



Environmental Monitoring and Audit for Contaminated Mud Pits to the South of The Brothers and at East Sha Chau (2012-2017) – Investigation *Agreement No. CE 23/2012(EP)*

3rd Monthly Progress Report for Contaminated Mud Pits to the South of The Brothers and at East Sha Chau – November 2012

Revision 0

14 December 2012

Environmental Resources Management

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16/F

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Civil En	gineering and Development Department (CEDD)	017	508	6		
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name of 'EF terms of the	has been prepared by Environmental Resources Management the trading RM Hong-Kong, Limited', with all reasonable skill, care and diligence within the Contract with the client, incorporating our General Terms and Conditions of Id taking account of the resources devoted to it by agreement with the client.	Distr	ibutio Inte	on ernal	OHSA	BSI 18001:2007
We disclaim scope of the	any responsibility to the client and others in respect of any matters outside the above.	\bowtie	Pu	olic	Certificate	No. OHS 515956
nature to thi	s confidential to the client and we accept no responsibility of whatsoever rd parties to whom this report, or any part thereof, is made known. Any such on the report at their own risk.		Co	nfidential	ISO 9 Certificat	001 : 2008 e No. FS 32515







Dredging, Management and Capping of Contaminated Sediment Disposal Facility to the South of The Brothers

Environmental Certification Sheet EP-427/2011/A

Reference Document/Plan

Document/ Plan- to be -Certified / Verified:	3 rd Monthly Progress Report for Contaminated Mud Pits to the South of The Brothers and at East Sha Chau – November 2012
Date of Report:	14 December 2012
Date prepared by ET:	14 December 2012
Date received by IA:	14 December 2012

Reference EP Condition

Environmental Permit Condition:

Condition No.: 4.4

4 hard copies and 1 electronic copy of monthly EM&A Report shall be submitted to the Director within 2 weeks after the end of the reporting month. The EM&A Reports shall include a summary of all noncompliance (exceedances) of the environmental quality performance limits (Action and Limit Levels). The submissions shall be certified by the ET Leader and verified by the Independent Auditor. Additional copies of the submission shall be provided to the Director upon request by the Director.

ET Certification

I hereby certify that the above referenced document/plan complies with the above referenced condition of EP-427/2011/A

Craig A. Reid, Environmental Team Leader:

Date: 14/12/2012

IA Verification

5 5	pove referenced document/ plan complies with	the abov	re referenced condition of
EP-427/2011/A	In MI		
Dr Wang Wen Xiong,	1/1/ aux	Date:	14/12/2012
Independent Auditor:	0 - 0 - 0 - 0		

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Agreement No. CE 23/2012 (EP) Environmental Monitoring and Audit for Contaminated Mud Pits at the South of The Brothers and at East Sha Chau (2012-2017) - Investigation

3rd MONTHLY PROGRESS REPORT FOR NOVEMBER 2012

1.1 BACKGROUND

- 1.1.1 Since early 1990s, contaminated sediment ⁽¹⁾ arising from various construction works in Hong Kong has been disposed of at a series of seabed pits at East of Sha Chau (ESC). In late 2008, a review indicated that the existing and planned facilities at ESC would not be able to meet the disposal demand after 2012. In order to meet this demand, the Hong Kong Special Administrative Region Government (HKSARG) decided to implement a new contained aquatic disposal (CAD) ⁽²⁾ facility at the South of The Brothers (SB CMPs) (hereafter referred to as "the Project") which had been under consideration for a number of years.
- 1.1.2The environmental acceptability of the construction and operation of the
Project had been confirmed by findings of the associated Environmental
Impact Assessment (EIA) study completed in 2005 under Agreement No. CE
12/2002(EP) ⁽³⁾. The Director of Environmental Protection (DEP) approved
this EIA report under the Environmental Impact Assessment Ordinance (Cap. 499)
(EIAO) in September 2005 (EIA Register No.: AEIAR-089/2005).
- 1.1.3 In accordance with the EIA recommendation, prior to commencement of construction works for the SB CMPs, the Civil Engineering and Development Department (CEDD) undertook a detailed review and update of the EIA findings for the SB site ⁽⁴⁾. Findings of the EIA review undertaken in 2009/2010 confirmed that the construction and operation of the SB site had been predicted to be environmentally acceptable.

- (1) According to the Management Framework of Dredged / Excavated Sediment of ETWB TC(W) No. 34/2002, contaminated sediment in general shall mean those sediment requiring Type 2 – Confined Marine Disposal as determined according to this TC(W).
- (2) CAD options may involve use of excavated borrow pits, or may involve purpose-built excavated pits. CAD sites are those which involve filling a seabed pit with contaminated mud and capping it with uncontaminated material such that the original seabed level is restored and the contaminated material is isolated from the surrounding marine environment.
- (3) Detailed Site Selection Study for a Proposed Contaminated Mud Disposal Facility within the Airport East / East of Sha Chau Area (Agreement No. CE 12/2002(EP))
- (4) Under the CEDD study Contaminated Sediment Disposal Facility to the South of The Brothers (Agreement No. FM 2/2009)

1.1.3 An Environmental Permit (EP-427/2011) was issued by the Environmental Protection Department (EPD) to the CEDD, the Permit Holder, on 3 November 2011 and varied on 23 December 2011 (EP-427/2011/A). Under the requirements of Condition 4 of the EP (EP-427/2011/A), an Environmental Monitoring and Audit (EM&A) programme as set out in the EM&A Manual is required to be implemented for the SB CMPs. The present EM&A programme undertaken under Agreement No. CE 23/2012 (EP) covers the dredging, disposal and capping operations for the SB CMPs.

1.2 **REPORTING PERIOD**

1.2.1 This Monthly Progress Report covers the EM&A activities for the reporting month of November 2012.

1.3 OVERVIEW OF STUDY ACTIVITIES

- 1.3.1 Study activities conducted during this monthly period are listed below:
 - The *Revised Updated EM&A Manual for SB CMPs* was submitted to EPD on 9 November 2012; and
 - The 2nd Monthly Progress Report for Contaminated Mud Pits (CMPs) to the South of The Brothers and at East Sha Chau October 2012 was submitted to EPD on 14 November 2012; and
 - The construction works of SB CMPs commenced on 24 November 2012 ⁽¹⁾.

⁽¹⁾ Please refer to letter ref MSDF/206/S/3.06/11.07/L/083 submitted to EPD by the Contractor Penta-Ocean - Gitanes Joint Venture on 23 November 2012 regarding confirmed commencement of construction and operation of the Project.

1.4 DETAILS OF SAMPLING AND LABORATORY TESTING ACTIVITIES

1.4.1Dredging works at SB CMPs were commenced on 24 November 2012.
Subsequently, Impact Water Quality Monitoring during Dredging Operations of
CMP 1 was conducted on 24, 27 and 29 November 2012 in this reporting
month.

1.5 DETAILS OF OUTSTANDING SAMPLING AND/OR ANALYSIS

1.5.1 No outstanding sampling and laboratory analysis remained from November2012. A summary of field activities are presented in *Annex A*.

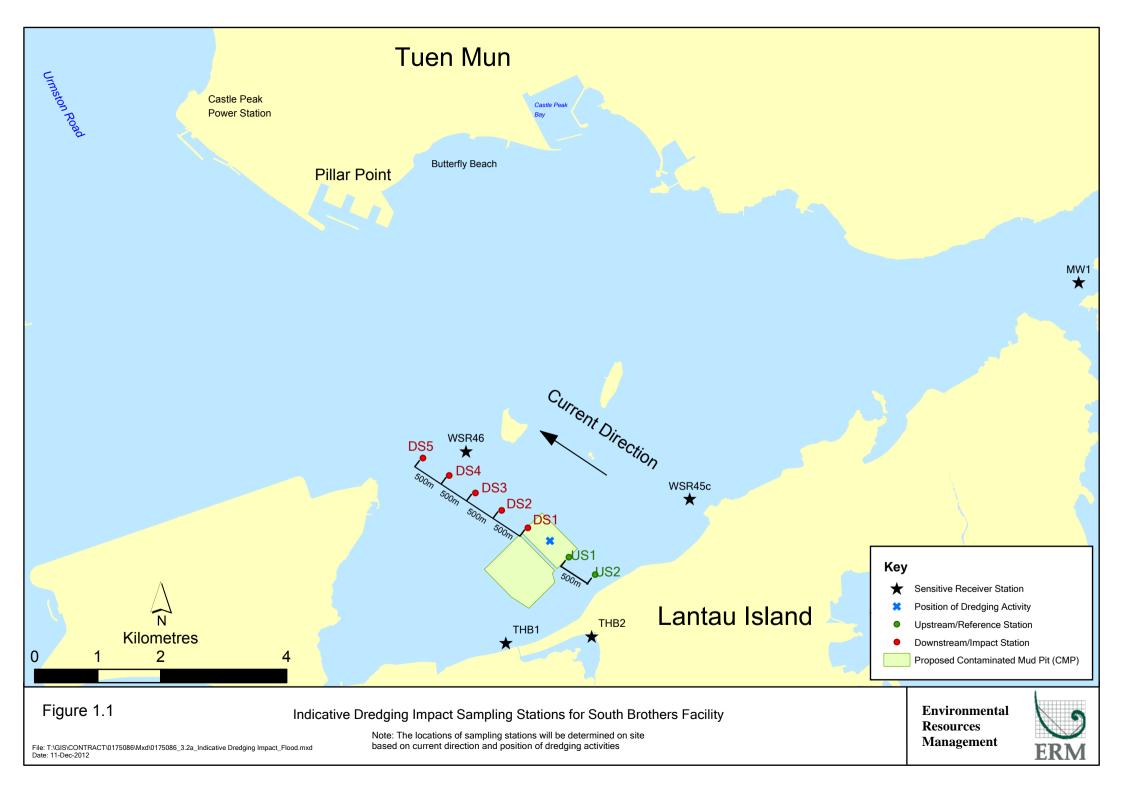
1.6 BRIEF DISCUSSION OF THE MONITORING RESULTS FOR SB CMPs

1.6.1 All monitoring data collected for SB CMPs in November 2012 will be presented in this monthly report. Detailed discussion will be presented in the corresponding *Quarterly Report*.

1.6.2 Impact Water Quality Monitoring during Dredging Operations of CMP 1 – November 2012

- 1.6.3 Impact Water Quality Monitoring during Dredging Operations of CMP 1 was conducted on 24, 27 and 29 November 2012. On the survey day, sampling was conducted during both mid-ebb and mid-flood tides at two Reference (Upstream) stations upstream and five Impact (Downstream) stations downstream of the dredging operations at CMP 1. Monitoring was also conducted at five Sensitive Receiver Stations (Ma Wan, Shum Shui Kok, Tai Mo To and Tai Ho Bay). Locations of the twelve sampling stations are shown in Figure 1.1.
- 1.6.4 It should be noted that monitoring was only conducted during the mid-flood tide on 24 November 2012 as no dredging works were being undertaken during the mid-ebb tide. In addition, on 24 November 2012 the Impact station DS2 was located within the construction site of the Hong Kong Boundary Crossing Facilities of Hong Kong- Zhuhai-Macao Bridge (HKBCF facility) and thus sampling could not be undertaken for this station.
- 1.6.5 Monitoring results are presented in *Table B1* of *Annex B*. Levels of Dissolved Oxygen (DO), Turbidity and Suspended Solids (SS) complied with the Action and Limit Levels set in the Baseline Monitoring Report ⁽¹⁾.

ERM (2012) Baseline Monitoring Report. Environmental Monitoring and Audit for Contaminated Mud Pits to the South of the Brothers and at East Sha Chau (2012-2017) – Investigation. Agreement No. CE 23/2012(EP). Submitted to EPD in October 2012.



1.6.6 Overall, the results indicated that the dredging operations at CMP 1 of SB did not appear to cause any unacceptable deterioration in water quality during this reporting period. Therefore, no further mitigation measures, except for those recommended in the Environmental Permit (*EP-427/2011/A*), are considered necessary for the dredging operations.

1.7 ACTIVITIES SCHEDULED FOR THE NEXT MONTH

1.7.1Impact Water Quality Monitoring during Dredging Operations for CMP 1 will be
conducted three times per week in the next monthly period of December 2012.
The sampling schedule is presented in Annex A.

1.8 STUDY PROGRAMME

1.8.1 A summary of the Study programme is presented in *Annex C*.

Annex A

Sampling Schedule

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1	SB-WFB	3 days per week for 4 weeks				*	*																																						
Mid Field Stations																																													
1	SB-WMA	3 days per week for 4 weeks				*	*																																						
1	SB-WMB	3 days per week for 4 weeks				*	*																																						
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1	SB-WNAB					*	*																																						
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Annex A - Environmental Monitoring and Audit Sampling Schedule for South of The Brothers (September 2012 - December 2017)

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Notes: "•" = Number of replicates depends on parameters Naming of stations are tentative only and will be subjected to changes

Annex B

Results of Impact Monitoring during Dredging Operations of CMP 1 in November 2012

Sampling Date	Tidal Period	Station	-	DO Levels ng/L)	Average Turbidity	Average S Level
			Bottom	Surface and Mid Depth	Level (NTU)	(mg/L)
2012/11/24	Mid-Flood	DS1	5.99	6.36	5.23	6.06
		DS3	6.31	6.59	4.81	5.98
		DS4	6.62	6.65	5.67	8.00
		DS5	6.64	6.64	8.13	11.15
		US1	5.97	6.11	7.83	9.96
		US2	5.98	6.09	6.81	9.10
		MW1	6.64	6.61	6.72	8.99
		THB1	6.76	6.97	6.58	12.78
		THB2	-	6.14	6.47	9.20
		WSR45C	6.36	6.54	8.20	10.92
		WSR46	6.11	6.51	10.03	9.58
2012/11/27	Mid-Ebb	DS1	6.03	6.13	7.63	9.28
		DS2	5.98	6.16	5.62	7.19
		DS3	5.95	6.17	5.59	7.37
		DS4	5.92	6.11	7.52	10.52
		DS5	5.89	6.12	8.76	11.52
		US1	6.17	6.21	17.72	19.82
		US2	6.27	6.31	12.70	15.60
		MW1	5.98	6.01	7.10	10.87
		THB1	6.23	6.30	10.96	15.43
		THB1	-	5.71	6.33	6.87
		WSR45C	5.95	6.14	5.44	8.04
		WSR46	6.07	6.38	10.96	11.93
	Mid-Flood	DS1	6.45	6.48	18.00	19.16
	Wild-1100d	DS1 DS2	6.40	6.43	9.43	10.27
		DS3	6.40	6.44	8.48	10.27
		DS4	6.39	6.41	9.10	9.68
		DS5	6.39	6.42	9.46	10.87
		US1	5.99	6.15	8.89	10.07
		US2	6.00	6.16	9.24	10.13
		MW1	6.01	6.04	5.36	10.92
		THB1	6.43	6.41	9.37	12.20
		THB1 THB2	0.45	6.64	7.27	9.33
		WSR45C	6.08	6.20	9.98	7.90
		WSR45C WSR46	6.14	6.47	9.98 8.14	10.18
2012/11/29	Mid-Ebb	DS1	6.41	6.42	11.04	13.37
2012/11/29	MIG-EDD	DS1 DS2	6.23	6.39	9.71	10.93
		DS3	6.19	6.37		11.64
		DS3 DS4	6.19 6.19	6.40	8.62 7.45	10.03
		DS4 DS5	6.19 6.17	6.34		
		US1	6.17 6.57	6.34 6.57	8.22 9.81	11.64 12.21
		US1 US2			9.81 12.74	
			6.52	6.52		13.06
		MW1	6.02	6.12	6.44 12.04	8.30
		THB1	6.36	6.40 7.85	12.04	12.58
		THB2	-	7.85	12.81	11.83
		WSR45C	6.10	6.24	6.74	9.06
		WSR46	6.40	6.43	7.10	7.34

Table B1	Summary Table of DO, Turbidity and SS Levels Recorded in November 2012	
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Sampling Date	Tidal Period	Station	0	DO Levels 1g/L)	Average Turbidity	Average SS Level
			Bottom	Surface and Mid Depth	Level (NTU)	(mg/L)
2012/11/29	Mid-Flood	DS1	6.44	6.46	7.00	9.11
		DS2	6.43	6.46	7.30	8.88
		DS3	6.42	6.45	8.56	10.31
		DS4	6.44	6.44	10.96	11.78
		DS5	6.45	6.46	10.53	11.40
		US1	6.39	6.41	8.76	10.39
		US2	6.09	6.27	12.81	12.33
		MW1	6.08	6.11	6.64	8.79
		THB1	6.34	6.45	9.77	10.78
		THB2	-	7.85	7.62	8.27
		WSR45C	6.26	6.38	8.99	7.72
		WSR46	6.36	6.43	5.81	6.87

Notes:

1. Cell shaded yellow indicated value exceeding the Action Level criteria.

2. Cell shaded red indicated value exceeding the Limit Level criteria.

DO for Surface and Mid-depth: less than 4.32 mg L⁻¹ (Action Level); less than 4 mg L⁻¹ (Limit Level).
DO (a. B. it and b. it a

DO for Bottom: less than 3.12 mg L⁻¹ (Action Level); less than 2 mg L⁻¹ (Limit Level) Depth-average Turbidity: greater than 25.04 NTU(Action Level); greater than 56.30 NTU(Limit Level).

Depth-average SS: greater than 21.60 mg $\rm L^{\mathchar`-1}$ (Action Level); greater than 40.10 mg $\rm L^{\mathchar`-1}$ (Limit Level).

4. Only mid-depth water was sampled at Station THB2 because water depth was less than 3m.

Annex C

Study Programme

Task Name	20)12 JASC				1 1	20 M	13						<u>20</u>)14	0					2	2015	
Project Commencement		JASC					IVI J	JA			DJ			/ J	JA	51						<u>, , , , , , , , , , , , , , , , , , , </u>	-
																							+
For South Brothers CMPs and East of Sha Chau CMPs							_																+
Submission of Draft Inception Report & Draft Programme			9/18																				+
Submission of Final Inception Report & Final Programme			10/2									-		+									+
Submission of Draft EM&A Manual (First Review)																							
Submission of Final EM&A Manual (First Review)		*	9/18 10/2																				
Submission of Draft EM&A Manual (Second Review)			4-10	0/30																			-
Submission of Final EM&A Manual (Second Review)				11/																			
Submission of Subsequent EM&A Manual Updates					•				0			۲				>			()			۲
Submission of Draft Operations Manual					12/31																		
Submission of Final Operations Manual				- Å	1/14	1																	
Submission of Operations Manual Updates					(Image: A start of the start			۲				>			(>			0
Monitoring Contracts				+								-		-					-				÷
Regular Site Inspections of CMP Contractors																							
Participate in Liaison Group Meetings/ Consultations as required by CEDD																							-
Submission of Report on Dredging & Capping Operations												۲				\bigcirc				\bigcirc			
Submission of Monthly Progress Report		\diamond	\diamond		$\diamond \diamond$	$\cdot \diamond \langle$	$\Rightarrow \diamond \cdot$	$\diamond \diamond$	$\diamond \diamond$	$\rightarrow \diamond <$	$\diamond \diamond \langle$	\rangle	$\diamond \diamond$	•		\diamond	$\rangle \diamond$	\diamond		$\diamond \diamond$	$\diamond \diamond$	> <> <	> (c
Submission of Quarterly EM&A Report				\diamond	<	\rightarrow	\diamond		\diamond		\diamond	\diamond	>	\diamond	,	\diamond		\diamond		\diamond	<	\diamond	<
Submission of Annual Review Report										\odot				-		(\odot						-
Submission of Annual Risk Assessment Report										\odot						(0						
Submission of Draft Final Report																							
Submission of the Final Report																							+
Submission of Draft Executive Summary Report																							
Submission of Final Executive Summary Report																							
For East Tung Lung Chau Disposal Facility																							
Submission of Monitoring Results & Monthly EM&A Progress Report		\diamond	\diamond		$\diamond \diamond$	• 🔷 <	$\diamond \diamond \langle$	$\diamond \diamond$	$\diamond \diamond$	$\rightarrow \diamondsuit$	$\diamond \diamond \langle$	\rangle	$\diamond \diamond$	• 🔷 •		\diamond	\rangle	\diamond	> 🔷 ·	$\diamond \diamond$	$\diamond \diamond$	> 🔷 🔇	> (¢
Submission of Initial Review Report (assume disposal commences in November 2012)					♦ 2	2/15																	
Submission of Quarterly EM&A Report				\diamond	<	\diamond	\diamond		\diamond		\diamond	\diamond	×	\diamond		\diamond		\diamond		\diamond	<	\diamond	<
Submission of Annual Report										\odot						(\bigcirc						
Alternative / Modified Capping Design																							
Submission of Investigation Report					2/	/5																	
Submission of Quarterly Report											\diamond	\diamond		\diamond		\diamond		\diamond		\diamond	<	\diamond	<
Submission of Annual Report												۲								۲			
Submission of Draft Final Report																							
Submission of the Final Report																							
Baseline Pelagic and Demersal Fisheries Survey																							
Baseline Shrimp Trawl & Hang Trawl Surveys, twice before SB CMPs dredging																							
Submission of Baseline Pelagic and Demersal Fisheries Survey Report				11/2	20																		

Study Programme	Task	Milestone	♦	Summary	Rolled Up Task	0

