15 (B)	173 days			
299	Removal of surcharge / site clearance	21 days			
300	Excavation & construction of pipe trench	30 days			
301	Construction of gas pipe support foundation	30 days			
302	Construction of underground drainage and utilities	60 days			
303	Backfill & road work	32 days			
304	Section E4 - 275kV cable trenching works connecting the 275kV Switching Station Extension and L11 MSB at Area E9 (A)	185 days			
305	Site possession	0 days			
306	Obtain Permit to work & Road close permit	10 days			

ID	Task Name	Duration	2021		
			Jul	Aug	Sep
307	Excavation & construction new cable trench to 275kV	45 days			
308	Excavation & construction new cable trench to L11MSB	130 days			
309	Section F - 275kV Station Building Extension and associated works at Area E17	709 days			
310	Installation of ELS for 275kV Switching Station near Staircase ST-3 and ST-6	14 days			
311	Construction of Staircase ST-3	110 days			
312	BD Amendment Approval on A&A	0 days			
313	BD Amendment Approval on A&A ST3 & Drainage	0 days			
314	OP inspection of Staircase ST-3	14 days			
315	Consent of New Foundation Works (Stage 1)	0 days			
316	Consent & BA10 for Demolition of Existing Staircase	0 days			
317	Demolition of Existing Staircase and Submit BA14A	14 days			
318	BD inspection for BA14A & Issue OP	28 days			
319	Consent & BA10 for New Foundation Work (Stage 2)	28 days			
320	Hoarding Modification	7 days			
321	Pile Cap & Tie Beam Construction (Stage 1)	98 days			
322	Erection of Tower Crane	40 days			
323	Pile Cap and Tie Beam (Stage 2)	21 days			
324	RC Construction up to 1/F (Stage 1)	30 days			
325	RC Construction up to 1/F (Stage 2)	75 days			
326	Construction of Staircase ST6	90 days			
327	Shop Drawing Submission & Approval of Structural Steel	45 days			
328	Structural Steel fabrication & Delivery	60 days			
329	Erection of Structural Steel GL 17~18	30 days			
330	Erection of Structural Steel GL 8~17	60 days			
331	Metal Cladding Delivery	60 days			
332	Metal Door, Window & Louvre Delivery	45 days			
333	Erection of Working Platform and Scaffold	150 days			
334	Install Decking	60 days			
335	RC Walls from 1/F @ GIS Hall	40 days			
336	Construction of 2/F RC slab	14 days			
337	Construction of R/F RC slab	21 days			
338	Construction of UR/F RC slab	14 days			
339	Construction of GIS Hall Floor	60 days			
340	Installation of Overhead Crane (By JEC)	60 days			
341	Construction of staircase ST4, ST5, Lift Shaft & Equip Floors	150 days			
342	Lift Installation	90 days			
343	Concrete of RC walls, plinths, kerb & parapet walls & New trench for LV Power	30 days			
344	ABWF Works @ G/F	50 days			
345	ABWF Works @ 1/F	50 days			
346	ABWF Works @ 2/F	75 days			
347	ABWF Works @ R/F	30 days			
348	ABWF Works @ UR/F	21 days			
349	Waterproofing Works at R/F & UR/F	45 days			
350	Building Services E&M Access & Installation & T&C	150 days			
351	Metal Cladding, Windows and Louvres incl. Roof Feature	90 days			
352	Shutter Erection	30 days			
353	Removal of External Scaffolding + Tower Crane	35 days			
354	External Underground Drainage and Utilities	30 days			
355	Road & Paving Reinstatement	30 days			
356	Ready for FSD & OP Inspection	0 days			
357	Section G - A&A Works at No. 4 C.W. Intake at Area E12	143 days			
358	Permit to work	0 days			
359	Erection of temp. platform	14 days			
360	Demolition work	30 days			
361	Modify existing slab openings	75 days			
362	Curing + Removal of platform	24 days			
363	Section H - L11 Steel flue liner at No. 4 Chimney	186 days			
364	Complete erection of L10 Steel flue	0 days			
365	Modification of erection equipment	21 days			
366	Erection temp. platform and demolition work	30 days			
367	Structural steel delivery & Erection	85 days			
368	Removal of temp. work	5 days			
369	Reinstatate G/F louvre wall and access door	45 days			
370	Section I - (i) 275kV cable trenching works connecting the 275kV Switching Station Extension and L11 MSB at Area E9 (B)	232 days			
371	Obtain Permit to work & Road close permit	0 days			
372	Excavation & construction new cable trench	160 days			
373	Re-excavate cable trench for cable laying	72 days			
374	Section I - (ii) Interconnector 2 Trench Modification Works at Area E10	275 days			
375	Obtain Permit to work & Road close permit	0 days			
376	Re-excavate & new cable trench for cable laying	275 days			

ID	Task Name	Duration	2021			
			Jul	Aug	Sep	
377	Section J - (i) Demolition of Retractable Cover A&B & (ii) Construction of new LOT 3 & 4	426 days				
378	Obtain permit to work & Road close permit	0 days				
379	Erection of Hoarding	21 days				
380	Removal of existing cover & structural steel	30 days				
381	Demolish of existing bund wall and staircases	45 days				
382	Demolish of existing slab & foundation	60 days				
383	Consent for new work	30 days				
384	Construction of new bund wall and foundation	100 days				
385	Construction of new oil separator	80 days				
386	Construct underground drainage and surface channel	40 days				
387	Construction on-grade slab	60 days				
388	Removal of hoarding and ground reinstatement	40 days				
389	Section K1 - External works at Area 15 (E) and 15(F)	365 days				
390	Removal of surcharge	30 days				
391	Construct new drainage and utilities work	200 days				
392	Road & Paving	135 days				
393	Section K2 - Removal of Southern Bund and External Works at Area D5, D6 and D7	365 days				
394	Demolition work	30 days				
395	Construct new drainage and utilities work	200 days				
396	Road & Paving	135 days				
397	Section K3 - All remaining works shall be completed for reporting completion to BD and ready for OP inspection (PS1.4.4)	623 days				30 Sep '21
398	Completion of remaining roof after over headcrane move in	30 days				
399	Construction of G/F Lube Oil Tank Room (BY TDK)	61 days				
400	Construction of wall and staircase at G/F after Condensor Move in	90 days				
401	Construction of Durasteel Steel wall panel after IBP installation	30 days				
402	Construction of Transformer fence wall, cladding & associated FS services	122 days				
403	Final restatement of road & paving around MSB & HRSG	122 days				
404	Installation of trench covers and gratings after plant installation	151 days				
405	Backfill and reinstatement after 275kV cable laying	122 days				Backfill and reinstatem

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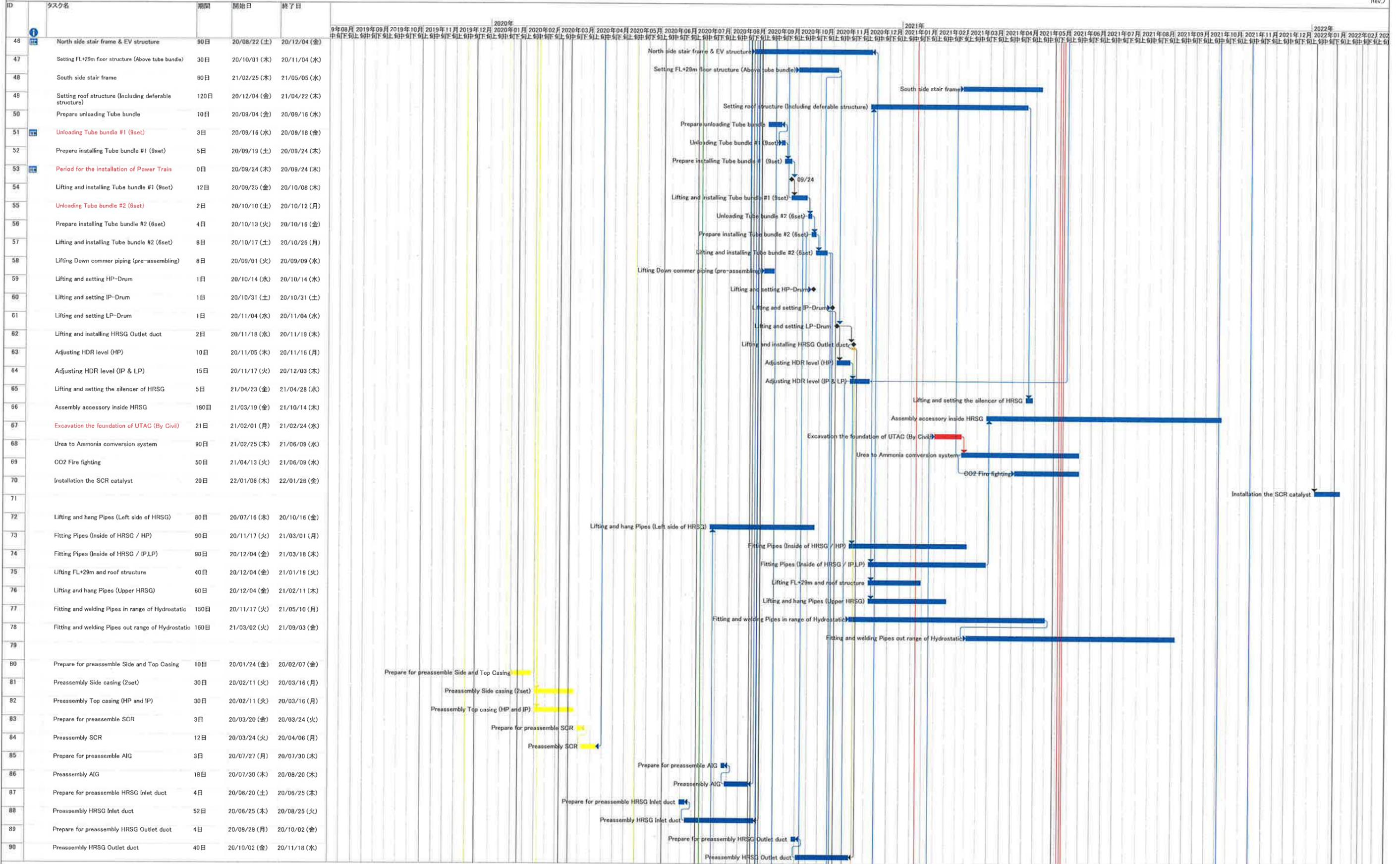


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 - ・ Installation Exhaust duct was re-started from 15th-May
2. To consider that structure of Takasago portion is delayed

4. To consider the delay of H/O date from PDC
5. Add the schedule of the electric work and the replacement the gantry crane for CWP

Construction Schedule of Unit-11

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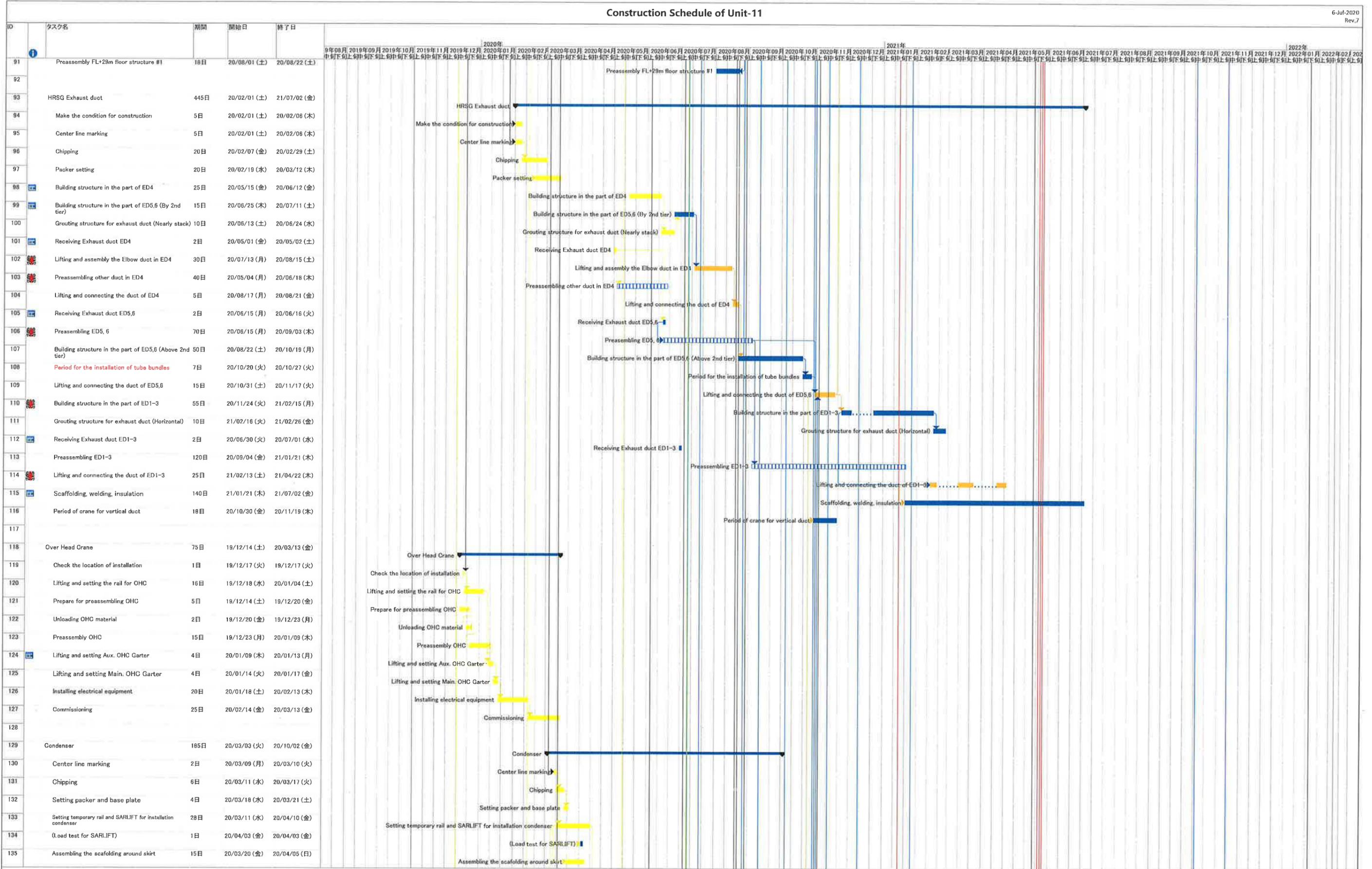


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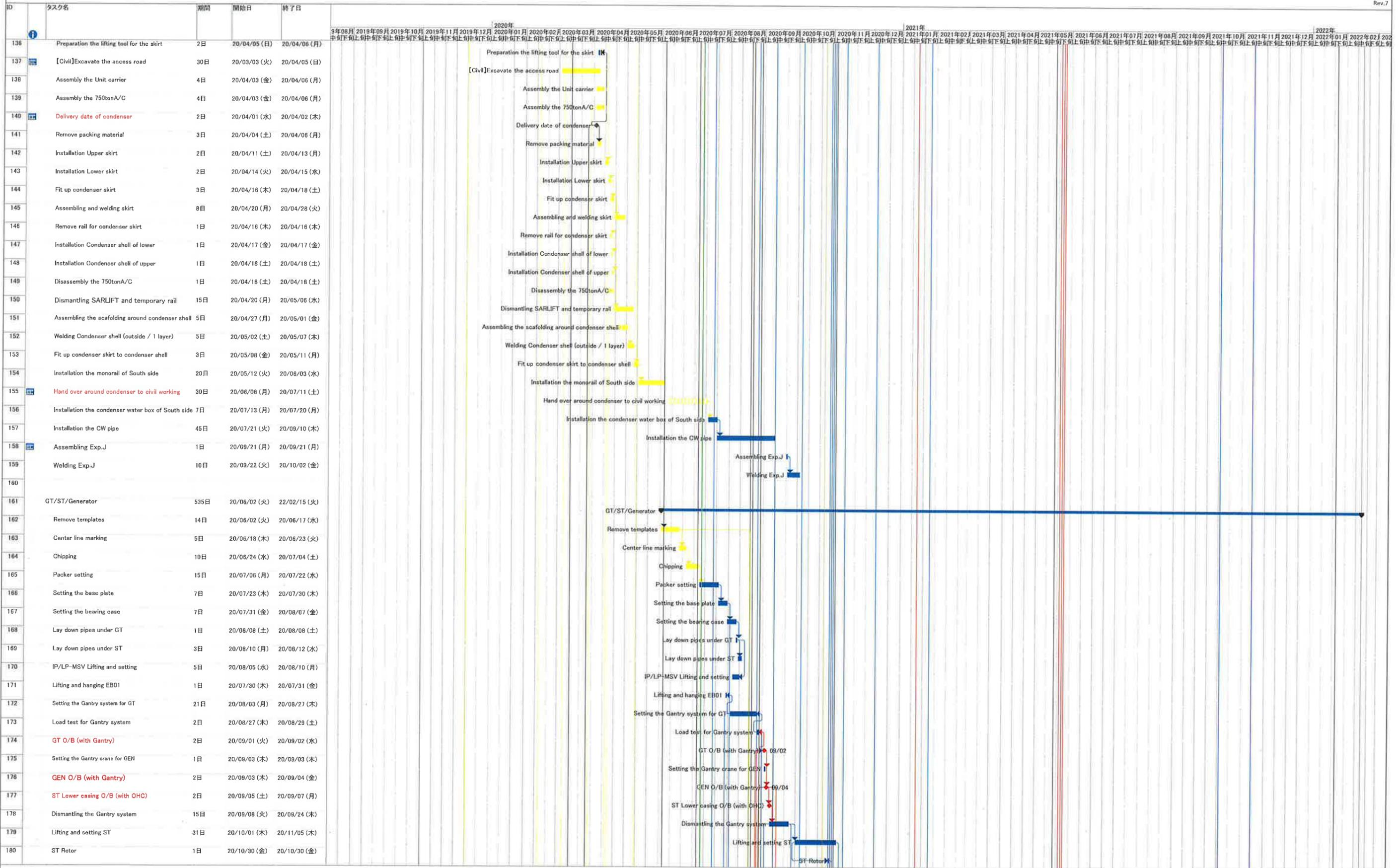


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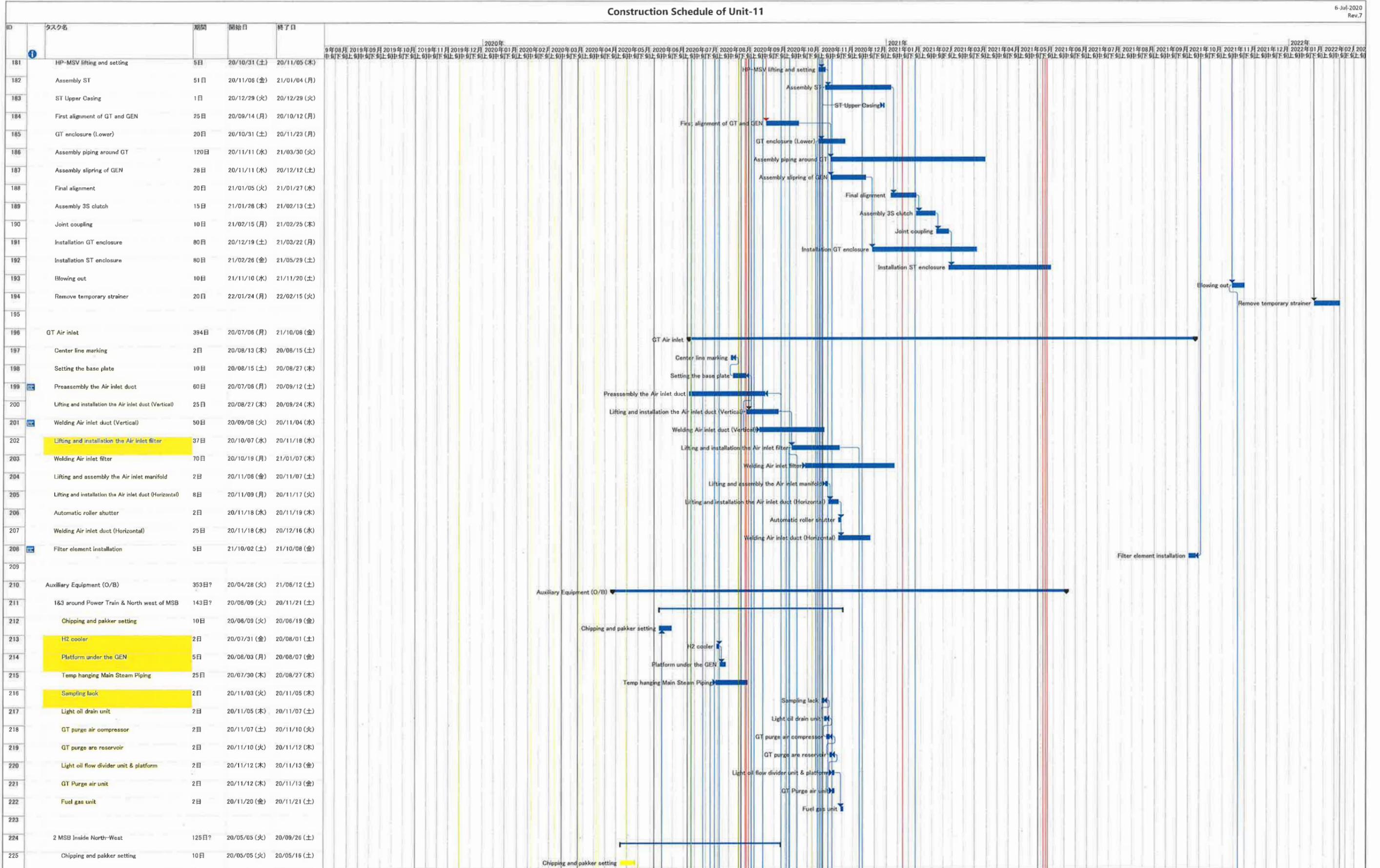


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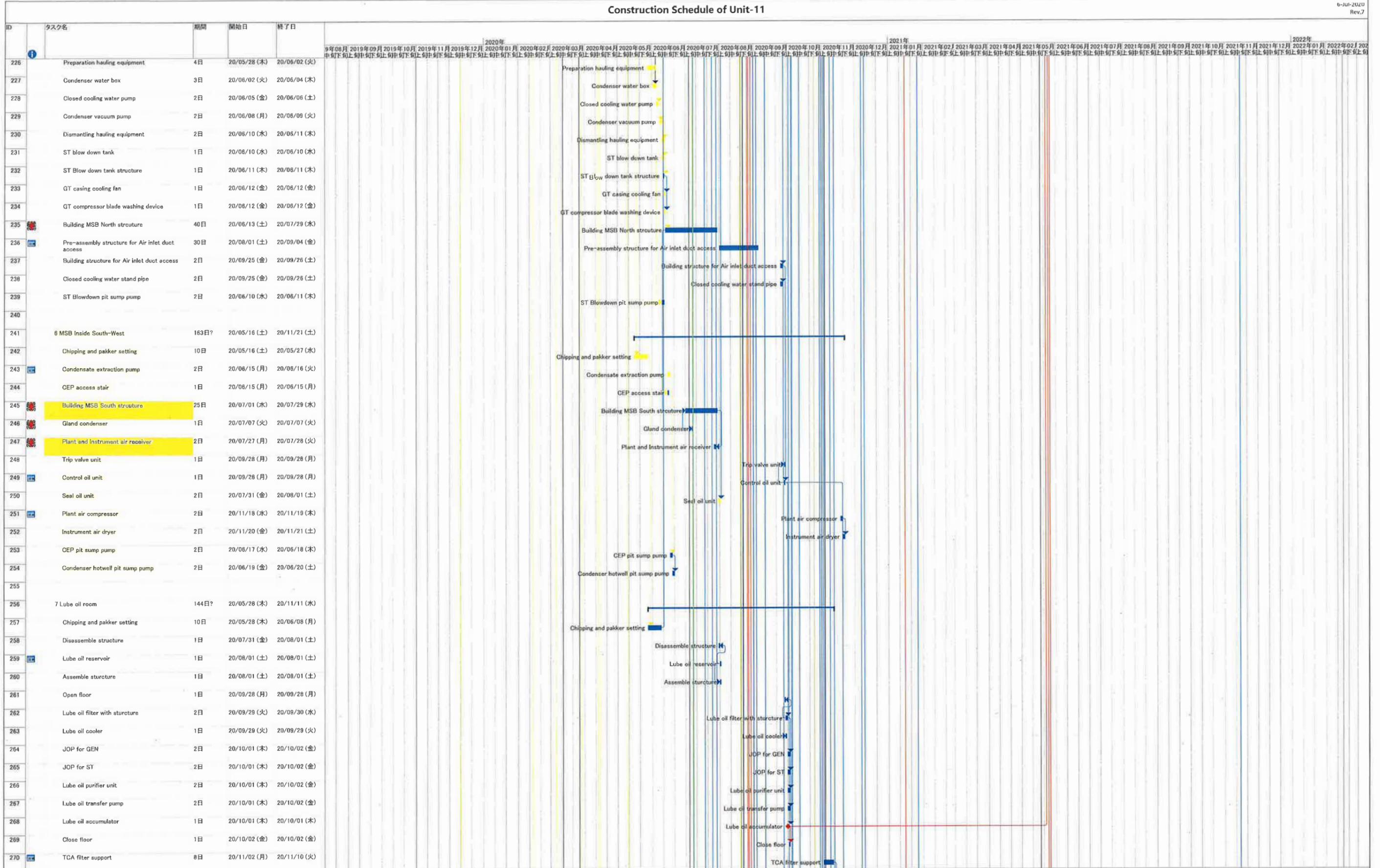
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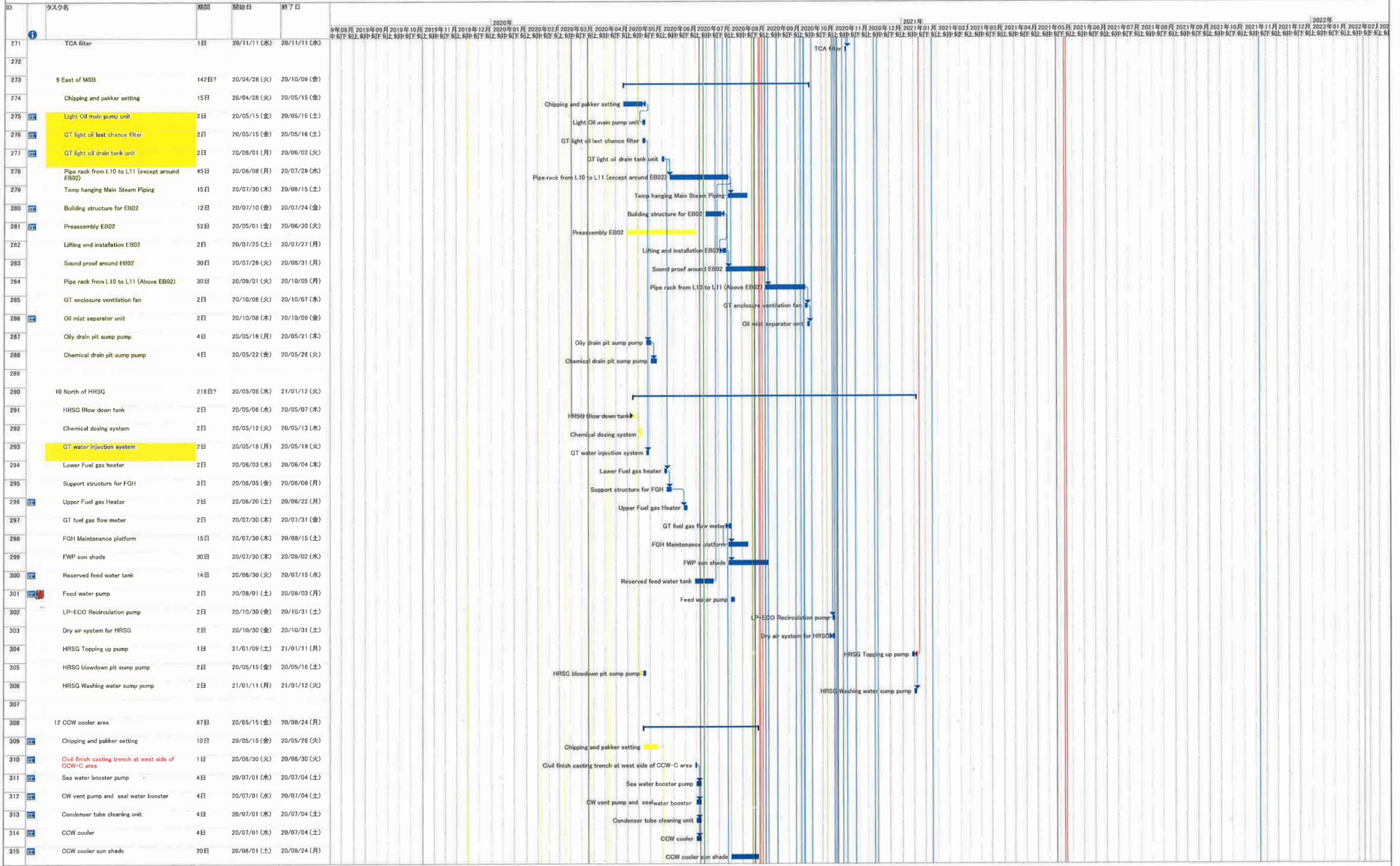
Construction Schedule of Unit-11



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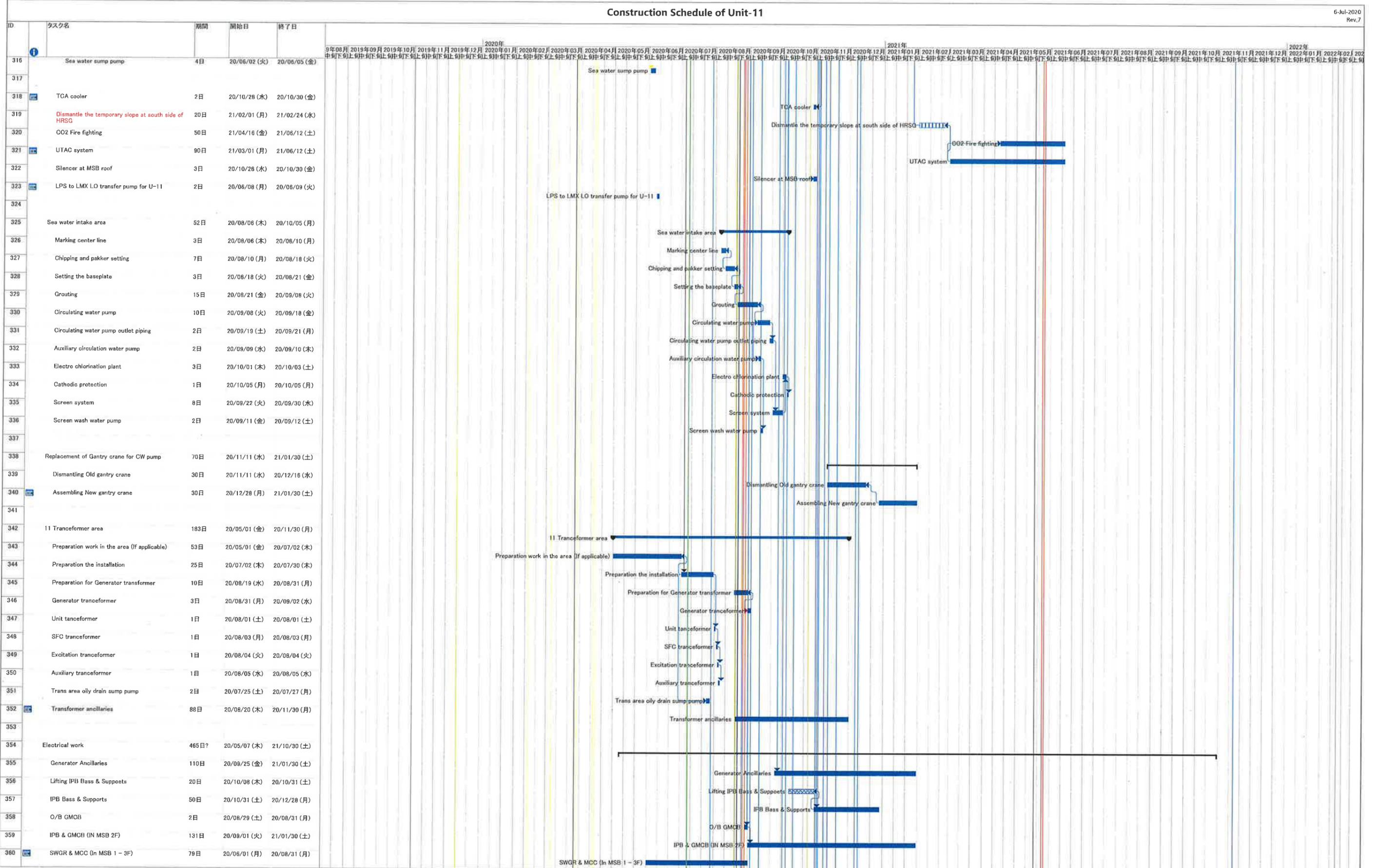


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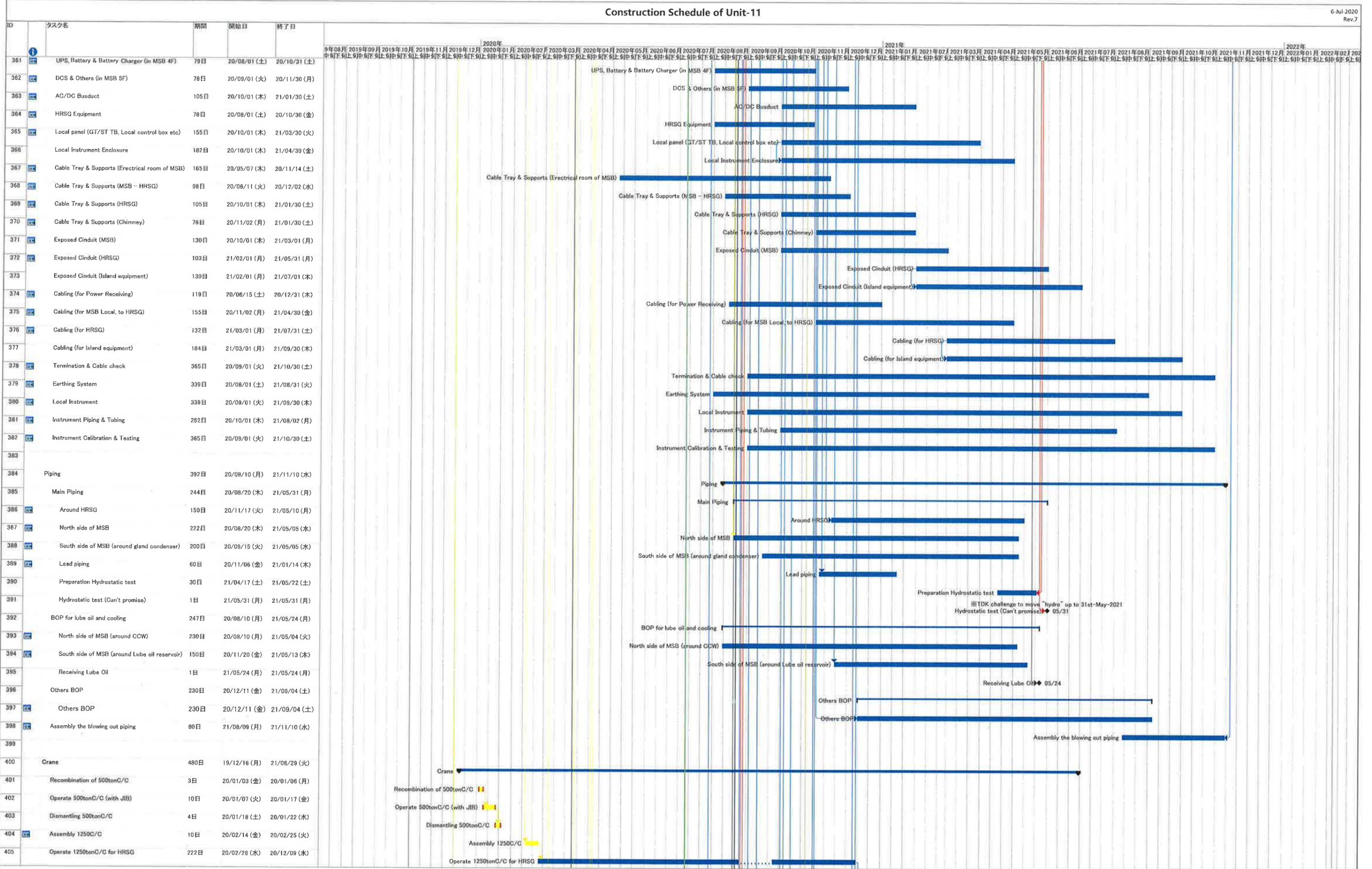


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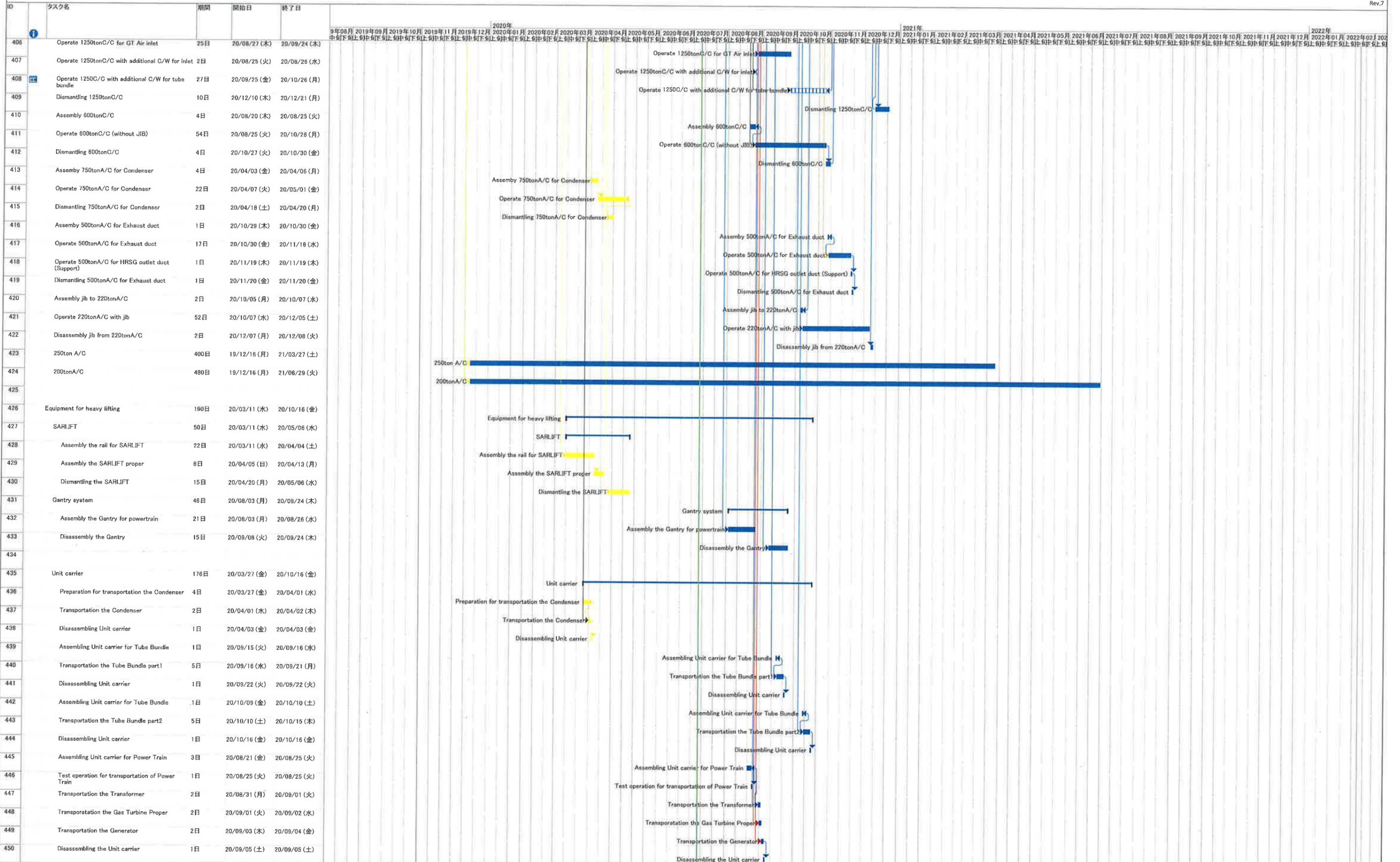


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Contract No. 19/83002 Lamma Power Station Extension Civil and Building Works for Unit L12

MASTER PROGRAMME

ID	Task Name	Duration	2021	Jul	Aug	Sep	Oct
1	KEY DATES & MILESTONES	1123 days					
2	Contract Period	1123 days					
3	Deferred Work Completion Key Dates	784 days					
4	Substantial Completion of the Whole Contract Works (1123 Days)	0 days					
5	SITE POSSESSION DATES	513 days					
6	Site Possession Date as phased site possession plan and PS1.4.2	0 days					
7	Site Possession Date as phased site possession plan and PS1.4.2	0 days					
8	Site Possession Date as phased site possession plan and PS1.4.2	0 days					
9	Site Possession Date as phased site possession plan and PS1.4.2	0 days					
10	Site Possession Date as phased site possession plan and PS1.4.2	0 days					
11	Site Possession Date as phased site possession plan and PS1.4.2	0 days					
12	COMPLETION DATES as per PS1.4.2 Time for Completion	609 days					
13	Section A1 (i) - Area south of L12 MSB and L12 HRSG from GL12-F eastwards leading to Chimney Road at Area F1 & F2	0 days					
14	Section A1 (ii) - Supporting structures for overhead cranes of L12 MSB including the associated roof structure except the roof deferred works	0 days					
15	Section A2 (i) External Works including CW Inlet Culvert at Area F8A	0 days					
16	Section A2 (ii) External Works including CW Inlet Culvert at Area F8B	0 days					
17	Section A2 (iii) External Works including CW Inlet Culvert at Area F8C	0 days					
18	Section B1 - Area south of L12 MSB from GL12-F westwards leading to Station Road at Area F3	0 days					
19	Section B2 (i)- Southern Part of L12 HRSG areas and its surrounding refer to Area F6B as shown in drawing no 553/03/2040 including the foundations for Gas Exhaust Duct	0 days					
20	Section B2 (ii) - Remaining northern part of L12 HRSG area and its surrounding at Area F6A and F6C	0 days					
21	Section B2 - (iii) L12 Turbo Block foundation including the L12 MSB ground floor together with the equipment foundations between GL 12-F to 12-H and 12-1 to 12-6 for the installation of power generator, air inlet duct and lube oil reservoir	0 days					
22	Section B2 - (iv) G/F of L12 MSB including the Condenser Pit, Circulating Water Pipe Pit and equipment foundations between GL 12-B to 12-C and 12-1 to 12-6 for the installation of condenser	0 days					
23	Section C - (i) Roads and external grounds surrounding L12 MSB and L12 HRSG in addition to the southern & eastern areas mentioned above in Area F5	0 days					
24	Section C - (ii) Whole of L12 MSB including the pipe and cable rack along south façade of L12 MSB with all underground utilities at Area F4 including C.W. Inlet and Outlet Culvert except the deferred works	0 days					
25	Section C - (iii) Link Bridge between L11 and L12 MSB including their associated A&A at L11 MSB	0 days					
26	Section D - (i) Microwave Antenna Room and Chimney Windshiled for the installation of microwave equipment and antenna	0 days					
27	Section D (ii) - No. 5 Chimney with L12 Steel Flue liner	0 days					
28	Section E (i) Tx Room of Administration and Control Building	0 days					
29	Section E (ii) - G/F,1/F, 2/F & Hoisting Well of Admin. & Control Building	0 days					
30	Section E (iii) - Whole of Admin. And Control Building	0 days					
31	Section F (i) - Gas Receiving Station and L12 Gas Receiving Station Equipment Room (GRS) Area Extension at Area F14	0 days					
32	Section F (ii) - Pipe and Cable rack and external work at Area F9A and F9B	0 days					
33	Section F (iii) - No. 5 CW Equipment Room, pipe and cable rack, external works at Area F10	0 days					
34	Section G (i) - External Work surrounding Area F11	0 days					
35	Section G (ii) - External Works at Area F12 & F13	0 days					
36	Section G (iii) - FS Modification works along South Seafront Road at Area F15	0 days					
37	Section G (iv) - 275kV cable trenches and External Works at Area F16	0 days					
38	Section G (v) - Shunt Reactor Compound and External Works at Area F17	0 days					
39	Section G (vi) - 275kV cable trenches and External Works at Area F18	0 days					
40	Section G (vii) - Flood Wall at No. 4 CW Intake Area along HUA at Area F20A	0 days					
41	Section G (viii) - Flood wall at No. 5 CW Intake Area along HUA at Area F20B	0 days					
42	Section G (ix) - Bund wall modification works at South Seafront Road at Area F21	0 days					
43	Section G (x) - DAX Cable Diversion Works (from Part I to Part IV)	0 days					
44	Section H - All remaining works shall be completed for reporting completion to BD and ready for OP inspection	0 days					
45	GENERAL & PRELIMINARY	228 days					
46	First Mobilization	18 days					
47	Set up Temporary Site Office and Welfare Facilities	90 days					
48	Permit Applications & Statuary Submissions	120 days					
49	Existing Utilities scanning & Excavation Permit	45 days					
50	Tower Crane erections	60 days					
51	TECHNICAL SUBMISSION AND APPROVAL	314 days					
52	BD Approval & Consent (If required)	0 days					
53	Submission and Approval of Master Programme	14 days					
54	Work Execution Overall Plan submission & approval	14 days					
55	Material Submissions and approval	300 days					
56	Method Statement submission and approval	300 days					
57	BIM Model, CSD & CBWD Submission & approval	120 days					
58	Structure Steelwork Connection Design Submission & BD approval	45 days					
59	Structure Steelwork Shop Drawing & Approval	30 days					
60	Metal Cladding, louvre & windows submission & BD approval	45 days					
61	Metal Cladding, louvre & windows shop drawing submission	45 days					
62	Order, Off Site Fabrication and Delivery (S. Steel & Cladding & louvres)	120 days					
63	ELS Submission and BD approval	90 days					
64	No. 5 Chimney windshield temporary work submission, approval & fabrication	60 days					
65	Steel Flue Assessment Report and Design Drawings submission & approval	60 days					
66	Folding Shutters Shop Drawing Submission & Approval	30 days					
67	Fabrication & Delivery of Folding Shutters	180 days					
68	Sewage Pump System Design submission & approval	45 days					
69	Fabrication & Delivery of Sewage Pump	180 days					
70	Other material submission & approval & delivery	180 days					
71	Other material submission & approval & delivery	180 days					
72	CONSTRUCTION	1123 days					
73	Coordination with the Employer's Specialist Contractors	421 days					
74	Installation of Puddle Pipes at C.W. outlet Culvert	7 days					
75	Installation of Puddle Pipes at C.W. Inlet Culvert	7 days					
76	Template setting at L12 Turbo Block Foundation	45 days					
77	Template setting of holding down bolts at HRSG column base	45 days					
78	I-beam / channel base installation on top of transformer foundations at Transformer Area	45 days					
79	Overhead crane erection at turbine hall using access through a temporary opening at L12 MSB roof between GL12-G to 12-H and 12-2 to 12-6	38 days					
80	Condenser assembly and erection using access through a temporary façade opening at L12 MSB below 1/F along GL 12-6 from GL12-B to 12-C including a clear space below 1/F between GL 12-B to 12-C	122 days					
81	Installation of power train equipment including air inlet duct using access through a temporary façade opening at L12 MSB below 1/F along GL 12-6 from GL12-F to 12-H including a clear space below 1/F of the above area	121 days					
82	Installation of embedded materials such as holding down bolts for equipment foundations - Commencement	0 days					
83	Section A1 (i) - Area south of L12 MSB and L12 HRSG from GL12-F eastwards leading to Chimney Road at Area F1 & F2	301 days					
84	Area Possession & Clearance	30 days					
85	Subletting / Fabrication / Delivery (both for Area F1 and Area F2)	60 days					
86	Excavation for CW Inlet Culvert (Type D Construction Area)	14 days					
87	Installation CW Inlet Culvert pipe + testing	30 days					
88	Construction of Thrust Box & Manholes,etc	14 days					
89	Backfill	14 days					
90	Construction UG Utilities 2m deep below further surface	30 days					
91	Temporary Paving and handover for plant erection	13 days					
92	Section A1 (ii) - Supporting structures for overhead cranes of L12 MSB including the associated roof structure except the roof deferred works	301 days					
93	Area Possession & Clearance	45 days					
94	Subletting / Fabrication / Delivery	210 days					
95	Complete structural steel erection	0 days					
96	Install Crane Girders	18 days					
97	Construction of roof slab (except defer work)	21 days					
98	Touch up and handover for install overhead cranes	3 days					
99	Section A2 (i) External Works including CW Inlet Culvert at Area F8A	301 days					
100	BD consent for Sheetpile installation	30 days					

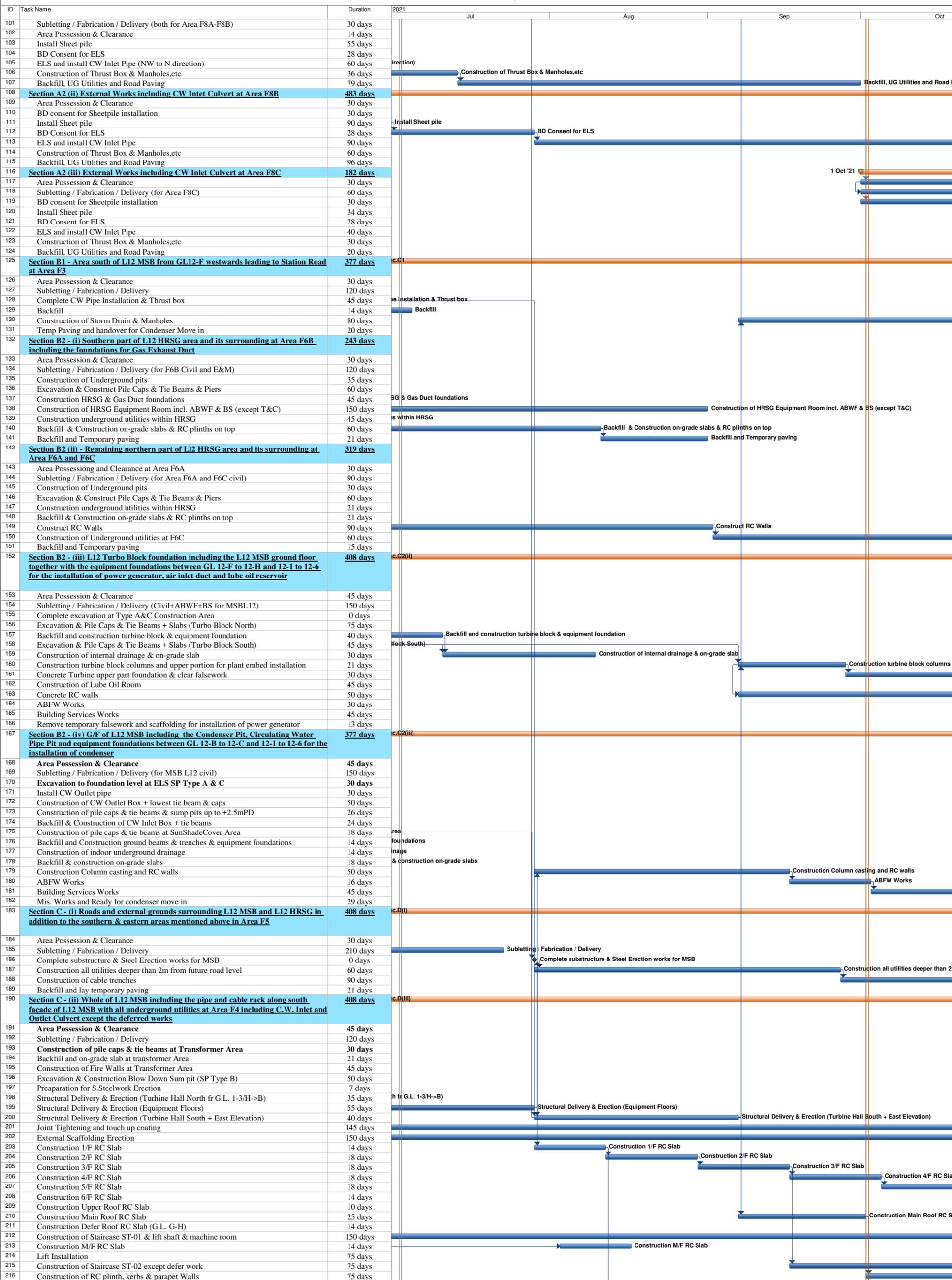
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Contract No. 19/83002 Lamma Power Station Extension Civil and Building Works for Unit L12

MASTER PROGRAMME

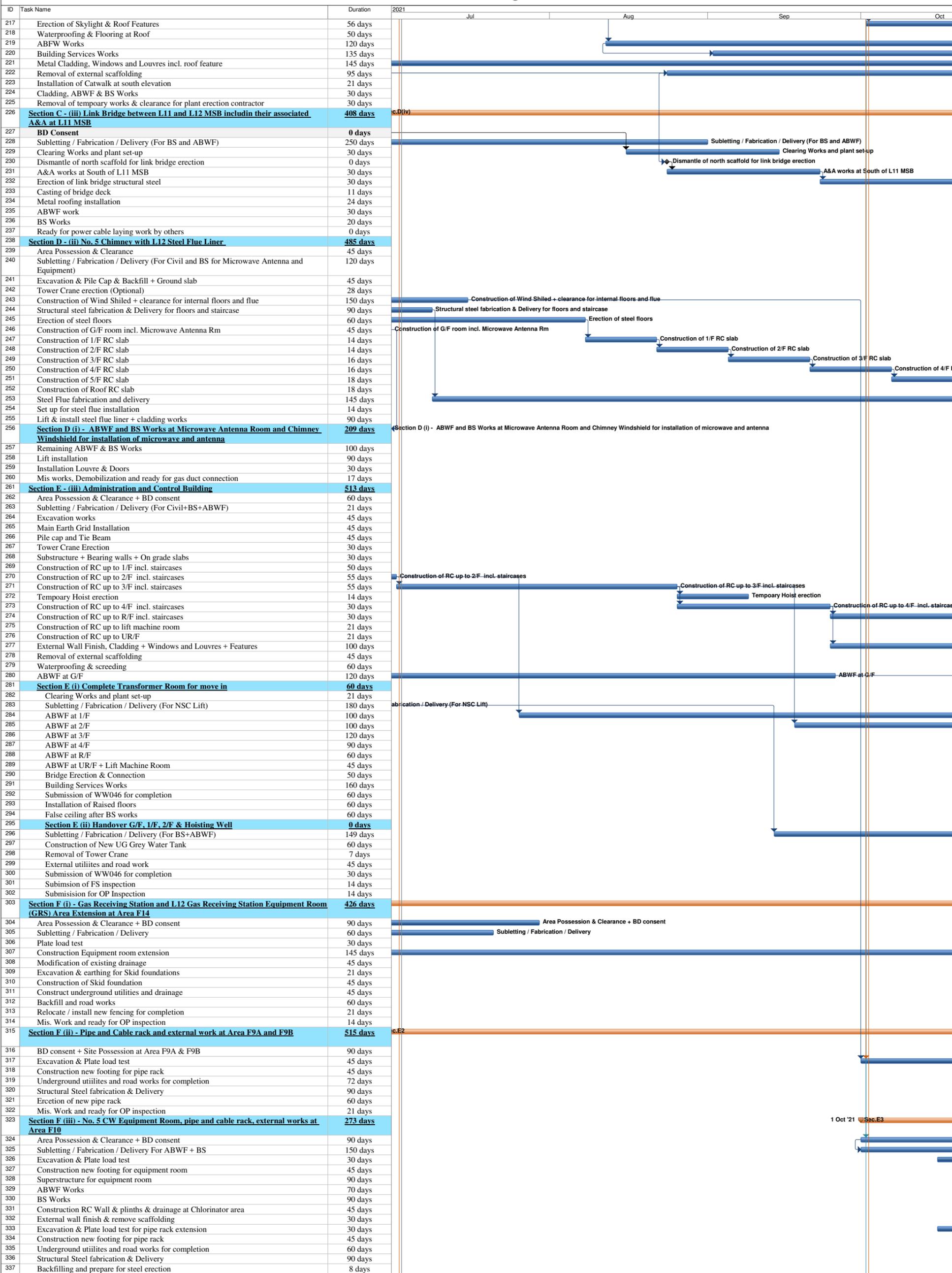


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Contract No. 19/83002 Lamma Power Station Extension Civil and Building Works for Unit L12

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ID	Task Name	Duration	2021	Jul	Aug	Sep	Oct
338	Erection of new pipe rack	70 days					
339	Mis. Work and ready for OP inspection	15 days					
340	Section G (i) - External Work surrounding Area F11	153 days					
341	Area Possession & Clearance after handover from No. 5 Intake Contractor	30 days					
342	Subletting / Fabrication / Delivery	30 days					
343	Submission WWO046 for commencement	30 days					
344	Construct Underground utilities and drainage	30 days					
345	Install new FS Hydrant	20 days					
346	Submission WWO046 for completion	30 days					
347	Construction Road extension	58 days					
348	Construction road paving and install fencing	30 days					
349	Ready for OP inspection	15 days					
350	Section G (ii) - External Works at Area F12 & F13	666 days					
351	Area Possession & Clearance after handover from other	45 days					
352	Subletting / Fabrication / Delivery	180 days					
353	Excavation	21 days					
354	Submission WWO046 for commencement	30 days					
355	Construct Underground utilities and drainage	90 days					
356	Install new FS Hydrant	30 days					
357	Submission WWO046 for completion	30 days					
358	Construction Road extension	127 days					
359	Complete with Mis. Works for completion	15 days					
360	Section G (iii) - FS Modification works along South Seafront Road at Area F15	183 days					
361	Area Possession & Clearance after handover from other	45 days					
362	Subletting / Fabrication / Delivery	21 days					
363	Temporary Traffic Arrangement approval	14 days					
364	Utilities scanning and expose existing FS	14 days					
365	Determine new FS alignment	21 days					
366	Submission to FSD	14 days					
367	Modification of FS	60 days					
368	Backfill and reinstatement + report to FSD	60 days					
369	Section G (iv) - 275kV cable trenches and External Works at Area F16	518 days					
370	Area Possession & Clearance	60 days					
371	Subletting / Fabrication / Delivery	210 days					
372	Temporary Traffic Arrangement approval	60 days					
373	Removal of aboveground services	60 days					
374	Utilities scanning and expose existing UU	30 days					
375	Arrange of diversion existing UG utilities	90 days					
376	Construct new cable trenches	173 days					
377	Realignment / install new UG utilities	60 days					
378	backfill and reinstate & ready for cable laying by others	45 days					
379	Section G (v) - Shunt Reactor Compound and External Works at Area F17	666 days					
380	Temporary Traffic Arrangement approval	45 days					
381	Subletting / Fabrication / Delivery	100 days					
382	BD approval & consent for sheetpile installation	90 days					
383	Area Possession & Clearance	14 days					
384	Removal of aboveground services	21 days					
385	Utilities scanning and expose existing UU	15 days					
386	Arrange of diversion existing UG utilities	45 days					
387	Install pipe piles	61 days					
388	BA14 for pipepile and BD consent for ELS	28 days					
389	Excavation & install earthing	35 days					
390	Construct Pile Caps and Tie Beams	45 days					
391	Backfill & Erect scaffold	21 days					
392	Construction of SRC Walls	75 days					
393	Wall finish and remove scaffolding	24 days					
394	Construct new cable trenches	60 days					
395	Realignment / install new UG utilities	117 days					
396	backfill and reinstate & ready for cable laying by others	30 days					
397	Section G (vi) - 275kV cable trenches and External Works at Area F18	397 days					
398	Temporary Traffic Arrangement approval	45 days					
399	Subletting / Fabrication / Delivery	60 days					
400	Area Possession & Clearance	15 days					
401	Removal of aboveground services	30 days					
402	Utilities scanning and expose existing UU	45 days					
403	Arrange of diversion existing UG utilities	60 days					
404	Construct new cable trenches	172 days					
405	Realignment / install new UG utilities	45 days					
406	backfill and reinstate & ready for cable laying by others	30 days					
407	Section G (vii) - Flood wall at No. 5 CW Intake Area along HUA at Area F20A	301 days					
408	Area Possession & Clearance	30 days					
409	Subletting / Fabrication / Delivery	60 days					
410	Temporary Traffic Arrangement approval	14 days					
411	ELS BD approval & consent	90 days					
412	Demolition of existing carriageway	30 days					
413	Removal of aboveground services	21 days					
414	Utilities scanning and expose existing UU	21 days					
415	Arrange of diversion existing UG utilities	30 days					
416	Install Sheet piles	45 days					
417	BA14 for sheetpile and BD consent for ELS	28 days					
418	Excavation and construction of new Flood wall	65 days					
419	Realignment / install new UG utilities	30 days					
420	backfill and construct new carriageway	18 days					
421	Mis. Work for completion	6 days					
422	Section G (viii) - Flood wall at No. 5 CW Intake Area along HUA at Area F20B	365 days					
423	Area Possession & Clearance	45 days					
424	Subletting / Fabrication / Delivery	90 days					
425	Temporary Traffic Arrangement approval	14 days					
426	ELS BD approval & consent	90 days					
427	Demolition of existing carriageway	60 days					
428	Removal of aboveground services	21 days					
429	Utilities scanning and expose existing UU	21 days					
430	Arrange of diversion existing UG utilities	30 days					
431	Install Sheetpiles	55 days					
432	BA14 for sheetpile and BD consent for ELS	28 days					
433	Excavation and construction of new Flood wall	90 days					
434	Realignment / install new UG utilities	30 days					
435	backfill and construct new carriageway	21 days					
436	Mis. Work for completion	9 days					
437	Section G (ix) - Bund wall modification works at South Seafront Road at Area F21	209 days					
438	Area Possession & Clearance	45 days					
439	Subletting / Fabrication / Delivery	90 days					
440	Temporary Traffic Arrangement approval	14 days					
441	ELS BD approval & consent	0 days					
442	Demolition of existing carriageway	14 days					
443	Removal of aboveground services	14 days					
444	Utilities scanning and expose existing UU	21 days					
445	Arrange of diversion existing UG utilities	30 days					
446	Excavation and expose existing bund wall & demolish	18 days					
447	Construction new bund wall for road junction	45 days					
448	Realignment / install new UG utilities	30 days					
449	backfill and construct new carriageway	18 days					
450	Mis. Work for completion	5 days					
451	Section G (x) - DAX Cable Diversion Works (from Part I to Part IV)	758 days					
452	Temporary Traffic Arrangement approval	14 days					
453	Subletting / Fabrication / Delivery	90 days					
454	Area Possession & Clearance	45 days					
455	Identification of existing cable trench	7 days					
456	Part 1 Re-excavation works incl. construction of joint bay	246 days					
457	Part 2 Re-excavation works incl. joint bay	120 days					
458	Part 3 Re-excavation works incl. joint bay	242 days					
459	Part 4 Re-excavation works incl. joint bay & new oil tank pits	92 days					
460	Backfill & Reinstatement Part 1	61 days					

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Task  Split  Milestone  Summary 

Contract No. 19/83002 Lamma Power Station Extension Civil and Building Works for Unit L12

MASTER PROGRAMME

ID	Task Name	Duration	2021	Jul	Aug	Sep	Oct
461	Backfill & Reinstatement Part 2	61 days					
462	Backfill & Reinstatement Part 3	61 days					
463	Section H - All remaining works shall be completed for reporting completion to BD and ready for OP inspection (PS1.4.4)	478 days					
464	Deferred works (MSB & HRSB) Listed in PS 1.4.4	281 days					
465	Construction of L12 MSB roof between GL12-G to 12-H and 12-2 to 12-6 after the overhead crane installation by the Employer's Specialist Contractors	38 days					
466	Construction of walls of L12 MSB below 1/F along GL 12-6 from GL12-B to 12-C and the associated staircases including the enclosure walls between G/F and 1/F. The Contractor shall allow access for the Employer's Specialist Contractors to use the hoisting we	92 days					
467	Provision in associated with hoisting well	21 days					
468	Construction of internal partition wall at 1/F of L12 MSB along GL 12-C from GL 12-2 to 12-3 AND North Façade at 1/F of L12 MSB along GL 12-1 from GL 12-B to 12-C	30 days					
469	Construction of metal fence and the associated Fire Services (F.S.) installations and installation of removable shelter at Transformer Area	92 days					
470	Deferred works (DAX1 and DAX2) Listed in PS 1.4.4	334 days					
471	Backfilling of whole DAX1 compartment inside existing joint bay "STJ12" and the new oil tank pit A located aside existing joint bay "STJ12".	59 days					
472	Re-excavation of whole DAX2 compartment inside existing joint bay "STJ12".	61 days					
473	Backfilling of whole DAX2 compartment inside existing joint bay "STJ12" and the new oil tank pit B located aside existing joint bay "STJ12".	61 days					
474	Deferred works (External Work) Listed in PS 1.4.4	121 days					
475	Final reinstatement of access roads and pavement surrounding and within L12 MSB and L12 HRSB area	62 days					
476	Installation of trench cover and road reinstatement of gas pipe and cable trenches within Area F5, F14, F16, F17 and F18.	90 days					
477	Backfilling and road-reinstatement of 275kV cable trenches	90 days					
478	All Remaining work ready for OP inspection	0 days					
479	STATUTORY SUBMISSION, INSPECTION & APPROVAL	865 days?					
480	WSD Statutory Submission, Inspection and Approval WWO Part I to III Submission / Approval	256 days					
481	WSD : Submit to WSD Form WWO 046 Part I to II - FOR ACB Building (for Ext Works at later stage)	0 days					
482	WSD: Vetting Form WWO 046 Part I and II Submission	90 days					
483	WSD: Issued of Form WWO 046 Part III by WSD - FOR ACB Building	0 days					
484	WSD: Prepare for 1st Amendment for Plumbing Plan	60 days					
485	WSD: Submit to WSD 1st Amendment for Plumbing Plan	0 days					
486	WSD: Vetting of Plumbing Plan by WSD	60 days					
487	WSD: 1st Approval for Plumbing Plan by WSD	0 days					
488	WSD: Prepare and Submit for Final Amendment for Plumbing Plan	45 days					
489	WSD: Vetting and Final Approval for Plumbing Plan by WSD	0 days					
490	WSD Statutory Submission, Inspection and Approval WWO Part IV to V Fire Services Water Submission / Approval	34 days?					
491	WSD: Form WWO 046 Part IV Submission (FS)	0 days					
492	WSD: WSD Received Form WWO046 Part IV and arrange for inspection (FS)	7 days					
493	WSD: WSD Inspection (FS)	7 days					
494	WSD: WWO 046 Part V Endorsement by WSD (FS)	12 days					
495	WSD: WSD Processing Water Supply Connection Certificate (FS)	7 days					
496	WSD: Issue by WSD Water Supply Connection Certificate (FS)	0 days?					
497	WSD Statutory Submission, Inspection and Approval WWO Part IV to V Potable /Flush Water Submission / Approval	60 days					
498	WSD: Form WWO 046 Part IV Submission (Fresh/Flush)	0 days					
499	WSD: WSD Acknowledge Form WWO 046	6 days					
500	WSD: WSD Inspection with Testing to lead (Fresh/Fluhs)	12 days					
501	WSD: Cleansing/Disinfecting Water Tanks / Piping System (Fresh/Flush)	6 days					
502	WSD: Collection of Sample for Testing at Accredited Lab (Fresh/Flush)	12 days					
503	WSD: Accredited Lab Testing Report of Sample to WSD	12 days					
504	WSD: Vetting of Test Report by WSD	6 days					
505	WSD: Issue of WWO 046 Part V (Fresh/Flush)	0 days					
506	WSD: WSD Processing WWO1005 Water Certification (Fresh/Flush)	6 days					
507	WSD: Issue by WSD WWO 1005 Water Certification (Fresh/Flush)	0 days					
508	EMSD LIFT Statutory Submission, Inspection and Approval	45 days					
509	EMSD: Submission of Lift Form LE5 to EMSD	12 days					
510	EMSD: EMSD Makes arrangement for Lift Installation	5 days					
511	EMSD: EMSD Inspection to Lift Installation	14 days					
512	EMSD: Processing Lift Certificate (Form LE6)	14 days					
513	EMSD: Lift Issuance of Form 6 (Lift Certificate)	0 days					
514	HKE Transformer Final Inspection	120 days					
515	TX Room: Invite HKE For Transformer Room Inspection	7 days					
516	TX Room: Give Access to Transformer Room for HKE Contractor	0 days					
517	TX Room: Move-IN HKE Transformer Equipments	5 days					
518	TX Room: Install HKE Transformer, MEP Works & Testing	90 days					
519	TX Room: HKE Power Energization / Inspection	6 days					
520	TX Room: Metering Installation	12 days					
521	TX Room: HKE Power-ON Date	0 days					
522	DSD Drainage Completion Memo	65 days					
523	DSD: CCTV Survey Report on Completed Drainage	30 days					
524	DSD: Submitted CCTV Report & Form HPB1 of Completed Drainage to DSD For Technical Audit	7 days					
525	DSD: Completed Drainage System including TMC Inspection/Technical Audit by DSD	14 days					
526	DSD: Preparation of Drainage Connection Completion Memo by DSD	14 days					
527	DSD: Issue of Drainage Connection Completion Memo by DSD	0 days					
528	EPD Submission, Inspection and Approval	60 days					
529	EPD: License Application to EPD under APCO (Cap 311) for Generator Sets	0 days					
530	EPD: Vetting of Application by EPD under APCO (Cap 311) for Generator Sets	60 days					
531	EPD: Approval from EPD under APCO (Cap 311) for Generator Sets Installation	0 days					
532	FSD VAC Statutory Submission, Inspection and Approval	150 days					
533	Preparation of FSD VAC Drawings and Submission to HEC	60 days					
534	HEC: Review and Approval	30 days					
535	Preparation of VAC Drawings and Submission to FSD	30 days					
536	FSD: Review and Approval	30 days					
537	FSD Statutory Submission, Inspection and Approval	91 days					
538	Testing and Commissioning (Individual System - FSI Related)	45 days					
539	FSD: All Sections FS Ingration Test by NSC_BS	15 days					
540	FSD: Completion of FS Integration Test by NSC_BS for FS314/501	0 days					
541	FSD: Submit Form 213/314 & Form 501 Request for Inspection	0 days					
542	FSD: FSD Makes Arrangement for Inspection	7 days					
543	FSD: FSD Inspection	12 days					
544	FSD: Completion of FS Inspection	0 days					
545	FSD: FSD Processing FS Certificate Form 172	12 days					
546	FSD: Issue of Fire Services FS Certificate Form 172	0 days					
547	PRACTICAL COMPLETION	216 days					
548	BD Inspection	97 days					
549	BD: Application Form BA13 for OP Application	21 days					
550	BD: BD Inspection Date	15 days					
551	BD: Reinspection date with defects and rectification works	60 days					
552	BD: Obtain Occupation Permit (OP) from BD	1 day					
553	As-Built Drawings & Handover Documentation	120 days					
554	Prepare and Submit As-Built Drawings & Handover Documentation	45 days					
555	Review and Approval	45 days					
556	As-Built Drawings & Handover Documentation - Revision by MC	30 days					
557	Revised As-Built Drawings & Handover Documentation - Final Submission	0 days					
558	Completion of the Whole Contract Works	119 days					
559	1st Client Inspection for Review and Comments	30 days					
560	Defects and Rectification works	60 days					
561	2nd Client Inspection	14 days					
562	Minor Defects Rectification Works and Final Inspection	15 days					
563	PRACTICAL COMPLETION	0 days					

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Monthly Waste Flow Table for Jun 2021

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

Contractor: Paul Y. Construction Company, Limited

Record by: Ben Lam

Year of Record: 2018, 2019, 2020 & 2021

MM.YYYY	Actual Quantities of Inert C&D Materials Generated Monthly								Actual Quantities of Non-inert C&D Materials Generated Monthly					
	Excavated Materials				Non-excavated Materials				Metals (steel bar / metal strip) ⁽¹⁾	Metals (aluminum can) ⁽¹⁾	Paper / cardboard packaging ⁽¹⁾	Plastics ^{(1) & (6)}	Chemical waste (wasted lubricant oil in container)	Other, e.g. general refuse
	Disposed in Public Fill	Disposed in Sorting Facilities	Others (e.g. Reused in the Contract / Other Projects)	Broken Concrete or Construction Waste Collected by Recycled Company	Reused in the Contract	Reused in other Projects	Disposed in Public Fill	Disposed in Sorting Facilities						
	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000L)	(in '000kg)	
Jul 2018	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Aug 2018	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sep 2018	3160.23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Oct 2018	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Nov 2018	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.87
Dec 2018	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.57
Jan 2019	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Feb 2019	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.66	0.00	0.00	0.00	0.60	0.00
Mar 2019	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	19.05	0.00	0.00	0.00	0.00	0.00
Apr 2019	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.08	0.00	0.00	0.00	0.00	19.09
May 2019	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.63	0.00	0.00	0.00	0.00	59.75
Jun 2019	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.64
Jul 2019	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.66
Aug 2019	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sep 2019	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	27.31
Oct 2019	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.109	0.00	0.00	4.76
Nov 2019	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.60	4.87
Dec 2019	0.00	0.00	0.00	0.00	0.00	10226.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	18.19
Jan 2020	0.00	0.00	0.00	0.00	0.00	7981.09	0.00	0.00	0.00	0.00	0.157	0.00	0.00	26.89
Feb 2020	0.00	0.00	0.00	0.00	0.00	8782.98	0.00	0.00	0.00	0.00	0.000	0.00	0.00	0.00
Mar 2020	0.00	0.00	0.00	0.00	0.00	20252.12	0.00	0.00	0.00	0.00	0.000	0.00	0.00	78.96
Apr 2020	0.00	0.00	0.00	0.00	0.00	12976.86	0.00	0.00	8.30	0.00	0.000	0.00	0.00	68.75
May 2020	0.00	0.00	0.00	0.00	0.00	20203.01	0.00	0.00	0.00	0.00	0.000	0.00	0.00	0.00
Jun 2020	0.00	0.00	0.00	0.00	0.00	28030.33	0.00	0.00	0.00	0.00	0.000	0.00	0.00	58.49
Jul 2020	0.00	0.00	0.00	0.00	0.00	12481.37	0.00	0.00	0.00	0.00	0.000	0.00	0.00	33.88
Aug 2020	0.00	0.00	0.00	0.00	0.00	11179.56	0.00	0.00	0.00	0.00	0.000	0.00	0.60	73.73
Sep 2020	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.53	0.00	0.286	0.00	0.00	64.93
Oct 2020	0.00	0.00	0.00	0.00	0.00	10762.20	0.00	0.00	7.12	0.00	0.297	0.00	0.00	83.34
Nov 2020	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	16.46	0.00	0.000	0.00	0.20	61.21
Dec 2020	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.00	0.00	59.98
Jan 2021	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.00	0.00	51.37
Feb 2021	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.00	0.00	44.94
Mar 2021	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.00	0.00	34.57
Apr 2021	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.00	0.00	30.92
May 2021	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.00	0.00	18.65
Jun 2021	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.00	0.00	10.76
Total	3160.23	0.00	0.00	0.00	0.00	142875.75	0.00	0.00	74.83	0.00	0.849	0.00	2.00	972.18

Total Inert C&D Waste Materials Generated	Non-inert C&D Materials		
	C&D Materials Recycled	C&D Waste Disposed of at Landfill	Chemical Waste
146035.98 tonnes	75.68 tonnes	972.18 tonnes	2000 Liters

Where (A) Inert C&D materials include bricks, concrete, building debris, rubble and excavated spoil. In total 146035.98 tonnes of inert C&D material were generated from the Project, of which 142875.75 tonnes were reused in this and other contracts, and the remaining 3160.23 tonnes were disposed as public fill to Fill Banks / Sorting Facilities.

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

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

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

Notes:

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

Monthly Waste Flow Table for June 2021

Project: LAMMA POWER STATION EXTENSION – Unit 11 Complete Erection, Inspection, Testing & Commissioning of Power Block Facilities
 Contractor: Taihei Dengyo Kaisha, Ltd.
 Record by: Stephen Sin
 Year of Record: 2019, 2020, 2021

MM.YYYY	Actual Quantities of Inert C&D Materials Generated Monthly								Actual Quantities of Non-inert C&D Materials Generated Monthly					
	Excavated Materials				Non-excavated Materials				Metals (steel bar / metal strip) ⁽¹⁾	Metals (aluminum can) ⁽¹⁾	Paper / cardboard packaging ⁽¹⁾	Plastics ^{(1) & (4)}	Chemical waste (wasted lubricant oil/oil container)	Other, e.g. general refuse
	Disposed in Public Fill	Disposed in Sorting Facilities	Others (e.g. Reused in the Contract / Other Projects)	Broken Concrete or Construction Waste Collected by Recycled Company	Reused in the Contract	Reused in other Projects	Disposed in Public Fill	Disposed in Sorting Facilities						
(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in L)	(in '000kg)	
Nov 2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
Dec 2019	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Jan 2020	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 2020	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 2020	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.35	
Apr 2020	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	11.61	
May 2020	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	12.39	
Jun 2020	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	13.03	
Jul 2020	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	16.32	
Aug 2020	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2600	10.38	
Sep 2020	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.20	
Oct 2020	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	12.02	
Nov 2020	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2400	26.18	
Dec 2020	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	15.38	
Jan 2021	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	21.65	
Feb 2021	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.40	
Mar 2021	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	17.43	
Apr 2021	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2400	20.24	
May 2021	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0	14.08	
June 2021	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0	17.43	
Total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7400	232.09	

Total Inert C&D Waste Materials Generated	Non-inert C&D Materials		
	C&D Materials Recycled	C&D Waste Disposed of at Landfill	Chemical Waste
0.00 tonnes	0.00 tonnes	232.09 tonnes	7400 Liters

- Where (A) Inert C&D materials include bricks, concrete, building debris, rubble and excavated spoil. In total, 0.00 tonnes of inert C&D material were generated from the Project, of which 0 tonnes were reused in this and other contracts, and the remaining 0.00 tonnes were disposed in Public Fill and Sorting Facilities.
- (b) Non-inert C&D materials (construction wastes) include metals, paper / cardboard packaging waste, plastics and other wastes such as general refuse. Metals generated from the Project were grouped into construction wastes as the materials were not disposed of with others at the public fill.
- (c) 0 kg of metals, 0 kg of papers/ cardboard packing and 0 kg of plastics were sent to recyclers for recycling during the reporting period.
- (d) Construction wastes other than metals, paper/cardboard packaging, plastics and chemicals were disposed of at Landfill.

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

