Installation of Additional Gas-fired Generation Unit (CCGT Unit No. 2)

Final EM&A Review Report

PREPARED FOR

Castle Peak Power Co. Ltd.

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Final EM&A Review Report

0554663

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Installation of Additional Gas-fired Generation Units at the Black Point Power Station (CCGT Unit No. 2)
Environmental Certification Sheet
No. EP-507/2016/D and FEP-04/507/2016/D

Reference Document/Plan

Document/~~Plan~~ to be Certified/ ~~Verified~~:	Final EM&A Review Report
Date of Report:	22 April 2024
Date prepared by ET:	22 April 2024
Date received by IEC:	

Reference EM&A Manual/ EP Requirement

EM&A Manual (AEIAR-197/2016): Sections 15.1 & 15.6

Content: *Final EM&A Review Report*

In accordance with Annex 21 of the EIAO-TM, a copy of the monthly, quarterly summary and final review EM&A reports will be made available to the Director of Environmental Protection.

A final EM&A report will be prepared by the ET at the end of the construction phase of each of the CCGT units.

ET Certification

I hereby certify that the above referenced document/~~plan~~ complies with the above referenced requirement of EM&A Manual (AEIAR-197/2016).

Dr Jasmine Ng,
Environmental Team Leader:  Date: 22 April 2024

IEC Verification

I hereby verify that the above referenced document/~~plan~~ complies with the above referenced requirement of EM&A Manual (AEIAR-197/2016).

Mr Thomas Chan,
Independent Environmental Checker:  Date: 23 April 2024

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LIST OF TABLES

EXECUTIVE SUMMARY

The construction works of CCGT Unit No. 2 of the Additional Gas-fired Generation Units Project at the Black Point Power Station commenced on 4 June 2020 and were substantially completed on 1 April 2024. This is the Final Environmental Monitoring and Audit (EM&A) Review Report which summarises and reviews the EM&A results of the EM&A programme during the construction of CCGT Unit No.2 against the prediction of the EIA Report of statutory requirements.

SUMMARY OF THE KEY CONSTRUCTION WORKS UNDERTAKEN FOR CCGT UNIT NO.2

The major construction works of CCGT Unit No.2 included site establishment and land-based civil works, superstructure construction, installation and reinstatement works, and testing and commissioning for CCGT Unit No.2.

SUMMARY OF EM&A PROGRAMME FOR CCGT UNIT NO.2

Activities of the EM&A Programme during the construction phase for CCGT Unit No.2 include

- Environmental Site Inspection – Once per week.

CONSTRUCTION WASTE MANAGEMENT

Inert C&D materials (public fill) and non-inert C&D wastes (construction waste) were generated during the construction phase. The construction waste and public fill were disposed of at the WENT Landfill and Tuen Mun Area 38 Fill Bank respectively. Mitigation measures recommended in the EIA Report and the Waste Management Plan (WMP) were implemented by the Contractors and were considered effective in minimising the total quantity of wastes generated during the construction phase.

REGULAR ENVIRONMENTAL SITE INSPECTION

Regular environmental site inspections were carried out by the Environmental Team (ET) weekly throughout the construction phase. These inspections confirmed that mitigation measures recommended in the EIA Report, the EM&A Manual and the requirements stipulated in the Environmental Permit (EP) were properly implemented by the Contractors. The findings of the environmental site inspections showed that there were no non-conformance issues recorded and outstanding environmental issues for the construction phase, and the recommended mitigation measures had been implemented properly.

ENVIRONMENTAL EXCEEDANCE/NON-CONFORMANCE/COMPLAINT/SUMMONS AND PROSECUTION

No non-compliance event was recorded during the construction phase.

No complaint was received during the construction phase.

No summon or prosecution was received in the construction phase.

The EM&A requirements have been reviewed and were considered as adequate and effective. No change to the requirements was considered to be necessary. The recommended

environmental mitigation measures are also considered to be effective and efficient in reducing the potential environmental impacts associated with the construction of CCGT Unit No.2.

Overall, the EM&A results indicated that the construction of CCGT Unit No.2 has not caused unacceptable environmental impacts. This is in line with the assessment predicted in the EIA Report.

1. INTRODUCTION

The Castle Peak Power Company Limited (CAPCO) is a joint venture between CLP Power Hong Kong Limited (CLP) and China Southern Power Grid Company Limited with CLP as the operator. ERM-Hong Kong, Limited (ERM) and Mott MacDonald Hong Kong Limited were appointed by CAPCO as the Environmental Team (ET) and the Independent Environmental Checker (IEC), respectively, to undertake the Environmental Monitoring and Audit (EM&A) activities for the installation of CCGT Unit No. 2 of the Additional Gas-fired Generation Units Project at the Black Point Power Station (BPPS).

1.1 PURPOSE OF THE REPORT

This is the Final EM&A Review Report which summarises and reviews the monitoring results and audit findings of the EM&A programme throughout the construction phase of the CCGT Unit No.2 from June 2020 to March 2024.

2. PROJECT INFORMATION

2.1 BACKGROUND

The scope of the Project involves the phased construction and operation of up to two additional combined cycle gas turbine (CCGT) units (with an installed capacity of up to 1,200 MW) at the BPPS. The additional generation units will be of CCGT configuration using natural gas as the primary fuel. It is a Designated Project under the *Environmental Impact Assessment Ordinance* (Cap. 499) (EIAO). The construction of CCGT Unit No. 1 was completed on 31 May 2021. The current EM&A Programme includes CCGT Unit No. 2.

An EIA of the Additional Gas-fired Generation Units Project was prepared in accordance with the *EIA Study Brief* (No. ESB-286/2015) and the *Technical Memorandum of the Environmental Impact Assessment Process* (*EIAO-TM*) and submitted under the EIAO in February 2016. Subsequent to the approval of the EIA (EIAO Register Number AEIAR-197/2016), an Environmental Permit (EP-507/2016) (EP) for CCGT Unit No. 1 was granted by the Director of Environmental Protection (DEP) on 14 June 2016.

An application for Variation of Environmental Permit (No. VEP-575/2020) was submitted to EPD on 30 March 2020 to include CCGT Unit No. 2 and the Variation of Environmental Permit (EP-507/2016/C) was granted on 27 April 2020.

Application for Further Environmental Permit (FEP-201/2020) was submitted to EPD on 3 August 2020 and the Further Environmental Permit (FEP-03/507/2016/C) was granted to the Contractor, Gammon Engineering & Construction Company Limited, of the CCGT Unit No. 2 on 28 August 2020. Further Environmental Permit (FEP-04/507/2016/C) was granted to the Contractor, Siemens Energy Limited, of the CCGT Unit No. 2 on 6 August 2021. The Contractor, Gammon Engineering & Construction Company Limited, had completed the early civil works, and the application for surrender of FEP (FEP-03/507/2016/C) was submitted to EPD on 25 November 2021 and approved on 30 November 2021.

Applications for Variation of Environmental Permits were submitted to EPD on 30 November 2021 to cater for the proposed changes of Project site area and cooling tower. The Variation of Environmental Permit (EP-507/2016/D) was granted on 21 December 2021 and the Further Environmental Permit (FEP-04/507/2016/D) was granted to the Contractor, Siemens Energy Limited, of the CCGT Unit No. 2 on 21 December 2021.

CCGT Unit No.2 is located within the existing boundaries of the BPPS site. The size of the land reserved for the additional generation units and the associated facilities (the Project Site) is about 37,300 m^2. The location plan of key Project components for CCGT Unit No. 2 is shown in ***Appendix A***.

2.2 CONSTRUCTION PROGRAMME AND ACTIVITIES

A summary of the key activities undertaken during the construction phase is shown in ***Table 2.1***. The construction programme for CCGT Unit No. 2 is presented in ***Appendix B***.

TABLE 2.1 SUMMARY OF THE CONSTRUCTION ACTIVITIES UNDERTAKEN DURING THE CONSTRUCTION PHASE OF CCGT UNIT NO.2

Construction Activities undertaken:
• Site establishment; • Land-based civil works; • Construction of stack, cooling water intake and discharge facilities; • Installation of generator, boiler and heat recovery steam generator (HRSG), selective catalytic reduction (SCR) system; • Reinstatement works; and • Testing and commissioning.

The construction of CCGT Unit No.2 was substantially completed on 1 April 2024. The site photographic records on the completion of construction works are shown in ***Appendix C***

2.3 PROJECT ORGANIZATION

The project organizational chart and contact details for CCGT Unit No. 2 are shown in ***Appendix D***.

3. EM&A REQUIREMENT

3.1 GENERAL

Potential environmental impacts, including air quality, hazards to life, noise, water quality, waste, land contamination, ecology, fisheries, landscape and visual and cultural heritage had been the subjects for the construction phase EM&A of the Project, which had been addressed through the monitoring and controls specified in the EM&A Manual and in the construction contracts. Monitoring of the effectiveness of the mitigation measures had been achieved through site inspections.

3.2 SITE INSPECTION & AUDITS

In accordance with the EM&A Manual, weekly site inspections are required to ensure that the mitigation measures in the approved EIA Report, the EM&A Manual and the requirements in the Environmental Permit are properly implemented by the Contractors.

3.3 WATER QUALITY MONITORING

In accordance with the EM&A Manual, monitoring works are required at a frequency of once per week on the first year of commissioning of the CCGT Unit No.2. The monitoring details including monitoring requirements, and locations of monitoring stations have been confirmed and approved by EPD before commissioning of the CCGT Unit No.2.

Baseline water quality monitoring was conducted from 3 July 2023 to 31 July 2023. The Baseline Water Quality Monitoring Report was submitted to EPD on 27 September 2023.

The construction of CCGT Unit No.2 was substantially completed on 1 April 2024 and the operation phase water quality monitoring has been commenced since 1 April 2024.

4. IMPLEMENTATION STATUS OF THE ENVIRONMENTAL PROTECTION REQUIREMENTS

4.1 GENERAL

The Contractors have implemented all the environmental mitigation measures and requirements as stated in the EIA Report, Environmental Permit (EP) and EM&A Manual for the installation of CCGT Unit No. 2.

During the environmental site inspections, the implementation status of the environmental mitigation measures for CCGT Unit No.2 was inspected and reviewed. It is concluded that the environmental mitigation measures as recommended in the EIA Report were implemented satisfactorily. The implementation status during the construction phase is summarised in ***Appendix E***.

4.2 MARINE VESSEL OPERATION

Vessel operation for transport of equipment was conducted during the construction phase of CCGT Unit No.2. An environmental briefing had been conducted to the vessel operators in accordance with the Vessel Control Plan prepared for the Project under Condition 2.4 of the EP. The environmental briefing had included the following content:

Requirements under the EP and *Vessel Control Plan*:

- General education on local cetaceans;
- Predefined and regular marine travel routes for this Project;
- Vessel speed limit within designated areas and areas identified as high presence of Indo-Pacific humpback dolphin;
- Guidelines for safe vessel operation in the presence of cetaceans;
- Guidelines on effluent/wastewater handling from vessels to prevent avoidable water quality impacts; and
- Policy of no dumping of rubbish, food, oil, or chemicals from vessels.

Details of the monitoring method and procedures had been agreed with the IEC before implementation and communicated with the vessel operators. The record of marine travel routes of the work vessels was provided by the vessel operators for inspection and monitoring purposes.

During the construction phase of CCGT Unit No.2, no warning had been issued to vessel operators given that the vessel operators followed the requirements under the EP and *Vessel Control Plan*.

5. MONITORING RESULTS

5.1 WASTE MANAGEMENT

The waste generated from this Project includes inert construction and demolition (C&D) materials, and non-inert C&D materials. Non-inert C&D materials are made up of general refuse and recyclable waste such as plastics and paper/cardboard packaging waste. Steel materials generated from the project are also grouped into non-inert C&D materials as the materials were not disposed of with other inert C&D materials.

With reference to relevant handling records and trip tickets of CCGT Unit No. 2, the quantities of different types of waste generated in the reporting month are summarised in ***Table 5.1***. Details of waste management data are presented in ***Appendix F.***

TABLE 5.1 QUANTITIES OF WASTE GENERATED FROM CCGT UNIT NO.2

Reporting Month	Quantity					
	Inert C&D Materials[a,b]	Chemical Waste[d]	Non-inert C&D Materials			
			General Refuse[c]	Recycled Materials		
				Paper/card board	Plastics	Metals
	(in '000 m^3)	(in '000 kg)	(in '000 m^3)	(in '000 kg)	(in '000 kg)	(in '000 kg)
June 2020 - March 2024[e]	33.207	12.160	1.898	2.582	8.843	763.852

Notes:

[a] Inert C&D materials include bricks, concrete, building debris, rubble and excavated spoil.

[b] The inert C&D materials generated from the Project were sent to Tseung Kwan O Area 137 Fill Bank during the reporting month.

[c] The general refuse generated from the Project was sent to WENT landfill during the reporting month.

[d] Chemical waste includes waste oil and spent pipes with lubricating oil. It is assumed density of waste oil to be 0.8 kg/L.

[e] The cut-off date for waste management data is 31 March 2024.

The estimated amount of waste generated from CCGT Unit No.2 predicted in EIA Report and the actual cumulative quantities of waste generated from the construction phase of CCGT Unit No.2 are presented in ***Table 5.2***. Mitigation measures recommended in EIA Report were implemented by the Contractors as far as practicable and were considered effective in reducing the total quantity of wastes generated during the construction phase.

TABLE 5.2 COMPARISON OF ESTIMATED AND ACTUAL AMOUNT OF WASTE GENERATED FROM CCGT UNIT NO. 2

Type of Material	Estimated Amount in the EIA Report	Actual Amount during the Construction Phase
Total Amount of Inert C&D Materials disposed as Public Fill [(a)] (in '000m^3)	85.050	33.207

Amount of Inert C&D Materials Reused in the Contract (in '000m^3)	12.010	13.475
Amount of Inert C&D Materials Reused in Other Projects (in '000m^3)	-	9.687
Total Amount of Non-Inert C&D Materials and General Refuse disposed at WENT Landfill [(b)] (in '000m^3)	1.525	1.898
Chemical Waste [(c)] (in '000kg)	10.20	12.160

Notes:

[a] Inert C&D materials include site clearance waste, excavated materials, building works generated from construction of CCGT Unit No.2 for the entire project.

[b] Non-inert C&D materials include site clearance waste, excavated materials, building works generated from construction period of CCGT Unit No.2 for the entire project. The amount of general refuse was estimated 780 kg per day for construction of CCGT Unit No.2.

[c] Chemical waste includes waste oil and spent pipes with lubricating oil. Density of waste oil is assumed to be 0.8 kg/L. There are 3 months in the reporting period.

5.2 ENVIRONMENTAL SITE INSPECTION

Joint site inspections were conducted by representatives of the Contractors, CAPCO Project Team and ET every week throughout the construction phase of the CCGT Unit No. 2. The representative of the IEC joined the site inspections on a monthly basis. These inspections ensured that mitigation measures in the EIA Report, EM&A Manual and requirements stipulated in the EP were properly implemented by the Contractors. There are no outstanding environmental issues for the construction phase of the CCGT Unit No. 2.

5.3 CONCLUSION OF REVIEW

The environmental monitoring results for the construction phase of the CCGT Unit No. 2 have been reviewed and compared with the findings of the EIA Report. The EIA Report concluded that no unacceptable environmental impacts would be caused by the CCGT Unit No. 2. The environmental monitoring results of the construction phase demonstrated no unacceptable impact. Mitigation measures recommended in the EP, EIA Report and EM&A Manual were implemented by the Contractors as far as practicable and were considered effective.

6. ENVIRONMENTAL NON-CONFORMANCE

6.1 SUMMARY OF MONITORING EXCEEDANCE

No environmental monitoring is required during the construction phase of CCGT Unit No.2.

6.2 SUMMARY OF ENVIRONMENTAL NON-COMPLIANCE

No non-compliance event was recorded during the construction phase of CCGT Unit No.2.

6.3 SUMMARY OF ENVIRONMENTAL COMPLAINT

No environmental complaint was received during the construction phase of CCGT Unit No.2.

6.4 SUMMARY OF ENVIRONMENTAL SUMMON AND SUCCESSFUL PROSECUTION

No summon or prosecution was received during the construction phase of CCGT Unit No.2.

7. CONCLUSIONS

This Final Environmental Monitoring and Audit (EM&A) Review Report presents the EM&A works carried out during the construction phase of the CCGT Unit No. 2 in accordance with the EM&A Manual and the requirements of EP-507/2016/D and FEP-04/507/2016/D.

7.1 REVIEW OF THE MONITORING METHODOLOGY

It is predicted in the EIA that there would be no unacceptable or residual impacts arising from the CCGT Unit No. 2 with the implementation of the recommended mitigation measures. The monitoring results showed in general comparable to the predictions or findings in the EIA Report and also indicated that the construction of the CCGT Unit No. 2 did not cause unacceptable impacts on the environment with the implementation of the mitigation measures recommended in the EIA Report.

The Contractors had implemented possible and feasible mitigation measures to mitigate the potential environmental impacts during construction. The recommended mitigation measures were effective and EIA predictions remained valid.

7.2 REVIEW OF THE ADEQUACY OF EM&A PROGRAMME

Environmental monitoring and audit, including environmental site inspection, was conducted during the construction phase of the CCGT Unit No. 2 in accordance with the requirements stipulated in the EM&A Manual and Environmental Permit.

The monitoring programmes were considered effective in reflecting the environmental conditions. With proper implementation of mitigation measures and environmental monitoring and audit during the CCGT Unit No. 2, the overall environmental performance of the CCGT Unit No. 2 was acceptable.

APPENDIX A WORKS AREA FOR CCGT UNIT NO.2 AT THE BLACK POINT POWER STATION

Legend 圖例

Indicative Location
初步位置

Lung Kwu Tan
龍鼓灘

Project Site
工程項目地點

N

Key Plan
要覽圖

Black Point Power Station
龍鼓灘發電廠

New Power
Generation Area for
CCGT Unit No.2
2號機組的
新發電區域

Metres 米
0 100 200

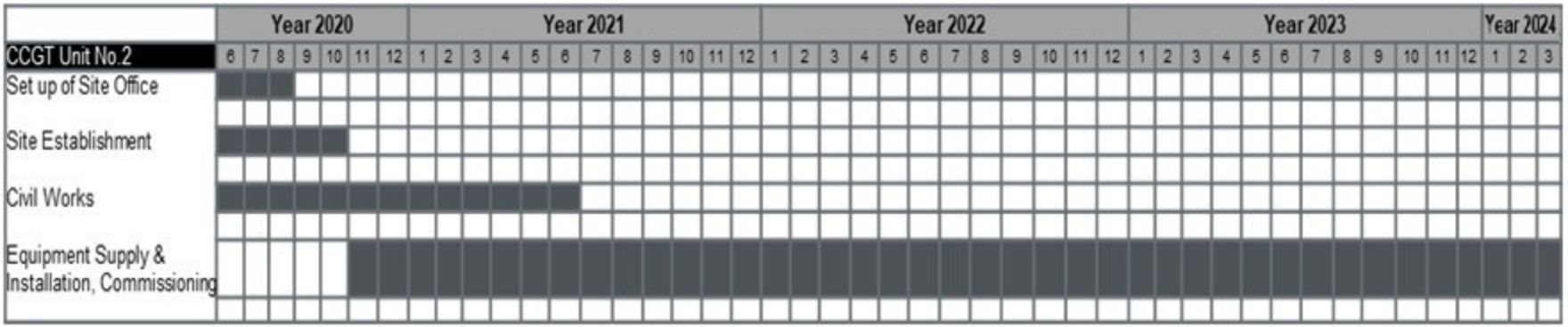
Figure 2.1
圖 2.1

Location of CCGT Unite No.2
2號聯合循環燃氣渦輪發電機組的項目位置圖

ERM

File: T:\GIS\CONTRACT\0554663\mxd\0554663_D2_Works_Area.mxd
Date: 10/11/2023

APPENDIX B CONSTRUCTION PROGRAMME OF CCGT UNIT NO.2



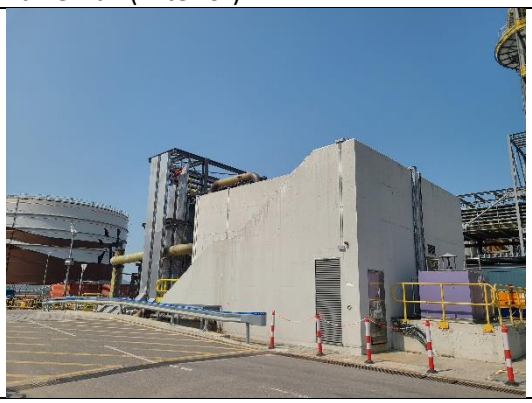
Appendix B

Construction Programme for CCGT Unit No. 2

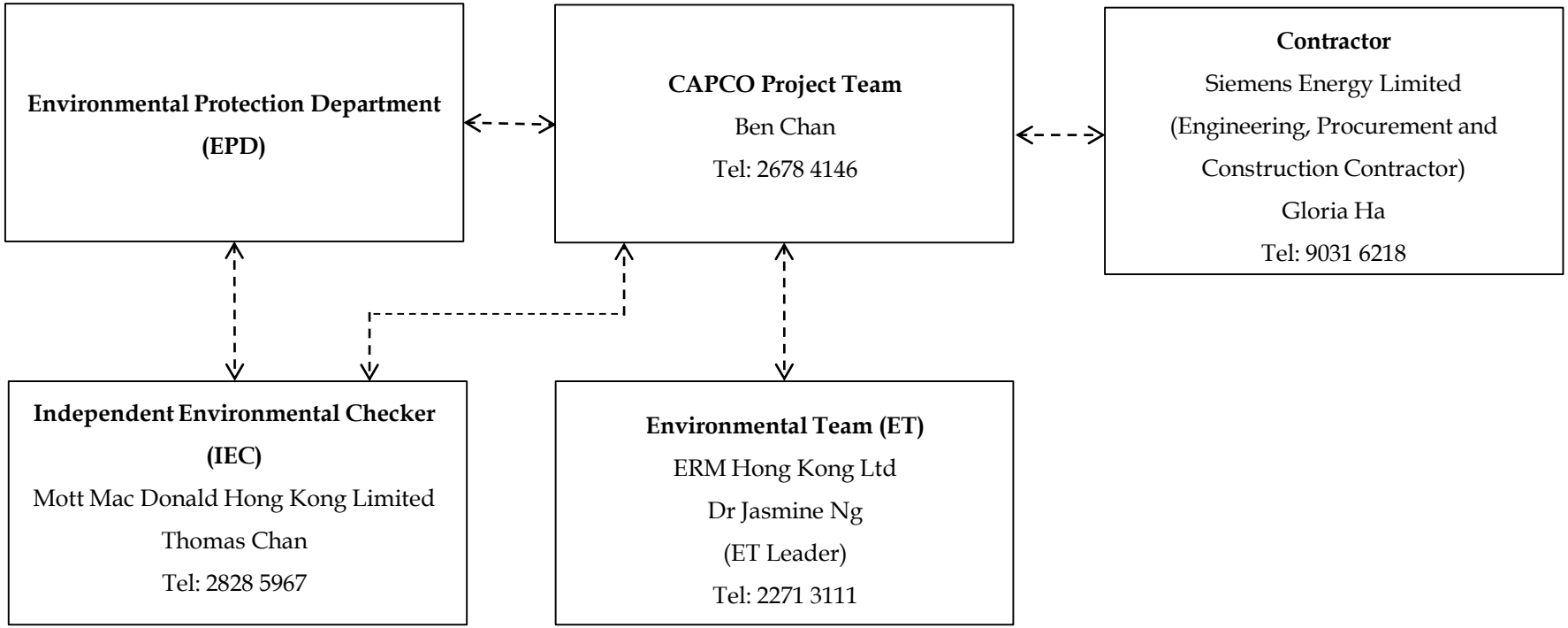
DATE: 08/04/2024

ERM

APPENDIX C SITE PHOTOGRAPHIC RECORDS

	
Generator Transformer	Turbine Hall (Interior)
	
Turbine Hall (Exterior)	Cooling Tower
	
Cooling Water Discharge Facility	Reinstatement of access road

APPENDIX D PROJECT ORGANISATION FOR EM&A IMPLEMENTATION



Key

------- Line of Communication

Appendix C

Project Organisation of CCGT Unit No. 2 for EM&A Implementation

DATE: 07/07/2022

APPENDIX E SUMMARY OF IMPLEMENTATION STATUS OF ENVIRONMENTAL MITIGATION

Appendix D - Environmental Mitigation Implementation Status for Additional CCGT Units Project at BPPS

Note:

✓ Compliance of Mitigation Measures
<> Compliance of Mitigation but need improvement
x Non-compliance of Mitigation Measures
▲ Non-compliance of Mitigation Measures but rectified by the Contractor
∆ Deficiency of Mitigation Measures but rectified by the Contractor
N/A Not Applicable in Reporting Period

EIA Reference	EM&A Reference	Recommended Environmental Protection Measures/ Mitigation Measures	Who to implement the measures?	When to implement the measures?	Implementation Status
Air Quality					
S4.10.1	S3.1	Impervious dust screen or sheeting will be provided to enclose scaffolding from the ground floor level of building for construction of superstructure of the new buildings.	Contractor	Construction Stage	✓
S4.10.1	S3.1	Impervious sheet will be provided for skip hoist for material transport.	Contractor	Construction Stage	✓
S4.10.1	S3.1	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.	Contractor	Construction Stage	✓
S4.10.1	S3.1	All dusty materials should be sprayed with water or a dust suppression chemical immediately prior to any loading, unloading or transfer operation.	Contractor	Construction Stage	✓
S4.10.1	S3.1	Dropping heights for excavated materials should be controlled to a practical height to minimise the fugitive dust arising from unloading.	Contractor	Construction Stage	✓
S4.10.1	S3.1	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.	Contractor	Construction Stage	✓
S4.10.1	S3.1	Wheel washing device should be provided at the exits of the work sites. Immediately before leaving a construction site, every vehicle shall be washed to remove any dusty material from its body and wheels as far as practicable.	Contractor	Construction Stage	✓
S4.10.1	S3.1	Road sections between vehicle-wash areas and vehicular entrance will be paved.	Contractor	Construction Stage	✓
S4.10.1	S3.1	Hoarding of not less than 1.8m high from ground level will be provided along the length of the Project Site boundary.	Contractor	Construction Stage	✓

EIA Reference	EM&A Reference	Recommended Environmental Protection Measures/ Mitigation Measures	Who to implement the measures?	When to implement the measures?	Implementation Status
S4.10.1	S3.1	Haul roads will be kept clear of dusty materials and will be sprayed with water so as to maintain the entire road surface wet at all times.	Contractor	Construction Stage	✓
S4.10.1	S3.1	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.	Contractor	Construction Stage	✓
S4.10.1	S3.1	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.	Contractor	Construction Stage	✓
S4.10.1	S3.1	All exposed areas will be kept wet always to minimise dust emission.	Contractor	Construction Stage	✓
S4.10.1	S3.1	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.	Contractor	Construction Stage	✓
S4.10.1	S3.1	The engine of the construction equipment during idling will be switched off.	Contractor	Construction Stage	✓
S4.10.1	S3.1	Regular maintenance of construction equipment deployed on-site will be conducted to prevent black smoke emission.	Contractor	Construction Stage	✓
S4.11.2	S3.2	It is recommended to continuously monitor and record the levels of air pollutants of the exhaust gas streams emitted from the stacks of the additional CCGT units by means of CEMS per the licence requirements. Continuous monitoring of ambient concentrations of SO_2, NO and NO_2 will be continued at the current CLP's AQMSs.	CAPCO	Operational Stage	N/A
Hazard to Life					
S5.6	S4	All construction workers shall comply with CLP's safety policy and requirements.	Contractor	Construction Stage	✓
S5.6	S4	Method statements and risk assessments shall be prepared and safety control measures shall be in place before commencement of work.	Contractor	Construction Stage	✓
S5.6	S4	All work procedures shall be complied with the operating plant procedures or guidelines and regulatory requirements.	Contractor	Construction Stage	✓
S5.6	S4	Work permit system, on-site pre-work risk assessment and emergency response procedure shall be in place before commencement of work.	Contractor	Construction Stage	✓
S5.6	S4	All construction workers shall equip with appropriate PPE when working at the Project Site.	Contractor	Construction Stage	✓

EIA Reference	EM&A Reference	Recommended Environmental Protection Measures/ Mitigation Measures	Who to implement the measures?	When to implement the measures?	Implementation Status
S5.6	S4	Safety training and briefings shall be provided to all construction workers.	Contractor	Construction Stage	✓
S5.6	S4	All construction workers shall be under close site supervision.	Contractor	Construction Stage	✓
S5.6	S4	Regular site safety inspections shall be conducted during the construction phase of the Project.	Contractor	Construction Stage	✓
S5.13	S4	Ensure speed limit enforcement is specified in the contractor's method statement to limit the speed of construction vehicles on-site.	Contractor	Construction Stage	✓
S5.13	S4	Conduct speed checks to ensure enforcement of speed limits and to ensure adequate site access control.	Contractor	Construction Stage	✓
S5.13	S4	Provide escort for hydrogen and CO_2 delivery vehicle drivers to ensure the right access route is used during the construction phases of the Project.	Contractor	Construction Stage	✓
S5.13	S4	A lifting plan, with detailed risk assessment, should be prepared and endorsed for heavy lifting of large equipment.	Contractor	Construction Stage	✓
S5.13	S4	Vehicle crash barrier, designed for the specific speed limit at the BPPS, should be provided between the construction site and the distillate oil storage facilities during 1st CCGT unit construction phase. Also, a vehicle crash barrier is to be provided between the construction site and the 1st CCGT unit during 2nd CCGT unit construction phase.	Contractor	Construction Stage	✓
S5.13	S4	Any lifting operation near or over live equipment should be strictly minimised. If such operation cannot be avoided, lifting activities should be assessed, controlled and supervised. Adequate protection covers should also be provided on the existing BPPS facilities in case the operation of lifting equipment has a potential to impact live equipment at BPPS. Process isolation should be achieved in case that live equipment protection becomes impractical.	Contractor	Construction Stage	✓
S5.13	S4	The hydrogen road trailer and carbon dioxide road tanker delivery should follow alternative route, which is further from the construction site, during crane operation and movement of construction vehicles in the vicinity.	Contractor	Construction Stage	✓
S5.13	S4	Ensure that a hazardous area classification study is conducted and hazardous area maps are updated before the start of the construction activities to ensure ignition sources are controlled during both construction and operation phases.	Contractor	Construction Stage	✓

EIA Reference	EM&A Reference	Recommended Environmental Protection Measures/ Mitigation Measures	Who to implement the measures?	When to implement the measures?	Implementation Status
S5.13	S4	Ensure work permit system for hot work activities within the Project Site is specified in the contractor's method statement to minimise/ control ignition sources during construction phase.	Contractor	Construction Stage	✓
S5.13	S4	Ensure effective communication system/ protocol is in place between the construction contractors and operation staff.	Contractor	Construction Stage	✓
S5.13	S4	Ensure the Project Construction Emergency Response Plan is integrated with the Emergency Response Plan for the BPPS during construction phases. The plan should address stop work instructions to be promptly communicated to all construction workers performing hot works in case a confirmed flammable gas (natural gas and hydrogen) detection at the BPPS.	Contractor	Construction Stage	✓
S5.13	S4	Ensure that construction activities do not impede the functions of fire and gas detection system, fire protection system, muster areas, fire-fighting vehicle access and escape routes.	Contractor	Construction Stage	✓
S5.13	S4	Ensure a Job Safety Analysis is conducted for construction activities of the Project during the construction phases, to identify and analyse hazards associated with the construction activities (e.g. lifting operations by cranes) onto the existing plant facilities and operations. Potential risks of the construction activities shall be assessed, and risk precautionary measures shall be implemented in Contractor's works procedures.	Contractor	Construction Stage	✓
Water Quality					
S 7.9	S6.5	Reduction of dredging rate from 4,000 m^3 per day to 740 m^3 per day for dredging at the seawater intake and discharge outfall	Contractor	Construction Stage	N/A
S 7.9	S6.5	Deploy floating type silt curtain around grab dredger	Contractor	Construction Stage	N/A
S 7.9	S6.5	Deploy single layer of floating type silt curtain surrounding coral colonies identify at dive survey Transect C (SR18). The silt curtain surrounding SR18 should provide sufficient clearance to the coral colonies such that no direct impact from the installation and anchoring of silt curtain would be inflicted on the coral colonies.	Contractor	Construction Stage	N/A
S 7.9	S6.5	The contractor shall regularly inspect the silt curtains and check that they are moored and marked to avoid danger to marine traffic. Regular inspection on the integrity of the silt curtain should be carried out by the contractor and any damage to the silt curtain shall be repaired by the contractor promptly. Relevant marine works shall only be undertaken when the repair is fixed to the satisfaction of the engineer.	Contractor	Construction Stage	N/A

EIA Reference	EM&A Reference	Recommended Environmental Protection Measures/ Mitigation Measures	Who to implement the measures?	When to implement the measures?	Implementation Status
S 7.9	S6.5	Construction of intake and outfall structure shall be conducted behind drained cofferdam.	Contractor	Construction Stage	N/A
S 7.9	S6.5	All vessels should be well maintained and inspected before use to limit any potential discharges to the marine environment.	Contractor	Construction Stage	N/A
S 7.9	S6.5	All vessels must have a clean ballast system.	Contractor	Construction Stage	N/A
S 7.9	S6.5	No discharge of sewage/grey wastewater should be allowed. Wastewater from potentially contaminated area on working vessels should be minimised and collected. These kinds of wastewater should be brought back to port and discharged at appropriate collection and treatment system.	Contractor	Construction Stage	N/A
S 7.9	S6.5	No soil waste is allowed to be disposed overboard.	Contractor	Construction Stage	N/A
S 7.9	S6.5	Silt removal facilities such as silt traps or sedimentation facilities will be provided 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.	Contractor	Construction Stage	✓
S 7.9	S6.5	Earthworks to form the final surfaces will be followed up with surface protection and drainage works to prevent erosion caused by rainstorms.	Contractor	Construction Stage	✓
S 7.9	S6.5	Appropriate surface drainage will be designed and provided where necessary.	Contractor	Construction Stage	✓
S 7.9	S6.5	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.	Contractor	Construction Stage	✓
S 7.9	S6.5	Oil interceptors will be provided in the drainage system where necessary and regularly emptied to prevent the release of oil and grease into the storm water drainage system after accidental spillages.	Contractor	Construction Stage	✓
S 7.9	S6.5	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.	Contractor	Construction Stage	✓

EIA Reference	EM&A Reference	Recommended Environmental Protection Measures/ Mitigation Measures	Who to implement the measures?	When to implement the measures?	Implementation Status
S 7.9	S6.5	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.	Contractor	Construction Stage	✓
S 7.9	S6.5	Appropriate infiltration control, such as cofferdam wall, should be adopted to limit groundwater inflow to the excavation works areas in the Project site. Groundwater pumped out from excavation area should be discharged into the storm system via silt removal facilities.	Contractor	Construction Stage	✓
S 7.9	S6.5	Appropriate numbers of portable toilets shall be provided by a licensed contractor to serve the construction workers over the construction site to prevent direct disposal of sewage into the water environment.	Contractor	Construction Stage	✓
S 7.9	S6.5	The contingency plan for the existing operation of the BPPS is considered sufficient for directing immediate response to any accidental spillage event.	CAPCO	Construction Stage	✓
S 7.9	S6.5	Mitigation measures required for maintenance dredging at seawater intake and discharge outfall would be the same as that recommended for construction phase dredging operation	Contractor	Construction Stage	N/A
S7.9 and S7.12	S6.2-S6.5	A water quality monitoring programme shall be implemented for the construction phase.	ET	Construction Stage	N/A
S7.9 and S7.12	S6.2-S6.5	To ensure compliance to the effluent standard, regular monitoring of effluent quality is recommended during normal operation. Furthermore, marine water monitoring at selected nearby WSRs during the first year of project commission are recommended to ensure compliance to WQO or other water quality criteria.	ET/ CAPCO	Operational Stage	N/A
Waste Management					
S8.5.1	Table 7.1	The Contractor must ensure that all the necessary waste disposal and marine dumping permits or licences are obtained prior to the commencement of the construction works.	Contractor	Construction Stage	✓
S8.5.1	S7.2	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.	Contractor	Construction Stage	✓
S8.5.1	S7.2	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.	Contractor	Construction Stage	✓

EIA Reference	EM&A Reference	Recommended Environmental Protection Measures/ Mitigation Measures	Who to implement the measures?	When to implement the measures?	Implementation Status
S8.5.1	S7.2	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.	Contractor	Construction Stage	✓
S8.5.1	Table 7.1	The management of dredged/ excavated sediment management requirement from *PNAP ADV-21* will be incorporated in the Specification of the Contract Documents.	CAPCO/ Contractor	Construction Stage	N/A
S8.5.1	S7.2	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.	Contractor	Construction Stage	✓
S8.5.1	S7.2	The Contractor 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.	Contractor	Construction Stage	✓
S8.5.1	S7.2	Containers used for storage of chemical wastes will: • 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.	Contractor	Construction Stage	✓
S8.5.1	S7.2	The storage area for chemical wastes will: • 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;	Contractor	Construction Stage	✓

EIA Reference	EM&A Reference	Recommended Environmental Protection Measures/ Mitigation Measures	Who to implement the measures?	When to implement the measures?	Implementation Status
		• 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.			
S8.5.1	S7.2	Chemical waste will be disposed of: • Via a licensed waste collector; and • 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.	Contractor	Construction Stage	✓
S8.5.1	S7.2	General refuse will be stored in enclosed bins separately from construction and chemical wastes. The general refuse will be delivered to the WENT Landfill, separately from construction and chemical wastes, on a daily basis to reduce odour, pest and litter impacts.	Contractor	Construction Stage	✓
S8.5.1	S7.2	Recycling bins will be provided at strategic locations within the Project Site to facilitate recovery of recyclable materials (including aluminium can, waste paper, glass bottles and plastic bottles) from the Project Site. Materials recovered will be sold for recycling.	Contractor	Construction Stage	✓
S8.5.1	S7.2	To avoid any odour and litter impact, appropriate number of portable toilets will be provided for workers on-site.	Contractor	Construction Stage	✓
S8.5.1	S7.2	At the commencement of the 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.	Contractor	Construction Stage	✓
Land Contamination					
S9.8	S8	During construction stage, good house-keeping practices shall be maintained by the Contractor to minimise the risk of land contamination due to construction activities, including but not limited to the followings: • Minimise the chemical stock within Project Site, only store the amount of chemicals needed; • Designated chemical/ chemical waste storage shall be established on concrete paved ground, as far as practicable. Secondary containments shall be provided for storage of chemicals/ chemical wastes;	Contractor	Construction Stage	✓

EIA Reference	EM&A Reference	Recommended Environmental Protection Measures/ Mitigation Measures	Who to implement the measures?	When to implement the measures?	Implementation Status
		• Conduct regular maintenance and inspection on plants and equipment, particularly those involve the use of fuel, hydraulic oil or any sort of chemicals; and • Divert rainfall and surface run-off around construction areas.			
Ecology					
S10.9.2	S9.1	The vessel operators will be required to control and manage all effluent from vessels to prevent avoidable water quality impacts.	Contractor	Construction Stage	N/A
S10.9.2	S9.1	A policy of no dumping of rubbish, food, oil, or chemicals will be strictly enforced. This will also be covered in the contractor briefings.	Contractor	Construction Stage	N/A
S10.9.2	S9.1	The effects of construction of the Project on the water quality of the area will be reduced with the implementation of mitigation measures as described in the Water Quality Impact Assessment.	Contractor	Construction Stage	N/A
S10.9.3	S9.1	All vessel operators working on the Project construction will be given a briefing, alerting them to the possible presence of dolphins in the marine works areas, and the guidelines for safe vessel operation in the presence of cetaceans. The use of high-speed vessels will be avoided as far as possible. All vessels used in this Project will be required to slow to 10 knots around the Project's marine works areas and area with high dolphin usage.	Contractor	Construction Stage	N/A
S10.9.3	S9.1	The vessel operators of this Project will be required to use predefined and regular routes.	Contractor	Construction Stage	N/A
S10.9.3	S9.2.1	A marine mammal exclusion zone within a radius of 250 m from dredger will be implemented during the construction phase. Qualified observer(s) will scan an exclusion zone of 250 m radius around the work area for at least 30 minutes prior to the start of dredging. If cetaceans are observed in the exclusion zone, dredging will be delayed until they have left the area.	Contractor	Construction Stage	N/A
S10.9.4	S9.1	Structures will utilise appropriate design to complement the surrounding landscape wherever possible. Materials and finishes will be considered during detailed design.	CAPCO	Construction Stage	✓
S10.9.4	S9.1	All of the major lighting sources will be pointed inward and downwards to avoid disturbances to wildlife.	CAPCO	Construction Stage	✓

EIA Reference	EM&A Reference	Recommended Environmental Protection Measures/ Mitigation Measures	Who to implement the measures?	When to implement the measures?	Implementation Status
S10.9.4	S9.1	Good site practices and precautionary measures are recommended to be implemented to avoid encroachment onto the nearby natural habitats, minimise disturbance to wildlife, and ensure air and water quality is maintained. Mitigations measures as mentioned in the air quality (Section 4 in Approved EIA Report ref. no. AEIAR-197/2016) and water quality (Section 7 in Approved EIA Report ref. no. AEIAR-197/2016) assessments will be consequently instigated to minimise dust and surface runoff to adjacent wildlife and natural habitats during construction activities.	CAPCO/ Contractor	Construction Stage	✓
S10.9.4	S9.1	Erect fences or demarcate along the boundary of the works area before the commencement of works to prevent vehicle movements, and encroachment of staffs, onto adjacent areas.	CAPCO/ Contractor	Construction Stage	✓
S10.9.4	S9.1	Avoid any damage and unnecessary disturbance to the surrounding natural habitats.	CAPCO/ Contractor	Construction Stage	✓
Landscape & Visual					
S12.8	S11	Sensitive architectural design of the new facilities. This should take into account material texture, colour, finished to structure and the context of the site.	CAPCO/ Design Contractor	Construction Stage	N/A
S12.8	S11	Reinstatement. Following construction, areas temporarily affected by the construction works, will be reinstated to their former state. This will include the artificial shoreline as well as parts of some roads.	CAPCO/ Contractor	Construction Stage	N/A
S12.8	S11	Preservation of vegetation. Plants affected by the proposed Project are all within movable planters. Prior to construction, these affected moveable planters should be re-located to a suitable area, still within the BPPS, taking care to ensure the existing health status of the vegetation is maintained or enhanced at the new location. Once construction is complete the final location of the moveable planters should be integrated into the LMP.	CAPCO/ Contractor	Construction Stage	✓
S12.8	S11	Update Landscape Master Plan (LMP) to take account of the changes brought about by the Project and explore suitable areas where soft landscaping may be installed amongst the new facilities. The LMP should give due consideration to the possibility of re-provisioning of disturbed lands and provision of screen planting within the facility boundaries as far as practicable.	Qualified Landscape Professional employed by Project Proponent	Construction Stage	N/A

APPENDIX F WASTE FLOW TABLE

Appendix F - Waste Flow Table for CCGT Unit No. 2

Monthly Summary Waste Flow Table for 2020

Month	Actual Quantities of Inert C&D Materials Generated Monthly [1]					Actual Quantities of C&D Wastes Generated Monthly				
	Total Quantity Generated (in '000m^3)	Broken Concrete [5] (in '000m^3)	Reused in the Contract (in '000m^3)	Reused in other Projects (in '000m^3)	Disposed as Public Fill [3] (in '000m^3)	Metals (in '000kg)	Paper/ cardboard packaging (in '000kg)	Plastics [2] (in '000kg)	Chemical Waste [4] (in'000 kg)	Others, e.g. general refuse [3] (in '000m^3)
Jan-20	-	-	-	-	-	-	-	-	-	-
Feb-20	-	-	-	-	-	-	-	-	-	-
Mar-20	-	-	-	-	-	-	-	-	-	-
Apr-20	-	-	-	-	-	-	-	-	-	-
May-20	-	-	-	-	-	-	-	-	-	-
Jun-20	0.570	0.542	0.000	0.000	0.028	181.030	0.000	0.000	0.000	0.000
Sub-total	0.570	0.542	0.000	0.000	0.028	181.030	0.000	0.000	0.000	0.000
Jul-20	0.059	0.059	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Aug-20	0.001	0.000	0.000	0.001	0.000	0.000	0.000	0.000	0.000	0.000
Sep-20	0.073	0.000	0.038	0.000	0.035	0.000	0.000	0.000	0.000	0.001
Oct-20	2.054	0.000	1.838	0.000	0.216	0.000	0.000	0.000	0.000	0.016
Nov-20	1.520	0.000	0.956	0.000	0.563	0.000	0.000	0.000	0.000	0.008
Dec-20	2.819	0.000	2.419	0.000	0.400	45.000	0.000	0.000	0.000	0.003
Total	7.095	0.602	5.250	0.001	1.243	226.030	0.000	0.000	0.000	0.029

Notes:

(1) Inert C&D materials include bricks, concrete, building debris, rubble and excavated spoil.

(2) Plastics refer to plastic bottles/containers, plastic sheets/foam form packaging material.

(3) Density Assumption: 1.6(kg/l) for Public Fill and 0.9(kg/l) for General Refuse.

(4) Chemical waste includes waste oil. Density of waste oil is assumed to be 0.8 kg/L.

(5) Density of broken concrete is assumed to be 2.5 ton/m^3.

(6) The cut-off data for waste management data is 31 December 2020.

Appendix F - Waste Flow Table for CCGT Unit No. 2

Monthly Summary Waste Flow Table for 2021

Month	Actual Quantities of Inert C&D Materials Generated Monthly [1]					Actual Quantities of C&D Wastes Generated Monthly				
	Total Quantity Generated	Broken Concrete [5]	Reused in the Contract	Reused in other Projects	Disposed as Public Fill [3]	Metals	Paper/ cardboard packaging	Plastics [2]	Chemical Waste [4]	Others, e.g. general refuse [3]
	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000kg)	(in '000kg)	(in '000kg)	(in'000 kg)	(in '000m^3)
Jan-21	3.014	0.000	1.856	0.000	1.158	9.500	0.000	0.000	0.000	0.006
Feb-21	5.791	0.000	4.641	0.000	1.150	0.000	0.000	0.000	0.000	0.016
Mar-21	1.387	0.000	0.338	0.000	1.049	0.000	0.000	0.000	1.120	0.072
Apr-21	1.578	0.000	0.000	0.000	1.578	10.850	0.000	0.000	0.000	0.009
May-21	1.512	0.000	0.000	0.000	1.512	0.000	0.000	0.000	0.000	0.023
Jun-21	0.990	0.000	0.000	0.000	0.990	0.000	0.000	0.000	0.000	0.074
Sub-total	14.272	0.000	6.835	0.000	7.437	20.350	0.000	0.000	1.120	0.200
Jul-21	1.368	0.000	1.337	0.000	0.031	0.000	0.000	0.000	0.000	0.072
Aug-21	0.010	0.000	0.000	0.000	0.010	0.000	0.000	0.000	0.000	0.046
Sep-21	0.048	0.000	0.000	0.000	0.048	10.920	0.000	0.000	0.000	0.028
Oct-21	0.013	0.000	0.008	0.000	0.005	50.540	0.069	0.000	0.000	0.022
Nov-21	0.088	0.000	0.005	0.000	0.083	46.840	0.000	0.000	0.000	0.039
Dec-21	0.588	0.000	0.003	0.529	0.056	33.150	0.000	0.000	0.000	0.028
Total (2021)	16.387	0.000	8.188	0.529	7.670	161.800	0.069	0.000	1.120	0.435
2020	7.095	0.602	5.250	0.001	1.243	226.030	0.000	0.000	0.000	0.029
Cumulative	23.482	0.602	13.438	0.530	8.913	387.830	0.069	0.000	1.120	0.464

Notes:

(1) Inert C&D materials include bricks, concrete, building debris, rubble and excavated spoil.

(2) Plastics refer to plastic bottles/containers, plastic sheets/foam form packaging material.

(3) Density Assumption: 1.6(kg/l) for Public Fill and 0.9(kg/l) for General Refuse.

(4) Chemical waste includes waste oil. Density of waste oil is assumed to be 0.8 kg/L.

(5) Density of broken concrete is assumed to be 2.5 ton/m^3.

(6) The waste management data in June 2021 have been updated according to the latest information from the Contractor in August 2021.

(7) The cut-off date for waste management data is 31 December 2021.

Appendix F - Waste Flow Table for CCGT Unit No. 2

Monthly Summary Waste Flow Table for 2022

Month	Actual Quantities of Inert C&D Materials Generated Monthly [1]					Actual Quantities of C&D Wastes Generated Monthly				
	Total Quantity Generated (in '000m^3)	Broken Concrete [5] (in '000m^3)	Reused in the Contract (in '000m^3)	Reused in other Projects (in '000m^3)	Disposed as Public Fill [3] (in '000m^3)	Metals (in '000kg)	Paper/ cardboard packaging (in '000kg)	Plastics [2] (in '000kg)	Chemical Waste [4] (in'000 kg)	Others, e.g. general refuse [3] (in '000m^3)
Jan 2022	0.002	0.000	0.002	0.000	0.000	59.830	0.000	0.410	0.000	0.012
Feb 2022	0.003	0.000	0.000	0.000	0.003	112.650	0.000	0.000	0.000	0.007
Mar 2022	0.261	0.000	0.000	0.246	0.015	53.060	0.109	0.000	0.030	0.030
Apr 2022	0.163	0.000	0.008	0.155	0.000	27.020	0.000	0.000	0.000	0.024
May 2022	0.101	0.000	0.000	0.096	0.005	13.300	0.000	0.011	0.000	0.016
Jun 2022	0.208	0.000	0.000	0.206	0.002	11.446	0.004	0.003	0.000	0.010
Sub-total	0.738	0.000	0.010	0.703	0.025	277.306	0.113	0.424	0.030	0.099
Jul 2022	0.034	0.000	0.009	0.000	0.025	0.021	0.113	0.011	0.000	0.006
Aug 2022	1.000	0.000	0.004	0.996	0.000	0.022	0.130	0.007	0.000	0.013
Sep 2022	1.336	0.000	0.003	1.325	0.008	4.301	0.112	0.007	0.000	0.027
Oct 2022	0.021	0.000	0.003	0.000	0.018	12.916	0.119	0.016	0.000	0.065
Nov 2022	0.639	0.000	0.000	0.634	0.005	0.016	0.102	0.016	0.000	0.084
Dec 2022	0.057	0.000	0.000	0.000	0.057	0.035	0.004	0.012	0.000	0.074
Total (2022)	3.825	0.000	0.029	3.658	0.138	294.617	0.693	0.493	0.030	0.368
2020	7.095	0.602	5.250	0.001	1.243	226.030	0.000	0.000	0.000	0.029
2021	16.387	0.000	8.188	0.529	7.670	161.800	0.069	0.000	1.120	0.435
Cumulative	27.307	0.602	13.467	4.188	9.051	682.447	0.762	0.493	1.150	0.832

Notes:

(1) Inert C&D materials include bricks, concrete, building debris, rubble and excavated spoil.

(2) Plastics refer to plastic bottles/containers, plastic sheets/foam form packaging material.

(3) Density Assumption: 1.6(kg/l) for Public Fill and 0.9(kg/l) for General Refuse.

(4) Chemical waste includes waste oil. Density of waste oil is assumed to be 0.8 kg/L.

(5) Density of broken concrete is assumed to be 2.5 ton/m^3.

(6) The cut-off date for waste management data is 31 December 2022.

Appendix F - Waste Flow Table for CCGT Unit No. 2

Monthly Summary Waste Flow Table for 2023

Month	Actual Quantities of Inert C&D Materials Generated Monthly [1]					Actual Quantities of C&D Wastes Generated Monthly				
	Total Quantity Generated (in '000m^3)	Broken Concrete [5] (in '000m^3)	Reused in the Contract (in '000m^3)	Reused in other Projects (in '000m^3)	Disposed as Public Fill [3] (in '000m^3)	Metals (in '000kg)	Paper/ cardboard packaging (in '000kg)	Plastics [2] (in '000kg)	Chemical Waste [4] (in'000 kg)	Others, e.g. general refuse [3] (in '000m^3)
Jan 2023	1.112	0.003	0.000	1.100	0.009	0.000	0.000	1.200	0.000	0.047
Feb 2023	0.000	0.000	0.000	0.000	0.000	5.288	0.110	0.002	0.000	0.042
Mar 2023	0.001	0.000	0.001	0.000	0.000	0.016	0.004	0.005	0.000	0.076
Apr 2023	1.016	0.000	0.001	0.992	0.023	0.000	0.005	0.906	0.000	0.070
May 2023	0.488	0.000	0.000	0.485	0.003	0.014	0.177	0.007	0.000	0.106
Jun 2023	0.021	0.000	0.001	0.000	0.020	0.021	0.013	0.008	0.000	0.050
Sub-total	2.638	0.003	0.003	2.577	0.055	5.339	0.309	2.128	0.000	0.391
Jul 2023	0.568	0.000	0.001	0.567	0.000	0.010	0.115	0.006	0.000	0.060
Aug 2023	0.572	0.000	0.001	0.566	0.005	0.017	0.410	0.005	0.000	0.106
Sep 2023	0.374	0.000	0.000	0.355	0.019	0.007	0.257	0.009	0.000	0.076
Oct 2023	1.407	0.000	0.001	1.261	0.145	0.010	0.019	1.582	6.400	0.099
Nov 2023	0.214	0.000	0.001	0.112	0.101	0.015	0.013	0.006	1.400	0.118
Dec 2023	0.000	0.000	0.000	0.000	0.000	0.009	0.198	0.006	3.210	0.079
Total (2023)	5.773	0.003	0.007	5.438	0.325	5.407	1.321	3.742	11.010	0.929
2020	7.095	0.602	5.250	0.001	1.243	226.030	0.000	0.000	0.000	0.029
2021	16.387	0.000	8.188	0.529	7.670	161.800	0.069	0.000	1.120	0.435
2022	3.825	0.000	0.029	3.658	0.138	294.617	0.693	0.493	0.030	0.368
Cumulative	33.080	0.605	13.474	9.626	9.376	687.854	2.083	4.235	12.160	1.761

Notes:

(1) Inert C&D materials include bricks, concrete, building debris, rubble and excavated spoil.

(2) Plastics refer to plastic bottles/containers, plastic sheets/foam form packaging material.

(3) Density Assumption: 1.6(kg/l) for Public Fill and 0.9(kg/l) for General Refuse.

(4) Chemical waste includes waste oil. Density of waste oil is assumed to be 0.8 kg/L.

(5) Density of broken concrete is assumed to be 2.5 ton/m^3.

(6) The cut-off date for waste management data is 31 December 2023.

Appendix F - Waste Flow Table for CCGT Unit No. 2

Monthly Summary Waste Flow Table for 2024

Month	Actual Quantities of Inert C&D Materials Generated Monthly [1]					Actual Quantities of C&D Wastes Generated Monthly				
	Total Quantity Generated (in '000m^3)	Broken Concrete [5] (in '000m^3)	Reused in the Contract (in '000m^3)	Reused in other Projects (in '000m^3)	Disposed as Public Fill [3] (in '000m^3)	Metals (in '000kg)	Paper/ cardboard packaging (in '000kg)	Plastics [2] (in '000kg)	Chemical Waste [4] (in'000 kg)	Others, e.g. general refuse [3] (in '000m^3)
Jan 2024	0.097	0.000	0.001	0.056	0.040	0.008	0.010	4.599	0.000	0.100
Feb 2024	0.022	0.000	0.000	0.000	0.022	0.010	0.489	0.009	0.000	0.014
Mar 2024	0.008	0.000	0.000	0.005	0.003	75.980	0.000	0.000	0.000	0.023
Total (2024)	0.127	0.000	0.001	0.061	0.065	75.998	0.499	4.608	0.000	0.137
2020	7.095	0.602	5.250	0.001	1.243	226.030	0.000	0.000	0.000	0.029
2021	16.387	0.000	8.188	0.529	7.670	161.800	0.069	0.000	1.120	0.435
2022	3.825	0.000	0.029	3.658	0.138	294.617	0.693	0.493	0.030	0.368
2023	5.773	0.003	0.007	5.438	0.325	5.407	1.321	3.742	11.010	0.929
2024	0.127	0.000	0.001	0.061	0.065	75.998	0.499	4.608	0.000	0.137
Cumulative	33.207	0.605	13.475	9.687	9.441	763.852	2.582	8.843	12.160	1.898

Notes:

(1) Inert C&D materials include bricks, concrete, building debris, rubble and excavated spoil.

(2) Plastics refer to plastic bottles/containers, plastic sheets/foam form packaging material.

(3) Density Assumption: 1.6(kg/l) for Public Fill and 0.9(kg/l) for General Refuse.

(4) Chemical waste includes waste oil. Density of waste oil is assumed to be 0.8 kg/L.

(5) Density of broken concrete is assumed to be 2.5 ton/m^3.

(6) The cut-off date for waste management data is 31 March 2024.