

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



Re-provision of Open Cycle Gas Turbines at Lamma Power Station

Decommissioning/ Demolition & Construction Phases

Monthly Environmental Monitoring & Audit Report

January 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-600/2022

**RE-PROVISION OF OPEN CYCLE GAS TURBINES
AT LAMMA POWER STATION**



Title	<u>Monthly EM&A Report (January 2023)</u>
Date	<u>14 February 2023</u>
Certified by	 <u>(Mr. Kenneth Fung, Environmental Team Leader)</u>
Verified by	 <u>Mr. Y. W. Fung (AECOM Asia Company Limited, Independent Environmental Checker)</u>

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EXECUTIVE SUMMARY

In April 2022, an Environmental Permit (EP-600/2022) was granted to the Hongkong Electric Co., Ltd. (HK Electric) for the decommissioning/ demolition, construction and operation of the Project entitled “Re-provision of Open Cycle Gas Turbines at Lamma Power Station”. This report, prepared by the Environmental Team, presents the Environmental Monitoring and Audit (EM&A) findings for the Project in January 2023 and is the 7th Monthly EM&A Report for the decommissioning/ demolition and construction phases of the Project.

Key Construction Activities Undertaken

The construction activities undertaken in the reporting month are as follows:

- Trenching works;
- GTAB plant equipment demolition;
- Operation of crawler crane;
- Steel frame removal; and
- Oil discharge.

Environmental Monitoring

According to the EM&A Manual, no environmental monitoring was necessary in view of the anticipated insignificant environmental impact.

Site Environmental Audit and Implementation of Mitigation Measure

Independent Environmental Checker (IEC) conducted a site inspection on 30/1/2023. The site conditions were generally satisfactory.

Weekly site audits were carried out to monitor environmental issues on the construction site. The site conditions were generally satisfactory. All recommended environmental mitigation measures were properly implemented. No environmental non-compliance was recorded in the reporting month.

Environmental Licensing and Permitting

License/Permit	Ref. No.	Valid Period		Authority/Holder	Date Issued
		From	To		
Environmental Permit	EP-600/2022	01/04/2022	-	EPD / HK Electric	01/04/2022
Waste Disposal Billing Account	Account No.: 7044319	27/06/2022	-	EPD / Civil Contractor	27/06/2022
Registration of Chemical Waste Producer	5213-912-P2781-22	22/02/2016	-	EPD / Civil Contractor	22/02/2016
EPD Notification (Dust) Construction, Air Pollution Control (Construction Dust) Regulation	481782	07/07/2022	-	EPD / Civil Contractor	07/07/2022
Construction Noise Permit	GW-RS1132-22	30/12/2022	26/6/2023	EPD / Civil Contractor	28/12/2022

License/Permit	Ref. No.	Valid Period		Authority/Holder	Date Issued
		From	To		
Waste Disposal Billing Account	Account No.: 7045179	28/09/2022	-	EPD / E&M Contractor	28/09/2022
Registration of Chemical Waste Producer	5517-912-K2931-02	05/12/2022	-	EPD / E&M Contractor	05/12/2022

Environmental Complaints / Summons/ Prosecutions

No complaint in relation to the environmental impact of the construction activities was received in the reporting month. There was also no notification of summon and successful prosecution for breaches of relevant environmental legislations received in the reporting month.

Future Key Issues

The construction activities scheduled for the coming month are mainly trenching works, GTAB plant equipment demolition, HRSG7 demolition, GT7 power train removal works, oil discharge.

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

- Relevant environmental legislations should be observed.
- Relevant environmental licenses/permits should be obtained, if required.
- Required environmental mitigation measures should be properly implemented.
- Good site practices should be adopted to minimize environmental impacts.
- Dust suppression measures should be implemented for the construction activities.
- Works conducted during restricted hours should comply with the valid CNP.
- Wastewater from site facilities should be properly collected and stored within the site area.
- Generation of waste should be minimized.
- Waste generated should be properly stored and disposed of.

Reporting Changes

There was no reporting change in the reporting month.

Concluding Remarks

The environmental performance of the Project was generally satisfactory.

1. INTRODUCTION

1.1 Background

In April 2022, an Environmental Permit (EP-600/2022) was granted to HK Electric for the decommissioning/ demolition, construction and operation of the Project entitled “Re-provision of Open Cycle Gas Turbines at Lamma Power Station”. An Environmental Team was then formed to implement the Environmental Monitoring and Audit (EM&A) programme in accordance with the EM&A Manual for the Project.

The key components of the Project are outlined as follows:

- Decommissioning and demolition of four oil-fired open cycle gas turbine units (GT2, GT3, GT4 and GT6) and one gas-fired combined cycle gas turbine unit (GT57), and auxiliary equipment including the black start gas turbine (BSGT), the miscellaneous storage shed, and the lube oil storage tank near GT5;
- Construction of four new oil-fired open cycle gas turbine units (GT8, GT9, GT 10 and GT11), and installation of the new BSGT and Battery Energy Storage System (BESS);
- Construction of new cable trenches, staircase and lift, and reconstruction of the GT57 Auxiliary Building (GTAB) to a new 132kV Switching Station; and
- Operation of four new oil-fired open cycle gas turbine units (GT8, GT9, GT10 and GT11).

The EM&A programme was commenced on 1 July 2022. This is the 7th monthly EM&A report which summarizes the environmental monitoring and audit work for the Project for the month of January 2023.

1.2 Project Organization

The management structure to oversee the Project includes the following:

- Project Proponent (HK Electric);
- Environmental Protection Department (EPD);
- Independent Environmental Checker (IEC);
- Environmental Team (ET); and
- Contractor.

The project organisation chart for the EM&A programme is shown in [Appendix A](#).

1.3 Key Construction Works Undertaken during the Reporting Month

The Project area is shown in [Figure 1.1](#), and the tentative decommissioning and construction phasing schedule is shown in [Figure 1.2](#).

The locations of air, noise and water sensitive receivers are shown in [Figure 1.3](#), [Figure 1.4](#) and [Figure 1.5](#) respectively.

The main construction activities carried out during the reporting month and the corresponding environmental mitigation measures are summarized in [Table 1.1](#). The implementation status of the major mitigation measures in the reporting month can be found in [Appendix C](#).

Table 1.1 Construction Activities and Corresponding Environmental Mitigation Measures

Item	Activities	Environmental Mitigation Measures
Civil Works - General		
1.	Trenching works	<p><i>Air</i></p> <ul style="list-style-type: none"> - All regulated machine attached with valid exception/ approval NRMM labels. - Water spraying for concrete breaking works. - Excavated material stockpile will be temporary covered with canvas or transferred to temporary storage location for backfill later. <p><i>Noise</i></p> <ul style="list-style-type: none"> - Noise emission label was provided for air compressor. - Works conducted during restricted hours should comply with the valid CNP. <p><i>Wastewater</i></p> <ul style="list-style-type: none"> - No wastewater is required to be discharged at this moment. - Sand bag barriers was set up as preventive measures. <p><i>Waste Management</i></p> <ul style="list-style-type: none"> - Excavated material was temporary stored for backfilling later. - Scrape metal will be recycled. - Chemical waste should be collected by licensed collector.
E&M Works - General		
2.	GTAB plant equipment demolition	<p><i>Air</i></p> <ul style="list-style-type: none"> - Fence off the working area to avoid dust emission. <p><i>Noise</i></p> <ul style="list-style-type: none"> - No works will be conducted during restricted hours at this moment. <p><i>Wastewater</i></p> <ul style="list-style-type: none"> - No wastewater is required to be discharged. <p><i>Waste Management</i></p> <ul style="list-style-type: none"> - Scrap metal will be recycled.
3.	Operation of crawler crane	<p><i>Air</i></p> <ul style="list-style-type: none"> - All regulated machine attached with valid exception/ approval NRMM labels. <p><i>Noise</i></p> <ul style="list-style-type: none"> - No works will be conducted during restricted hours at this moment. <p><i>Wastewater</i></p> <ul style="list-style-type: none"> - No wastewater is required to be discharged. <p><i>Waste Management</i></p> <ul style="list-style-type: none"> - No waste will be generated.

Item	Activities	Environmental Mitigation Measures
4.	Steel frame removal	<p><i>Air</i></p> <ul style="list-style-type: none"> - Fence off the working area to avoid dust emission. <p><i>Noise</i></p> <ul style="list-style-type: none"> - No works will be conducted during restricted hours at this moment. <p><i>Wastewater</i></p> <ul style="list-style-type: none"> - No wastewater is required to be discharged. <p><i>Waste Management</i></p> <ul style="list-style-type: none"> - Scrap metal will be recycled.
5.	Oil discharge	<p><i>Air</i></p> <ul style="list-style-type: none"> - No dust will be generated. <p><i>Noise</i></p> <ul style="list-style-type: none"> - No works will be conducted during restricted hours. <p><i>Wastewater</i></p> <ul style="list-style-type: none"> - Nylon sheet are set on the ground. <p><i>Waste Management</i></p> <ul style="list-style-type: none"> - Oil would be handled by a specific chemical waste disposal company.

1.4 Summary of EM&A Requirements

Impact Monitoring

According to the EM&A Manual, no routine impact monitoring for air quality, noise and water quality is necessary in view of the anticipated insignificant environmental impact.

Environmental Audit

Regular environmental audits on air quality, noise, water quality, waste management, and land contamination are required. Details of the audits are summarized in [Section 2](#) of this report.

Report on complaints, notification of summons and successful prosecutions are given in [Section 3](#) of this report.

Future key issues are given in [Section 4](#) of this report.

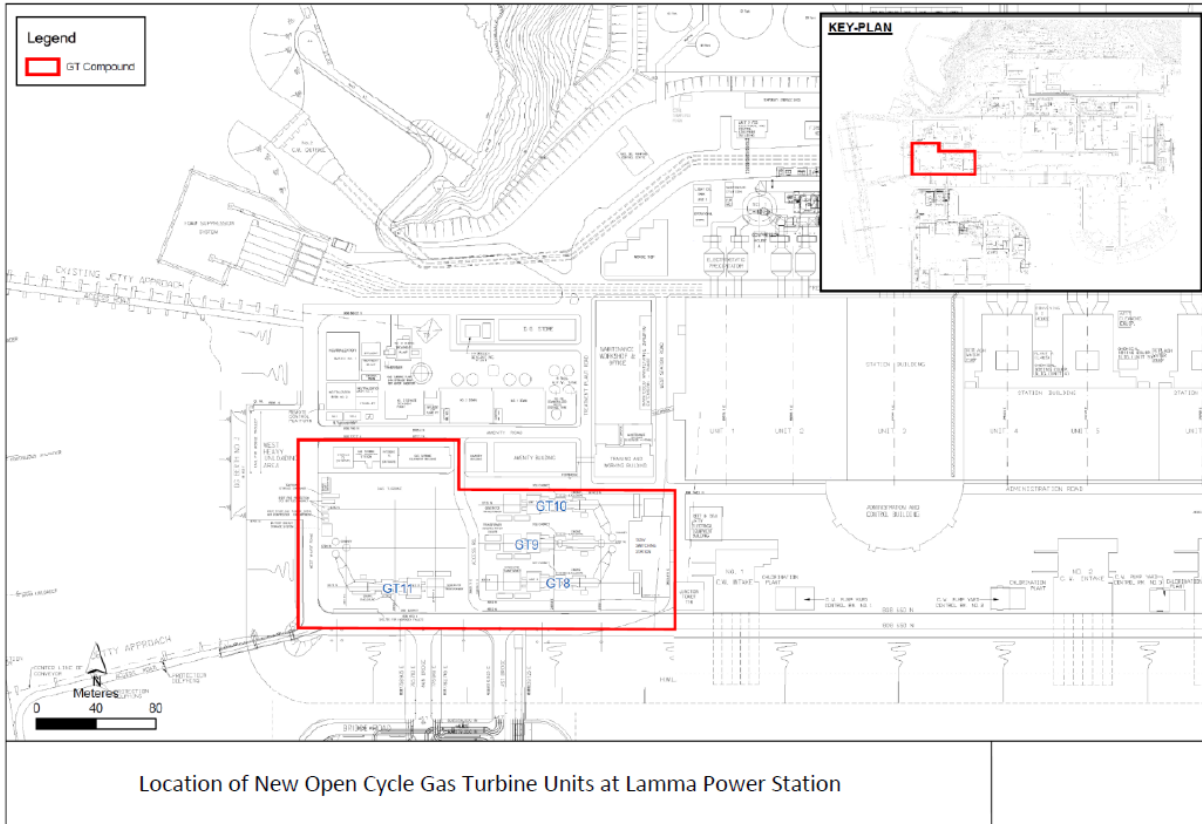
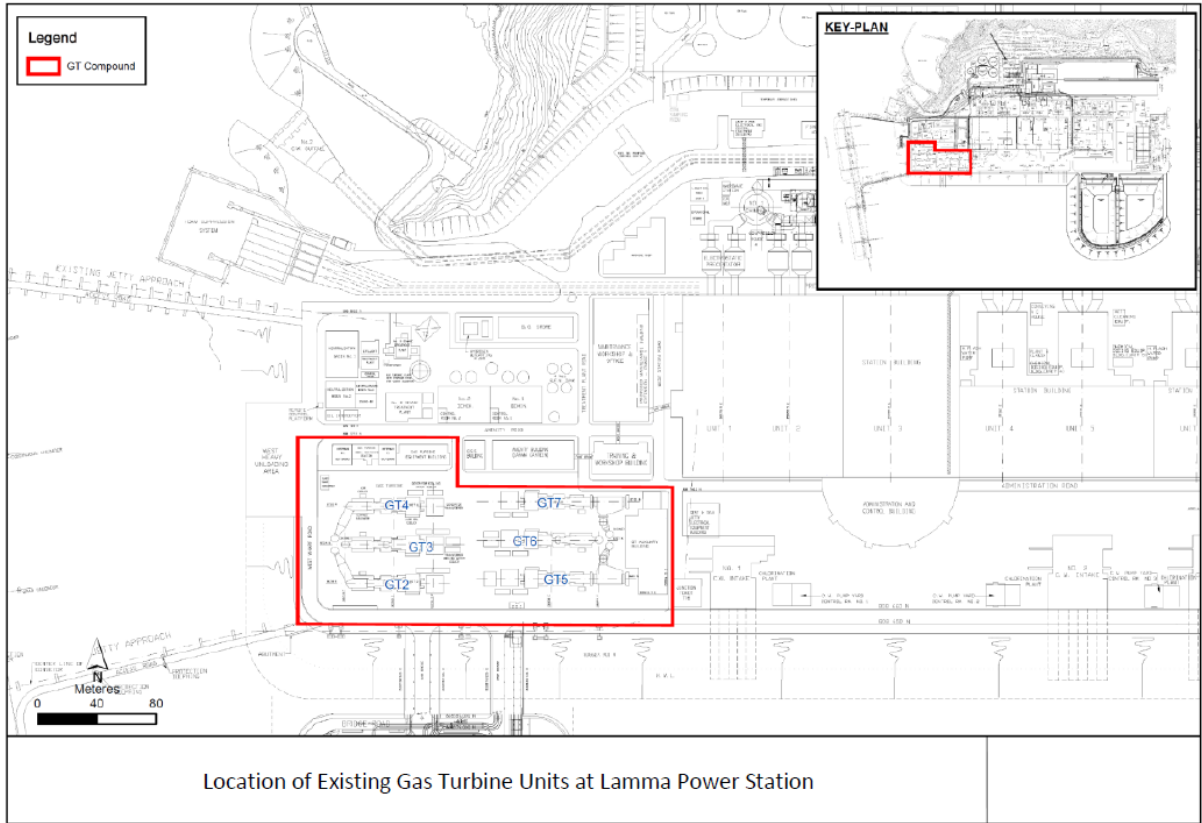


Figure 1.1 The Project Area

		Q1 2022	Q2 2022	Q3 2022	Q4 2022	Q1 2023	Q2 2023	Q3 2023	Q4 2023	Q1 2024	Q2 2024	Q3 2024	Q4 2024	Q1 2025	Q2 2025	Q3 2025	Q4 2025	Q1 2026	Q2 2026	Q3 2026	Q4 2026
GT57	Decommissioning of GT57																				
Demolition of GT7	Demolition of E&M equipment in GTAB																				
	Demolition of HRSG Demolition of gas turbine, generator, generator transformer and auxiliary equipment																				
GT10	Anchor bolt replacement																				
	Stack refurbishment																				
	Construction of gas turbine, generator, generator transformer and auxiliary equipment																				
	Testing and Commissioning																				
Demolition of GT5	Demolition of HRSG Demolition of gas turbine, generator, generator transformer and auxiliary equipment																				
	Anchor bolt replacement Construction of gas turbine, generator, generator transformer and auxiliary equipment																				
GT8	Anchor bolt replacement																				
	Construction of gas turbine, generator, generator transformer and auxiliary equipment																				
	Testing and Commissioning																				
Demolition of GT6	Decommissioning Demolition of gas turbine, generator, generator transformer and auxiliary equipment																				
	Anchor bolt replacement Construction of gas turbine, generator, generator transformer and auxiliary equipment																				
GT9	Anchor bolt replacement																				
	Construction of gas turbine, generator, generator transformer and auxiliary equipment																				
	Testing and Commissioning																				
GT2	Decommissioning	To be advised																			
	Demolition																				
GT3	Decommissioning																				
	Demolition																				
GT4	Decommissioning																				
	Demolition																				
GT11	Construction																				
	Testing and Commissioning																				

Figure 1.2 Decommissioning and Construction Phasing Schedule



Figure 1.3 Locations of Air Sensitive Receivers within the 15km Assessment Area



Figure 1.4 Locations of Noise Sensitive Receivers

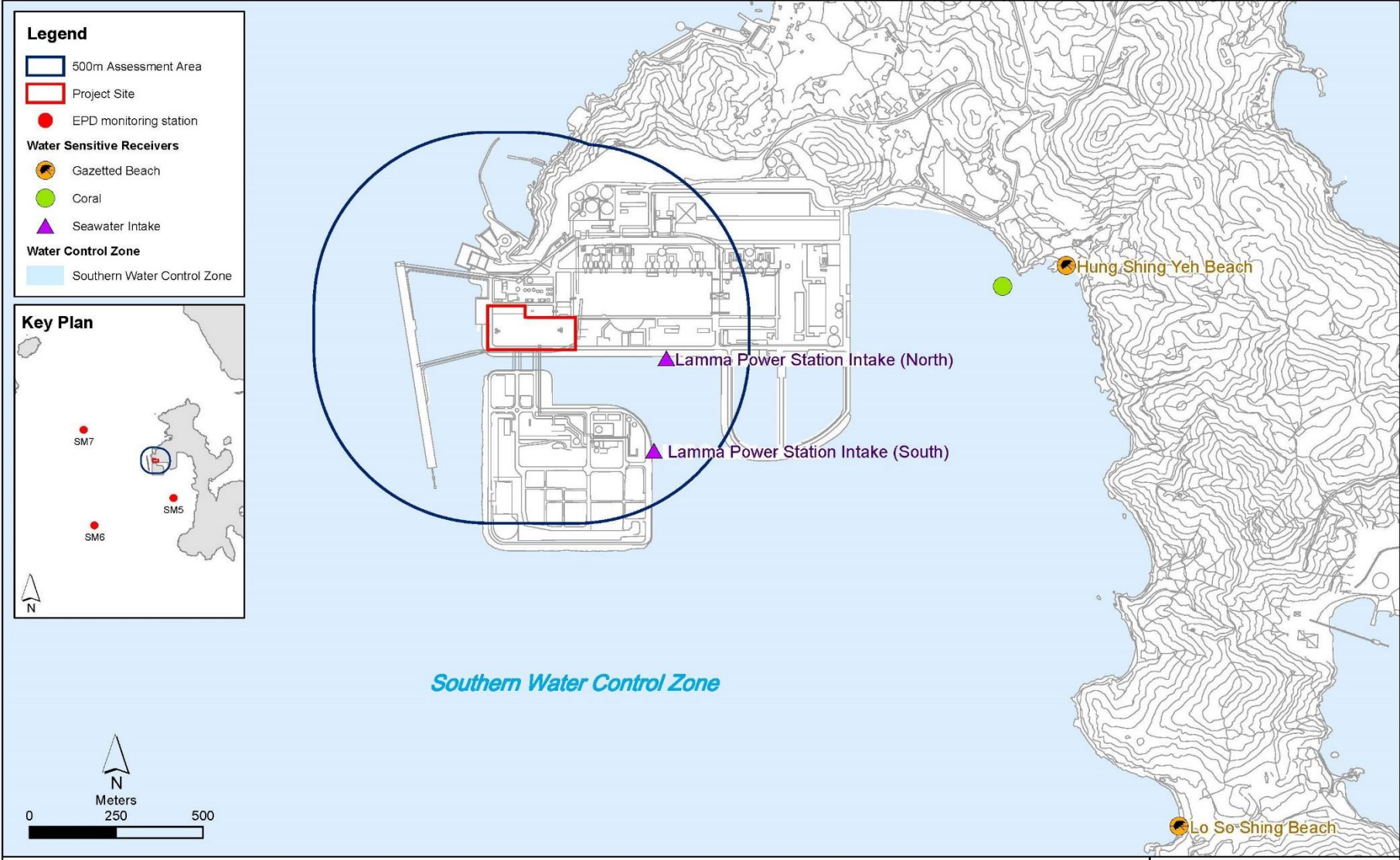


Figure 1.5 Locations of Water Sensitive Receivers

2. ENVIRONMENTAL AUDIT

2.1 Site Inspection

Independent Environmental Checker (IEC) conducted a site inspection on 30/1/2023. The site conditions were generally satisfactory.

Weekly site audits were carried out by the Environmental Team in the reporting month to ensure compliance with relevant legislations and other requirements. The site audit findings or recommendations in the reporting month are summarized in [Appendix D](#). The site conditions were generally satisfactory. No non-compliance was recorded during the site inspection. All recommended mitigation measures were properly implemented.

2.2 Status of Environmental Licensing and Permitting

The licenses/permits obtained for the Project as of end January 2023 are summarised in [Table 2.1](#).

Table 2.1 Status of Environmental Licensing and Permitting

License/Permit	Ref. No.	Valid Period		Description	Status
		From	To		
Environmental Permit	EP-600/2022	01/04/2022	-	For the decommissioning/ demolition, construction and operation of the Project	Valid
Waste Disposal Billing Account	Account No.: 7044319	27/06/2022	-	Civil Work	Valid
Registration of Chemical Waste Producer	5213-912-P2781-22	22/02/2016	-	Civil Work	Valid
EPD Notification (Dust) Construction, Air Pollution Control (Construction Dust) Regulation	481782	07/07/2022	-	Civil Work	Valid
Construction Noise Permit	GW-RS1132-22	30/12/2022	26/6/2023	Civil Work. Operation of PME during restricted hours	Valid
Waste Disposal Billing Account	Account No.: 7045179	28/09/2022	-	E&M Work	Valid
Registration of Chemical Waste Producer	5517-912-K2931-02	05/12/2022	-	E&M Work	Valid

2.3 Waste Management

All wastes produced were managed in accordance with the Waste Management Plan, good waste management practices, and statutory regulations and requirements.

The estimated quantities of wastes generated in January 2023 are summarized in [Table 2.2](#).

Table 2.2 Estimated Quantities of Waste Generated in January 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	0 Tonnes	22.25 Tonnes	34.16 Tonnes

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

2.4 Implementation Status of Land Contamination Assessment

The EIA study has recommended to conduct site investigation and sampling at five hotspot locations (i.e. 4 boreholes and 1 trial pit) to assess the potential land contamination impacts within the Project site in accordance with the Contaminated Assessment Plan (CAP). Site investigation and soil and groundwater sampling will be undertaken in accordance with the CAP under the supervision of a Land Contamination Specialist when the proposed sampling locations are made available after the demolition of the existing units and structures. The updated CAP was submitted to EPD in December 2022 for approval. EPD's comments on the CAP were received on 20/12/2022 and an revised CAP was submitted to EPD on 13 January 2023.

2.5 Implementation Status of Environmental Mitigation Measures

Mitigation measures detailed in the Environmental Permit and the EM&A Manual are required to be implemented. A summary of the Environmental Mitigation Implementation Schedule (EMIS) is presented in [Appendix C](#).

3. REPORT ON COMPLAINTS, NOTIFICATION OF SUMMONS AND SUCCESSFUL PROSECUTIONS

3.1 Implementation Status of Environmental Complaint Handling Procedures

No complaint in relation to the environmental impact of the construction activities was received in the reporting month.

Table 3.1 Environmental Complaints Received in January 2023

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

Table 3.2 Outstanding Environmental Complaints Carried Over

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

3.2 Environmental Summon and Successful Prosecution

No notification of summon or successful prosecution was received in the reporting month.

Table 3.3 Notifications of Summon or Successful Prosecution Received in January 2023

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

Table 3.4 Notifications of Summon or Successful Prosecution Carried Over

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

4. FUTURE KEY ISSUES

4.1 Construction Program for the Coming Month

The construction activities scheduled for the coming month are mainly trenching works, GTAB plant equipment demolition, HRSG7 demolition, GT7 power train removal works, oil discharge. (see [Appendix B](#)).

4.2 Key Issues for the Coming Month

Key issues to be considered and recommended in the coming month include:

Civil Works

General

- Relevant environmental legislations should be observed.
- Relevant environmental licenses/permits should be obtained, if required.
- Required environmental mitigation measures should be properly implemented.

Air

- Dust suppression measures should be implemented for the construction activities.

Noise

- General noise mitigation measures should be employed at work site.
- Works conducted during restricted hours should comply with the valid CNP.

Water

- Wastewater from site facilities should be properly collected and stored within the site area.
- Good site practices should be adopted.

Waste

- Waste Management Plan submitted should be implemented
- Good site practices should be adopted.

Land Contamination

- Good site practices should be adopted.

E&M Works

General

- Relevant environmental legislations should be observed.
- Relevant environmental licenses/permits should be obtained, if required.
- Required environmental mitigation measures should be properly implemented.

Air

- Dust suppression measures should be implemented for the construction activities.

Noise

- General noise mitigation measures should be employed at work site.

Water

- Wastewater from site facilities should be properly collected and stored within the site area.
- Good site practices should be adopted.

Waste

- Waste Management Plan submitted should be implemented
- Good site practices should be adopted.

Land Contamination

- Good site practices should be adopted.

5. CONCLUSION

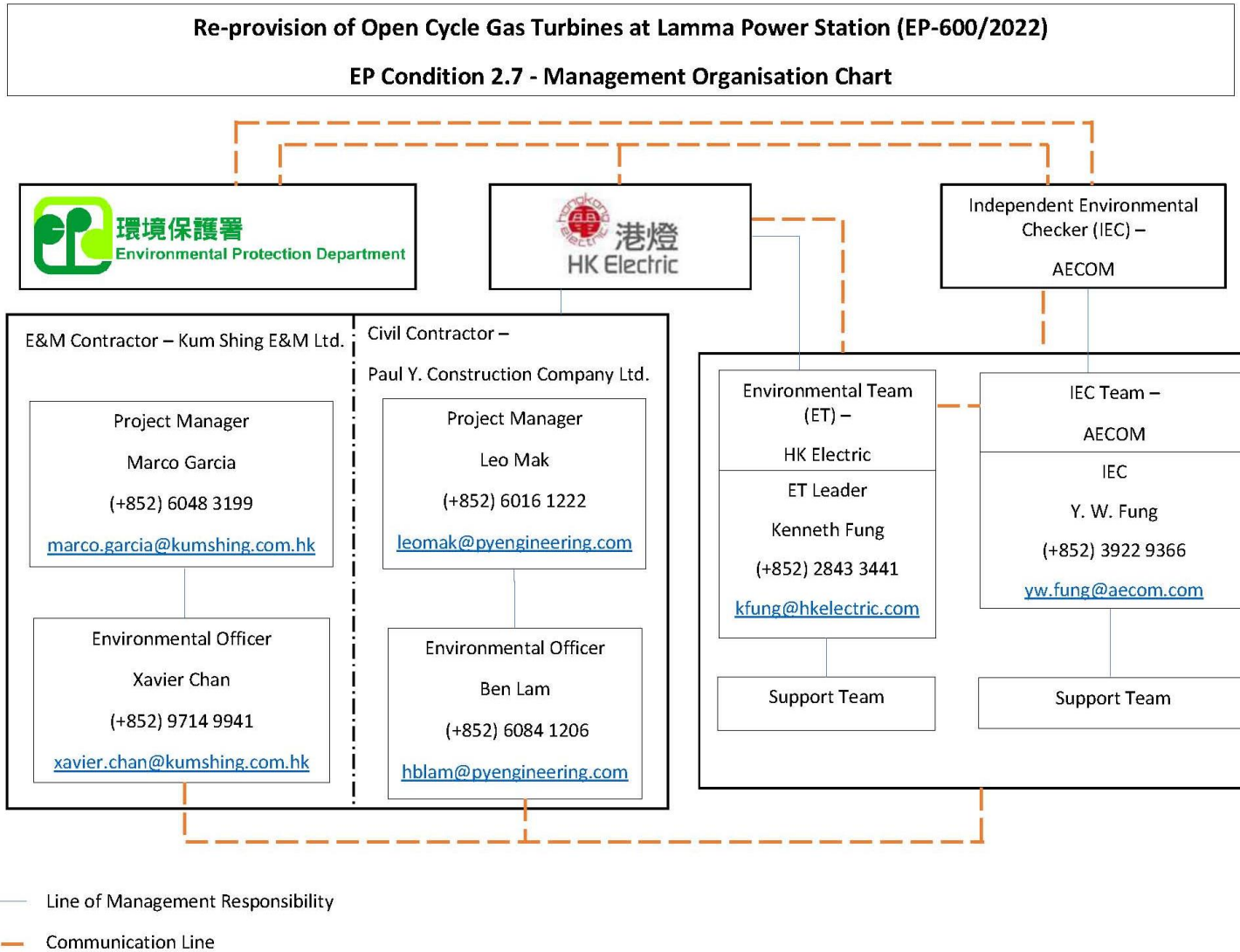
According to the EM&A Manual, environmental monitoring was not necessary in view of the anticipated insignificant environmental impact. Environmental audits were performed in accordance with the EM&A Manual.

All recommended environmental mitigation measures were properly implemented. No complaint in relation to the environmental impact of the construction activities was received in the reporting month. There was also no notification of summon and successful prosecution for breaches of relevant environmental legislations received in the reporting month.

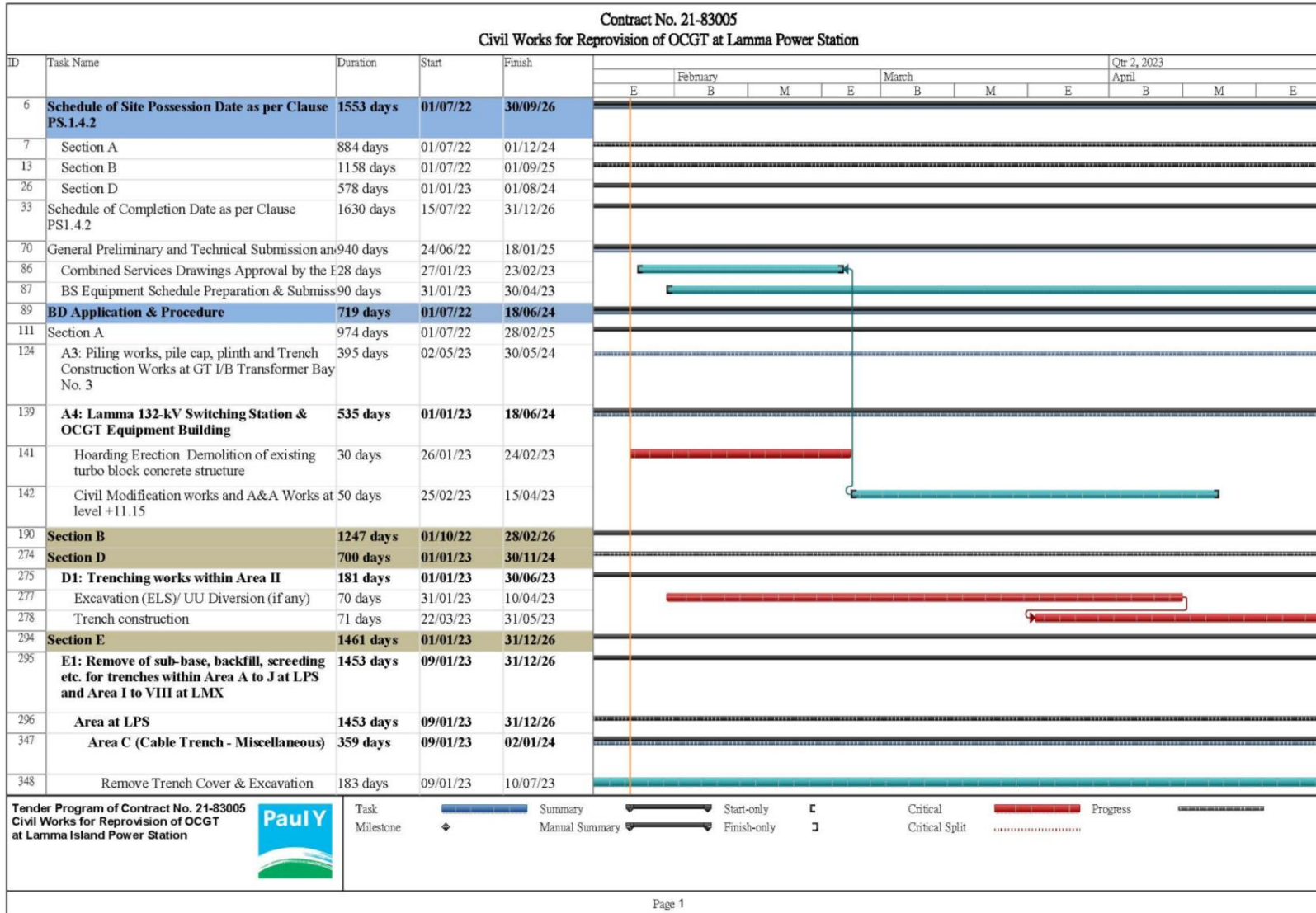
No non-compliance was recorded in the reporting month.

The environmental performance of the Project was generally satisfactory.

Appendix A Organization Chart



Appendix B1 Tentative Decommissioning and Construction Programme (Civil Contractor)



Appendix B2 Tentative Decommissioning and Construction Programme (E&M Contractor)

HKE LPS OCGT Re-Provision											
ID	Task	Task Name	Duration	Start	Finish	2022	2023	2024	2025	2026	2027
50		HRSBG Demolition	183.25 days	Fri 22/11/04	Fri 23/05/12						
51		Demolition of HRSBG5	127 days	Mon 23/01/02	Fri 23/05/12						
52		Mobile Crane on Site	0 days	Mon 23/01/02	Mon 23/01/02						
53		Set Up and Load Test on Mobile Crane	3 days	Mon 23/01/02	Wed 23/01/04						
54		Mobile Crane Ready for Use	0 days	Wed 23/01/04	Wed 23/01/04						
55		Set Up of Crawler Crane	13 days	Mon 23/01/02	Sat 23/01/14						
56		Load Test on Crawler Crane	5 days	Tue 23/01/10	Sat 23/01/14						
57		Crawler Crane Ready for Use	0 days	Sat 23/01/14	Sat 23/01/14						
58		Removal of Gas Outlet Duct	10 days	Wed 23/01/04	Sat 23/01/14						
62		Removal of Steam Room EL +23300 – EL +40	40 days	Sat 23/01/14	Sat 23/02/25						
76		Removal of Gas Inlet Duct	10 days	Sat 23/02/25	Tue 23/03/07						
81		Removal of HRSBG Roof – above Hot Beam	12 days	Wed 23/03/08	Mon 23/03/20						
83		Removal of Modules – Boiler Internal – 5	20 days	Mon 23/03/20	Mon 23/04/10						
91		Removal of HRSBG External platforms in controlled manner	20 days	Mon 23/04/10	Mon 23/05/01						

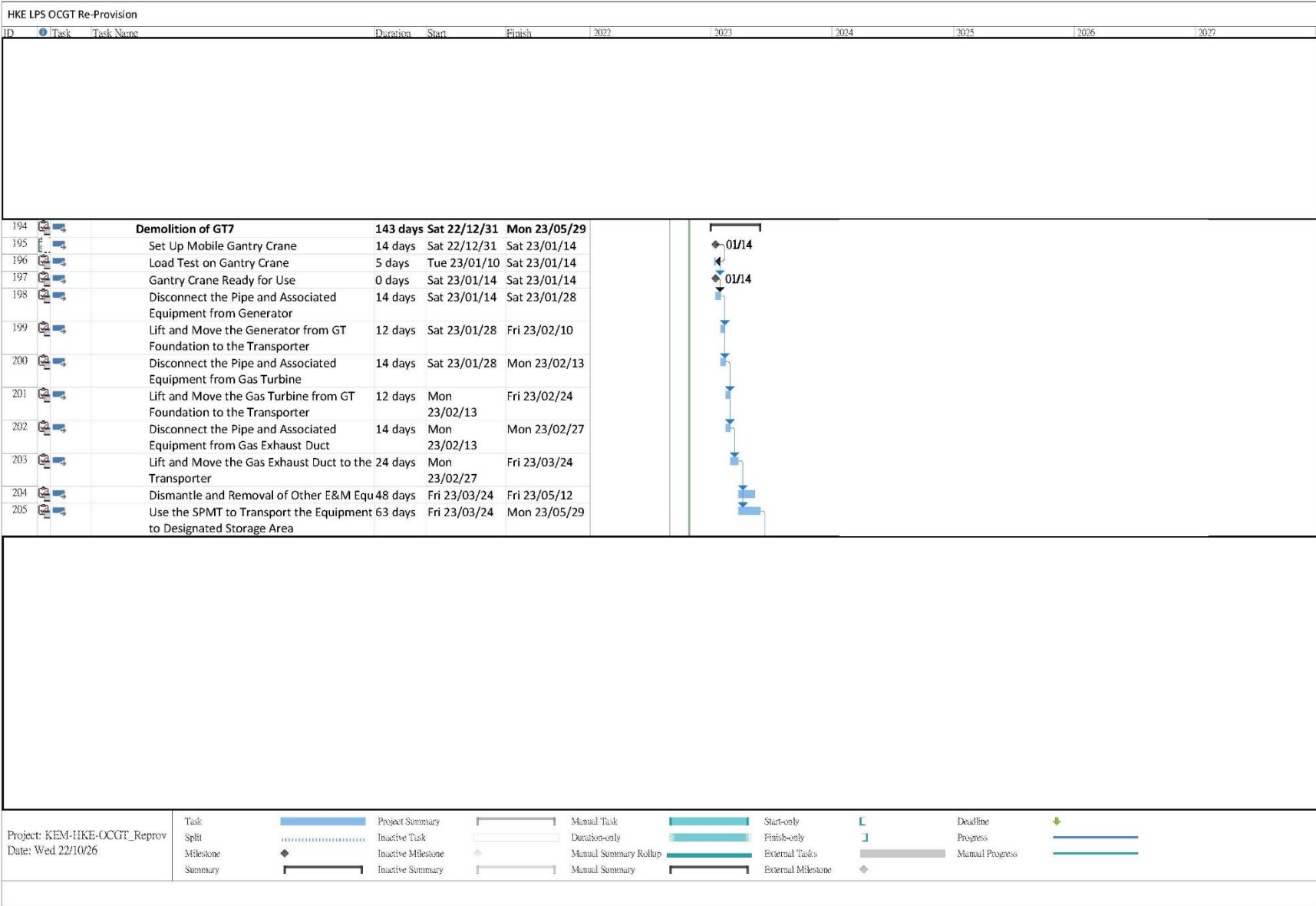
Project: KEM-HKE-OCGT_Reprov Date: Wed 22/10/26	Task	Project Summary	Manual Task	Start-only	Deadline
	Split	Inactive Task	Duration-only	Finish-only	Progress
	Milestone	Inactive Milestone	Manual Summary Rollup	External Tasks	Manual Progress
	Summary	Inactive Summary	Manual Summary	External Milestone	

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HKE LPS OCGT Re-Provision											
ID	Task	Task Name	Duration	Start	Finish	2022	2023	2024	2025	2026	2027
135		Removal of Gas Inlet Duct	10 days	Thu 22/12/29	Sat 23/01/07						
140		Removal of HRSG Roof – above Hot Beam	12 days	Mon 23/01/05	Fri 23/01/20						
142		Removal of Modules – Boiler Internal – 5	20 days	Fri 23/01/20	Fri 23/02/10						
150		Removal of HRSG External platforms in controlled manner	20 days	Fri 23/02/10	Fri 23/03/03						
156		Removal of all remaining piping connected to HRSG Headers – (Internally)	12 days	Fri 23/03/03	Wed 23/03/15						

Project: KEM-HKE-OCGT_Reprov Date: Wed 22/10/26	Task		Project Summary		Manual Task		Start-only		Deadline	
	Split		Inactive Task		Duration-only		Finish-only		Progress	
	Milestone		Inactive Milestone		Manual Summary Rollup		External Tasks		Manual Progress	
	Summary		Inactive Summary		Manual Summary		External Milestone			

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Re-provision of Open Cycle Gas Turbines at Lamna Power Station
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Appendix C Summary of EMIS

Table C.1 Mitigation Measures and their Implementation in the Reporting Month

EM&A Log Ref.	Recommended Mitigation Measures	Implementation Status
	AIR QUALITY	
EM&A: S2	Impervious sheet will be provided for skip hoist for material transport.	Complied
EM&A: S2	The area where dusty work takes place should be sprayed with water or a dust suppression chemical immediately prior to, during and immediately after dusty activities as far as practicable.	Complied
EM&A: S2	All dusty materials should be sprayed with water or a dust suppression chemical immediately prior to any loading, unloading or transfer operation.	Complied
EM&A: S2	Dropping heights for excavated materials should be controlled to a practical height to minimise the fugitive dust arising from unloading.	Complied
EM&A: S2	During transportation by truck, materials should not be loaded to a level higher than the side and tail boards, and should be dampened or covered before transport.	Complied
EM&A: S2	Temporary stockpiles of dusty materials will be either covered entirely by impervious sheets or sprayed with water to maintain the entire surface wet all the time.	Complied
EM&A: S2	Stockpiles of more than 20 bags of cement, dry pulverised fuel ash and dusty construction materials will be covered entirely by impervious sheeting sheltered on top and 3-sides.	Complied
EM&A: S2	All exposed areas will be kept wet always to minimise dust emission.	Complied
EM&A: S2	Ultra-low-sulphur diesel (ULSD) will be used for all construction plant on-site, as defined as diesel fuel containing not more than 0.005% sulphur by weight) as stipulated in Environment, Transport and Works Bureau Technical Circular (ETWB-TC(W)) No 19/2005 on Environmental Management on Construction Sites.	Complied
EM&A: S2	The engine of the construction equipment during idling will be switched off.	Complied
EM&A: S2	Regular maintenance of construction equipment deployed on-site will be conducted to prevent black smoke emission.	Complied
EM&A: S2	All marine vessels fuelled in Hong Kong will operate using marine light diesel with Sulphur content lower than 0.05%.	Complied
EM&A: S2	NRMMs, e.g. mobile generator and air compressor, will comply with the prescribed emission standards with a proper label approved by EPD.	Complied
EM&A: S2	Electric power supply for on-site machinery will be provided as far as practicable for construction activities.	Complied
EM&A: S2	To ensure proper implementation of the recommended dust mitigation measures and good construction site practices during the decommissioning/ demolition/ construction phases, environmental site audits on weekly basis is recommended throughout the construction period.	Complied

EM&A Log Ref.	Recommended Mitigation Measures	Implementation Status
APCO	Every vehicle shall be washed to remove any dusty materials from its body and wheels before leaving construction site.	Complied
	NOISE	
EM&A: S3	Machines and construction plant that may be in intermittent use should be shut down between work periods or should be throttled down to a minimum.	Complied
EM&A: S3	Only well-maintained construction plant should be operated on-site and should be serviced regularly.	Complied
NCO	Valid construction noise permits, if required, are available for inspection.	Complied
NCO	Conditions of construction noise permits, if any, for the relevant part(s) of the works are implemented accordingly.	Complied
NCO	Valid noise emission labels are fixed at air compressors and hand held percussive breakers.	Complied
	WATER QUALITY	
EM&A: S4	Wastewater, chemical waste and effluent from cleaning of existing OCGTs would be collected, stored for proper disposal by licensed contractor.	No applicable at this stage
EM&A: S4	Silt removal facilities such as silt traps or sedimentation facilities will be provided where necessary to remove silt particles from runoff to meet the requirements of the TM standard under the WPCO. The design of silt removal facilities will be based on the guidelines provided in ProPECC PN 1/94. All drainage facilities and erosion and sediment control structures will be inspected on a regular basis and maintained to confirm proper and efficient operation at all times and particularly during rainstorms. Deposited silt and grit will be removed regularly.	No applicable at this stage
EM&A: S4	Appropriate surface drainage will be designed and provided, where necessary.	No applicable at this stage
EM&A: S4	The precautions to be taken at any time of year when rainstorms are likely together with the actions to be taken when a rainstorm is imminent or forecasted and actions to be taken during or after rainstorms are summarised in Appendix A2 of ProPECC PN 1/94.	No applicable at this stage
EM&A: S4	Oil interceptors will be provided in the drainage system where necessary and regularly emptied to prevent the release of oil and grease into the stormwater drainage system after accidental spillages.	No applicable at this stage
EM&A: S4	Temporary and permanent drainage pipes and culverts provided to facilitate runoff discharge, if any, will be adequately designed for the controlled release of storm flows.	No applicable at this stage
EM&A: S4	The temporary diverted drainage, if any, will be reinstated to the original condition when the construction work has finished or when the temporary diversion is no longer required.	No applicable at this stage
EM&A: S4	Appropriate numbers of portable toilets shall be provided by a licensed contractor where necessary to serve the construction workers over the construction site to prevent direct disposal of sewage into the water environment.	Complied
EM&A: S4	To ensure proper implementation of the recommended water quality mitigation measures and good construction site practices during the decommissioning/ demolition, and construction phases, environmental	Complied

EM&A Log Ref.	Recommended Mitigation Measures	Implementation Status
	site audits on weekly basis is recommended throughout the construction period.	
	WASTE MANAGEMENT	
EM&A: S5	The contractor(s) must ensure that all the necessary waste disposal licences are obtained prior to the commencement of the decommissioning/ demolition and construction works.	Complied
EM&A: S5	The contractor will open a billing account with EPD in accordance with the Waste Disposal (Charges for Disposal of Construction Waste) Regulation for the payment of disposal charges.	Complied
EM&A: S5	A trip-ticket system will be established in accordance with DEVB TC(W) No. 6/2010 to monitor the reuse of surplus excavated materials off-site and disposal of construction waste and general refuse at transfer facilities/ landfills, and to control fly-tipping.	Complied
EM&A: S5	A WMP as stated in the PNAP ADV-19 for the amount of waste generated, recycled and disposed of (including the disposal sites) will be established and implemented during the construction phase as part of the Environmental Management Plan (EMP). The Contractor will be required to prepare the EMP and submits it to the Architect/ Engineer under the Contract for approval prior to implementation.	Complied
EM&A: S5	C&D materials will be segregated on-site into public fill and construction waste and stored in different containers or skips to facilitate reuse of the public fill and proper disposal of the construction waste. Specific areas of the Site will be designated for such segregation and storage if immediate use is not practicable. Prefabrication will be adopted as far as practicable to reduce the construction waste arisings.	Complied
EM&A: S5	The contractor(s) will register as a chemical waste producer with the EPD. Chemical waste will be handled in accordance with the Code of Practice on the Packaging, Handling and Storage of Chemical Wastes.	Complied
EM&A: S5	Containers used for storage of chemical wastes will: <ul style="list-style-type: none"> • Be suitable for the substance they are holding, resistant to corrosion, maintained in a good condition, and securely closed; • Have a capacity of less than 450 L unless the specifications have been approved by the EPD; and • Display a label in English and Chinese in accordance with instructions prescribed in Schedule 2 of the Regulations. 	Complied
EM&A: S5	The storage area for chemical wastes will: <ul style="list-style-type: none"> • Be clearly labelled and used solely for the storage of chemical waste; • Be enclosed on at least 3 sides; • Have an impermeable floor and bunding, of capacity to accommodate 110% of the volume of the largest container or 20% by volume of the chemical waste stored in that area, whichever is the greatest; • Have adequate ventilation; • Be covered to prevent rainfall entering (water collected within the bund must be tested and disposed of as chemical waste, if necessary); and • Be arranged so that incompatible materials are appropriately separated. 	Complied
EM&A: S5	Chemical waste will be disposed of: <ul style="list-style-type: none"> • Via a licensed chemical waste collector; and 	Complied

EM&A Log Ref.	Recommended Mitigation Measures	Implementation Status
	<ul style="list-style-type: none"> To a facility licensed to receive chemical waste, such as the Chemical Waste Treatment Facility which also offers a chemical waste collection service and can supply the necessary storage containers. 	
EM&A: S5	General refuse will be stored in enclosed bins separately from construction and chemical wastes. The general refuse will be delivered separately from construction and chemical wastes for offsite disposal on a daily basis to reduce odour, pest and litter impacts.	Complied
EM&A: S5	Recycling bins will be provided at strategic locations within the Project Site to facilitate recovery of recyclable materials (including aluminium cans, waste papers, glass bottles and plastic bottles, etc.). Materials recovered will be sold for recycling.	No applicable at this stage
EM&A: S5	To avoid any odour and litter impact, appropriate number of portable toilets will be provided for workers on-site where appropriate.	No applicable at this stage
EM&A: S5	At the commencement of the decommissioning/demolition and construction works, training will be provided to workers on the concepts of site cleanliness and on appropriate waste management procedures, including waste reduction, reuse and recycling.	Complied
EM&A: S5	General refuse and non-recyclables will be stored in enclosed bins and collected by existing waste management contractor at Lamma Power Station for disposal at the landfills on a daily basis for avoidance of pest and odour nuisance.	Complied
EM&A: S5	Recycling bins for recyclable materials (including aluminium cans, waste papers, glass bottles and plastic bottles) will be placed at the site office and transported off- site for recycling on a regular basis.	Complied
EM&A: S5	It is recommended that weekly audits of the waste management practices be carried out during the decommissioning/demolition, and construction phases to determine if wastes are being managed in accordance with the recommended good site practices and WMP. The audits will investigate all aspects of waste management including waste generation, storage, handling, recycling, transportation and disposal.	Complied
LAND CONTAMINATION		
EM&A: S6	During the demolition stage, a Land Contamination Specialist shall oversee the removal / demolition activities and record any new visual signs of potential contamination such as oil leakage or oil stains. The Land Contamination Specialist shall also review the need of additional sampling to capture potential contamination observed during the demolition stage.	Complied
EM&A: S6	SI and sampling shall be carried out when the proposed sampling locations are available after the demolition stage.	No applicable at this stage
EM&A: S6	Soil and groundwater sampling works will be supervised by a Land Contamination Specialist.	No applicable at this stage
EM&A: S6	Prior to commencement of demolition works in the Project site, the leftover diesel or other petroleum products in the equipment to be demolished shall be removed as much as possible. The removed diesel or other petroleum products will be reused as far as practicable. The removed diesel and other petroleum products, which cannot be reused are considered as chemical waste and are controlled under the Waste Disposal (Chemical Waste)(General) Regulation. The demolition contractor who will generate the chemical waste or cause it to be	Complied

EM&A Log Ref.	Recommended Mitigation Measures	Implementation Status
	<p>produced should register with the EPD as a chemical waste producer. Removed diesel and petroleum products shall be labelled and stored in accordance with the requirement stipulated in the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes issued by EPD. The removed petrol and petroleum products are required to be collected by licensed chemical waste collector for disposal. Trip tickets system shall be implemented during the collection and disposal of removed petrol and diesel.</p>	
EM&A: S6	<p>During demolition and construction phases, the following good housekeeping practices shall be implemented to ensure that risk of ground contamination as a result of oil spills or leaks is kept to a practical minimum:</p> <ul style="list-style-type: none"> • Regular visual inspections to detect any early signs of fuel leakage prior to demolition; • Provision of impermeable lining or absorbent materials to contain leaks; • Provision of secondary containment for the temporary storage of removed diesel or petroleum products, demolished structures and pipes; and • Provision of spill control materials and equipment 	Complied
EM&A: S6	<p>To ensure proper implementation of the good housekeeping practices, weekly site inspections should be carried out during the decommissioning/demolition, and construction phases of the Project.</p>	Complied

Remarks:

APCO: Air Pollution Control Ordinance
 EM&A: EM&A Manual
 NCO: Noise Control Ordinance

Appendix D Summary of Site Audit Findings or Recommendation

Civil contractor

Dates of Inspection: 03/01/2023, 10/01/2023, 17/01/2023, 26/01/2023 and 30/01/2023

Summary of Findings or Recommendation

Air Quality

- No environmental deficiency identified.

Noise

- No environmental deficiency identified.

Water Quality

- No environmental deficiency identified.

Waste Management

- No environmental deficiency identified.

Land Contamination

- No environmental deficiency identified.

E&M contractor

Dates of Inspection: 06/01/2023, 13/01/2023, 20/01/2023 and 30/01/2023

Summary of Findings or Recommendation

Air Quality

- No environmental deficiency identified.

Noise

- No environmental deficiency identified.

Water Quality

- No environmental deficiency identified.

Waste Management

- No environmental deficiency identified.

Land Contamination

- No environmental deficiency identified.

Appendix E

Monthly Waste Flow Table for January 2023

Appendix E1 Monthly Waste Flow Table for January 2023 (Civil Contractor)

Monthly Waste Flow Table for January 2023

Project: Civil Works for Re-Provision of Open Cycle Gas Turbine at Lamna Power Station
 Contractor: Paul Y. Construction Company, Limited
 Record by: Ben Lam
 Year of Record: 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)	
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	0.00	0.00
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	0.00
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	0.00
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	0.00
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	0.00
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	0.00	11.21
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	2.72
Total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	13.93

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
0.00 tonnes	0.00 tonnes	13.93 tonnes	0.00 tonnes

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

Appendix E2 Monthly Waste Flow Table for January 2023 (E&M Contractor)

Monthly Waste Flow Table for Jan 2023

Project: C/N 22 23001 Lamma Re-provision of OCGT Demolition & Erection Work
 Contractor: Kum Shing
 Record by: Xavier Chan
 Year of Record: 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 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	0.00
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	0.00
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	0.00	0.00
Jan 2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	36.00	0.00	0.00	19.53
Total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	36.00	0.00	0.00	19.53

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	19.53 tonnes	34.16 tonnes ⁽⁷⁾

- 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 0.00 tonnes were reused in this and other contracts, and the remaining 0.00 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.
 - (7) One litre of lube oil converts to 0.948889 kg of weight