

Emission Control Project at Castle Peak Power Station "B" Units



**Environmental Monitoring
and Audit Monthly Report**

Sep 2010

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Executive Summary

This is the 35th monthly Environmental Monitoring and Audit (EM&A) report for the Emissions Control Project at Castle Peak Power Station 'B' Units (EC Project) prepared by the Environmental Team (ET), with reference to the EPD's Environmental Monitoring and Audit – Guidelines for Development Projects in Hong Kong.

This report presents the implementation status of EM&A requirements in Sep 2010 as per the Project Environmental Impact Assessment (EIA) Report (EIAO Register No.: AEIAR-102/2006) and Environmental Permit (EP) No. EP-251/2006.

Key Project Works in the reporting month

The key project activities in the reporting month are summarized below:

- Flue Gas Desulphurization Absorbers
 - Mechanical erection works at the Unit B4 FGD Absorbers, and Gas-to-Gas Heater Area (*Photo E.1*).
 - Building works at the Common Limestone Preparation and Gypsum Dewatering Areas, Limestone Handling Area, and Gypsum Handling Area.
 - Commissioning works at the Unit B3 FGD System and Waste Water Treatment Plant Area.
- Material Handling Berth & Material Handling System
 - Electrical works of the Material Handling Berth and Material Handling Conveyor Systems.
 - Commissioning works at the Material Handling Berth (*Photo E.2*) and Material Handling Conveyor Systems (*Photo E.3*).
- NO_x Reduction Facilities Erection
 - Commissioning works Unit B3 Boosted Over-fire Air System & Selective Catalytic Reduction System.
- Stack Lining Installation
 - Complete Unit B3 stack lining installation works.
- Civil Works
 - Ground paving and drainage works (*Photo E.4*).

Environmental Monitoring

The implementation status of the Project EM&A programmes are summarized below:

- Groundwater monitoring
 - The Groundwater monitoring program for 2009 was completed in October and the results indicated that the TPH levels has consistently

remained well below the relevant Risk-based Remediation Goals (RBRGs) value.

- Confirmation from EPD regarding the groundwater monitoring program for 2010 was received on 29 April 2010 and the groundwater monitoring frequency was reduced to once a year.
- The next groundwater monitoring is scheduled on 13 October 2010. (*Section 3.1*)

- Marine water quality monitoring

- Baseline water quality monitoring programme was completed on 21 December 2007 according to the schedule submitted to EPD on 6 November 2007. The Baseline Water Quality Monitoring Report was revised to address EPD's comments on the first submission and re-submitted to EPD on 4 March 2008.
- According to the EIA report, impact monitoring on marine water quality is required solely during dredging works. There was no dredging works conducted during the reporting month and hence water quality monitoring was not required.
- Post project water quality monitoring programme was completed on 12 February 2010 and the Post Project Water Quality Monitoring Report was submitted to EPD on 24 February 2010. (*Section 3.2*)

- Ecology monitoring

- According to the EIA report, visual cetaceans monitoring is required solely during underwater percussive piling works. There was no underwater percussive piling works conducted during the reporting month and hence visual cetaceans monitoring was not required. (*Section 3.3*)

Environmental Mitigation Implementation Schedule

Environmental mitigation measures for the construction stage were implemented as per the EIA Report. (*Section 4.1*)

Implementation Status of Event and Action Plan

There was no dredging works conducted in the reporting month so impact monitoring for marine water quality was not required and hence the Event and Action Plan was not applicable. (*Section 4.2*)

Site Environmental Inspection

Joint site inspection was conducted by the ET and contractors on a weekly basis, and independent audit was conducted by the Independent Environmental Checker (IEC) on a bi-weekly basis. All required follow-up actions were implemented by the

relevant contractors and verified by the Integrated Project Environmental Team in the subsequent site inspections. (*Section 4.3*)

Environmental Complaint and Enquiries

No complaint or enquiries were received in the reporting month. (*Section 4.4*)

Key Project Works in the reporting month



E.1 Unit B4 FGD Area



E.2 Loader/ Unloader at Material Handling Berth



E.3 Material Handling Conveyor Systems



E.4 Civil Works

1. Basic Project Information

1.1 Background

The Emissions Control Project at Castle Peak Power Station “B” Units (the Project) involves the installation of additional emissions control facilities to further reduce air emissions from the operation of these units. The emissions control facilities to be installed in the Castle Peak Power Station “B” Units (CPB) include NO_x reduction facilities and Limestone Flue Gas Desulphurisation (LS FGD) for SO₂ reduction. The location of the Site is presented in *Figure 1.1*. An overview of the Project Site general arrangement is presented in *Figure 1.2*.

1.2 Project Organisation

An Integrated Project Environmental Team has been set up to manage the environmental issues associated with the EC Project. The Project Environmental Team comprises the Project Environmental Team Leader (ETL), the Project Regulatory Compliance and Environmental Officer, and the Project Environmental Officer. The Project Environmental Team organisation is depicted in *Figure 1.3*.

1.3 Construction Activities and Project Programme

The construction of the Project involves demolition and relocation of certain existing facilities. While the existing generating units will remain in their current locations, some of the auxiliary and common facilities to the south of the generating units at CPB will be demolished or relocated to provide space for the emission control and related facilities. The scope of the Project is as follows:

- Demolition of some existing facilities at CPB including the Fuel Oil Day Tank, Fuel Oil Pump House and Dangerous Goods (DG) Store;
- Relocation or re-routing of existing facilities including Ash and Dust Control Room, Underground Pipeworks, Carbon Dioxide (CO₂) Storage Tank, Liquefied Petroleum Gas (LPG) Storage Tanks, Intermediate Pressure Reduction Station, Oil Interceptors, Oils Sump, Oil Sewer Manholes and Foul Water Pumping Station;
- Provision of Reagent and By-Product Handling and Storage Facilities including limestone store, limestone slurry tanks, gypsum dewatering and storage facilities;
- Installation of new emission control equipment and facilities for NO_x and SO₂ control;
- Provision of additional berthing facilities for loading and unloading of the additional reagents and gypsum.

The civil works of the EC Project were commenced on 26 September 2007. These included piling works, foundation works, roads and other civil engineering works and would be executed in a phased manner. Start-up of the retrofitted units are scheduled from 2010 to 2011.

1.4 Summary of EM&A Requirements

An Environmental Impact Assessment (EIA) for the Project was undertaken and the EIA Report was approved under the *Environmental Impact Assessment Ordinance* (EIAO) (Cap499) on 25 October 2006 (EIAO Register No. AEIAR-102/2006). Environmental Permit (EP) No. EP-251/2006 for the Project was granted on 10 November 2006. Condition 3.2 of the EP requires an EM&A programme to be implemented in accordance with the procedures and requirements set out in the approved EIA Report (EIAO Register No. AEIAR-102/2006).

The EM&A requirements for the EC Project are summarized below:

- Establish baseline water quality levels at designated locations;
- Implement construction impact monitoring programmes for water quality and dolphin monitoring;
- Implement inspection and audit programmes for water quality and dolphin monitoring;
- Liaise with, and provide environmental advice (as requested or when otherwise necessary) to construction site staff on the comprehension and consequences of the environmental monitoring data and exceedances;
- Identify and resolve environmental issues and other functions as they may arise from the works;
- Check and advise the Contractor's overall environmental performance, the implementation of Event and Action Plans (EAPs), and remedial actions taken to mitigate adverse environmental impacts as they may arise from the works;
- Conduct monthly reviews of monitored impact data as the basis for assessing compliance with the defined criteria and to ensure that necessary mitigation measures are identified and implemented, and to undertake additional ad hoc monitoring and auditing as required by special circumstances;
- Evaluate and interpret all environmental monitoring data to provide an early indication should any of the environmental control measures or practices fail to achieve the acceptable standards, and to verify the environmental impacts predicted in the EIA Report;
- Manage and liaise with other individuals or parties concerning other environmental issues deemed to be relevant to the construction process;

- Conduct regular site inspections to assess:
 - the level of the Contractor's general environmental awareness;
 - the Contractor's implementation of the conditions in the EP and the recommendations in the EIA Report;
 - the Contractor's performance as measured by the EM&A programme;
 - the need for specific mitigation measures to be implemented or the continued usage of those previously agreed; and
 - to advise the Site Staff of any identified potential environmental issues.

- Submit Monthly EM&A Reports which summarize environmental monitoring and auditing data, with interpretation illustrating the acceptability or otherwise of any environmental impacts and identification or assessment of the implementation status of agreed mitigation measures.

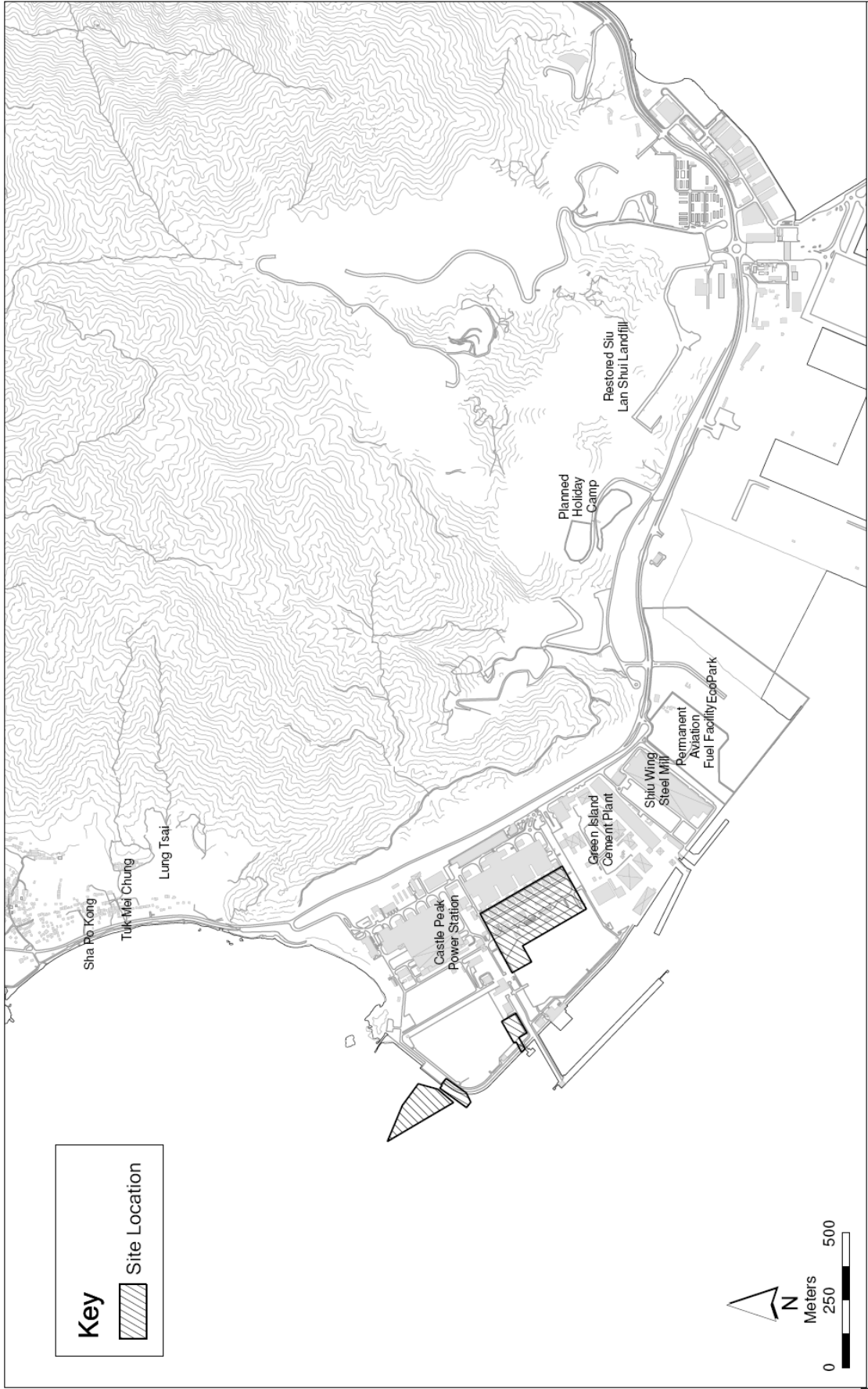


Figure 1.1 Location of the EC Project Site

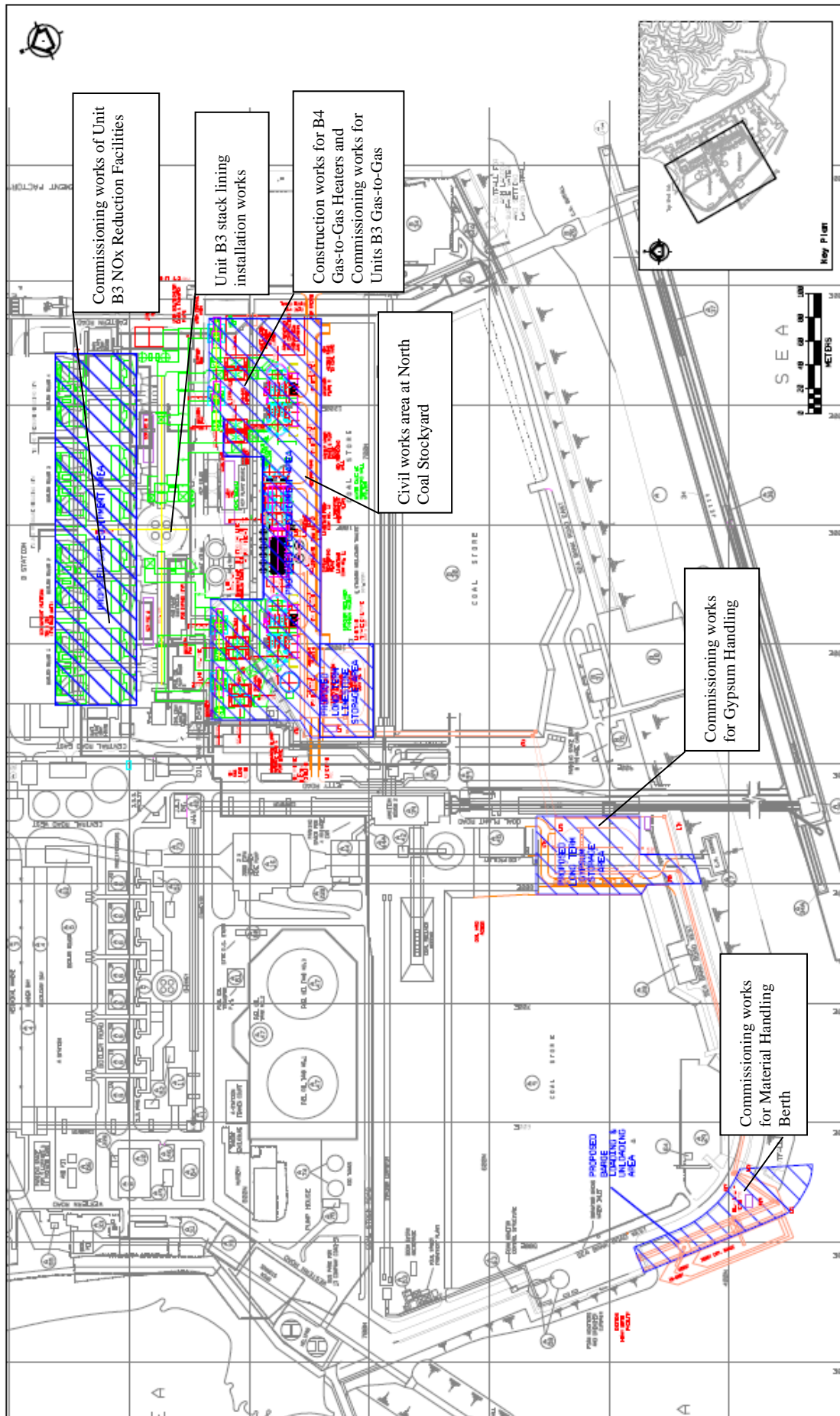


Figure 1.2 EC Project Site General Layout Arrangement

Integrated Project Environmental Team

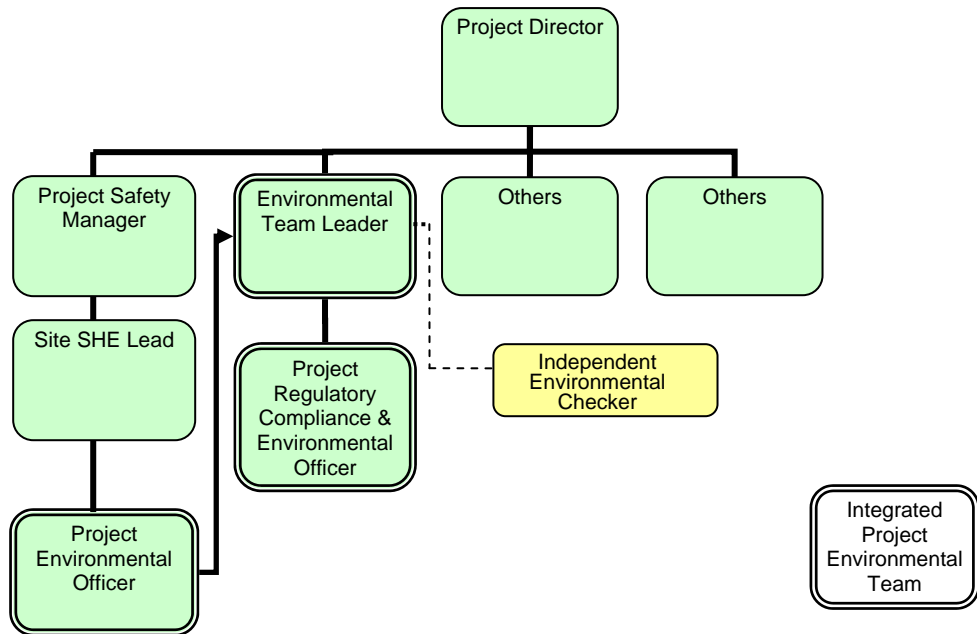


Figure 1.3 Integrated Project Environmental Team

2. Environmental Status

2.1 Project Works undertaken during the Reporting Month

The key site works undertaken in the reporting month and implementation of the required environmental protection measures are summarized in *Table 2.1* below.

Table 2.1 Key construction works undertaken in the reporting month

	Construction Activities	Environmental Protection Measures
FGD Erection	<ul style="list-style-type: none"> • Mechanical erection works at the Unit B4 FGD Absorbers and Gas-to-Gas Heater Area. • Building works at the Common Limestone Preparation and Gypsum Dewatering Areas, Limestone Handling Area, and Gypsum Handling Area. • Commissioning work on Unit B3 FGD System and Waste Water Treatment Plant Area. 	<ul style="list-style-type: none"> • Dust suppression on access roads; • Spillage control measures (e.g. drip tray, spill kit) were implemented; • Proper on-site chemical waste store was provided.
NOx Reduction Facilities Erection	<ul style="list-style-type: none"> • Commissioning work on Unit B3 Boosted Over-fire Air System & Selective Catalytic Reduction System. 	<ul style="list-style-type: none"> • Spillage control measures (e.g. drip tray, spill kit) were implemented; • Proper on-site chemical waste store was provided.
Material Handling Berth & Material Handling System	<ul style="list-style-type: none"> • Electrical works of the Material Handling Berth and Material Handling Conveyor Systems. • Commissioning work on the Material Handling Berth and Material Handling Conveyor Systems. 	<ul style="list-style-type: none"> • Spillage control measures (e.g. drip tray, spill kit) were implemented.
Stack Lining	<ul style="list-style-type: none"> • Complete Unit B3 stack lining installation works. 	<ul style="list-style-type: none"> • Proper on-site construction waste store was provided; • Chemical waste storage area was set up.

Civil Works	<ul style="list-style-type: none"> • Ground paving and draining works. 	<ul style="list-style-type: none"> • Dust suppression on access roads; • Temporary stockpiles were either wetted or covered by tarpaulin sheet to prevent dust emission.
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2.2 Construction Works to be undertaken in the Coming Month

The key site activities in the coming month are summarized below:

- Flue Gas Desulphurization Absorbers
 - Continue mechanical erection works at the Unit B4 FGD Absorbers, and Gas-to-Gas Heater Area.
 - Continue building works at the Common Limestone Preparation and Gypsum Dewatering Areas, Limestone Handling Area, and Gypsum Handling Area.
 - Continue commissioning works on Unit B3 FGD system and Waste Water Treatment Plant Area.
- NO_x Reduction Facilities
 - Continue plant erection and commissioning works at Unit B3 Boosted Over-fire Air System & Selective Catalytic Reduction System.
- Material Handling Berth & Material Handling System
 - Continue electrical works for the Material Handling Berth and Material Handling Conveyor Systems.
 - Continue commissioning works for the Material Handling Berth and Material Handling Conveyor Systems.
- Civil Works
 - Continue ground paving and draining works.

The potential environmental impacts associated with the above construction works include dust emission, oil spillage and chemical wastes. Preventive measures have been and will continue to be implemented as per the Environmental Mitigation Implementation Schedule for the EC Project Construction Phase.

2.3 Status of Submissions to EPD

The status of submissions to EPD as required under the Environmental Permit No. EP-251/2006 is summarized in *Table 2.2* below.

Table 2.2 Environmental Permit No. EP-251/2006 - Submissions for Decommissioning / Construction Stage

EP Condition Ref	Submission	Timing for Submission	Target Submission Date	Actual Submission Date
General Conditions				
1.11	Commencement Dates of decommissioning and construction of the Project	At least 2 weeks before the commencement of decommissioning and construction respectively	As per schedule	4/07/07 & 20/08/07 respectively
Submission before/after Commencement of Decommissioning/Construction of the Project				
2.3	Management organisation of the main decommissioning/construction companies and/or any form of JV associated with the Project (including organisation chart, names of responsible persons and their contact details)	At least 1 month after commencement of decommissioning/construction of the Project	As per schedule	26/10/07
2.4	Details of any change to emission reduction process described and assessed in the EIA Report (Register No.: AEIAR - 102/2006) for	At least 3 months before commencement of construction of relevant facilities	If applicable	
EM&A Requirements				
3.1	Groundwater Monitoring Plan	At least 1 month before commencement of construction of the Project	As per schedule	1st issue - 20/07/07 2nd issue - 5/09/07 3rd issue - 20/11/07 4th issue - 27/02/08
3.3	Baseline Water Quality Monitoring Report	At least 1 month before commencement of dredging works	As per schedule	1st issue - 29/01/08 2nd issue - 4/03/08
3.4	Monthly EM&A Report	Within 10 working days at the end of the reporting month	As per schedule	As per schedule
3.5	Post-Project Monitoring Report for Dredging Works	Within 1 week of completion of the Post-Project Monitoring for the dredging works	As per schedule	24/02/10
Electronic Reporting of EM&A Information				
4.2	Written notification on the internet address of EM&A website to Director of Environmental	Within 6 weeks after the commencement of construction of the Project	As per schedule	06/11/07

3. Monitoring Results

3.1 Groundwater Monitoring

With respect to the requirement specified in the Environmental Permit No. EP-251/2006, monitoring of the total petroleum hydrocarbon (TPH) in the groundwater within the Project site during construction and operation of the Project is required. A Groundwater Monitoring Plan has been developed to define the groundwater monitoring locations, methodology for groundwater monitoring as well as the monitoring schedule.

Bi-weekly Groundwater Monitoring Programme for the initial period of three months after the commencement of major piling and foundation works was successfully concluded on 25 January 2008. The TPH monitoring results for the initial three-month period consistently remained well below the relevant Risk-based Remediation Goals (RBRGs) values, and therefore the remaining groundwater monitoring for 2008 was conducted on a quarterly basis in accordance with the Groundwater Monitoring Plan (Rev 4), which had been accepted by EPD.

The Groundwater Monitoring Program for 2008 was completed in October 2008 with all results well within the Risk-Based Remediation Goals (RBRGs) stated in the EPD's Guidance Note for Contaminated Land Assessment and Remediation. In view of this, the groundwater monitoring frequency for 2009 is reduced to twice a year as per the email confirmation (dated 07 November 2008) from EPD to the Independent Environmental Checker.

The 2nd half-yearly Groundwater Monitoring for 2009 was conducted in October 2009. Groundwater samples were taken from the three designated sampling points on 15 October 2009 for TPH measurement and all results indicated that TPH levels continue to remain well below the relevant RBRGs value.

Confirmation from EPD regarding the groundwater monitoring program for 2010 was received on 29 April 2010 and the groundwater monitoring frequency was reduced to once a year.

The next groundwater monitoring is scheduled on 13 October 2010.

3.2 Marine Water Quality Monitoring

With respect to the requirement specified in the Environmental Permit No. EP-251/2006, monitoring of marine water quality during the construction phase is required to evaluate whether any impacts would be posed by the dredging operations on the surrounding waters during the construction period of the dredging works. Baseline monitoring (prior to the dredging works), impact monitoring (during any works

related to the dredging works) and post-project monitoring (after completion of the dredging) shall be carried out according to the monitoring locations, monitoring parameters and frequency specified in the EIA Report.

Baseline water quality monitoring programme was completed on 21 December 2007 according to the schedule submitted to EPD on 6 November 2007. The Baseline Water Quality Monitoring Report was revised to address EPD's comments on the first submission and re-submitted to EPD on 4 March 2008.

According to the EIA report, impact monitoring on marine water quality is required solely during dredging works. There was no dredging works conducted during the reporting month and therefore impact monitoring was not required.

Post project water quality monitoring programme was completed on 12 February 2010 and the Post Project Water Quality Monitoring Report was submitted to EPD on 24 February 2010.

3.3 Ecology Monitoring

With respect to the requirement specified in the Environmental Permit No. EP-251/2006, visual cetacean monitoring should be conducted during the underwater percussive piling works to evaluate whether there have been any effects on the animals.

There was no underwater percussive piling works conducted during the reporting month and hence visual cetaceans monitoring was not required.

4. Implementation Status of EIA Recommendations

4.1 Environmental Mitigation Implementation Schedule

Environmental mitigation measures for the construction stage were implemented as per the EIA Report.

An updated summary of the Environmental Mitigation Implementation Schedule (EMIS) is presented in *Appendix A*.

4.2 Implementation status of Event and Action Plan

There was no dredging works conducted in the reporting month so impact monitoring for marine water quality was not required and hence the Event and Action Plan was not applicable.

4.3 Site Environmental Inspection and Audit

Independent Environmental Checker (IEC) conducted bi-weekly site inspection on 3rd Sep 2010, 17th Sep 2010 and 29th Sep 2010 respectively. All the follow-up actions to respond to the IEC observations have been completed by the relevant contractors and verified in the subsequent site inspections by the Integrated Project Environmental Team.

Summary of the IEC site inspections is shown in *Table 4.1*.

Joint site audits were carried out by the Integrated Project Environmental Team (ET) with contractors on a weekly basis to monitor environmental issues at the construction sites to ensure that all mitigation measures were implemented timely and properly. All required mitigation measures were implemented by the relevant contractors and verified in the subsequent site inspections by the Integrated Project Environmental Team.

Summary of the weekly ET site inspections is shown in *Table 4.2*.

4.4 Implementation Status of Complaint Handling Procedure

No complaint or enquiries were received in the reporting month.

Table 4.1 Summary of Bi-weekly IEC Site Inspections

Date of Inspection	Observations	Follow-up action
3/09/10	Stockpiles of soil were observed not to be covered near the main access road to the proposed limestone preparation plant.	Stockpiles of soil were covered by the Contractor.
17/09/10	Stockpiles of soil were observed not to be covered properly near the main access road to the proposed limestone preparation plant.	Stockpiles of soil were covered properly by the Contractor.
29/09/10	Stagnant water was observed in an empty chemical container and in one of the chemical stores near proposed limestone preparation plant.	Stagnant water found in an empty chemical container and in one of the chemical stores was cleaned up by the Contractor.

Table 4.2 Summary of Weekly ET Site Inspection

Week of Inspection	Observations	Follow-up action
01/09/10-04/09/10	Chemical waste store located at NCY to be tidy up.	Chemical waste store located at NCY was tidy up by the Contractor.
05/09/10-11/09/10	Soil stockpile at MHB to be covered.	Soil stockpile at MHB was covered by the Contractor.
	Lube oil found on concrete floor at Sea Bank Road West to be cleaned up.	Lube oil on concrete floor at Sea Bank Road West was cleaned up immediately by the Contractor.
	Chemicals found at Sea Bank Road West to be labelled.	The identified chemicals were labelled by the Contractor.
12/09/10-18/09/10	Spilled glue found near limestone store to be cleaned up.	The spilled glue found near gypsum store was cleaned up by the Contractor.
	Chemicals found in DG store located at NCY to be labelled.	The identified chemicals were labelled by the Contractor.
19/09/10-25/09/10	Chemical found in chemical cabinet near the gypsum store to be labelled.	The identified chemical was labelled by the Contractor.
	Waste found at Sea Bank Road West to be disposed properly.	Waste found at Sea Bank Road West was cleaned up.
26/09/10-30/09/10	Stagnant water formed on tarpaulin at NCY to be cleaned up.	Stagnant water formed on tarpaulin at NCY was cleaned up immediately.

Appendices

Appendix A Construction Phase - Environmental Mitigation Implementation Schedule

Legends:

C - Complied NC - Not complied N/A - Not Applicable

Ref.	Environmental Protection Measures	Location/Duration of Measures/Timing of Completion of Measures	Implementation Agent	Implementation Stage		Implementation Status during the reporting month
				Design	Construction	
<i>Air Quality</i>						
EIA S3.6.1	<ul style="list-style-type: none"> The area at which demolition work takes place should be sprayed with water prior to, during and immediately after the demolition activities so as to maintain the entire surface wet 	Within the construction site/Throughout the construction period	Contractor		✓	C
EIA S3.6.1	<ul style="list-style-type: none"> Dust screens or sheeting should be provided to enclose the structure to be demolished to a height of at least 1 m higher than the highest level of the structure; 	Within the construction site/Throughout the construction period	Contractor		✓	C
EIA S3.6.1	<ul style="list-style-type: none"> Any dusty materials should be wetted with water to avoid any fugitive dust emission; 	Within the construction site/Throughout the construction period	Contractor		✓	C
EIA S3.6.1	<ul style="list-style-type: none"> All temporary stockpiles should be wetted or covered by tarpaulin sheet to prevent fugitive emissions; 	Within the construction site/Throughout the construction period	Contractor		✓	C
EIA S3.6.1	<ul style="list-style-type: none"> All the dusty areas and roads should be wetted with water; 	Within the construction site/Throughout the construction period	Contractor		✓	C
EIA S3.6.1	<ul style="list-style-type: none"> All the dusty materials transported by lorries should be covered entirely by impervious sheet to avoid any leakage; and 	Within the construction site/Throughout the construction period	Contractor		✓	C
EIA S3.6.1	<ul style="list-style-type: none"> The falling height of fill materials should be controlled. 	Within the construction site/Throughout the construction period	Contractor		✓	C
<i>Water Quality</i>						
EP Con	<ul style="list-style-type: none"> Silt curtains should be deployed around the closed grab dredger to 	Within the construction	Contractor		✓	C

Ref.	Environmental Protection Measures	Location/Duration of Measures/Timing of Completion of Measures	Implementation Agent	Implementation Stage		Implementation Status during the reporting month
				Design	Construction	
2.14, EIA S5.8.1	contain suspended solids within the construction site during dredging.	site/Throughout the construction period				
EP Cons 2.13 & 2.15, EIA S5.8.1	<ul style="list-style-type: none"> A daily dredging rate of a closed grab dredger (with a minimum grab size of 8 m³) should be less than 5,200 m³ day⁻¹, with reference to the maximum rate for dredging, which was derived in the EIA. 	Within the construction site/Throughout the construction period	Contractor		✓	N/A
EP Con 2.16, EIA S5.8.1	<ul style="list-style-type: none"> Barges or hoppers should have tight fitting seals to their bottom openings to prevent leakage of material. 	Within the construction site/Throughout the construction period	Contractor		✓	N/A
EP Con 2.9	<ul style="list-style-type: none"> Any groundwater arising from the decommissioning and construction of the Project shall be collected and recharged back to the site of the Project. No groundwater shall be used for any industrial or domestic purposes. 	Within the construction site/Throughout the construction period	Contractor		✓	C
EP Con 2.10	<ul style="list-style-type: none"> All wastewater or effluent arising from the stockpiling, transportation and treatment of the excavated contaminated materials shall be properly collected and treated. 	Within the construction site/Throughout the construction period	Contractor		✓	C
EP Con 2.11	<ul style="list-style-type: none"> Surface run-off from the construction site shall be directed into sand/silt removal facilities such as sand/silt traps and sediment basins before discharge. The sand/silt removal facilities shall be adequately designed and properly operated and maintained. 	Within the construction site/Throughout the construction period	Contractor		✓	C
EP Con 2.12, EIA S5.8.2	<ul style="list-style-type: none"> All exposed earth areas should be completed as soon as possible after earthworks have been completed, or alternatively, within 14 days of the cessation of earthworks, where practicable. If excavation of soil cannot be avoided during the rainy season, or at any time of year when rainstorms are likely, exposed slope surfaces should be covered by tarpaulin or by other means. 	Within the construction site/Throughout the construction period	Contractor		✓	C
EIA S5.8.1	<ul style="list-style-type: none"> Mechanical grabs should be designed and maintained to avoid spillage and should seal tightly while being lifted. 	Within the construction site/Throughout the construction period	Contractor		✓	C
EIA	<ul style="list-style-type: none"> Loading of barges or hoppers should be controlled to prevent 	Within the construction	Contractor		✓	C

Ref.	Environmental Protection Measures	Location/Duration of Measures/Timing of Completion of Measures	Implementation Agent	Implementation Stage		Implementation Status during the reporting month
				Design	Construction	
S5.8.1	splashing of dredged material to the surrounding water.	site/Throughout the construction period				
EIA S5.8.1	<ul style="list-style-type: none"> Barges or hoppers should not be filled to a level which will cause overflow of materials or pollution of water during loading or transportation. 	Within the construction site/Throughout the construction period	Contractor		✓	C
EIA S5.8.1	<ul style="list-style-type: none"> Excess material should be cleaned from the decks and exposed fittings of barges or hoppers before the vessel is moved. 	Within the construction site/Throughout the construction period	Contractor		✓	C
EIA S5.8.1	<ul style="list-style-type: none"> Adequate freeboard should be maintained on barges to reduce the likelihood of decks being washed by wave action. 	Within the construction site/Throughout the construction period	Contractor		✓	C
EIA S5.8.1	<ul style="list-style-type: none"> All vessels should be sized such that adequate clearance is maintained between vessels and the seabed at all states of the tide to ensure that undue turbidity is not generated by turbulence from vessel movement or propeller wash. 	Within the construction site/Throughout the construction period	Contractor		✓	C
EIA S5.8.1	<ul style="list-style-type: none"> The works should not cause foam, oil, grease, litter or other objectionable matter to be present in the water within and adjacent to the works site. 	Within the construction site/Throughout the construction period	Contractor		✓	C
EIA S5.8.2	<ul style="list-style-type: none"> At the start of site establishment, perimeter cut-off drains to direct off-site water around the site should be constructed and internal drainage works and erosion and sedimentation control facilities implemented. Channels, earth bunds or sand bag barriers should be provided on site to direct stormwater to silt removal facilities. The design of efficient silt removal facilities should be based on the guidelines in <i>Appendix A1 of ProPECC PN 1/94</i>. 	Within the construction site/Throughout the construction period	Contractor		✓	C
EIA S5.8.2	<ul style="list-style-type: none"> All the surface runoff or extracted ground water contaminated by silt and suspended solids should be collected by the on-site drainage system and diverted through the silt traps prior to discharge into storm drain. 	Within the construction site/Throughout the construction period	Contractor		✓	C

Ref.	Environmental Protection Measures	Location/Duration of Measures/Timing of Completion of Measures	Implementation Agent	Implementation Stage		Implementation Status during the reporting month
				Design	Construction	
EIA S5.8.2	<ul style="list-style-type: none"> All drainage facilities and erosion and sediment control structures should be regularly inspected and maintained to ensure proper and efficient operation at all times and particularly following rainstorms. Deposited silt and grit should be removed regularly and disposed of by spreading evenly over stable, vegetated areas. 	Within the construction site/Throughout the construction period	Contractor		✓	C
EIA S5.8.2	<ul style="list-style-type: none"> Measures should be taken to reduce the ingress of site drainage into excavations. If the excavation of trenches in wet periods is necessary, they should be dug and backfilled in short sections wherever practicable. Water pumped out from trenches or foundation excavations should be discharged into storm drains via silt removal facilities. 	Within the construction site/Throughout the construction period	Contractor		✓	C
EIA S5.8.2	<ul style="list-style-type: none"> Open stockpiles of construction materials (for example, aggregates, sand and fill material) of more than 50 m³ should be covered with tarpaulin or similar fabric during rainstorms. Measures should be taken to prevent the washing away of construction materials, soil, silt or debris into any drainage system. 	Within the construction site/Throughout the construction period	Contractor		✓	C
EIA S5.8.2	<ul style="list-style-type: none"> Manholes (including newly constructed ones) should always be adequately covered and temporarily sealed so as to prevent silt, construction materials or debris being washed into the drainage system. 	Within the construction site/Throughout the construction period	Contractor		✓	C
EIA S5.8.2	<ul style="list-style-type: none"> Precautions to be taken at any time of year when rainstorms are likely, actions to be taken when a rainstorm is imminent or forecasted, and actions to be taken during or after rainstorms are summarised in <i>Appendix A2 of ProPECC PN 1/94</i>. Particular attention should be paid to the control of silty surface runoff during storm events, especially for areas located near steep slopes. 	Within the construction site/Throughout the construction period	Contractor		✓	C

Ref.	Environmental Protection Measures	Location/Duration of Measures/Timing of Completion of Measures	Implementation Agent	Implementation Stage		Implementation Status during the reporting month
				Design	Construction	
EIA S5.8.2	<ul style="list-style-type: none"> Oil interceptors should be provided in the drainage system and regularly emptied to prevent the release of oil and grease into the storm water drainage system after accidental spillages. The interceptor should have a bypass to prevent flushing during periods of heavy rain. 	Within the construction site/Throughout the construction period	Contractor		✓	N/A
EIA S5.8.2	<ul style="list-style-type: none"> All temporary and permanent drainage pipes and culverts provided to facilitate runoff discharge should be adequately designed for the controlled release of storm flows. All sediment traps should be regularly cleaned and maintained. The temporary diverted drainage should be reinstated to the original condition when the construction work has finished or the temporary diversion is no longer required. 	Within the construction site/Throughout the construction period	Contractor		✓	C
EIA S5.8.2	<ul style="list-style-type: none"> Sewage from toilets should be collected by a licensed waste collector. 	Within the construction site/Throughout the construction period	Contractor		✓	C
EIA S5.8.2	<ul style="list-style-type: none"> Vehicle and plant servicing areas, vehicle wash bays and lubrication bays should, as far as possible, be located within roofed areas. The drainage in these covered areas should be connected to foul sewers via a petrol interceptor. 	Within the construction site/Throughout the construction period	Contractor		✓	C
EIA S5.8.2	<ul style="list-style-type: none"> Oil leakage or spillage should be contained and cleaned up immediately. Waste oil should be collected and stored for recycling or disposal, in accordance with the <i>Waste Disposal Ordinance</i>. 	Within the construction site/Throughout the construction period	Contractor		✓	C
EIA S5.8.2	<ul style="list-style-type: none"> Waste streams classifiable as chemical wastes should be properly stored, collected and treated for compliance with <i>Waste Disposal Ordinance</i> or <i>Disposal (Chemical Waste) (General) Regulation</i> requirements. 	Within the construction site/Throughout the construction period	Contractor		✓	C
EIA S5.8.2	<ul style="list-style-type: none"> The storage areas should be surrounded by bunds with a capacity equal to 110% of the storage capacity of the largest tank to prevent spilled oil, fuel and chemicals from reaching the receiving waters. 	Within the construction site/Throughout the construction period	Contractor		✓	C

Ref.	Environmental Protection Measures	Location/Duration of Measures/Timing of Completion of Measures	Implementation Agent	Implementation Stage		Implementation Status during the reporting month
				Design	Construction	
EIA S5.8.2	<ul style="list-style-type: none"> The Contractors should prepare guidelines and procedures for immediate clean-up actions following any spillages of oil, fuel or chemicals. 	Within the construction site/Throughout the construction period	Contractor		✓	C
EIA S5.8.2	<ul style="list-style-type: none"> Surface run-off from bunded areas should pass through oil/grease traps prior to discharge to the stormwater system. 	Within the construction site/Throughout the construction period	Contractor		✓	N/A
<i>Waste Management</i>						
EP Con 2.19	No wastes, spoil or excavated materials or materials alike arising from the demolition and/or decommissioning and construction works of the Project shall be dumped in any environmentally sensitive areas, including but not limited to Sites of Special Scientific Interest, coastal protection areas, conservation areas and agricultural land.	Within the construction site/Throughout the construction period	Contractor		✓	C
EIA S6.6.1	Dredged sediments should be disposed of only at designated disposal sites allocated by the Marine Fill Committee (MFC) based on the findings of further sediment quality tests. A dumping licence should also be obtained from EPD prior to the commencement of the dredging works.	Within designated disposal site/prior to commencement of the dredging works	Contractor		✓	N/A
EIA S6.6.1	<p>Regardless of the disposal method and site, the Contractor should:</p> <ul style="list-style-type: none"> Dredge the sediments using closed grabs; Use split barges of not less than 750 m³ capacity when transporting the sediment to the disposal site; Regularly maintain the barge hoppers to ensure that they are capable of rapid opening and discharge at the designated disposal site; and Monitor the barge load against loss of materials during transportation. 	Within the dredging area /Throughout the dredging works period	Contractor		✓	N/A

Ref.	Environmental Protection Measures	Location/Duration of Measures/Timing of Completion of Measures	Implementation Agent	Implementation Stage		Implementation Status during the reporting month
				Design	Construction	
EIA S6.6.3	The contractor should open a billing account with EPD in accordance with the <i>Waste Disposal (Charges for Disposal of Construction Waste) Regulation</i> for the payment of disposal charges. Every waste load transferred to government waste disposal facilities such as public fill, sorting facilities, landfills or transfer station would required a valid “chit” which contain the information of the account holder to facilitate waste transaction recording and billing to the waste producer. A trip-ticket system should also be established in accordance with <i>Works Bureau Technical Circular No. 21/2002</i> to monitor the disposal of solid wastes at transfer station/landfills, and to control fly-tipping. The billing “chit” and trip-ticket system should be included as one of the contractual requirements and implemented by the contractor.	Within the construction site/Throughout the construction period	Contractor		✓	C
EIA S6.6.3	A recording system for the amount of waste generated, recycled and disposed of (including the disposal sites) should be established during the construction stage.	Within the construction site/Throughout the construction period	Contractor		✓	C

Ref.	Environmental Protection Measures	Location/Duration of Measures/Timing of Completion of Measures	Implementation Agent	Implementation Stage		Implementation Status during the reporting month
				Design	Construction	
EIA S6.6.3	<p><i>Measures for the Reduction of C&DM Generation during Planning and Design Stages</i></p> <p>The various waste management options can be categorized in terms of preference from an environmental viewpoint. The options considered to be more preferable have the least impacts and are more sustainable in the long term. Hence, the waste management hierarchy is as follows:</p> <ul style="list-style-type: none"> • Avoidance and minimization, that is, reduction of waste generation through changing or improving practices and design; • Reuse of materials, thus avoiding disposal (generally with only limited reprocessing); • Recovery and recycling, thus avoiding disposal (although reprocessing may be required); and • Treatment and disposal, according to relevant law, regulations, guidelines and good practice. <p>This hierarchy should be used to evaluate the waste management options, thus allowing maximum waste reduction and reduced disposal costs. Records of quantities of wastes generated, recycled and disposed (locations) should be kept.</p>	Within the construction site/Throughout the construction period	Contractor	✓		C

Ref.	Environmental Protection Measures	Location/Duration of Measures/Timing of Completion of Measures	Implementation Agent	Implementation Stage		Implementation Status during the reporting month
				Design	Construction	
EIA S6.6.3	<p><i>Measures for the Reduction of C&DM Generation during Construction</i></p> <ul style="list-style-type: none"> • C&D materials will be reused as far as possible within the Project. Public fill and construction waste should be segregated and stored in different containers or skips to facilitate reuse or recycling of materials and their proper disposal of construction waste. Specific areas of the work site should be designated for such segregation and temporary storage if immediate use is not practicable. • The construction waste should be collected by Contractor and transported to landfills for disposal. • The use of wooden hoardings should not be allowed. An alternative material, which can be reused or recycled, for example, metal (aluminium, alloy, etc) should be used. • To reduce the potential dust impact, C&D materials should be wetted as quickly as possible during excavation works. 	Within the construction site/Throughout the construction period	Contractor		✓	C
EIA S6.6.4	<p>Containers used for storage of chemical wastes should:</p> <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 <i>Schedule 2 of the Regulations</i> 	Within the construction site/Throughout the construction period	Contractor		✓	C

Ref.	Environmental Protection Measures	Location/Duration of Measures/Timing of Completion of Measures	Implementation Agent	Implementation Stage		Implementation Status during the reporting month
				Design	Construction	
EIA S6.6.4	The storage area for chemical wastes should: <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. 	Within the construction site/Throughout the construction period	Contractor		✓	C
EIA S6.6.4	Disposal of chemical waste should be: <ul style="list-style-type: none"> • 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 	Within the construction site/Throughout the construction period	Contractor		✓	C
EIA S6.6.5	The sewage sludge from the portable toilet should be collected by a reputable collector on a regular basis.	Within the construction site/Throughout the construction period	Contractor		✓	C
EIA S6.6.6	General refuse should be stored in enclosed bins or compaction units separately from construction and chemical wastes.	Within the construction site/Throughout the construction period	Contractor		✓	C
EIA S6.6.6	General refuse should be removed from the site, separately from construction and chemical wastes, on a daily basis to minimise odour, pest and litter impacts.	Within the construction site/Throughout the construction period	Contractor		✓	C

Ref.	Environmental Protection Measures	Location/Duration of Measures/Timing of Completion of Measures	Implementation Agent	Implementation Stage		Implementation Status during the reporting month
				Design	Construction	
EIA S6.6.6	Burning of refuse on construction site is prohibited by law.	Within the construction site/Throughout the construction period	Contractor		✓	C
EIA S6.6.6	Aluminium cans are often recovered from the waste stream by individual collectors if they are segregated and made easily accessible. As such, separate, labelled bins for their deposit should be provided if feasible. Materials recovered will be re-used on site or sold for recycling.	Within the construction site/Throughout the construction period	Contractor		✓	C
EIA S6.6.7	Training should be provided to workers on the concepts of site cleanliness and on appropriate waste management procedures, including waste reduction, reuse and recycling at the beginning of the Contract.	Within the construction site/Throughout the construction period	Contractor		✓	C
<i>Land Contamination</i>						
EP Con 2.5	The oil tanks shall be properly cleaned before their demolition. All wastes and effluent arising from the cleaning of the oil tanks shall be properly collected, stored, treated and disposed of.	Within the contaminated area /Throughout the construction period	Contractor		✓	N/A
EP Con 2.6	No contaminated soil arising from the demolition and/or decommissioning works shall be stockpiled, treated or disposed of outside the Castle Peak Power Station.	Within the contaminated area /Throughout the construction period	Contractor		✓	N/A
EP Con 2.7	The excavated soil arising from the demolition and/or decommissioning works shall be properly contained in container(s) during storage and transportation to avoid any discharge or leakage.	Within the contaminated area /Throughout the construction period	Contractor		✓	N/A
EP Con 2.8	The contaminated soil arising from the demolition and/or decommissioning works shall be decontaminated within the Castle Peak Power Station in accordance with the Land Contamination Remediation Action Plan contained in the EIA report (Register No. AEIAR-102/2006). Bio-remediation methods shall be used to remedy the petroleum hydrocarbon contamination in the excavated materials.	Within the contaminated area /Throughout the construction period	Contractor		✓	N/A
EIA Annex E	Potentially contaminated soil should be treated in accordance with the remediation actions specified in the Remediation Action Plan (RAP) of this EIA Report and the treated soil should be reused within the Project Site as far as possible.	Within the contaminated area /Throughout the construction period	Contractor		✓	N/A

Ref.	Environmental Protection Measures	Location/Duration of Measures/Timing of Completion of Measures	Implementation Agent	Implementation Stage		Implementation Status during the reporting month
				Design	Construction	
EIA Annex E	The temporary stockpile of excavated potentially contaminated materials should be contained in a container covered by HDPE sheet on top	Within the contaminated area /Throughout the construction period	Contractor		✓	N/A
EIA Annex E	Bioremediation by applying nutrient to the soil should be employed for the on-site treatment of excavated materials potentially contaminated by TPH.	Within the contaminated area /Throughout the construction period	Contractor		✓	N/A
EIA Annex E	If disposal of the treated excavated soil to the public fill bank is required, vehicles containing any excavated materials should be suitably covered to limit potential dust emissions or wastewater run-off, and truck bodies and tailgates will be sealed to minimise the risk of a discharge during transportation or during wet conditions.	Within the contaminated area /Throughout the construction period	Contractor		✓	N/A
EIA Annex E	Records of the quantities of soil generated for off-site disposal will be maintained.	Within the contaminated area /Throughout the construction period	Contractor		✓	C
EP Con 2.9, EIA Annex E	As groundwater is not used for either domestic or industrial purposes at the site or in the adjacent areas, remediation of groundwater is not considered to be necessary for the Project to proceed. If groundwater is encountered during the construction of foundations, the groundwater abstracted or collected will be recharged back to the site.	Within the contaminated area /Throughout the construction period	Contractor		✓	C
EIA Annex E	The FODT and the oil separator serving it should be cleaned prior to demolition.	Within the contaminated area /Throughout the construction period	Contractor		✓	N/A
EIA Annex E	Oily water and sludge collected from the cleaning should be treated at the on-site wastewater treatment facility. Oily water and sludge collected from the cleaning should be collected and disposed of as chemical waste at Government chemical waste treatment facility.	Within the contaminated area /Throughout the construction period	Contractor		✓	N/A
EIA Annex E	Only licensed waste contractors should be used to collect and transport any chemical waste. The necessary waste disposal permits will be obtained, as required, from the appropriate authorities, in accordance with the <i>Waste Disposal Ordinance (Cap 354)</i> and <i>Waste Disposal (Chemical Waste) (General) Regulation (Cap 354C)</i> , as required.	Within the contaminated area /Throughout the construction period	Contractor		✓	C

Ref.	Environmental Protection Measures	Location/Duration of Measures/Timing of Completion of Measures	Implementation Agent	Implementation Stage		Implementation Status during the reporting month
				Design	Construction	
EIA Annex E	Prior to commence any remediation work, a health and safety risk assessment should be performed for the remediation work to identify potential work related hazards and prepare appropriate control measures.	Within the contaminated area /Throughout the construction period	Contractor		✓	N/A
EIA Annex E	Appropriate Personal Protective Equipment (PPE) such as safety hat, chemical protective gloves, masks (for both dust and vapour), eye goggles, protective clothing and protective footwear should be provided to staff who would be involved in the tank cleaning and contaminated area (FODT and TP3) remediation works. No works should be allowed without the suitable PPE.	Within the contaminated area /Throughout the construction period	Contractor		✓	N/A
EIA Annex E	The workers should inspect and check their PPE before, during and after use. In cases where any of the PPE is impaired, the workers should stop work immediately and inform their supervisor. The workers should not be allowed to re-start their work until the impaired PPE is replaced.	Within the contaminated area /Throughout the construction period	Contractor		✓	N/A
EIA Annex E	The workers should always maintain basic hygiene standard (e.g. hand wash before leaving the contaminated work area). The workers should also be responsible for cleaning and storing their own PPE in a secure place before leaving the site.	Within the contaminated area /Throughout the construction period	Contractor		✓	N/A
EIA Annex E	Eating, drinking and smoking should be strictly prohibited within the contaminated site area.	Within the contaminated area /Throughout the construction period	Contractor		✓	N/A
EIA Annex E	The designated site management representatives must be informed if any workers feel uncomfortable physically or mentally during the remediation works. All workers should leave the work areas and the work should be temporarily suspended until the reason for the uncomfortable feeling has been identified.	Within the contaminated area /Throughout the construction period	Contractor		✓	N/A
EIA Annex E	The works should be stopped or discontinued when Typhoon Signal No. 3 or Rainstorm Warning signals are hoisted. All stockpile materials (if any) should be covered immediately by tarpaulin or other similar protective and waterproof materials.	Within the contaminated area /Throughout the construction period	Contractor		✓	N/A
EIA Annex E	Bulk earth-moving excavator equipment should be used to minimise construction workers' potential contact with contaminated materials.	Within the contaminated area /Throughout the construction period	Contractor		✓	N/A

Ref.	Environmental Protection Measures	Location/Duration of Measures/Timing of Completion of Measures	Implementation Agent	Implementation Stage		Implementation Status during the reporting month
				Design	Construction	
<i>Ecological – Marine Mammal</i>						
EP Con 2.17, EIA S8.9	To limit potential impacts to cetaceans from underwater percussive piling, the following steps should be taken: <ul style="list-style-type: none"> • Only hydraulic hammers should be used; • An exclusion zone of 500 m radius should be scanned around the work area for at least 30 minutes prior to the start of piling. If cetaceans are observed in the exclusion zone, piling should be delayed until they have left the area; and, • Acoustic decoupling of noisy equipment on work barges should be undertaken. These techniques include the use of a soft sling to retain the pile driving hammer, rubber tyred air compressor for bubble jacket/curtain, rubber pads on barge leaders and guides, and an air curtain around the pile barge. 	Within the dredging area /Throughout the construction period	Contractor		✓	N/A
EP Con 2.18	To minimize potential construction and operation impacts on dolphins and porpoises, no dumping of rubbish, food, oil, or chemicals from the marine vessels shall be allowed.	Within the dredging area /Throughout the construction period	Contractor		✓	N/A
EIA S8.9	The following recommendations should be considered to minimize potential construction impacts on dolphins and porpoises. <ul style="list-style-type: none"> • All vessel operators working on the Project construction should be given a briefing, alerting them to the possible presence of dolphins in the area, and the guidelines for safe vessel operation in the presence of cetaceans. If high speed vessels are used, they should be required to slow to 10 knots when passing through a high density dolphin area (west Lantau, Sha Chau and Lung Kwu Chau); • The vessel operators should be required to use predefined and regular routes, as these will become known to dolphins using these waters; • The vessel operators should be required to control and manage all effluent from vessels; • A policy of no dumping of rubbish, food, oil, or chemicals should be 	Within the marine works area /Throughout the construction period of the additional berthing facility	Contractor / CLP Power (as CAPCO operator)		✓	C

Ref.	Environmental Protection Measures	Location/Duration of Measures/Timing of Completion of Measures	Implementation Agent	Implementation Stage		Implementation Status during the reporting month
				Design	Construction	
	<p>strictly enforced. This should also be covered in the contractor briefings;</p> <ul style="list-style-type: none"> • Every attempt should be made to minimize the effects of construction of the Project on the water quality of the area; 					
S9.3.5	The new structures associated with the Project, including those of the additional conveyor systems, should be painted in a colour scheme that complements the surrounding industrial setting of the existing CPPS.	New structures associated with the Project	Contractor		✓	C