

 土木工程拓展署  
Civil Engineering and  
Development Department

**Environmental Monitoring and Audit  
for Contaminated Mud Pit at Sha  
Chau (2009-2013) – Investigation  
Agreement No. CE 4/2009(EP)**

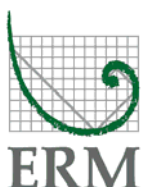
**27<sup>th</sup> Monthly Progress Report for  
Contaminated Mud Pits at Sha Chau –  
September 2011**

Revision 0

28 November 2011

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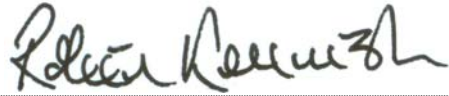



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# Environmental Monitoring and Audit for Contaminated Mud Pit at Sha Chau (2009-2013) – Investigation

## 27<sup>th</sup> Monthly Progress Report for Contaminated Mud Pits at Sha Chau – September 2011

*Revision 0*

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|   |  |  |         |          |          |
|---|--|--|---------|----------|----------|
| Client:<br>Civil Engineering and Development Department (CEDD)  |  | Project No:<br>0103262   |         |          |          |
| Summary:<br><br>This document presents progress of monitoring works on contaminated mud pits at Sha Chau in September 2011 under Agreement No. CE 4/2009 (EP).  |  | Date:<br>28 November 2011  |         |          |          |
|   |  | Approved by:<br><br><br>Dr Robin Kennish<br>Director   |         |          |          |
|   |  |  |         |          |          |
| 0   | 27 <sup>th</sup> Monthly Progress Report for CMP | JF   | JT      | RK       | 28/11/11 |
| Revision  | Description                                      | By   | Checked | Approved | Date     |
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Agreement No. CE 4/2009 (EP)  
Environmental Monitoring and Audit  
for Contaminated Mud Pit at Sha Chau (2009-2013) - Investigation

27<sup>th</sup> MONTHLY PROGRESS REPORT  
FOR CONTAMINATED MUD PITS AT SHA CHAU

**1.1 BACKGROUND**

Since 1992, the East of Sha Chau area has been the site of a series of dredged contaminated mud pits (CMPs) designed to provide confined marine disposal capacity for contaminated mud arising from the HKSAR's dredging and reclamation projects. CMP IVc is presently in operation for backfilling by contaminated mud and is anticipated to reach its capacity in 2011. A series of four newly constructed seabed pits at the East of Sha Chau area, CMP Va-d, will be provided for the disposal of contaminated mud after CMP IVc is full. Dredging operations were completed for the construction of CMP Va-b and are now taking place to construct CMP Vc. The environmental monitoring and audit (EM&A) programme for the CMPs at the East of Sha Chau area presently covers disposal and capping operations at CMP IV and dredging operations at CMP Vc.

**1.2 REPORTING PERIOD**

This *Monthly Progress Report* covers the monitoring period of September 2011.

**1.3 DETAILS OF SAMPLING AND LABORATORY TESTING ACTIVITIES**

No sampling activities are scheduled for CMP IV in September 2011.

For CMP V, sampling for *Impact Water Quality Monitoring during Dredging Operations* was conducted on 7 September 2011. A summary of field activities are presented in *Annex A*.

A summary of monitoring data submitted by the Contractor in this reporting month is presented in *Table 1.1*.

**Table 1.1** *Summary of monitoring data submitted by the Contractor during the reporting month*

| Key Task                       | Monitoring Component | Results Received from the Contractor   |
|--------------------------------|----------------------|--|
| <b>CMP IV</b>                  |                      |  |
| Demersal Trawling              | Marine Biota         | July 2011 sampling: 8 September 2011   |
| <b>CMP V</b>                   |                      |  |
| Impact Monitoring for Dredging | Water Quality        | August 2011 sampling: 8 September 2011 |

#### 1.4 **DETAILS OF OUTSTANDING SAMPLING AND/OR ANALYSIS**

No outstanding sampling and laboratory analysis remained from September 2011.

#### 1.5 **BRIEF DISCUSSION OF THE MONITORING RESULTS**

Results of *Impact Water Quality Monitoring during Dredging Operations of CMP V* are presented for September 2011. Detailed results will be discussed in the *9<sup>th</sup> Quarterly Report*.

##### 1.5.1 **CMP V**

*Impact Water Quality Monitoring during Dredging Operations of CMP V – September 2011*

*Impact Water Quality Monitoring during Dredging Operations of CMP V* was conducted on 7 September 2011. 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 V. Monitoring was also conducted at the Ma Wan station. At each station, *in-situ* measurements of water quality parameters as well as water samples were taken from three depths in the water column (ie surface: 1 m below sea surface, mid-depth and bottom: 1 m above the seabed).

Monitoring results are presented in *Table B1 of Annex B*. Levels of Dissolved Oxygen (DO), Turbidity and Total Suspended Solids (TSS) generally complied with the Action and Limit Levels set in the *Baseline Monitoring Report* <sup>(1)</sup>. Levels of TSS and Turbidity exceeded the Action Level in the downstream station DS1 during the mid-flood tide. Station DS1 is located on the edge of the works area of CMP Vc and the compliance of Action and Limit Levels at other downstream stations (i.e. DS2-4) outside the works area would indicate that there is no evidence of any unacceptable adverse water quality impacts arising from the dredging operations of CMP V at ESC.

#### 1.6 **ACTIVITIES SCHEDULED FOR THE NEXT MONTH**

*Impact Water Quality Monitoring during Dredging Operations* will be undertaken for CMP V in October 2011. No monitoring activities are scheduled for CMP IV in the next reporting month.

The sampling schedule is presented in *Annex A*.

(1) ERM (2009) Baseline Monitoring Report. Environmental Monitoring and Audit for Contaminated Mud Pit at Sha Chau (2009-2013) – Investigation. Agreement No. CE 4/2009(EP). Submitted to EPD in September 2009.

## 1.7

### *STUDY PROGRAMME*

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

Annex A

## Sampling Schedule







| Baseline Water Quality Monitoring |          |  | 2009 |   |   |   |   |   |   |   |   |   |   |   | 2010 |   |   |   |   |   |   |   |   |   |   |   | 2011 |   |   |   |   |   |  |  |  |  |  |  |
|-----------------------------------|----------|--|------|---|---|---|---|---|---|---|---|---|---|---|------|---|---|---|---|---|---|---|---|---|---|---|------|---|---|---|---|---|--|--|--|--|--|--|
|                                   |          |  | J    | A | S | O | N | D | J | F | M | A | M | J | J    | A | S | O | N | D | J | F | M | A | M | J | J    | A | S | O | N | D |  |  |  |  |  |  |
| Near Field                        | ESC-WNAA |  | *    | * |   |   |   |   |   |   |   |   |   |   |      |   |   |   |   |   |   |   |   |   |   |   |      |   |   |   |   |   |  |  |  |  |  |  |
|                                   | ESC-WNAB |  | *    | * |   |   |   |   |   |   |   |   |   |   |      |   |   |   |   |   |   |   |   |   |   |   |      |   |   |   |   |   |  |  |  |  |  |  |
|                                   | ESC-WNAC |  | *    | * |   |   |   |   |   |   |   |   |   |   |      |   |   |   |   |   |   |   |   |   |   |   |      |   |   |   |   |   |  |  |  |  |  |  |
|                                   | ESC-WNAD | To be surveyed 24 times (3 days per week during mid-flood and mid-ebb tide of each day) in the month prior to commencement of marine works | *    | * |   |   |   |   |   |   |   |   |   |   |      |   |   |   |   |   |   |   |   |   |   |   |      |   |   |   |   |   |  |  |  |  |  |  |
|                                   | ESC-WNBA |  | *    | * |   |   |   |   |   |   |   |   |   |   |      |   |   |   |   |   |   |   |   |   |   |   |      |   |   |   |   |   |  |  |  |  |  |  |
|                                   | ESC-WNBB |  | *    | * |   |   |   |   |   |   |   |   |   |   |      |   |   |   |   |   |   |   |   |   |   |   |      |   |   |   |   |   |  |  |  |  |  |  |
|                                   | ESC-WNBC |  | *    | * |   |   |   |   |   |   |   |   |   |   |      |   |   |   |   |   |   |   |   |   |   |   |      |   |   |   |   |   |  |  |  |  |  |  |
| ESC-WNBD                          | *        |  | *    |   |   |   |   |   |   |   |   |   |   |   |      |   |   |   |   |   |   |   |   |   |   |   |      |   |   |   |   |   |  |  |  |  |  |  |
| Mid Field                         | ESC-WMB  | To be surveyed 24 times (3 days per week during mid-flood and mid-ebb tide of each day) in the month prior to commencement of marine works | *    | * |   |   |   |   |   |   |   |   |   |   |      |   |   |   |   |   |   |   |   |   |   |   |      |   |   |   |   |   |  |  |  |  |  |  |
|                                   | ESC-WMA  |  | *    | * |   |   |   |   |   |   |   |   |   |   |      |   |   |   |   |   |   |   |   |   |   |   |      |   |   |   |   |   |  |  |  |  |  |  |
| Far Field                         | ESC-WFA  | To be surveyed 24 times (3 days per week during mid-flood and mid-ebb tide of each day) in the month prior to commencement of marine works | *    | * |   |   |   |   |   |   |   |   |   |   |      |   |   |   |   |   |   |   |   |   |   |   |      |   |   |   |   |   |  |  |  |  |  |  |
|                                   | ESC-WFB  |  | *    | * |   |   |   |   |   |   |   |   |   |   |      |   |   |   |   |   |   |   |   |   |   |   |      |   |   |   |   |   |  |  |  |  |  |  |
|                                   | MW1      |  | *    | * |   |   |   |   |   |   |   |   |   |   |      |   |   |   |   |   |   |   |   |   |   |   |      |   |   |   |   |   |  |  |  |  |  |  |
| Reference Stations                | NM1      |  | *    | * |   |   |   |   |   |   |   |   |   |   |      |   |   |   |   |   |   |   |   |   |   |   |      |   |   |   |   |   |  |  |  |  |  |  |
|                                   | NM2      |  | *    | * |   |   |   |   |   |   |   |   |   |   |      |   |   |   |   |   |   |   |   |   |   |   |      |   |   |   |   |   |  |  |  |  |  |  |
|                                   | NM3      | To be surveyed 24 times (3 days per week during mid-flood and mid-ebb tide of each day) in the month prior to commencement of marine works | *    | * |   |   |   |   |   |   |   |   |   |   |      |   |   |   |   |   |   |   |   |   |   |   |      |   |   |   |   |   |  |  |  |  |  |  |
|                                   | NM5      |  | *    | * |   |   |   |   |   |   |   |   |   |   |      |   |   |   |   |   |   |   |   |   |   |   |      |   |   |   |   |   |  |  |  |  |  |  |
|                                   | NM6      |  | *    | * |   |   |   |   |   |   |   |   |   |   |      |   |   |   |   |   |   |   |   |   |   |   |      |   |   |   |   |   |  |  |  |  |  |  |

| Water Column Profiling |            |  | J | A | S | O | N | D | J | F | M | A | M | J | J | A | S | O | N | D | J | F | M | A | M | J | J | A | S | O | N | D |
|------------------------|------------|--|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Plume Stations         | Upstream   |  |   |   | 2 | 2 | 2 | 2 | 2 | 2 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|                        | Downstream |  |   |   | 2 | 2 | 2 | 2 | 2 | 2 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |

| Water Quality Impact Monitoring for Dredging |     |  | J | A | S | O | N | D | J | F | M | A | M | J | J | A | S | O | N | D | J | F | M | A | M | J | J | A | S | O | N | D |   |
|--|-----|--|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Downcurrent Impact Stations                  | 1   |  |   |   | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * |
|  | 2   |  |   |   | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * |
|  | 3   |  |   |   | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * |
|  | 4   |  |   |   | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * |
|  | 5   |  |   |   | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * |
| Upcurrent Stations                           | 1   |  |   |   | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * |
|  | 2   |  |   |   | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * |
|  | MW1 |  |   |   | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * |

 Sampling completed  
 Sampling to be completed

Annex B

## Monitoring Results

**Table B1**      **Summary Table of DO, Turbidity and TSS Levels Recorded in September 2011**

| Sampling Date | Tidal Period | Station | Average DO Levels (mg/L) |                       | Average Turbidity Level (NTU) | Average TSS Level (mg/L) |
|---------------|--------------|---------|--------------------------|-----------------------|-------------------------------|--------------------------|
|               |              |         | Bottom                   | Surface and Mid Depth |                               |                          |
| 2011/09/07    | ME           | DS1     | 4.36                     | 4.65                  | 21.64                         | 25.67                    |
|               |              | DS2     | 3.86                     | 4.71                  | 13.77                         | 20.33                    |
|               |              | DS3     | 4.56                     | 4.82                  | 11.36                         | 12.17                    |
|               |              | DS4     | 4.41                     | 4.89                  | 15.09                         | 15.67                    |
|               |              | DS5     | 4.71                     | 4.87                  | 13.84                         | 14.00                    |
|               |              | MW1     | 4.51                     | 4.69                  | 4.02                          | 6.00                     |
|               |              | US1     | 4.19                     | 4.64                  | 8.79                          | 7.17                     |
|               | MF           | US2     | 4.08                     | 4.63                  | 11.27                         | 10.17                    |
|               |              | DS1     | 4.06                     | 5.17                  | 32.66                         | 43.83                    |
|               |              | DS2     | 4.11                     | 4.97                  | 13.09                         | 14.17                    |
|               |              | DS3     | 4.13                     | 5.45                  | 10.71                         | 12.00                    |
|               |              | DS4     | 3.95                     | 5.41                  | 12.99                         | 12.33                    |
|               |              | DS5     | 4.46                     | 5.22                  | 10.24                         | 10.50                    |
|               |              | MW1     | 4.12                     | 4.28                  | 6.16                          | 7.00                     |
|               |              | US1     | 4.46                     | 5.22                  | 9.31                          | 11.33                    |
|               |              | US2     | 4.54                     | 5.12                  | 10.12                         | 12.00                    |

Notes:

1. Cell shaded yellow indicates value exceeding the Action Level.

Annex C

## Study Programme



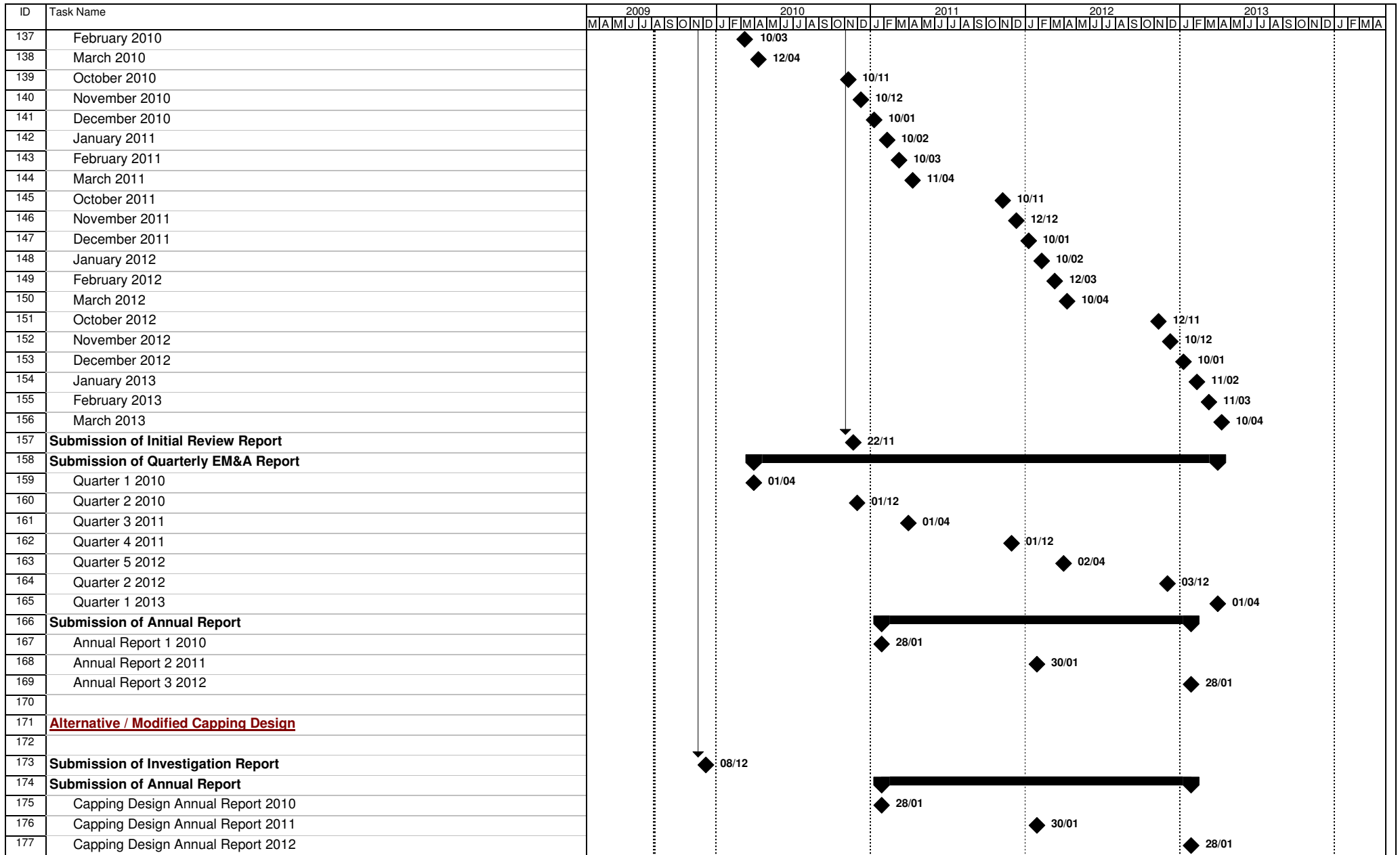


Figure 4.1 - Study Programme

