

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 2023

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 L12 Monthly EM&A Report (June 2023)
Date	14 July 2023
Certified by	 (Mr. CHAN Hon Yeung, Environmental Team Leader)
Verified by	 Mr. Y. W. Fung (AECOM Asia Company Limited, Independent Environmental Checker)

TABLE OF CONTENT

EXECUTIVE SUMMARY

1.	INTRODUCTION.....	1
1.1	Background	1
1.2	Project Organisation	1
1.3	Construction Works undertaken during the Reporting Month	1
1.4	Summary of EM&A Requirements	4
2.	AIR QUALITY.....	6
2.1	Monitoring Requirements	6
2.2	Monitoring Locations	6
2.3	Monitoring Equipment	6
2.4	Monitoring Parameters, Frequency and Duration	6
2.5	Monitoring Procedures and Calibration Details	7
2.6	Results and Observations	8
3.	NOISE.....	10
3.1	Monitoring Requirements	10
3.2	Monitoring Locations	10
3.3	Monitoring Equipment	10
3.4	Monitoring Parameters, Frequency and Duration	10
3.5	Monitoring Procedures and Calibration Details	11
3.6	Results and Observations	11
4.	ENVIRONMENTAL AUDIT.....	13
4.1	Review of Environmental Monitoring Procedures	13
4.2	Assessment of Environmental Monitoring Results	13
4.3	Waste Management	13
4.4	Site Environmental Audit	14
4.5	Status of Environmental Licensing and Permitting	14
4.6	Implementation Status of Environmental Mitigation Measures	15
4.7	Implementation Status of Event/Action Plans	15
4.8	Implementation Status of Environmental Complaint Handling Procedures	15
5.	FUTURE KEY ISSUES.....	16
5.1	Key Issues for the Coming Month	16
5.2	Monitoring Schedules for the Next 3 Months	16
5.3	Construction Program for the Next 3 Months	17
6.	CONCLUSION.....	18

LIST OF TABLES

Table 1.1	Construction Activities and Their Corresponding Environmental Mitigation Measures
Table 2.1	Air Quality Monitoring Locations
Table 2.2	Air Quality Monitoring Equipment
Table 2.3	Air Quality Monitoring Parameter, Duration and Frequency
Table 3.1	Noise Monitoring Equipment
Table 3.2	Noise Monitoring Duration and Parameter
Table 4.1	Summary of AL Level Exceedances on Monitoring Parameters
Table 4.2	Estimated Amounts of Waste in June 2023
Table 4.3	Summary of Environmental Licensing and Permit Status
Table 4.4	Environmental Complaints Received in June 2023
Table 4.5	Outstanding Environmental Complaints Carried Over

LIST OF FIGURES

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

APPENDICES

Appendix A	Organization Chart
Appendix B	Action and Limit Levels for Air Quality and Noise
Appendix C	Environmental Monitoring Schedule
Appendix D	Air Quality Monitoring Results for June 2023
Appendix E	Noise Monitoring Results for June 2023
Appendix F	The QA/QC Procedures and Results
Appendix G	Event/Action Plans
Appendix H	Site Audit Summary
Appendix I	Summary of EMIS
Appendix J	Tentative Construction Programme
Appendix K	Monthly Waste Flow Table for June 2023

EXECUTIVE SUMMARY

This is the 158th 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 2023.

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.

In September 2016, the Government approved HK Electric to construct the third combined cycle gas-fired generating unit (Unit L11) to implement the 2020 Fuel Mix Target. L11 was commissioned for reliable operation effective in May 2022. The operational EM&A work for L9, L10 and L11 is recorded in the separate monthly EM&A report for the Project “Operation of Lamma Power Station Extension”.

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 L12 Civil and Building Works	External works of Main Station Building, erection of metal cover and entry duct cover at No.5 chimney, external works of L12 GRS, fitting out and external works, cable trench works for ACB, construction of cable trench for Cable Bridge (North & South), construction of superstructure for shunt reactor compound extension and external works and flood wall construction for No. 5 C.W. Intake.
Unit L12 Mechanical Erection	Condenser installation, HRSG installation and turbine block installation
Unit L12 Electrical, Instrumentation & Control Erection	Cable installation

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 27/6/2023. 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-RS1163-22	08/01/23	06/07/23	Contractor	04/01/23
Construction Noise Permit	GW-RS0027-23	28/01/23	27/07/23	Contractor	20/01/23
Construction Noise Permit	GW-RS0126-23	01/03/23	31/08/23	Contractor	21/02/23
WPCO Discharge Licence	WT00037613-2021	15/04/21	30/04/26	Contractor	15/04/21
WPCO Discharge Licence	WT00037665-2021	06/05/21	31/05/26	Contractor	06/05/21
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.: 7038672	27/10/20	-	Contractor	27/10/20
Waste Disposal Billing Account	Account No.: 7039272	08/01/21	-	Contractor	08/01/21
Waste Disposal Billing Account	Account No.: 7041942	21/10/21	-	Contractor	21/10/21

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 in relation to the environmental impact of 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 L12 Civil and Building Works

- to continue monitoring the noise level during construction and to ensure compliance with the CNP's already obtained;
- 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 L12 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 L12 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.

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 2023.

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 L12 civil and building works were, external works of Main Station Building, erection of metal cover and entry duct cover at No.5 chimney, external works of L12 GRS, fitting out and external works, cable trench works for ACB, and construction of cable trench for Cable Bridge (North & South), construction of superstructure for shunt reactor compound extension, external works and flood wall construction for No. 5 C.W. Intake.

Construction activities for Unit L12 mechanical erection were condenser installation, HRSG

installation and turbine block installation. Construction activity for Unit L12 electrical, instrumentation & control erection was cable installation. 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 L12 Civil and Building Works		
1.	External works of Main Station Building Erection of metal cover and entry duct cover at No.5 chimney External works of L12 GRS <u>ACB</u> Fitting out and external works Cable trench works	<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 comply with the valid CNP. – 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 in 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.
2.	<u>Cable Bridge (North & South):</u>	<p>Air</p> <ul style="list-style-type: none"> – All regulated machine attached with valid

Item	Construction Activities	Environmental Mitigation Measures
	Construction of cable trench <u>Shunt Reactor Compound Extension</u> Construction of superstructure <u>No. 5 C.W. Intake</u> External works and flood wall construction	exception/approval NRMM labels. – Water truck, water sprinkler system and mist cannon were used. – Excavated soil slop covered with tarpaulin. – Wheel washing facilities was provided. – Water spraying on haul road and during concrete breaking. Noise – Noise emission label was provided for air compressor. – Works conducted during restricted hours should comply with the valid CNP. Waste Management – Excavated soil would be transferred to other projects for reuse. – Scrape metal will be recycled. Wastewater - Wastewater would be treated in desilting tanks or wastewater treatment facility before discharge.
Unit L12 Mechanical Erection		
3.	Condenser installation HRSG installation Turbine block installation	Air – Dust suppression measures implemented according to the EMP. Noise – General noise mitigation measures employed at all work sites throughout the construction phase. Waste Management – Waste Management Plan submitted and implemented
Unit L12 Electrical, Instrumentation & Control Erection		
4.	Cable installation	Air – Dust suppression measures implemented according to the EMP. Noise – General noise mitigation measures employed at all work sites throughout the construction phase.

Item	Construction Activities	Environmental Mitigation Measures
		Waste Management – Waste Management Plan submitted and implemented.

1.4 Summary of EM&A Requirements

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

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

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

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

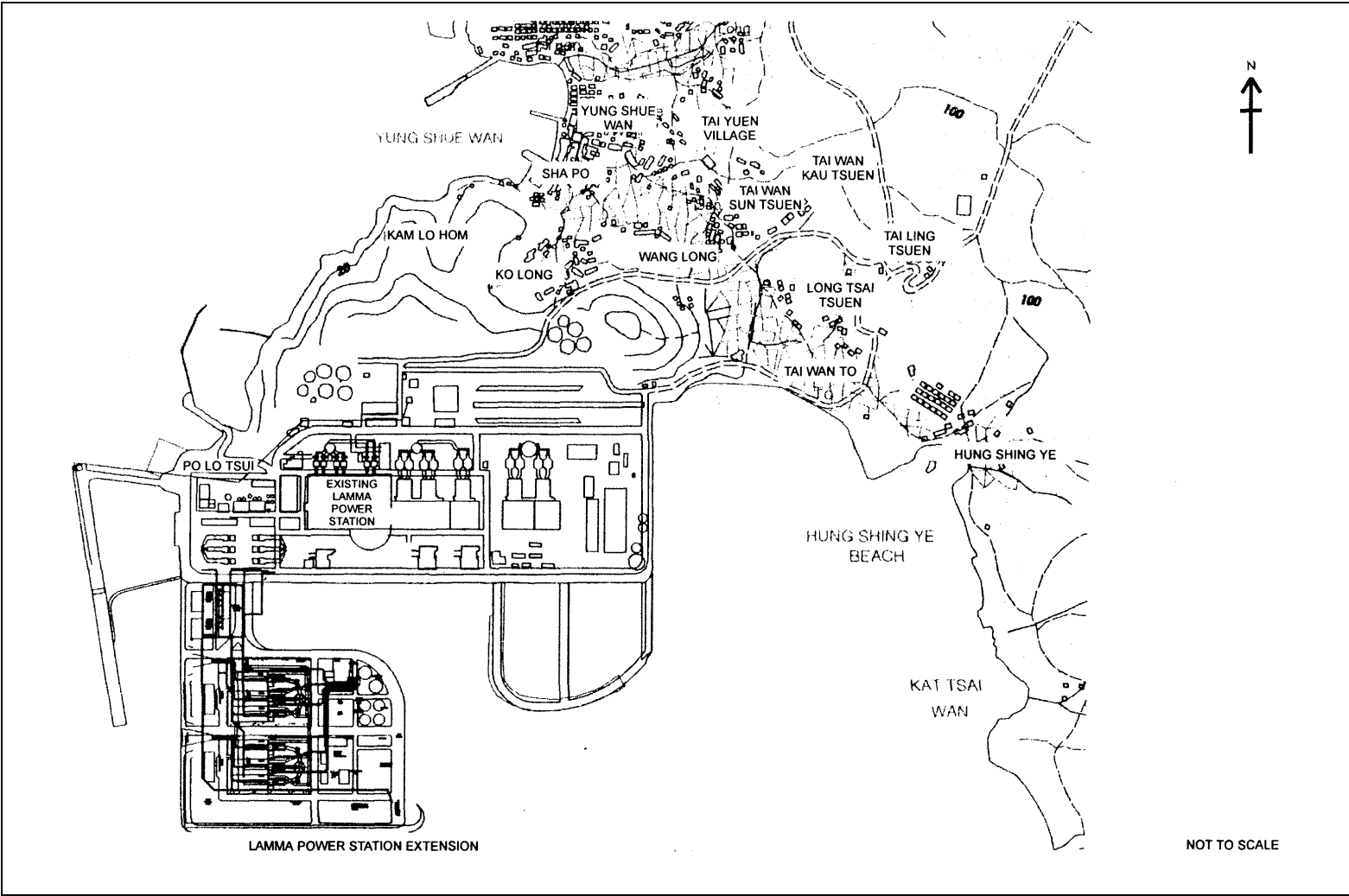


Figure 1.1 Layout of Work Site

2. AIR QUALITY

2.1 Monitoring Requirements

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

2.2 Monitoring Locations

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

Table 2.1 Air Quality Monitoring Locations

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

2.3 Monitoring Equipment

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

Table 2.2 Air Quality Monitoring Equipment

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

2.4 Monitoring Parameters, Frequency and Duration

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

Table 2.3 Air Quality Monitoring Parameter, Duration and Frequency

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

2.5 Monitoring Procedures and Calibration Details

MINIVOL (24- hour TSP Monitoring):

Preparation of Filter Papers

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

Field Monitoring

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

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

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

Maintenance & Calibration

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

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

2.6 Results and Observations

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

1-hour TSP

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

24-hour TSP

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

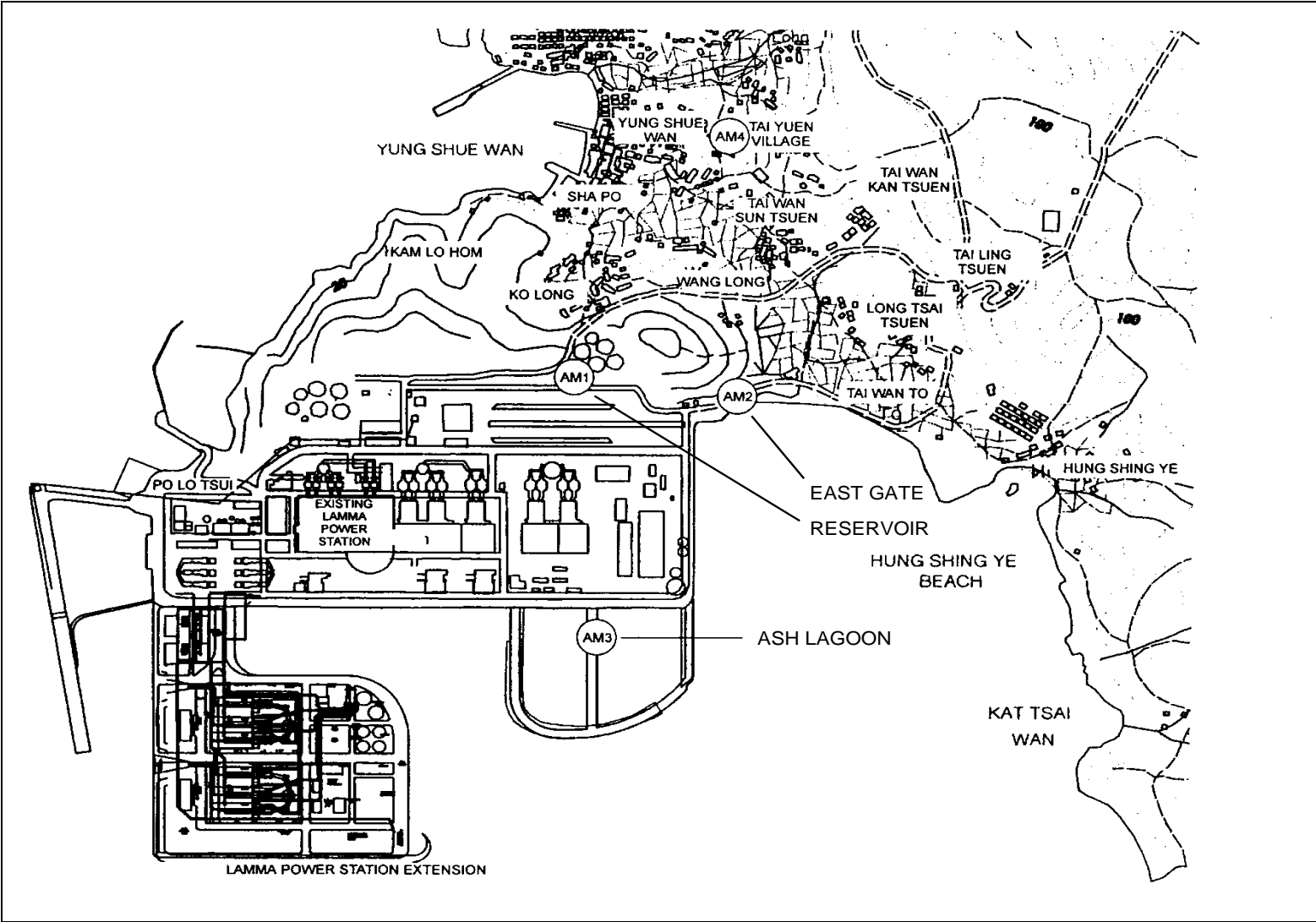


Figure 2.1 Location of Air Quality Monitoring Stations

3. NOISE

3.1 Monitoring Requirements

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

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

3.2 Monitoring Locations

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

3.3 Monitoring Equipment

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

Table 3.1 Noise Monitoring Equipment

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

3.4 Monitoring Parameters, Frequency and Duration

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

Table 3.2 Noise Monitoring Duration and Parameter

Location	Time Period	Frequency	Parameter
----------	-------------	-----------	-----------

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 May 2023 and March 2023 respectively. The next calibrations for the two corresponding noise monitoring stations were scheduled in November and September 2023 respectively.

3.6 Results and Observations

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

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

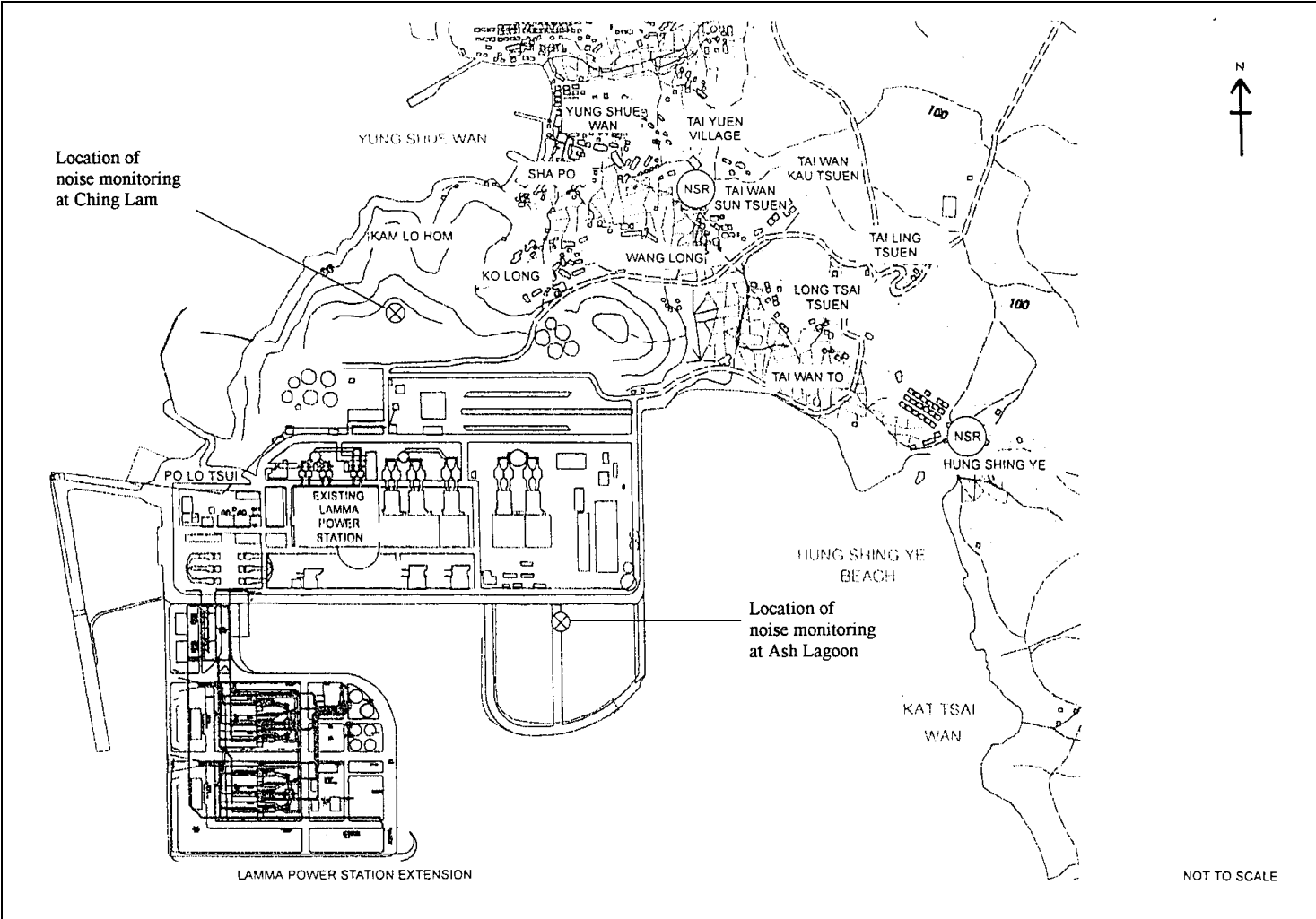


Figure 3.1 Location of Noise Monitoring Stations

4. ENVIRONMENTAL AUDIT

4.1 Review of Environmental Monitoring Procedures

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

4.2 Assessment of Environmental Monitoring Results

Monitoring results for Air Quality and Noise

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

Table 4.1 Summary of AL Level Exceedances on Monitoring Parameters

Item	Parameter Monitored	Monitoring Period	No. of Exceedances In		Event/Action Plan Implementation Status and Results
			Action Level	Limit Level	
Air					
1	Ambient TSP (24-hour)	01/06/2023-30/06/2023	0	0	
2	Ambient TSP (1-hour)	01/06/2023-30/06/2023	0	0	
Noise					
1	Noise level at the critical NSR's predicted by the noise alarm monitoring system	01/06/2023-30/06/2023	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 2023 are shown in [Table 4.2](#).

Table 4.2 Estimated Amounts of Waste in June 2023

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	7.73 Tonnes	102.92 Tonnes	0 kg
----------	-------------	---------------	------

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 27/6/2023. 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-RS1163-22	08/01/23	06/07/23	Construction site of Unit L12. Operation of PME during restricted hours	Valid
Construction Noise Permit	GW-RS0027-23	28/01/23	27/07/23	Civil and Building Works for Unit L12. Operation of PME during restricted hours	Valid
Construction Noise Permit	GW-RS0126-23	01/03/23	31/08/23	Power Block Facilities works for Unit L12. Operation of PME during restricted hours	Valid
WPCO Discharge Licence#	WT00037613-2021	15/04/21	30/04/26	Civil and Building Works for No.5 C.W. Intake and Cable Bridge	Valid
WPCO Discharge Licence##	WT00037665-2021	06/05/21	31/05/26	Civil and Building Works for Unit L12	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.: 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
Waste Disposal Billing Account	Account No.: 7041942	21/10/21	-	E&M Erection of Power Block Facilities – L12	Valid

Notes: # and ## - Water quality monitoring was carried out in May 2023 and the results of which would be 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 2023, no complaint in relation to the environmental impact of the construction activities was received.

Table 4.4 Environmental Complaints Received in June 2023

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 L12 Civil and Building Works

Noise Impact

- To continue monitoring the noise level during construction and to ensure compliance with the CNP's already obtained.

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 L12 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 L12 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.

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 in relation to the environmental impact of the construction activities was received in the reporting month. No prosecution was received for this Project in the reporting period.

The environmental performance of the Project was generally satisfactory.

Appendix A Organization Chart

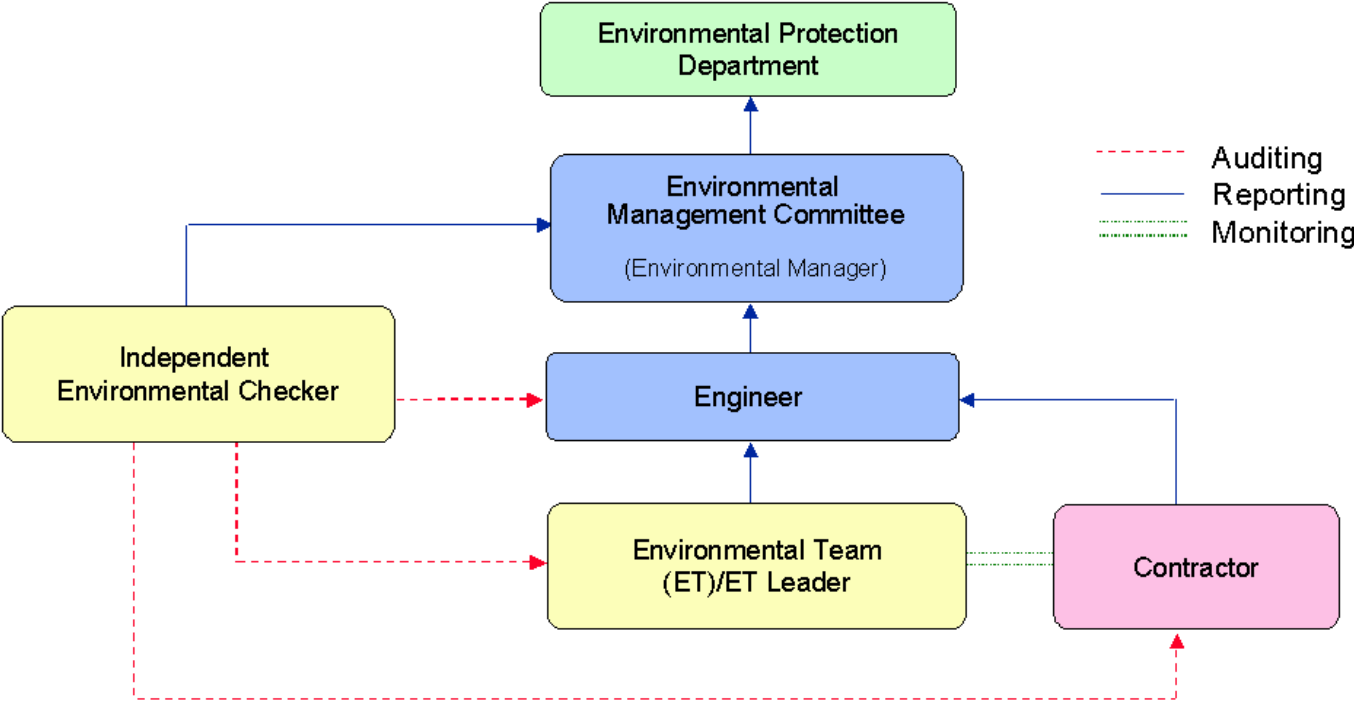


Figure A.1 Organisation of EM&A Programme at Construction Phase

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

B.1. Air

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

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

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

B.2. Noise

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

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

Appendix C Environmental Monitoring Schedule

Table C.1 Monitoring schedule for 24hr and 1hr TSP monitoring for Lamma Extension Construction (June 2023 to September 2023)

24hr TSP Monitoring	1hr TSP Monitoring
1/June/2023	1/June/2023 1500hr to 1800hr
7/June/2023	7/June/2023 1500hr to 1800hr
13/June/2023	13/June/2023 1500hr to 1800hr
19/June/2023	19/June/2023 1500hr to 1800hr
25/June/2023	25/June/2023 1500hr to 1800hr
1/July/2023	1/July/2023 1500hr to 1800hr
7/July/2023	7/July/2023 1500hr to 1800hr
13/July/2023	13/July/2023 1500hr to 1800hr
19/July/2023	19/July/2023 1500hr to 1800hr
25/July/2023	25/July/2023 1500hr to 1800hr
31/July/2023	31/July/2023 1500hr to 1800hr
6/August/2023	6/August/2023 1500hr to 1800hr
12/August/2023	12/August/2023 1500hr to 1800hr
18/August/2023	18/August/2023 1500hr to 1800hr
24/August/2023	24/August/2023 1500hr to 1800hr
30/August/2023	30/August/2023 1500hr to 1800hr
5/September/2023	5/September/2023 1500hr to 1800hr
11/September/2023	11/September/2023 1500hr to 1800hr
17/September/2023	17/September/2023 1500hr to 1800hr
23/September/2023	23/September/2023 1500hr to 1800hr
29/September/2023	29/September/2023 1500hr to 1800hr

APPENDIX D AIR QUALITY MONITORING RESULTS

Site: Lamma Power Station Extension

Month: June 2023

24 hour TSP Measurement:-

Date	TSP concentration ($\mu\text{g}/\text{m}^3$)				Weather Information (From Hong Kong Observatory)		
	Reservoir (AM1)	East Gate (AM2)	Ash Lagoon (AM3)	Tai Yuen Village (AM4)	Mean Wind Speed (km/hr)	Prevailing Wind Dir. ($^{\circ}$)	Mean R.H. (%)
1/6/2023	23	37	17	28	12.3	240	79
7/6/2023	18	22	8	14	23.5	140	88
13/6/2023	22	24	9	11	11.7	170	81
19/6/2023	23	25	18	10	26.2	220	83
25/6/2023	16	18	15	8	15.8	150	83

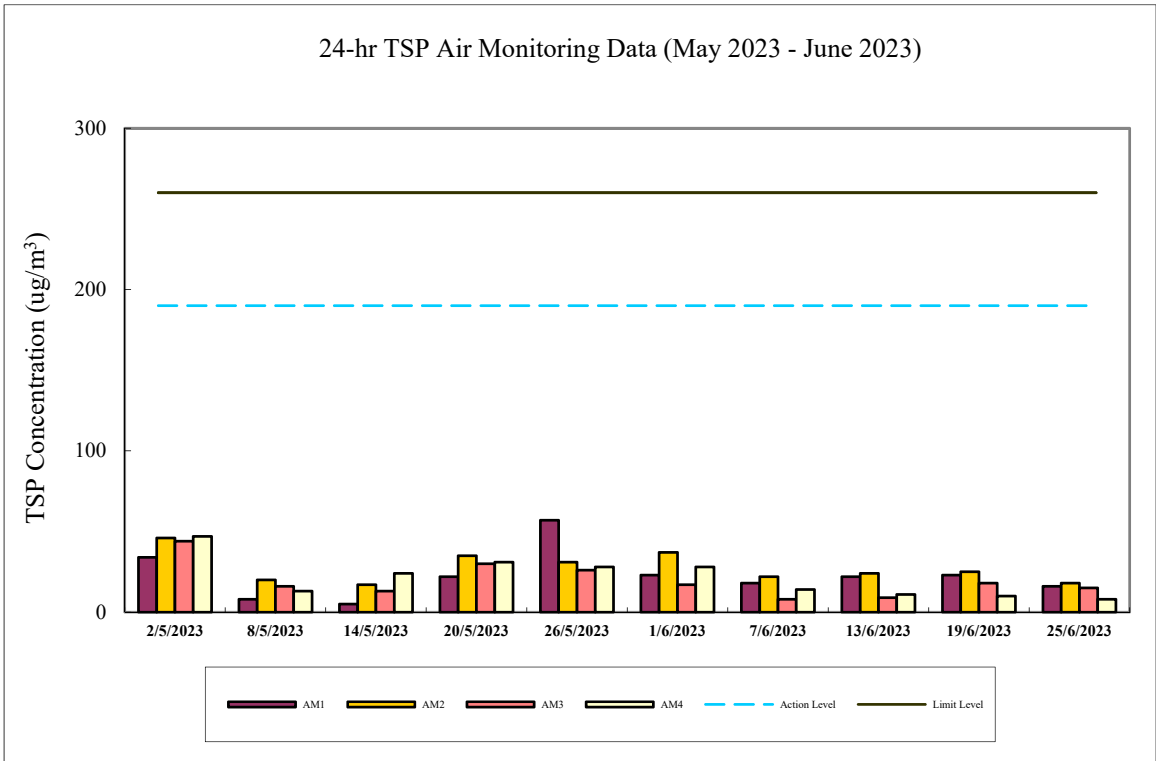
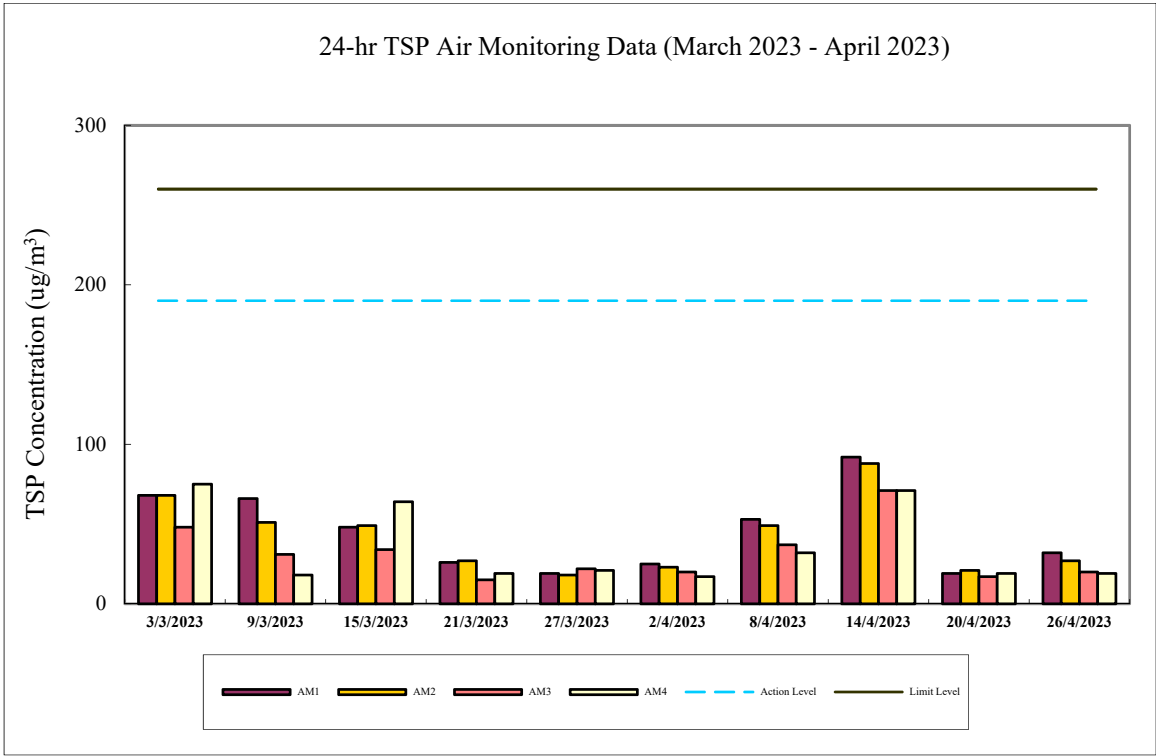
1 hour TSP Measurement:-

Date	Time	TSP concentration ($\mu\text{g}/\text{m}^3$)		
		Reservoir (AM1)	East Gate (AM2)	Ash Lagoon (AM3)
1/6/2023	15:00 - 15:59	7	46	14
	16:00 - 16:59	5	50	19
	17:00 - 17:59	12	49	23
7/6/2023	15:00 - 15:59	23	28	9
	16:00 - 16:59	18	27	8
	17:00 - 17:59	24	24	8
13/6/2023	15:00 - 15:59	22	32	10
	16:00 - 16:59	27	26	11
	17:00 - 17:59	22	29	11
19/6/2023	15:00 - 15:59	28	29	17
	16:00 - 16:59	30	27	18
	17:00 - 17:59	31	24	20
25/6/2023	15:00 - 15:59	39	34	19
	16:00 - 16:59	21	20	15
	17:00 - 17:59	19	22	18

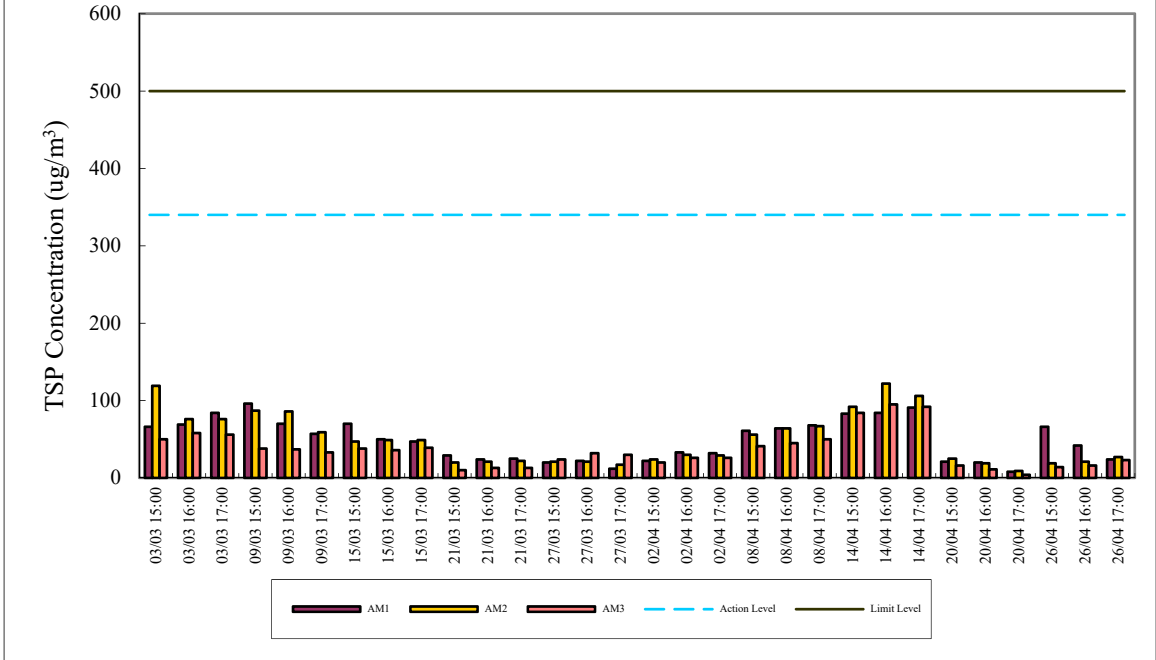
	1-hr TSP ($\mu\text{g}/\text{m}^3$)	24-hr TSP ($\mu\text{g}/\text{m}^3$)
Action Level	340	190
Limit Level	500	260
Calibration:	Calibration details are shown in appendix F.	

Equipment used:

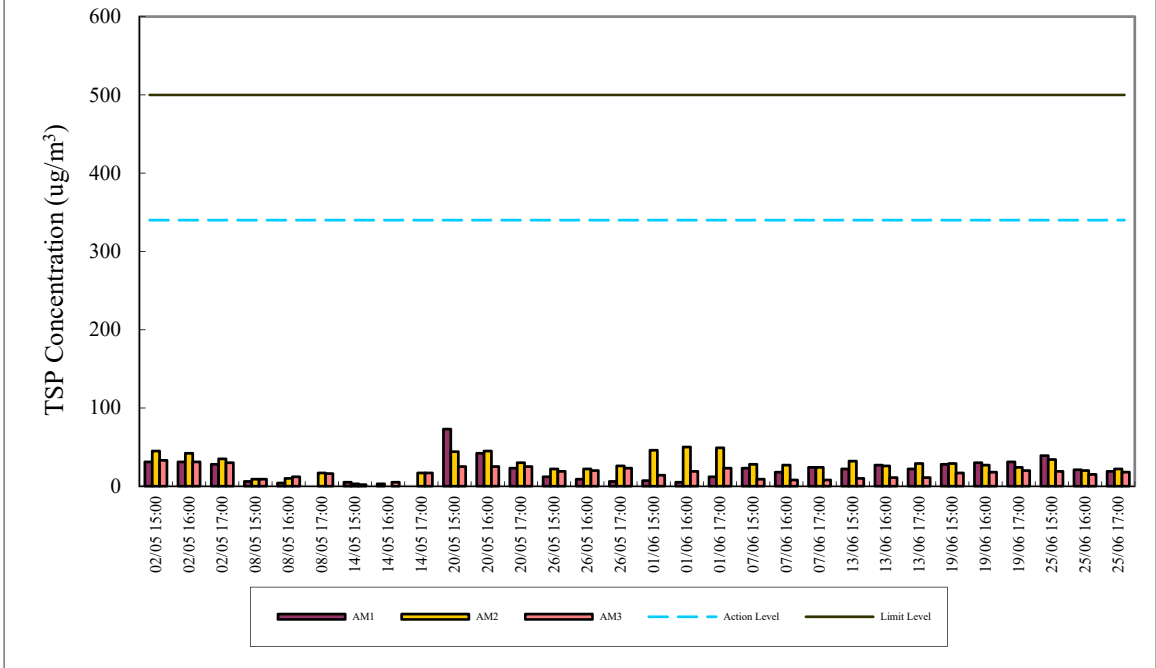
Location	1-hr TSP	24-hr TSP
Reservoir, East Gate and Ash Lagoon	TEOM	TEOM
Tai Yuen Village	-	MINIVOL Portable Sampler



1-hr TSP Air Monitoring Data (March 2023 - April 2023)



1-hr TSP Air Monitoring Data (May 2023 - June 2023)



Appendix E

Continuous Noise Monitoring Results for June 2023

Site: Lamma Power Station Extension Construction
 Measurement Location: Ash Lagoon and Ching Lam
 Measurement Parameter: 30-min Leq (07:00-19:00 hrs on normal weekdays)
 5-min Leq (07:00-23:00 hrs on holidays and
 19:00-23:00 hrs on all other days, and 23:00-
 07:00 hrs of next day)
 Noise Equipment: B&K 2250 sound level meters and B&K 4231 sound
 Level calibrator
 Lab. Calibration Date: B&K 2250 sound level meters - 21/10/2021 (Ash Lagoon)
 03/09/2021 (Ching Lam)
 B&K 4231 calibrator (17/10/2022)

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	
01/06/2023	07:00-19:00	58	43	75	44	44	70
01/06/2023	19:00-23:00	43	38	60	38	31	60
01/06/2023	23:00-07:00	43	33	45	42	35	45
02/06/2023	07:00-19:00	56	42	75	38	38	70
02/06/2023	19:00-23:00	39	33	60	---	---	60
02/06/2023	23:00-07:00	45	34	45	37	35	45
03/06/2023	07:00-19:00	60	45	75	32	32	70
03/06/2023	19:00-23:00	38	35	60	27	27	60
03/06/2023	23:00-07:00	44	35	45	39	39	45
04/06/2023	07:00-23:00	55	37	60	29	27	60
04/06/2023	23:00-07:00	45	44	45	39	39	45
05/06/2023	07:00-19:00	43	39	75	25	25	70
05/06/2023	19:00-23:00	37	34	60	26	26	60
05/06/2023	23:00-07:00	44	32	45	---	---	45
06/06/2023	07:00-19:00	43	37	75	---	---	70
06/06/2023	19:00-23:00	37	35	60	30	28	60
06/06/2023	23:00-07:00	42	30	45	36	33	45
07/06/2023	07:00-19:00	41	36	75	---	---	70
07/06/2023	19:00-23:00	42	34	60	---	---	60
07/06/2023	23:00-07:00	43	33	45	27	27	45
08/06/2023	07:00-19:00	58	43	75	---	---	70
08/06/2023	19:00-23:00	48	36	60	---	---	60
08/06/2023	23:00-07:00	44	34	45	34	34	45
09/06/2023	07:00-19:00	49	42	75	28	28	70
09/06/2023	19:00-23:00	48	35	60	36	36	60
09/06/2023	23:00-07:00	45	34	45	40	39	45
10/06/2023	07:00-19:00	45	39	75	---	---	70
10/06/2023	19:00-23:00	50	39	60	20	20	60
10/06/2023	23:00-07:00	43	31	45	39	37	45
11/06/2023	07:00-23:00	51	39	60	41	34	60
11/06/2023	23:00-07:00	44	36	45	43	41	45
12/06/2023	07:00-19:00	50	47	75	39	39	70
12/06/2023	19:00-23:00	49	41	60	---	---	60
12/06/2023	23:00-07:00	45	39	45	44	38	45
13/06/2023	07:00-19:00	54	44	75	---	---	70
13/06/2023	19:00-23:00	51	37	60	36	29	60
13/06/2023	23:00-07:00	45	37	45	43	36	45

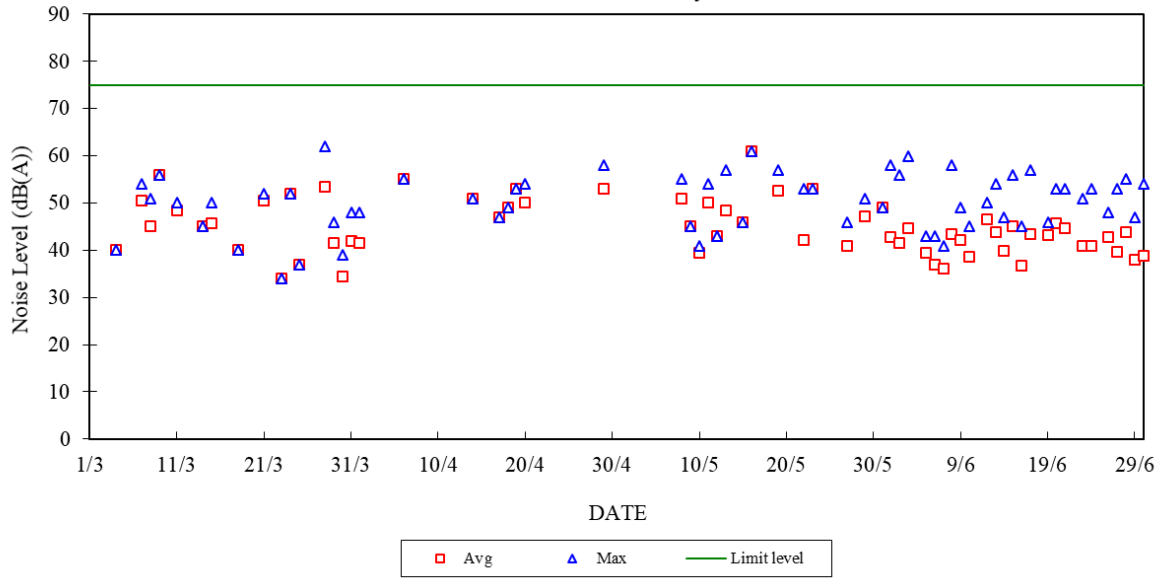
14/06/2023	07:00-19:00	47	40	75	---	---	70
14/06/2023	19:00-23:00	47	35	60	27	27	60
14/06/2023	23:00-07:00	45	37	45	42	35	45
15/06/2023	07:00-19:00	56	45	75	---	---	70
15/06/2023	19:00-23:00	41	40	60	---	---	60
15/06/2023	23:00-07:00	45	39	45	38	34	45
16/06/2023	07:00-19:00	45	37	75	40	35	70
16/06/2023	19:00-23:00	45	40	60	---	---	60
16/06/2023	23:00-07:00	45	38	45	42	38	45
17/06/2023	07:00-19:00	57	43	75	52	43	70
17/06/2023	19:00-23:00	40	39	60	34	34	60
17/06/2023	23:00-07:00	43	39	45	39	38	45
18/06/2023	07:00-23:00	59	41	60	46	38	60
18/06/2023	23:00-07:00	45	37	45	41	35	45
19/06/2023	07:00-19:00	46	43	75	---	---	70
19/06/2023	19:00-23:00	47	39	60	---	---	60
19/06/2023	23:00-07:00	41	37	45	36	29	45
20/06/2023	07:00-19:00	53	46	75	48	47	70
20/06/2023	19:00-23:00	53	47	60	---	---	60
20/06/2023	23:00-07:00	43	35	45	42	38	45
21/06/2023	07:00-19:00	53	45	75	43	43	70
21/06/2023	19:00-23:00	49	43	60	---	---	60
21/06/2023	23:00-07:00	45	40	45	39	38	45
22/06/2023	07:00-23:00	49	41	60	36	32	60
22/06/2023	23:00-07:00	45	40	45	32	27	45
23/06/2023	07:00-19:00	51	41	75	---	---	70
23/06/2023	19:00-23:00	52	40	60	41	41	60
23/06/2023	23:00-07:00	42	36	45	42	42	45
24/06/2023	07:00-19:00	53	41	75	---	---	70
24/06/2023	19:00-23:00	54	40	60	---	---	60
24/06/2023	23:00-07:00	44	34	45	43	41	45
25/06/2023	07:00-23:00	56	40	60	46	38	60
25/06/2023	23:00-07:00	42	36	45	36	33	45
26/06/2023	07:00-19:00	48	43	75	---	---	70
26/06/2023	19:00-23:00	47	39	60	---	---	60
26/06/2023	23:00-07:00	45	39	45	38	30	45
27/06/2023	07:00-19:00	53	40	75	32	32	70
27/06/2023	19:00-23:00	49	37	60	---	---	60
27/06/2023	23:00-07:00	45	36	45	42	38	45
28/06/2023	07:00-19:00	55	44	75	---	---	70
28/06/2023	19:00-23:00	45	38	60	23	23	60
28/06/2023	23:00-07:00	45	37	45	40	37	45
29/06/2023	07:00-19:00	47	38	75	39	39	70
29/06/2023	19:00-23:00	44	36	60	---	---	60
29/06/2023	23:00-07:00	45	34	45	39	34	45
30/06/2023	07:00-19:00	54	39	75	40	36	70
30/06/2023	19:00-23:00	45	33	60	---	---	60
30/06/2023	23:00-07:00	45	36	45	37	35	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).

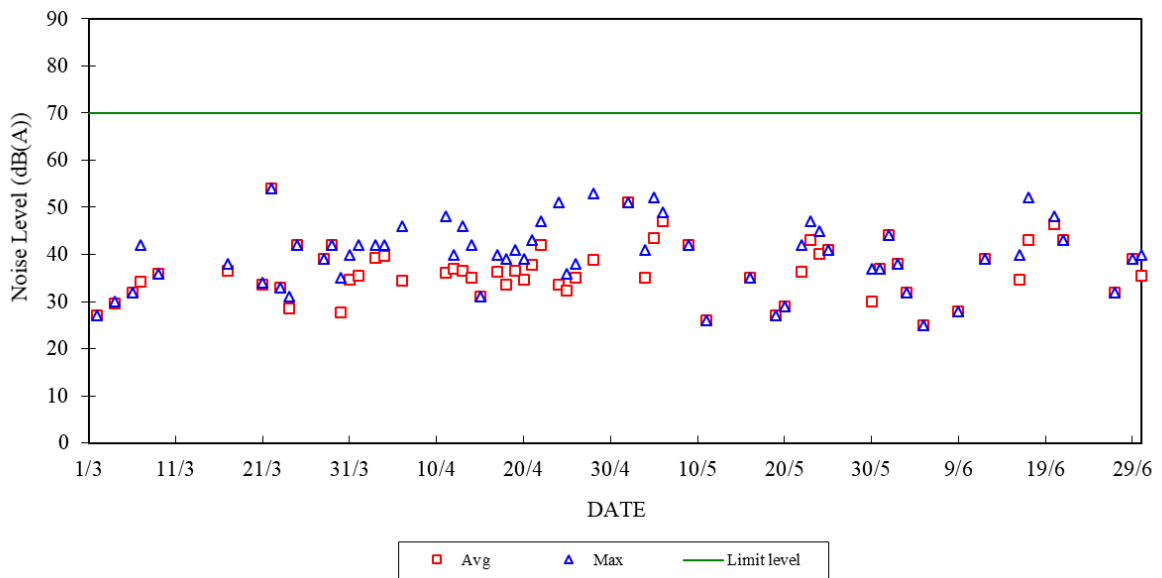
Construction Noise Monitoring in March - June 2023

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

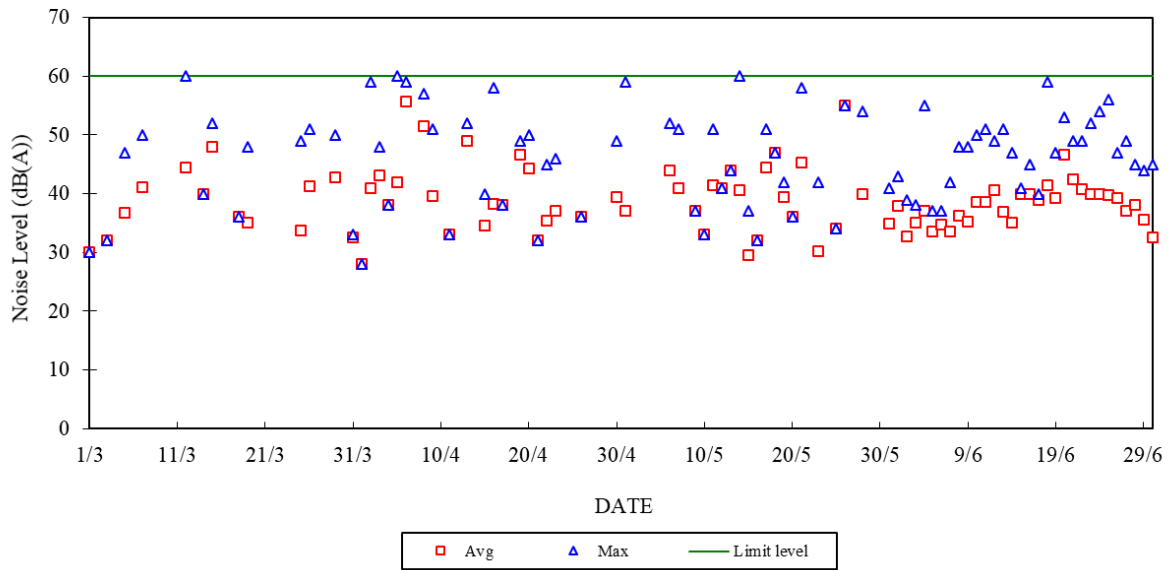


Construction Noise Monitoring in March - June 2023

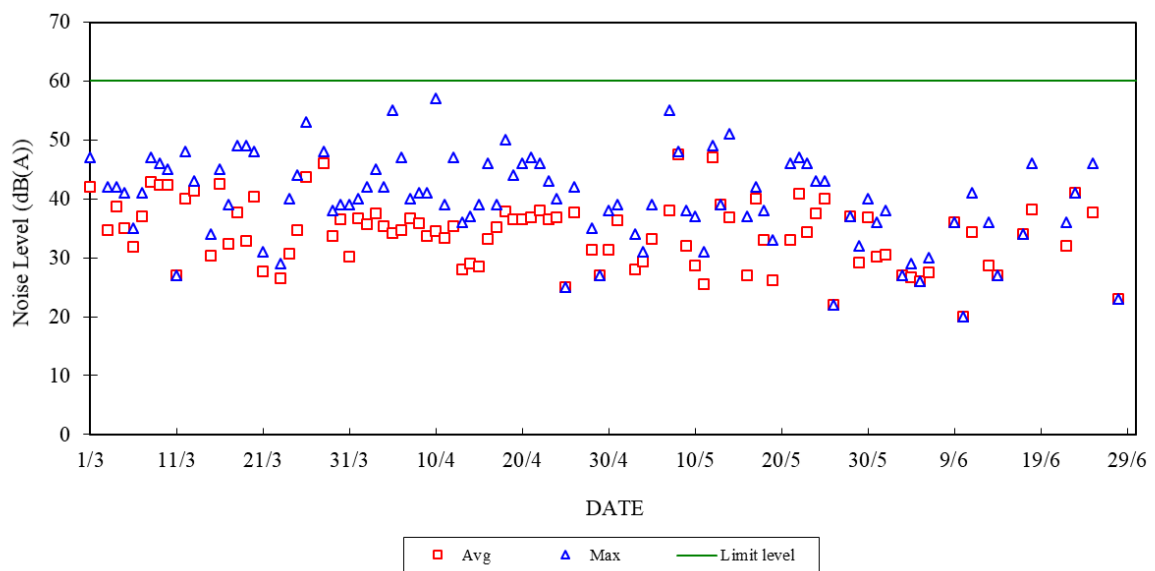
NSR at School within Tai Wan San Tsuen
07:00-19:00 hrs on Normal Weekdays



Construction Noise Monitoring in March - June 2023
NSR at Long Tsai Tsuen/Hung Shing Ye
07:00-23:00 hrs on Holidays and 19:00-23:00 hrs on All Other Days

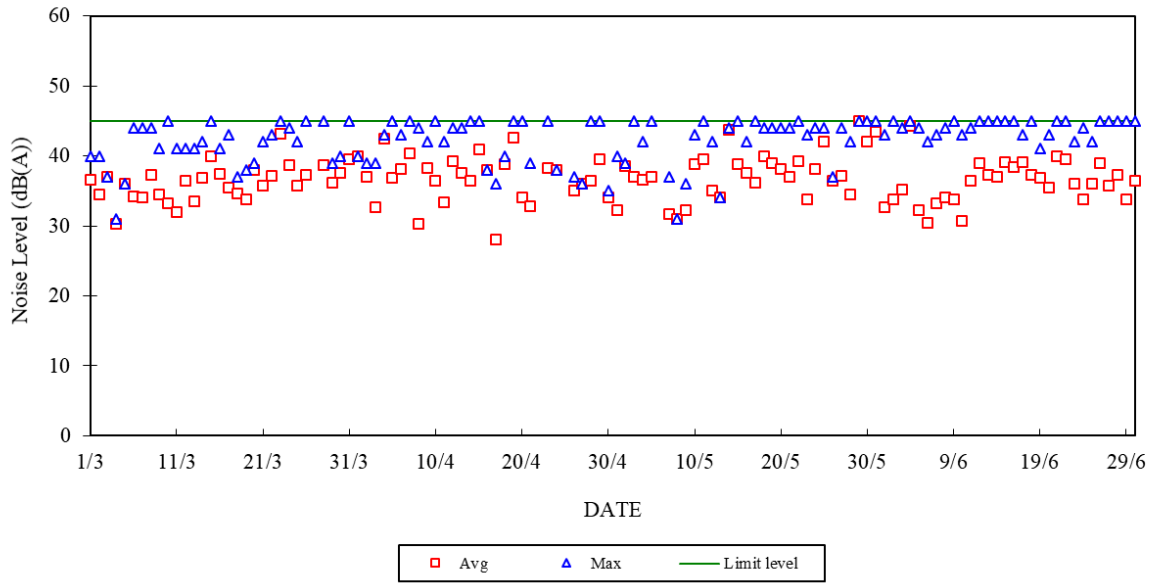


Construction Noise Monitoring in March - June 2023
NSR at School within Tai Wan San Tsuen
07:00-23:00 hrs on Holidays and 19:00-23:00 hrs on All Other Days



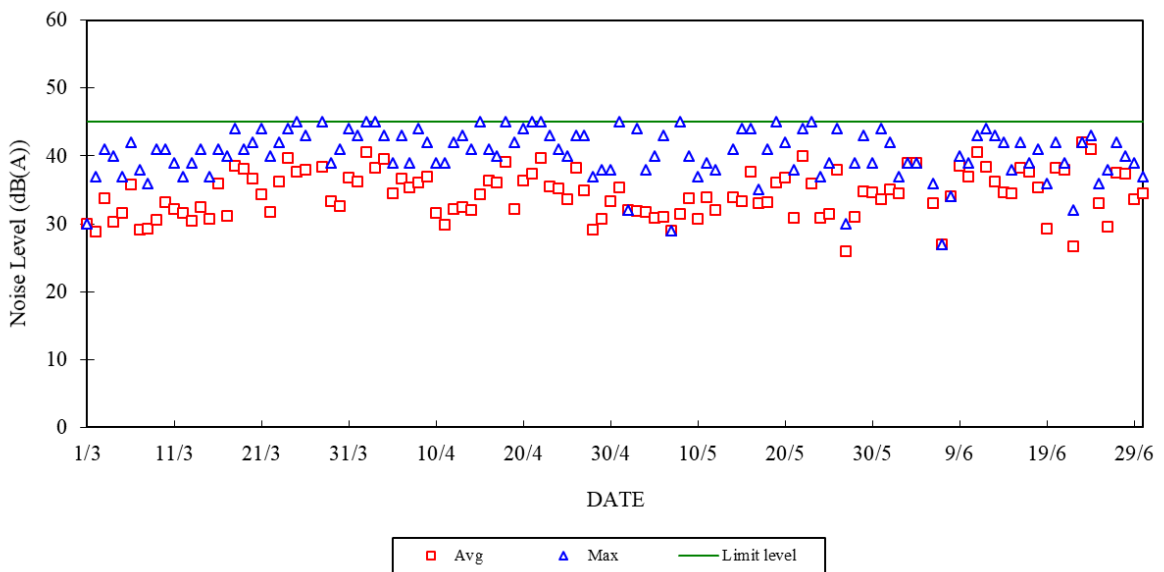
Construction Noise Monitoring in March - June 2023

NSR at Long Tsai Tsuen/Hung Shing Ye
23:00-07:00 hrs of Next Day



Construction Noise Monitoring in March - June 2023

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: 2023

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)
1/6/2023	267.961	4	2.85	10.31
7/6/2023	270.675	4	2.85	10.31
13/6/2023	270.551	4	2.82	10.31
19/6/2023	270.233	4	2.84	10.31
25/6/2023	269.835	4	2.84	10.31

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)
1/6/2023	266.332	4	3.00	13.66
7/6/2023	265.974	4	3.00	13.66
13/6/2023	265.703	4	3.00	13.66
19/6/2023	267.469	4	3.00	13.66
25/6/2023	267.078	4	3.00	13.66

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)
1/6/2023	257.262	4	1.52	13.68
7/6/2023	257.161	4	1.47	13.68
13/6/2023	257.104	4	1.45	13.68
19/6/2023	257.830	4	3.00	13.67
25/6/2023	257.585	4	2.50	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
20/06/2023 / 14:00	WM Tam / Brian So

Equipment / Item

Equipment / Item	Serial No. / No.
MINIVOL	5580
Used filter paper no.	MS66
New filter paper no.	MS67

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: 5.069
After: 5.043

- 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 / Brian So

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)
01/06/2023	Passed	0	Passed	-0.01
02/06/2023	Passed	0.01	Passed	-0.03
03/06/2023	Passed	0	Passed	-0.01
04/06/2023	Passed	0.01	Passed	-0.02
05/06/2023	Passed	0	Passed	-0.02
06/06/2023	Passed	-0.03	Passed	-0.03
07/06/2023	Passed	0	Passed	-0.04
08/06/2023	Passed	-0.01	Passed	-0.02
09/06/2023	Passed	-0.02	Passed	-0.01
10/06/2023	Passed	0	Passed	-0.01
11/06/2023	Passed	-0.01	Passed	-0.03
12/06/2023	Passed	-0.01	Passed	-0.02
13/06/2023	Passed	0.02	Passed	0.01
14/06/2023	Passed	0	Passed	-0.03
15/06/2023	Passed	-0.02	Passed	-0.04
16/06/2023	Passed	-0.02	Passed	-0.05
17/06/2023	Passed	-0.03	Passed	-0.05
18/06/2023	Passed	-0.01	Passed	-0.03
19/06/2023	Passed	-0.01	Passed	0.00
20/06/2023	Passed	-0.01	Passed	0.00
21/06/2023	Passed	0.01	Passed	-0.01
22/06/2023	Passed	0	Passed	-0.02
23/06/2023	Passed	0	Passed	-0.02
24/06/2023	Passed	-0.03	Passed	-0.03
25/06/2023	Passed	-0.01	Passed	-0.02
26/06/2023	Passed	0.01	Passed	-0.02
27/06/2023	Passed	0	Passed	0.00
28/06/2023	Passed	0	Passed	-0.03
29/06/2023	Passed	0.02	Passed	0.00
30/06/2023	Passed	0.01	Passed	0.01

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

L12 Civil and Building Works

Dates of Inspection: 6/6/2023, 13/6/2023, 20/6/2023 and 27/6/2023.

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 Mechanical, Electrical, Instrumentation & Control Erection Works

Dates of Inspection: 1/6/2023, 8/6/2023, 15/6/2023, 23/6/2023 and 29/6/2023

Summary of Findings

General

- No environmental deficiency identified.

Air Quality

- No environmental deficiency identified.

Noise

- No environmental deficiency identified.

Water Quality

- No environmental deficiency identified.

Waste Management

- No environmental deficiency identified.

Summary of EMIS

Power Station – (Part B of EIA Report)

Construction Phase Mitigation Measures and their Implementation

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

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

EM&A Log Ref.	Mitigation Measures	Implementation Status
WASTE MANAGEMENT		
E1	HEC to submit a Waste Management Plan for the construction phase to EPD. The Plan shall be verified by the IEC and shall describe the arrangements for avoidance, reuse, recovery and recycling, storage, collection, treatment and disposal of different categories of waste to be generated from the construction activities and shall take into account the recommendations of the EIA report.	C
<i>Dredging Waste</i>		
E2	All vessels for marine transportation of dredged sediment shall be fitted with tight fitting seals to their bottom openings to prevent leakage of materials. In addition, loading of barges and hoppers shall be controlled to prevent splashing of dredged material into the surrounding water, and barges or hoppers should under no circumstances be filled to a level which shall cause the overflowing of materials or polluted water during loading or transportation**	N/A
<i>Storage, Collection and Transport of Waste</i>		
E3	<ul style="list-style-type: none"> • Minimise windblown litter and dust during transportation by either covering trucks or transporting wastes in enclosed containers. 	C
	<ul style="list-style-type: none"> • Obtain the necessary waste disposal permits from the appropriate authorities, if they are required, in accordance with the Waste Disposal Ordinance (Cap.354), Waste Disposal (Chemical Waste) (General) Regulation (Cap.354), the Crown Land Ordinance (Cap 28), Dumping at Sea Ordinance (Cap 466) and Work Branch Technical Circular No. 22/92, Marine Disposal of Dredged Mud. 	C
	<ul style="list-style-type: none"> • Disposal of waste at Licensed sites; 	C
	<ul style="list-style-type: none"> • Develop procedures such as a ticketing system to facilitate tracking of marine mud and chemical waste, and to ensure that illegal disposal does not occur; 	C
	<ul style="list-style-type: none"> • Segregate and sort the waste materials into 3 categories: <ul style="list-style-type: none"> • public fill (e.g. concrete and rubble) for re-use on-site or disposal at a public filling area; • re-use and/or recycling waste (e.g. steel and other metals); • waste which cannot be re-used and/or recycled (e.g. wood, glass and plastic) for landfill disposal. • The sorting process shall be carefully monitored to avoid missing of the 3 categories. Different types of wastes shall be stockpiled and stored in different containers or skips to enhance re-use or recycling of materials and their proper disposal. 	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 L12 construction
- C - Compliance with mitigation measure
- NC - Non-compliance with mitigation measure
- N/A - Not Applicable

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

Master Programme

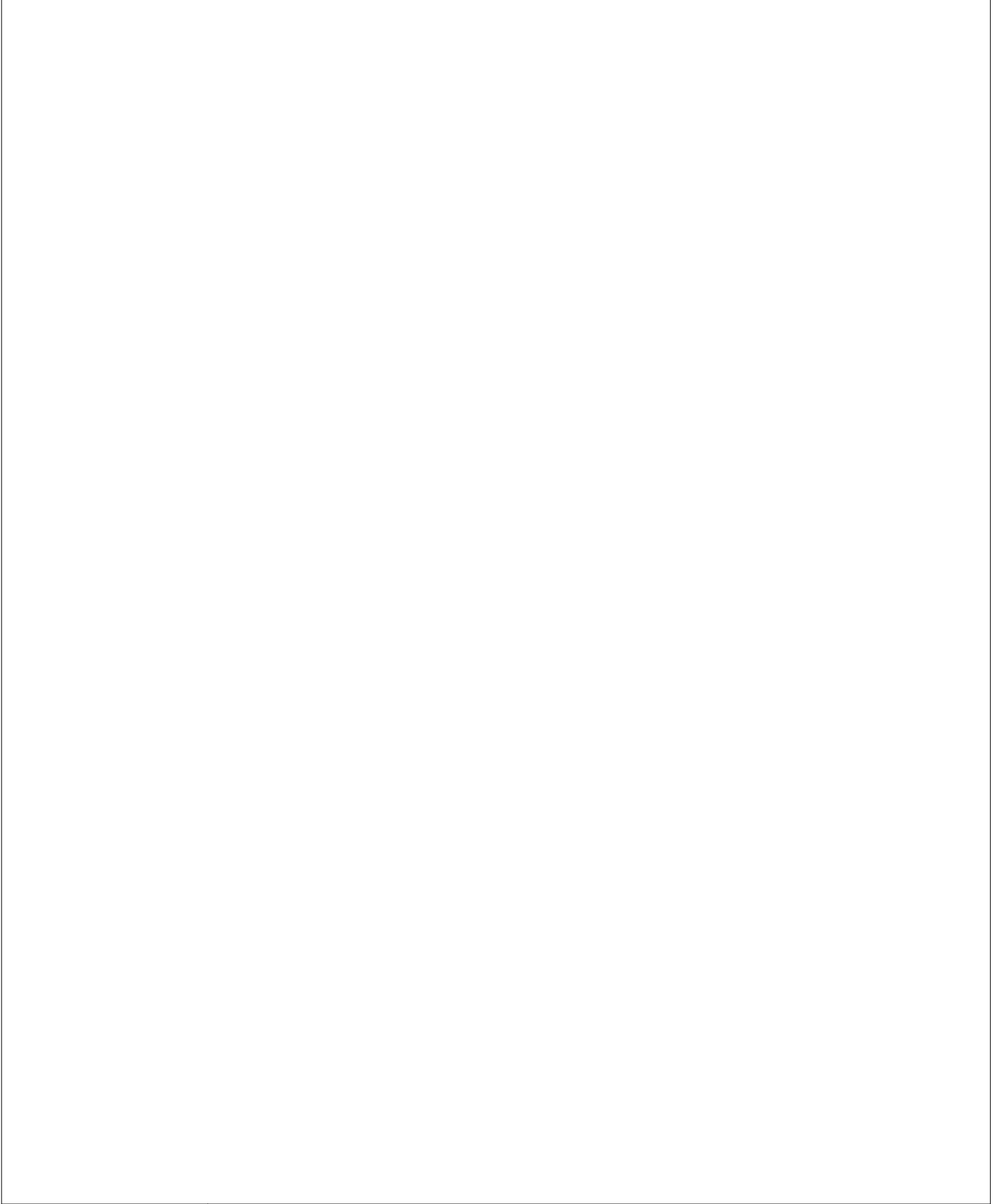
Table with 6 columns: ID, Task Name, Duration, Start, Finish, and a Gantt chart area showing task progress from June to September. Rows include Key Dates & Milestones, Site Possession Dates, Completion Dates, and various construction tasks like Section A1, B2, C, D, E, F, G, H.

MASTER PROGRAMME Rev 1-B 23 Aug 2021 logo and name: PAULY

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	Start	Finish	
561	BD: Obtain Occupation Permit (OP) from BD	1 day	Fri 21/7/23	Fri 21/7/23	
562	As-Built Drawings & Handover Documentation	120 days	Mon 1/5/23	Mon 28/8/23	
563	Prepare and Submit As-Built Drawings & Handover Documentation	45 days	Mon 1/5/23	Wed 14/6/23	
564	Review and Approval	45 days	Thu 15/6/23	Sat 29/7/23	
565	As-Built Drawings & Handover Documentation - Revision by MC	30 days	Sun 30/7/23	Mon 28/8/23	
566	Revised As-Built Drawings & Handover Documentation - Final Submission	0 days	Mon 28/8/23	Mon 28/8/23	
567	Completion of the Whole Contract Works	119 days	Sat 22/7/23	Fri 17/11/23	
568	1st Client Inspection for Review and Comments	30 days	Sat 22/7/23	Sun 20/8/23	
569	Defects and Rectification works	60 days	Mon 21/8/23	Thu 19/10/23	
570	2nd Client Inspection	14 days	Fri 20/10/23	Thu 2/11/23	
571	Minor Defects Rectification Works and Final Inspection	15 days	Fri 3/11/23	Fri 17/11/23	
572	PRACTICAL COMPLETION	0 days	Fri 17/11/23	Fri 17/11/23	



ID	Task Name	Duration	Start	Finish	Predecessors	3rd Quarter		
						Jul	Aug	Sep
1	19-83014 - Civil Works for No. 5 C.W. Intake and Cable Bridge at Lamma Power Station Extension	390 days	Fri 22/7/22	Tue 15/8/23		[Gantt bar from Jul 22 to Aug 15]		
2	No. 5 C.W. Intake	390 days	Fri 22/7/22	Tue 15/8/23		[Gantt bar from Jul 22 to Aug 15]		
3	Delivery of Precast No. 5 Intake Chamber	3 days	Fri 22/7/22	Sun 24/7/22		[Gantt bar from Jul 22 to Jul 24]		
4	Installation of Precast No. 5 Intake Chamber	2 days	Mon 25/7/22	Tue 26/7/22 3		[Gantt bar from Jul 25 to Jul 26]		
5	Prepare formation level for reinstall culvert	18 days	Wed 27/7/22	Sat 13/8/22 4		[Gantt bar from Jul 27 to Aug 13]		
6	Reinstate of culvert	7 days	Mon 15/8/22	Sun 21/8/22		[Gantt bar from Aug 15 to Aug 21]		
7	Reinstate of seawall block	28 days	Mon 22/8/22	Sun 18/9/22 6		[Gantt bar from Aug 22 to Sep 18]		
8	Backfill at East Side	20 days	Mon 19/9/22	Sat 8/10/22 7		[Gantt bar from Sep 19 to Oct 8]		
9	Reinstate of seawall coping	30 days	Thu 3/11/22	Fri 2/12/22 8FS+25 days		[Gantt bar from Nov 3 to Dec 2]		
10	Temporary backfill for access at east of Intake Chamber	10 days	Sat 3/12/22	Mon 12/12/22 9		[Gantt bar from Dec 3 to Dec 12]		
11	Handover back from erection contractor at Intake Road	1 day	Mon 15/5/23	Mon 15/5/23		[Gantt bar from May 15 to May 15]		
12	UU works and reinstatement of Intake Road	92 days	Tue 16/5/23	Tue 15/8/23 11		[Gantt bar from May 16 to Aug 15]		
13	Steel Parapet along seawall	46 days	Tue 18/4/23	Fri 2/6/23		[Gantt bar from Apr 18 to Jun 2]		
14	Delivery of steel parapet (Removed for Chamber installation portion)	1 day	Tue 18/4/23	Tue 18/4/23		[Gantt bar from Apr 18 to Apr 18]		
15	Installation of steel parapet (Removed for chamber installation portion)	7 days	Mon 29/5/23	Sun 4/6/23 14FS+40 days		[Gantt bar from May 29 to Jun 4]		
16	Removal of existing steel parapet for replacement	7 days	Mon 5/6/23	Sun 11/6/23 15		[Gantt bar from Jun 5 to Jun 11]		
17	Installation of steel parapet (Replacement)	21 days	Mon 12/6/23	Sun 2/7/23 16		[Gantt bar from Jun 12 to Jul 2]		
18	Steel Gantry Frame above Bar Screen Chamber	21 days	Tue 25/4/23	Mon 15/5/23		[Gantt bar from Apr 25 to May 15]		
19	Delivery of steel members	1 day	Thu 15/6/23	Thu 15/6/23		[Gantt bar from Jun 15 to Jun 15]		
20	Installation of gantry frame	14 days	Fri 16/6/23	Thu 29/6/23 19		[Gantt bar from Jun 16 to Jun 29]		
21	Bollard & Fender	151 days	Wed 1/3/23	Sat 29/7/23		[Gantt bar from Mar 1 to Jul 29]		
22	Confirmation and order of bollard and fender	1 day	Wed 1/3/23	Wed 1/3/23		[Gantt bar from Mar 1 to Mar 1]		
23	Fabrication and delivery of bollard & fender	100 days	Thu 2/3/23	Fri 9/6/23 22		[Gantt bar from Mar 2 to Jun 9]		
24	Installation of bollard (1 no.)	1 day	Sat 10/6/23	Sat 10/6/23 23		[Gantt bar from Jun 10 to Jun 10]		
25	Rebar fixing & Concreting	2 days	Sun 11/6/23	Mon 12/6/23 24		[Gantt bar from Jun 11 to Jun 12]		
26	Removal of existing fender	15 days	Sat 10/6/23	Sat 24/6/23 23		[Gantt bar from Jun 10 to Jun 24]		
27	Installation of fender	35 days	Sun 25/6/23	Sat 29/7/23 26		[Gantt bar from Jun 25 to Jul 29]		
28	In-situ Construction Work for Intake Chamber	339 days	Sat 20/8/22	Mon 24/7/23		[Gantt bar from Aug 20 to Jul 24]		
29	Backfilling Work between Pipepile and Intake Chamber External Wall	19 days	Sat 20/8/22	Wed 7/9/22		[Gantt bar from Aug 20 to Sep 7]		
33	Backfilling at Discharge Valve Chamber	10 days	Fri 9/9/22	Sun 18/9/22		[Gantt bar from Sep 9 to Sep 18]		
34	Installation of Concrete Block inside/ on intake chamber/ culvert	25 days	Tue 23/8/22	Fri 16/9/22		[Gantt bar from Aug 23 to Sep 16]		
35	Removal of Internal Strut/ King Post	28 days	Sat 20/8/22	Fri 16/9/22		[Gantt bar from Aug 20 to Sep 16]		
36	Dewatering in Chamber Internal Side	3 days	Tue 20/9/22	Thu 22/9/22 30,31,33		[Gantt bar from Sep 20 to Sep 22]		
37	Corrosion Protection of Rebar	8 days	Fri 23/9/22	Fri 30/9/22		[Gantt bar from Sep 23 to Sep 30]		
38	Construction of Intake Chamber External Wall to Level +5.70mPD	189 days	Sun 28/8/22	Sat 4/3/23		[Gantt bar from Aug 28 to Mar 4]		
39	Erection of Scaffolding Supporting Bracket	37 days	Sun 28/8/22	Mon 3/10/22		[Gantt bar from Aug 28 to Sep 3]		
44	Installation of Scaffolding	51 days	Sat 3/9/22	Sun 23/10/22		[Gantt bar from Sep 3 to Oct 23]		
45	Chamber Internal Side	51 days	Sat 3/9/22	Sun 23/10/22		[Gantt bar from Sep 3 to Oct 23]		
50	Chamber External Side	51 days	Sat 3/9/22	Sun 23/10/22		[Gantt bar from Sep 3 to Oct 23]		
55	Rebar Fixing & Formwork	58 days	Thu 8/9/22	Fri 4/11/22		[Gantt bar from Sep 8 to Nov 4]		
59	Concreting	18 days	Thu 29/9/22	Sun 16/10/22		[Gantt bar from Sep 29 to Oct 16]		
63	Wall construction at Penstock Chamber	132 days	Mon 24/10/22	Sat 4/3/23		[Gantt bar from Oct 24 to Mar 4]		
72	Excavation and installation of CW culvert pipes	45 days	Sat 15/10/22	Mon 28/11/22		[Gantt bar from Oct 15 to Nov 28]		
76	On grade slab & plinths construction at west of Intake Chamber	14 days	Tue 29/11/22	Mon 12/12/22 75		[Gantt bar from Nov 29 to Dec 12]		
77	Construction of trash pit & RC footings for hoist support	218 days	Wed 16/11/22	Wed 21/6/23		[Gantt bar from Nov 16 to Jun 21]		
78	Backfill to bottom level of trash pit at south of Intake Chamber	7 days	Wed 16/11/22	Tue 22/11/22 61FS+10 days		[Gantt bar from Nov 16 to Nov 22]		
79	RC works for trash pit & hoist support footings	30 days	Mon 6/2/23	Tue 7/3/23 78,314FF		[Gantt bar from Feb 6 to Feb 7]		
80	Construction of sump pit (VO) & eastern portion of flood wall "I"	20 days	Wed 8/3/23	Mon 27/3/23 79		[Gantt bar from Mar 8 to Mar 27]		
81	Backfill to ground level at south of Intake Chamber	4 days	Tue 28/3/23	Fri 31/3/23 80		[Gantt bar from Mar 28 to Mar 31]		
82	Handover to TDK for installation of hoist	37 days	Sat 1/4/23	Sun 7/5/23 81		[Gantt bar from Apr 1 to Apr 7]		
83	On grade slab & plinths construction at south of Intake Chamber	45 days	Mon 8/5/23	Wed 21/6/23 82		[Gantt bar from May 8 to Jun 21]		
84	North Chamber (L12)	91 days	Fri 23/9/22	Thu 22/12/22		[Gantt bar from Sep 23 to Dec 22]		
149	W20 (Seal up L12 Box-out openings at discharge valve chamber)	15 days	Wed 15/3/23	Wed 29/3/23		[Gantt bar from Mar 15 to Mar 29]		

Project: 19-83014 - No. 5 Intake and Cable Br
 Date: 28 May 2023
 Rev. 10 - Programme for No. 5 C.W. Intake

Task		Project Summary		Inactive Milestone		Manual Summary Rollup		Progress	
Split		External Tasks		Inactive Summary		Manual Summary		Deadline	
Milestone		External Milestone		Manual Task		Start-only			
Summary		Inactive Task		Duration-only		Finish-only			

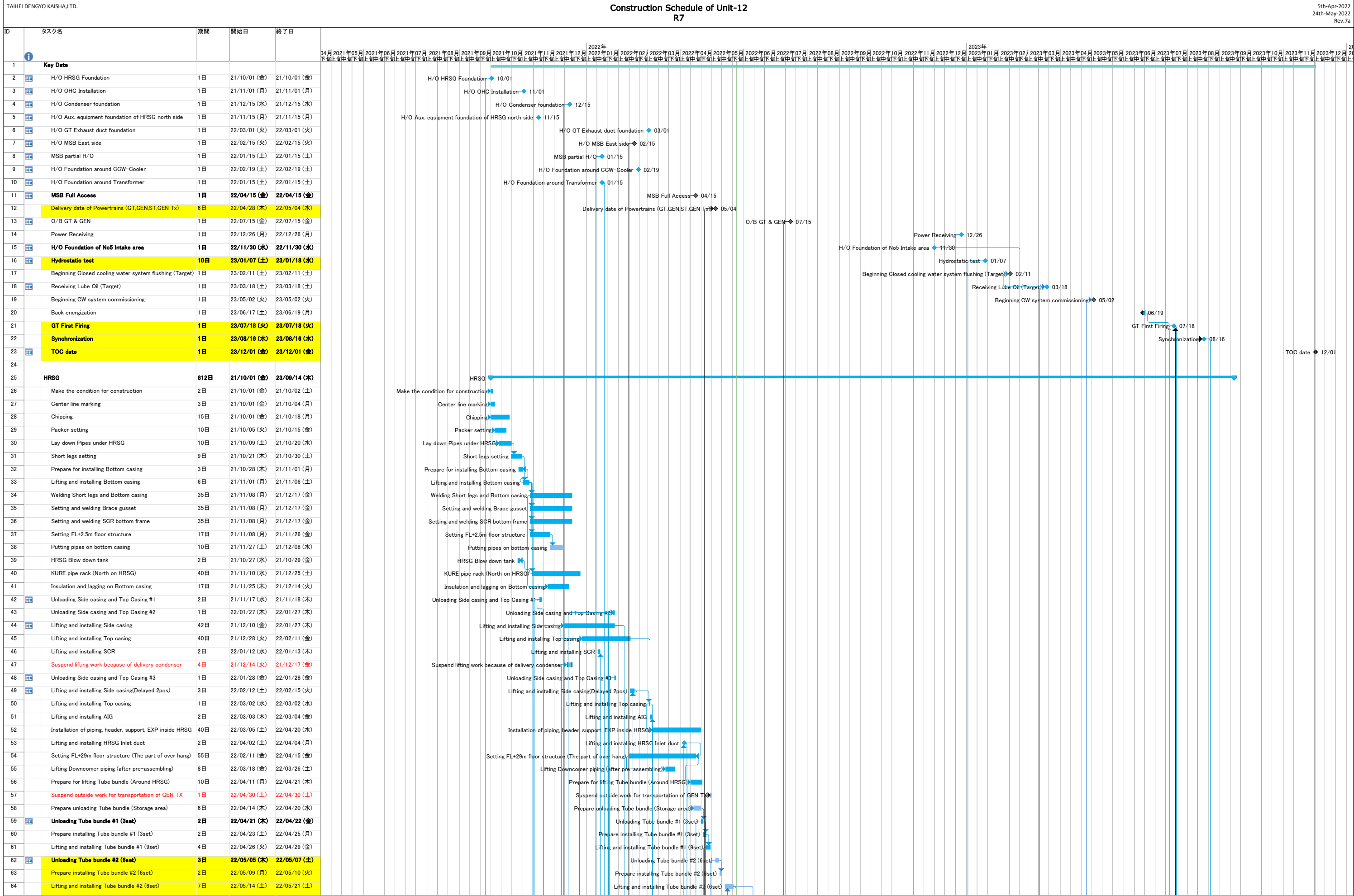
ID	Task Name	Duration	Start	Finish	Predecessors	3rd Quarter		
						Jul	Aug	Sep
150	Handover to Paul Y for Sealing up work	1 day	Wed 15/3/23	Wed 15/3/23				
151	Rebar fixing, Formwork, Concreteing and Removal of Formwork	14 days	Thu 16/3/23	Wed 29/3/23	150			
152	L12 Penstock Chamber	18 days	Mon 10/4/23	Thu 27/4/23				
153	Handover to Paul Y for additional RC curb	1 day	Mon 10/4/23	Mon 10/4/23				
154	Drilled in rebar	7 days	Tue 11/4/23	Mon 17/4/23	153			
155	Formwork	2 days	Tue 18/4/23	Wed 19/4/23	154			
156	Concreting	1 day	Thu 20/4/23	Thu 20/4/23	155			
157	Installation of GRP catladder	2 days	Wed 26/4/23	Thu 27/4/23				
158	L12 Bar Screen Chamber	95 days	Fri 24/2/23	Mon 29/5/23				
159	Drilled in anchor bolt at concrete recess of bar screen chamber	7 days	Fri 24/2/23	Thu 2/3/23				
160	Installation of Bar Screen Guide Channel (Bottom & Based Portion)	7 days	Fri 3/3/23	Thu 9/3/23	159			
161	Installation of Bar Screen Guide Channel (Remaining Portion)	7 days	Fri 10/3/23	Thu 16/3/23	160			
162	Grouting	18 days	Fri 17/3/23	Mon 3/4/23	161			
163	Removal of formwork & temporary struct	3 days	Tue 4/4/23	Thu 6/4/23	162			
164	Modification works of bar screen walls	15 days	Fri 7/4/23	Fri 21/4/23	163			
165	Removal of scaffold and installation of GRP catladder	3 days	Sat 22/4/23	Mon 24/4/23	164			
166	Delivery of Rubber gasket for replacement	1 day	Thu 27/4/23	Thu 27/4/23				
167	Replacement of damaged Rubber gasket for CW4 Penstock	2 days	Fri 28/4/23	Sat 29/4/23	166			
168	Installation of temporary water gate (Use existing water gate from Intake 4)	1 day	Sun 30/4/23	Sun 30/4/23	165,167			
169	Removal of temporary water gate	1 day	Mon 29/5/23	Mon 29/5/23				
170	L12 2nd Bar Screen Chamber and culvert	65 days	Mon 27/3/23	Tue 30/5/23				
171	Drilled in anchor bolt at concrete recess of bar screen chamber	6 days	Mon 27/3/23	Sat 1/4/23				
172	Form Access Panel and pump out remaining water inside culvert	4 days	Mon 3/4/23	Thu 6/4/23				
173	Obsesrvation for any leakage from steel gate at culvert inlet	4 days	Fri 7/4/23	Mon 10/4/23	172			
174	Installation of Bar Screen Guide Channel (Bottom & Based Portion) & temporary struct for temporary water gate	12 days	Tue 11/4/23	Sat 22/4/23	173			
175	Installation of Bar Screen Guide Channel (Remaining Portion)	7 days	Tue 18/4/23	Mon 24/4/23	174FF+2 days			
176	Grouting	6 days	Sun 23/4/23	Fri 28/4/23	174			
177	Installation of Dosing Pipe for vertical portion	2 days	Tue 25/4/23	Wed 26/4/23	175			
178	Removal of formwork & temporary struct (by Paul Y.), installation of conduit (by other) and removal of scaffolding	3 days	Sat 29/4/23	Mon 1/5/23	176,177			
179	Installation of GRP catladder	1 day	Tue 2/5/23	Tue 2/5/23	178			
180	Water filling of chamber	1 day	Wed 3/5/23	Wed 3/5/23	168,179			
181	Removal of Steel Gate (Friendly Benefit)	9 days	Thu 4/5/23	Fri 12/5/23	180			
182	Removal of Steel Gate at Culvert Inlet L12 (WOD)	4 days	Thu 27/4/23	Sun 30/4/23	177			
183	Installation of Dosing Pipe for culvert portion	6 days	Mon 1/5/23	Sat 6/5/23	182			
184	Connection of Dosing Pipe for culvert & vertical portion	2 days	Sat 13/5/23	Sun 14/5/23	181,183			
185	Testing & Commissioning	1 day	Tue 30/5/23	Tue 30/5/23	169,184			
186	Centre Chamber (Spare)	124 days	Tue 25/10/22	Sat 25/2/23				
238	W20 (Seal up spare Box-out openings at discharge valve chamber)	15 days	Sat 15/4/23	Sat 29/4/23				
239	Handover to Paul Y for Sealing up work	1 day	Sat 15/4/23	Sat 15/4/23				
240	Rebar fixing, Formwork, Concreteing and Removal of Formwork	18 days	Sun 16/4/23	Wed 3/5/23	239			
241	Spare Penstock Chamber	11 days	Wed 31/5/23	Sat 10/6/23				
242	Drilled in rebar	7 days	Wed 31/5/23	Tue 6/6/23	156FS+40 days			
243	Handover to TDK for installation of Cast-in embedment	1 day	Wed 7/6/23	Wed 7/6/23	242			
244	Formwork	2 days	Thu 8/6/23	Fri 9/6/23	243			
245	Concreting	1 day	Sat 10/6/23	Sat 10/6/23	244			
246	Spare Bar Screen Chamber	65 days	Sun 2/4/23	Mon 5/6/23				
247	Drilled in anchor bolt at concrete recess of bar screen chamber	7 days	Sun 2/4/23	Sat 8/4/23	171			
248	Installation of Bar Screen Guide Channel (Bottom & Based Portion)	14 days	Tue 2/5/23	Mon 15/5/23	178,247			
249	Installation of Bar Screen Guide Channel (Remaining Portion)	7 days	Tue 16/5/23	Mon 22/5/23	248			
250	Grouting	7 days	Tue 23/5/23	Mon 29/5/23	249			
251	Removal of formwork & temporary struct (by Paul Y.) and installation of conduit (by other)	3 days	Tue 30/5/23	Thu 1/6/23	250			
252	Modification works of bar screen walls	14 days	Tue 23/5/23	Mon 5/6/23	249			

Project: 19-83014 - No. 5 Intake and Cable Br
 Date: 28 May 2023
 Rev. 10 - Programme for No. 5 C.W. Intake

Task		Project Summary		Inactive Milestone		Manual Summary Rollup		Progress	
Split		External Tasks		Inactive Summary		Manual Summary		Deadline	
Milestone		External Milestone		Manual Task		Start-only			
Summary		Inactive Task		Duration-only		Finish-only			

ID	Task Name	Duration	Start	Finish	Predecessors	3rd Quarter		
						Jul	Aug	Sep
253	Removal of scaffold and installation of GRP catladder	3 days	Tue 6/6/23	Thu 8/6/23	252			
254	Installation of temporary water gate (Use existing water gate from Intake 4)	1 day	Fri 9/6/23	Fri 9/6/23	169,253			
255	Removal of temporary water gate	1 day	Mon 24/7/23	Mon 24/7/23	256			
256	Spare 2nd Bar Screen Chamber and culvert	106 days	Sun 9/4/23	Sun 23/7/23				
257	Drilled in anchor bolt at concrete recess of bar screen chamber	6 days	Sun 9/4/23	Fri 14/4/23	247			
258	Installation of Bar Screen Guide Channel (Bottom & Based Portion) & temporary struct for temporary water gate	14 days	Fri 2/6/23	Thu 15/6/23	251			
259	Installation of Bar Screen Guide Channel (Remaining Portion)	7 days	Fri 16/6/23	Thu 22/6/23	258			
260	Grouting	7 days	Fri 23/6/23	Thu 29/6/23	259			
261	Removal of formwork & temporary struct (by Paul Y.), installation of conduit (by other) and removal of scaffolding	3 days	Fri 30/6/23	Sun 2/7/23	260			
262	Water filling of chamber	1 day	Mon 3/7/23	Mon 3/7/23	254,261			
263	Removal of Steel Gate (Friendly Benefit)	9 days	Tue 4/7/23	Wed 12/7/23	262			
264	Installation of Dosing Pipe	9 days	Thu 13/7/23	Fri 21/7/23	263			
265	Testing & Commissioning	2 days	Sat 22/7/23	Sun 23/7/23	264			
266	Removal of Steel Gate at Culvert Inlet L12 (WOD)	2 days	Mon 15/5/23	Tue 16/5/23	184			
267	Installation of GRP catladder	2 days	Sat 22/7/23	Sun 23/7/23	264			
268	South Chamber (L13)	130 days	Wed 23/11/22	Sat 1/4/23				
320	L13 Penstock Chamber	11 days	Sun 11/6/23	Wed 21/6/23				
321	Drilled in rebar	7 days	Sun 11/6/23	Sat 17/6/23	245			
322	Handover to TDK for installation of Cast-in embedment	1 day	Sun 18/6/23	Sun 18/6/23	321			
323	Formwork	2 days	Mon 19/6/23	Tue 20/6/23	322			
324	Concreting	1 day	Wed 21/6/23	Wed 21/6/23	323			

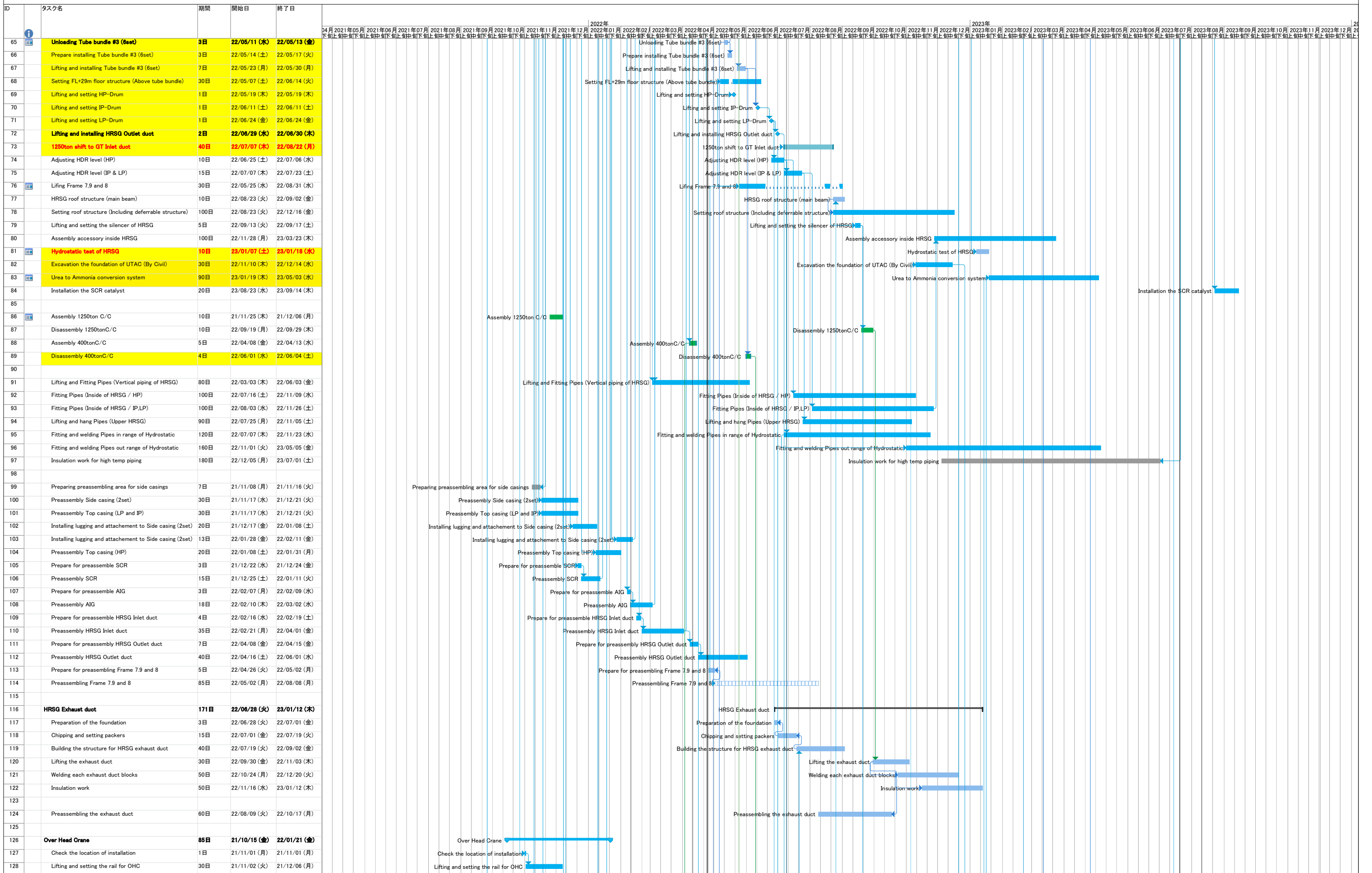
Project: 19-83014 - No. 5 Intake and Cable Br Date: 28 May 2023 Rev. 10 - Programme for No. 5 C.W. Intake	Task		Project Summary		Inactive Milestone		Manual Summary Rollup		Progress	
	Split		External Tasks		Inactive Summary		Manual Summary		Deadline	
	Milestone		External Milestone		Manual Task		Start-only			
	Summary		Inactive Task		Duration-only		Finish-only			



This schedule was based on belows;
 i) This schedule was revised with based on the email M80020 and M80036.
 ii) Delivery schedule of the powertrain and the tube bundles are followed to the information by 5th-April.

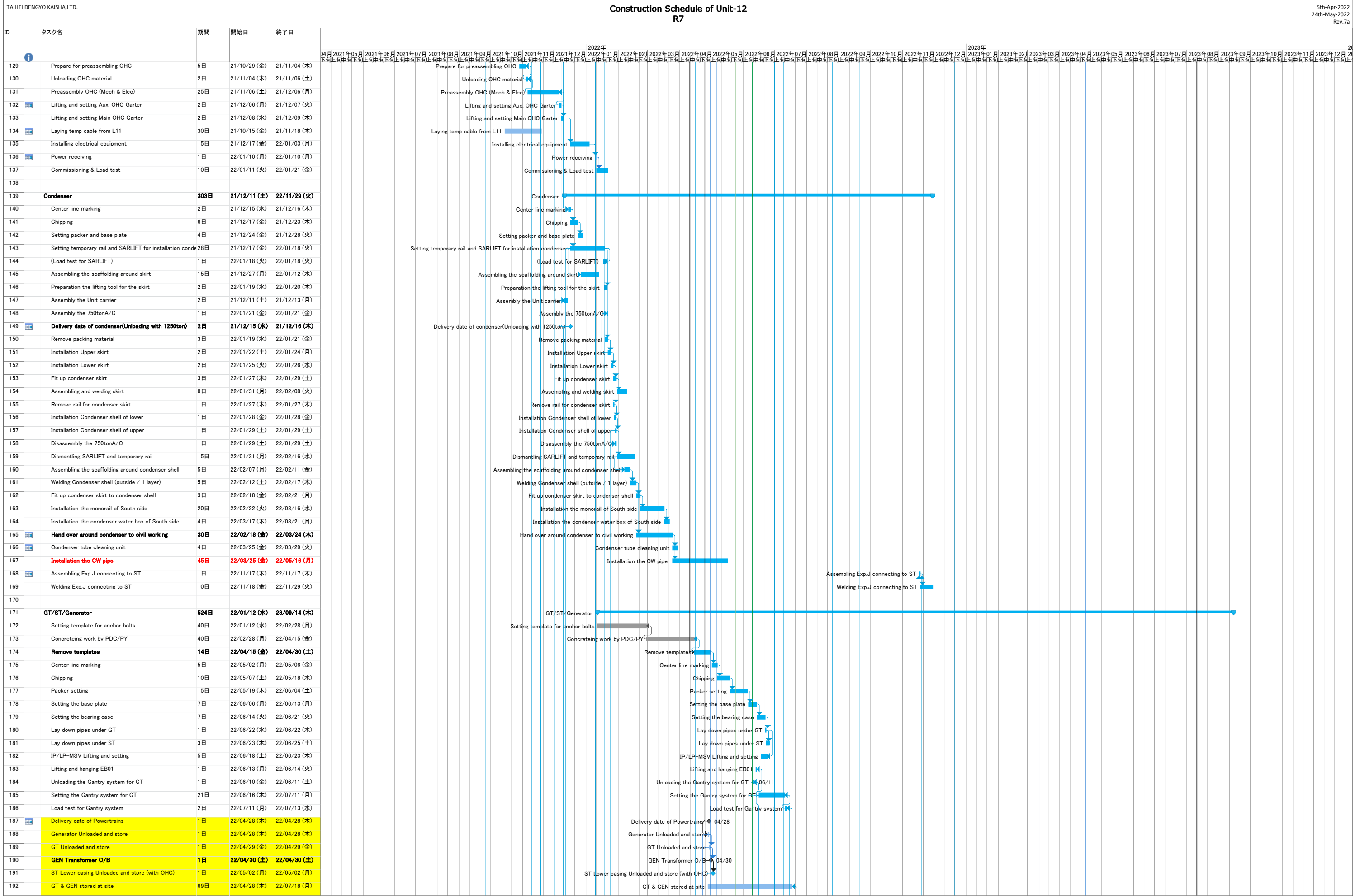
iii) Corrected by the comment of HKE on 11th-May-2022

Construction Schedule of Unit-12
R7



This schedule was based on belows;
 i) This schedule was revised with based on the email M80020 and M80036.
 ii) Delivery schedule of the powertrain and the tube bundles are followed to the information by 5th-April.

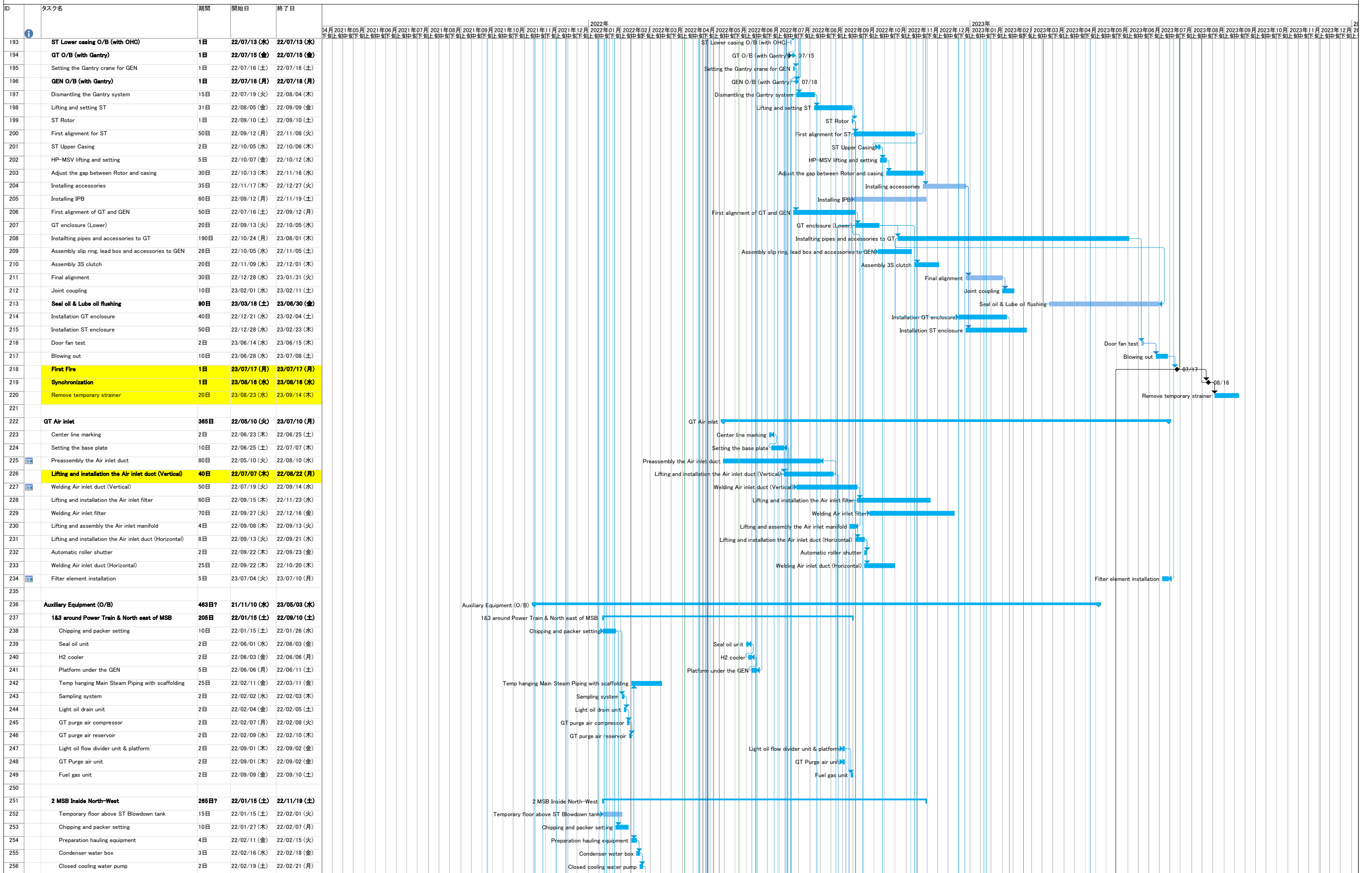
iii) Corrected by the comment of HKE on 11th-May-2022



This schedule was based on belows;
 i) This schedule was revised with based on the email M80020 and M80036.
 ii) Delivery schedule of the powertrain and the tube bundles are followed to the information by 5th-April.

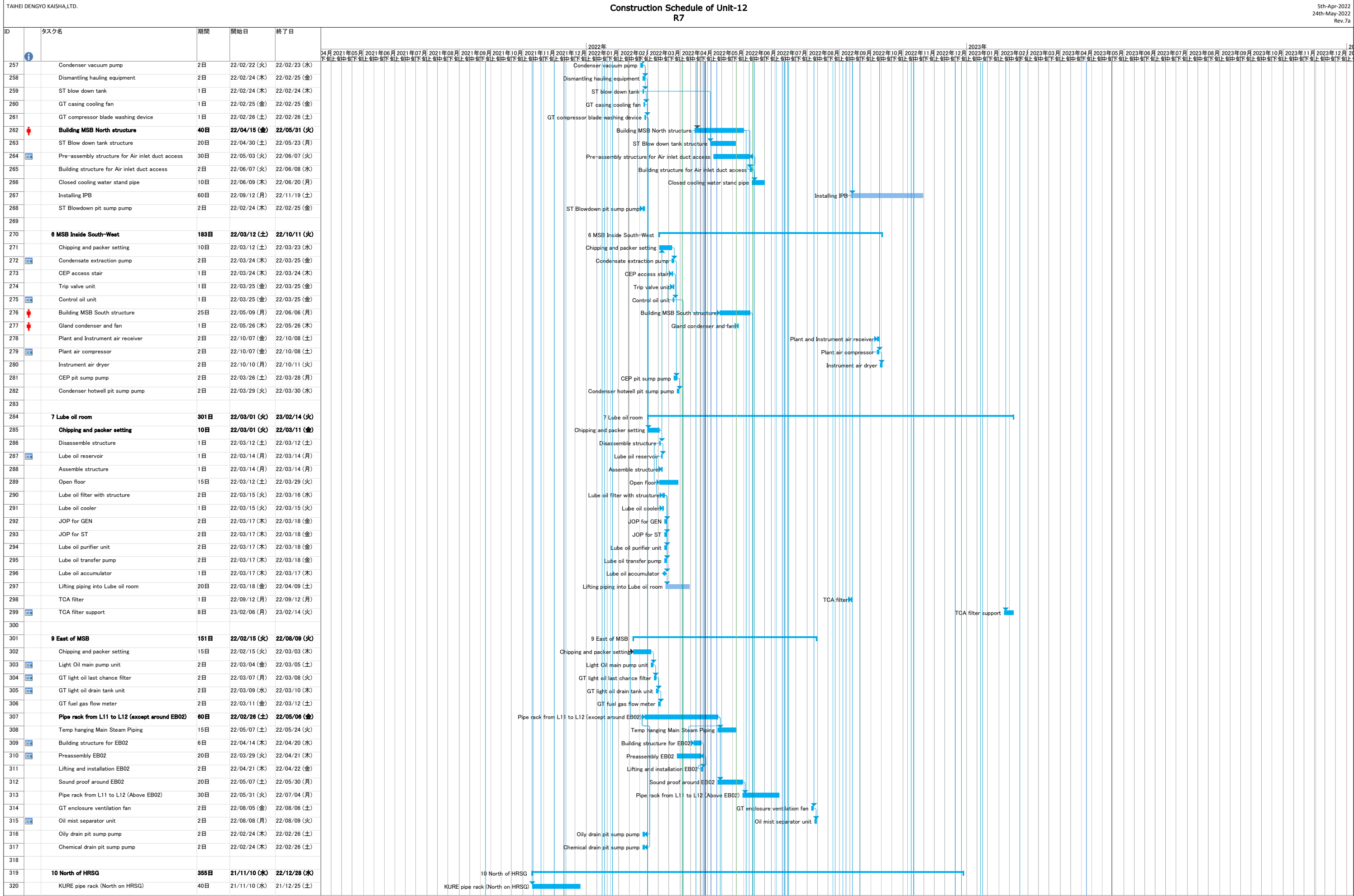
iii) Corrected by the comment of HKE on 11th-May-2022

Construction Schedule of Unit-12
R7



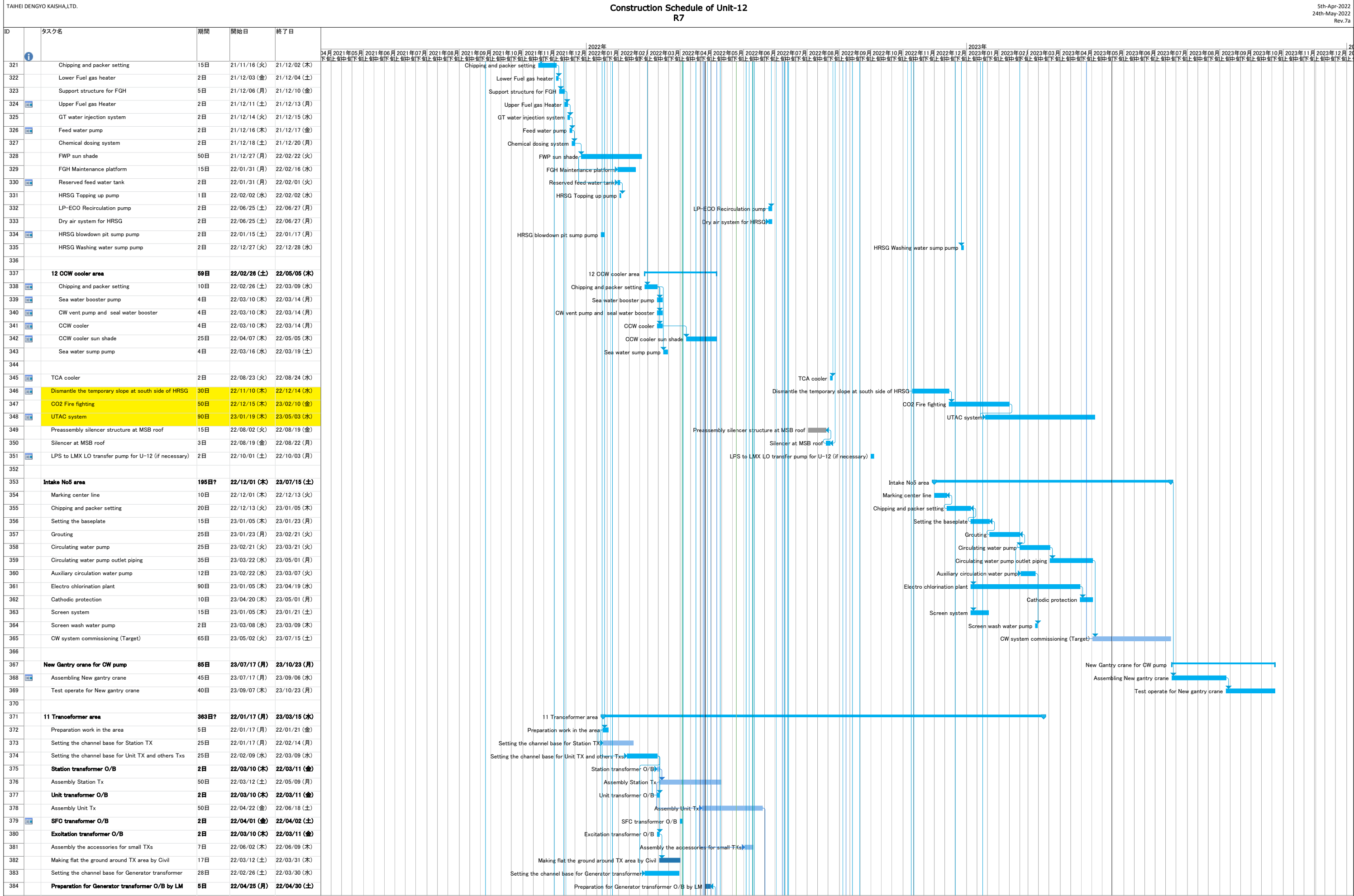
This schedule was based on belows;
 i) This schedule was revised with based on the email M80020 and M80036.
 ii) Delivery schedule of the powertrain and the tube bundles are followed to the information by 5th-April.

iii) Corrected by the comment of HKE on 11th-May-2022



This schedule was based on belows;
 i) This schedule was revised with based on the email M80020 and M80036.
 ii) Delivery schedule of the powertrain and the tube bundles are followed to the information by 5th-April.

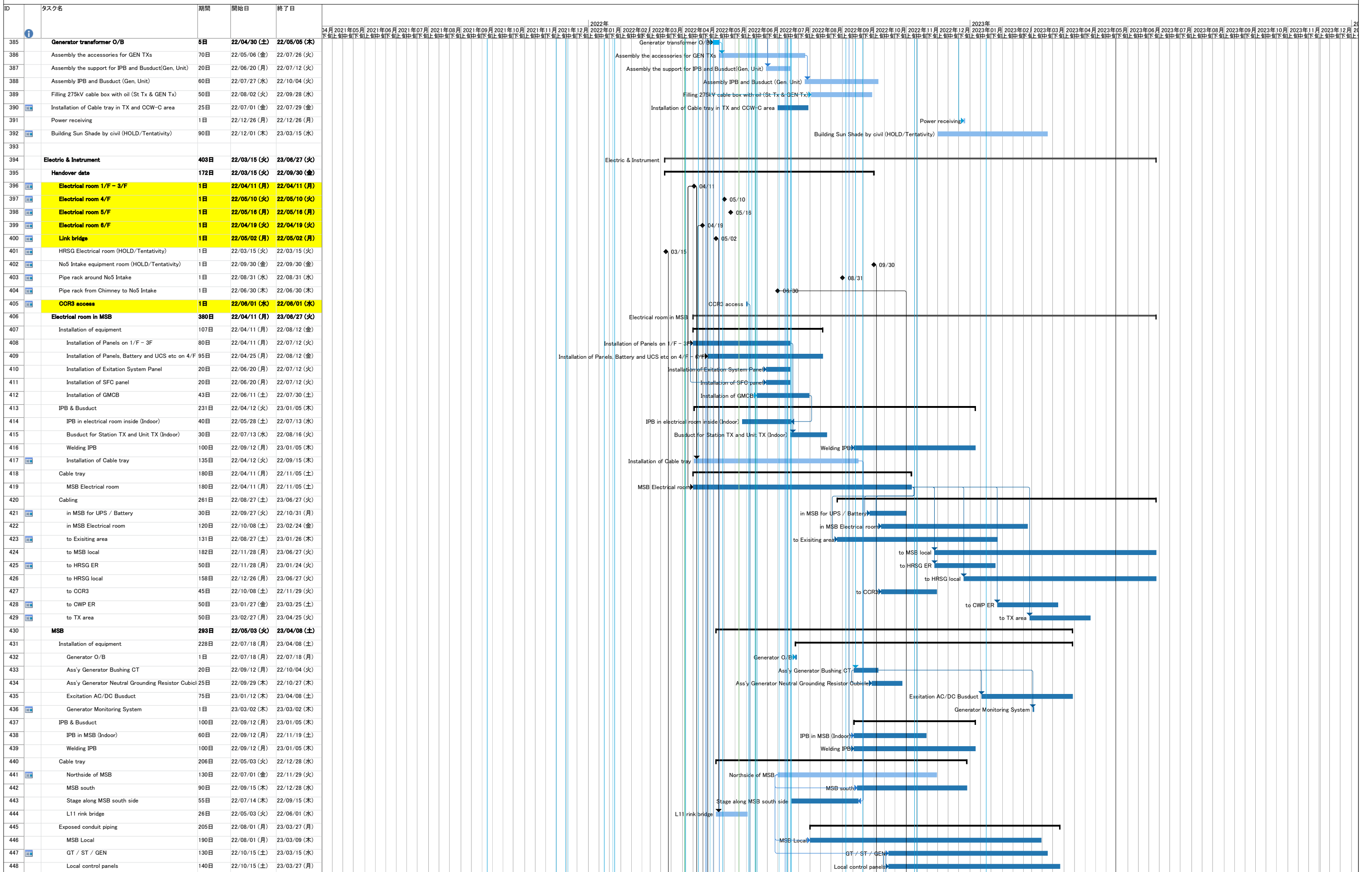
iii) Corrected by the comment of HKE on 11th-May-2022



This schedule was based on belows;
 i) This schedule was revised with based on the email M80020 and M80036.
 ii) Delivery schedule of the powertrain and the tube bundles are followed to the information by 5th-April.

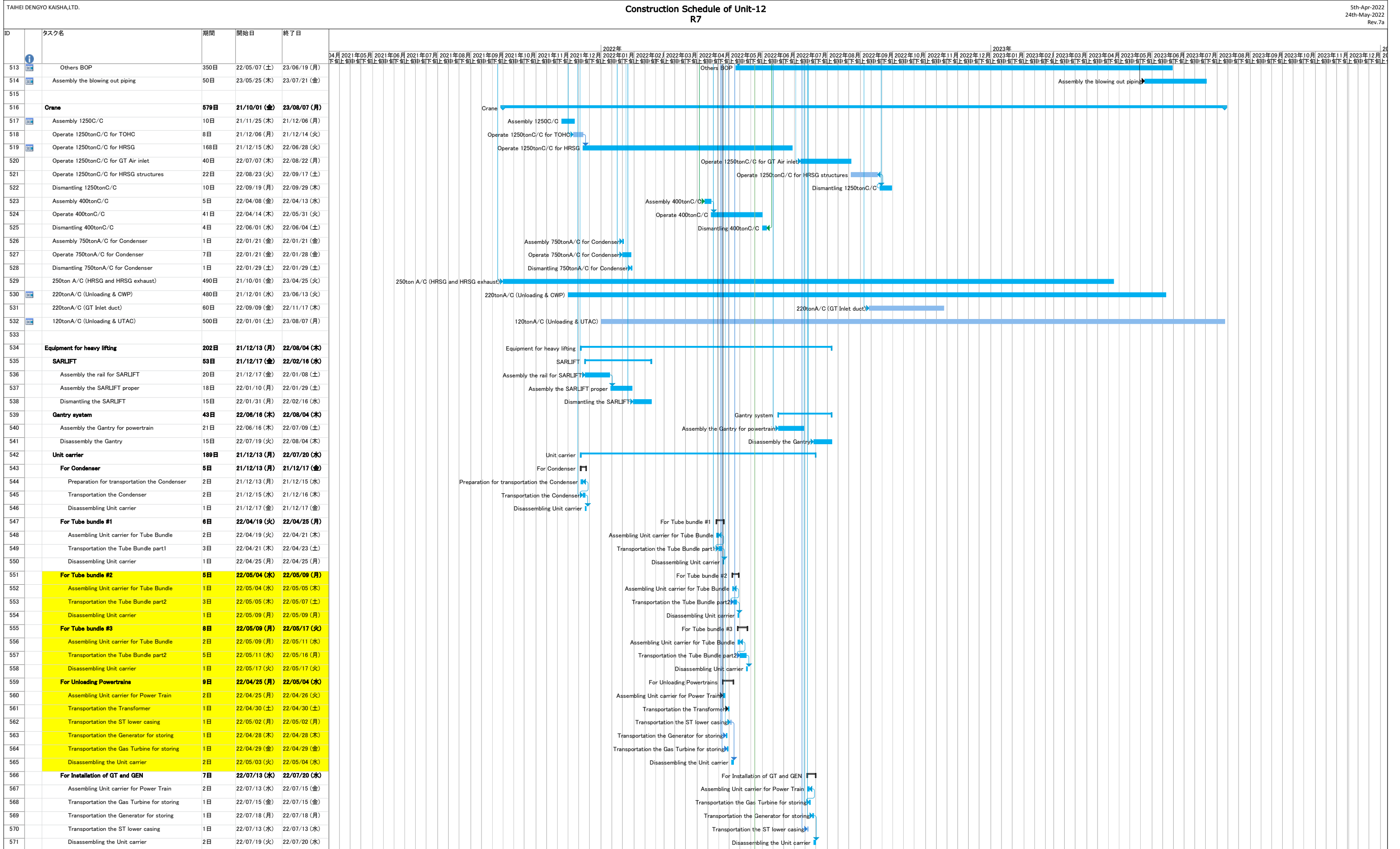
iii) Corrected by the comment of HKE on 11th-May-2022

Construction Schedule of Unit-12
R7



This schedule was based on belows;
 i) This schedule was revised with based on the email M80020 and M80036.
 ii) Delivery schedule of the powertrain and the tube bundles are followed to the information by 5th-April.

iii) Corrected by the comment of HKE on 11th-May-2022



This schedule was based on belows;
 i) This schedule was revised with based on the email M80020 and M80036.
 ii) Delivery schedule of the powertrain and the tube bundles are followed to the information by 5th-April.

iii) Corrected by the comment of HKE on 11th-May-2022

Monthly Waste Flow Table for June 2023

Project: Lamma Power Station Extension Civil and Building Works for Unit L12

Contractor: Paul Y. Construction Company, Limited

Record by: Ben Lam

Year of Record: 2020, 2021, 2022 & 2023

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)	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)							
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	0.00	0.00	0.00
Jan 2021	0.00	0.00	21020.16	0.00	0.00	0.00	0.00	0.00	8.82	0.00	0.00	0.00	0.00	0.00	0.00
Feb 2021	0.00	0.00	18083.97	0.00	0.00	0.00	0.00	0.00	18.25	0.00	0.25	0.00	0.00	0.00	0.00
Mar 2021	0.00	0.00	9048.21	0.00	0.00	0.00	0.00	0.00	7.69	0.00	0.00	0.00	0.00	0.00	2.61
Apr 2021	0.00	0.00	3205.15	0.00	0.00	0.00	0.00	0.00	28.08	0.00	0.00	0.00	0.00	0.00	14.45
May 2021	0.00	0.00	6267.49	0.00	0.00	0.00	0.00	0.00	34.68	0.00	0.00	0.00	0.00	0.00	0.00
Jun 2021	0.00	0.00	6555.38	0.00	0.00	0.00	0.00	0.00	26.87	0.00	0.00	0.00	0.00	0.00	25.03
Jul 2021	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	16.95	0.00	0.00	0.00	0.00	0.00	10.97
Aug 2021	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.55	0.00	0.00	0.00	0.00	0.00	3.49
Sep 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	0.40	0.28	49.15
Oct 2021	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	17.47	0.00	0.00	0.00	0.00	0.00	62.08
Nov 2021	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	0.00	34.17
Dec 2021	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.36	0.00	0.00	0.00	0.00	0.00	52.18
Jan 2022	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	16.93	0.00	0.00	0.00	0.00	0.00	42.73
Feb 2022	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	8.62
Mar 2022	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24.21	0.00	0.000	0.00	0.00	0.00	25.70
Apr 2022	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.51	0.00	0.00	0.00	0.00	0.00	0.00	52.83
May 2022	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	15.36	0.00	0.00	0.00	0.00	0.00	38.60
Jun 2022	0.00	0.00	6645.22	0.00	0.00	0.00	0.00	5.70	0.00	0.00	0.000	0.00	0.00	0.00	37.38
Jul 2022	0.00	0.00	4710.98	0.00	0.00	0.00	0.00	6.58	11.55	0.00	0.000	0.00	0.00	0.00	25.22
Aug 2022	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.00	0.60	0.42	21.74
Sep 2022	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	11.64	0.00	0.000	0.00	0.00	0.00	48.57
Oct 2022	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	0.00	44.71
Nov 2022	0.00	0.00	4930.52	0.00	0.00	0.00	0.00	0.00	6.67	0.00	0.000	0.00	0.00	0.00	12.15
Dec 2022	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.21	0.00	0.000	0.00	0.00	0.00	62.32
Jan 2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.57	0.00	0.000	0.00	0.00	0.00	8.89
Feb 2023	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	0.00	7.39
Mar 2023	0.00	0.00	4910.49	0.00	0.00	0.00	0.00	0.00	17.09	0.00	0.000	0.00	0.00	0.00	28.59
Apr 2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	31.78	0.00	0.000	0.00	0.00	0.00	29.60
May 2023	0.00	0.00	4953.79	0.00	0.00	0.00	0.00	0.00	7.41	0.00	0.000	0.00	0.00	0.00	13.29
Jun 2023	0.00	0.00	7406.05	0.00	0.00	0.00	0.00	0.00	7.73	0.00	0.000	0.00	0.00	0.00	50.47
Total	0.00	0.00	97737.40	0.00	0.00	0.00	0.00	17.79	358.95	0.00	0.25	0.00	1.00	0.70	812.93

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
97755.19 tonnes	359.20 tonnes	812.93 tonnes	0.70 tonnes

Where (A) Inert C&D materials include bricks, concrete, building debris, rubble and excavated spoil. In total, 97755.19 tonnes of inert C&D material were generated from the Project, of which 97737.40 tonnes were reused in this and other contracts, and the remaining 5.51 tonnes were disposed as public fill to Fill Banks / Sorting Facilities.

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

(c) 7730 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 2023

Project: Civil Works for No. 5 C.W. Intake and Cable Bridge at Lamna Power Station Extension

Contractor: Paul Y. Construction Company, Limited

Record by: Ben Lam

Year of Record: 2020, 2021, 2022 & 2023

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)	Chemical waste (wasted lubricant oil/oil container)	Other, e.g. general refuse
	Disposed in Public Fill	Disposed in Sorting Facilities	Others (e.g. Reused in the Contract / Other Projects)	Broken Concrete or Construction Waste Collected by Recycled Company	Reused in the Contract	Reused in other Projects	Disposed in Public Fill	Disposed in Sorting Facilities							
(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000L)	(in '000kg)	(in '000kg)	
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	0.00	0.00	0.00
Nov 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	0.00	0.00
Dec 2020	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.21	0.00	0.00	0.00	0.00	0.00
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	0.00	0.00	0.00
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	0.00	0.00	0.00
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	0.00	0.00	7.49
Apr 2021	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.60	0.42	4.85	
May 2021	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	22.61
Jun 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	0.00	0.00	0.00
Jul 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	0.00	0.00	0.00
Aug 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	0.00	0.00	0.00
Sep 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	0.00	0.00	37.84
Oct 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	0.00	0.00	24.93
Nov 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	0.00	0.00	0.00
Dec 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	0.00	0.00	0.00
Jan 2022	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	46.25
Feb 2022	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	13.45
Mar 2022	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	29.86
Apr 2022	0.00	0.00	15076.84	0.00	0.00	0.00	0.00	10.27	0.00	0.00	0.00	0.00	0.00	0.00	43.60
May 2022	0.00	0.00	29151.94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	54.64
Jun 2022	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	11.79
Jul 2022	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24.04	0.00	0.00	0.00	0.00	0.00	0.00	35.90
Aug 2022	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	41.91
Sep 2022	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	51.26
Oct 2022	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	37.87
Nov 2022	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	31.69
Dec 2022	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.29	0.00	0.00	0.00	0.00	0.00	24.62
Jan 2023	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	39.90
Feb 2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.67	0.00	0.00	0.00	0.00	0.00	6.17
Mar 2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	16.59	0.00	0.00	0.00	0.00	0.00	35.13
Apr 2023	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	11.14
May 2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.40	0.28	7.85	
Jun 2023	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	37.44
Total	0.00	0.00	44228.78	0.00	0.00	0.00	0.00	34.31	36.76	0.00	0.00	0.00	1.00	0.70	658.19

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
44263.09 tonnes	36.76 tonnes	658.19 tonnes	0.70 tonnes

Where (A) Inert C&D materials include bricks, concrete, building debris, rubble and excavated spoil. In total, 44263.09 tonnes of inert C&D material were generated from the Project, of which 44228.78 tonnes were reused in this and other contracts, and the remaining 10.27 tonnes were disposed as public fill to Fill Banks / Sorting Facilities.

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

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

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

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

Monthly Waste Flow Table for June 2023

Project: LAMMA POWER STATION EXTENSION – Unit 12 Complete Erection, Inspection, Testing & Commissioning of Power Block Facilities

Contractor: Taihei Dengyo Kaisha, Ltd.

Record by: Stephen Sin

Year of Record: 2021, 2022, 2023

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 '000kg)	(in '000kg)	
Nov 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	0.00	0.00
Dec 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	0.00	0.00
Jan 2022	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	10.36
Feb 2022	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	9.29
Mar 2022	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	13.59
Apr 2022	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	19.42
May 2022	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	19.93
Jun 2022	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	18.60
Jul 2022	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	15.57
Aug 2022	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	19.40
Sep 2022	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	20.96
Oct 2022	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	12.89
Nov 2022	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	17.83
Dec 2022	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	14.58
Jan 2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	15.11
Feb 2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	13.50
Mar 2023	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	22.86
Apr 2023	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	14.30
May 2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.76	14.66
Jun 2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	15.01
Total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.76	287.86

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	287.86 tonnes	4.76 tonnes

Where (A) Inert C&D materials include bricks, concrete, building debris, rubble and excavated spoil. In total, 0.00 tonnes of inert C&D material were generated from the Project, of which 0 tonnes were reused in this and other contracts, and the remaining 0.00 tonnes were disposed 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.
 - (7) Assume Lube Oil Density = 700 kg/m3
 - (8) 1 m3 = 1000 L