Capco 青山發電有限公司 Castle Peak Power Co. Ltd.

Black Point Gas Supply Project

Twentieth Monthly Environmental Monitoring & Audit (EM&A) Report – First Phase Project

14 November 2012

Environmental Resources Management
16/F, DCH Commercial Centre
25 Westlands Road
Quarry Bay, Hong Kong
Telephone 2271 3000
Facsimile 2723 5660

www.erm.com

ERM

Black Point Gas Supply Project

Environmental Resources Management

16/F, DCH Commercial Centre
25 Westlands Road
Quarry Bay
Hong Kong
Telephone: (852) 2271 3000
Facsimile: (852) 2723 5660
E-mail: post.hk@erm.com
http://www.erm.com

Twentieth Monthly Environmental Monitoring & Audit (EM&A) Report – First Phase Project

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Black Point Gas Supply Project (First Phase)
Environmental Certification Sheet
EP-391/2010/A

Reference Document/Plan

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Reference EM&A Manual/ EP Requirement

EP Condition:

Condition No. 5.3

Two hard copies and one electronic copy of monthly EM&A Reports shall be submitted to the Director within 2 weeks after the end of the reporting month. Additional copies of the submission shall be provided to the Director upon request from the Director.

ET Certification

I hereby certify that the above referenced document/~~plan~~ complies with the above referenced condition of EP-391/2010/A.

Dr Helen Chiu, Environmental Team Leader: Date: 12 Nov 2012

IEC Verification

I hereby verify that the above referenced document/~~plan~~ complies with the above referenced condition of EP-391/2010/A.

Dr Anne Kerr, Independent Environmental Checker: Date: 12/Nov/2012

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EXECUTIVE SUMMARY

The Castle Peak Power Company Limited (CAPCO), a joint venture between CLP Power Hong Kong Limited (CLP) and ExxonMobil Energy Limited (EMEL) with CLP as operator, and its Contractor for Gas Receiving Station (GRS) construction, Leighton Contractors (Asia) Limited (Leighton), commenced the construction of the First Phase of the Black Point Gas Supply Project (BPGSP) at the Co-located GRS area on 15 March 2011. This is the twentieth monthly Environmental Monitoring and Audit (EM&A) report presenting the EM&A works carried out during the period from 1 to 31 October 2012 in accordance with the Updated EM&A Manual for the First Phase Project submitted under EP-391/2010/A, FEP-01/391/2010/A and FEP-02/391/2010/A.

Environmental Site Inspection & Audit

A monthly joint environmental site inspection/audit was carried out by the representatives of the Contractor, the Environmental Team (ET), CLP and the Independent Environmental Checker (IEC). Environmental performance complied with the environmental requirements and all necessary mitigation measures were properly implemented.

Water Quality

Marine water quality impact monitoring was conducted in the reporting month during periods when there were jetting activities in Hong Kong waters. Intensive water quality monitoring was also conducted during the first two days of the jetting operations near the shore approach (i.e. from Urmston Road to Black Point). Exceedances of the Action and Limit Levels for water quality were recorded in four monitoring events during the reporting month. Following the review of monitoring data and marine works details in accordance with the procedures stipulated in the Event Action Plan of Updated EM&A Manual, these exceedances were considered to be due to natural variation in water quality characteristic of western Hong Kong waters and were unlikely to be due to the Project's jetting activities.

Waste Management

CAPCO and the Contractors have followed the Waste Management Plan (WMP) for handling of inert construction and demolition (C&D) materials (public fill), non-inert C&D materials (construction wastes) and sewage. Wastes generated during this reporting period were summarised.

Marine Ecology

Daily marine mammal exclusion zone monitoring was undertaken during the period of jetting activities in Hong Kong waters. No sighting of Indo-Pacific humpback dolphin *Sousa chinensis* were recorded in October 2012 during the exclusion zone monitoring.

Construction phase dolphin monitoring survey was conducted in October 2012 to record information on dolphin distribution and abundance in the Project areas. No sighting of the Indo-Pacific humpback dolphin *Sousa chinensis* was observed during the survey.

Environmental Complaints, Non-compliance & Summons

No non-compliance with EIA recommendations, EP conditions and other requirements associated with the construction of the First Phase Project was recorded in this reporting period.

No environmental complaint was received in this reporting period.

No environmental summons was received in this reporting period.

Upcoming Works for the Next Reporting Period

Works to be undertaken in the coming monitoring period include continuing construction works in the co-located Gas Receiving Station (GRS) area, continuing hydro-testing for the Gas Header, continuing rock dumping for gas pipeline installation within Hong Kong waters.

Potential environmental impacts arising from the construction activities in the coming month are expected to be mainly associated with dust, noise, site runoff, waste management and marine water quality.

1 INTRODUCTION

ERM-Hong Kong, Limited (ERM) and Mott MacDonald Hong Kong Limited was appointed by the Castle Peak Power Company Limited (CAPCO) as the Environmental Team (ET) and the Independent Environmental Checker (IEC), respectively, to undertake Environmental Monitoring and Audit (EM&A) activities for the First Phase of the Black Point Gas Supply Project (BPGSP) ***(the First Phase Project)***.

1.1 PURPOSE OF THE REPORT

This is the twentieth monthly EM&A report which summarises the impact monitoring results and inspection/ audit findings for the EM&A programme during the reporting period from **1** to **31 October 2012**.

1.2 STRUCTURE OF THE REPORT

The structure of the report is as follows:

Section 1 : **Introduction**
details the scope and structure of the report.

Section 2 : **Project Information**
summarises the background and scope of the First Phase Project, works locations, construction programme, the construction works undertaken and the status of Environmental Permits (EP)/licences over the construction phase of the First Phase Project.

Section 3 : **Implementation Status on Environmental Mitigation Measures**
summarises the implementation of environmental mitigation measures as recommended in the approved EIA report, EM&A Manual, EP and relevant environmental requirements stated in the Contract Specification.

Section 4 : **EM&A Results**
summarises the monitoring results, if any, obtained in the reporting period and the findings of the monthly site inspection undertaken within the reporting period.

Section 5 : **Environmental Non-conformance**
summarises any non-compliance of environmental performance standard, and environmental complaints and environmental summons received within the reporting period.

Section 6 : **Upcoming Works for the next Reporting Period**
summarises the impact forecast and monitoring schedule for the next reporting month.

Section 7 : **Conclusions**

2 PROJECT INFORMATION

2.1 PROJECT BACKGROUND

The Black Point Gas Supply Project (BPGSP) at the Black Point Power Station (BPPS), proposed by the Castle Peak Power Company Limited (CAPCO), a joint venture between CLP Power Hong Kong Limited (CLP) and ExxonMobil Energy Limited (EMEL) with CLP as operator, will provide facilities to import replacement gas from Mainland China.

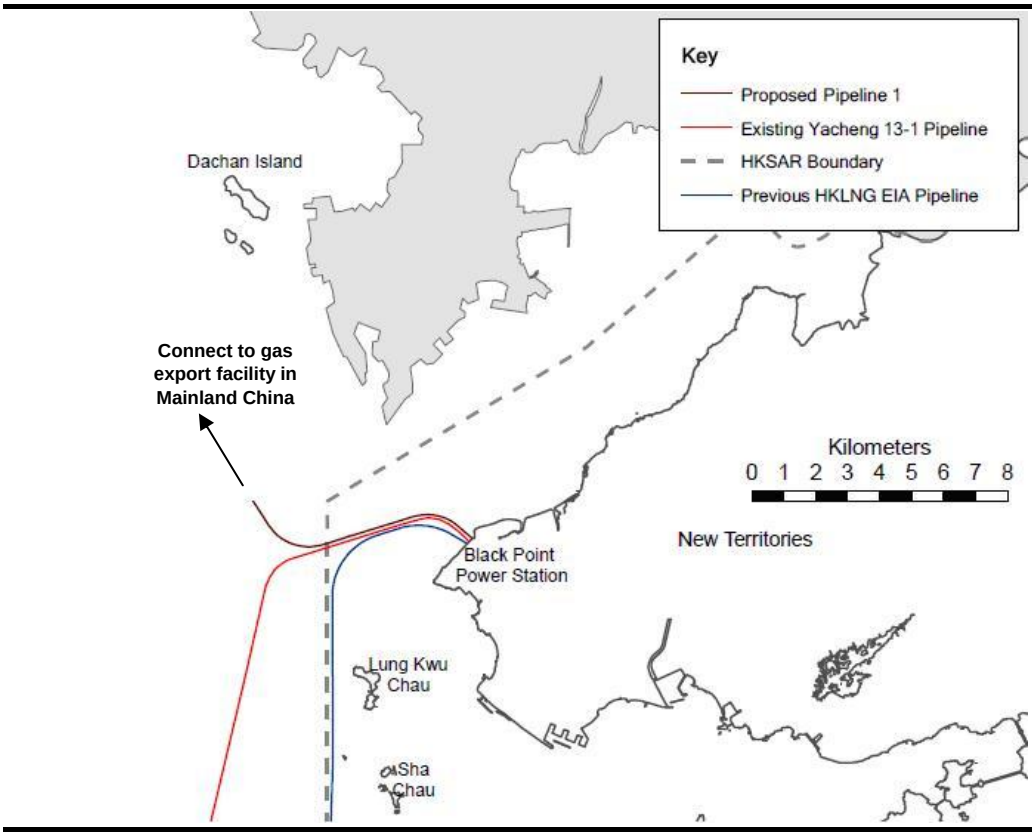
The First Phase of the BPGSP (hereafter referred to as the First Phase Project) will involve the construction and operation by PetroChina Company Limited (as the operator of the new CAPCO/PetroChina pipeline joint venture) of one submarine natural gas pipeline connecting BPPS with a gas export facility in Mainland China, while CAPCO is constructing and operating one gas receiving station (GRS) at BPPS.

An EIA of the BPGSP, including the First Phase Project, was prepared in accordance with the *EIA Study Brief* (No. ESB-208/2009) and the *Technical Memorandum of the Environmental Impact Assessment Process* (*EIAO-TM*) and submitted under the EIAO in February 2010. Subsequent to the approval of the EIA (*EIAO Register Number AEIAR-150/2010*) on 27 April 2010, an Environmental Permit (EP-391/2010) (EP) for the First Phase Project was granted by the Director of Environmental Protection (DEP) on 25 May 2010. A Further Environmental Permit (FEP) FEP-01/391/2010 was granted to the Contractor, Leighton Contractors (Asia) Limited, of the First Phase Project on 24 February 2011. Another FEP, FEP-02/391/2010/A, was issued to the Contractor, Wai Kee (Zens) Construction & Transportation Co., Ltd, on 23 March 2012. Applications for variation of the EP and FEP-01/391/2010 of the First Phase Project were submitted to the DEP and two EP variations, EP-391/2010/A and FEP-01/391/2010/A, were granted to CAPCO and Leighton Contractors (Asia) Limited respectively on 24 November 2011.

2.2 PROJECT SCOPE (FIRST PHASE)

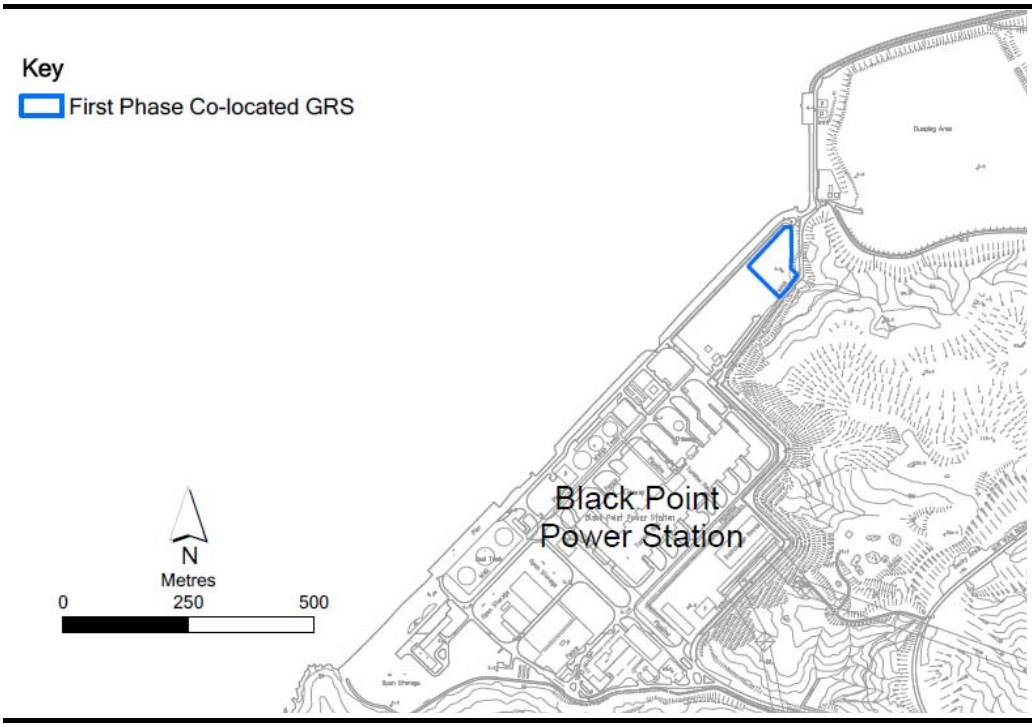
The proposed pipeline will traverse from the BPPS to a natural gas export facility in southern Guangdong Province, across the Urmston Road shipping channel and the Tonggu Waterway. It will be installed to the north of the existing Yacheng 13-1 Pipeline by approximately 100 m. Indicative routing of the proposed pipeline is depicted in *Figure 2.1*.

Figure 2.1 *Indicative Alignment of the Cross-Boundary Submarine Gas Pipeline Connecting the BPPS and the New Gas Export Facility in Mainland China*



The GRS is proposed to be located at the BPPS and will be constructed and operated within the site boundary of the BPPS, co-located with the existing GRS operated by the China National Offshore Oil Corporation (CNOOC) (hence referred to as the *Co-located GRS*). The proposed location of the Co-located GRS is presented on *Figure 2.2*.

Figure 2.2 Location of the First Phase Gas Receiving Station (GRS)



2.3 WORKS PROGRAMME & WORKS LOCATIONS

The construction works at the Co-located GRS area commenced on 15 March 2011. The preliminary construction programme is given in *Figure 2.3*. The locations of works are shown in *Figure 2.4*. The Sensitive Receivers in the vicinity of the proposed pipeline route are shown in *Figure 2.5*.

Figure 2.3 Preliminary Construction Programme for the First Phase of the Black Point Gas Supply Project

First Phase Construction	Month																							
Co-located GRS & Pipeline 1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Construction of GRS																								
- Installation of GRS Facilities																								
Construction of Submarine Pipeline																								
- Dredging																								
- Installation																								
- Jetting																								
- Rock Dumping																								
- Testing																								

Figure 2.4

Locations of Works for the First Phase of the Black Point Gas Supply Project

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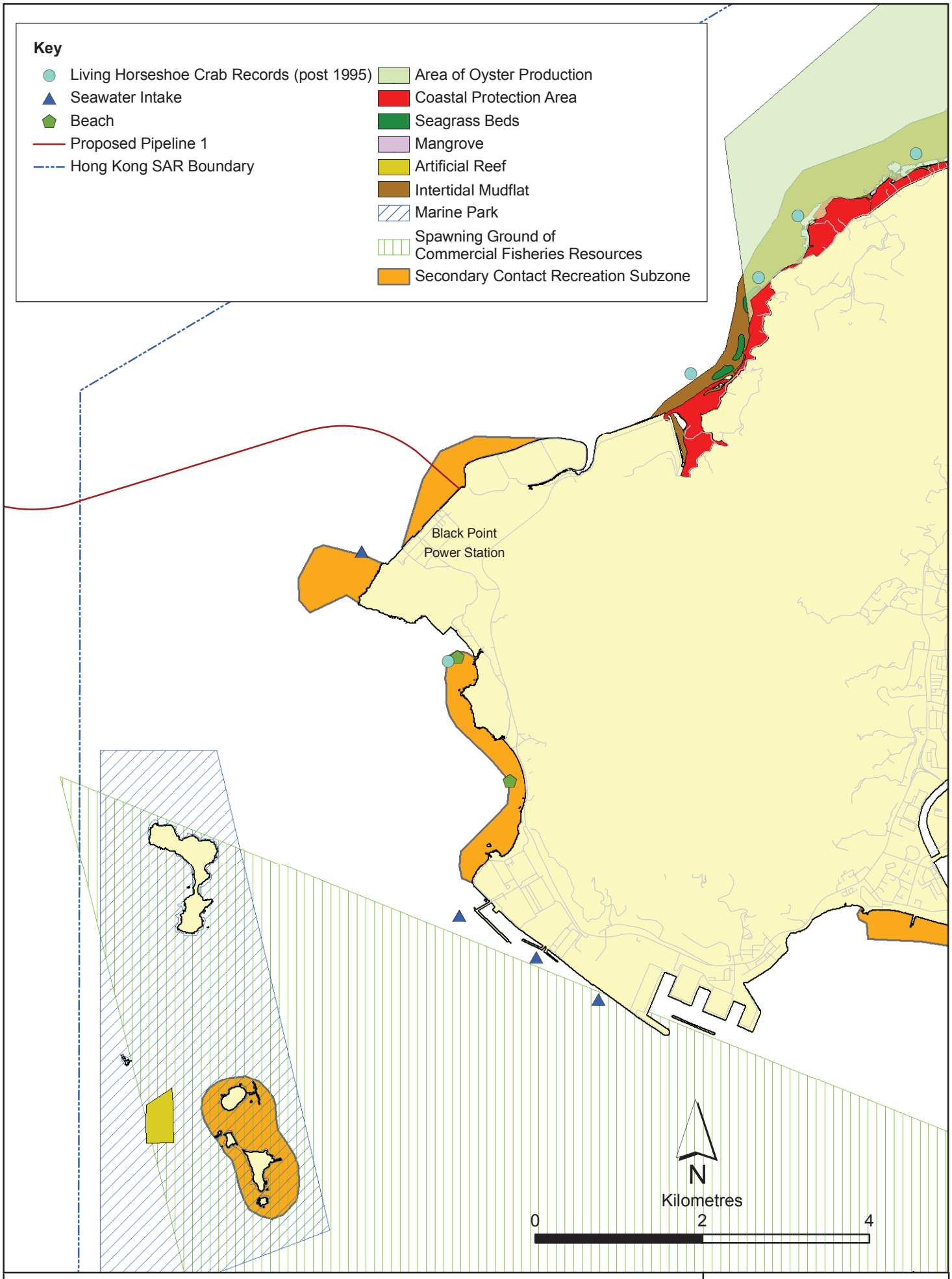

Figure 2.5

Surrounding Environment in the vicinity of Black Point

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2.4 CONSTRUCTION ACTIVITIES UNDERTAKEN DURING THE REPORTING PERIOD

A summary of the major construction activities undertaken in this reporting period is shown in *Table 2.1*. The locations of the construction activities are shown in *Figure 2.6*.

Table 2.1 Summary of Construction Activities Undertaken during the Reporting Period

Construction Activities Undertaken
• Construction of Satellite Instrument Enclosure (SIE) Building, piping cleaning and leak testing in the co-located GRS area
• Hydro-testing GRS area
• Jetting and rock dumping for gas pipeline installation

2.5 STATUS OF ENVIRONMENTAL APPROVAL DOCUMENTS

A summary of the relevant permits, licences, and/or notifications on environmental protection for this Project is presented in *Table 2.2*.

Figure 2.6 Locations of the Construction Activities - October 2012

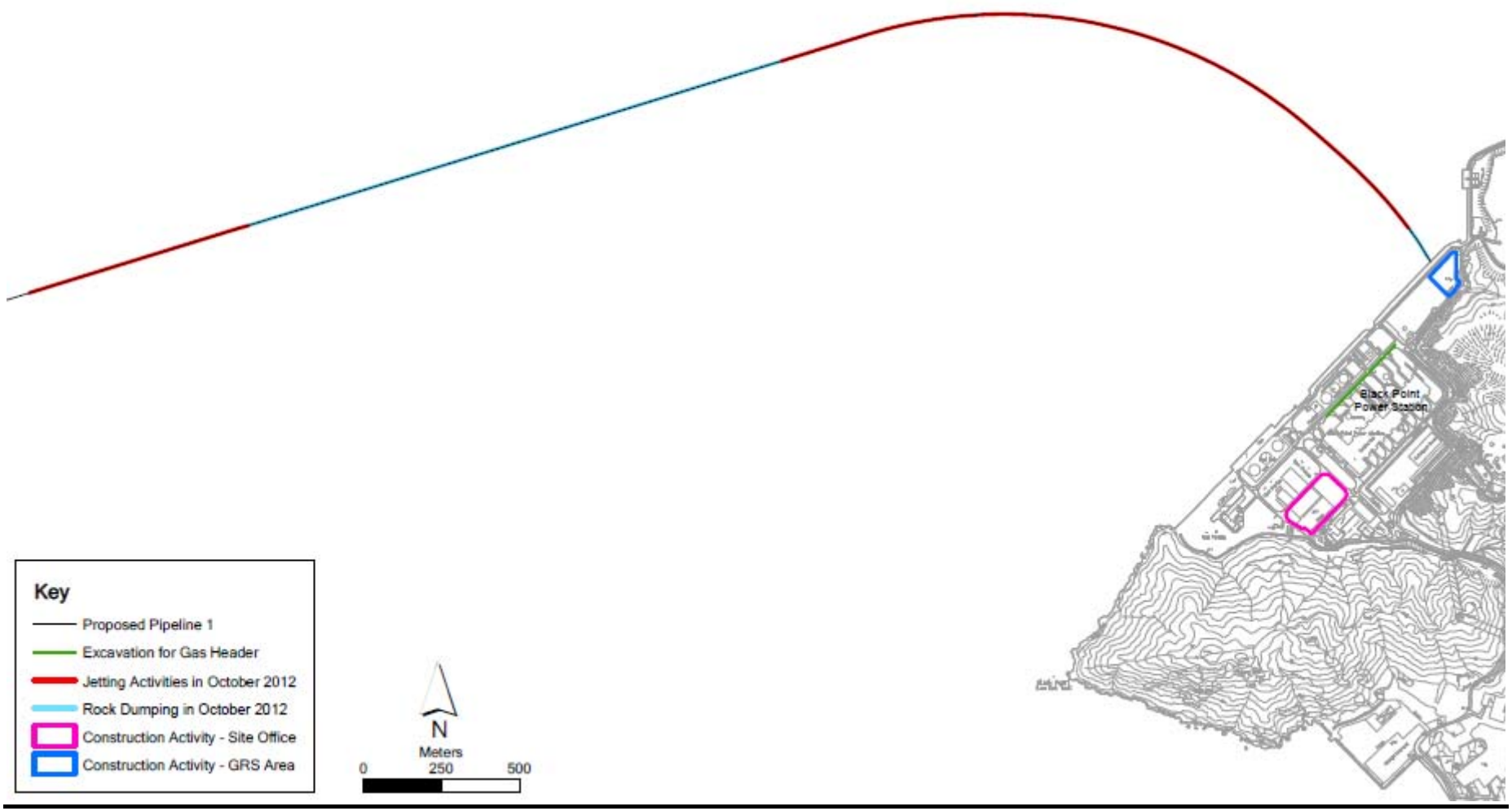

Table 2.2 Summary of Environmental Licensing, Notification and Permit Status

Permit/ Licenses/ Notification	Reference	Validity Period	Status	Remarks
CAPCO				
Environmental Permit	EP-391/2010	Throughout the Contract	Superseded by Environmental Permit No. EP-391/2010/A	Permit granted on 25 May 2010
Environmental Permit	EP-391/2010/A	Throughout the Contract	Valid	Permit granted on 24 Nov 2011
Allocation of Sediment Disposal Sites	(OHS3C-01) in FM4/IC/70A	up to 31 December 2012	Valid	Allocation granted on 4 Oct 2010, extension applied on 23 Dec 2011 and 22 June 2012 and subsequently approved.
Leighton Contractors (Asia) Limited				
Further Environmental Permit	FEP-01/391/2010	Throughout the Contract	Superseded by Environmental Permit No. FEP-01/391/2010/A	Permit granted on 24 February 2011
Further Environmental Permit	FEP-01/391/2010/A	Throughout the Contract	Valid	Permit granted on 24 Nov 2011
Notification of Construction Works under Air Pollution Control (Construction Dust) Regulation	--	--	Revised	Reference Number for Notification Pursuant to APC (Construction Dust) Regulation: 325647
Construction Noise Permit	GW-RW00286-11	1 May 2011 to 30 Oct 2011	Expired; new permit granted	Permit granted on 21 April 2011
Construction Noise Permit	GW-RW0423-11	3 July 2011 to 21August 2011	Expired; new permit granted	Permit granted on 28 June 2011
Construction Noise Permit	GW-RW0461-11	31 July 2011 to 29 January 2012	Expired; new permit granted	Permit granted on 12 July 2011
Construction Noise Permit	GW-RW0491-11	21 August 2011 to 21 Feb 2012	Expired; new permit granted	Permit granted on 22 July 2011
Construction Noise Permit	GW-RW0526-11	11 September 2011 to 4 March 2012	Expired; new permit granted	Permit granted on 5 August 2011

Permit/ Licenses/ Notification	Reference	Validity Period	Status	Remarks
Construction Noise Permit	GW-RW0033-12	30 January 2012 to 30 July 2012	Expired; new permit granted	Permit granted on 17 January 2012
Construction Noise Permit	GW-RW0121-12	11 March 2012 to 09 September 2012	Expired; new permit granted	Permit granted on 21 February 2012
Construction Noise Permit	GW-RW0483-12	30 July 2012 to 28 January 2013	Valid	Permit granted on 15 June 2012
Construction Noise Permit	GW-RW0809-12	16 November 2012 to 15 May 2013	Valid	Permit granted on 29 October 2012
Registration of Waste Producer under Waste Disposal (Chemical Waste)(General) Regulation	WPN 5213-432-L1048-05	Throughout the Contract	Valid	Granted on 19 April 2011 Renewed on 14 March 2012
Marine Dumping Permit	EP/MD/ 12-128	1 April 2012 to 31 July 2012	Expired	Permit granted on 23 March 2012; for dredged sediment requiring Type 1 – Open Sea Disposal. Dumping completed on 31 July 2012.
Wai Kee (Zens) Construction & Transportation Co., Ltd				
Further Environmental Permit	FEP-02/391/2010/A	Throughout the Contract	Valid	Permit granted on 23 March 2012
Construction Noise Permit	GW-RW0215-12	15 April 2012 to 14 October 2012	Expired; new permit granted	Permit granted on 26 March 2012
Construction Noise Permit	GW-RW0790-12	30 October 2012 to 29 April 2013	Valid	Permit granted on 18 October 2012
Marine Dumping Permit	EP/MD/12-142	20 April 2012 to 30 July 2012	Expired; new permit granted	Permit granted on 20 April 2012; for dredged sediment requiring Type 1 – Open Sea Disposal
Marine Dumping Permit	EP/MD/12-141	26 April 2012 to 25 May 2012	Expired; new permit granted	Permit granted on 26 April 2012; for dredged sediment requiring Type 1 – Open Sea Disposal (Dedicated Site) or Type 2 – Confined Marine Disposal

Permit/ Licenses/ Notification	Reference	Validity Period	Status	Remarks
Marine Dumping Permit	EP/MD/13-014	26 May 2012 to 25 June 2012	Expired; new permit granted	Permit granted on 22 May 2012; for dredged sediment requiring Type 1 – Open Sea Disposal (Dedicated Site) or Type 2 – Confined Marine Disposal
Marine Dumping Permit	EP/MD/13-026	10 June 2012 to 31 July 2012	Expired; new permit granted	Permit granted on 7 June 2012; for dredged sediment requiring Type 1 – Open Sea Disposal
Marine Dumping Permit	EP/MD/13-032	26 June 2012 to 25 July 2012	Expired; new permit granted	Permit granted on 21 June 2012; for dredged sediment requiring Type 1 Open Sea Disposal (Dedicated Site) and Type 2 Confined Marine Disposal
Marine Dumping Permit	EP/MD/13-044	31 July 2012 to 31 December 2012	Valid	Permit granted on 20 July 2012; for dredged sediment requiring Type 1 Open Sea Disposal
Marine Dumping Permit	EP/MD/13-045	1 August 2012 to 30 September 2012	Expired	Permit granted on 20 July 2012; for dredged sediment requiring Type 1 Open Sea Disposal
Marine Dumping Permit	EP/MD/13-043	26 July 2012 to 25 August 2012	Expired; new permit granted	Permit granted on 24 July 2012; for dredged sediment requiring Type 1 Open Sea Disposal (Dedicated Site) and Type 2 Confined Marine Disposal
Marine Dumping Permit	EP/MD/13-057	26 August 2012 to 25 September 2012	Expired	Permit granted on 15 August 2012; for dredged sediment requiring Type 1 Open Sea Disposal (Dedicated Site) and Type 2 Confined Marine Disposal
Chemical Waste Producer Registration	5213-432-W3140-02	Throughout the Contract	Valid	Registration granted on 15 June 2012

3 IMPLEMENTATION STATUS ON ENVIRONMENTAL MITIGATION MEASURES

The Contractor has implemented environmental mitigation measures and requirements as stated in the EIA Report, EM&A Manual, EP and FEP. The implementation status of the measures during the reporting period is summarised in the Implementation Schedule of Mitigation Measures (*Annex A*).

Status of required submissions under the EP during the reporting period is presented in *Table 3.1*.

Table 3.1 Status of Required Submission

EP Condition	Submission	Date of Submission to EPD
Condition 1.11	Notification on commencement of construction of the Project	14 January 2011
Condition 2.3	Submission of Updated EM&A Manual	1 March 2011
Condition 2.4	Submission of Updated EM&A Programme	1 March 2011
Condition 3.1	Notification on Management Organization of the Main Construction Company	22 February 2011
Condition 3.4	Submission of Waste Disposal Plan (WDP)	1 March 2011
Condition 3.5	Submission of Waste Management Plan (WMP)	11 April 2011
Condition 3.6	Submission of Silt Curtain Deployment Plan for Jetting Operation	9 August 2012
Condition 5.1	Submission of Baseline Marine Water Quality Monitoring Report (Final)	18 April 2011
	Submission of Updated Baseline Marine Water Quality Monitoring Report	26 July 2012
Condition 5.3	Submission of Quarterly EM&A Summary Report – June to August 2012	5 October 2012
Condition 5.3	Submission of Monthly EM&A Report – September 2012	12 October 2012
Condition 3.6	Submission of intensive water quality monitoring results	19 October 2012

4 EM&A RESULTS

4.1 SITE INSPECTIONS & AUDITS

A monthly joint site inspection was conducted by representatives of the Contractor, the ET, CAPCO and the IEC on 19 October 2012. Locations inspected included the derrick lighter, jetting barge, the Co-located GRS area, the project site office compound, temporary stockpiling area and the project store. There was no non-compliance recorded during the site inspection.

Environmental performance complied with environmental requirements and all necessary mitigation measures were properly implemented. Emission of black smoke from diesel generators was observed on the jetting barge. The contractor was requested to conduct regular maintenance and checking of diesel powered mechanical equipment. Also, the contractor was reminded to fully cover the temporary stockpiles at the co-located GRS area with tarpaulin.

Joint inspections of the first two days of jetting works were also conducted by representatives of the Contractor, the ET, CAPCO and the IEC on 6 and 7 October 2012. The jetting barge was inspected. Environmental performance complied with environmental requirements and all necessary mitigation measures were properly implemented. No non-compliance was recorded during the inspections and no specific observation was identified.

The ET will keep track of the construction activities to confirm compliance of environmental requirements and the proper implementation of all necessary mitigation measures.

4.2 WATER QUALITY MONITORING

Jetting activities for the construction of pipeline from Urmston Road to HKSAR boundary were commenced on 1 October 2012 and completed on 2 October 2012. Jetting works near the shore approach (i.e. from Urmston Road to Black Point) was commenced on 6 October 2012.

Per plan and in accordance with the requirements described in the Updated EM&A Manual, marine water quality impact monitoring was conducted during periods when there were jetting works. Impact monitoring was undertaken three times per week between 2 and 30 October 2012 for jetting activities in Hong Kong waters (see monitoring schedule for the present reporting period in *Annex C*). Monitoring results are presented graphically in *Annex D* and key observations are described below.

In addition, as per the requirements of the Updated EM&A Manual, a two-day intensive water quality monitoring for jetting near BPPS shore approach was

conducted on 6 and 7 October 2012. Details and results of the two-day intensive water quality monitoring are presented in the *Technical Note on 2-day Intensive Monitoring for Jetting near Black Point Power Station Shore Approach* submitted to EPD on 19 October 2012 (1). Action/Limit Level Exceedances in depth-averaged Turbidity were recorded on 6 and 7 October 2012. As explained in the *Technical Note*, the observed exceedances were not considered to be associated with the Project's jetting works.

4.2.1 *Impact Monitoring during Jetting Activities in Hong Kong Waters*

Dissolved oxygen (DO) levels from surface, mid-depth and bottom waters from Impact, Control, Reference and Sensitive Receiver stations were generally similar. DO levels were variable throughout the monitoring period. Low levels of DO levels were occasionally recorded during both mid-ebb and mid-flood tides. Whilst DO levels were relatively low at times, DO levels returned to normal levels shortly which represented natural fluctuation in water quality.

Similar to DO levels, turbidity and SS levels were generally similar at all stations and variable throughout the monitoring period. Elevated levels of turbidity and SS were occasionally recorded during both mid-ebb and mid-flood tides. Such fluctuations were also observed during baseline monitoring and are considered to be sporadic events and characteristic of water quality in this area of Hong Kong. Turbidity and SS levels returned to normal levels shortly.

A total of thirteen monitoring events were undertaken and exceedances were recorded on 13 and 27 October 2012. Marginal exceedances in the Action Level of surface DO were observed on 27 October 2012. It is considered that the observed low DO levels may represent a natural fluctuation in water quality of western waters of Hong Kong.

Exceedances in the Action Level, and occasionally the Limit Levels, of depth-averaged Turbidity and SS level were recorded. As explained above, high level of Turbidity, and occasionally SS, in this area are considered to be sporadic and characteristic of water quality in this area of Hong Kong. In addition, heavy marine traffic (not associated with this Project) at the Urmston Road area may have affected the water quality near the monitoring stations. The observed Turbidity and SS exceedances were not considered to be associated with the Project's jetting works.

The silt curtains were deployed and working properly during jetting operations. Details of the jetting machine and silt curtain deployment plan are presented in *Annex E*. The level of jetting activities was within the working rate described in the EP and approved EIA Report. Following the

(1) ERM (2012) Technical Note on 2-day Intensive Monitoring for Jetting near Black Point Power Station Shore Approach. Submitted to EPD on 19 October 2012.

review of monitoring data and marine works details in accordance with the procedures stipulated in the Event and Action Plan of Updated EM&A Manual, these exceedances were considered to be due to natural variation in water quality characteristic of western Hong Kong waters and were unlikely to be due to the Project's jetting activities.

4.3 WASTE MANAGEMENT

Wastes generated during this reporting period include mainly construction and demolition (C&D) materials (inert public fill and non-inert construction wastes) and sewage. Reference has been made to the Monthly Summary Waste Flow Table prepared by Leighton Contractors (Asia) Limited and Wai Kee (*Annex B*). The quantities of different types of wastes are summarized in *Table 4.1* with reference to relevant handling records for this Project.

Table 4.1 Quantities of Different Wastes Generated during the Reporting Period

	Quantity							
	C&D Materials (inert) [a]	C&D Materials (non-inert) [b]	Chemical Waste [c]	Recyclable Materials [d]	C&D Materials (Inert) Re-used [e]	Sewage [f]	Marine Sediment[g]	
Month / Year							Type I [h]	Type II [i]
October 2012	1,542 tonnes	27 tonnes	0 kg	870 kg	0 tonnes	210 m^3	0 m^3	0 m^3

Notes:
(a) Inert C&D materials include concrete, rubble, earth, boulder, sand, tile, masonry and used bentonite and were disposed of at the Tuen Mun Area 38 Public Fill.
(b) Non-inert C&D materials after segregation were sent to WENT Landfill.
(c) A licensed waste collector has been engaged for the collection of chemical wastes for disposal or recycling at licensed facilities.
(d) Recyclable materials include metals, paper, cardboard, plastics, timber and others.
(e) Inert C&D materials recycled include broken concrete, materials reused in the First Phase Project and materials reused in other Projects.
(f) Sewage generated by toilets with holding tanks was collected and disposed of off-site at Pillar Point Sewage Treatment Works.
(g) Marine sediment generated from dredging activities by the Contractor (Wai Kee and Leighton).
(h) Type I sediments are disposed of at the South Cheung Chau Sea and East Ninepin Sea Sediment Disposal Area
(i) Type II sediments are disposed of at the Mud Pit V of East of Sha Chau Confined Marine Sediment Disposal facility

4.4 MARINE ECOLOGY MONITORING

4.4.1 Marine Mammal Exclusion Zone Monitoring

Daily marine mammal exclusion zone monitoring was undertaken during the period of jetting activities in Hong Kong waters. No sighting of the Indo-Pacific humpback dolphin *Sousa chinensis* were recorded in October 2012 during the exclusion zone monitoring.

4.4.2 *Additional Marine Mammal Monitoring*

Per plan, additional marine mammal monitoring during the construction phase of the First Phase Project was conducted once per month to record information on dolphin distribution and abundance in the Project areas. The sixth monthly construction phase marine mammal monitoring survey was conducted on 15 October 2012. The survey was conducted as per the methodology described in the Updated EM&A Manual for the First Phase Project.

A total of 27.8 km of survey effort was collected from the sixth monthly line-transect vessel survey for the construction phase monitoring (*Figure 4.1*). No sighting of the Indo-Pacific humpback dolphin *Sousa chinensis* was observed in the present survey.

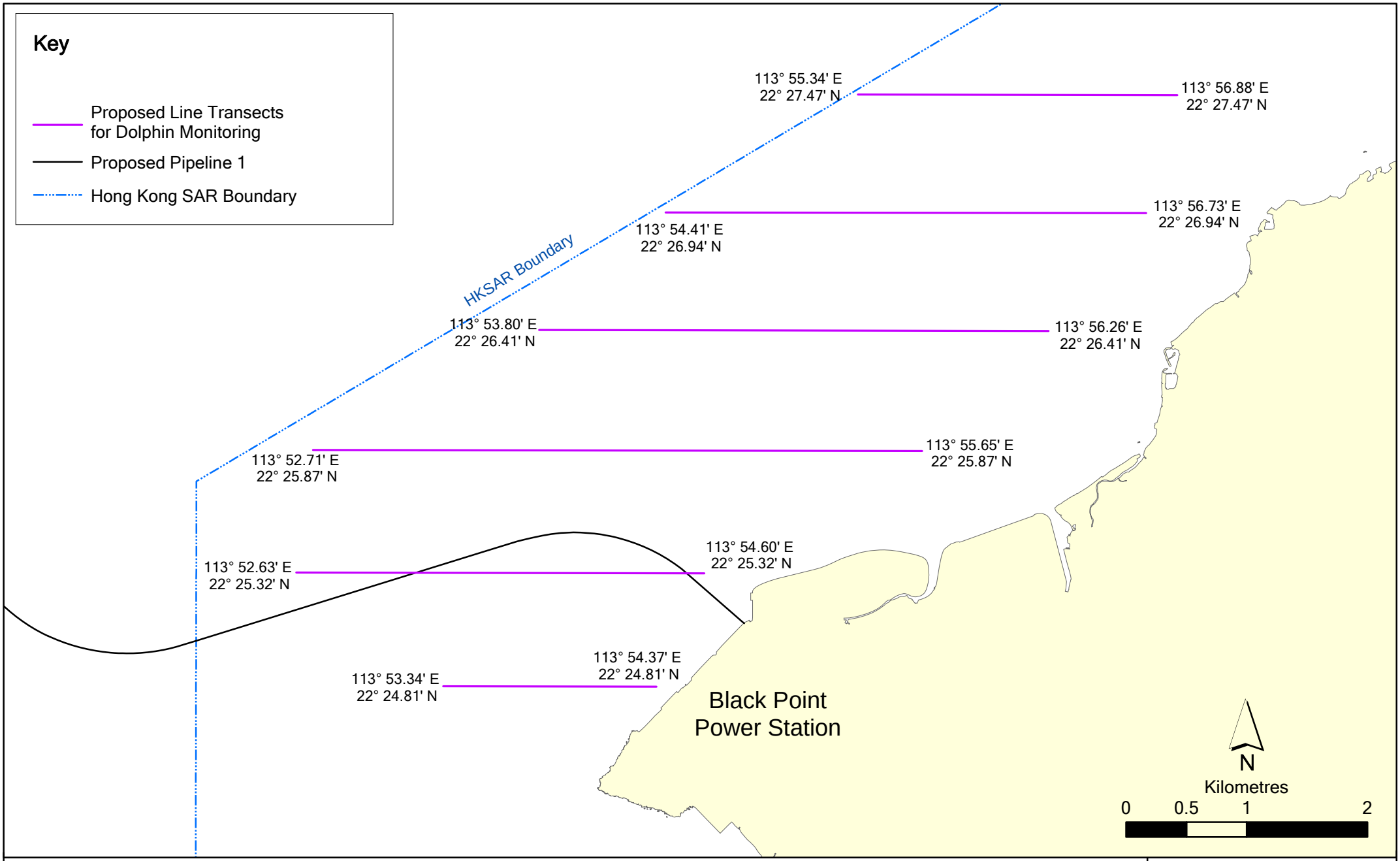

Figure 4.1

Line Transects for Additional Marine Mammal Monitoring

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5 ENVIRONMENTAL NON-CONFORMANCE

5.1 SUMMARY OF ENVIRONMENTAL NON-COMPLIANCE

No non-compliance of EIA/ EM&A/ EP/ legislative requirements was recorded during the reporting period.

5.2 SUMMARY OF ENVIRONMENTAL COMPLAINT

No complaint was received during the reporting period.

5.3 SUMMARY OF ENVIRONMENTAL SUMMON AND SUCCESSFUL PROSECUTION

No summons/ prosecution was received during the reporting period.

6 UPCOMING WORKS FOR THE NEXT REPORTING PERIOD

6.1 CONSTRUCTION ACTIVITIES FOR THE COMING MONTH

Works to be undertaken for the coming reporting period are summarized in *Table 6.1.*

Table 6.1 Construction Works to Be Undertaken in the Coming Month

Work to be taken
• Continue construction works in the co-located GRS area
• Continue hydro-testing for Gas Header
• Continue rock dumping for gas pipeline installation

Potential environmental impacts arising from the above construction activities are mainly associated with dust, noise, site runoff, waste management and marine water quality.

6.2 MONITORING SCHEDULE FOR THE COMING MONTHS

Impact monitoring for marine water quality is scheduled for the next reporting period (*Annex C*). The monitoring programme has been reviewed and was considered as adequate to cater for the nature of works in progress.

7 CONCLUSIONS

This Twentieth Monthly EM&A Report presents the findings of the EM&A activities undertaken during the period from 1 to 31 October 2012, in accordance with EM&A Manual and the requirements of EP-391/2010/A, FEP-01/391/2010/A and FEP-02/391/2010/A.

Jetting activities were undertaken during this reporting period and construction phase water quality and marine mammal monitoring were conducted in accordance with the requirements described in the Updated EM&A Manual. Exceedances of Action and Limit Level for water quality were recorded in four monitoring events during jetting works in Hong Kong waters. The review of monitoring data suggested that marine jetting activities have proceeded in an environmentally acceptable manner.

A monthly joint environmental site inspection was conducted in the reporting period. It confirmed that the environmental mitigation measures recommended in the EIA Report were properly implemented by the Contractor.

No non-compliance event was recorded during the reporting period.

No complaint and summons/prosecution was received during the reporting period.

The ET will keep track on the construction works to confirm compliance of environmental requirements and the proper implementation of all necessary mitigation measures.

Annex A

Implementation Schedule of Mitigation & Precautionary Measures

Annex A-1 Implementation Schedule for Environmental Protection Measures for the Black Point Gas Supply Project (First Phase)

EIA Ref.	Environmental Protection Measures	Location/Duration of Measures/Timing of Completion of Measures	Implementation Agent	Relevant Legislation & Guidelines	Status
1. Air Quality Measures					
S4.8	Dust control measures stipulated in the *Air Pollution Control (Construction Dust) Regulation* will be implemented during the construction of the GRS to control the potential fugitive dust emissions.	Land Site / During Construction	Contractor(s)	Air Pollution Control (Construction Dust) Regulation	✓
S4.8	Site practices such as regular maintenance and checking of the diesel powered mechanical equipment will be adopted to avoid any black smoke emissions and to minimize gaseous emissions.	Land Site / During Construction	Contractor(s)	-	<>
S4.10	EM&A in the form of site inspection and audit of dust generating activities.	Land Site / During Construction	Environmental Team (ET) & Independent Environmental Checker (IEC)	Environmental Impact Assessment Ordinance	✓
S4.10	A commissioning test for heaters will be conducted to ensure the stack design, heater operation and the emission information adopted in the assessment is maintained.	Land Site / During Construction/ commissioning	CAPCO	-	N/A. Test to be conducted prior to commissioning.
S4.6, EP4.1	The GRS shall be designed and operated in accordance with the following parameters: • The maximum number of gas heaters shall not be more than seven, and no more than six gas heaters shall be operated simultaneously. The total amount of NOx and CO emissions emitted from the heaters in operation shall not be more than 8.22kg and 5.14kg per hour respectively; • The stack height shall not be less than 15m above ground; • The exhaust gas velocity of the gas heaters shall not be less than 10ms^{-1} under full load operation; and • The exhaust gas temperature of the gas heaters shall not be less than 280 °C under full load operation.	Land Site / During Design and Operation	CAPCO	-	N/A. To be checked during detailed engineering stage.

EIA Ref.	Environmental Protection Measures	Location/Duration of Measures/Timing of Completion of Measures	Implementation Agent	Relevant Legislation & Guidelines	Status
2. Noise					
S5.7	EM&A in the form of site inspection and audit of construction activities.	Land Site / During Construction	Environmental Team (ET) & Independent Environmental Checker (IEC)	Environmental Impact Assessment Ordinance	✓
3. Water Quality					
S6 Annex 6A	Dredging/ jetting plants will be required to comply with the rates modelled in the EIA (*S6 Annex 6A* and *Annex 14A-2*) for the various activities assessed.	Marine works areas / During Construction	Contractor(s) and ET	-	✓
S6.9	Dredged marine mud will be disposed of in a gazetted marine disposal area in accordance with the *Dumping at Sea Ordinance (DASO)* permit conditions.	Dredged areas/ During Construction	Contractor(s)	Dumping at Sea Ordinance	N/A. No dredged marine mud during the reporting period
S6.9	Disposal vessels will be fitted with tight bottom seals in order to prevent leakage of material during transport.	Dredged areas/ During Construction	Contractor(s)	Dumping at Sea Ordinance	✓
S6.9	Barges will be filled to a level, which ensures that material does not spill over during transport to the disposal site and that adequate freeboard is maintained to ensure that the decks are not washed by wave action.	Dredged areas/ During Construction	Contractor(s)	-	✓
S6.9	After dredging, any excess materials will be cleaned from decks and exposed fittings before the vessel is moved from the dredging area.	Dredged areas/ During Construction	Contractor(s)	Dumping at Sea Ordinance	N/A. No dredging during the reporting period
S6.9	The contractor(s) will confirm that the works cause no visible foam, oil, grease, litter or other objectionable matter to be present in the water within and adjacent to the dredging site.	Dredged areas/ During Construction	Contractor(s)	-	✓
S6.9	Monitoring and automation systems will be used to improve the crew's information regarding the various dredging parameters to improve dredging accuracy and efficiency.	Dredged areas/ During Construction	Contractor(s)	-	✓
S6.9	Control and monitoring systems will be used to alert the crew to leaks or any other potential risks such as chemicals and oils.	Dredged areas/ During Construction	Contractor(s)	-	✓

EIA Ref.	Environmental Protection Measures	Location/Duration of Measures/Timing of Completion of Measures	Implementation Agent	Relevant Legislation & Guidelines	Status
S6.9	When the dredged material has been unloaded at the disposal areas, any material that has accumulated on the deck or other exposed parts of the vessel will be removed and placed in the hold or a hopper. Under no circumstances will decks be washed clean in a way that permits material to be released overboard.	Dredged areas/ During Construction	Contractor(s)	Dumping at Sea Ordinance	N/A. No dredged material being disposed during the reporting period
S6.9	Dredgers will maintain adequate clearance between vessels and the seabed at all states of the tide and reduce operations speed to ensure that excessive turbidity is not generated by turbulence from vessel movement or propeller wash.	Dredged areas/ During Construction	Contractor(s)	-	✓
S6.9	Mitigation measures to be implemented during submarine pipeline installation activities are presented in *Annex 14A-2*.	Marine works areas / During Construction	Contractor(s)	-	✓
S6.9	Channels, earth bunds or sand bag barriers will be provided on site to direct stormwater to silt removal facilities. The design of silt removal facilities (e.g. silt traps or sedimentation facilities) will make reference to the guidelines in *Appendix A1* of *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.	Land Site / During Construction	Contractor(s)	ProPECC PN 1/94 TM standard under the WPCO	✓
S6.9	Earthworks to form the final surfaces will be followed up with surface protection and drainage works to prevent erosion caused by rainstorms.	Land Site / During Construction	Contractor(s)	-	N/A
S6.9	Appropriate surface drainage will be designed and provided where necessary.	Land Site / During Construction	Contractor(s)	-	✓
S6.9	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*.	Land Site / During Construction	Contractor(s)	ProPECC PN 1/94	N/A
S6.9	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.	Land Site / During Construction	Contractor(s)	-	N/A

EIA Ref.	Environmental Protection Measures	Location/Duration of Measures/Timing of Completion of Measures	Implementation Agent	Relevant Legislation & Guidelines	Status
S6.9	Temporary and permanent drainage pipes and culverts provided to facilitate runoff discharge will be adequately designed for the controlled release of storm flows.	Land Site / During Construction	Contractor(s)	-	✓
S6.9	The temporary diverted drainage will be reinstated to the original condition when the construction work has finished or when the temporary diversion is no longer required.	Land Site / During Construction	Contractor(s)	-	N/A
S6.9	During the early stages of work, portable chemical toilets will be used and the effluent will either be shipped offsite or be disposed of at sewage treatment work (STW) at BPPS.	All facilities / During Construction	Contractor(s)	-	✓. Toilets with holding tanks have been provided. Portable chemical toilets will be provided
S6.9	Debris and refuse generated on-site will be collected, handled and disposed of properly to avoid entering the nearby WSRs. Stockpiles of cement and other construction materials will be kept covered when not being used.	All facilities / During Construction	Contractor(s)	-	✓
S6.9	Oil leakage or spillage will be contained and clean up immediately. Waste oil will be collected and stored for recycling or disposal, in accordance with the *Waste Disposal Ordinance*.	All facilities / During Construction	Contractor(s)	Waste Disposal Ordinance	✓
S6.10	Water quality monitoring shall be undertaken for suspended solids, salinity, turbidity, and dissolved oxygen. If exceedances occur due to dredging/ jetting activities, event and action plan shall be adopted.	Designated monitoring stations as defined in EM&A Manual / Construction period for dredging/ jetting works	ET	Environmental Impact Assessment Ordinance	✓
S6.9	The surface runoff from the GRS should be connected to a storm water channel via a grit and oil interceptor. These grit and oil interceptors will be regularly cleaned and maintained in good working condition. Trapped oil and grease should be disposed of periodically by waste collection contractor using a suitable liquid waste collection vehicle	GRS/ During Operation	CAPCO	-	✓
S6.9	Any oil leakage or spillage will be contained and cleaned up immediately.	GRS/ During Operation	CAPCO	-	✓

EIA Ref.	Environmental Protection Measures	Location/Duration of Measures/Timing of Completion of Measures	Implementation Agent	Relevant Legislation & Guidelines	Status
S6.9	Waste oil will be collected and stored for recycling or disposal in accordance with the *Waste Disposal Ordinance*.	GRS/ During Operation	CAPCO	Waste Disposal Ordinance	✓
4. Waste Management					
S7.5	The Contractor shall identify a coordinator/ approved personnel for implementing standard site practices and managing wastes. The waste coordinator shall implement the Waste Management Plan which specifies procedures such as a recording system to facilitate tracking of loads and protocols for the maintenance of records of the quantities of wastes generated, recycled and disposed. Responsibilities also include arrangements for collection and effective disposal of wastes to appropriate facilities.	Contract mobilisation / During construction	Contractor(s)	-	✓
S7.5	The Contractor shall apply for and obtain the appropriate licenses for the disposal of public fill, chemical waste and effluent discharges. A trip ticket system (TTS) for the removal of C&D materials from the site to the designated disposal facility will be implemented.	Contract mobilisation / During construction	Contractor(s)	Waste Disposal (Chemical Waste) (General) Regulation Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes DEVB TC(W) No. 6/2010, Trip-ticket System for Disposal of Construction and Demolition Material Water Pollution Control Ordinance	✓

EIA Ref.	Environmental Protection Measures	Location/Duration of Measures/Timing of Completion of Measures	Implementation Agent	Relevant Legislation & Guidelines	Status
S7.5	A 'chit' ticket system (TTS) for the disposal of C&D materials will be implemented.	Contract mobilisation / During construction	Contractor(s)	Waste Disposal (Charges for Disposal of Construction Waste) Regulation	✓
S7.5	No waste shall be burnt on site. Wastes shall be collected by licensed waste haulier and be disposed of at licence sites.	Land site/ During construction	Contractor(s)	Air Pollution Control Ordinance	✓
S7.5	Rock and soil may be excavated from site formation works and that will be reused as fill material for the Project as far as practicable.	Land site / During construction	Contractor(s)	WBTC No. 2/93, Public Dumps	✓
S7.5	Material shall be reused on site as far as practicable, including formwork plywood, topsoil and excavated material.	Land site / During construction	Contractor(s)	WBTC 32/92, The Use of Tropical Hard Wood on Construction Site	✓
S7.5	C&D materials will be sorted on site into inert waste (public fill) and non-inert waste (construction waste). Public fill will be disposed of at public fill reception facilities (e.g. Tuen Mun Area 38 or other locations as agreed with CEDD). Construction waste, such as timber, paper, plastics and general refuse, cannot be reused and need to be disposed of at the West New Territories (WENT) Landfill.	Land site / During construction	Contractor(s)	-	✓
S7.5	The site and surroundings shall be kept tidy and litter free. Waste storage area shall be properly cleaned and shall not cause windblown litter and dust nuisance.	All areas / During construction	Contractor(s)	WBTC Nos. 6/2002 and 6/2002A, Enhanced Specification for Site Cleanliness and Tidiness. Works Bureau, Hong Kong SAR Government	✓
S7.5	Stockpiled material shall avoid vegetated areas.	Land site / During construction	Contractor(s)		✓

EIA Ref.	Environmental Protection Measures	Location/Duration of Measures/Timing of Completion of Measures	Implementation Agent	Relevant Legislation & Guidelines	Status
S7.5	Stockpiles shall be covered by tarpaulins and/or watered as needed.	Land site / During construction, particularly dry season	Contractor(s)	Air Pollution Control (Construction Dust) Regulation	<>
S7.5	Storage of material on site shall be kept to a minimum. Construction materials shall be planned and stocked carefully to reduce amount of waste generated and avoid unnecessary generation of waste.	All areas / During construction	Contractor(s)	-	✓
S7.5	Use of reusable non-timber formwork to reduce the amount of C&D materials	All areas / During construction	Contractor(s)	Works Branch Technical Circular (WBTC) No. 32/92, The Use of Tropical Hard Wood on Construction Site	✓
S7.5	Prior to disposal of construction waste, wood, steel and other metals will be separated to the extent practical, for re-use and/or recycling to reduce the quantity of waste to be disposed of to landfill	All areas / During construction	Contractor(s)	-	✓
S7.5	Wheel washing facilities shall be used by all trucks leaving the site to prevent the transfer of mud onto public roads.	Site entrances and exits / During construction	Contractor(s)	Air Pollution Control (Construction Dust) Regulation	✓
S7.5	Any unused chemicals and those with remaining functional capacity shall be recycled to the extent practical.	Land site / During construction	Contractor(s)	-	✓
S7.5	Temporary storage areas for general refuse shall be enclosed or contained to avoid environmental impacts.	All areas / During construction	Contractor(s)	WBTC Nos. 6/2002 and 6/2002A, Enhanced Specification for Site Cleanliness and Tidiness.	✓

EIA Ref.	Environmental Protection Measures	Location/Duration of Measures/Timing of Completion of Measures	Implementation Agent	Relevant Legislation & Guidelines	Status
S7.5	Sufficient dustbins shall be provided for storage of waste. Wastes shall be timely cleared and shall be disposed of to the nearest licensed facility.	All areas / During construction	Contractor(s)	WBTC Nos. 6/2002 and 6/2002A, Enhanced Specification for Site Cleanliness and Tidiness.	✓
S7.5	Waste oils, chemicals or solvents shall not be disposed of to drain. Drainage systems, sumps and oil interceptors shall be cleaned and maintained regularly.	All facilities / During construction	Contractor(s)	-	✓
S7.5	Standard site practice shall be implemented to avoid waste generation and promote waste minimisation.	All facilities / During construction	Contractor(s)	-	✓
S7.5	Waste materials such as paper, metal, timber and waste oil shall be recycled as far as practicable. Different types of waste shall be segregated and stored of in different containers, skips or stockpiles to enhance reuse or recycling of material and their proper disposal. Recycling bins will be provided at strategic locations to facilitate recovery of aluminium can and waste paper from the site.	Land Site / During construction	Contractor(s)	ETWBTC No. 33/2002, Management of Construction and Demolition Material Including Rock	✓
S7.5	C&D materials will be wetted as quickly as possible to the extent practice after filling to reduce the potential dust and water quality impacts of site formation works	All facilities / During construction	Contractor(s)	-	✓
S7.5	Dredged marine mud shall be disposed of in marine disposal sites designated by the Marine Fill Committee (MFC) and under the requirements of the *Dumping at Seas Ordinance*.	Dredging / During construction	Contractor(s)	Dumping at Sea Ordinance	N/A. No disposal of dredged marine mud during the reporting period
S7.5	Waste containers shall be in good condition and fitted with lids or covers to prevent waste from escaping or the ingress of water. Waste containers shall be in a secure area on hardstanding.	All facilities / During construction	Contractor(s)	WBTC Nos. 6/2002 and 6/2002A, Enhanced Specification for Site Cleanliness and Tidiness.	✓

EIA Ref.	Environmental Protection Measures	Location/Duration of Measures/Timing of Completion of Measures	Implementation Agent	Relevant Legislation & Guidelines	Status
S7.5	Proper storage and site practices shall be adopted to reduce the potential for damage or contamination of construction materials.	All facilities / During construction	Contractor(s)	-	✓
S7.5	Plan and stock construction materials carefully to reduce amount of waste generated and avoid unnecessary generation of waste	All facilities / During construction	Contractor(s)	-	✓
S7.5	Emergency equipment to deal with any spillage or fire shall be kept on site.	All facilities / During construction	Contractor(s)	Waste Disposal (Chemical Waste) (General) Regulation Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes	✓
S7.5	Suitable chemical waste storage areas shall be formed at the works site for temporary storage pending collection. Chemical wastes shall be separated for special handling and shall be disposed of via a licensed waste collector at appropriate licensed treatment facility, e.g. the Chemical Waste Treatment Centre at Tsing Yi.	Land site/ Chemical Waste Treatment Centre at Tsing Yi/ During construction	Contractor(s)	Waste Disposal (Chemical Waste) (General) Regulation Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes	✓
S7.5	Containers used for storage of chemical waste shall be: • Maintained in good condition and clearly labelled in both English and Chinese; • Suitable for the substance they are holding, resistant to corrosion, and securely closed; and • Capacity of less than 450 L unless the specifications have been approved by the EPD.	All facilities / During construction	Contractor(s)	Waste Disposal (Chemical Waste) (General) Regulation Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes	✓

EIA Ref.	Environmental Protection Measures	Location/Duration of Measures/Timing of Completion of Measures	Implementation Agent	Relevant Legislation & Guidelines	Status
S7.5	Storage areas for chemical waste shall: • Be clearly labelled and used solely for the storage of chemical waste; • Be enclosed on at least 3 sides; • Have adequate ventilation; • Be arranged so that incompatible materials are appropriately separated • 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; and • Be covered to prevent rainfall from entering	All facilities / During construction	Contractor(s)	Waste Disposal (Chemical Waste) (General) Regulation Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes	✓
S7.5	Leaking containers shall be contained and removed from site as soon as is reasonably practicable.	All facilities / During construction	Contractor(s)	Waste Disposal (Chemical Waste) (General) Regulation Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes	✓
S7.5	Training shall be provided to site personnel in proper waste management and chemical handling procedures, the concepts of site cleanliness and appropriate waste management procedures, including waste reduction, reuse and recycling.	All facilities / During construction	Contractor(s)	-	✓
S7.5	EM&A of waste handling, storage, transportation, disposal procedures and documentation through the site inspection and audit programme shall be undertaken. Waste flow tables (WFT) will be used as a recording system to document the amount of waste generated, recycled and disposed of (including the disposal sites).	All facilities / During construction	ET and IEC	-	✓

EIA Ref.	Environmental Protection Measures	Location/Duration of Measures/Timing of Completion of Measures	Implementation Agent	Relevant Legislation & Guidelines	Status
S7.5	Appropriate measures to reduce windblown litter and dust transportation of waste by either covering trucks or by transporting wastes in enclosed containers.	All facilities / During construction	Contractor(s)	-	✓
5. Marine Ecology (Marine Mammals)					
S8.8	The vessel operators will be required to control and manage all effluent from vessels	Marine works area / During construction	Contractor(s) and ET	-	✓
S8.8	A policy of no dumping of rubbish, food, oil, or chemicals will be strictly enforced. This will also be covered in the contractor briefings	Marine works area / During construction	Contractor(s) and ET	-	✓
S8.8	All vessel operators working on the Project construction phase will 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 by the contractors, they will be required to slow to 10 knots when passing through a high density dolphin area (Sha Chau and Lung Kwu Chau)	Marine works area / During construction	Contractor(s) and ET	-	✓
S8.8	The vessel operators engaged during the construction phase will be required to use predefined and regular routes, as these will become known to dolphins using these waters	Marine works area / During construction	Contractor(s) and ET	-	✓
S8.8	A marine mammal exclusion zone within a radius of 250 m from dredgers/ jetting machine will be implemented during the construction phase. Qualified observer(s) will scan the 250 m-exclusion zone for at least 30 minutes prior to the start of dredging. If cetaceans are observed in the exclusion zone, dredging/ jetting will be delayed until they have left the area. As per previous practice in Hong Kong, should cetaceans move into the works area during dredging/ jetting, it is considered that cetaceans will have acclimatised themselves to the works therefore cessation of dredging is not required	Works areas along the pipeline route / During Dredging/ Jetting for the Gas Pipeline Installation	Contractor(s) and ET	-	✓

EIA Ref.	Environmental Protection Measures	Location/Duration of Measures/Timing of Completion of Measures	Implementation Agent	Relevant Legislation & Guidelines	Status
S8.8	Except for the pipeline section along Urmston Road, dredging/ jetting works shall be restricted to a daily maximum of 12 hours with daylight operations. Because of marine traffic constraints, dredgers/ jetting machine may need to operate 24 hours on the pipeline section which crosses the Urmston Road channel off Black Point enabling completion in the shortest possible time	Works areas along the pipeline route / During Dredging/ Jetting for the Gas Pipeline Installation	Contractor(s) and ET	-	✓
S8.8	Monitoring will be conducted for the distribution and abundance of dolphins during the construction and post-construction phase of the project. Three months of pre-construction dolphin monitoring will also be conducted. The protocols for this will be agreed with AFCD in advance.	Marine works areas / Pre-construction, during construction and post-construction	CAPCO	-	✓
6. Fisheries					
S9.10	Geophysical survey will be conducted during the pre-construction and post-construction of pipeline works to confirm the seabed would be reinstated to its original level.	Pre-construction and Post-construction after pipeline works	ET	-	✓. Pre-construction phase geophysical survey completed.
7. Landscape & Visual					
S10.5.11	Site hoardings to be compatible with surrounding landscape.	Land site / During Construction	Contractor(s)	-	✓
S10.5.11	The tree requiring removal is to be compensated in accordance with relevant government guidelines	Land site / During Construction	Contractor(s)	-	<>
S10.6.13	The colours of the proposed GRS should be selected to complement the existing industrial surroundings.	Land site / Pre-Construction (Detail Design)	Contractor(s)	-	N/A. To be checked.
8. Cultural Heritage No mitigation measures were specified in the EIA report as no sites of terrestrial or marine archaeological potential are located in the Project Area.					
9. Hazard to Life					

EIA Ref.	Environmental Protection Measures	Location/Duration of Measures/Timing of Completion of Measures	Implementation Agent	Relevant Legislation & Guidelines	Status
EP3.12	The first major piece of equipment in the GRS for connecting the offshore pipeline shall be an Emergency Shutdown (ESD) valve, which can be closed in order to isolate the GRS from the source of gas in the event of an emergency	Land site / Pre-Construction (Detail Design)	CAPCO	-	N/A. To be checked during detailed engineering design.

Remark:
✓ Compliance of Mitigation Measures
<> Compliance of Mitigation but need improvement
x Non-compliance of Mitigation Measures
▲ Non-compliance of Mitigation Measures but rectified by Leighton Contractors (Asia) Limited
Δ Deficiency of Mitigation Measures but rectified by Leighton Contractors (Asia) Limited
N/A Not Applicable in Reporting Period

Annex A-2 Summary of Mitigation Measures during the Dredging/ Jetting Activities for this Project

Marine Work Location (Zone)	Marine Work & Plant Type	No. of Plant	Specific Mitigation Measures	Status
Gas Pipeline – Shore Approach (KP 4.89 – KP 4.78)	Dredging by Closed Grab Dredger	1	Grab dredging speed shall be no more than 57 m per day or 4.75 m per hour, whichever is less. Silt curtain(s) will be installed during grab dredging operations along this pipeline section *.	N/A. No dredging during the reporting period
Gas Pipeline – Black Point to Urmston Road (KP 4.78 – KP 2.52)	Trenching by Jetting Machine	1	Jetting speed shall be no more than 360 m per day or 30 m per hour, whichever is less. Silt curtain(s) will be installed along the marine works areas during jetting operations for the installation of this pipeline section *. The extent of silt curtain(s) installation will be determined based on site condition (e.g. bathymetry of the works area) and navigation safety considerations. Details of the design and implementation of the silt curtain(s) will be developed before construction and verified by the Independent Environmental Checker (IEC) and agreed with EPD. Should non-compliance occur at the respective impact station during water quality monitoring, the use of additional mitigation measures will be examined by the ET and the IEC, discussed with the Contractor, EPD and CAPCO.	✓
Gas Pipeline – across Urmston Road (KP 2.52 – KP 0.73)	Dredging by Closed Grab Dredger	1	Grab dredging speed shall be no more than 57 m per day or 2.5 m per hour, whichever is less. Should non-compliance occur at the respective impact station during water quality monitoring, the use of additional mitigation measures, such as cage-type silt curtain, will be examined by the ET and the IEC, discussed with the Contractor, EPD and CAPCO *.	N/A. No dredging during the reporting period
Gas Pipeline – from Urmston Road to HKSAR boundary (KP 0.73 – KP 0)	Trenching by Jetting Machine	1	Jetting speed shall be no more than 360 m per day or 30 m per hour, whichever is less. Should non-compliance occur at the respective impact station during water quality monitoring, the use of additional mitigation measures will be examined by the ET and the IEC, discussed with the Contractor, EPD and CAPCO *.	✓

* Details of silt curtain installation shall be submitted to the IEC for verification prior to the commencement of dredging/jetting works.

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

Annex B

Waste Flow Table

Leighton Contractors (Asia) Ltd

CONTRACT NO. PO4500641608 BLACK POINT GAS SUPPLY PROJECT - M2554

Waste Flow Table Year: 2012

Month	Actual Quantities of Inert Construction Waste Reused/Recycled			Actual Quantities of Construction Waste Recycled						Actual Quantities of Disposed Material				
	Broken Concrete[1] Recycled	Re-used in Project	Re-used in Other Projects[2]	Metals Recycled	Paper Recycled	Cardboard Packaging Recycled	Plastic[3] Recycled	Timber	Others[4]	Chemical Waste[5] to Licensed Facilities		Inert Construction Waste[6] to Public Fill	Type 1 Sea Mud to Open Sea Disposal Site	Construction Waste to Landfill
										Liquid	Solid			
	(tonnes)	(tonnes)	(tonnes)	(kg)	(kg)	(kg)	(kg)	(kg)	(nos.)	(litres)	(kg)	(tonnes)	(cub. m)	(tonnes)
Jan	0	0	0	0	0	0	0	0	0	0	0	4974.25	0	11.55
Feb	0	0	0	10	780	0	0	0	0	0	250	2786.54	0	10
Mar	0	0	0	6445	625	0	0	0	0	0	0	3574.56	0	6.69
Q1 total	0	0	0	6455	1405	0	0	0	0	0	250	11335	0	28.24
Apr	0	0	0	15	775	0	0	0	0	0	0	833.48	0	33.92
May	0	0	0	7080	510	300	50	0	162	0	0	113.48	0	11.47
Jun	0	400	0	25	590	540	5	0	19	0	0	1910.25	0	9.83
Q2 total	0	400	0	7120	1875	840	55	0	181	0	0	2857	0	55.22
Jul	0	0	892	48	460	590	22	900	0	0	0	858.93	432	40.03
Aug	0	0	0	4800	0	0	0	0	0	0	0	862.33	0	70.01
Sep	0	0	0	13065	394	196	5	0	0	0	0	206.59	0	20.13
Q3 total	0	0	892	17913	854	786	27	900	0	0	0	1928	432	130.17
Oct	0	0	0	20	279	566	5	0	0	0	0	1542.45	0	26.52
Nov														
Dec														
Q4 total	0	0	0	20	279	566	5	0	0	0	0	1542	0	26.52
Grand total	**0**	**400**	**892**	**31508**	**4413**	**2192**	**87**	**900**	**181**	**0**	**250**	**17662.86**	**432.00**	**240.15**

Note / Definition:

1. Broken concrete for recycling into aggregates (eg Tuen Mun Area 38).
2. Other projects include third-parties (eg quarries).
3. Plastic refers to plastic bottles/containers, plastic sheets/foam from packaging material.
4. Examples of other waste recycled may include tyres and computer equipment
5. Chemical waste is split into 2 components: liquid waste (eg spent lubricating oil) and solid waste (eg spent batteries).
6. Inert construction waste is also known as public fill. It includes, for example, concrete, rubble, earth, boulder, sand, tile, masonry and used bentonite.

Wai Kee (Zens) Construction & Transportation Co., Ltd.
Black Point Gas Supply Project - The Second West-East Gas Pipeline Project-Hong Kong

Monthly Summary Waste Flow Table (October 2012)

Month	Actual Quantities of Inert C&D Materials Generated Monthly						Actual Quantities of C&D Wastes Generated Monthly						
	Total Quantity Generated	Hard Rock and Large Borken Concrete	Reused in the Contract	Reused in other Projects	Disposal as Public Fill	Imported Fill	Metals	Paper / Cardboard Packaging	Plastics (3)	Chemical Waste	Marine Sediment		
	[in '000m^3]	[in '000m^3]	[in '000m^3]	[in '000m^3]	[in '000m^3]	[in '000m^3]	[in '000kg]	[in '000kg]	[in '000kg]	[in '000kg]	S. Cheung Chau/ m3 (Type I)	E. Sha Chau/ m3 (Type II)	E. Ninepin/ m3 (Type I)
JAN													
FEB													
MAR													
APR													
MAY													
JUNE	0	0	0	0	0	0	0	0	0	0	8,600	13,650	0
SUB-TOTAL	0	0	0	0	0	0	0	0	0	0	8,600	13,650	0
JULY	0	0	0	0	0	0	0	0	0	0	14,650	67,350	450
AUG	0	0	0	0	0	0	0	0	0	0	0	3,250	1,150
SEPT	0	0	0	0	0	0	0	0	0	0	0	0	0
OCT	0	0	0	0	0	0	0	0	0	0	0	0	0
NOV													
DEC													
TOTAL	0	0	0	0	0	0	0	0	0	0	23,250	84,250	1,600

Forecast of Total Quantities of C&D Materials to be Generated from the Contract												
Total Quantity Generated	Hard Rock and Large Broken Concrete	Reused in the Contract	Reused in other Projects	Disposal as Public Fill	Imported Fill	Metals	Paper / Cardboard Packaging	Plastics (3)	Chemical Waste	Marine Sediment		
[in '000m^3]	[in '000m^3]	[in '000m^3]	[in '000m^3]	[in '000m^3]	[in '000m^3]	[in '000kg]	[in '000kg]	[in '000kg]	[in '000kg]	S. Cheung Chau/ m3 (Type I)	E. Sha chau/m3 (Type II)	E. Ninepin/ m3 (Type I)
0	0	0	0	0	0	0	0	0	0	26,000	145,600	46,800

Notes :
(1) The performance targets are given in PS Clause 6(14)
(2) The waste flow table shall also include C&D materials that are specified in the Contract to be imported for use at the site
(3) Plastics refer to plastic bottles / containers, plastic sheets / foam from packaging material
(4) The contractor shall also submit the latest forecast of the total amount of C&D materials expected to be generated from the Works, together with a breakdown of the nature where the total amont of C&D materials expected to be generated from the Works is equal to or exceeding 50000m3

Annex C

Schedules for Water Quality Impact Monitoring and Additional Marine Mammal Monitoring

Black Point Gas Supply Project (First Phase)
Water Quality Impact Monitoring Schedule - October 2012

Impact-HK Monitoring: Water Quality Monitoring for Dredging and Jetting Activities in Hong Kong Waters. For monitoring stations please refer to Figure 1

Reference Tidal Station: Lok On Pai (Source: HK Observatory Department)

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
	Public Holiday 01-Oct	Public Holiday 02-Oct	03-Oct	04-Oct	05-Oct	06-Oct
		Mid-Flood 08:51 Mid-Ebb 14:00 *Impact-HK Monitoring*		Mid-Flood 09:30 Mid-Ebb 15:01 *Impact-HK Monitoring*		Mid-Flood 11:11 Mid-Ebb 16:10 *2-day intensive WQM for jetting* *Impact-HK Monitoring*
07-Oct	08-Oct	09-Oct	10-Oct	11-Oct	12-Oct	13-Oct
2-day intensive WQM for jetting		Mid-Flood 15:00 Mid-Ebb 06:48 *Impact-HK Monitoring*		Mid-Flood 16:36 Mid-Ebb 09:26 *Impact-HK Monitoring*		Mid-Flood 17:30 Mid-Ebb 11:10 *Impact-HK Monitoring*
14-Oct	15-Oct	16-Oct	17-Oct	18-Oct	19-Oct	20-Oct
		Mid-Flood 19:03 Mid-Ebb 13:19 *Impact-HK Monitoring*		Mid-Flood 09:11 Mid-Ebb 14:51 *Impact-HK Monitoring*		Mid-Flood 11:16 Mid-Ebb 16:34 *Impact-HK Monitoring*
21-Oct	22-Oct	Public Holiday 23-Oct	24-Oct	25-Oct	26-Oct	27-Oct
		Mid-Flood 15:06 Mid-Ebb 07:14 *Impact-HK Monitoring*		Mid-Flood 16:34 Mid-Ebb 09:38 *Impact-HK Monitoring*		Mid-Flood 17:30 Mid-Ebb 11:16 *Impact-HK Monitoring*
28-Oct	29-Oct	30-Oct	31-Oct			
		Mid-Flood 18:41 Mid-Ebb 13:04 *Impact-HK Monitoring*				

The schedule is subject to agreement from the EPD on the monitoring times. The schedule will be revised after reviewing the progress of the construction works or due to adverse (safety, weather etc) conditions.

Black Point Gas Supply Project (First Phase)
Schedule for Additional Marine Mammal Monitoring (Construction Phase) - October 2012

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
	Public Holiday 01-Oct	Public Holiday 02-Oct	03-Oct	04-Oct	05-Oct	06-Oct
07-Oct	08-Oct	09-Oct	10-Oct	11-Oct	12-Oct	13-Oct
14-Oct	15-Oct	16-Oct	17-Oct	18-Oct	19-Oct	20-Oct
	Additional Marine Mammal Monitoring (Construction Phase)					
21-Oct	22-Oct	Public Holiday 23-Oct	24-Oct	25-Oct	26-Oct	27-Oct
28-Oct	29-Oct	30-Oct	31-Oct			

The schedule is subject to agreement from the EPD on the monitoring times. The schedule will be revised after reviewing the progress of the construction works or due to adverse (safety, weather etc) conditions.

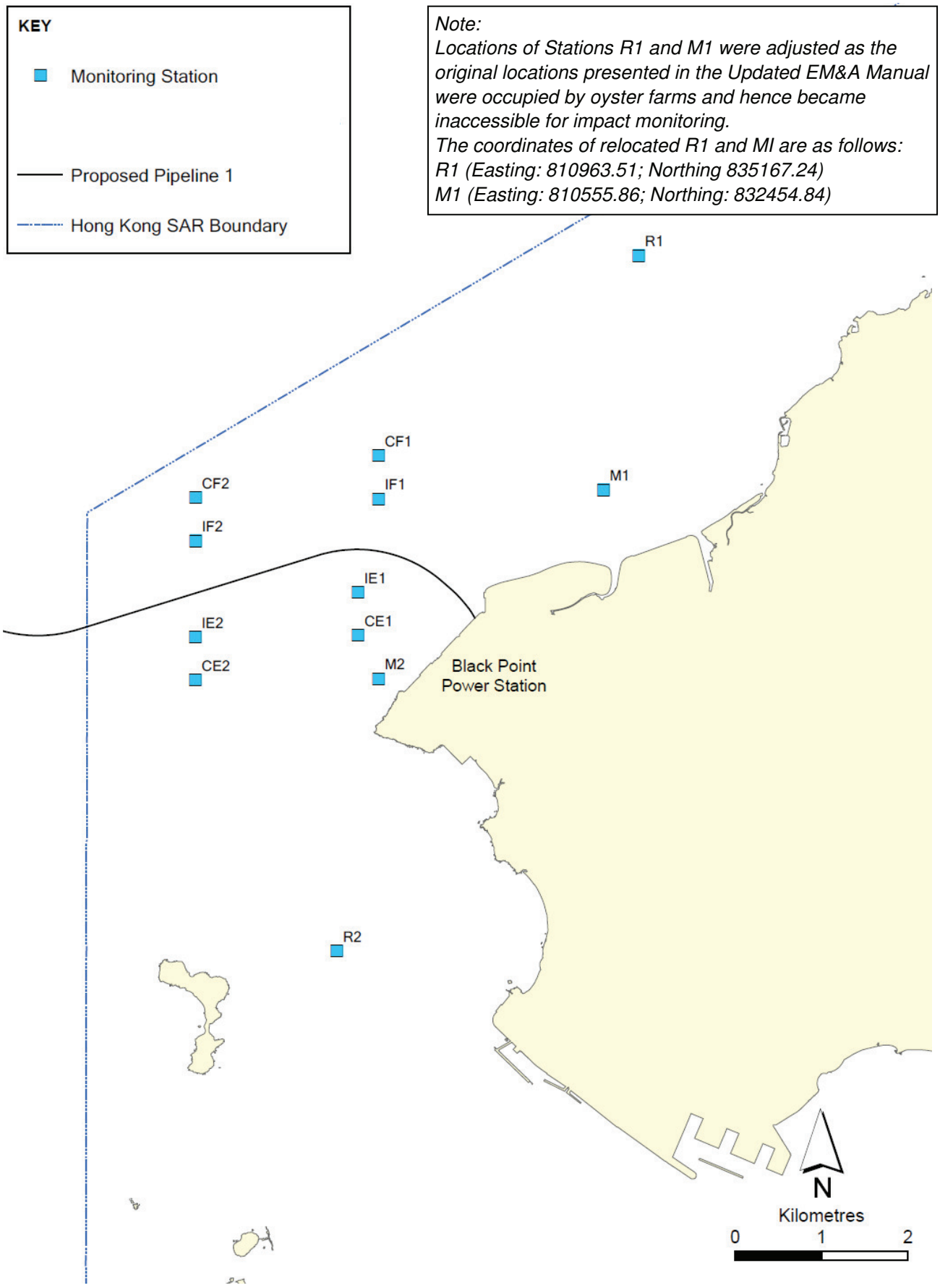


Figure 1 **Water Quality Monitoring Stations during Dredging Activities in Hong Kong Waters**

Environmental Resources Management

ERM

Black Point Gas Supply Project (First Phase)
Tentative Water Quality Impact Monitoring Schedule - November 2012

Impact-HK Monitoring: Water Quality Monitoring for Dredging and Jetting Activities in Hong Kong Waters. For monitoring stations please refer to Figure 1

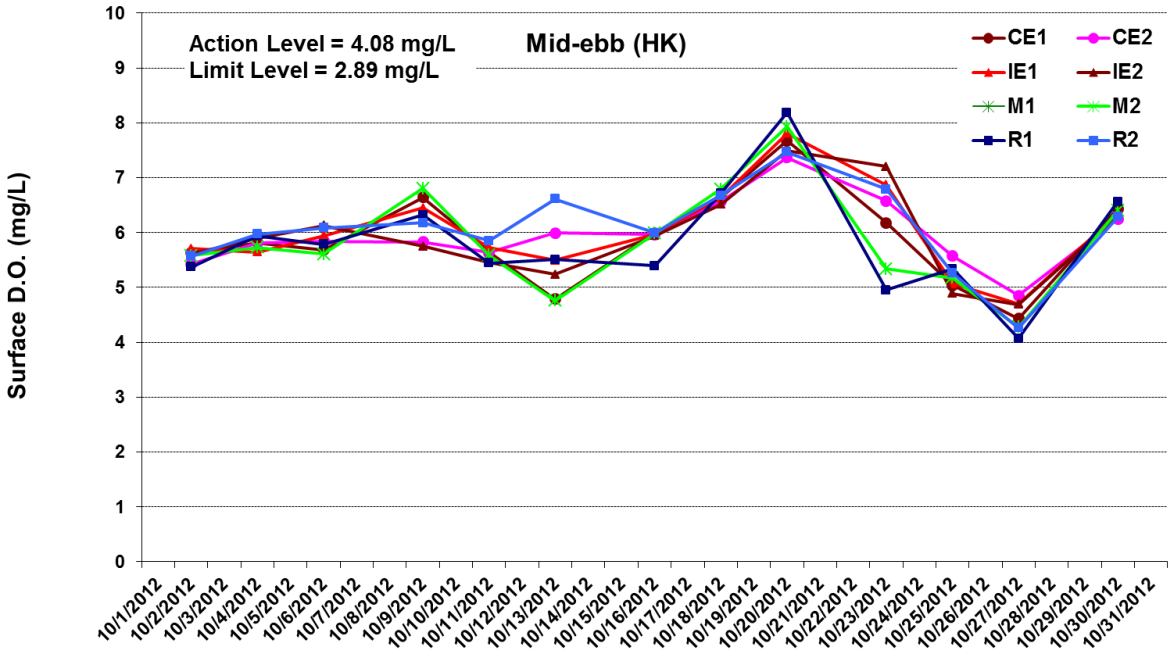
Reference Tidal Station: Lok On Pai (Source: HK Observatory Department)

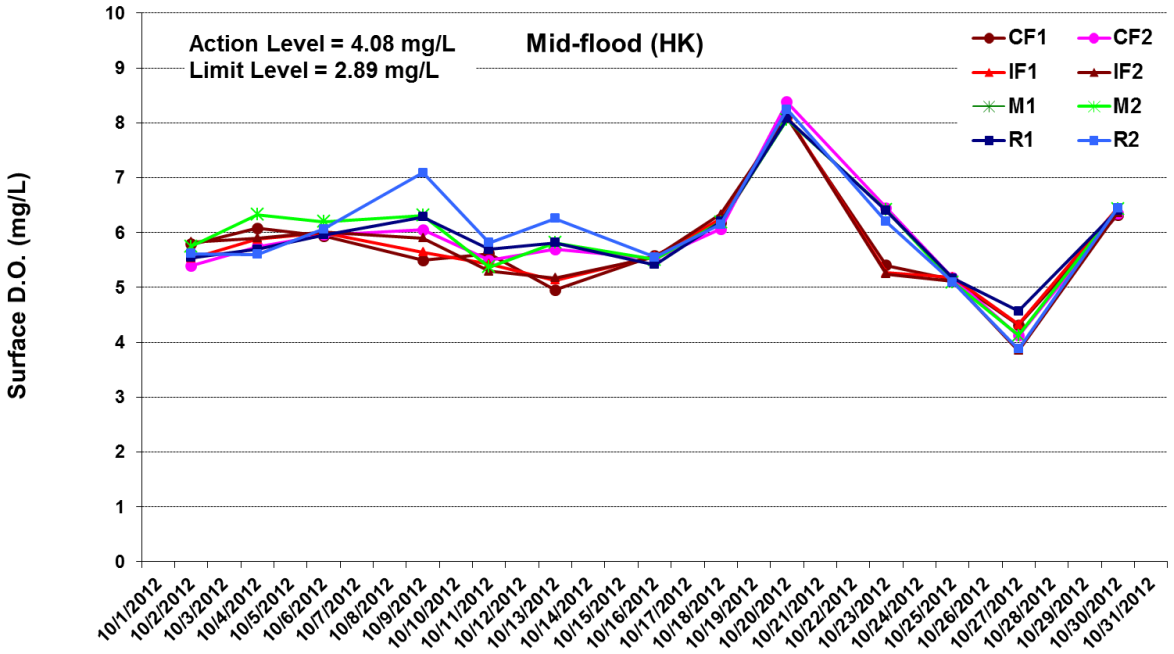
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
				01-Nov	02-Nov	03-Nov
04-Nov	05-Nov	06-Nov	07-Nov	08-Nov	09-Nov	10-Nov
						Impact-HK Monitoring
11-Nov	12-Nov	13-Nov	14-Nov	15-Nov	16-Nov	17-Nov
		Impact-HK Monitoring		*Impact-HK Monitoring*		
18-Nov	19-Nov	20-Nov	21-Nov	22-Nov	23-Nov	24-Nov
25-Nov	26-Nov	27-Nov	28-Nov	29-Nov	30-Nov	

The schedule is subject to agreement from the EPD on the monitoring times. The schedule will be revised after reviewing the progress of the construction works or due to adverse (safety, weather etc) conditions.

Annex D

Impact Water Quality Monitoring Result – October 2012



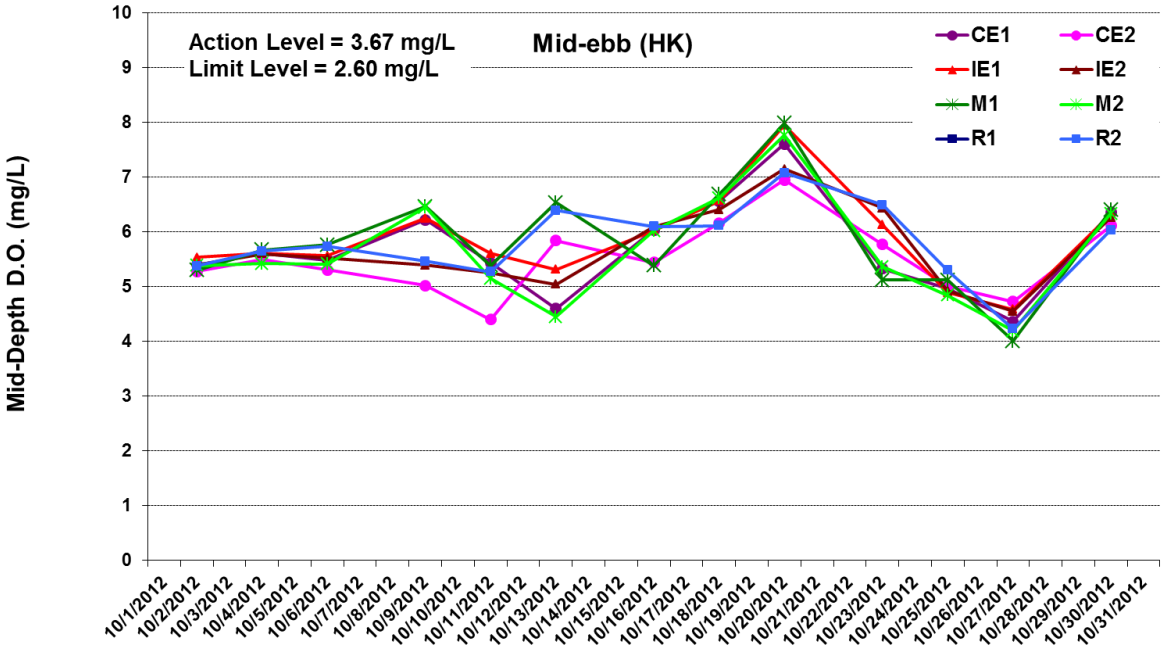


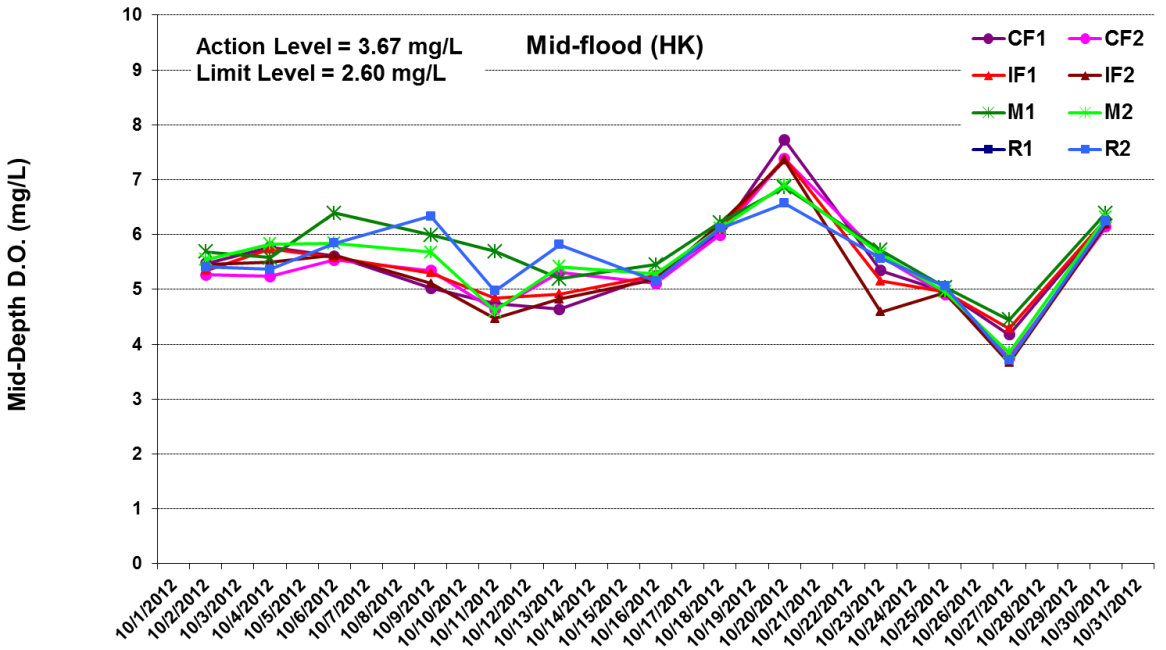
* No data for Station M1 due to shallow water depth (< 3m).

Figure D1 Impact Monitoring – Mean Level of Dissolved Oxygen (mg/L) in surface waters between 2 and 30 October 2012 at Monitoring Stations for Hong Kong Jetting Works.

Ref: ***0124291_Impact-WQ_October 2012graphs_Rev a.xls***

ERM

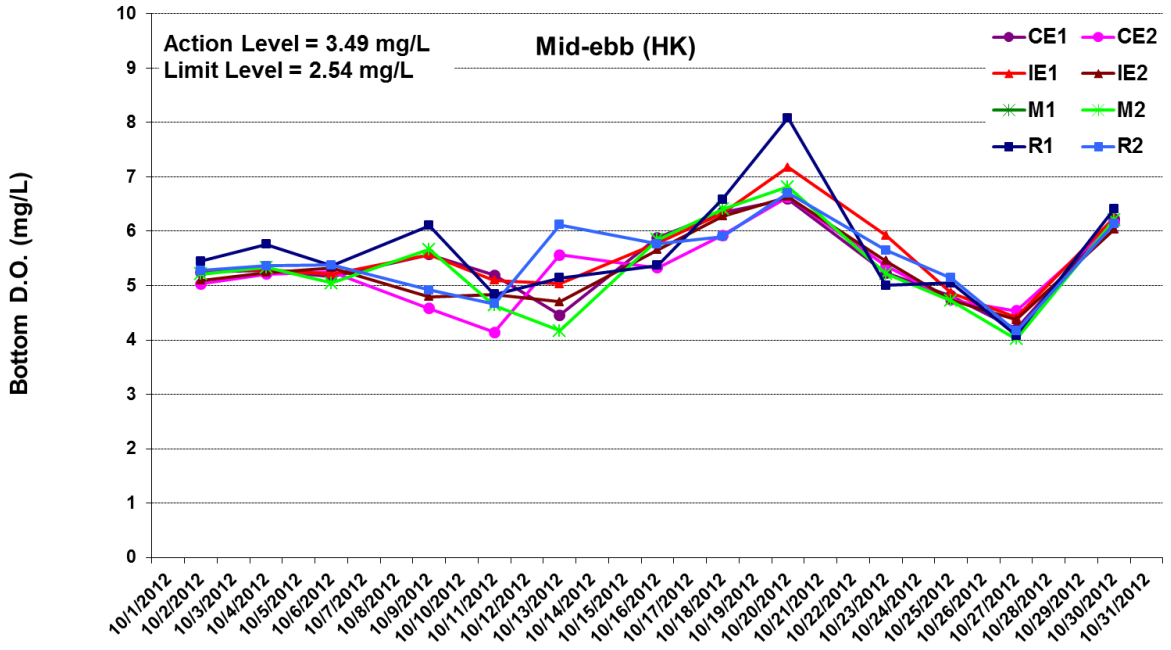


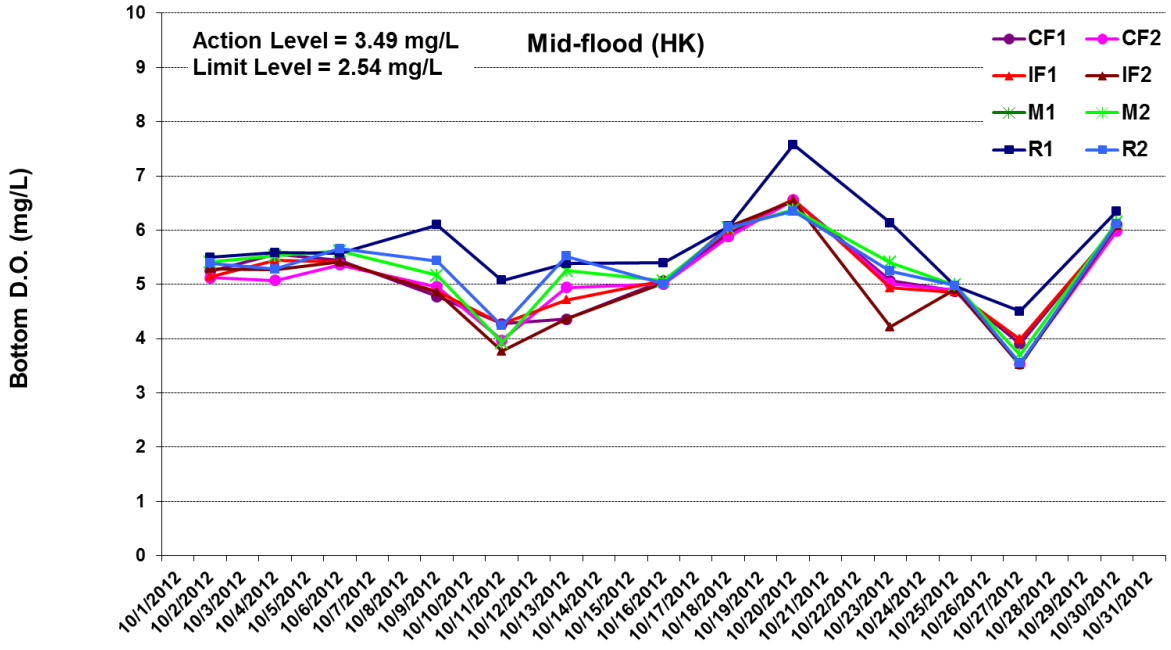


* No data for Station R1 due to shallow water depth (< 6m).

Figure D2 Impact Monitoring – Mean Level of Dissolved Oxygen (mg/L) in mid-depth waters between 2 and 30 October 2012 at Monitoring Stations for Hong Kong Jetting Works.

Ref: ***0124291_Impact-WQ_October 2012graphs_Rev a.xls***

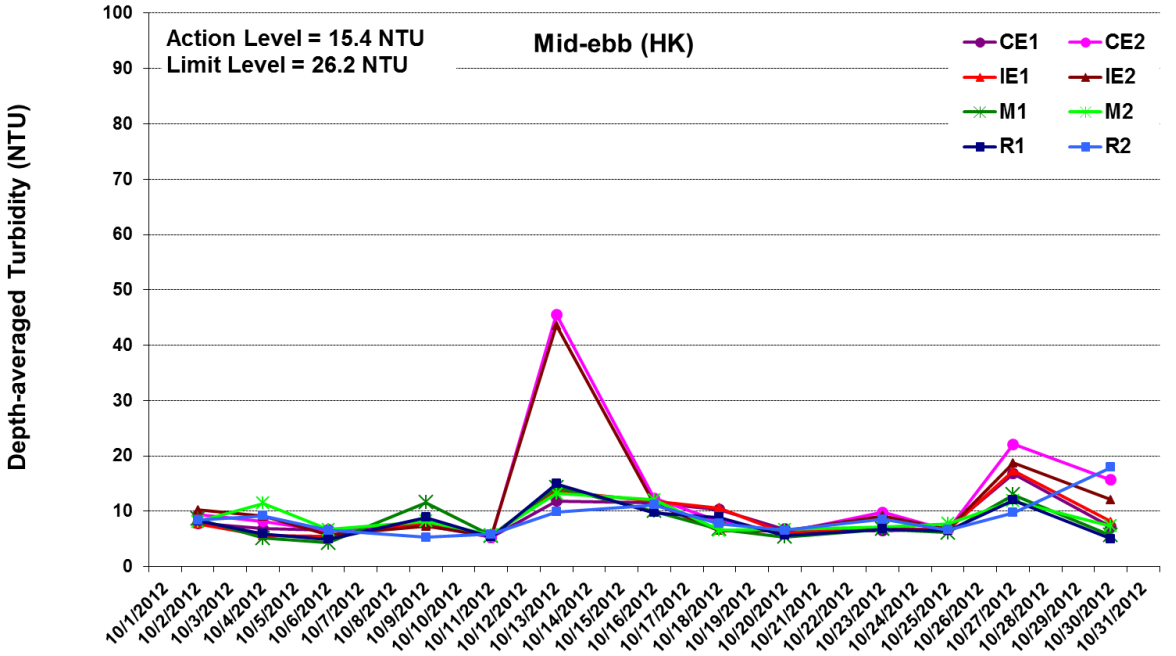




* No data for Station M1 due to shallow water depth (< 3m).

Figure D3 Impact Monitoring – Mean Level of Dissolved Oxygen (mg/L) in bottom water between 2 and 30 October 2012 at Monitoring Stations for Hong Kong Jetting Works.

Ref: ***0124291_Impact-WQ_October 2012graphs_Rev a.xls***



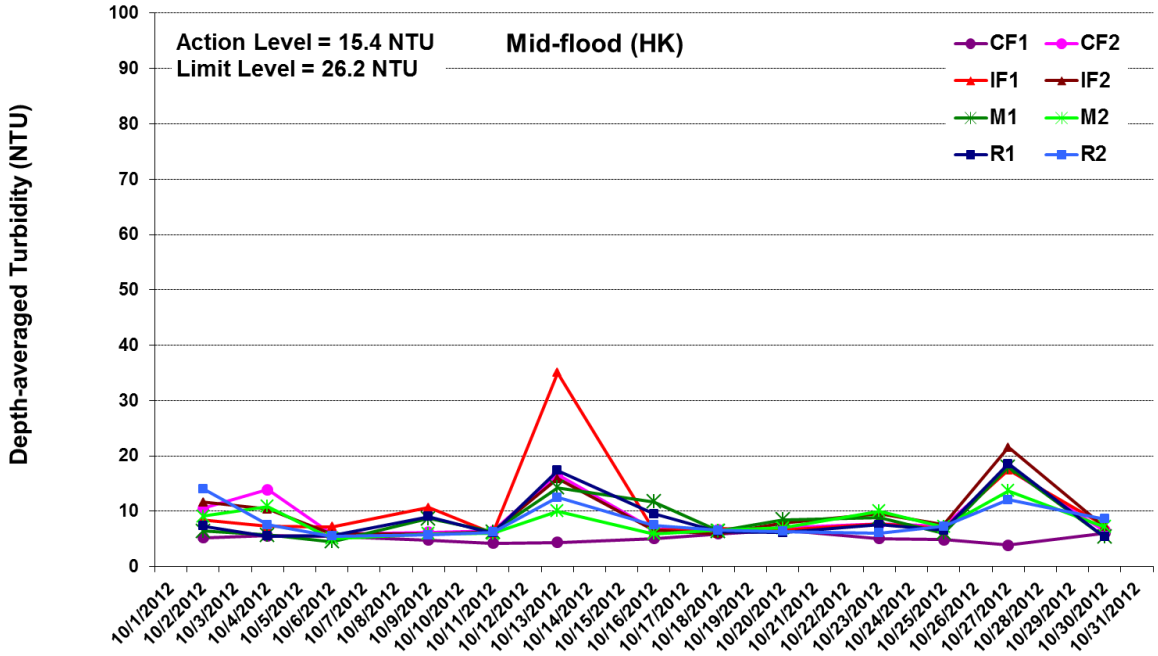
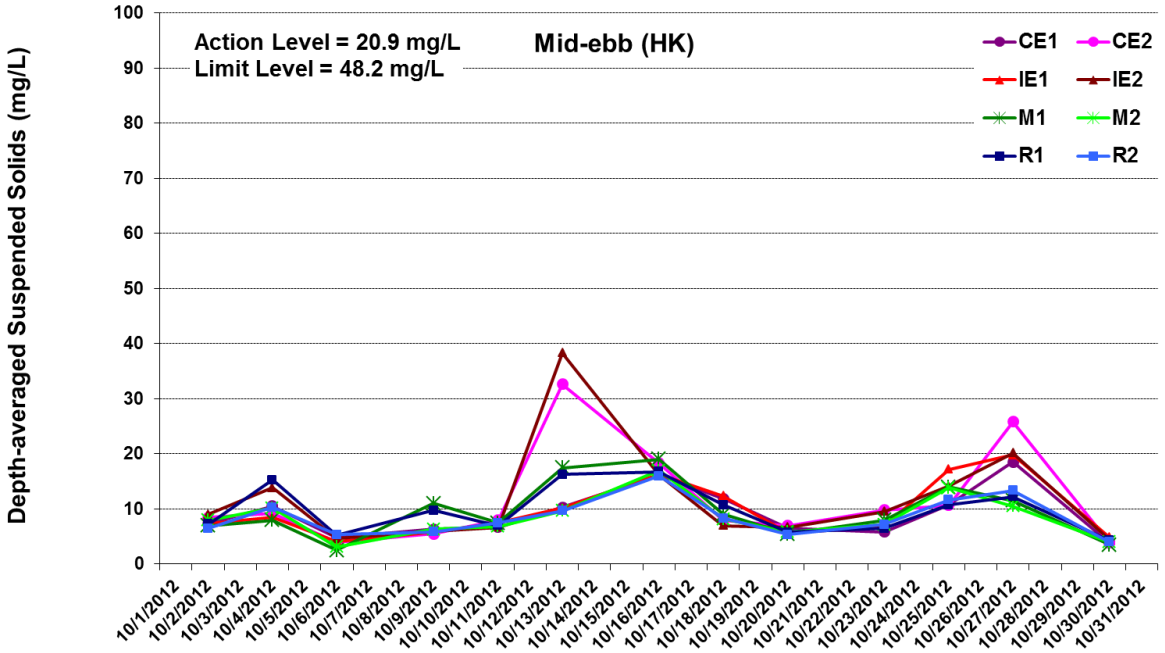


Figure D4 Impact Monitoring – Mean Depth-averaged Level of Turbidity (NTU) between 2 and 30 October 2012 at Monitoring Stations for Hong Kong Jetting Works.

Ref: ***0124291_Impact-WQ_October 2012graphs_Rev a.xls***

ERM



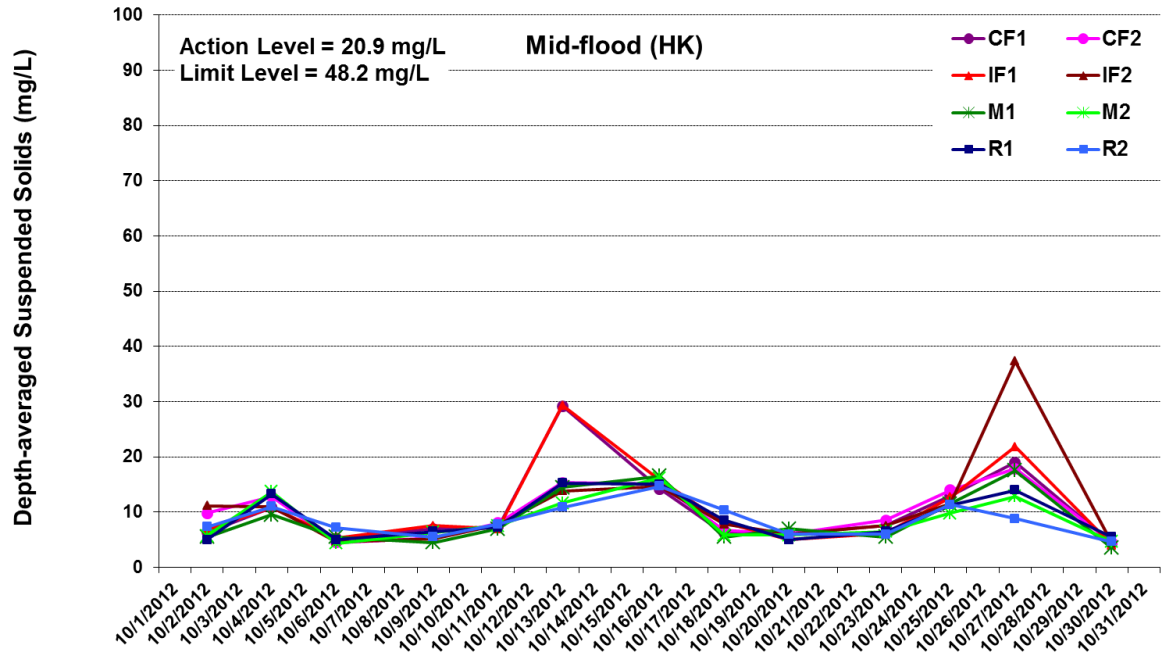


Figure D5 Impact Monitoring – Mean Depth-averaged Level of Suspended Solids (mg/L) between 2 and 30 October 2012 at Monitoring Stations for Hong Kong Jetting Works.

Ref: ***0124291_Impact-WQ_October 2012graphs_Rev a.xls***

ERM

Annex E

Specifications of Jetting Machine and Silt Curtain Deployment Plan for Jetting Works

Specification of Jetting Machine

Parameter		Specification
Size		About 12m x 11m x 7m
Weight		80T
Applicable Water Depth		3 - 100m
Applicable Pipe Diameter		0.5 - 1.5m
Jetting Depth		≤ 4m (number of passes subject to seabed conditions)
Jetting Speed		10m/h – 100m/h
Applicable Shear Strength		≤ 50kpa
Applicable Soil Types		very soft mud, soft mud, sandy soil, clay soil
Nozzle: Diameter Number Total Flow Volume Jetting Pressure Jetted Water Velocity		 15 – 52 mm 46 6,000 m^3 0.7 Mpa 0.5 – 14m/s
Marine Water Condition	Anti-Vertical and Transverse Inclination	±10°
	Temperature	-20°C – +45°C
	Water Flow Velocity	≤ 3Knot

Please refer to Figure 1 below for the jetting machine being deployed in this project. Silt curtain deployment is illustrated in Figure 2.

Figure 1. *Jetting Machine*

Figure 2. *Silt Curtain for Jetting Machine*

Black Point Gas Supply Project (Phase 1)

Silt Curtain Deployment Plan For Jetting Operation

Revision 1

3 September 2012

Capco 青山發電有限公司 Castle Peak Power Co. Ltd.

CLP 中電

ExxonMobil

Black Point Gas Supply Project (First Phase)
Environmental Certification Sheet
EP-391/2010/A

Reference Document/Plan

Document/~~Plan~~ to be ~~Certified~~/ Verified:	Silt Curtain Deployment Plan for Jetting Operation (Rev 1)
Date of Report:	3 September 2012
Date prepared by Contractor:	3 September 2012
Date received by IEC:	3 September 2012

Reference EM&A Manual/ EP Requirement

EP Condition:

Condition No. 3.6 Table 1 Summary of Mitigation Measures during the Jetting Activities for the Phase 1 of the Project

From Urmston Road to Black Point (KP2.52 – KP4.78)
(ii) Silt curtain(s) shall be installed along the marine works areas during jetting operations for the installation of this pipeline section. The extent of silt curtain(s) installation shall be determined based on site condition (e.g. bathymetry of the works area) and navigation safety considerations. Details of the design and implementation of the silt curtain(s) shall be developed before construction and verified by the IEC and agreed with EPD.

ET Certification

I hereby certify that the above referenced ~~document~~/ plan complies with the above referenced condition of EP-391/2010/A.

Dr Helen Chiu, Environmental Team Leader:  Date: 3 September 2012

IEC Verification

I hereby verify that the above referenced ~~document~~/ plan complies with the above referenced condition of EP-391/2010/A.

Dr Anne Kerr, Independent Environmental Checker:  Date: 6 September 2012

Contents

1.0 Introduction

2.0 Structure of Silt Curtain

3.0 Deployment of Silt Curtain

4.0 Materials Used for Silt Curtain Fabrication

5.0 Inspection and Rectification Work

6.0 Silt Curtain Layout Plan

7.0 Tentative Installation and Removal Program

Figure 1 Location of Pipeline Jetting Sections

Figure 2 The Layout Plan of Frame Type Silt Curtain

Figure 3 Indicative Side View of the 31.8m Silt Curtain

1.0 Introduction

With reference to the Environmental Permit EP-391/2010/A and Further Environmental Permit FEP-02/391/2010/A for this project, silt curtain(s) shall be installed along the marine works areas during jetting operations for the installation of the pipeline section from Urmston Road to Black Point (KP2.52 – KP4.78). Should non-compliance occur at the respective impact station during water quality monitoring for the jetting section from the HKSAR boundary to Urmston Road (KP0.00 – KP0.73), the use of additional mitigation measures such as silt curtain shall be examined. The location of the jetting sections is shown in *Figure 1*. The purpose of this document is to illustrate the general methodology and procedures for deploying silt curtain for the jetting activities, and the materials to be used for fabricating such silt curtain.

2.0 Structure of Silt Curtain

2.1 The indicative layout of the silt curtain is shown in *Figures 2 and 3*. The silt curtain will be affixed to the rear of the working vessel "Nan Tian Peng" along each side of the jetting machine. The silt curtain on each side will be about 31.8 m in length with a maximum of 8.9 m in depth, which allows the silt curtain to extend from seawater surface to seabed during jetting operation (water depth of the jetting sections ranges from about 2.7 m to 6.8 m).

2.2 The frame of the silt curtain is constructed with 800 mm diameter of steel pipes which are sealed at both ends to ensure the silt curtains are kept aligned in position. The configuration of the silt curtain frame is reinforced by two steel ropes affixed to the vessel (Figure 2). The anchor chain is fixed vertically on the geotextile (i.e. six columns with each in 5.3 m, *Figure 3*) and along the bottom of silt curtain to provide additional weight for sinking and resisting the current force. The reinforced steel frame together with the heavy anchor chain will ensure the silt curtain to be in place during jetting operation.

2.3 Lit markers buoys with light will be installed onto the silt curtain to aid night navigation and prevention of collision of boat at night.

3.0 Deployment of Silt Curtain

3.1 Initial bathymetry survey will be carried out when necessary to determine approximate depth of water for silt curtain deployment.

3.2 The frame type silt curtain will be pre-fabricated and moored to the rear side of the vessel “Nan Tian Peng” , so that they can be towed by the vessel during jetting operations.

3.3 During construction period, the jetting machine will be deployed into water by the crane on “Nan Tian Peng”. Jetting works will then be performed within the silt curtain enclosed area to prevent

muddy/silty water and sediment from leaking outside of the frame type silt curtain during operation.

3.4 The silt curtain will be removed after completion of all the jetting works. Prior to the removal of silt curtain, completion of all jetting works should be affirmed, and water quality should be checked visually to ensure no dispersion of muddy water outside the works area.

4.0 Materials Used for Silt Curtain Fabrication

The material to be used for fabrication the silt curtain shall be woven polypropylene geotextile. The main technical specification is listed below:

Properties	**Value**
Tensile strength	110.0 kn/m
Elongation	12.0%
Static puncture resistance - CBR	12.50 kn
Dynamic perforation resistance - cone drop	10.0 mm
Water permeability normal to the plane	$25*10^{-3}$ m/s
Water flow normal to the plane	25 $l/m^2.s$
Characteristic opening size (AOS)	230.0 μm
Thickness under 2 kpa	1.53 mm
Weight	464.0 g/m
Composition	100% polypropylene woven geotextile
Durability	25 years

5.0 Inspection and Rectification Work

5.1 The Project Environmental Team (ET) and Independent Environmental Checker (IEC) will inspect the silt curtain deployment process during the initial installation.

5.2 Jetting works will be conducted when the installation and adjustment of the silt curtain is completed and approved by the corresponding parties (i.e. ET, IEC and CAPCO). In addition, the ET employed by CAPCO will conduct the intensive water quality monitoring during the first two days of jetting operations for the installation of the pipeline section from Urmston Road to Black Point according to the Environmental Monitoring and Audit (EM&A) Manual.

5.3 Visual inspection shall be conducted daily to confirm that no muddy/silty water leaking out from the jetting works through the silt curtain, and to ensure the silt curtain is function properly and effectively.

5.4 In case of any malfunction of the silt curtain during construction period, all jetting works should be suspended immediately and prompt rectification works shall be carried out to maintain well-functioning of the silt curtain. The situation should be immediately reported to CAPCO and ET, and also be reported to IEC through ET or CAPCO.

5.5 Spare geotextile will be ready for use and kept onboard for

emergency replacement in case of damage or defect is observed on the silt curtain.

6.0 Silt Curtain Layout Plan

Please refer to the attached drawings on *Figures 2 and 3*.

7.0 Tentative Installation and Removal Program

7.1 Date of silt curtain installation: at least one day before commencement of jetting operations.

7.2 Date of silt curtain removal: at least one day after completion of jetting operations to allow complete settlement of suspended solids, if any, within the silt curtain enclosed area.

Figure 1 Location of Pipeline Jetting Sections

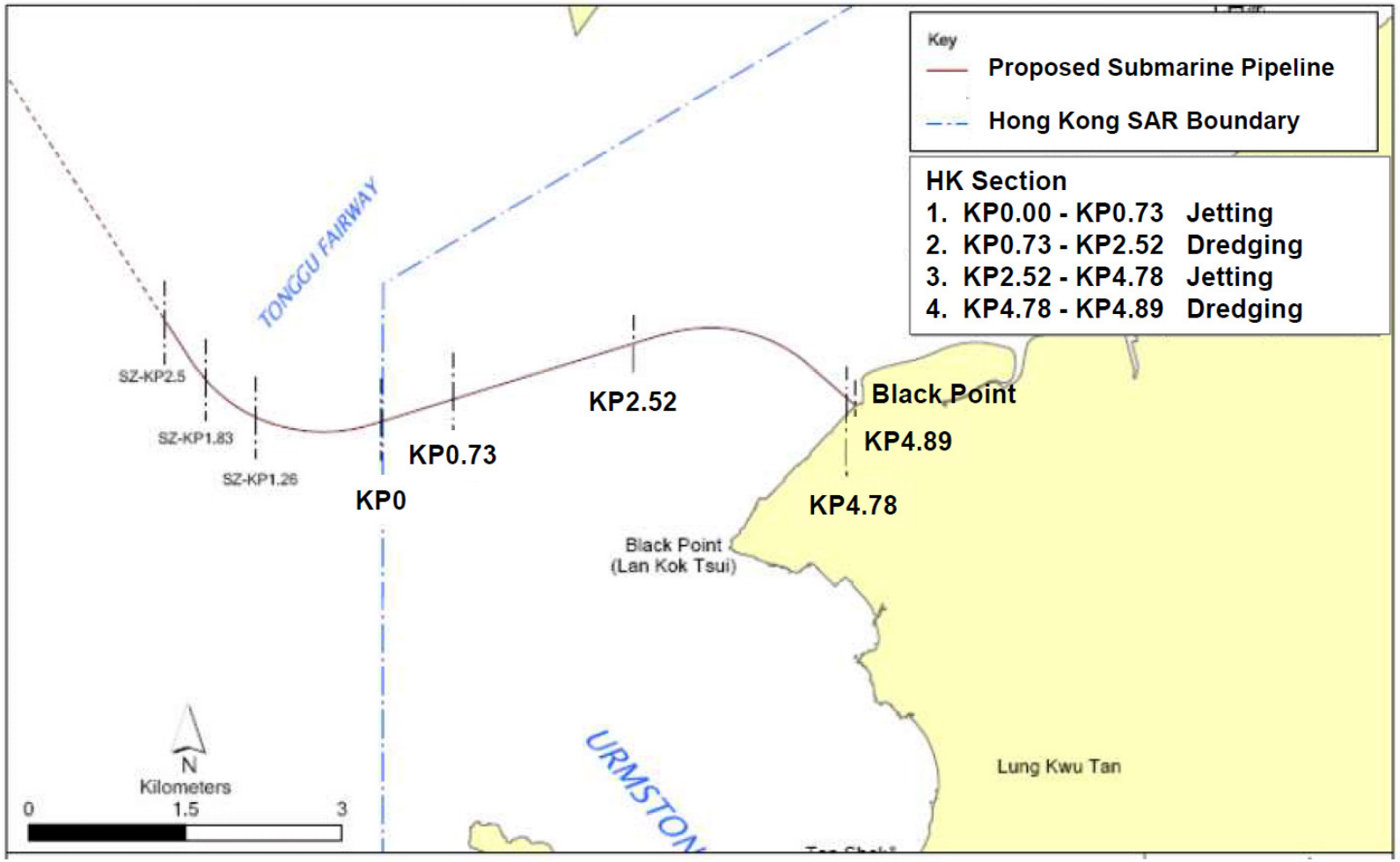


Figure 2 The Layout Plan of Frame Type Silt Curtains (A – B and C – D)

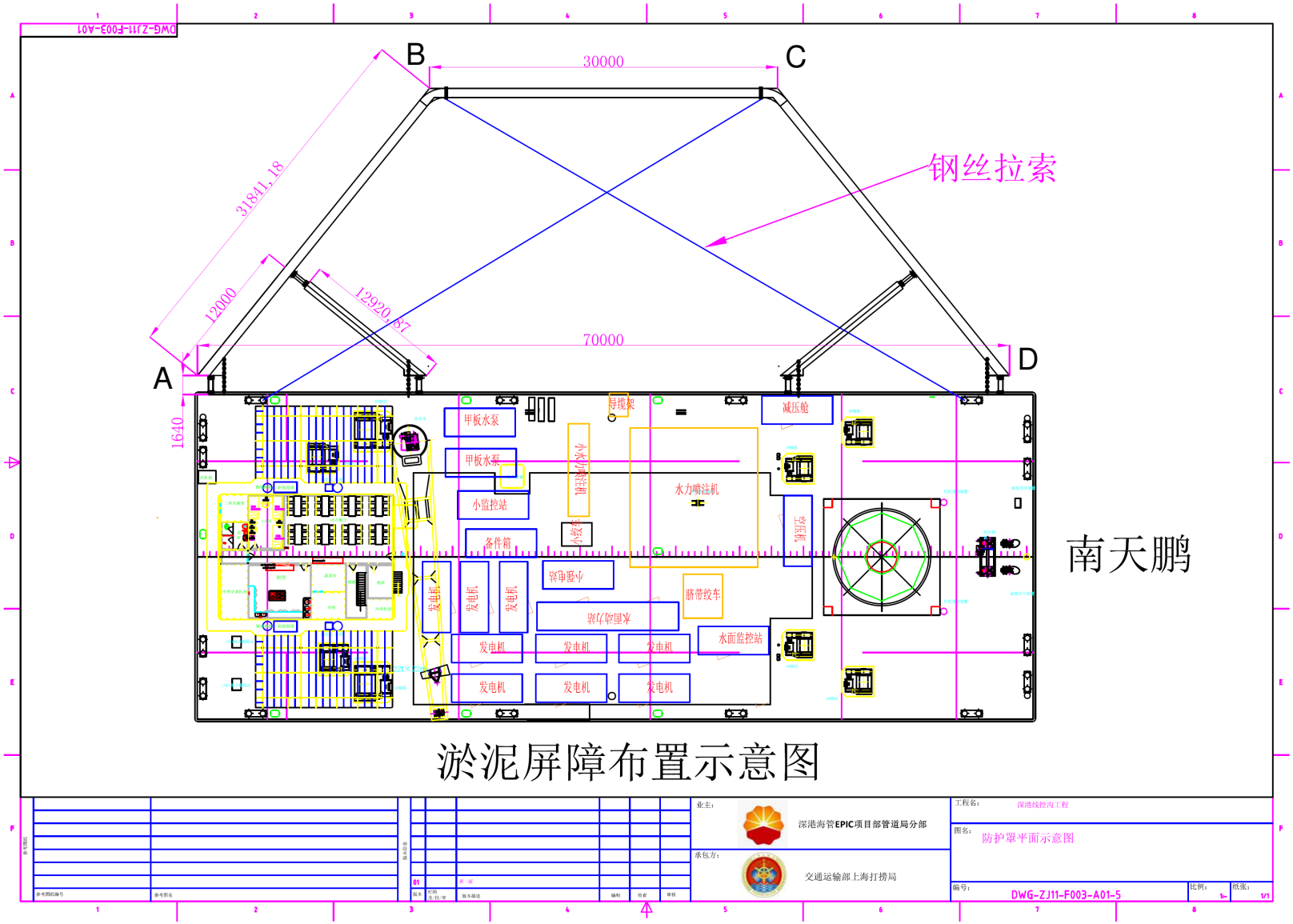


Figure 3　Indicative Side View of the 31.8m Silt Curtain