

FUGRO TECHNICAL SERVICES LIMITED

Fugro Development Centre,
5 Lok Yi Street, Tai Lam,
Tuen Mun, N.T.,
Hong Kong.

Tel : +852 2450 8233
Fax : +852 2450 6138
E-mail : matlab@fugro.com
Website : www.fugro.com



Report No.: 0394/13/ED/0391

Monthly EM&A Report

March 2020

Client : China International Water & Electric Corporation
Project: Providing Sufficient Water Depth for Kwai Tsing Container Basin and its Approach Channel
Contract No.: CV/2013/04
Report No.: 0394/13/ED/0391

Project Proponent:

Civil Engineering & Development Department
101 Princess Margaret Road,
Homantin,
Kowloon, Hong Kong.

Prepared by: Jimmy Lui

Reviewed by: Cyrus Lai

Certified by:

A handwritten signature in black ink, appearing to be "Colin Yung", written over a horizontal line.

Colin Yung
Environmental Team Leader for
Fugro Technical Services Limited

Ref.: CEDDWKTBEM00_0_0392L.20

01 April 2020
By Post

Mott MacDonald Hong Kong Ltd.
3/F Mapletree Bay Point,
348 Kwun Tong Road
Kwun Tong, Kowloon

Attention: Mr. C M Howley

Dear Mr. Howley,

**Re: Agreement No. CE 63/2008 (CE)
Dredging Works in Kwai Tsing Container Basin and its Approach Channel
– Investigation, Design and Construction)**

**Contract No. CV/2013/04
Dredging Works in Kwai Tsing Container Basin and its Approach Channel
Verification of Monthly EM&A Report for March 2020**

Reference is made to the Environmental Team's submission of the Monthly Environmental Monitoring & Audit Report for March 2020 (ET's Report No. 0394/13/ED/0391) received by e-mail on 30 March 2020.

We write to verify the captioned report in accordance with Condition 5.4 of EP-426/2011/A.

Thank you very much for your kind attention and please do not hesitate to contact our Mr. Manson Yeung or the undersigned should you have any queries.

Yours faithfully,
For and on behalf of
Ramboll Hong Kong Limited



Y H Hui
Independent Environmental Checker

Cc:	MMHK	Ms. Sunny Zhao	(by post and email)
	Fugro	Mr. Colin Yung	(by email)
	CIWE	Mr. K.O. Leung	(by email)

Q:\Projects\CEDDWKTBEM00\02 Project Management\02 Corr\CEDDWKTBEM00_0_0392L.20.docx

FUGRO TECHNICAL SERVICES LIMITED

Fugro Development Centre,
5 Lok Yi Street, Tai Lam,
Tuen Mun, N.T.,
Hong Kong.

Tel : +852 2450 8233
Fax : +852 2450 6138
E-mail : matlab@fugro.com
Website : www.fugro.com



Report No.: 0394/13/ED/0391

TABLE OF CONTENTS

	EXECUTIVE SUMMARY	1
1.	INTRODUCTION	4
2.	BASIC PROJECT INFORMATION	6
3.	ROUTINE IMPACT WATER QUALITY MONITORING	9
4.	24-HR WATER QUALITY MONITORING	10
5.	ENVIRONMENTAL SITE INSPECTION AND AUDIT	11
6.	EXCEEDANCE OF THE ENVIRONMENTAL PARAMETERS	12
7.	NON-COMPLIANCE, COMPLAINTS, NOTIFICATION OF SUMMONS AND PROSECUTION	13
8.	CONCLUSIONS	14

FUGRO TECHNICAL SERVICES LIMITED

Fugro Development Centre,
5 Lok Yi Street, Tai Lam,
Tuen Mun, N.T.,
Hong Kong.

Tel : +852 2450 8233
Fax : +852 2450 6138
E-mail : matlab@fugro.com
Website : www.fugro.com



Report No.: 0394/13/ED/0391

TABLES:

Table 2.1	Key Personnel Contact of the Contract	6
Table 2.2	Status of Environmental Licenses, Notification and Permits	7
Table 5.1	Waste Quantities of Dredging Works	11
Table 7.1	Environmental Complaints Log	13
Table 7.2	Cumulative Statistics on Complaints	13
Table 7.3	Cumulative Statistics on Successful Prosecutions	13

FIGURES:

Figure 1	Project General Layout
----------	------------------------

APPENDICES:

Appendix A	Project Organization Chart
Appendix B	Construction Programme
Appendix C	Action and Limit Levels
Appendix D	Schedule of Water Quality Monitoring
Appendix E	Event and Action Plans
Appendix F	Environmental Mitigation Implementation Schedule
Appendix G	Waste Generation in Reporting Period

EXECUTIVE SUMMARY

i. This is the Fifty-ninth Monthly Environmental Monitoring Audit (EM&A) Monthly Report – March 2020 for Contract No. CV/2013/04 – Dredging Works in Kwai Tsing and its Approach Channel (Agreement No. CE63/2008 – Providing Sufficient Water Depth for Kwai Tsing Container Basin and its Approach Channel). The dredging works commenced on 23 April 2014. This report presents the environmental monitoring and audit works conducted from 23 February 2020 to 22 March 2020.

ii. Construction Activities for the Reporting Period

According to the Contractor, the construction work under this Contract has been temporarily suspended since 1 February 2020. There was no construction work carried out in the reporting month.

iii. Water Quality Monitoring

The water quality monitoring programme (including routine water quality impact monitoring and 24-hour water quality monitoring) was suspended from 21 February 2020 which was agreed by EPD on 20 February 2020 (Ref: Ax(1) to EP2/N3/C/57 Pt.10) due to the temporary suspension of construction works. There was no water quality monitoring conducted during the reporting month, thus no exceedance was recorded in the routine impact monitoring and 24-hour water quality monitoring in the reporting month.

The water quality monitoring programme will be resumed in the next reporting month. Detailed impact monitoring schedule for the next reporting month is included in **Appendix D**.

iv. Waste Management

There was no inert or non-inert C&D material generated and no general refuse was disposed off site in the reporting month.

v. Non-Compliance, Complaints, Notifications of Summons and Successful Prosecutions

No complaint, notification of prosecutions or summons were received in the reporting period.

vi. Site Inspections and Audit

Due to the temporary closure of the construction site since 1 February 2020, no observation was recorded in the reporting month.

vii. Compliance with Specific EP conditions

The project was in compliance with the requirements and mitigation measures as stated in the EIA Report, the EP and EM&A Manual.

viii. Construction Activities for the Coming Reporting Period

For the coming reporting period, the principal work activities included:

- Preparation Works of Dredging at Portion A / Zone 2B1, 2B2 and 2C1 in EP
- Dredging at Portion A/ Zone 2B1, 2B2 and 2C1 in EP

Future Key Issues include:

- Regular inspection on silt curtain deployment
- Regular inspection on silt screen deployment

FUGRO TECHNICAL SERVICES LIMITED

Fugro Development Centre,
5 Lok Yi Street, Tai Lam,
Tuen Mun, N.T.,
Hong Kong.

Tel : +852 2450 8233
Fax : +852 2450 6138
E-mail : matlab@fugro.com
Website : www.fugro.com



Report No.: 0394/13/ED/0391

Page 2

- Implementation of EM&A Programme
- Maintain dredging below allowable dredging rate in EP.
- Cleaning of excess material from the decks and exposed fittings of barges and dredgers before the vessel is moved.
- Barge loading shall be monitored to ensure material is not lost during transportation.
- Conditions in dumping permit shall be followed strictly.

According to the information provided by the Contractor, the construction work under this Contract has been temporarily suspended since 1 February 2020 and is expected to be resumed on 30 March 2020. Therefore the water quality monitoring programme (including routine water quality impact monitoring and 24-hour water quality monitoring) will be resumed on 30 March 2020 correspondingly.

1. INTRODUCTION

1.1 Background

- 1.1.1 The Project objective is to dredge approximately 4.0 million cubic metres of sediment from the seabed of Kwai Tsing Container Basin, as well as portions of Northern Fairway and Western Fairway, to provide sufficient depth of container basin and approach channel to Kwai Tsing Container Terminal (KTCT) for the safe navigation of Ultra Large Container Ships (ULCS).
- 1.1.2 The environmental monitoring and audit works of this Project is governed by Environmental Permit (EP) No. EP-426/2011/A, EM&A Manual (AEIAR-156/2010) and EM&A TIN (EPD Letter Ref: (34) in Ax(1) to EP2/N3/C/57Pt.7)).
- 1.1.3 The project proponent was the Civil Engineering & Development Department, HKSAR (CEDD). The Project General Layout is shown in **Figure 1**.
- 1.1.4 Mott MacDonald Hong Kong Ltd. (MMHK) was commissioned by CEDD as the Engineer for the Project. Ramboll Hong Kong Limited (RHK) was employed as the Independent Environmental Checker (IEC) in the Project.
- 1.1.5 China International Water & Electric Corporation Limited (CIWE) was appointed as the main contractor for the dredging works.
- 1.1.6 Fugro Technical Services Limited (FTS) was appointed as the Environmental Team (ET) to implement the Environmental Monitoring and Audit (EM&A) programme for the Project.
- 1.1.7 The construction phase of the Project under the EP was commenced on 23 April 2014. The impact EM&A programme of the Project commenced on 23 April 2014.

1.2 Purpose of the Report

- 1.2.1 This Fifty-ninth Monthly EM&A Report is prepared by FTS. This report presents a summary of the environmental monitoring and audit works, list of activities and mitigation measures proposed by the ET for the Project in 23 February 2020 to 22 March 2020.

1.3 Structure of the Report

- 1.3.1 The structure of this report is as follows:

- Section 1: Introduction, including background, purpose and structure of the report
- Section 2: Basic Project Information – summaries background and scope of the Contract, site description, project organization and contract details, construction programme, the construction works undertaken and the status of Environmental Permits/Licenses during the reporting period.
- Section 3: Routine Impact Water Quality Monitoring – summaries the status of monitoring programmes, Action and Limit Levels and Event / Action Plans.

FUGRO TECHNICAL SERVICES LIMITED

Fugro Development Centre,
5 Lok Yi Street, Tai Lam,
Tuen Mun, N.T.,
Hong Kong.

Tel : +852 2450 8233
Fax : +852 2450 6138
E-mail : matlab@fugro.com
Website : www.fugro.com



Report No.: 0394/13/ED/0391

Page 5

- Section 4: 24-hr Water Quality Monitoring – summaries the status of monitoring programmes, Action and Limit Levels and Event / Action Plans.
- Section 5: Environmental Site Inspection – summaries the audit findings of the weekly site inspections undertaken within the reporting period.
- Section 6: Exceedance of the environmental parameters – summaries any monitoring exceedance within the reporting period.
- Section 7: Non-Compliance, Complaints, notifications of summons and Prosecution – summaries any environmental complaints, environmental summons and successful prosecutions within the reporting period.
- Section 8: Conclusions and Recommendation

2. BASIC PROJECT INFORMATION

2.1 Project Organizations

2.1.1 The Project Organization structure is shown in **Appendix A**. The key personnel contact names and numbers are summarized in **Table 2.1**.

Table 2.1 Key Personnel Contact of the Contract

Party	Position	Name	Telephone	Fax
Engineer's Representative (MMHK)	Resident Engineer	Mr. Jason Chan	2585 8595	2827 1823
	Project Engineer	Ms. Sunny Zhao	2828 5908	2827 1823
Independent Environmental Checker (RHK)	Independent Environmental Checker	Mr. YH Hui	3465 2888	3465 2899
Contractor (CIW&E)	Site Agent	Mr. KO Leung	2508 0983	2508 0987
Environmental Team (FTS)	Environmental Team Leader	Mr. Colin Yung	3565 4114	3565 4160

2.2 Construction Programme

2.2.1 The construction phase of the Project under the EP commenced on 23 April 2014.

2.2.2 The construction programme of the Project is shown in **Appendix B**.

2.2.3 The environmental mitigation measures implementation schedule is presented in **Appendix F**.

2.3 Works undertaken during the month

2.3.1 According to the Contractor, the construction work under this Contract has been temporarily suspended since 1 February 2020. There was no construction work carried out in the reporting month.

2.4 Status of Environmental Licences, Notification and Permits

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

Table 2.2 Status of Environmental Licenses, Notification and Permits

Permit / Direction / License	Ref No	Valid From	Valid Till
Notification pursuant to Air Pollution (Control Dust) Regulation	Not Required		
Construction Noise Permit Portion A 0000-2400 hours on general holidays (including Sundays); 0000-0700 and 1900-2400 hours on any day not being a public holiday (including Sunday) but note Condition 3.d.1 below for the hours within which the use of the above listed mechanical powered equipment is allowed.	GW-RW0454-19	12/10/2019	11/4/2020
Marine Dumping Permit Portion A Type 1 – Open Sea Disposal (Dedicated Site) and Type 2 Confined Marine Disposal <i>East of Sha Chau Contaminated Mud Pit (CMP Vb) as directed by management team of CEDD</i>	EP/MD/20-105	01/02/2020	29/2/2020
	EP/MD/20-133	16/03/2020	15/4/2020
Waste Producer License	5213-320-C3907-01	27/10/2014	Upon Completion

Note: No dredging work was carried out and no marine sediment was disposed in the reporting month.

2.5 Summary of EM&A Programme Requirements

2.5.1 The EM&A programme requires environmental monitoring for water quality and environmental site inspections for air quality, noise, water quality, waste management, landscape and visual impact. The EM&A requirements for each parameter described in the following sections include:

- Monitoring schedules for the reporting month and forthcoming month;
- Action and Limit levels for all environmental parameters;
- Event / Action Plan;
- Environmental mitigation measures, as recommended in the Project EIA reports; and
- Environmental requirement in contract documents.

2.6 Construction Activities for the Coming Reporting Period

2.6.1 For the coming reporting period, the principal work activities included:

- Preparation Works of Dredging at Portion A / Zone 2B1, 2B2 and 2C1 in EP
- Dredging at Portion A/ Zone 2B1, 2B2 and 2C1 in EP

2.6.2 Future Key Issues include:

- Regular inspection on silt curtain deployment
- Regular inspection on silt screen deployment
- Implementation of EM&A Programme
- Maintain dredging below allowable dredging rate in EP.
- Cleaning of excess material from the decks and exposed fittings of barges and dredgers before the vessel is moved.
- Barge loading shall be monitored to ensure material is not lost during transportation.
- Conditions in dumping permit shall be followed strictly.

FUGRO TECHNICAL SERVICES LIMITED

Fugro Development Centre,
5 Lok Yi Street, Tai Lam,
Tuen Mun, N.T.,
Hong Kong.

Tel : +852 2450 8233
Fax : +852 2450 6138
E-mail : matlab@fugro.com
Website : www.fugro.com



Report No.: 0394/13/ED/0391

Page 8

2.6.3 According to the information provided by the Contractor, the construction work under this Contract has been temporarily suspended since 1 February 2020 and is expected to be resumed on 30 March 2020. Therefore the water quality monitoring programme (including routine water quality impact monitoring and 24-hour water quality monitoring) will be resumed on 30 March 2020 correspondingly.

3. ROUTINE IMPACT WATER QUALITY MONITORING

3.1 Summary of the Routine Impact Water Quality Monitoring

3.1.1 The routine impact water quality monitoring programme (including routine water quality impact monitoring) was suspended from 21 February 2020 which was agreed by EPD on 20 February 2020 (Ref: Ax(1) to EP2/N3/C/57 Pt.10) due to the temporary suspension of construction works.

3.1.2 There was no water quality monitoring conducted during the reporting month. No exceedance was recorded in the routine impact water quality monitoring in the reporting month.

3.1.3 The routine impact water quality monitoring programme will be resumed in the next reporting month. Detailed impact monitoring schedule for the next reporting month is included in **Appendix D**.

3.2 Action and Limit Levels

3.2.1 Referring to the ER Letter ref. (CV/2013/04)/M45/400/1247 dated 19 March 2015, a Revised Baseline Water Quality Monitoring Test Methodology – Review of Action and Limit Levels has been submitted to EPD by ER in March 2015. The Action and Limit Level for the wet season (April – October) was effected and applied to the water quality monitoring data from 1 April 2015. The Action and Limit Level is given in **Appendix C**.

3.3 Event and Action Plan

3.3.1 The Event and Action Plan is given in **Appendix E**.

4. 24-HR WATER QUALITY MONITORING

4.1 Summary of the 24-hour Water Quality Monitoring

4.1.1 The 24-hour water quality monitoring programme was suspended from 21 February 2020 which was agreed by EPD on 20 February 2020 (Ref: Ax(1) to EP2/N3/C/57 Pt.10) due to the temporary suspension of construction works.

4.1.2 There was no water quality monitoring conducted during the reporting month. No exceedance was recorded in the 24-hour monitoring in the reporting month.

4.1.3 The 24-hour water quality monitoring programme will be resumed in the next reporting month.

4.2 Action and Limit Levels

4.2.1 Referring to the ER Letter ref. (CV/2013/04)/M45/400/1247 dated 19 March 2015, a Revised Baseline Water Quality Monitoring Test Methodology – Review of Action and Limit Levels has been submitted to EPD by ER in March 2015. The Action and Limit Level for the wet season (April – October) was effected and applied to the water quality monitoring data from 1 April 2015. The Action and Limit Level is given in **Appendix C**.

4.3 Event and Action Plan

4.3.1 The Event and Action Plan is given in **Appendix E**.

5. ENVIRONMENTAL SITE INSPECTION AND AUDIT

5.1 Site Inspections

5.1.1 Due to the temporary closure of the construction site since 1 February 2020, no observation was recorded in the reporting month.

5.2 Advice on the Solid and Liquid Waste Management Status

5.2.1 There was no inert or non-inert C&D material generated and no general refuse was disposed off site in the reporting month. The details can be referred to the **Table 5.1**.

Table 5.1 Waste Quantities of Dredging Works

Month	Marine Sediment Type	Quantity Generated from 23 February 2020 to 22 March 2020 (m ³)	Cumulative-to 22 March 2020 (m ³)	Disposal / Dumping Ground
March 2020	Type 1 – Open Sea Disposal	0	1685700	NA
	Type 2 – Confined Marine Disposal	0	656930	NA
	Type 3 – Special Treatment / Disposal	0	1260	NA

Note:

1. All the Type 3 (Cat. Hf) sediment dredging and disposal was completed on 18 May 2016.
2. No dredging work was carried out and no marine sediment was disposed in the reporting month.

5.2.2 Monthly summary of waste flow table is detailed in **Appendix G**.

5.3 Compliance with Specific EP conditions

5.3.1 The project was in compliance with the requirements and mitigation measures as stated in the EIA Report, the EP and EM&A Manual.

5.4 Implementation Status of Environmental Mitigation Measures

5.4.1 A summary of the Implementation Schedule of Environmental Mitigation Measures (EMIS) is presented in **Appendix F**. The necessary mitigation measures were implemented properly.

FUGRO TECHNICAL SERVICES LIMITED

Fugro Development Centre,
5 Lok Yi Street, Tai Lam,
Tuen Mun, N.T.,
Hong Kong.

Tel : +852 2450 8233
Fax : +852 2450 6138
E-mail : matlab@fugro.com
Website : www.fugro.com



Report No.: 0394/13/ED/0391

Page 12

6. EXCEEDANCE OF THE ENVIRONMENTAL PARAMETERS

- 6.1.1 No exceedance was recorded in the routine impact monitoring in the reporting month.
- 6.1.2 No exceedance was recorded in the 24-hr monitoring in the reporting month.

7. NON-COMPLIANCE, COMPLAINTS, NOTIFICATION OF SUMMONS AND PROSECUTION

7.1.1 No complaint, notification of prosecutions or summons was received in the reporting period.

7.1.2 Cumulative complaint log, summaries of complaints, notification of summons and successful prosecutions are presented in Tables 7.1, 7.2 and 7.3.

Table 7.1 Environmental Complaints Log

Complaint Log No.	Date of Receipt	Received From and Received By	Nature of Complaint	Date Investigated	Outcome	Date of Reply
Nil	-	-	-	-	-	-

Table 7.2 Cumulative Statistics on Complaints

Environmental Parameters	Cumulative No. Brought Forward	No. of Complaints This Month	Cumulative Project-to-Date
Air	0	0	0
Noise	0	0	0
Water	0	0	0
Waste	0	0	0
Total	0	0	0

Table 7.3 Cumulative Statistics on Successful Prosecutions

Environmental Parameters	Cumulative No. Brought Forward	No. of Prosecutions This Month	Cumulative Project-to-Date
Air	0	0	0
Noise	0	0	0
Water	0	0	0
Waste	0	0	0
Total	0	0	0



8. CONCLUSIONS

- 8.1.1 The dredging works was commenced on 23 April 2014. The EM&A programme was carried out in accordance with the EM&A Manual requirements. The water quality monitoring programme (including routine water quality impact monitoring and 24-hour water quality monitoring) was suspended from 21 February 2020 which was agreed by EPD on 20 February 2020 (Ref: Ax(1) to EP2/N3/C/57 Pt.10) due to the temporary suspension of construction works.
- 8.1.2 No exceedance was recorded in the routine impact monitoring and 24-hour water quality monitoring in the reporting month.
- 8.1.3 No complaint, notification of prosecutions or summons was received in the reporting period.
- 8.1.4 Due to the temporary closure of the construction site since 1 February 2020, no observation was recorded in the reporting month.
- 8.1.5 No environmental complaint was received and followed up by Environmental Team in the reporting period.
- 8.1.6 According to the information provided by the Contractor, the construction work under this Contract has been temporarily suspended since 1 February 2020 and is expected to be resumed on 30 March 2020. Therefore the water quality monitoring programme (including routine water quality impact monitoring and 24-hour water quality monitoring) will be resumed on 30 March 2020 correspondingly.

FUGRO TECHNICAL SERVICES LIMITED

Fugro Development Centre,
5 Lok Yi Street, Tai Lam,
Tuen Mun, N.T.,
Hong Kong.

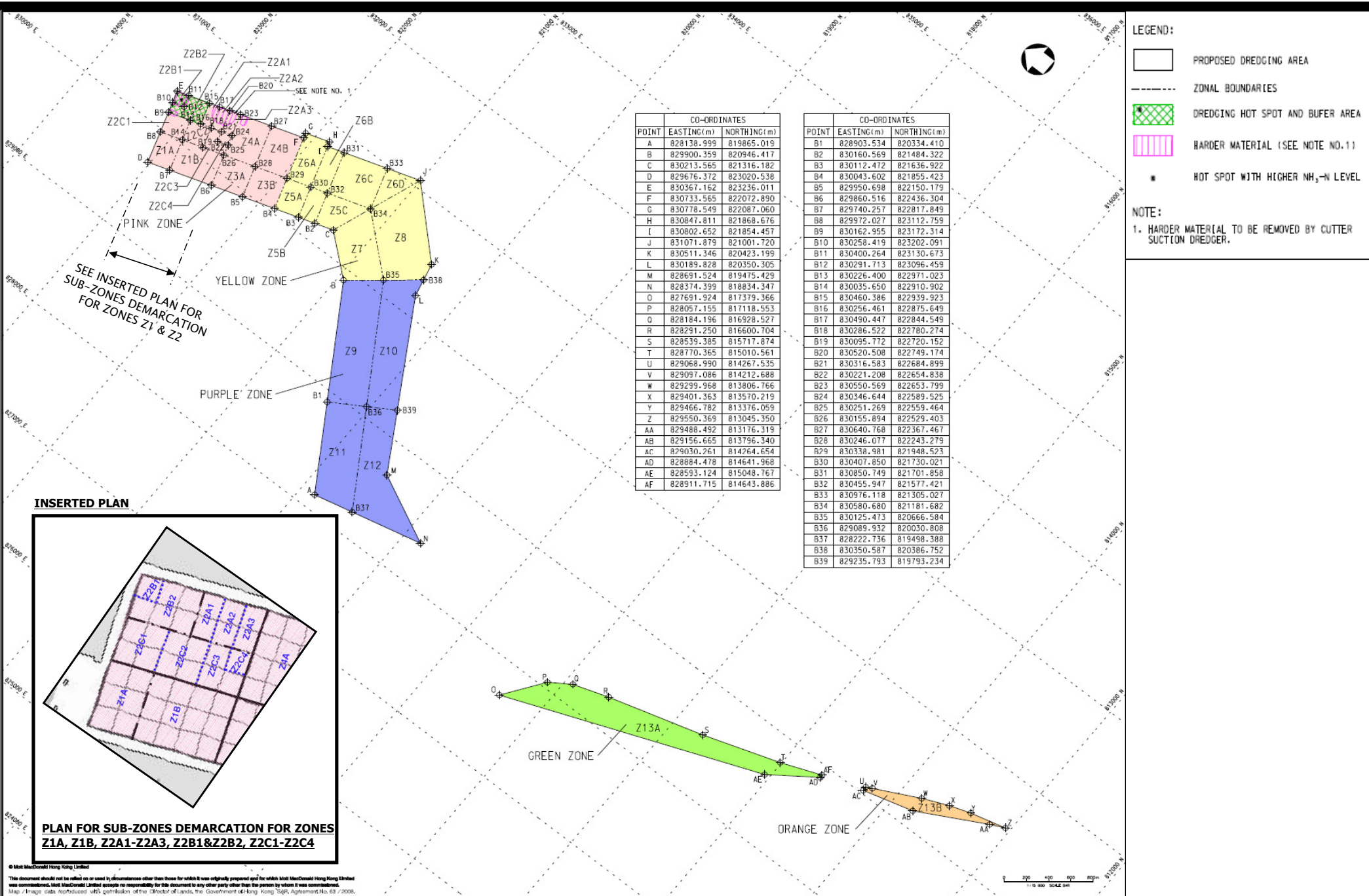
Tel : +852 2450 8233
Fax : +852 2450 6138
E-mail : matlab@fugro.com
Website : www.fugro.com



Report No.: 0394/13/ED/0391

Figure 1

Project General Layout



Project Title: Providing Sufficient Water Depth for Kwai Tsing Container Basin and its Approach Channel

Figure 2: Zones and Sub-zone of Dredging Plan Layout (Extracted from Figure 2 of Justification for the Proposed Demarcation of the Dredging Zones)

Environmental Permit No.:

EP-426/2011/A



© Mott MacDonald Hong Kong Limited
 This document should not be relied on or used in circumstances other than those for which it was originally prepared and for which Mott MacDonald Hong Kong Limited was commissioned. Mott MacDonald Limited accepts no responsibility for this document to any other party other than the person by whom it was commissioned.
 Map / Image data reproduced with permission of the Director of Lands, the Government of Hong Kong SAR, Agreement No. 83 / 2008.

FUGRO TECHNICAL SERVICES LIMITED

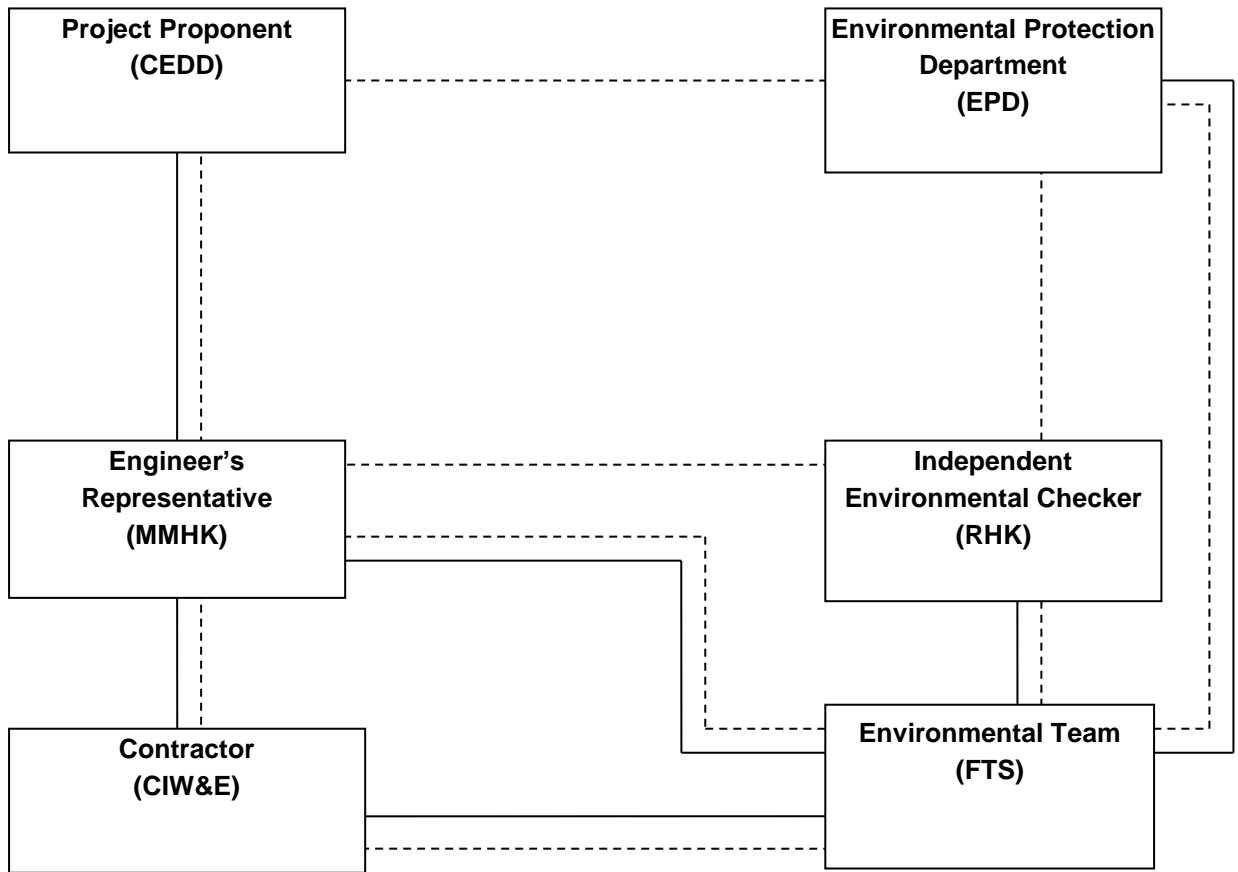
Fugro Development Centre,
5 Lok Yi Street, Tai Lam,
Tuen Mun, N.T.,
Hong Kong.

Tel : +852 2450 8233
Fax : +852 2450 6138
E-mail : matlab@fugro.com
Website : www.fugro.com



Report No.: 0394/13/ED/0391

Appendix A Project Organization Chart



Legend:
— Line of Reporting
- - - Line of Communication

FUGRO TECHNICAL SERVICES LIMITED

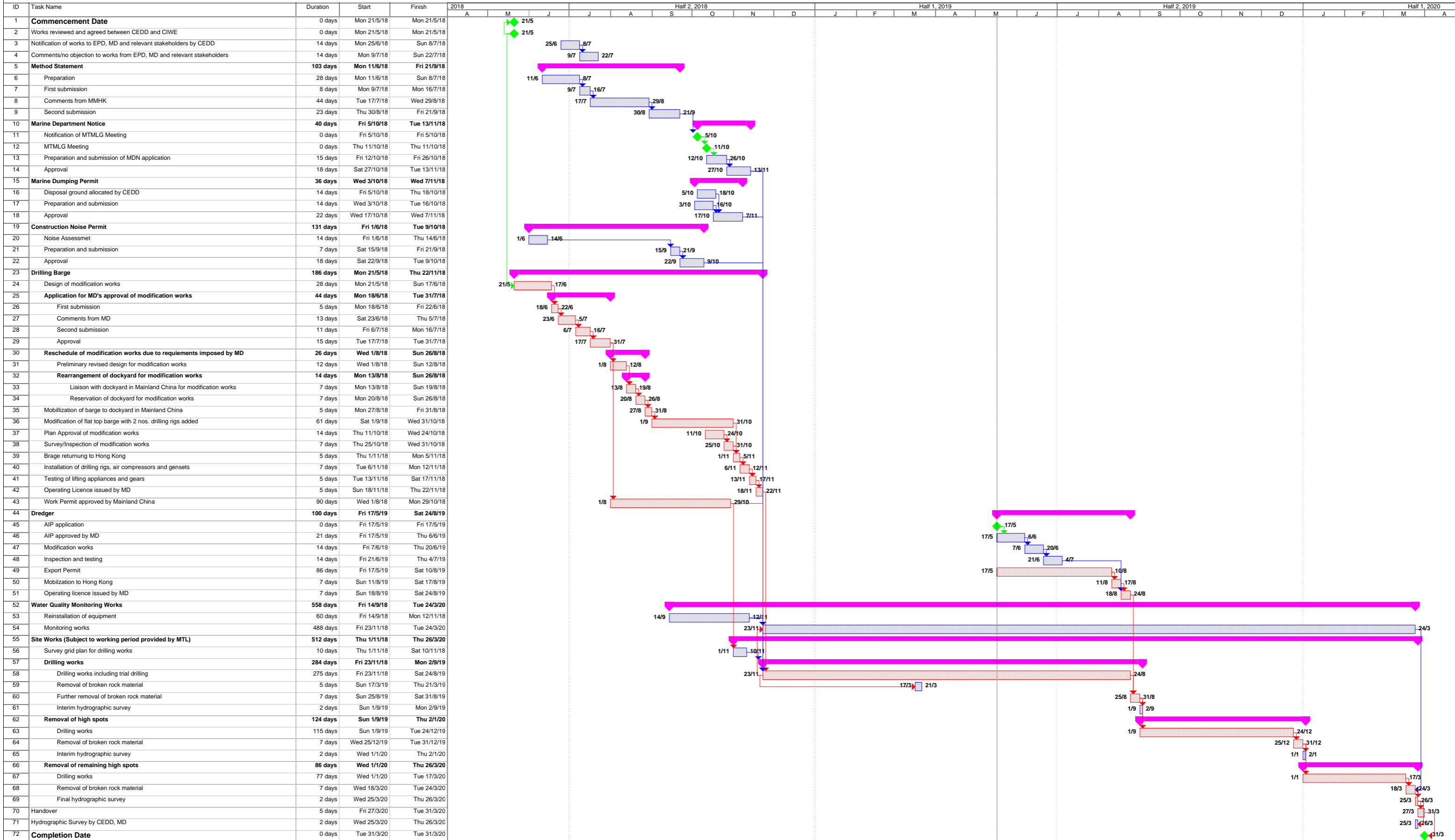
Fugro Development Centre,
5 Lok Yi Street, Tai Lam,
Tuen Mun, N.T.,
Hong Kong.

Tel : +852 2450 8233
Fax : +852 2450 6138
E-mail : matlab@fugro.com
Website : www.fugro.com



Report No.: 0394/13/ED/0391

Appendix B Construction Programme



China International Water & Electric Corp. Task Critical Task Milestone Summary

Remark: The construction work under this Contract has been temporarily suspended since 1 February 2020 and is expected to be resumed on 30 March 2020. Therefore the water quality monitoring programme (including routine water quality impact monitoring and 24-hour water quality monitoring) will be resumed on 30 March 2020 correspondingly.

FUGRO TECHNICAL SERVICES LIMITED

Fugro Development Centre,
5 Lok Yi Street, Tai Lam,
Tuen Mun, N.T.,
Hong Kong.

Tel : +852 2450 8233
Fax : +852 2450 6138
E-mail : matlab@fugro.com
Website : www.fugro.com



Report No.: 0394/13/ED/0391

Appendix C Action and Limit Levels

Action and Limit Levels for Routine Water Quality Monitoring (Dry Season)

Monitoring Station	DO (mg/L) Surface & Middle		DO (mg/L) Bottom		Turbidity (NTU) Depth-Averaged		Suspended Solids (mg/L) Depth-averaged		BOD5(mg/L) Depth- averaged		E.coli (CFU /100mL) Depth-averaged		NH3-N (mg/L) Depth-averaged		UIA (mg/L) Depth-averaged		Synthetic Detergent as MBAS (mg/L) Depth- averaged		TIN (mg/L) Depth Averaged	
	AL	LL	AL	LL	AL	LL	AL	LL	AL	LL	AL	LL	AL	LL	AL	LL	AL	LL	AL	LL
Seawater Intake																				
SR4	2	2	2	2	<10	<10	<10	<10	<10	<10	<20,000	<20,000	<1	<1	0.021	0.021	<5	<5	NA	NA
SR12																				
Fish Culture Zone																				
SR5	5.45	5.39#	5.43	5.27*	6.7 or 120%C*	10.1 or 130%C^	12 or 120%C*	19 or 130%C^	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.36	0.39
EMSD Cooling Water Intake																				
SR13	5.31	5.22#	5.29	5.12*	13.1 or 120%C*	15.7 or 130%C^	23 or 120%C*	38 or 130%C^	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Note:

* Or 120% of upstream control station at the same tide of the day

^ Or 130% of upstream control station at the same tide of the day

According to EM&A Manual, LL of DO (surface & middle) is 5 mg/L or 1 percentile of baseline data in FCZ; 4 mg/L or 1 percentile of baseline data in other impact monitoring stations.

+ According to EM&A Manual, LL of DO (bottom) is 2 mg/L or 1 percentile of baseline data

For DO measurement, non-compliance occurs when monitoring result is lower than the limits;

For TIN, UIA, NH₃-N, SS, BOD₅, E.coli, synthetic detergent and turbidity, non-compliance of water quality results when monitoring results is higher than the limits;

AL/LL of TIN and NH₃-N are determined from laboratory results for better accuracy and reliability. These AL/LL will be applied to both laboratory and in-situ measurements at impact stage.

Dry Season: November to March

Action and Limit Levels for Routine Water Quality Monitoring (Wet Season)

Monitoring Station	DO (mg/L) Surface & Middle		DO (mg/L) Bottom		Turbidity (NTU) Depth-Averaged		Suspended Solids (mg/L) Depth-averaged		BOD5 (mg/L) Depth- averaged		E.coli (CFU /100mL) Depth-averaged		NH3-N (mg/L) Depth-averaged		UIA (mg/L) Depth-averaged		Synthetic Detergent as MBAS (mg/L) Depth-averaged		TIN (mg/L) Depth Averaged	
	AL	LL	AL	LL	AL	LL	AL	LL	AL	LL	AL	LL	AL	LL	AL	LL	AL	LL	AL	LL
Seawater Intake																				
SR4	2	2	2	2	<10	<10	<10	<10	<10	<10	<20,000	<20,000	<1	<1	0.021	0.021	<5	<5	NA	NA
SR12																				
Fish Culture Zone																				
SR5	5.00#	5.00#	4.11	4.04+	10.8 or 120%C*	15.0 or 130%C^	12 or 120%C*	19 or 130%C^	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.45	0.50
EMSD Cooling Water Intake																				
SR13	4.24	4.17#	3.70	3.58+	13.1 or 120%C*	15.7 or 130%C^	23 or 120%C*	38 or 130%C^	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Note:

* Or 120% of upstream control station at the same tide of the day

^ Or 130% of upstream control station at the same tide of the day

According to EM&A Manual, LL of DO (surface & middle) is 5 mg/L or 1 percentile of baseline data in FCZ; 4 mg/L or 1 percentile of baseline data in other impact monitoring stations. (5%ile & 1 %ile determined from wet season baseline data for cluster 1 (4.68mg/L & 4.62mg/L) and cluster 2 (5.00mg/L & 4.82mg/L) are 5mg/L or below, thus 5mg/L was adopted as the AL & LL for the SR in FCZ)

+ According to EM&A Manual, LL of DO (bottom) is 2 mg/L or 1 percentile of baseline data

Referring to the ER Letter ref. (CV/2013/04)/M45/400/1247 dated 19 March 2015, a Revised Baseline Water Quality Monitoring Test Methodology – Review of Action and Limit Levels has been submitted to EPD by ER in March 2015. The Action and Limit Level for the wet season (April – October) was effected and applied to the water quality monitoring data from 1 April 2015.

For DO measurement, non-compliance occurs when monitoring result is lower than the limits;

For TIN, UIA, NH₃-N, SS, BOD₅, E.coli, synthetic detergent and turbidity, non-compliance of water quality results when monitoring results is higher than the limits;

AL/LL of TIN and NH₃-N are determined from laboratory results for better accuracy and reliability. These AL/LL will be applied to both laboratory and in-situ measurements at impact stage.

Wet season: April to October

Action and Limit Levels for 24-hr Water Quality Monitoring (Dry Season)

Monitoring Station	DO (mg/L) Surface		Turbidity (NTU) Surface		Ammonia-N (mg/L) Surface	
	AL	LL	AL	LL	AL	LL
WSD Seawater Intake						
SR4	2	2	<10	<10	<1	<1
SR12						
Fish Culture Zone						
SR5	5.46	5.39	6.0	7.9	NA	NA
EMSD Cooling Water Intake						
SR13	5.28	5.22	11.9	13.3	NA	NA

Note: According to EM&A Manual, LL of DO (surface & middle) is 5 mg/L or 1 percentile of baseline data in FCZ; 4 mg/L or 1 percentile of baseline data in other impact monitoring stations.

Dry Season: November to March.

Action and Limit Levels for 24-hr Water Quality Monitoring (Wet Season)

Monitoring Station	DO (mg/L) Surface		Turbidity (NTU) Surface		Ammonia-N (mg/L) Surface	
	AL	LL	AL	LL	AL	LL
WSD Seawater Intake						
SR4	2	2	<10	<10	<1	<1
SR12						
Fish Culture Zone						
SR5	5.24	5.13	9.7	14.4	NA	NA
EMSD Cooling Water Intake						
SR13	4.23	4.17	11.9	13.3	NA	NA

Note: # According to EM&A Manual, LL of DO (surface & middle) is 5 mg/L or 1 percentile of baseline data in FCZ; 4 mg/L or 1 percentile of baseline data in other impact monitoring stations. (1 %ile determined from wet season baseline data for cluster 2 (4.78mg/L) is below 5mg/L, thus 5mg/L was adopted as the DO (surface) LL for the SR in FCZ in cluster 2 stations)

Referring to the ER Letter ref. (CV/2013/04)/M45/400/1247 dated 19 March 2015, a Revised Baseline Water Quality Monitoring Test Methodology – Review of Action and Limit Levels has been submitted to EPD by ER in March 2015. The Action and Limit Level for the wet season (April – October) was effected and applied to the water quality monitoring data from 1 April 2015.

Wet Season: April to October.

FUGRO TECHNICAL SERVICES LIMITED

Fugro Development Centre,
5 Lok Yi Street, Tai Lam,
Tuen Mun, N.T.,
Hong Kong.

Tel : +852 2450 8233
Fax : +852 2450 6138
E-mail : matlab@fugro.com
Website : www.fugro.com



Report No.: 0394/13/ED/0391

Appendix D Schedules for Routine Impact Water Quality Monitoring

Water Quality Monitoring Schedule (Next Reporting Period)

Sun	Mon	Tue	Wed	Thur	Fri	Sat
	23 March 2020	24	25	26	27	28
29	30	31 Routine WQM Mid-Flood (09:12) Mid-Ebb (16:39)	1 April 2020	2 Routine WQM Mid-Flood (07:19) Mid-Ebb (19:08)	3	4 Routine WQM Mid-Flood (04:32) Mid-Ebb (10:00)
5	6	7 Routine WQM Mid-Flood (05:56) Mid-Ebb (11:53)	8	9 Routine WQM Mid-Flood (07:03) Mid-Ebb (13:12)	10	11 Routine WQM Mid-Flood (08:12) Mid-Ebb (14:37)
12	13	14 Routine WQM Mid-Flood (10:01) Mid-Ebb (17:31)	15	16 Routine WQM Mid-Flood (07:50) Mid-Ebb (19:58)	17	18 Routine WQM Mid-Flood (04:46) Mid-Ebb (10:32)
19	20	21 Routine WQM Mid-Flood (05:52) Mid-Ebb (11:55)	22			

Remarks

- Actual monitoring will be subjected to change due to any safety concern or adverse weather condition.
- According to the approved proposal (Ref: 0394/13ED/0370G), routine impact water quality monitoring locations are SR4, SR5, SR12, SR13, G2, C1A and C2A.
- According to the information provided by the Contractor, the construction work under this Contract has been temporarily suspended since 1 February 2020. The water quality monitoring programme (including routine water quality impact monitoring and 24-hour water quality monitoring) was suspended from 21 February 2020 which was agree by EPD on 20 February 2020 (Ref: Ax(1) to EP2/N3/C/57 Pt.10). The marine construction works and the water quality monitoring programme (including the routine impact water quality monitoring and 24-hour water quality monitoring) will be tentatively resumed on 30 March 2020.

FUGRO TECHNICAL SERVICES LIMITED

Fugro Development Centre,
5 Lok Yi Street, Tai Lam,
Tuen Mun, N.T.,
Hong Kong.

Tel : +852 2450 8233
Fax : +852 2450 6138
E-mail : matlab@fugro.com
Website : www.fugro.com



Report No.: 0394/13/ED/0391

Appendix E Event and Action Plans

Typical Event and Action Plan for Water Quality for Construction Phase

Event	Action			
	ET Leader	IEC	ER	Contractor
Action Level				
Exceedance for one sample	<ol style="list-style-type: none"> 1. Repeat in-situ measurement to confirm finding; 2. Identify source(s) of impact; 3. Inform IEC and Contractor; 4. Check monitoring data, all plant, equipment and Contractor's working methods; 5. Discuss mitigation measures with IEC and Contractor; and 6. Repeat measurement on next day of exceedance. 	<ol style="list-style-type: none"> 1. Discuss with ET and Contractor on the mitigation measures; 2. Review proposals on mitigation measures submitted by Contractor and advise the ER accordingly; and 3. Assess the effectiveness of the implemented mitigation measures. 	<ol style="list-style-type: none"> 1. Discuss with IEC on the proposed mitigation measures; and 2. Make agreement on the mitigation measures to be implemented. 	<ol style="list-style-type: none"> 1. Inform the ER and confirm notification of the non-compliance in writing; 2. Rectify unacceptable practice; 3. Check all plant and equipment; 4. Consider changes of working methods; 5. Discuss with ET and IEC and propose mitigation measures to IEC and ER; and 6. Implement the agreed mitigation measures.
Exceedance for two or more consecutive samples	<ol style="list-style-type: none"> 1. Repeat in-situ measurement to confirm finding; 2. Identify source(s) of impact; 3. Inform IEC and Contractor; 4. Check monitoring data, all plant, equipment and Contractor's working methods; 5. Discuss mitigation measures with IEC and Contractor; 6. Ensure mitigation measures are implemented; 7. Prepare to increase the monitoring frequency to daily; and 8. Repeat measurement on next day of exceedance. 	<ol style="list-style-type: none"> 1. Discuss with ET and Contractor on the mitigation measures; 2. Review proposals on mitigation measures submitted by Contractor and advise the ER accordingly; and 3. Assess the effectiveness of the implemented mitigation measures. 	<ol style="list-style-type: none"> 1. Discuss with IEC on the proposed mitigation measures; 2. Make agreement on the mitigation measures to be implemented; and 3. Assess the effectiveness of the implemented mitigation measures. 	<ol style="list-style-type: none"> 1. Inform the ER and confirm notification of the non-compliance in writing; 2. Rectify unacceptable practice; 3. Check all plant and equipment; 4. Consider changes of working methods; 5. Discuss with ET and IEC and propose mitigation measures to IEC and ER within 3 working days; and 6. Implement the agreed mitigation measures.
Exceedance for two or more consecutive samples	<ol style="list-style-type: none"> 1. Repeat in-situ measurement to confirm finding; 2. Identify source(s) of impact; 3. Inform IEC and Contractor; 4. Check monitoring data, all plant, equipment and Contractor's working methods; 5. Discuss mitigation measures with IEC and Contractor; 6. Ensure mitigation measures are implemented; 7. Prepare to increase the monitoring frequency to daily; and 8. Repeat measurement on next day of exceedance. 	<ol style="list-style-type: none"> 1. Discuss with ET and Contractor on the mitigation measures; 2. Review proposals on mitigation measures submitted by Contractor and advise the ER accordingly; and 3. Assess the effectiveness of the implemented mitigation measures. 	<ol style="list-style-type: none"> 1. Discuss with IEC on the proposed mitigation measures; 2. Make agreement on the mitigation measures to be implemented; and 3. Assess the effectiveness of the implemented mitigation measures. 	<ol style="list-style-type: none"> 1. Inform the ER and confirm notification of the non-compliance in writing; 2. Rectify unacceptable practice; 3. Check all plant and equipment; 4. Consider changes of working methods; 5. Discuss with ET and IEC and propose mitigation measures to IEC and ER within 3 working days; and 6. Implement the agreed mitigation measures.
Limit Level				
Exceedance for one sample	<ol style="list-style-type: none"> 1. Repeat in-situ measurement to confirm finding; 2. Identify source(s) of impact; 3. Inform IEC, Contractor and EPD, if the exceedance is recorded at Fish Culture Zone, AFCD should be informed. If the exceedance is recorded at WSD Flushing Water intakes, WSD should be informed; 4. Check monitoring data, all plant, equipment 	<ol style="list-style-type: none"> 1. Discuss with ET and Contractor on the mitigation measures; 2. Review proposals on mitigation measures submitted by Contractor and advise the ER accordingly; and 3. Assess the effectiveness of the implemented mitigation measures. 	<ol style="list-style-type: none"> 1. Discuss with IEC, ET and Contractor on the proposed mitigation measures; and 2. Request Contractor to critically review the working methods; 3. Make agreement on the mitigation measures to be implemented; and 4. Assess the effectiveness of the implemented mitigation measures. 	<ol style="list-style-type: none"> 1. Inform the ER and confirm notification of the non-compliance in writing; 2. Rectify unacceptable practice; 3. Check all plant and equipment; 4. Consider changes of working methods; 5. Discuss with ET and IEC and ER and propose mitigation measures to IEC and ER within 3 working days; and 6. Implement the agreed mitigation measures.

Event	Action			
	ET Leader	IEC	ER	Contractor
	<p>and Contractor's working methods;</p> <p>5. Discuss mitigation measures with IEC, ER and Contractor;</p> <p>6. Ensure mitigation measures are implemented; and</p> <p>7. Increase the monitoring frequency to daily until no exceedance of Limit level.</p>			
Exceedance for two or more consecutive samples	<p>1. Repeat in-situ measurement to confirm finding;</p> <p>2. Identify source(s) of impact;</p> <p>3. Inform IEC, Contractor and EPD, if the exceedance is recorded at Fish Culture Zone, AFCD should be informed. If the exceedance is recorded at WSD Flushing Water intakes, WSD should be informed;</p> <p>4. Check monitoring data, all plant, equipment and Contractor's working methods;</p> <p>5. Discuss mitigation measures with IEC, ER and Contractor;</p> <p>6. Ensure mitigation measures are implemented; and</p> <p>7. Increase the monitoring frequency to daily until no exceedance of Limit level for two consecutive days.</p>	<p>1. Discuss with ET and Contractor on the mitigation measures;</p> <p>2. Review proposals on mitigation measures submitted by Contractor and advise the ER accordingly; and</p> <p>3. Assess the effectiveness of the implemented mitigation measures.</p>	<p>1. Discuss with IEC, ET and Contractor on the proposed mitigation measures; and</p> <p>2. Request Contractor to critically review the working methods;</p> <p>3. Make agreement on the mitigation measures to be implemented;</p> <p>4. Assess the effectiveness of the implemented mitigation measures; and</p> <p>5. Consider and instruct, if necessary, the Contractor to slow down or to stop all or part of the marine work until no exceedance of Limit Level.</p>	<p>1. Inform the ER and confirm notification of the non-compliance in writing;</p> <p>2. Rectify unacceptable practice;</p> <p>3. Check all plant and equipment;</p> <p>4. Consider changes of working methods;</p> <p>5. Discuss with ET and IEC and ER and propose mitigation measures to IEC and ER within 3 working days;</p> <p>6. Implement the agreed mitigation measures; and</p> <p>7. As directed by the ER, to slow down or to stop all or part of the marine work or construction activities.</p>

Event and Action Plan for 24-hour Water Quality Monitoring

Event	Action			
	ET Leader	Contractor	ER	IEC
Action Level				
On Action Level exceedance of turbidity or DO (mg/L) (over a period of 30-minute), or exceedance of ammonia (mg/L) (over a period of 60-minute). Notification is sent to ET, Contractor, ER, EPD, AFCD and WSD automatically via email	<ol style="list-style-type: none"> 1. Check data and determine if the exceedance was due to equipment problem. If so, fix the problem within 1 working day. Continue monitoring 2. Carry out investigation as soon as possible after identification of exceedance. Check monitoring data (including data from regular water quality), all plant, equipment and Contractor's working methods; 3. Report the initial investigation results to the Contractor within 24 hours of identification of exceedance. Advise contractor if exceedance may be due to contractor's construction works. 4. Conduct water quality monitoring at the mariculture/ WSD flushing water intake station with exceedance recorded and gradient stations in vicinity within 18 hours of identification of exceedance if the exceedance may be due to the works. Parameters to monitor include DO (mg/L), turbidity and SS. 5. Report the monitoring data to the Contractor within 48 hours of identification of exceedance. Advise contractor if exceedance is due to contractor's construction works. 6. Discuss mitigation measures with IEC, ER and Contractor within 2 working days of submission of the investigation results. 7. Ensure mitigation measures are implemented; 8. Closely monitor the concerned 24-hr station. 	<ol style="list-style-type: none"> 1. Check all plant and equipment; 2. Consider changes of working methods; 3. Rectify unacceptable practice; 4. Submit the monitoring data and results of the investigation to IEC and ER within 48 hours of the identification of an exceedance Inform EPD, AFCD and WSD of the results; 5. Discuss with ET, IEC and ER and propose mitigation measures to IEC and ER within 2 working days of submission of the investigation results; 6. Implement the agreed mitigation measures within reasonable time scale 	<ol style="list-style-type: none"> 1. Request Contractor to critically review the working methods; 2. Discuss with IEC, ET and Contractor on the proposed mitigation measures; 3. Ensure remedial measures are properly implemented 4. Assess the effectiveness of the implemented mitigation measures 	<ol style="list-style-type: none"> 1. Check monitoring data submitted by ET 2. Confirm ET assessment if exceedance is due /not due to the works 3. Discuss with ET, ER and Contractor on the mitigation measures 4. Review proposals on mitigation measures submitted by Contractor and advise the ER accordingly 5. Assess the effectiveness of the implemented mitigation measures
Limit Level				
On Limit Level exceedance of turbidity or DO (mg/L) (over a period of 30-minute or exceedance of ammonia (mg/L) (over a period of 60-minute). Notification is sent to ET, Contractor, ER, EPD, AFCD and	<ol style="list-style-type: none"> 1. Check data and determine if the exceedance was due to equipment problem. If so, fix the problem within 1 working day. Continue monitoring 2. Carry out investigation as soon as possible after identification of exceedance. Check monitoring data (including data from regular water quality), all plant, equipment and Contractor's working methods; 	<ol style="list-style-type: none"> 1. Check all plant and equipment; 2. Consider changes of working methods; 3. Rectify unacceptable practice; 4. Submit the monitoring data and results of the investigation to IEC and ER within 48 hours of the identification of an exceedance Inform EPD, AFCD and WSD of the results; 5. Discuss with ET, IEC and ER and propose mitigation measures to IEC and ER within 	<ol style="list-style-type: none"> 1. Request Contractor to critically review the working methods; 2. Discuss with IEC, ET and Contractor on the proposed mitigation measures; 3. Ensure remedial measures are properly implemented 4. Assess the effectiveness of the implemented mitigation measures; 5. Consider and instruct, if necessary, the Contractor to slow down or to stop all or 	<ol style="list-style-type: none"> 1. Check monitoring data submitted by ET 2. Confirm ET assessment if exceedance is due /not due to the works 3. Discuss with ET, ER and Contractor on the mitigation measures 4. Review proposals on mitigation measures submitted by Contractor and advise the ER accordingly 5. Assess the effectiveness of the implemented mitigation measures

Event	Action			
	ET Leader	Contractor	ER	IEC
WSD automatically via email	<p>3. Report the initial investigation results to the Contractor within 24 hours of identification of exceedance. Advise contractor if exceedance may be due to contractor's construction works.</p> <p>4. Conduct water quality monitoring at the all monitoring stations within 18 hours of identification of exceedance if the exceedance may be due to the works. Parameters to monitor include DO (mg/L), turbidity and SS.</p> <p>5. Report the monitoring data to the Contractor within 48 hours of identification of exceedance. Advise contractor if exceedance is due to contractor's construction works.</p> <p>6. Discuss mitigation measures with IEC, ER and Contractor within 2 working days of submission of the investigation results.</p> <p>7. Ensure mitigation measures are implemented;</p> <p>8. Closely monitor the concerned 24-hr station.</p>	<p>2 working days of submission of the investigation results;</p> <p>6. Implement the agreed mitigation measures within reasonable time scale;</p> <p>7. As directed by ER, to slow down or stop all or part of the marine work or construction activities.</p>	<p>part of the marine work until no exceedance of Limit Level.</p>	

FUGRO TECHNICAL SERVICES LIMITED

Fugro Development Centre,
5 Lok Yi Street, Tai Lam,
Tuen Mun, N.T.,
Hong Kong.

Tel : +852 2450 8233
Fax : +852 2450 6138
E-mail : matlab@fugro.com
Website : www.fugro.com



Report No.: 0394/13/ED/0391

Appendix F Environmental Mitigation Implementation Schedule

EIA Ref	EM&A Ref	No.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to Address	Who to implement the measure	Location of the measure	When to implement the measure?	Implementation Status
		A	Water Quality					
3.8	2.9		<u>Use of Silt Screens</u>	Minimize the effect of potential increase in SS levels at the seawater intakes	Contractor	WSD8, WSD9 and EMSD1	Construction Phase	Implemented
	A1	Silt Screens shall be installed at the flushing water intakes WSRs WSD1, WSD8, WSD9 and EMSD1 to minimise the effect of potential increase in SS levels at the seawater intakes.						
3.8	2.9		<u>Use of Silt Curtains</u>	Minimize the release of suspended soil from the dredging area	Contractor	Construction Work Sites	Construction Phase	NA – No dredging was carried out
	A2	To minimize the potential SS impact from dredging, deployment of silt curtains around the grab dredgers is recommended; and Before commencement of dredging works, the holder of the Environmental Permit shall submit detailed proposal of the design and arrangement of the frame type silt curtain to EPD for approval.						
3.10	2.9	A3	Water Quality Monitoring Program	Perform water quality monitoring at sensitive receivers during construction phase	ET	Monitoring Locations as stated in Table 2.1 of the EM&A Manual	Construction Phase	NA – construction work was suspended
			Water quality monitoring shall be carried out in accordance with Section 2 of the Environmental Monitoring and Audit (EM&A) Manual. Event and Action Plan (EAP) for water quality shall be followed in case of any exceedance in action and limit level.					
3.8 (EP Ref 3)	-		Dredging Operation	Minimize potential adverse effect as a result of dredging activities	Contractor	Construction Work Sites	Construction Phase	NA – No dredging was carried out
	A4	Only two types of dredgers are allowed for this Project: (a) grab dredger with closed grab, and (b) cutter suction dredger spud pole grab dredger.						
	A5	The speed of any construction vessels shall not exceed 10 knots when passing through the area of the Project.						
	A6	No more than three two grab dredgers with closed grab (or one cutter suction dredger with two closed grab dredgers) shall be operated within the Project Area at any one time for the Project.						
	A7	Only one closed grab dredger or one cutter suction dredger shall be operated in Zone 2B and during which no other closed grab dredger shall be allowed in other zones within the Project Area.						
	A8	No more than one grab dredger with closed grab (or one cutter suction dredger) shall be operated within each of the five main zones at any one time for the Project in which the cutter suction dredger shall only be operated in Zones 2 and 4 with maximum dredging rate of 700 m ³ in 30 minutes in any given hour (max. 8,400 m ³ /day, based on a 12-hour operation per day).						
	A9	The maximum dredging rate for closed grab dredger at Rambler Channel – Zones 1 to 2 (subzones Z1A, Z1B, Z2A, Z2B and Z2C) shall follow the Dredging Plan for the Hotspot, as shown in EP-426/2011/A.						
	A10	The maximum dredging rate for closed grab dredger at Rambler Channel – Zones 3 to 4 (subzones Z3A to Z4B) shall not exceed 1,600 m ³ per day during dry season or 3,440 m ³ per day during wet season as shown in EP-426/2011/A.						
	A11	The maximum dredging rate for closed grab dredger at Rambler Channel – Zones 5 to 6 (subzones Z5A, Z5B and Z6A) shall not exceed 4,000 m ³ per day during both dry and wet seasons as shown in EP-426/2011/A.						

EIA Ref	EM&A Ref	No.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to Address	Who to implement the measure	Location of the measure	When to implement the measure?	Implementation Status
		A12	The maximum dredging rate for closed grab dredger at Rambler Channel – Zones 5 to 8 (subzones Z5C, Z6B, Z6C, Z6D, Z7 and Z8) shall not exceed 4,000 m ³ per day during both dry and wet seasons as shown in EP-426/2011/A.					NA – No dredging was carried out
		A13	The maximum dredging rate for closed grab dredger at Northern Fairway – Zones 9 to 12 shall not exceed 4,000 m ³ per day during both dry and wet seasons as shown in EP-426/2011/A.					NA – No dredging was carried out
		A14	The maximum dredging rate for closed grab dredger at Western Fairway – Zone 13A shall not exceed 4,000 m ³ per day during both dry and wet seasons as shown in EP-426/2011/A.					NA – No dredging was carried out
		A15	The maximum dredging rate for closed grab dredger at Western Fairway – Zone 13B shall not exceed 4,000 m ³ per day during both dry and wet seasons as shown in EP-426/2011/A.					NA – No dredging was carried out
		A16	The dredging pump of cutter suction dredger shall be operated during cutting to reduce the sediment loss to water body.					NA-no CSD employed
		A17	Project dredging works within Zone 1 to 6 (including sub-zones) of the Container Basin shall not be carried out at the same time with Terminal Operator's maintenance dredging activities.					NA-No Terminal Operator's maintenance dredging carried out
		A18	Cutter suction dredger is only to be deployed for the removal of harder material during daytime only (07:00 to 19:00) in Zone 2 (including subzones) of the Container Basin.					NA-no CSD employed
		A19	In case of rainstorm warning in effect during dredging works, the dredged material on barge shall be covered properly before transportation to disposal site.					NA – No dredging was carried out
		A20	In case of exceedance of SS and NH ₃ -N at the Tsing Yi WSD flushing intake due to dredging operation is evidenced, the Contractor shall propose mitigation measures not limited to reducing dredging rate. If exceedance persists, the Contractor shall propose not to undertake dredging operation in close proximity to the Tsing Yi flushing water intake during flood tide. The Contractor shall liaise with the ETL, IEC, ER, EPD and WSD for the proposed mitigation measures.					NA No dredging was carried out
		A21	If further mitigation measures are required due to continuous exceedance of SS and NH ₃ -N, consideration shall then be given to dredge only on the state of the tide which would avoid migration of SS towards the WSD and EMSD intakes.					NA-no exceedance due to dredging operation
		A22	Dredging sub-zone Z2B where high NH ₃ -N in sediment is found shall be isolated with dredging works to be carried out towards the end of construction programme.					Implemented
		A23	Administrative control in terms of dredging rate adjustment in controlling the release of contaminants shall be employed as mitigation measures.					NA – No dredging was carried out
		A24	Field trials shall be carried out to propose the most effective dredging process and rate to control the release of ammoniacal nitrogen and UIA into the water column and achieve compliance at the WSD1 seawater intake (NH ₃ -N) and at the beaches for UIA.					Implemented

EIA Ref	EM& A Ref	No.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to Address	Who to implement the measure	Location of the measure	When to implement the measure?	Implementation Status
			Capital dredging works in dredging sub-zone Z2B (Figure 1.2h refers) should not therefore be carried out until the proposed method and rate are confirmed.					
		A25	Detailed dredging plan shall be prepared providing details of individual dredging subzones and dredging rate taking into account of the field trial results.					Implemented
3.8	-		Other Good Site Practices for Dredging	Minimize potential adverse effect as a result of dredging activities	Contractor	Construction Work Sites	Construction Phase	
		A26	All vessels should be sized so that adequate clearance is maintained between vessels and the seabed in all tide conditions, to ensure that undue turbidity is not generated by turbulence from vessel movement or propeller wash.					NA – site was closed and construction work was suspended
		A27	The speed of all Contractor's vessels should be controlled within the works area to prevent propeller wash from stirring up the seabed sediments.					NA – site was closed and construction work was suspended
		A28	All barges / dredgers used should be fitted with tight fitting seals to their bottom openings to prevent leakage of material.					NA – site was closed and construction work was suspended
		A29	Construction activities should not cause foam, oil, grease, scum, litter or other objectionable matter to be present on the water within the site or dumping grounds.					NA – site was closed and construction work was suspended
		A30	No overflow of dredged mud should be allowed. Barges or hopper should not be filled to a level that will cause the overflow of materials or polluted water during loading or transportation.					NA – site was closed and construction work was suspended
		B	Waste Management					
			<u>Good Site Practices</u>	Minimize potential adverse effect arising from the handling of dredged material	Contractor	Construction Work Sites (General)	Construction Phase	
4.5	3.3	B1	Obtain the profile of different sediment categories and careful planning of sediment removal.					Implemented
		B2	Nomination of an approved person, such as a site manager, to be responsible for good site practices, arrangements for collection and effective disposal to an appropriate facility, of all wastes generated at the site.					Implemented
		B3	Training of site personnel in proper waste management and chemical handling procedures.					Implemented
		B4	Provision of sufficient waste disposal points and regular collection of waste.					Implemented
		B5	Well planned delivery programme for offsite disposal such that adverse environmental impact from transporting sediment material is not anticipated.					Implemented
		B6	Use well maintained PME on site.	Implemented				
			<u>General Refuse</u>	Minimize the adverse effect arising from the handling of site general refuse	Contractor	Construction Work Sites (General)	Construction Phase	
4.5	3.3	B7	General refuse should be stored in enclosed bins. A reputable waste collector should be employed by the contractor to remove general refuse from the site.					Implemented
			<u>Chemical Waste</u>	Minimize the adverse effect arising from the handling of site	Contractor	Construction Work Site	Construction Phase	
4.5	3.3	B8	If chemical wastes are produced at the construction site, the Contractor shall be required to register with the EPD as a chemical waste producer and to follow the guidelines stated in the Code of Practice on the Packaging, Labelling and					Implemented

EIA Ref	EM& A Ref	No.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to Address	Who to implement the measure	Location of the measure	When to implement the measure?	Implementation Status
			Storage of Chemical Wastes. Good quality containers compatible with the chemical wastes shall be used, and incompatible chemicals should be stored separately. Appropriate labels shall be securely attached on each chemical waste container indicating the corresponding chemical characteristics of the chemical waste, such as explosive, flammable, oxidizing, irritant, toxic, harmful, corrosive, etc. The Contractor shall use a licensed collector to transport and dispose of the chemical wastes, to either the approved Chemical Waste Treatment Centre, or another licensed facility, in accordance with the Waste Disposal (Chemical Waste) (General) Regulation.	chemical waste				
4.5	3.3		Marine Dredged Sediment	Control of transportation and disposal of dredged material in a manner to minimize potential impacts on water quality	Contractor	Construction Work Site	Construction Phase	
		B9	Control of transportation and disposal of dredged material in a manner to minimize potential impacts on water quality.					NA – No dredging was carried out
		B10	Bottom opening of barges will be fitted with tight fitting seals to prevent leakage of material. Excess material shall be cleaned from the decks and exposed fittings of barges and dredgers before the vessel is moved.					NA – No dredging was carried out
		B11	Monitoring of the barge loading shall be conducted to ensure that loss of material does not take place during transportation. Transport barges or vessels shall be equipped with automatic self-monitoring devices as specified by the EPD.					NA – No dredging was carried out
		B12	Barges or hopper barges shall not be filled to a level that would cause the overflow of materials or sediment laden water during loading or transportation.					NA – No dredging was carried out
		B13	Sediment Quality Report shall be prepared and submit to EPD under DASO.					Implemented
		B14	If disposal of Type 3 sediment is identified, agreement with EPD shall be reached regarding the treatment of sediment before disposal.					NA – no type 3 material disposed
		B15	Project works shall not be carried out before obtaining confirmation from MFC on disposal option.					Implemented
		B16	Follow strictly all conditions stipulated in the dumping permit.					Implemented
		C	Marine Ecology	Review and assess the potential adverse effect on marine ecology	Contractor	Construction Work Sites	Construction Phase	
5.7	4.1	C1	Water quality monitoring results shall be reviewed from time to time to assess if there were any impact to marine ecology due to dredging operation.					NA – construction work was suspended
		D	Fisheries	Review and assess the potential adverse effect on fisheries	Contractor	Construction Work Sites	Construction Phase	
6.7	5.1	D1	Water quality monitoring results shall be reviewed from time to time to assess if there were any impact to fisheries due to dredging operation.					NA – construction work was suspended
		E	Hazard to Life		Contractor	Construction Work Sites (General)	Construction Phase	
7.8.2	6.2	E1	Sound communication channel shall be established with the oil companies, Marine Department, and Fire Services Department for effective notification and emergency evacuation in case of accidents.					Implemented
		E2	Proper safety and emergency training shall be given to the relevant operation staff at the dredging site. Emergency plans and procedures should be prepared and drills should be performed periodically.					Implemented
		F	Landscape Visual and Glare	Minimize landscape	Contractor	Construction	Throughout	

EIA Ref	EM& A Ref	No.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to Address	Who to implement the measure	Location of the measure	When to implement the measure?	Implementation Status
8.9 Table 8-3 & 8-6	7.2	F1	Visa shields to the lights of dredgers shall be provided.	and visual impacts during construction phase		activities' area	design, construction phase	Implemented
		F2	The light source shall not point directly to any VSRs.					Implemented
		F3	Lights shall be switched off if they are not in use.					Implemented
		G	Cultural Heritage					
9.5	8		<u>Monitoring Brief</u>	Minimize potential marine archaeological impact during dredging activities	Contractor	Locations of the 20 unidentified sonar contacts and masked areas	During Construction works	
		G1	A monitoring brief shall be conducted during the dredging. It shall only be required during dredging at the locations of the 20 unidentified sonar contacts and masked areas and does not need to cover all of the dredging activities. Dredging staff should be briefed about the possibility of locating archaeological objects and a marine archaeologist shall be available to monitor the dredged spoil and provide advice. If material indicative of archaeological remains is retrieved, the AMO should be contacted as soon as possible.					NA- no archaeological deposit was found during reporting period.
		H	Noise					
10.8	9		<u>Good Site Practices</u>	Control and minimize the generation of undue noise nuisance	Contractor	Construction Work Sites (Along the alignment of dredging)	Construction Phase	
		H1	Only well-maintained plant shall be operated on-site and plant should be serviced regularly during the construction program.					NA – site was closed and construction work was suspended
		H2	Machines and plant that may be in intermittent use should be shut down between works periods or should be throttled down to a minimum.					NA – site was closed and construction work was suspended
		H3	Plant known to emit noise strongly in one direction should, wherever possible, be orientated so that the noise is directed away from nearby NSRs.					NA – site was closed and construction work was suspended
		H4	If dredging is to be carried out during restricted hours, work locations close to NSRs shall be avoided.					NA – site was closed and construction work was suspended
		I	Construction Dust					
11.7	10		<u>Dust Control</u>	Good site practice to control dust and odour impact to the nearby sensitive receivers	Contractor	Construction Work Sites (General)	Construction Phase	
		I1	Requirements of the Air Pollution Control (Construction Dust) Regulation, where relevant, shall be adhered to during the construction period.					NA – site was closed and construction work was suspended
			<u>Odour</u>		Contractor	Construction Work Sites (General)	Construction Phase	
		I2	To minimize potential odour emissions, if dredged sediment is anticipated to be placed on barge for more than a day the load shall be properly covered as far as practicable to minimise the exposed area and potential odour.	NA-no work in such condition				
		I3	If dredged sediment is found to be malodorous it shall be removed from site as soon as possible within one hour after the barge being filled up.				NA-no work in such condition	

FUGRO TECHNICAL SERVICES LIMITED

Fugro Development Centre,
5 Lok Yi Street, Tai Lam,
Tuen Mun, N.T.,
Hong Kong.

Tel : +852 2450 8233
Fax : +852 2450 6138
E-mail : matlab@fugro.com
Website : www.fugro.com



Report No.: 0394/13/ED/0391

Appendix G Waste Generation in Reporting Period

Name of Department : Civil Engineering and Development Department
 Contract No. : CV/2013/04

Monthly Summary Waste Flow Table for 2020 (year)

Year	Actual Quantities of Inert C&D Materials Generated Monthly					Actual Quantities of C&D Wastes Generated Monthly				
	Total Quantity Generated	Broken Concrete (see Note 3)	Reused in the Contract	Reused in other Projects	Disposed as Public Fill	Metals	Paper/cardboard packaging	Plastics (see Note 2)	Chemical Waste	Others, e.g. general refuse
	(in '000 m ³)	(in '000 m ³)	(in '000 m ³)	(in '000 m ³)	(in '000 m ³)	(in '000 kg)	(in '000 kg)	(in '000 kg)	(in '000 kg)	(in '000 m ³)
2020										
Jan	nil	nil	nil	nil	nil	nil	nil	nil	nil	nil
Feb	nil	nil	nil	nil	nil	nil	nil	nil	nil	nil
Mar	nil	nil	nil	nil	nil	nil	nil	nil	nil	nil
Apr										
May										
Jun										
Jul										
Aug										
Sep										
Oct										
Nov										
Dec										
Total	nil	nil	nil	nil	nil	nil	nil	nil	nil	nil

Notes:

- (1) The waste flow table shall also include C&D materials that are specified in the Contract to be imported for use at the Site.
- (2) Plastics refer to plastic bottles/containers, plastic sheets/foam from packaging material.
- (3) Broken concrete for recycling into aggregates

Monthly Summary of Sediment Disposal (2020)

Marine Sediment Type	Type 1 – Open Sea Disposal	Type 2 – Confined Marine Disposal	Type 3 – Special Treatment / Disposal
Month	Quantity (m ³)	Quantity (m ³)	Quantity (m ³)
2014			
Jan-Dec	549,430	99,660	nil
2015			
Jan-Dec	938,560	372,370	nil
2016			
Jan-Dec	195,860	153,250	1,260
2017			
Jan-Dec	1,850	28,550	nil
2018			
Jan-Dec	nil	nil	nil
2019			
Jan-Dec	nil	2,850	nil
2020			
January	nil	250	nil
February	nil	nil	nil
March	nil	nil	nil
Total	1,685,700	656,930	1,260

Yearly Summary Waste Flow Table

Year	Estimated Annual Quantities of Inert C&D Materials (in '000m ³)										Estimated Annual of C&D Wastes									
	Total Quantity Generated		Broken Concrete (see Note 3)		Reused in the Contract		Reused in other Projects		Disposed as Public Fill		Metals		Paper/cardboard packaging		Plastics (see Note 2)		Chemical Waste		Others, e.g. general refuse	
	(a)		(b)		(c)		(d)		(a-b-c-d)		(in '000 kg)		(in '000 kg)		(in '000 kg)		(in '000 kg)		(in '000 m ³)	
	Est.	Act.	Est.	Act.	Est.	Act.	Est.	Act.	Est.	Act.	Est.	Act.	Est.	Act.	Est.	Act.	Est.	Act.	Est.	Act.
2013	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	0.003	0.01
2014	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	0.2	0.16
2015	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	13	14.4	0.2	0.12
2016	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	17	Nil	0.2	0.12
2017	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	10	Nil	0.15	0.12
2018	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
2019	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
2020																				
2021																				
Grand Total	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	40	14.4	0.753	0.53

Notes:

- (1) The waste flow table shall also include C&D materials that are specified in the Contract to be imported for use at the Site.
- (2) Plastics refer to plastic bottles/containers, plastic sheets/foam from packaging material
- (3) Broken concrete for recycling into aggregates.