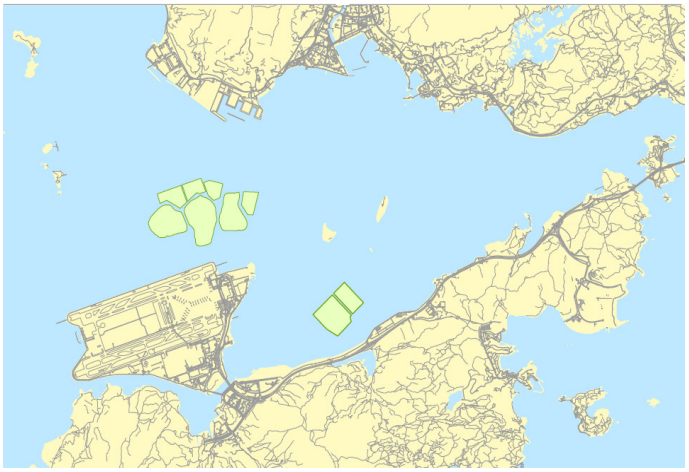


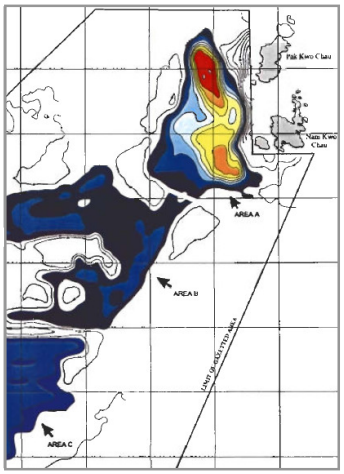



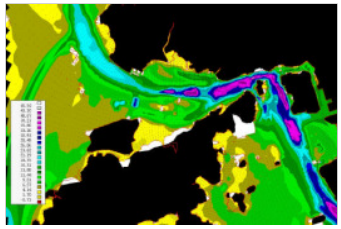


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Civil Engineering and Development Department

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)

18th Monthly Progress Report for Contaminated Mud Pits to the South of The Brothers and at East Sha Chau – February 2014

Revision 0

29 April 2014

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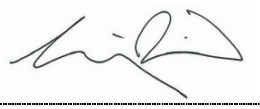
Client:	Project No:
Civil Engineering and Development Department (CEDD)	0175086
Summary:	Date: 29 April 2014
This document presents the 18th monthly progress report for Contaminated Mud Pits at the South of The Brothers and at East Sha Chau.	Approved by:  Craig A. Reid *Partner*

Revision	Description	By	Checked	Approved	Date
v0	18th Monthly Progress Report for ESC CMPs and SB CMPs	YL	JT	CAR	29/4/14

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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:	18th Monthly Progress Report for Contaminated Mud Pits to the South of The Brothers and at East Sha Chau – February 2014
Date of Report:	29 April 2014
Date prepared by ET:	29 April 2014
Date received by IA:	29 April 2014

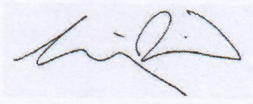
Reference EP Condition

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 non-compliance (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.

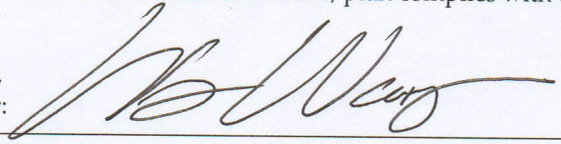
ET Certification

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: 29/4/2014

IA Verification

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

Dr Wang Wen Xiong,
Independent Auditor:  Date: 29/4/2014

CONTENTS

ANNEXES

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

18TH MONTHLY PROGRESS REPORT FOR FEBRUARY 2014

1.1 BACKGROUND

1.1.1 Since early 1990s, contaminated sediment (1) arising from various construction works (e.g. dredging and reclamation projects) 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) which had been under consideration for a number of years.

1.1.2 The 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)*

1.1.4 *Environmental Permits (EPs)* (*EP-312/2008/A* and *EP-427/2011A*) were issued by the Environmental Protection Department (EPD) to the CEDD, the Permit Holder, on 28 November 2008 for East of Sha Chau (ESC) CMP V and on 23 December 2011 for SB CMPs, respectively. Under the requirements of the *EPs*, an Environmental Monitoring and Audit (EM&A) programme as set out in the EM&A Manuals (1) (2) is required to be implemented for the CMPs.

1.1.5 The present EM&A programme undertaken under *Agreement No. CE 23/2012 (EP)* covers the dredging, disposal and capping operations of the SB CMPs as well as CMPs at East of Sha Chau (ESC). In February 2014, the following works were being undertaken at the CMPs:

- Capping was being undertaken at ESC CMP IVc and CMP Va;
- Disposal of contaminated mud was taking place at SB CMP 1; and
- Dredging operations were taking place at SB CMP 2.

1.2 REPORTING PERIOD

1.2.1 This *18th Monthly Progress Report* covers the EM&A activities for the reporting month of February 2014.

1.3 DETAILS OF SAMPLING AND LABORATORY TESTING ACTIVITIES

1.3.1 *Water Quality Monitoring during Capping Operations* at ESC CMPs was undertaken on 14 February 2014.

1.3.2 The following monitoring activities have been undertaken for SB CMPs in February 2014:

- *Impact Water Quality Monitoring during Dredging Operations* was undertaken for CMP 2 three times per week on 4, 6, 8, 11, 13, 15, 18, 20, 22, 25, and 27 February 2014;
- *Routine Water Quality Monitoring* was undertaken for CMP 1 on 5, 7, 10, 12, 14, 17, 19, 21, 24, 26 and 28 February 2014;
- *Demersal Trawling* for CMP 1 was undertaken out on 11 and 12 February 2014;
- *Pit Specific Sediment Chemistry* was undertaken for CMP 1 on 18 February 2014;

(1) ERM (2012) Environmental Monitoring and Audit (EM&A) Manual. Final First Review. 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 November 2012.

(2) ERM (2010) Environmental Monitoring and Audit (EM&A) Manual. Final Second Review. Environmental Monitoring and Audit for Contaminated Mud Pit at Sha Chau (2009-2013) – Investigation. Agreement No. CE 4/2009(EP). Submitted to EPD in November 2010.

- *Cumulative Impact Sediment Chemistry* was undertaken on 20 and 22 February 2014; and
- *Water Column Profiling* for CMP 1 was undertaken on 21 February 2014.

1.4 DETAILS OF OUTSTANDING SAMPLING AND/OR ANALYSIS

1.4.1 No outstanding sampling remained for February 2014. The following laboratory analyses were still in progress during the preparation of this monthly report and hence were not presented in this monthly report:

- Laboratory analyses of sediment samples collected for *Pit Specific Sediment Chemistry of CMP 1* in December 2013, January and February 2014;
- Laboratory analyses of sediment samples collected for *Cumulative Impact Sediment Chemistry of CMP 1* in February 2014;
- Laboratory analyses of water samples collected for *Routine Water Quality Monitoring for CMP 1* from 17 to 29 January 2014; and
- Laboratory analyses of Suspended Solids (SS) samples collected for *Water Quality Monitoring during Dredging Operations of CMP 2* on 27 February 2014.

1.4.2 A summary of field activities conducted are presented in *Annex A*.

1.5 BRIEF DISCUSSION OF THE MONITORING RESULTS FOR SB CMPS

1.5.1 Brief discussion of the monitoring results of the following activities is presented in this *18th Monthly Progress Report*:

- *Impact Water Quality Monitoring during Dredging Operations of CMP 2* conducted from 10 January to 25 February 2014;
- *Routine Water Quality Monitoring of CMP 1* undertaken from 5 to 28 January 2014;
- *Water Column Profiling of CMP 1* conducted on 21 February 2014; and
- *Cumulative Impact Sediment Chemistry* conducted in December 2013.

1.5.2 Impact Water Quality Monitoring during Dredging Operations of CMP 2 –10 January to 25 February 2014

1.5.3 Monitoring data collected for CMP 2 from 10 January to 25 February 2014 are presented in this monthly report. Detailed discussion will be presented in the corresponding *Quarterly Report*.

1.5.4 *Impact Water Quality Monitoring during Dredging Operations of CMP 2* was conducted three times per week from 10 January to 25 February 2014. On each 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 2. Monitoring was also conducted at five Sensitive Receiver Stations situated in Ma Wan, Shum Shui Kok, Tai Mo To and Tai Ho Bay. A total of twelve stations were monitored and locations of the sampling stations are shown in *Figure 1.1*.

1.5.5 Monitoring results from 10 January to 25 February 2014 are presented in *Table C1* of *Annex C*. Daily dredging volume in January and February 2014 is reported in *Annex D*. Levels of Dissolved Oxygen (DO), Turbidity and SS generally complied with the Action and Limit Levels (see *Table C2* of *Annex C* for details) set in the *Baseline Monitoring Report* (1), except for the following occasions of exceedances shown in *Table 1.1* below.

Table 1.1 Details of Exceedances Recorded at CMP 2 in January and February 2014

Date	Tide	Parameter	Station	Type
10 January 2014	Mid-Flood	SS	DS1	Action
		SS	DS2	Action
13 January 2014	Mid-Flood	SS	DS1	Action
17 January 2014	Mid-Flood	SS	DS1	Action
		SS	DS2	Action
		Turbidity	DS2	Limit
24 January 2014	Mid-Flood	SS	DS2	Action
		SS	DS3	Action

(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.

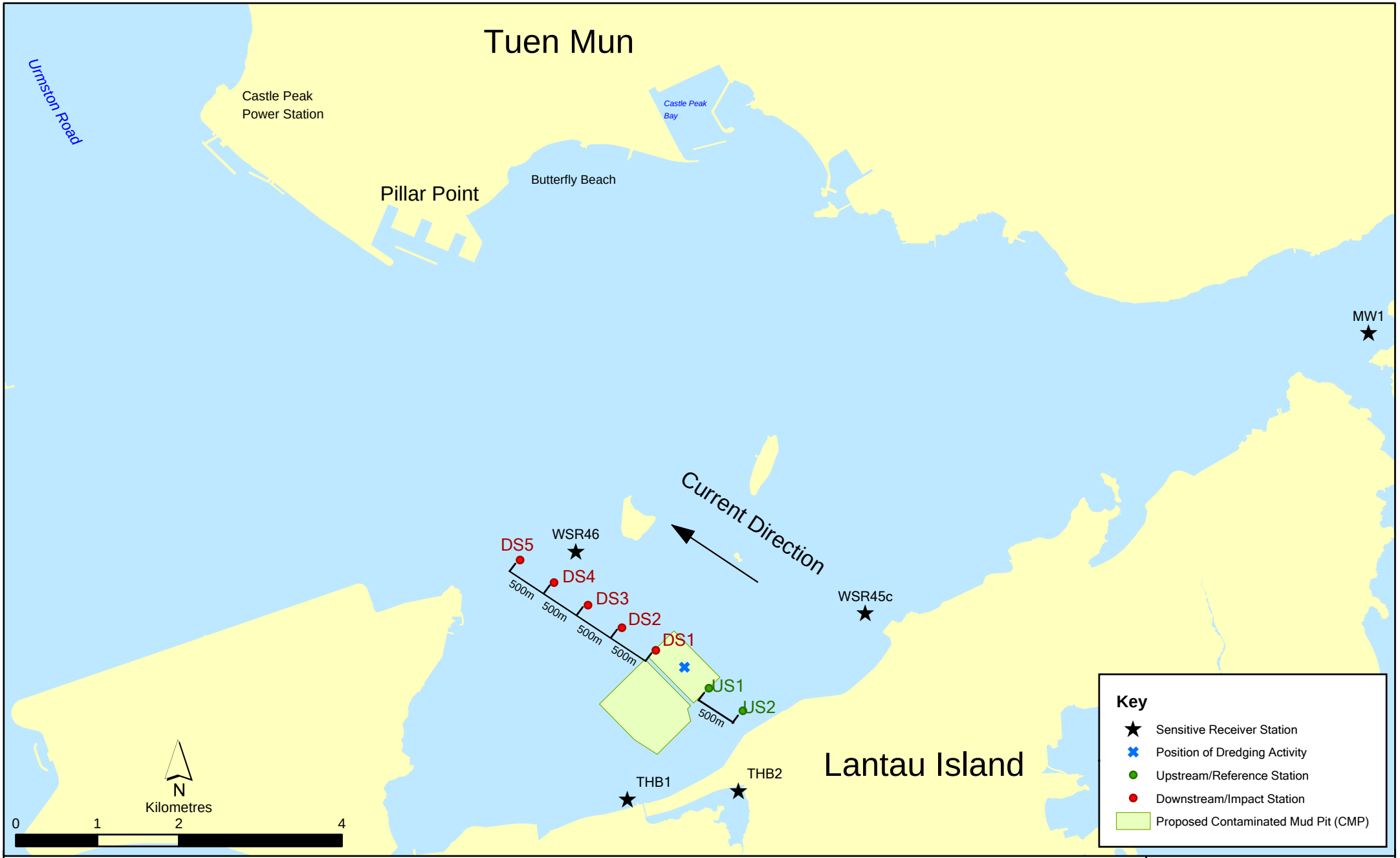


Figure 1.1

Indicative Dredging Impact Sampling Stations for South Brothers Facility

Note: The locations of sampling stations will be determined on site based on current direction and position of dredging activities

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Date: 4/10/2013

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1.5.6 SS exceedance was recorded at station DS1 only on 13 January 2014 (mid-flood). Since station DS1 was located at the boundary of the works area, the sole exceedance at this station did not appear to indicate any unacceptable water quality impacts outside the works area of the Project. On 24 January 2014, SS exceedances were recorded at stations DS2 and DS3 but not station DS1 which is located closer to the dredging operations. As such, the exceedances recorded are unlikely to be caused by the dredging operations at CMP 2. The SS exceedances recorded on 10 and 17 January 2014 (mid-flood) at stations DS1 and DS2 did not appear to indicate any trend of increasing SS towards the dredging operations with higher SS concentration recorded at DS2. Overall, it did not appear that the SS exceedances were caused by the dredging operations at CMP 2.

1.5.7 Turbidity exceedance on 17 January 2014 (mid-flood) was recorded at station DS2 which were was further away from the works area when compared to station DS1 at which the level of Turbidity did not exceed the Action and Limit Levels during the same tidal period on the same day. As such, these recorded exceedances are not likely to be caused by the dredging works at CMP 2.

1.5.8 It should be noted that high levels of Turbidity and SS were occasionally recorded during baseline monitoring which are considered to be sporadic events and characteristic of water quality in this area of Hong Kong (baseline monitoring data are summarised in *Table C3* of *Annex C*). Therefore, the Action and Limit Level exceedances may be caused by natural background variation in water quality of the area.

1.5.9 Overall, the results indicated that the dredging operations at CMP 2 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.

1.5.10 Routine Water Quality Monitoring of SB CMP 1 – January 2014

1.5.11 Monitoring results from 3 to 15 January 2014 were presented in *17th Monthly Progress Report*. Daily monitoring results for 18 to 29 January 2014 are shown in *Tables C4* and *C5* of *Annex C* . Monthly averaged and daily monitoring results for January 2014 are presented with graphical presentation in *Figure 1-Figure 20 of Annex B*.

1.5.12 The monitoring results for the *Routine Water Quality Monitoring* conducted for January 2014 in the dry season have been assessed for compliance with the Water Quality Objectives (WQOs) set by EPD. This consists of a review of the EPD routine water quality monitoring data for the dry season period (November to March) of 2003-2012 from stations in the Northwestern Water Control Zone, where the CMPs are located. For Salinity, the averaged value obtained from the Reference stations was used for the basis as the WQO. Levels of DO, Turbidity and SS were also assessed for compliance with the Action and Limit Levels (see *Table C2* of *Annex C* for details).

1.5.13 Monthly averaged and daily monitoring results for February 2014 will be presented with graphical presentation in the next monthly report when all monitoring results for February 2014 are received.

1.5.14 Locations of monitoring stations were presented in *Figure 1.2 and Figure 1.3*.

In-situ Measurements

1.5.15 Analyses of results indicated that for all the stations (Impact, Intermediate, Reference and Water Sensitive Receiver stations), both daily and monthly average levels of pH, DO and Salinity complied with the WQOs in January 2014 (*Figure 1, 2, 4, 12, 15, and 16 of Annex B*).

1.5.16 In January 2014, daily and monthly average levels of DO and Turbidity at all the stations complied with the Action and Limit Levels (*Tables C5 and C7* of *Annex C*).

Laboratory Measurements

1.5.17 In January, monthly average concentrations of Nickel and Zinc were slightly higher at Tai Ho Bay Station 2 and Tai Ho Bay Station 1, respectively (*Figure 6 and 7 of Annex B*). Monthly average concentrations of the other metals were similar amongst stations (*Figures 6-7 of Annex B*). Monthly average levels of 5-day Biochemical Oxygen Demand (BOD_5), Ammoniacal-Nitrogen (NH_3-N) and Total Inorganic Nitrogen (TIN) in January 2014 were similar amongst station (*Figures 8 and 9 of Annex B*). The monthly average concentration of TIN did not show any exceedance with the WQO in January 2014 (*Figure 9 of Annex B*).

1.5.18 Analyses of January 2014 results indicated that daily concentrations of Cadmium, Mercury and Silver were below their limits of reporting at all the stations (*Figure 17, 19 and 23 of Annex B*). The daily concentrations of Arsenic, Chromium, Copper, Lead, Nickel and Zinc indicated variations over time at all the stations throughout January 2014.

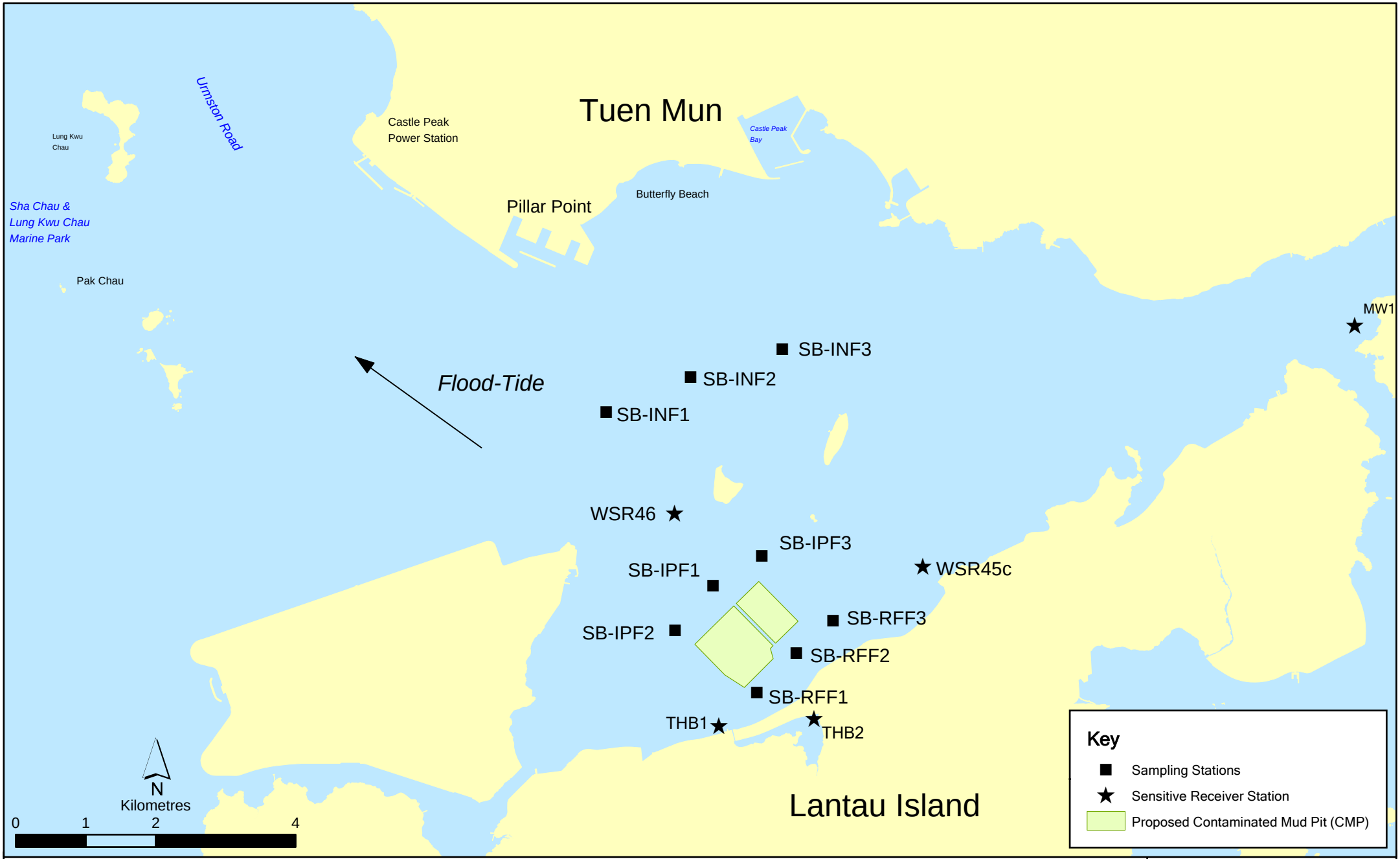

Figure 1.2

Routine Water Quality Sampling Stations (Flood-Tide) for South Brothers Facility

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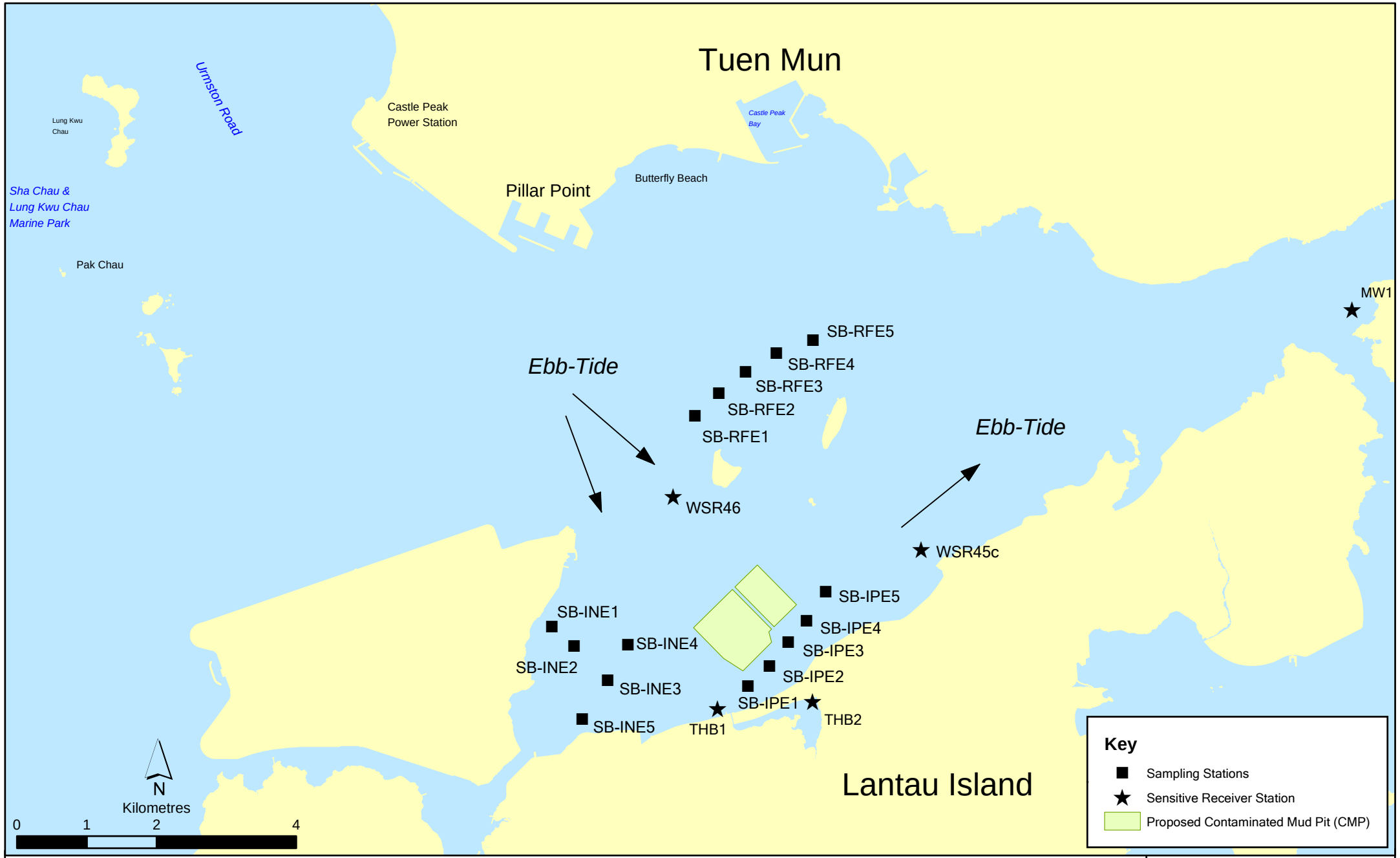

Figure 1.3

Routine Water Quality Sampling Stations (Ebb-Tide) for South Brothers Facility

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Date: 13/11/2013

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1.5.19 Daily recorded levels of TIN, BOD_5 and NH_3-N were observed to fluctuate over time throughout January 2014 (*Figure 26-28 of Annex B*). Compliance with TIN WQO (0.50 mg/L) was observed at all the stations in the monitoring period except for the measurement at Tai Ho Bay station 1(THB1) on 9 January 2014. This only exceedance of TIN WQO did not appear to provide any evidence of unacceptable water quality impacts due to the mud disposal activities.

1.5.20 Daily levels of SS complied with the Action and Limit Levels set in the *EM&A Manual* and occasionally exceeded SS WQO (14.4 mg/L for dry season) (*Figure 29* of *Annex B*) in January 2014. The monthly average levels of SS compiled with the WQO at all stations (*Figure 10* of *Annex B).* These occasional exceedances recorded for daily SS levels are thus not likely to be caused by mud disposal works, but sporadic events and characteristic of water quality in this area of Hong Kong.

1.5.21 Overall, results of the *Routine Water Quality Monitoring* indicated that the disposal operation at CMP 1 did not appear to cause any unacceptable deterioration in water quality in January 2014.

Recommendations

1.5.22 From the results of the *Routine Water Quality Monitoring* conducted in October 2013, November 2013 and January 2014 for CMP 1, there did not appear to be any unacceptable deterioration in water quality in all of the sampling events which were conducted three times a week during the monitoring period. In accordance with the EM&A Manual, it is recommended to adjust the sampling frequency to eight (8) times per year which is the same as the frequency of *Routine Water Quality Monitoring* for CMP V. It is anticipated that this adjusted sampling frequency is adequate for tracking the potential change in contaminant concentrations in seawater which may take a long time to appear while at the same time address the potential seasonal difference in seawater quality.

1.5.1 Water Column Profiling of CMP 1 – February 2014

1.5.2 *Water Column Profiling* was undertaken at a total of two sampling stations (Upstream and Downstream stations) on 21 February 2014. The water quality monitoring results have been assessed for compliance with the WQOs (*Table C8 of Annex C*). The monitoring results were also compared with the Action and Limit Levels set in the *Baseline Monitoring Report*.

In-situ Measurements

1.5.3 Analyses of results for February 2014 indicated that levels of Salinity, pH and DO complied with the WQOs at both Upstream and Downstream stations (*Table C8 of Annex C*). DO and Turbidity complied with the Action and Limit Levels.

Laboratory Measurements for Suspended Solids (SS)

1.5.4 Analyses of data obtained on 21 February 2014 indicated that the SS levels at Downstream and Upstream stations complied with the WQO (*Table C8 of Annex C*). In addition, SS levels at all the stations complied with the Action and Limit Levels.

1.5.5 Overall, the monitoring results indicated that the mud disposal operation at CMP 1 did not appear to cause any deterioration in water quality during this reporting period.

1.5.6 Cumulative Impact Sediment Chemistry of CMP 1 – December 2013

1.5.7 Monitoring locations for *Cumulative Impact Sediment Chemistry for CMP 1* are shown in *Figure 1.4*. A total of eleven (11) monitoring stations were sampled in December 2013.

1.5.8 Analyses of results for the *Cumulative Impact Sediment Chemistry Monitoring* indicated that the concentrations of all metals, except Arsenic, were below the Lower Chemical Exceedance Level (LCEL) in December 2013 (*Figures 30 and 31* of *Annex B*). Concentrations of Arsenic in sediments from all stations exceeded the LCEL, except for Near Field station SB-RNB and Mid Field station SB-RMB.

1.5.9 Whilst the average concentration of Arsenic in the Earth's crust is generally ~2mg/kg, significantly higher Arsenic concentrations (median = 14 mg/kg) have been recorded in Hong Kong's onshore sediments [(1)]. It is presumed that the natural concentrations of Arsenic are similar in onshore and offshore sediments [(2)], and relatively high Arsenic levels may thus occur throughout Hong Kong. Therefore, the LECL exceedances of Arsenic are unlikely to be caused by the disposal operations at CMP 1 but rather as a result of naturally occurring deposits.

1.5.10 For organic contaminants, concentration of Total Organic Carbon (TOC) at Tai Ho Bai Station 2 (THB2) was recorded to be higher than other stations (*Figure 32* of *Annex B*). Concentrations of Tributyltin (TBT) were recorded to be higher at Near-field station SB-RNB and Ma Wan station (*Figure 33* of *Annex B*). Total Dichloro-diphenyl-trichloroethane (DDT) and 4,4'-Dichloro-diphenyl-dichloroethylene (4,4'-DDE) were recorded below the limit of detection at most stations with no apparent spatial trend (*Figure 34* of *Annex B*). Concentrations of Total Polychlorinated Biphenyls (PCBs) as well as Low and High Molecular Weight Polycyclic Aromatic Hydrocarbons (Low and High MW PAHs) were recorded below the limit of reporting at all the stations.

(1) Sewell RJ (1999) Geochemical Atlas of Hong Kong. Geotechnical Engineering Office, Government of the Hong Kong Special Administrative Region

(2) Whiteside PGD (2000) Natural geochemistry and contamination of marine sediments in Hong Kong. In: The Urban Geology of Hong Kong (ed Page A & Reels SJ). Geological Society of Hong Kong Bulletin No. 6, p109-121

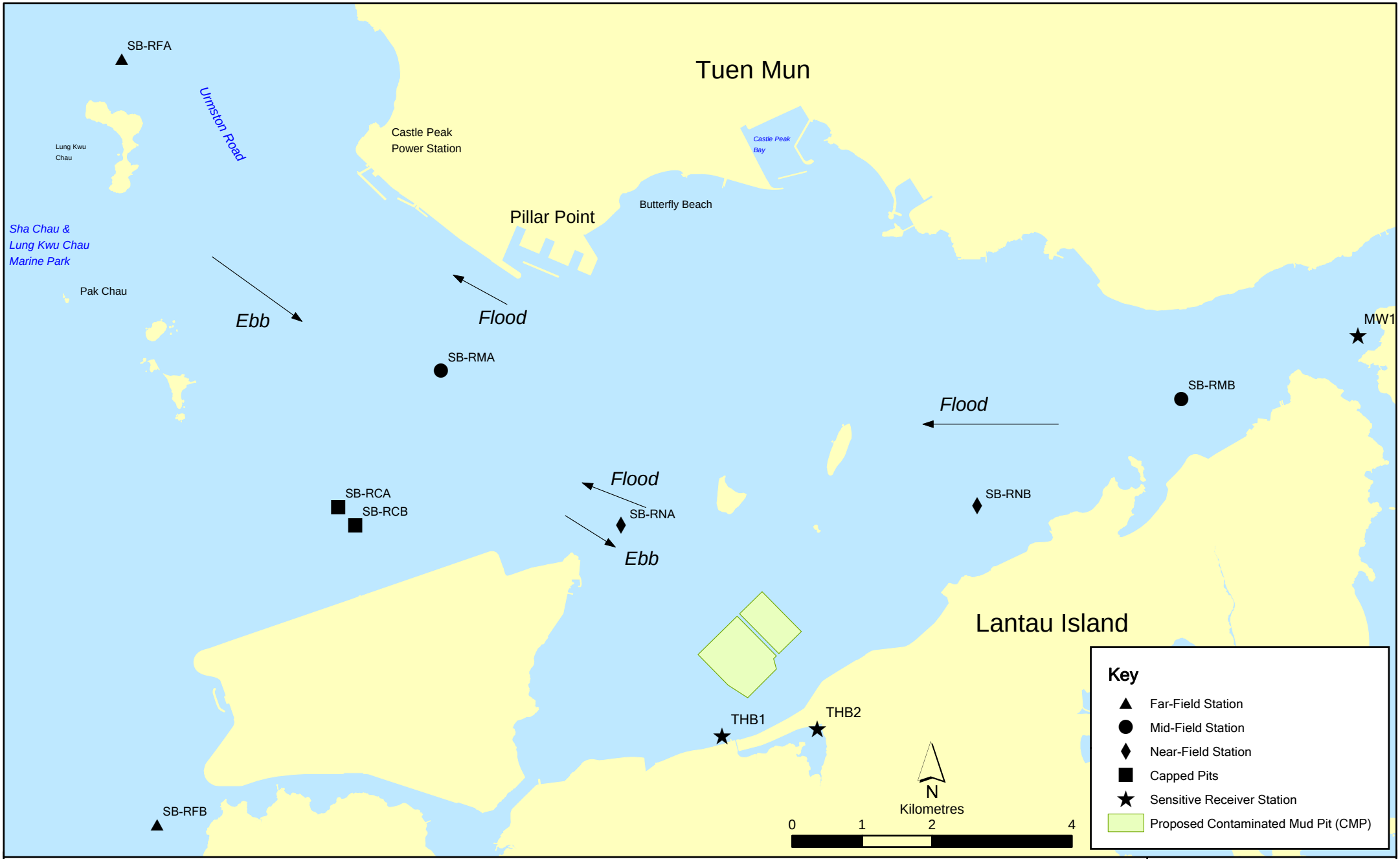

Figure 1.4

Cumulative Impacts Sediment Quality Monitoring Stations for South Brothers Facility

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Date: 14/3/2014

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1.5.11 Overall, there is no evidence indicating any unacceptable environmental impacts to sediment quality as a result of the contaminated mud disposal operations at CMP 1 during this monthly period.

1.6 ACTIVITIES SCHEDULED FOR THE NEXT MONTH

1.6.1 The following monitoring activities will be conducted in the next monthly period of March 2014 for SB CMPs:

- *Impact Water Quality Monitoring during Dredging Operations of CMP 2;*
- *Pit Specific Sediment Chemistry of CMP 1;* and
- *Water Column Profiling of CMP 1.*

1.6.2 The sampling schedule is presented in *Annex A*.

1.7 STUDY PROGRAMME

1.7.1 A summary of the Study programme is presented in *Annex E*.

Annex A

Sampling Schedule

Annex A1 - Environmental Monitoring and Audit Sampling Schedule for East of Sha Chau (January 2012 - February 2014)

		2012												2013												2014											
Pit Specific Sediment Chemistry	**Code**	**J**	**F**	**M**	**A**	**M**	**J**	**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**
Active-Pit																																					
	ESC-NPDA		*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*																
	ESC-NPDB		*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*																
Pit-Edge																																					
	ESC-NEDA		*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*																
	ESC-NEDB		*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*																
Near-Pit																																					
	ESC-NNDA		*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*																
	ESC-NNDB		*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*																

Cumulative Impact Sediment Chemistry	**J**	**F**	**M**	**A**	**M**	**J**	**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 Stations																																				
ESC-RNA		*				*		*				*		*				*		*																
ESC-RNB		*				*		*				*		*				*		*																
Mid-field Stations																																				
ESC-RMA		*				*		*				*		*				*		*																
ESC-RMB		*				*		*				*		*				*		*																
Capped Pit Stations																																				
ESC-RCA		*				*		*				*		*				*		*																
ESC-RCB		*				*		*				*		*				*		*																
Far-Field Stations																																				
ESC-RFA		*				*		*				*		*				*		*																
ESC-RFB		*				*		*				*		*				*		*																
Ma Wan Station																																				
MW1		*				*		*				*		*				*		*																

Sediment Toxicity Tests	**J**	**F**	**M**	**A**	**M**	**J**	**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 Stations																																				
ESC-TDA		*						*						*						*																
ESC-TDB		*						*						*						*																
Reference Stations																																				
ESC-TRA		*						*						*						*																
ESC-TRB		*						*						*						*																
Ma Wan Station																																				
MW1		*						*						*						*																

Tissue/ Whole Body Sampling	**J**	**F**	**M**	**A**	**M**	**J**	**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**
Impact Stations																																				
ESC-INA								*						*						*																
ESC-INB								*						*						*																
Reference																																				
ESC-TNA								*						*						*																
ESC-TNB								*						*						*																
ESC-TSA								*						*						*																
ESC-TSB								*						*						*																

Annex A1 - Environmental Monitoring and Audit Sampling Schedule for East of Sha Chau (January 2012 - February 2014)

	2012												2013												2014											
Demersal Trawling	J	F	M	A	M	J	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
Impact Stations																																				
ESC-INA							*	*					*	*					*	*																
ESC-INB							*	*					*	*					*	*																
Reference Stations																																				
ESC-TNA							*	*					*	*					*	*																
ESC-TNB							*	*					*	*					*	*																
ESC-TSA							*	*					*	*					*	*																
ESC-TSB							*	*					*	*					*	*																

Capping	J	F	M	A	M	J	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
Ebb Tide																																				
Impact Station																																				
ESC-IPE1																								*		*				*		*				*
ESC-IPE2																								*		*				*		*				*
ESC-IPE3																								*		*				*		*				*
ESC-IPE4																								*		*				*		*				*
ESC-IPE5																								*		*				*		*				*
Intermediate Station																																				
ESC-INE1																								*		*				*		*				*
ESC-INE2																								*		*				*		*				*
ESC-INE3																								*		*				*		*				*
ESC-INE4																								*		*				*		*				*
ESC-INE5																								*		*				*		*				*
Reference Station																																				
ESC-RFE1																								*		*				*		*				*
ESC-RFE2																								*		*				*		*				*
ESC-RFE3																								*		*				*		*				*
ESC-RFE4																								*		*				*		*				*
ESC-RFE5																								*		*				*		*				*
Ma Wan Station																																				
MW1																								*		*				*		*				*
Flood Tide																																				
Impact Station																																				
ESC-IPF1																								*		*				*		*				*
ESC-IPF2																								*		*				*		*				*
ESC-IPF3																								*		*				*		*				*
Intermediate Station																																				
ESC-INF1																								*		*				*		*				*
ESC-INF2																								*		*				*		*				*
ESC-INF3																								*		*				*		*				*
Reference Station																																				
ESC-RFF1																								*		*				*		*				*
ESC-RFF2																								*		*				*		*				*
ESC-RFF3																								*		*				*		*				*
Ma Wan Station																																				
MW1																								*		*				*		*				*

Annex A1 - Environmental Monitoring and Audit Sampling Schedule for East of Sha Chau (January 2012 - February 2014)

		2012												2013												2014											
Routine Water Quality Monitoring		J	F	M	A	M	J	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
Ebb Tide																																					
Impact Station																																					
	ESC-IPE1		*		*	*		*	*		*	*		*	*		*	*		*	*																
	ESC-IPE2		*		*	*		*	*		*	*		*	*		*	*		*	*																
	ESC-IPE3		*		*	*		*	*		*	*		*	*		*	*		*	*																
	ESC-IPE4		*		*	*		*	*		*	*		*	*		*	*		*	*																
	ESC-IPE5		*		*	*		*	*		*	*		*	*		*	*		*	*																
Intermediate Station																																					
	ESC-INE1		*		*	*		*	*		*	*		*	*		*	*		*	*																
	ESC-INE2		*		*	*		*	*		*	*		*	*		*	*		*	*																
	ESC-INE3		*		*	*		*	*		*	*		*	*		*	*		*	*																
	ESC-INE4		*		*	*		*	*		*	*		*	*		*	*		*	*																
	ESC-INE5		*		*	*		*	*		*	*		*	*		*	*		*	*																
Reference Station																																					
	ESC-RFE1		*		*	*		*	*		*	*		*	*		*	*		*	*																
	ESC-RFE2		*		*	*		*	*		*	*		*	*		*	*		*	*																
	ESC-RFE3		*		*	*		*	*		*	*		*	*		*	*		*	*																
	ESC-RFE4		*		*	*		*	*		*	*		*	*		*	*		*	*																
	ESC-RFE5		*		*	*		*	*		*	*		*	*		*	*		*	*																
Ma Wan Station																																					
	MW1		*		*	*		*	*		*	*		*	*		*	*		*	*																
Flood Tide																																					
Impact Station																																					
	ESC-IPF1		*		*	*		*	*		*	*		*	*		*	*		*	*																
	ESC-IPF2		*		*	*		*	*		*	*		*	*		*	*		*	*																
	ESC-IPF3		*		*	*		*	*		*	*		*	*		*	*		*	*																
Intermediate Station																																					
	ESC-INF1		*		*	*		*	*		*	*		*	*		*	*		*	*																
	ESC-INF2		*		*	*		*	*		*	*		*	*		*	*		*	*																
	ESC-INF3		*		*	*		*	*		*	*		*	*		*	*		*	*																
Reference Station																																					
	ESC-RFF1		*		*	*		*	*		*	*		*	*		*	*		*	*																
	ESC-RFF2		*		*	*		*	*		*	*		*	*		*	*		*	*																
	ESC-RFF3		*		*	*		*	*		*	*		*	*		*	*		*	*																
Ma Wan Station																																					
	MW1		*		*	*		*	*		*	*		*	*		*	*		*	*																

Annex A1 - Environmental Monitoring and Audit Sampling Schedule for East of Sha Chau (January 2012 - February 2014)

		2012												2013												2014											
Water Column Profiling		J	F	M	A	M	J	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	WCP1		*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*																
	WCP2		*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*																

Benthic Recolonisation Studies		J	F	M	A	M	J	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
Capped Contaminated Mud Pits IVa-c																																					
	ESC-CPA								*				*								*				*												
	ESC-CPB								*				*								*				*												
	ESC-CPC								*				*								*				*												
Reference Stations																																					
	ESC-RBA								*				*								*				*												
	ESC-RBB								*				*								*				*												
	ESC-RBC								*				*								*				*												

Impact Monitoring for Dredging		J	F	M	A	M	J	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
Upstream/Reference Stations																																					
	US1	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*																			
	US2	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*																			
Downstream/Impact Stations																																					
	DS1	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*																			
	DS2	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*																			
	DS3	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*																			
	DS4	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*																			
	DS5	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*																			
Ma Wan Station																																					
	MW1	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*																			

Sampling completed

Sampling to be completed

Annex A2 - Environmental Monitoring and Audit Sampling Schedule for South of The Brothers (July 2012 - December 2017)

			2012						2013												2014												2015												2016												2017											
Baseline Monitoring Prior to Dredging	**Code**	**Frequency**	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	J	F	M	A	M	J	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
Far Field Stations																																																																	
	SB-WFA	3 days per week for 4 weeks	*	*																																																														
	SB-WFB	3 days per week for 4 weeks	*	*																																																														
Mid Field Stations																																																																	
	SB-WMA	3 days per week for 4 weeks	*	*																																																														
	SB-WMB	3 days per week for 4 weeks	*	*																																																														
Near Field Stations																																																																	
	SB-WNAA	3 days per week for 4 weeks	*	*																																																														
	SB-WNAB	3 days per week for 4 weeks	*	*																																																														
	SB-WNBA	3 days per week for 4 weeks	*	*																																																														
	SB-WNBB	3 days per week for 4 weeks	*	*																																																														
Reference Stations																																																																	
	NM1	3 days per week for 4 weeks	*	*																																																														
	NM2	3 days per week for 4 weeks	*	*																																																														
	NM3	3 days per week for 4 weeks	*	*																																																														
	NM5	3 days per week for 4 weeks	*	*																																																														
	NM6	3 days per week for 4 weeks	*	*																																																														
Sensitive Receiver Stations																																																																	
	MW1	3 days per week for 4 weeks	*	*																																																														
	THB1	3 days per week for 4 weeks	*	*																																																														
	THB2	3 days per week for 4 weeks	*	*																																																														
	WSR45C	3 days per week for 4 weeks	*	*																																																														
	WSR46	3 days per week for 4 weeks	*	*																																																														

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	J	F	M	A	M	J	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
Upstream Stations																																																																	
	US1	3 days per week					*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*																																							
	US2	3 days per week					*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*																																							
Downstream Stations																																																																	
	DS1	3 days per week					*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*																																							
	DS2	3 days per week					*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*																																							
	DS3	3 days per week					*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*																																							
	DS4	3 days per week					*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*																																							
	DS5	3 days per week					*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*																																							
Sensitive Receiver Stations																																																																	
	MW1	3 days per week					*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*																																							
	THB1	3 days per week					*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*																																							
	THB2	3 days per week					*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*																																							
	WSR45C	3 days per week					*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*																																							
	WSR46	3 days per week					*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*																																							

Pit Specific Sediment Chemistry			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	J	F	M	A	M	J	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
SB CMP 1 Active																																																																	
Near-Pit																																																																	
	SB-NNAA	Monthly														12	12	12	12	12	12	12	12	12	12	12	12	12	12																																							
	SB-NNAB	Monthly														12	12	12	12	12	12	12	12	12	12	12	12	12	12																																							
Pit-Edge																																																																	
	SB-NEAA	Monthly														12	12	12	12	12	12	12	12	12	12	12	12	12	12																																							
	SB-NEAB	Monthly														12	12	12	12	12	12	12	12	12	12	12	12	12	12																																							
Active-Pit																																																																	
	SB-NPAA	Monthly														12	12	12	12	12	12	12	12	12	12	12	12	12	12																																							
	SB-NPAB	Monthly														12	12	12	12	12	12	12	12	12	12	12	12	12	12																																							
SB CMP 2 Active																																																																	
Near-Pit																																																																	
	SB-NNBA	Monthly																												12	12	12	12	12	12	12	12	12	12	12	12	12	12	12																								
	SB-NNBB	Monthly																												12	12	12	12	12	12	12	12	12	12	12	12	12	12	12																								
Pit-Edge																																																																	
	SB-NEBA	Monthly																												12	12	12	12	12	12	12	12	12	12	12	12	12	12	12																								
	SB-NEBB	Monthly																												12	12	12	12	12	12	12	12	12	12	12	12	12	12	12																								
Active-Pit																																																																	
	SB-NPBA	Monthly																												12	12	12	12	12	12	12	12	12	12	12	12	12	12	12																								
	SB-NPBB	Monthly																												12	12	12	12	12	12	12	12	12	12	12	12	12	12	12																								

Annex A2 - Environmental Monitoring and Audit Sampling Schedule for South of The Brothers (July 2012 - December 2017)

			2012						2013												2014												2015												2016												2017											
Cumulative Impact Sediment Chemistry			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	J	F	M	A	M	J	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 Stations																																																																		
	SB-RNA	4 times per year														12				12		12				12		12				12		12				12		12				12																								
	SB-RNB	4 times per year														12				12		12				12		12				12		12				12		12				12																								
Mid-field Stations																																																																		
	SB-RMA	4 times per year														12				12		12				12		12				12		12				12		12				12																								
	SB-RMB	4 times per year														12				12		12				12		12				12		12				12		12				12																								
Far-Field Stations																																																																		
	SB-RFA	4 times per year														12				12		12				12		12				12		12				12		12				12																								
	SB-RFB	4 times per year														12				12		12				12		12				12		12				12		12				12																								
Capped Pit Stations																																																																		
	SB-RCA	4 times per year														12				12		12				12		12				12		12				12		12				12																								
	SB-RCB	4 times per year														12				12		12				12		12				12		12				12		12				12																								
Sensitive Receiver Stations																																																																		
	MW1	4 times per year														12				12		12				12		12				12		12				12		12				12																								
	THB1	4 times per year														12				12		12				12		12				12		12				12		12				12																								
	THB2	4 times per year														12				12		12				12		12				12		12				12		12				12																								
Sediment Toxicity Tests			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	J	F	M	A	M	J	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
SB CMP 1 Active																																																																		
Reference																																																																		
	SB-TRA	2 times per year														5						5																																												
	SB-TRB	2 times per year														5						5																																												
Near-Field																																																																		
	SB-TAA	2 times per year														5						5																																												
	SB-TAB	2 times per year														5						5																																												
Sensitive Receiver Stations																																																																		
	MW1	2 times per year														5						5																																												
	THB1	2 times per year														5						5																																												
	THB2	2 times per year														5						5																																												
SB CMP 2 Active																																																																		
Reference																																																																		
	SB-TRA	2 times per year																										5						5						5																												
	SB-TRB	2 times per year																										5						5						5																												
Near-Field																																																																		
	SB-TBA	2 times per year																										5						5						5																												
	SB-TBB	2 times per year																										5						5						5																												
Sensitive Receiver Stations																																																																		
	MW1	2 times per year																										5						5						5																												
	THB1	2 times per year																										5						5						5																												
	THB2	2 times per year																										5						5						5																												
Tissue/ Whole Body Sampling			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	J	F	M	A	M	J	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-Pit Stations																																																																		
	SB-INA	2 times per year																				*						*						*						*																												
	SB-INB	2 times per year																				*						*						*						*																												
Reference North																																																																		
	TNA	2 times per year																				*						*						*						*																												
	TNB	2 times per year																				*						*						*						*																												
Reference South																																																																		
	TSA	2 times per year																				*						*						*						*																												
	TSB	2 times per year																				*						*						*						*																												
Demersal Trawling			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	J	F	M	A	M	J	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
Impact																																																																		
	SB-INA 1-5	4 times per year														5					5	5					5	5					5	5					5	5																												
	SB-INB 1-5	4 times per year														5					5	5					5	5					5	5					5	5																												
Reference North																																																																		
	TNA 1-5	4 times per year														5					5	5					5	5					5	5					5	5																												
	TNB 1-5	4 times per year														5					5	5					5	5					5	5					5	5																												
Reference South																																																																		
	TSA 1-5	4 times per year														5					5	5					5	5					5	5					5	5																												
	TSB 1-5	4 times per year														5					5	5					5	5					5	5					5	5																												

Annex A2 - Environmental Monitoring and Audit Sampling Schedule for South of The Brothers (July 2012 - December 2017)

			2012						2013												2014												2015												2016												2017											
Routine Water Quality Monitoring			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	J	F	M	A	M	J	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
Ebb Tide																																																																				
Impact Stations Downcurrent																																																																			
	SB-IPE1	8 times per year														8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8																									
	SB-IPE2	8 times per year														8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8																									
	SB-IPE3	8 times per year														8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8																									
	SB-IPE4	8 times per year														8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8																									
	SB-IPE5	8 times per year														8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8																									
Intermediate Stations Downcurrent																																																																			
	SB-INE1	8 times per year														8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8																									
	SB-INE2	8 times per year														8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8																									
	SB-INE3	8 times per year														8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8																									
	SB-INE4	8 times per year														8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8																									
	SB-INE5	8 times per year														8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8																									
Reference Stations Upcurrent																																																																				
	SB-RFE1	8 times per year														8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8																									
	SB-RFE2	8 times per year														8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8																									
	SB-RFE3	8 times per year														8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8																									
	SB-RFE4	8 times per year														8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8																									
	SB-RFE5	8 times per year														8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8																									
Sensitive Receiver Stations																																																																				
	MW1	8 times per year														8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8																									
	THB1	8 times per year														8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8																									
	THB2	8 times per year														8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8																									
	WSR45C	8 times per year														8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8																									
	WSR46	8 times per year														8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8																									
Flood Tide																																																																			
Impact Stations Downcurrent																																																																				
	SB-IPF1	8 times per year														8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8																									
	SB-IPF2	8 times per year														8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8																									
	SB-IPF3	8 times per year														8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8																									
Intermediate Stations Downcurrent																																																																				
	SB-INF1	8 times per year														8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8																									
	SB-INF2	8 times per year														8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8																									
	SB-INF3	8 times per year														8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8																									
Reference Stations Upcurrent																																																																				
	SB-RFF1	8 times per year														8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8																									
	SB-RFF2	8 times per year														8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8																									
	SB-RFF3	8 times per year														8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8																									
Sensitive Receiver Stations																																																																				
	MW1	8 times per year														8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8																									
	THB1	8 times per year														8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8																									
	THB2	8 times per year														8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8																									
	WSR45C	8 times per year														8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8																									
	WSR46	8 times per year														8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8																									

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	J	F	M	A	M	J	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	WCP1	Monthly														4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4																								
	WCP2	Monthly														4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4																								

Annex A2 - Environmental Monitoring and Audit Sampling Schedule for South of The Brothers (July 2012 - December 2017)

Capping Water Quality Monitoring			2012						2013												2014												2015											
			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	J	F	M	A	M	J	J	A	S	O	N	D
Ebb Tide																																												
Impact Stations Downcurrent																																												
	SB-IPE1	8 times per year																																										
	SB-IPE2	8 times per year																																										
	SB-IPE3	8 times per year																																										
	SB-IPE4	8 times per year																																										
	SB-IPE5	8 times per year																																										
Intermediate Stations Downcurrent																																												
	SB-INE1	8 times per year																																										
	SB-INE2	8 times per year																																										
	SB-INE3	8 times per year																																										
	SB-INE4	8 times per year																																										
	SB-INE5	8 times per year																																										
Reference Stations Upcurrent																																												
	SB-RFE1	8 times per year																																										
	SB-RFE2	8 times per year																																										
	SB-RFE3	8 times per year																																										
	SB-RFE4	8 times per year																																										
	SB-RFE5	8 times per year																																										
Sensitive Receiver Stations																																												
	MW1	8 times per year																																										
	THB1	8 times per year																																										
	THB2	8 times per year																																										
	WSR45C	8 times per year																																										
	WSR46	8 times per year																																										
Flood Tide																																												
Impact Stations Downcurrent																																												
	SB-IPF1	8 times per year																																										
	SB-IPF2	8 times per year																																										
	SB-IPF3	8 times per year																																										
Intermediate Stations Downcurrent																																												
	SB-INF1	8 times per year																																										
	SB-INF2	8 times per year																																										
	SB-INF3	8 times per year																																										
Reference Stations Upcurrent																																												
	SB-RFF1	8 times per year																																										
	SB-RFF2	8 times per year																																										
	SB-RFF3	8 times per year																																										
Sensitive Receiver Stations																																												
	MW1	8 times per year																																										
	THB1	8 times per year																																										
	THB2	8 times per year																																										
	WSR45C	8 times per year																																										
	WSR46	8 times per year																																										

Capping Water Quality Monitoring			2016												2017											
			J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D
Ebb Tide																										
Impact Stations Downcurrent																										
	SB-IPE1	8 times per year	3	3		3	3		3	3		3	3													
	SB-IPE2	8 times per year	3	3		3	3		3	3		3	3													
	SB-IPE3	8 times per year	3	3		3	3		3	3		3	3													
	SB-IPE4	8 times per year	3	3		3	3		3	3		3	3													
	SB-IPE5	8 times per year	3	3		3	3		3	3		3	3													
Intermediate Stations Downcurrent																										
	SB-INE1	8 times per year	3	3		3	3		3	3		3	3													
	SB-INE2	8 times per year	3	3		3	3		3	3		3	3													
	SB-INE3	8 times per year	3	3		3	3		3	3		3	3													
	SB-INE4	8 times per year	3	3		3	3		3	3		3	3													
	SB-INE5	8 times per year	3	3		3	3		3	3		3	3													
Reference Stations Upcurrent																										
	SB-RFE1	8 times per year	3	3		3	3		3	3		3	3													
	SB-RFE2	8 times per year	3	3		3	3		3	3		3	3													
	SB-RFE3	8 times per year	3	3		3	3		3	3		3	3													
	SB-RFE4	8 times per year	3	3		3	3		3	3		3	3													
	SB-RFE5	8 times per year	3	3		3	3		3	3		3	3													
Sensitive Receiver Stations																										
	MW1	8 times per year	3	3		3	3		3	3		3	3													
	THB1	8 times per year																								
	THB2	8 times per year																								
	WSR45C	8 times per year	3	3		3	3		3	3		3	3													
	WSR46	8 times per year	3	3		3	3		3	3		3	3													
Flood Tide																										
Impact Stations Downcurrent																										
	SB-IPF1	8 times per year	3	3		3	3		3	3		3	3													
	SB-IPF2	8 times per year	3	3		3	3		3	3		3	3													
	SB-IPF3	8 times per year	3	3		3	3		3	3		3	3													
Intermediate Stations Downcurrent																										
	SB-INF1	8 times per year	3	3		3	3		3	3		3	3													
	SB-INF2	8 times per year	3	3		3	3		3	3		3	3													
	SB-INF3	8 times per year	3	3		3	3		3	3		3	3													
Reference Stations Upcurrent																										
	SB-RFF1	8 times per year	3	3		3	3		3	3		3	3													
	SB-RFF2	8 times per year	3	3		3	3		3	3		3	3													
	SB-RFF3	8 times per year	3	3		3	3		3	3		3	3													
Sensitive Receiver Stations																										
	MW1	8 times per year	3	3		3	3		3	3		3	3													
	THB1	8 times per year																								
	THB2	8 times per year																								
	WSR45C	8 times per year	3	3		3	3		3	3		3	3													
	WSR46	8 times per year	3	3		3	3		3	3		3	3													

Benthic Recolonisation Studies			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	J	F	M	A	M	J	J	A	S	O	N	D
Capped Contaminated Mud Pits																																												
	SB-CPA	2 times per year																																										
	SB-CPB	2 times per year																																										
Reference Stations																																												
	RBA	2 times per year																																										
	RBB	2 times per year																																										
	RBC	2 times per year																																										

Benthic Recolonisation Studies			J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D
Capped Contaminated Mud Pits																										
	SB-CPA	2 times per year								12				12								12				12
	SB-CPB	2 times per year								12				12								12				12
										12				12								12				12
Reference Stations																										
	RBA	2 times per year								12				12								12				12
	RBB	2 times per year								12				12								12				12
	RBC	2 times per year								12				12								12				12

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

Annex B

Graphs of Monitoring Results

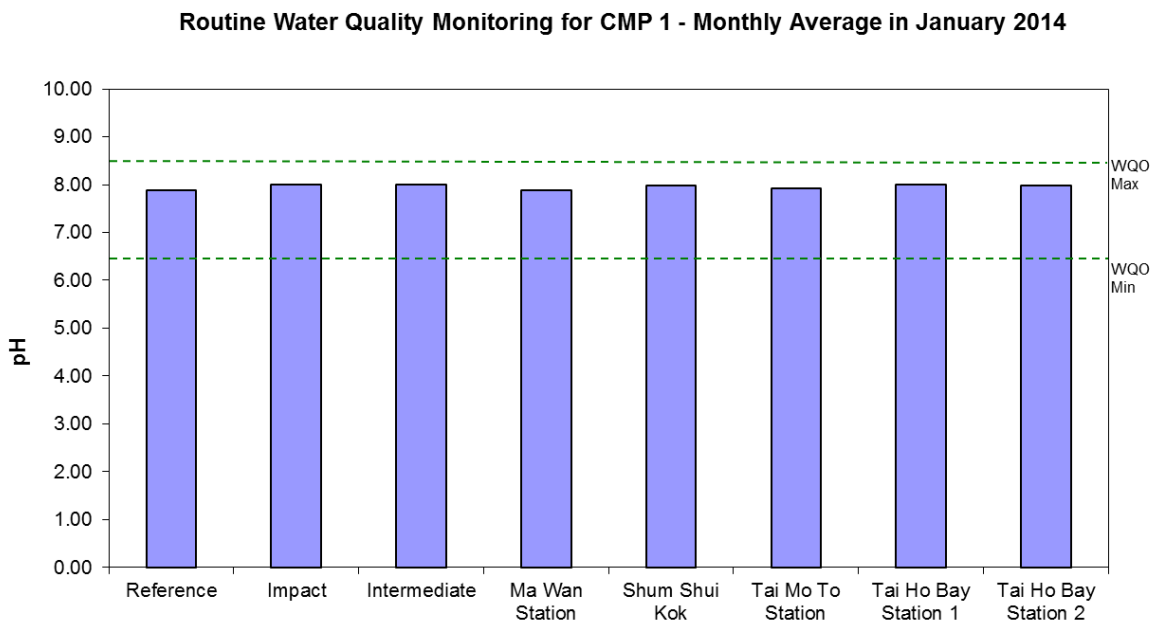


Figure 1: Monthly averaged level of pH (mean + SD) recorded during *Routine Water Quality Monitoring* for disposal operations at CMP 1 in January 2014.

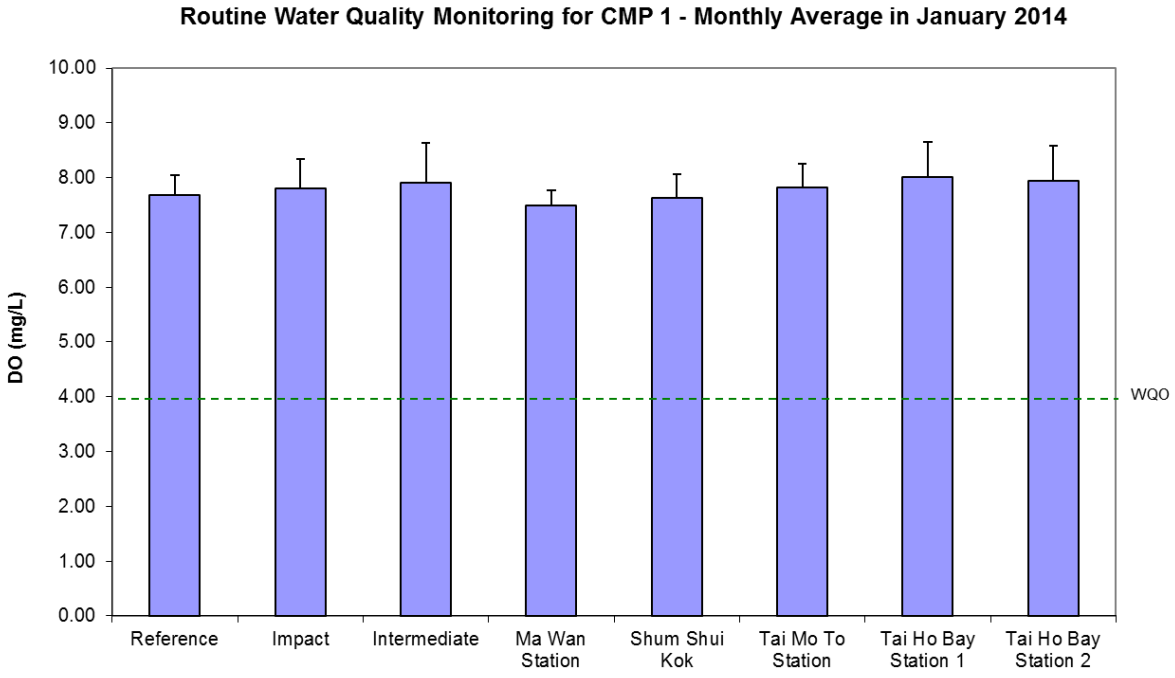


Figure 2: Monthly averaged concentration of Dissolved Oxygen (mg/L; mean + SD) recorded during *Routine Water Quality Monitoring* for disposal operations at CMP 1 in January 2014.

Source: H:\Team\EM\GMS Projects\0175086 CEDD EM&A for South Brothers\02 Deliverable\07 CMP Monthly Report\18th (February 2014)

Date: 14/3/2014

Environmental Resources Management

ERM

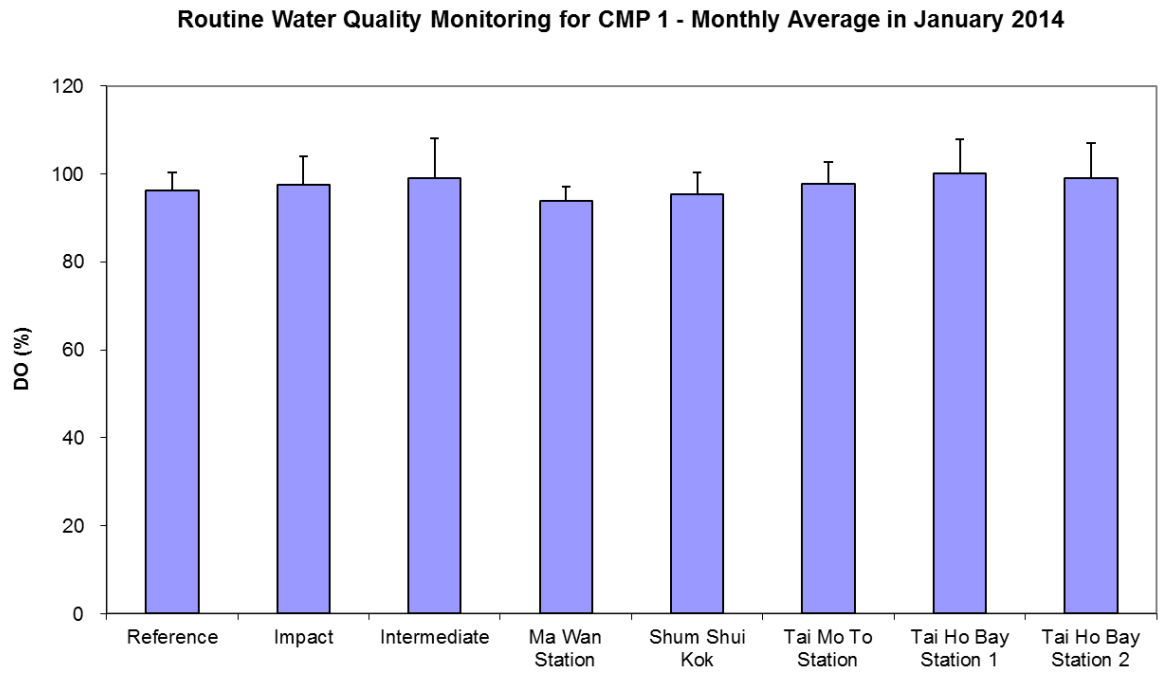


Figure 3: Monthly averaged level of Dissolved Oxygen (% saturation; mean + SD) recorded during *Routine Water Quality Monitoring* for disposal operations at CMP 1 in January 2014.

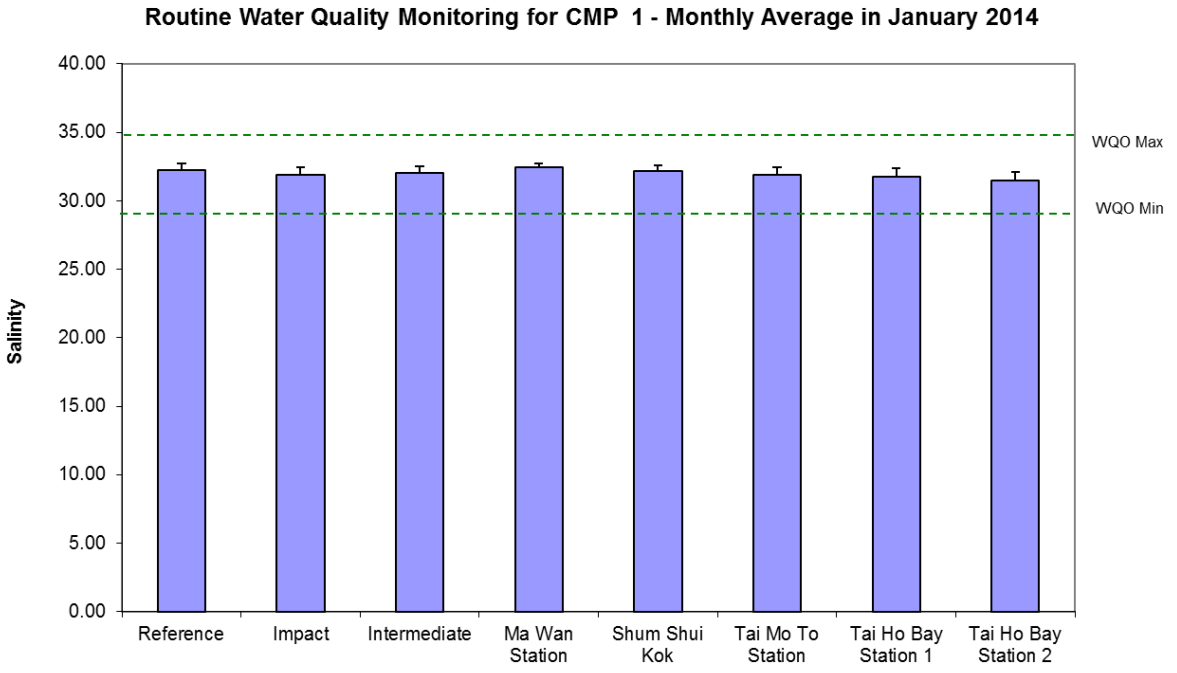


Figure 4: Monthly averaged level of Salinity (mean + SD) recorded during *Routine Water Quality Monitoring* for disposal operations at CMP 1 in January 2014.

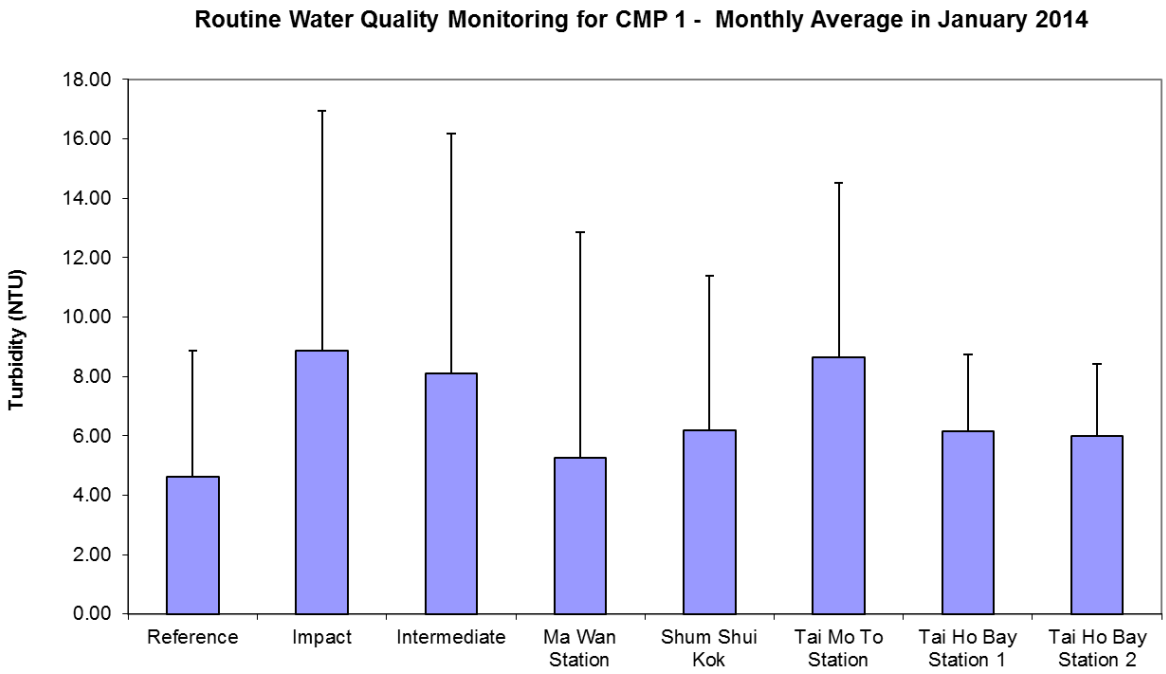


Figure 5: Monthly averaged level of Turbidity (NTU; mean + SD) recorded during *Routine Water Quality Monitoring* for disposal operations at CMP 1 in January 2014.

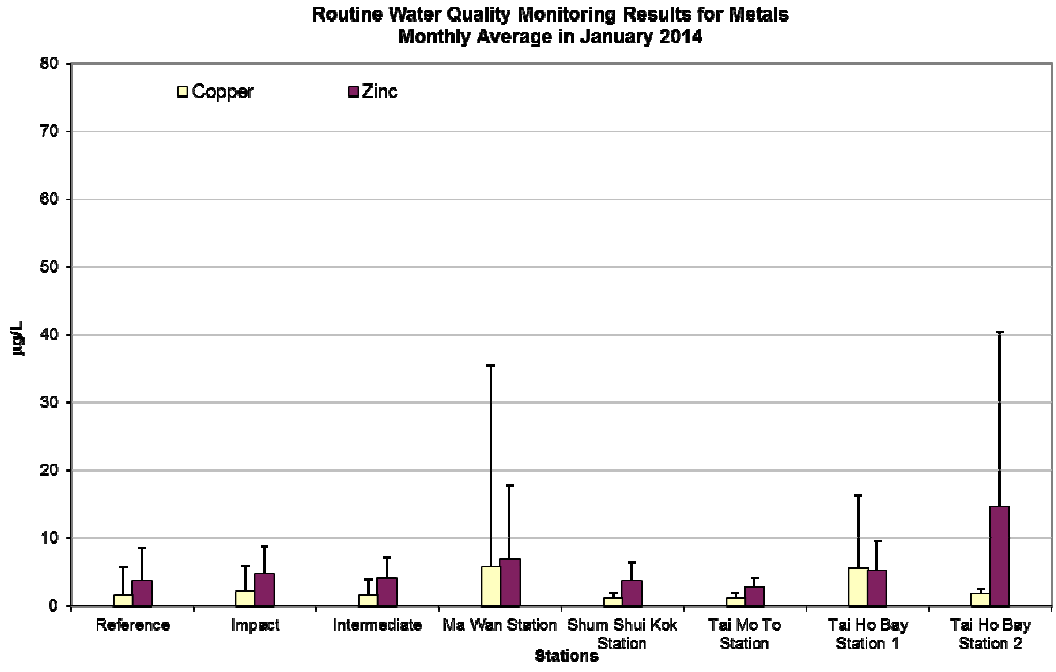


Figure 6: Monthly averaged concentration of Copper and Zinc (mean + SD) in water samples collected from *Routine Water Quality Monitoring* for disposal operations at CMP 1 in January 2014.

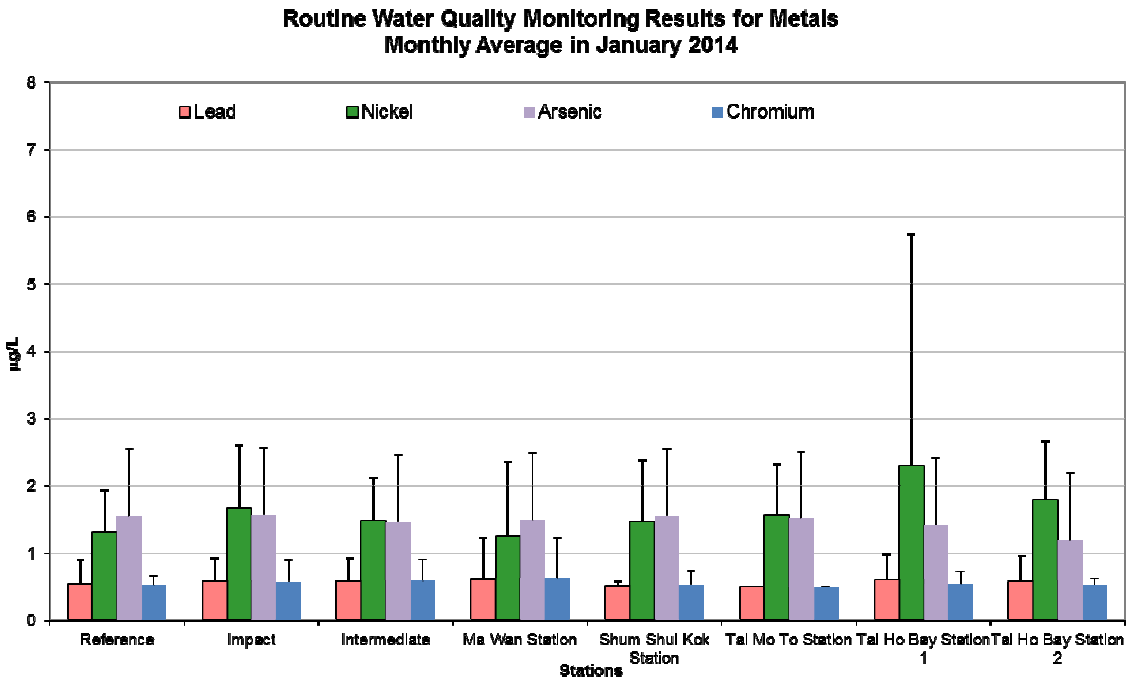


Figure 7: Monthly averaged concentration of Lead, Nickel, Arsenic and Chromium (mean + SD) in water samples collected from *Routine Water Quality Monitoring* for disposal operations at CMP 1 in January 2014.

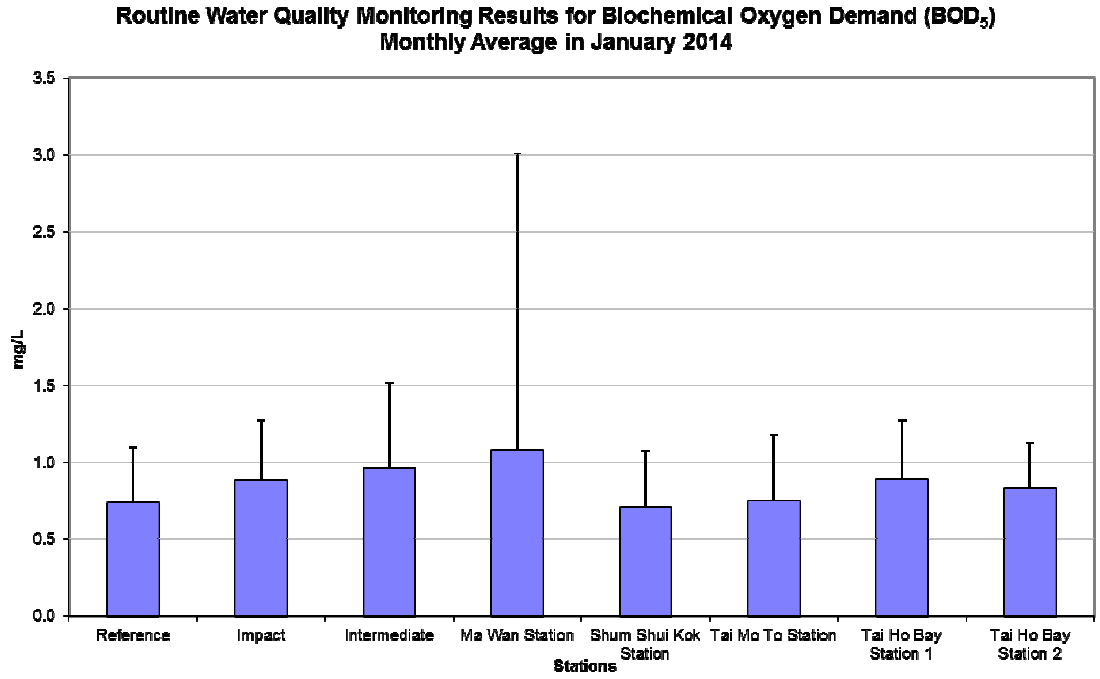


Figure 8: Monthly averaged level of Biochemical Oxygen Demand (BOD_5; mean + SD) in water samples collected from *Routine Water Quality Monitoring* for disposal operations at CMP 1 in January 2014.

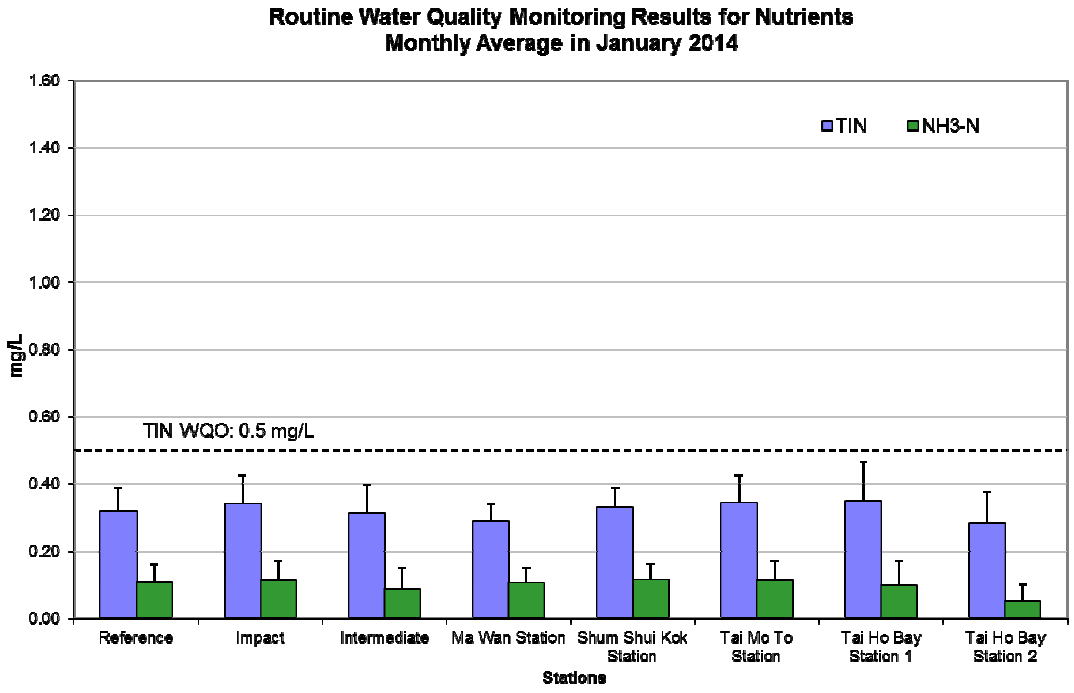


Figure 9: Monthly averaged concentration of Total Inorganic Nitrogen and NH_3-N (mean + SD) in water samples collected from *Routine Water Quality Monitoring* for disposal operations at CMP 1 in January 2014.

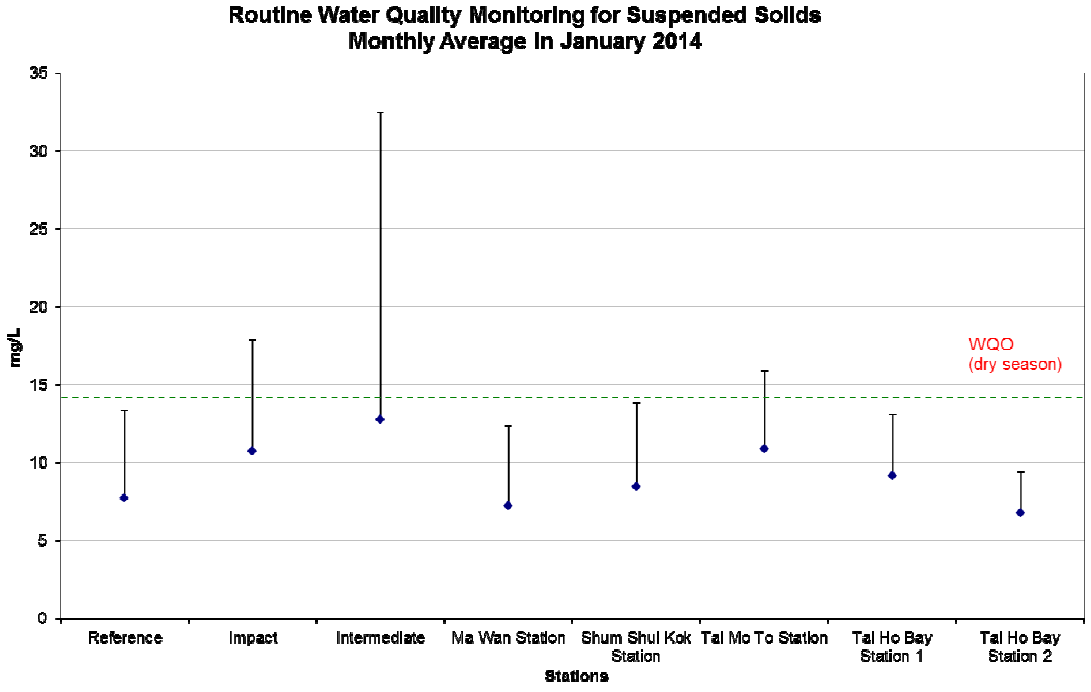


Figure 10: Monthly averaged concentration of Suspended Solids (mean + SD) in water samples collected from *Routine Water Quality Monitoring* for disposal operations at CMP 1 in January 2014.

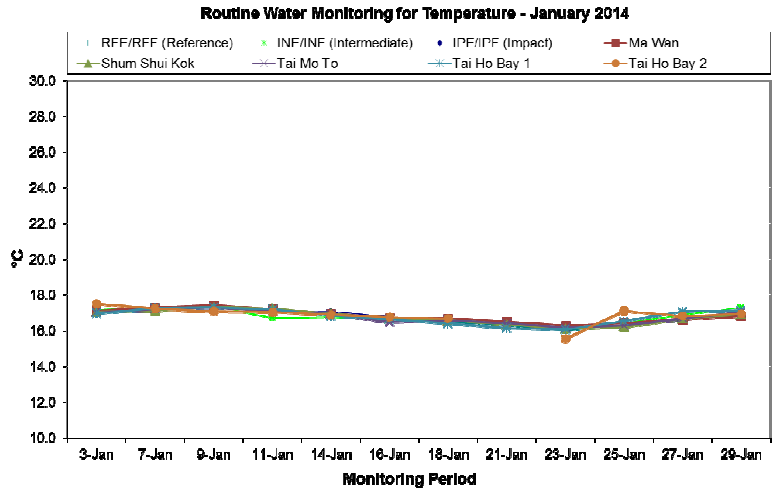


Figure 11: Daily levels of Temperature during *Routine Water Quality Monitoring* for disposal operations at CMP 1 in January 2014.

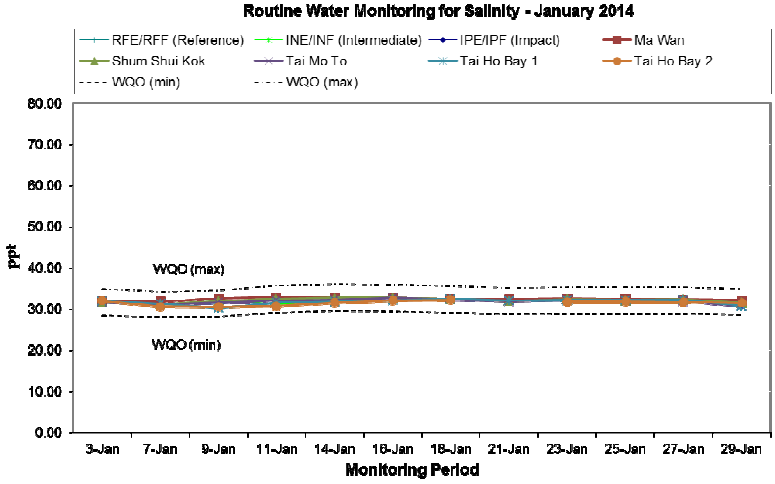


Figure 12: Daily levels of Salinity during *Routine Water Quality Monitoring* for disposal operations at CMP 1 in January 2014.

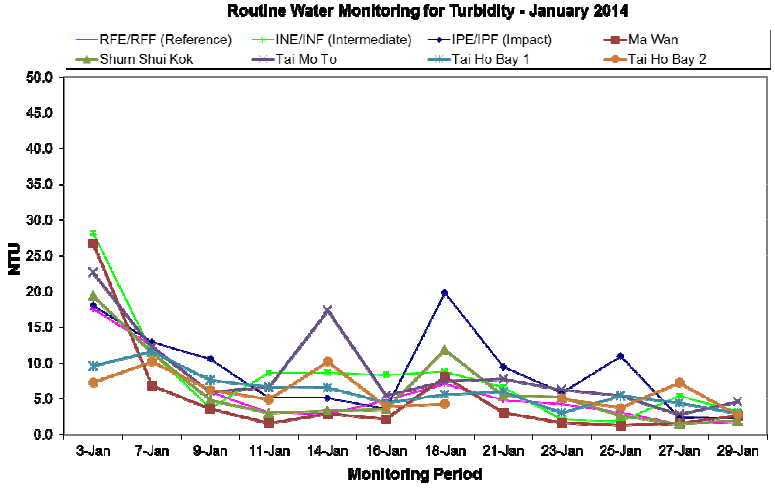


Figure 13: Daily levels of Turbidity during *Routine Water Quality Monitoring* for disposal operations at CMP 1 in January 2014.

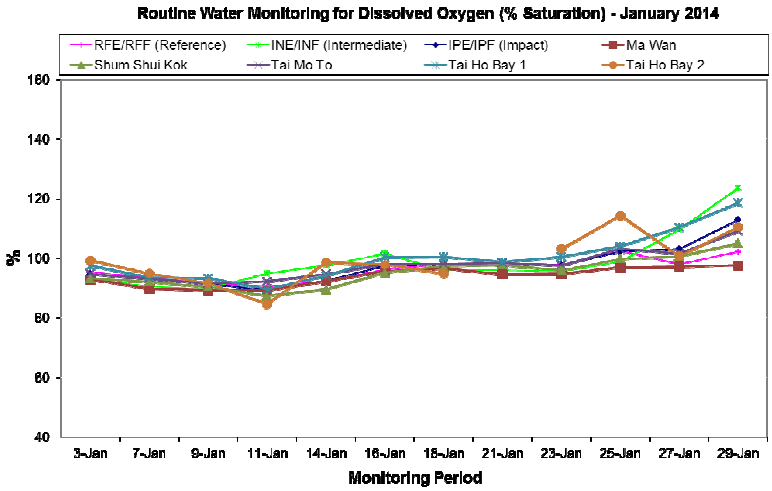


Figure 14: Daily levels of Dissolved Oxygen (%) during *Routine Water Quality Monitoring* for disposal operations at CMP 1 in January 2014.

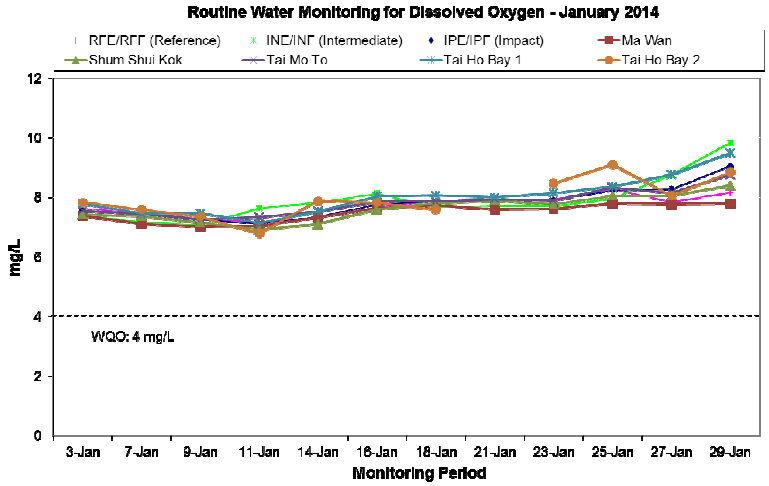


Figure 15: Daily levels of Dissolved Oxygen (mg/L) during *Routine Water Quality Monitoring* for disposal operations at CMP 1 in January 2014.

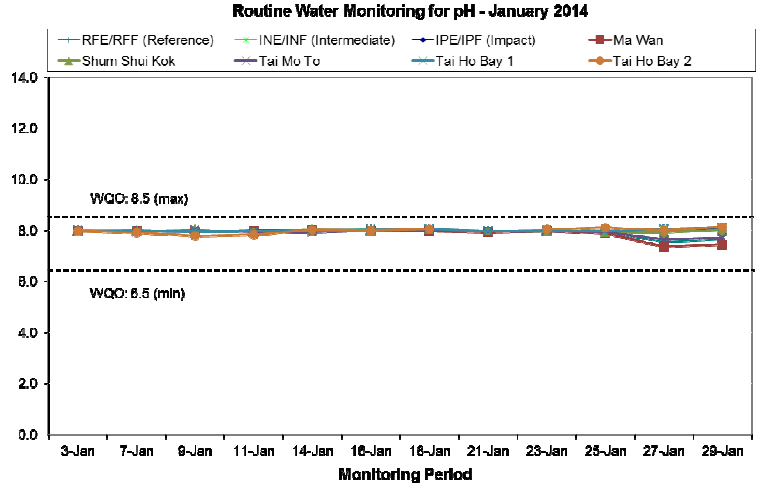


Figure 16: Daily levels of pH during *Routine Water Quality Monitoring* for disposal operations at CMP 1 in January 2014.

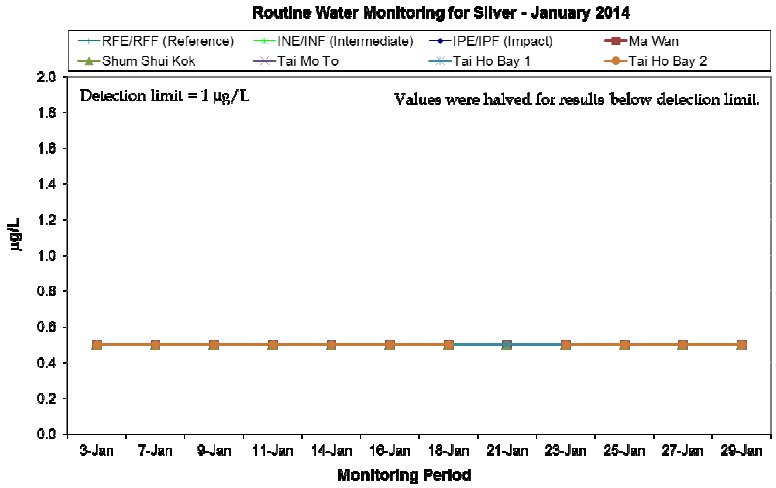


Figure 17: Daily levels of Silver during *Routine Water Quality Monitoring* for disposal operations at CMP 1 in January 2014.

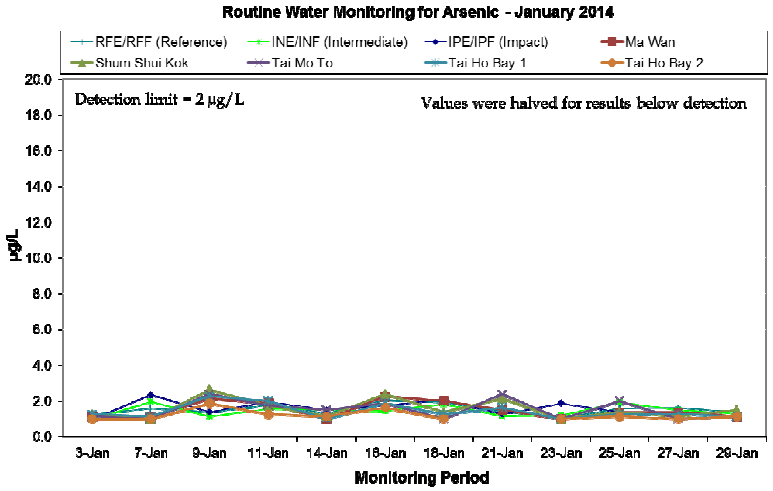


Figure 18: Daily levels of Arsenic during *Routine Water Quality Monitoring* for disposal operations at CMP 1 in January 2014.

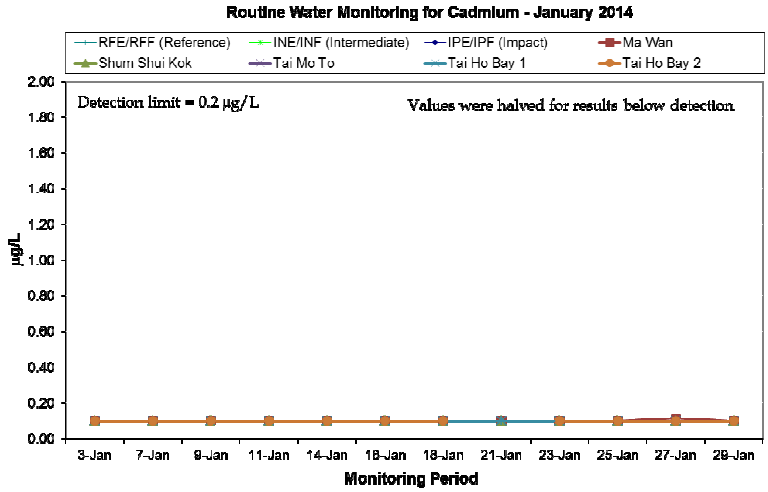


Figure 19: Daily levels of Cadmium during *Routine Water Quality Monitoring* for disposal operations at CMP 1 in January 2014.

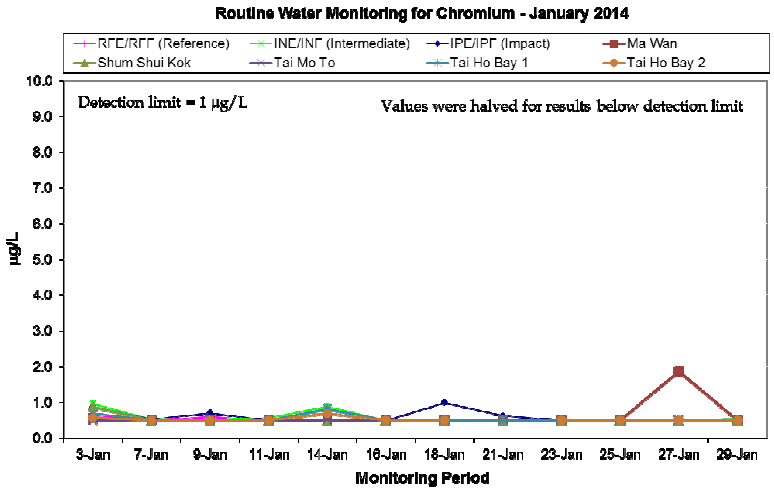


Figure 20: Daily levels of Chromium during *Routine Water Quality Monitoring* for disposal operations at CMP 1 in January 2014.

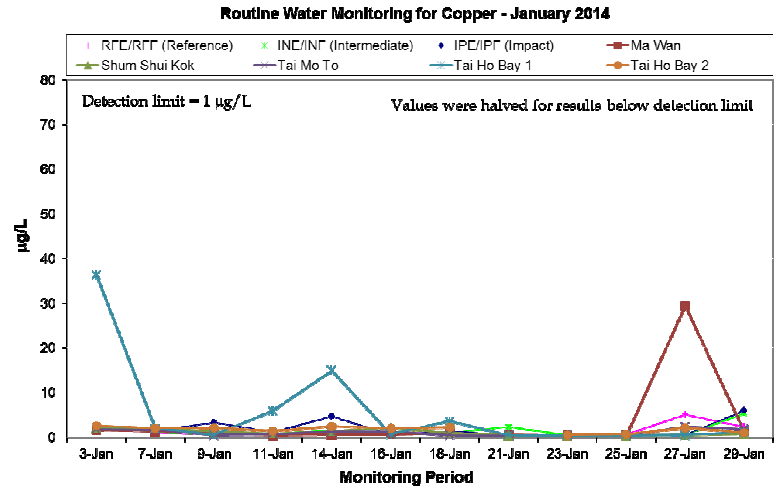


Figure 21: Daily levels of Copper during *Routine Water Quality Monitoring* for disposal operations at CMP 1 in January 2014.

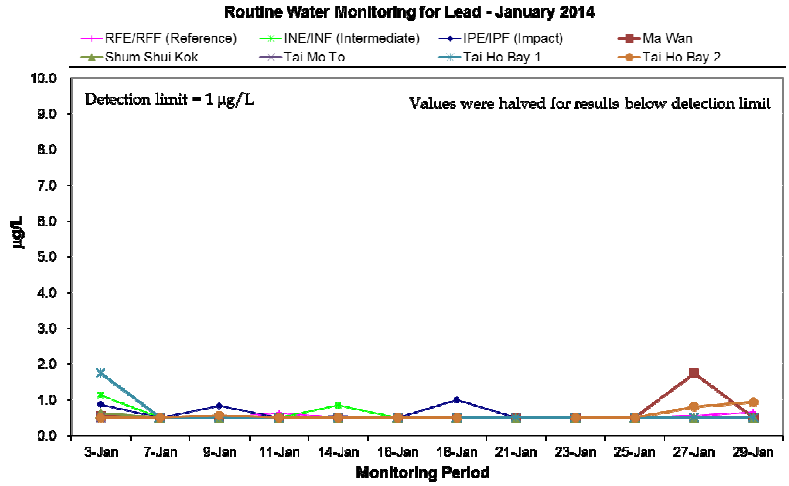


Figure 22: Daily levels of Lead during *Routine Water Quality Monitoring* for disposal operations at CMP 1 in January 2014.

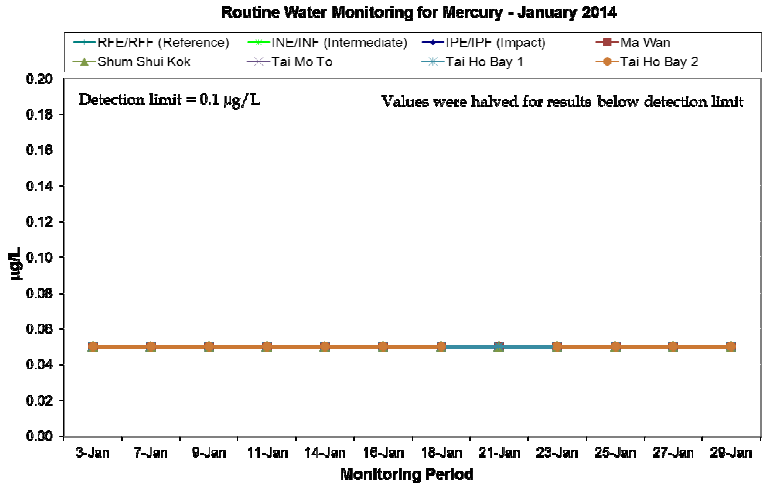


Figure 23: Daily levels of Mercury during *Routine Water Quality Monitoring* for disposal operations at CMP 1 in January 2014.

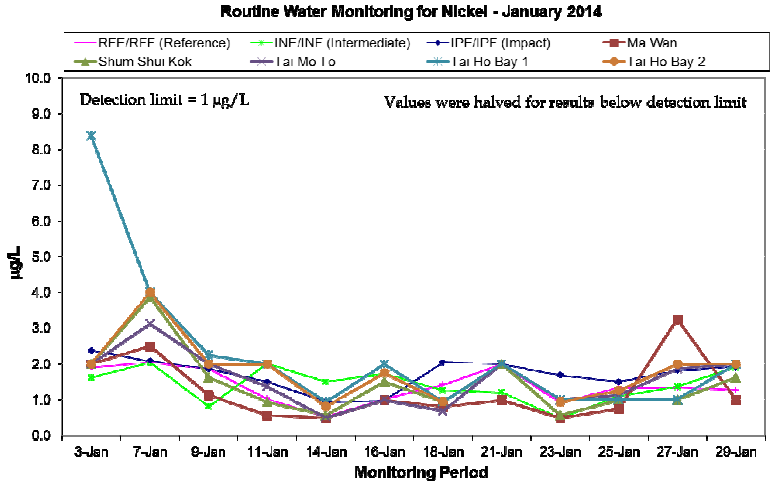


Figure 24: Daily levels of Nickel during *Routine Water Monitoring* for disposal operations at CMP 1 in January 2014.

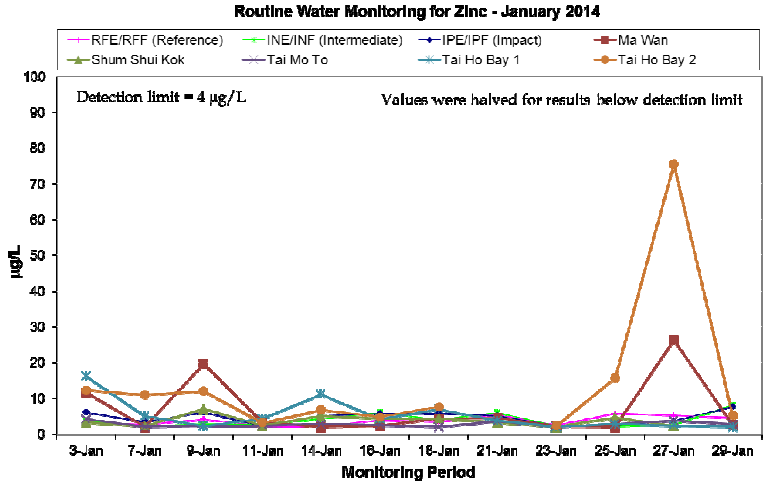


Figure 25: Daily levels of Zinc during *Routine Water Quality Monitoring* for disposal operations at CMP 1 in January 2014.

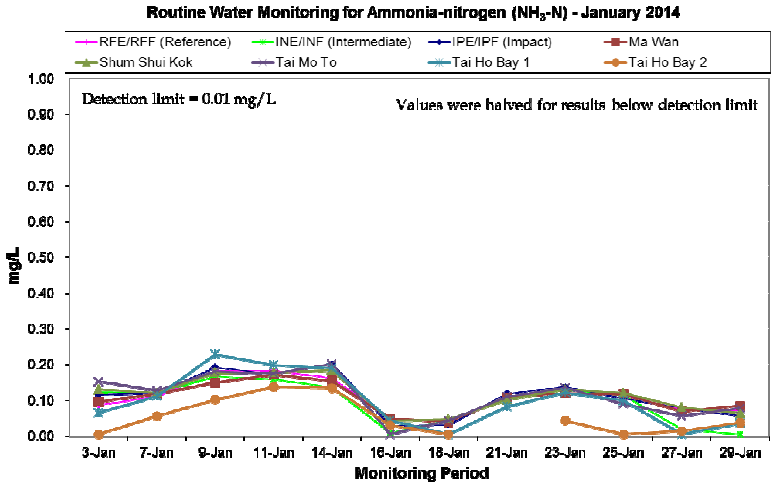


Figure 26: Daily levels of Ammonia-Nitrogen during *Routine Water Quality Monitoring* for for disposal operations at CMP 1 in January 2014.

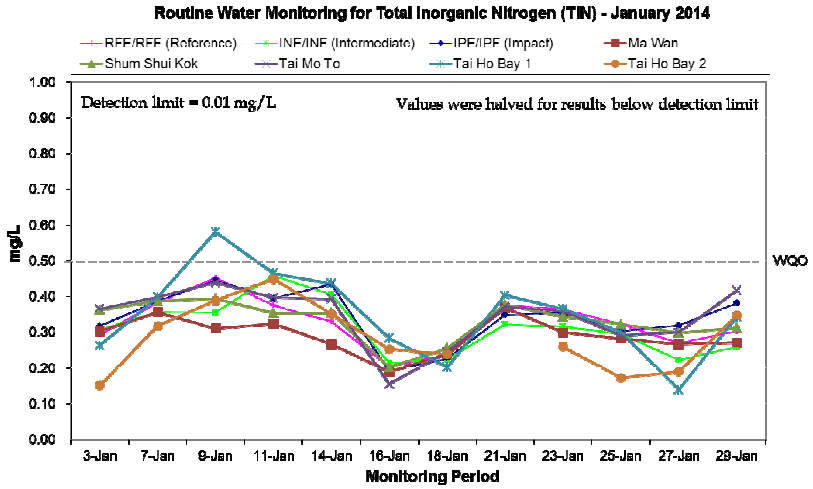


Figure 27: Daily levels of Total Inorganic Nitrogen during *Routine Water Quality Monitoring* for disposal operations at CMP 1 in January 2014.

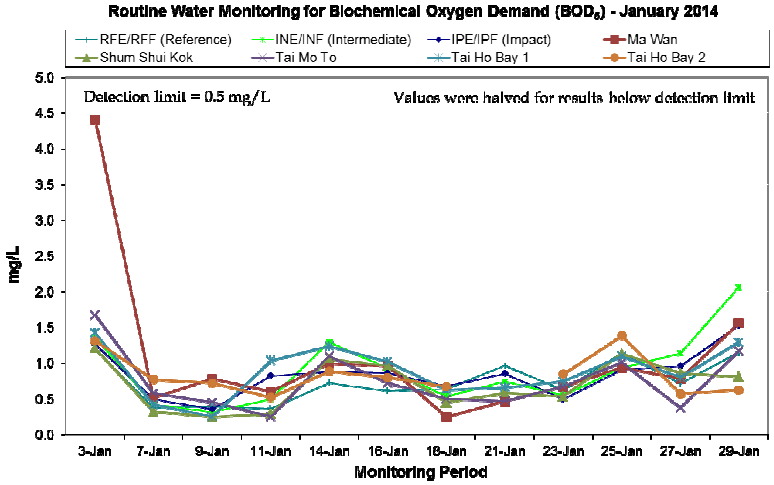


Figure 28: Daily levels of Biochemical Oxygen Demand during *Routine Water Quality Monitoring* for disposal operations at CMP 1 in January 2014.

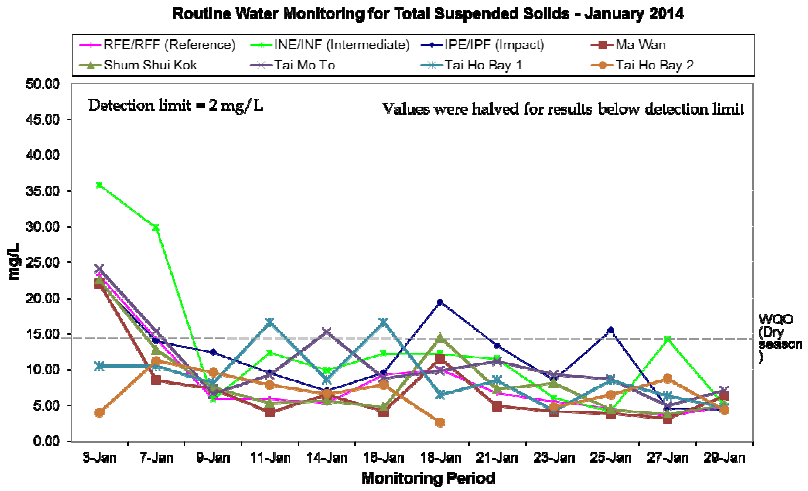


Figure 29: Daily levels of Total Suspended Solids during *Routine Water Quality Monitoring* for disposal operations at CMP 1 in January 2014.

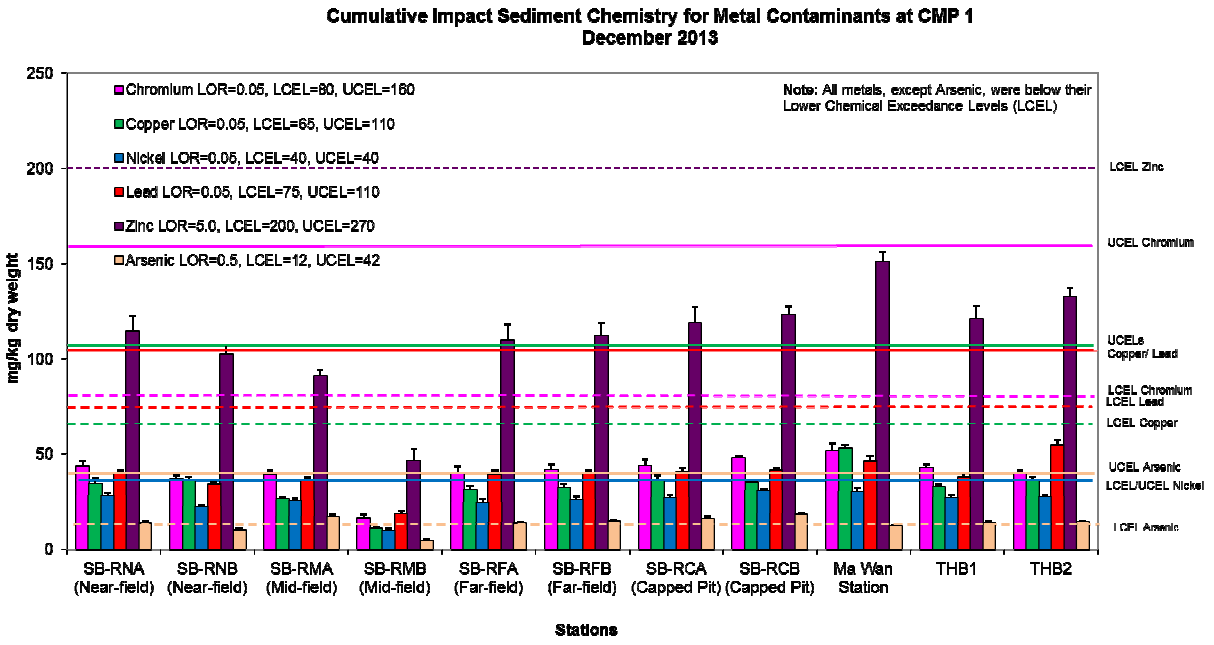


Figure 30: Concentration of Metals (Cr, Cu, Ni, Pb, Zn, As; mean +SD) in sediment samples collected for Cumulative Impact Sediment Chemistry Monitoring for CMP 1 in December 2013

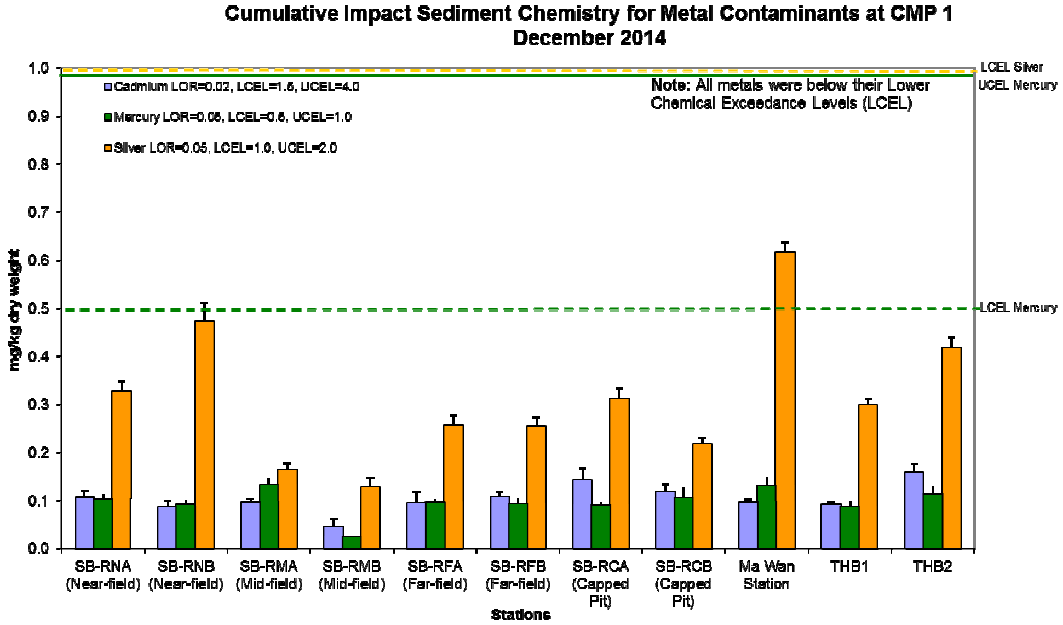


Figure 31: Concentration of Metals (Cd, Hg, Ag; mean +SD) in sediment samples collected for Cumulative Impact Sediment Chemistry Monitoring for CMP 1 in December 2013

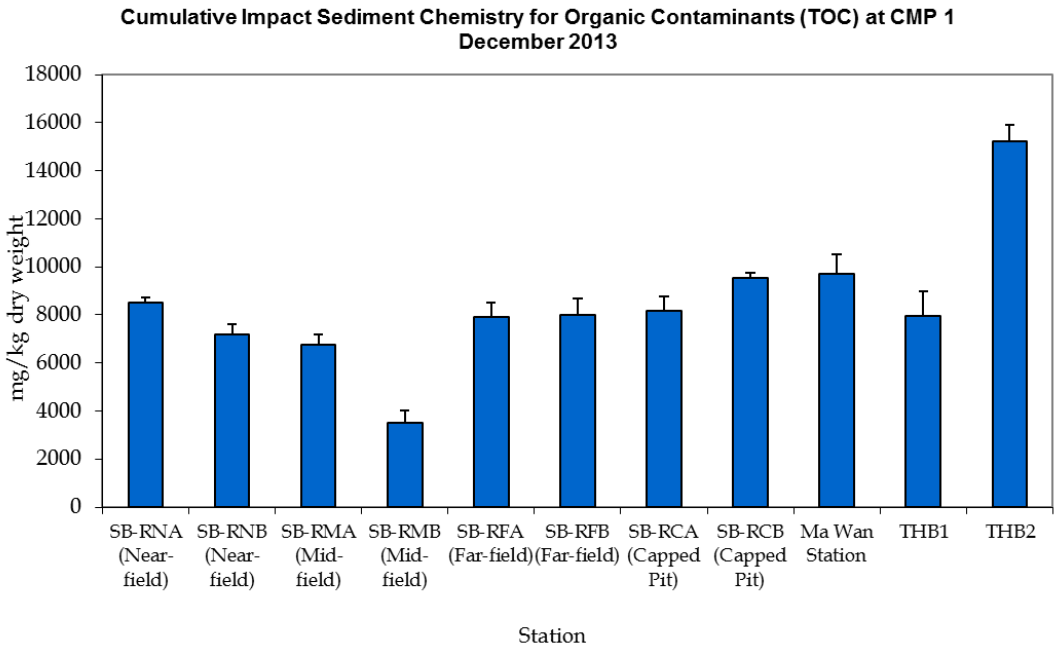


Figure 32: Concentration of Total Organic Carbon (mg/kg dry weight; mean +SD) in sediment samples collected for Cumulative Impact Sediment Chemistry Monitoring for CMP 1 in December 2013

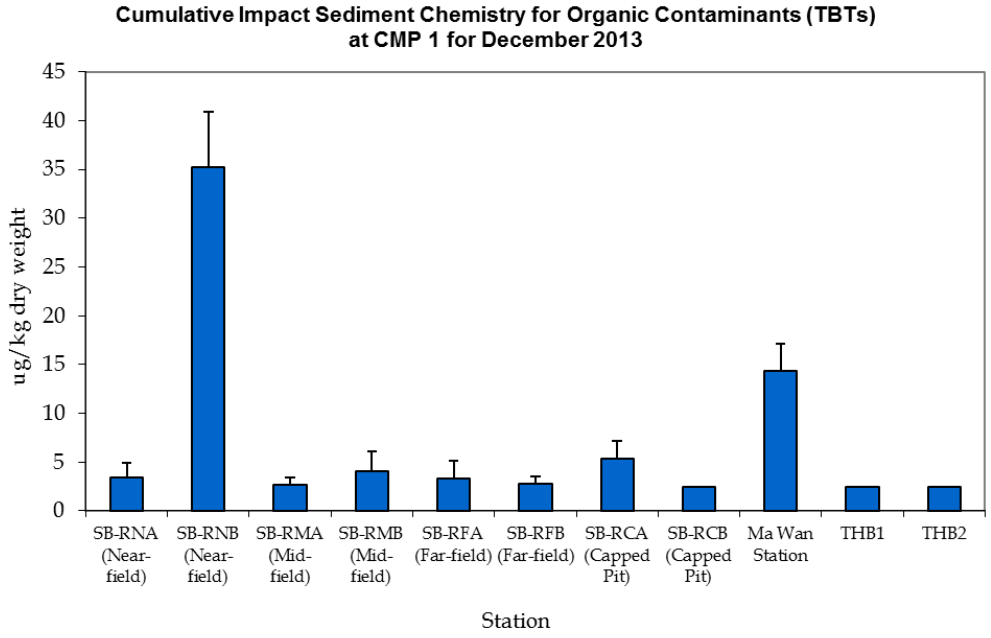


Figure 33: Concentration of Tributyltin (μg TBT/kg; mean +SD) in sediment samples collected for Cumulative Impact Sediment Chemistry Monitoring for CMP 1 in December 2013

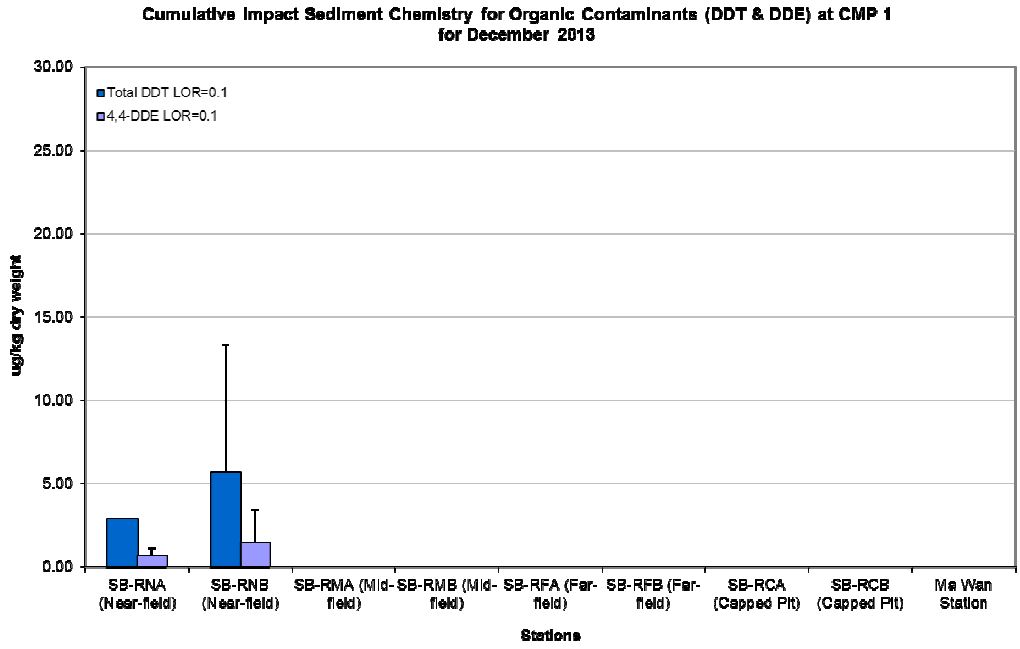


Figure 34: Concentration of Total Dichloro-diphenyl-trichloroethane (DDT) and 4,4′-Dichloro-diphenyl-dichloroethylene (4,4′-DDE) (μg/kg dry weight; mean +SD) in sediment samples collected for Cumulative Impact Sediment Chemistry Monitoring for CMP 1 in December 2013

Annex C

Water Quality Monitoring Results

Table C1 ***Summary Table of DO, Turbidity and SS Levels Recorded in January and February 2014***

Sampling Date	Tidal Period	Station	Average DO Levels (mg/L)		Average Turbidity Level (NTU)	Average SS Level (mg/L)
			Bottom	Surface and Mid Depth		
2014/01/10	Mid-Ebb	DS1	7.19	7.18	5.23	5.83
		DS2	7.24	7.23	3.98	4.50
		DS3	7.30	7.29	3.80	4.78
		DS4	7.12	7.13	3.34	4.33
		DS5	7.10	7.15	2.89	6.11
		US1	7.43	7.43	7.71	13.00
		US2	7.56	7.56	9.80	6.50
		MW1	7.08	7.11	1.48	3.11
		THB1	7.31	7.25	6.62	6.50
		THB2	-	7.00	4.98	4.67
		WSR45C	7.12	7.18	2.92	3.89
		WSR46	7.16	7.27	7.00	6.44
	Mid-Flood	DS1	7.41	7.43	10.66	22.17
		DS2	7.36	7.39	23.74	28.17
		DS3	7.48	7.47	16.95	19.17
		DS4	7.60	7.61	9.40	10.22
		DS5	7.52	7.53	7.85	8.00
		US1	7.13	7.21	4.59	8.83
		US2	7.07	7.29	3.01	5.00
		MW1	7.07	7.11	1.41	2.56
		THB1	7.44	7.38	8.93	9.50
		THB2	-	7.23	9.35	6.33
		WSR45C	7.14	7.19	2.15	3.67
		WSR46	7.18	7.31	7.91	8.22
2014/01/13	Mid-Ebb	DS1	7.48	7.51	6.88	6.50
		DS2	7.31	7.39	5.30	5.78
		DS3	7.15	7.45	3.83	7.33
		DS4	7.14	7.32	3.23	3.78
		DS5	7.07	7.25	3.06	3.89
		US1	7.56	7.59	24.13	29.83
		US2	7.61	7.61	10.17	12.33
		MW1	7.05	7.14	2.23	2.89
		THB1	7.77	7.77	6.62	6.00
		THB2	-	6.65	14.70	6.00
		WSR45C	7.24	7.36	3.03	3.56
		WSR46	7.48	7.58	7.38	6.33
	Mid-Flood	DS1	7.55	7.59	20.62	28.00
		DS2	7.52	7.53	17.10	18.33
		DS3	7.88	7.91	8.03	8.00
		DS4	7.91	7.90	7.21	8.33
		DS5	7.93	7.94	6.58	7.22
		US1	7.17	7.47	4.02	4.78
		US2	7.55	7.77	3.62	4.56
		MW1	7.28	7.26	2.37	4.22
		THB1	7.89	7.90	6.63	6.50
		THB2	-	7.39	8.57	6.33
		WSR45C	7.23	7.51	3.19	3.33

Sampling Date	Tidal Period	Station	Average DO Levels (mg/L)		Average Turbidity Level (NTU)	Average SS Level (mg/L)
			Bottom	Surface and Mid Depth		
		WSR46	7.24	7.43	5.70	5.89
2014/01/15	Mid-Ebb	DS1	7.59	7.61	6.48	8.67
		DS2	7.59	7.61	3.86	4.78
		DS3	7.58	7.60	3.37	4.78
		DS4	7.75	7.73	2.31	3.89
		DS5	7.74	7.78	2.26	3.56
		US1	8.03	8.07	5.90	7.00
		US2	8.00	8.19	5.53	6.00
		MW1	7.54	7.59	2.14	3.44
		THB1	7.78	7.70	7.03	8.00
		THB2	-	7.69	8.80	7.67
		WSR45C	7.60	7.60	2.56	3.44
		WSR46	7.43	7.49	7.82	9.67
	Mid-Flood	DS1	7.74	7.74	7.98	10.50
		DS2	7.83	7.83	9.63	11.50
		DS3	7.83	7.83	5.97	6.33
		DS4	7.91	7.90	5.70	7.50
		DS5	7.76	7.84	5.99	7.11
		US1	7.62	7.60	6.63	8.17
		US2	7.55	7.55	8.87	11.00
		MW1	7.33	7.40	3.04	4.44
		THB1	7.70	7.66	5.98	6.83
		THB2	-	7.16	2.10	4.33
		WSR45C	7.49	7.48	7.24	8.89
		WSR46	7.74	7.61	12.23	14.33
2014/01/17	Mid-Ebb	DS1	8.07	8.09	20.31	20.56
		DS2	7.96	8.11	6.40	7.67
		DS3	7.96	8.07	3.84	4.78
		DS4	7.97	8.10	3.89	5.11
		DS5	7.93	8.05	3.72	4.78
		US1	8.41	8.43	7.31	9.33
		US2	8.26	8.39	9.20	10.17
		MW1	7.80	7.84	2.83	4.00
		THB1	8.22	8.36	5.34	5.33
		THB2	-	8.00	6.45	4.67
		WSR45C	8.03	8.07	3.84	5.11
		WSR46	7.97	8.00	10.52	12.22
	Mid-Flood	DS1	-	7.91	16.99	23.83
		DS2	7.91	7.93	32.88	34.83
		DS3	8.01	8.02	8.58	9.00
		DS4	8.11	8.11	7.24	7.33
		DS5	8.17	8.16	6.08	5.67
		US1	7.91	7.92	6.45	7.11
		US2	7.86	7.90	5.27	5.67
		MW1	7.74	7.74	8.63	10.11
		THB1	7.96	7.96	5.63	6.67
		THB2	-	7.54	3.45	3.33
		WSR45C	7.90	7.90	6.07	6.00
		WSR46	7.92	7.93	9.01	10.11
2014/01/20	Mid-Ebb	DS1	8.07	8.12	13.90	20.33
		DS2	7.91	7.99	4.67	6.56

Sampling Date	Tidal Period	Station	Average DO Levels (mg/L)		Average Turbidity Level (NTU)	Average SS Level (mg/L)
			Bottom	Surface and Mid Depth		
		DS3	7.95	8.01	3.73	5.22
		DS4	7.80	7.92	3.31	5.00
		DS5	7.71	7.90	3.30	4.00
		US1	8.53	8.54	8.37	8.67
		US2	8.72	8.77	5.28	6.50
		MW1	7.77	7.82	1.99	2.78
		THB1	8.80	8.81	3.62	7.67
		THB2	-	8.92	5.80	4.00
		WSR45C	7.85	7.95	3.52	5.78
		WSR46	8.03	8.05	10.46	7.67
	Mid-Flood	DS1	7.85	7.82	13.53	16.50
		DS2	8.06	8.02	3.55	4.33
		DS3	8.28	8.28	4.03	5.33
		DS4	8.21	8.25	4.71	5.56
		DS5	8.27	8.30	4.20	4.67
		US1	7.83	7.85	5.84	6.00
		US2	7.79	7.81	4.93	5.67
		MW1	7.59	7.63	4.17	5.22
		THB1	7.90	7.87	4.12	5.50
		THB2	-	8.10	6.17	4.67
		WSR45C	7.78	7.79	6.60	8.33
		WSR46	7.84	7.84	5.58	6.67
2014/01/22	Mid-Ebb	DS1	7.82	7.86	18.43	18.78
		DS2	7.62	7.72	3.42	3.00
		DS3	7.58	7.65	2.73	2.67
		DS4	7.53	7.69	2.72	2.44
		DS5	7.51	7.66	3.01	2.78
		US1	8.35	8.38	6.05	4.17
		US2	8.60	8.63	5.15	3.89
		MW1	7.75	7.71	1.64	2.33
		THB1	8.46	8.40	3.46	3.17
		THB2	-	8.78	5.15	4.00
		WSR45C	7.71	7.89	1.86	2.33
		WSR46	7.71	7.96	9.07	9.89
	Mid-Flood	DS1	7.62	7.61	11.70	12.33
		DS2	7.96	7.82	10.40	9.67
		DS3	7.86	7.84	7.18	7.11
		DS4	8.08	8.05	5.28	4.67
		DS5	7.65	8.06	8.68	13.67
		US1	7.61	7.63	5.58	4.67
		US2	7.56	7.58	5.28	4.44
		MW1	8.16	7.58	1.93	1.89
		THB1	7.71	8.09	4.05	3.83
		THB2	-	8.13	4.18	5.33
		WSR45C	7.78	7.86	3.39	3.33
		WSR46	7.97	7.92	5.54	5.11
2014/01/24	Mid-Ebb	DS1	8.12	8.14	6.67	7.67
		DS2	8.01	8.16	4.08	4.11
		DS3	8.08	8.09	3.66	3.89
		DS4	7.96	8.02	3.90	4.33
		DS5	7.95	8.00	3.59	4.67

Sampling Date	Tidal Period	Station	Average DO Levels (mg/L)		Average Turbidity Level (NTU)	Average SS Level (mg/L)
			Bottom	Surface and Mid Depth		
		US1	8.92	8.93	5.61	6.33
		US2	9.18	9.25	7.86	9.11
		MW1	7.86	7.89	1.15	1.56
		THB1	8.86	8.84	5.40	6.67
		THB2	-	9.53	4.95	5.00
		WSR45C	7.96	8.16	2.60	4.56
		WSR46	8.14	8.30	2.90	4.67
	Mid-Flood	DS1	8.06	8.06	17.75	21.33
		DS2	8.39	8.31	24.76	31.44
		DS3	8.69	8.67	21.03	25.56
		DS4	8.72	8.81	5.53	7.17
		DS5	8.13	8.94	5.88	7.00
		US1	8.15	8.14	3.90	6.00
		US2	7.74	8.16	5.48	9.11
		MW1	8.19	7.75	1.55	4.56
		THB1	7.96	8.19	3.68	6.17
		THB2	-	9.26	7.08	5.00
		WSR45C	7.90	7.99	3.46	5.56
		WSR46	8.09	8.11	5.24	7.22
2014/01/28	Mid-Ebb	DS1	8.44	8.46	4.70	6.00
		DS2	8.31	8.43	2.56	5.00
		DS3	8.37	8.48	2.43	4.33
		DS4	8.24	8.39	1.96	4.56
		DS5	8.31	8.40	2.23	5.44
		US1	9.15	9.24	3.59	7.83
		US2	9.26	9.42	4.07	5.44
		MW1	7.84	7.87	1.64	4.00
		THB1	9.26	9.26	3.59	7.33
		THB2	-	8.59	4.57	9.00
		WSR45C	8.05	8.43	1.96	7.67
		WSR46	8.41	8.68	3.29	6.67
	Mid-Flood	DS1	9.55	9.63	2.85	6.50
		DS2	10.55	10.95	3.40	5.89
		DS3	9.70	10.21	4.01	6.89
		DS4	9.97	10.07	4.02	5.33
		DS5	10.40	10.57	5.63	7.33
		US1	8.94	9.07	3.43	6.33
		US2	8.85	9.02	2.69	5.22
		MW1	8.10	8.12	1.53	4.00
		THB1	10.27	10.33	4.36	5.67
		THB2	-	9.83	8.66	9.00
		WSR45C	8.48	8.93	2.61	6.67
		WSR46	8.78	8.85	4.35	6.56
2014/02/04	Mid-Ebb	DS1	10.28	10.52	1.92	2.89
		DS2	10.00	10.48	2.10	4.00
		DS3	10.07	10.58	1.52	3.78
		DS4	10.13	10.62	1.74	3.78
		DS5	10.10	10.62	1.59	3.22
		US1	10.99	11.11	3.81	5.44
		US2	11.03	11.06	1.09	2.00
		MW1	9.75	9.87	1.36	3.00

Sampling Date	Tidal Period	Station	Average DO Levels (mg/L)		Average Turbidity Level (NTU)	Average SS Level (mg/L)
			Bottom	Surface and Mid Depth		
		THB1	11.12	11.28	1.55	3.00
		THB2	-	9.98	3.20	2.67
		WSR45C	9.77	10.35	1.57	2.56
		WSR46	10.00	10.35	2.51	3.56
	Mid-Flood	DS1	10.10	10.21	2.58	5.67
		DS2	10.07	10.18	2.28	4.56
		DS3	10.26	10.40	1.89	3.00
		DS4	10.42	10.58	1.47	3.33
		DS5	10.31	10.31	1.30	3.67
		US1	10.39	10.43	2.30	3.67
		US2	10.09	10.36	2.73	3.78
		MW1	9.80	9.87	1.44	6.44
		THB1	10.23	10.37	1.98	4.33
		THB2	-	9.53	3.37	7.00
		WSR45C	10.05	10.22	2.51	5.44
		WSR46	10.16	10.26	5.52	6.78
2014/02/06	Mid-Ebb	DS1	10.05	10.17	3.59	4.11
		DS2	9.70	9.92	3.25	3.89
		DS3	9.77	10.02	2.35	2.44
		DS4	9.81	10.29	1.48	2.11
		DS5	9.91	10.12	1.62	1.22
		US1	10.31	10.36	3.53	4.56
		US2	10.51	10.48	1.56	2.56
		MW1	9.64	10.05	1.12	1.33
		THB1	10.53	10.68	3.25	1.33
		THB2	-	9.85	2.70	1.00
		WSR45C	9.69	10.30	1.98	1.11
		WSR46	9.90	10.49	1.56	1.00
	Mid-Flood	DS1	9.44	9.57	1.92	1.17
		DS2	9.25	9.46	4.72	4.00
		DS3	9.55	9.75	1.36	1.22
		DS4	9.49	9.57	1.29	1.00
		DS5	9.52	9.65	1.36	1.50
		US1	9.55	9.81	3.00	2.11
		US2	9.27	9.53	1.90	1.78
		MW1	9.10	9.36	1.56	1.89
		THB1	9.91	9.98	1.92	2.50
		THB2	-	8.68	4.03	2.33
		WSR45C	9.23	9.44	1.91	2.56
		WSR46	9.30	9.67	3.20	4.56
2014/02/08	Mid-Ebb	DS1	9.84	9.98	2.88	4.67
		DS2	9.28	9.80	1.44	3.78
		DS3	8.93	9.54	1.11	3.11
		DS4	8.93	9.44	1.10	3.78
		DS5	8.92	9.46	7.36	6.89
		US1	9.54	9.68	1.90	3.17
		US2	9.22	9.41	1.64	4.00
		MW1	8.54	8.85	1.36	2.67
		THB1	9.07	9.66	2.05	4.17
		THB2	-	7.90	3.93	3.33
		WSR45C	9.05	9.60	1.18	1.89

Sampling Date	Tidal Period	Station	Average DO Levels (mg/L)		Average Turbidity Level (NTU)	Average SS Level (mg/L)
			Bottom	Surface and Mid Depth		
		WSR46	9.34	9.77	1.57	2.89
	Mid-Flood	DS1	9.38	9.80	4.42	4.17
		DS2	9.45	9.88	1.64	1.67
		DS3	9.21	9.60	1.78	2.11
		DS4	9.49	9.65	1.60	1.89
		DS5	8.79	9.59	1.70	2.56
		US1	9.21	9.48	1.69	2.89
		US2	8.83	9.23	1.83	3.78
		MW1	8.34	8.43	1.80	3.67
		THB1	9.26	9.62	2.32	3.83
		THB2	-	7.52	7.79	5.00
		WSR45C	8.45	8.92	1.29	1.44
		WSR46	9.18	9.52	3.04	4.22
2014/02/11	Mid-Ebb	DS1	7.51	7.57	10.78	13.17
		DS2	7.47	7.47	5.56	7.56
		DS3	7.56	7.67	1.69	2.33
		DS4	7.55	7.69	1.76	2.33
		DS5	7.61	7.78	1.52	2.11
		US1	7.87	7.90	3.36	3.83
		US2	7.94	8.00	2.12	2.83
		MW1	7.44	7.52	2.53	2.89
		THB1	8.05	8.04	2.07	2.50
		THB2	-	6.80	6.99	4.33
		WSR45C	7.51	7.65	2.18	3.22
		WSR46	7.54	7.56	3.58	4.11
	Mid-Flood	DS1	7.72	7.95	3.05	3.33
		DS2	8.03	8.14	2.98	3.50
		DS3	8.30	8.27	1.71	2.33
		DS4	8.16	8.23	2.27	2.78
		DS5	7.27	7.73	5.55	7.78
		US1	7.91	7.96	2.53	3.00
		US2	7.60	7.79	4.02	4.44
		MW1	7.37	7.43	1.90	2.00
		THB1	8.22	8.23	2.22	2.00
		THB2	-	7.08	4.90	4.67
		WSR45C	7.48	7.77	2.41	2.33
		WSR46	7.61	7.67	3.40	3.89
2014/02/13	Mid-Ebb	DS1	7.69	7.69	6.56	11.33
		DS2	7.53	7.57	5.42	7.11
		DS3	7.44	7.49	7.47	9.22
		DS4	7.37	7.46	7.29	10.67
		DS5	7.35	7.43	8.23	12.00
		US1	7.74	7.90	2.98	3.33
		US2	7.68	7.90	4.23	4.67
		MW1	7.23	7.30	3.67	3.67
		THB1	7.72	7.76	2.83	3.33
		THB2	-	-	-	-
		WSR45C	7.19	7.38	8.62	9.33
		WSR46	7.38	7.43	8.21	7.22
	Mid-Flood	DS1	7.61	7.75	2.75	3.67
		DS2	7.75	7.78	3.16	4.33

Sampling Date	Tidal Period	Station	Average DO Levels (mg/L)		Average Turbidity Level (NTU)	Average SS Level (mg/L)
			Bottom	Surface and Mid Depth		
		DS3	7.96	7.92	4.91	6.67
		DS4	7.81	7.88	3.35	3.00
		DS5	7.38	7.58	4.53	4.56
		US1	7.47	7.46	4.63	6.00
		US2	7.29	7.33	8.90	10.44
		MW1	7.11	7.16	2.64	3.00
		THB1	7.90	7.89	3.67	3.83
		THB2	-	-	-	-
		WSR45C	7.23	7.32	4.71	4.89
		WSR46	7.43	7.52	9.98	10.56
2014/02/15	Mid-Ebb	DS1	7.93	7.70	5.47	7.00
		DS2	7.49	7.46	4.06	5.33
		DS3	7.45	7.53	5.42	5.67
		DS4	7.45	7.47	7.14	8.11
		DS5	7.44	7.45	9.23	10.11
		US1	8.19	8.32	4.05	4.33
		US2	8.37	8.41	3.18	4.00
		MW1	7.38	7.43	2.58	3.78
		THB1	7.81	7.88	2.88	3.67
		THB2	-	7.63	3.80	4.00
		WSR45C	7.54	7.54	8.10	9.67
		WSR46	7.81	7.79	10.12	9.89
	Mid-Flood	DS1	7.68	7.59	4.38	4.00
		DS2	7.66	7.58	4.13	4.00
		DS3	7.91	7.88	3.30	3.50
		DS4	7.82	7.80	4.12	4.17
		DS5	7.71	7.74	4.01	4.00
		US1	7.49	7.37	5.65	6.83
		US2	7.29	7.26	5.24	5.00
		MW1	7.15	7.23	3.68	4.78
		THB1	7.74	7.64	3.22	3.67
		THB2	-	7.32	3.33	3.33
		WSR45C	7.31	7.29	8.48	9.89
		WSR46	7.46	7.41	4.82	6.00
2014/02/18	Mid-Ebb	DS1	7.81	7.82	5.56	6.67
		DS2	7.66	7.66	4.98	6.33
		DS3	7.56	7.58	4.65	6.78
		DS4	7.55	7.60	7.05	9.22
		DS5	7.50	7.58	7.30	10.11
		US1	8.13	8.13	4.88	9.67
		US2	8.09	8.09	4.59	8.00
		MW1	7.10	7.17	3.16	5.00
		THB1	8.08	8.13	4.44	6.67
		THB2	-	7.37	5.30	4.67
		WSR45C	7.56	7.61	7.51	10.11
		WSR46	7.51	7.60	5.27	7.67
	Mid-Flood	DS1	7.58	7.60	5.89	7.00
		DS2	7.63	7.63	4.54	6.67
		DS3	7.92	7.92	5.95	7.50
		DS4	7.83	7.86	5.13	6.33
		DS5	7.82	7.85	5.07	7.44

Sampling Date	Tidal Period	Station	Average DO Levels (mg/L)		Average Turbidity Level (NTU)	Average SS Level (mg/L)
			Bottom	Surface and Mid Depth		
		US1	7.56	7.59	6.02	7.33
		US2	7.44	7.47	4.48	5.33
		MW1	7.26	7.35	4.25	6.89
		THB1	7.65	7.68	4.61	6.00
		THB2	-	6.68	3.17	11.00
		WSR45C	7.47	7.53	5.48	8.67
		WSR46	7.55	7.59	4.53	9.56
2014/02/20	Mid-Ebb	DS1	7.64	7.69	8.90	10.00
		DS2	7.60	7.53	7.94	8.44
		DS3	7.49	7.50	5.50	6.44
		DS4	7.45	7.48	5.27	6.56
		DS5	7.45	7.54	6.32	6.89
		US1	8.50	8.50	7.63	11.17
		US2	8.33	8.40	6.43	6.00
		MW1	7.42	7.49	3.11	4.11
		THB1	8.04	7.78	4.30	6.00
		THB2	-	7.41	4.60	5.33
		WSR45C	7.55	7.59	10.62	12.33
		WSR46	7.66	7.68	17.32	16.78
	Mid-Flood	DS1	7.50	7.48	6.67	6.33
		DS2	7.74	7.61	5.05	6.67
		DS3	8.17	8.15	5.43	6.17
		DS4	8.06	7.95	5.44	5.67
		DS5	7.85	7.81	8.12	7.33
		US1	7.47	7.42	6.70	8.44
		US2	7.35	7.29	4.06	4.89
		MW1	7.08	7.13	3.02	3.56
		THB1	7.66	7.57	5.27	8.67
		THB2	-	7.18	5.82	6.00
		WSR45C	7.28	7.28	5.56	7.11
		WSR46	7.39	7.37	6.43	8.00
2014/02/22	Mid-Ebb	DS1	7.66	7.63	4.91	7.00
		DS2	7.61	7.58	8.69	4.11
		DS3	7.50	7.52	4.48	4.44
		DS4	7.38	7.40	3.60	4.00
		DS5	7.34	7.34	3.21	5.00
		US1	7.73	7.74	6.67	4.00
		US2	7.84	7.81	7.07	6.17
		MW1	7.14	7.18	1.41	1.89
		THB1	7.81	7.77	5.98	5.67
		THB2	-	7.76	4.67	5.67
		WSR45C	7.34	7.37	3.63	3.78
		WSR46	7.67	7.72	7.28	7.33
	Mid-Flood	DS1	7.60	7.59	6.12	5.83
		DS2	7.74	7.67	7.15	6.00
		DS3	7.74	7.68	6.87	6.83
		DS4	7.72	7.70	7.52	7.11
		DS5	7.60	7.62	4.51	3.11
		US1	7.59	7.55	3.40	3.78
		US2	7.47	7.44	3.17	3.33
		MW1	7.16	7.21	1.46	2.33

Sampling Date	Tidal Period	Station	Average DO Levels (mg/L)		Average Turbidity Level (NTU)	Average SS Level (mg/L)
			Bottom	Surface and Mid Depth		
		THB1	7.58	7.59	16.62	17.67
		THB2	-	7.35	4.70	4.00
		WSR45C	7.31	7.32	2.48	3.00
		WSR46	7.59	7.56	4.58	4.11
2014/02/25	Mid-Ebb	DS1	7.74	7.76	9.50	9.17
		DS2	7.63	7.63	3.74	3.89
		DS3	7.60	7.64	2.96	3.22
		DS4	7.57	7.61	3.12	2.78
		DS5	7.47	7.52	1.77	2.78
		US1	7.90	7.92	7.13	7.33
		US2	7.85	7.95	8.05	8.83
		MW1	7.09	7.16	1.46	3.00
		THB1	7.59	7.57	3.37	3.33
		THB2	-	7.48	6.52	4.00
		WSR45C	7.42	7.41	1.98	4.00
		WSR46	7.82	7.91	3.17	3.22
	Mid-Flood	DS1	7.94	8.00	4.33	5.50
		DS2	7.89	7.93	5.35	6.67
		DS3	7.99	8.00	8.08	8.67
		DS4	8.10	8.09	5.44	4.67
		DS5	8.25	8.31	6.26	5.33
		US1	7.72	7.74	4.18	5.44
		US2	7.54	7.53	3.46	4.78
		MW1	7.19	7.26	1.41	2.78
		THB1	7.84	7.87	5.33	5.33
		THB2	-	7.77	7.22	7.33
		WSR45C	7.37	7.43	1.73	3.44
		WSR46	7.85	7.90	8.71	9.00

Notes:

1. Please refer to Table C2 below for the Action and Limit Levels for dredging activities.
2. Cell shaded yellow indicated value exceeding the Action Level criteria.
3. Cell shaded red indicated value exceeding the Limit Level criteria.
4. Only mid-depth water was sampled at Station THB2 because water depth was less than 3m.
5. Sampling at THB2 was cancelled on 13 February 2014 due to adverse weather condition.

Table C2 ***Action and Limit Levels of Water Quality for Dredging, Backfilling and Capping Activities***

Parameter	Action Level	Limit Level
Dissolved Oxygen (DO) (1)	Surface and Mid-depth (2) The average of the impact, WSR 45C and WSR 46 station readings are < 5%-ile of baseline data for surface and middle layer = **4.32 mg L^{-1}** and Significantly less than the reference stations mean DO (at the same tide of the same day)	Surface and Mid-depth (2) The average of the impact, WSR 45C and WSR 46 station readings are **< 4 mg L^{-1}** and Significantly less than the reference stations mean DO (at the same tide of the same day)
	Bottom The average of the impact, WSR 45C and WSR 46 station readings are < 5%-ile of baseline data for bottom layers = **3.12 mg L^{-1}** and Significantly less than the reference stations mean DO (at the same tide of the same day)	Bottom The average of the impact station, WSR 45C and WSR 46 readings are **< 2 mg L^{-1}** and Significantly less than the reference stations mean DO (at the same tide of the same day)
Depth-averaged Suspended Solids (SS) (3) (4)	The average of the impact, WSR 45C and WSR 46 station readings are > 95%-ile of baseline data for depth average = **21.60 mg L^{-1}** and 120% of control station's SS at the same tide of the same day	The average of the impact, WSR 45C and WSR 46 station readings are > 99%-ile of baseline data for depth average = **40.10 mg L^{-1}** and 130% of control station's SS at the same tide of the same day
Depth-averaged Turbidity (Tby) (3) (4)	The average of the impact, WSR 45C and WSR 46 station readings are > 95%-ile of baseline data = **25.04 NTU** and 120% of control station's Tby at the same tide of the same day	The average of the impact, WSR 45C and WSR 46 station readings are > 99%-ile of baseline data = **32.68 NTU** and 130% of control station's Tby at the same tide of the same day

Notes:

(1) For DO, non-compliance of the water quality limits occurs when monitoring result is lower than the limits.

(2) The Action and Limit Levels for DO for Surface & Middle layers were calculated from the combined pool of baseline surface layer data and baseline middle layer data.

(3) "Depth-averaged" is calculated by taking the arithmetic means of reading of all three depths.

(4) For turbidity and SS, non-compliance of the water quality limits occurs when monitoring result is higher than the limits.

Table C3 Results of Baseline Monitoring conducted for SB CMPs in July and August 2012

Parameter	Detection Limit	Stations around SB CMP			EPD Stations (NM1, NM2, NM3, NM5 and NM6)		
		Average	Min	Max	Average	Min	Max
DO (mg/L)	0.1	5.6	2.5	12.2	5.1	2.3	10.7
Turbidity (NTU)	0.1	9.5	1.5	74.9	9.6	1.9	120.1
SS (mg/L)	2	9.9	3.1	130.7	8.8	0.8	49.3
Arsenic (µg/L)	10	<10	<10	<10	<10	<10	<10
Cadmium (µg/L)	0.2	0.2	0.2	0.4	0.2	0.2	0.2
Chromium (µg/L)	1	1.5	1.0	2.0	2.0	1.0	3.0
Copper (µg/L)	1	2.3	1.0	13.0	1.2	1.0	11.0
Lead (µg/L)	1	1.3	1.0	2.0	5.0	1.0	9.0
Mercury (µg/L)	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Nickel (µg/L)	1	2.2	1.0	7.0	2.1	1.0	5.0
Silver (µg/L)	1	<1	<1	<1	<1	<1	<1
Zinc (µg/L)	10	18.9	10.0	173.0	23.7	10.0	224.0
NH_3-N (mg/L)	0.01	0.1	0.0	0.4	0.1	0.0	0.4
TIN (mg/L)	0.1	0.8	0.3	1.7	0.8	0.2	1.8
BOD_5 (mg/L)	2	<2	<2	<2	<2	<2	<2

Table C4 In-situ Monitoring Results for Routine Water Quality Monitoring of CMP 1 in January 2014

Sampling Date	Stations	Temp	Salinity	Turbidity	Dissolved Oxygen		pH
		(°C)	(ppt)	(NTU)	(%)	(mg L^{-1})	(mg L^{-1})
2014/1/18	RFF (Reference)	16.48	32.42	7.11	98.17	7.88	8.03
	IPF (Impact)	16.53	32.39	19.86	97.88	7.85	8.02
	INF (Intermediate)	16.66	32.54	8.78	96.14	7.68	8.00
	Ma Wan Station	16.69	32.51	8.03	96.72	7.73	7.99
	Shum Shui Kok Station	16.56	32.42	11.84	97.31	7.80	8.03
	Tai Mo To Station	16.58	32.38	7.43	98.03	7.86	8.01
	Tai Ho Bay Station 1	16.41	32.44	5.60	100.45	8.07	8.04
	Tai Ho Bay Station 2	16.67	32.24	4.31	94.84	7.59	8.04
	WQO	N/A	29.18-35.66 (Note 1)	N/A	N/A	>4	6.5-8.5
2014/1/21	RFF (Reference)	16.31	31.96	4.85	98.32	7.94	7.98
	IPF (Impact)	16.36	31.95	9.47	98.38	7.94	7.97
	INF (Intermediate)	16.52	32.35	6.59	96.19	7.72	7.94
	Ma Wan Station	16.52	32.43	3.06	94.70	7.59	7.95
	Shum Shui Kok Station	16.36	31.94	5.40	97.75	7.89	7.97
	Tai Mo To Station	16.41	31.92	7.77	98.39	7.93	7.95
	Tai Ho Bay Station 1	16.17	32.02	5.96	98.78	8.00	7.98
	Tai Ho Bay Station 2	-	-	-	-	-	-
	WQO	N/A	28.76-35.16 (Note 1)	N/A	N/A	>4	6.5-8.5
2014/1/23	RFF (Reference)	16.01	32.16	4.25	97.97	7.95	8.01
	IPF (Impact)	16.05	32.24	5.89	97.68	7.92	7.99
	INF (Intermediate)	16.29	32.52	2.09	95.70	7.71	7.97
	Ma Wan Station	16.30	32.54	1.62	94.78	7.63	7.99

Sampling Date	Stations	Temp (°C)	Salinity (ppt)	Turbidity (NTU)	Dissolved Oxygen (%)	Dissolved Oxygen (mg L^{-1})	pH (mg L^{-1})
	Shum Shui Kok Station	16.13	32.35	5.18	96.01	7.76	8.01
	Tai Mo To Station	16.17	32.26	6.25	97.63	7.89	7.98
	Tai Ho Bay Station 1	16.07	32.14	3.01	100.52	8.15	8.01
	Tai Ho Bay Station 2	15.56	31.74	5.04	103.23	8.47	8.05
	WQO	N/A	28.95-35.38 (Note 1)	N/A	N/A	>4	6.5-8.5
2014/1/25	RFF (Reference)	16.30	32.13	3.09	102.53	8.27	7.95
	IPF (Impact)	16.32	32.19	10.94	102.23	8.24	7.95
	INF (Intermediate)	16.41	32.40	1.84	98.99	7.96	7.92
	Ma Wan Station	16.44	32.50	1.24	97.08	7.80	7.90
	Shum Shui Kok Station	16.22	32.18	2.62	99.75	8.06	7.94
	Tai Mo To Station	16.30	32.14	5.45	103.13	8.32	7.95
	Tai Ho Bay Station 1	16.53	32.17	5.39	104.04	8.36	7.95
	Tai Ho Bay Station 2	17.12	31.81	3.75	114.35	9.10	8.11
	WQO	N/A	28.92-35.34 (Note 1)	N/A	N/A	>4	6.5-8.5
2014/1/27	RFF (Reference)	16.68	32.18	1.49	98.06	7.85	7.56
	IPF (Impact)	16.60	32.01	2.38	103.15	8.28	7.97
	INF (Intermediate)	16.91	32.00	5.38	109.74	8.76	8.03
	Ma Wan Station	16.66	32.29	1.58	97.23	7.78	7.36
	Shum Shui Kok Station	16.67	32.31	1.52	100.65	8.06	7.94
	Tai Mo To Station	16.68	31.88	2.78	101.58	8.15	7.63
	Tai Ho Bay Station 1	17.08	32.24	4.46	110.41	8.77	8.06
	Tai Ho Bay Station 2	16.82	31.72	7.25	100.67	8.06	8.01
	WQO	N/A	28.96-35.40 (Note 1)	N/A	N/A	>4	6.5-8.5
2014/1/29	RFF (Reference)	16.91	31.83	1.75	102.22	8.17	7.65
	IPF (Impact)	17.10	30.85	2.34	112.99	9.05	8.08
	INF (Intermediate)	17.29	31.28	3.21	123.69	9.84	8.13
	Ma Wan Station	16.82	32.15	2.62	97.65	7.80	7.45
	Shum Shui Kok Station	16.93	31.60	1.97	105.00	8.40	8.02
	Tai Mo To Station	17.04	30.76	4.61	109.22	8.76	7.72
	Tai Ho Bay Station 1	17.14	30.87	2.89	118.63	9.49	8.11
	Tai Ho Bay Station 2	16.95	31.46	2.73	110.45	8.84	8.12
	WQO	N/A	28.64-35.01 (Note 1)	N/A	N/A	>4	6.5-8.5

Note:

1 #Not exceeding 10% of natural ambient level which is the result obtained from the Reference Station.

2 Cell shaded yellow indicate value exceeding the Action Level/Limit Level.

Table C5 Laboratory Results for Routine Water Quality Monitoring of CMP 1 in January 2014

Date	Stations	As (µg/L)	Cd (µg/L)	Cr (µg/L)	Cu (µg/L)	Pb (µg/L)	Hg (µg/L)	Ni (µg/L)	Ag (µg/L)	Zn (µg/L)	NH_3 (mg/L)	TIN (mg/L)	BOD_5 (mg/L)	SS (mg/L)
1/18	RFF	1.92	<LOR	<LOR	0.77	<LOR	<LOR	1.42	<LOR	3.46	0.04	0.24	0.65	9.98
	IPF	2.08	<LOR	1.00	1.42	1.00	<LOR	2.04	<LOR	5.88	0.03	0.23	0.68	19.48
	INF	1.83	<LOR	<LOR	1.04	<LOR	<LOR	1.27	<LOR	4.00	0.04	0.22	0.54	12.19
	Ma Wan Station	2.00	<LOR	<LOR	0.94	<LOR	<LOR	0.81	<LOR	4.25	0.04	0.24	0.25	11.56
	Shum Shui Kok Station	1.38	<LOR	<LOR	0.94	<LOR	<LOR	0.94	<LOR	4.38	0.05	0.26	0.46	14.50

Date	Stations	As (μg/L)	Cd (μg/L)	Cr (μg/L)	Cu (μg/L)	Pb (μg/L)	Hg (μg/L)	Ni (μg/L)	Ag (μg/L)	Zn (μg/L)	NH_3 (mg/L)	TIN (mg/L)	BOD_5 (mg/L)	SS (mg/L)
	Tai Mo To Station	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	0.69	<LOR	<LOR	0.04	0.25	0.50	9.88
	Tai Ho Bay Station 1	1.25	<LOR	<LOR	3.69	<LOR	<LOR	0.94	<LOR	6.88	0.01	0.20	0.63	6.50
	Tai Ho Bay Station 2	<LOR	<LOR	<LOR	2.25	<LOR	<LOR	0.94	<LOR	7.63	0.01	0.24	0.68	2.63
1/21	RFF	1.42	<LOR	<LOR	0.60	<LOR	<LOR	2.00	<LOR	5.29	0.10	0.38	0.97	6.75
	IPF	1.25	<LOR	0.63	0.54	<LOR	<LOR	2.00	<LOR	5.13	0.12	0.35	0.86	13.35
	INF	1.17	<LOR	<LOR	2.38	0.52	<LOR	1.21	<LOR	6.00	0.10	0.32	0.75	11.52
	Ma Wan Station	1.50	<LOR	<LOR	0.56	<LOR	<LOR	1.00	<LOR	4.50	0.11	0.37	0.47	4.94
	Shum Shui Kok Station	2.13	<LOR	<LOR	<LOR	<LOR	<LOR	2.00	<LOR	3.25	0.10	0.38	0.59	7.31
	Tai Mo To Station	2.38	<LOR	<LOR	<LOR	<LOR	<LOR	2.00	<LOR	3.50	0.11	0.37	0.48	11.19
	Tai Ho Bay Station 1	1.63	<LOR	<LOR	<LOR	<LOR	<LOR	2.00	<LOR	3.75	0.08	0.40	0.66	8.50
	Tai Ho Bay Station 2	1.42	<LOR	<LOR	0.60	<LOR	<LOR	2.00	<LOR	5.29	0.10	0.38	0.97	6.75
1/23	RFF	1.04	<LOR	<LOR	<LOR	<LOR	<LOR	0.92	<LOR	2.50	0.13	0.36	0.63	5.58
	IPF	1.88	<LOR	<LOR	<LOR	<LOR	<LOR	1.69	<LOR	2.13	0.14	0.35	0.50	8.58
	INF	1.21	<LOR	<LOR	0.54	<LOR	<LOR	<LOR	<LOR	2.13	0.13	0.32	0.55	6.04
	Ma Wan Station	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	2.25	0.12	0.30	0.68	4.19
	Shum Shui Kok Station	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	0.56	<LOR	<LOR	0.13	0.34	0.54	8.13
	Tai Mo To Station	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	1.00	<LOR	<LOR	0.14	0.36	0.68	9.31
	Tai Ho Bay Station 1	<LOR	<LOR	<LOR	<LOR	<LOR	<LOR	1.00	<LOR	<LOR	0.12	0.37	0.75	4.25
	Tai Ho Bay Station 2	<LOR	<LOR	<LOR	0.56	<LOR	<LOR	0.94	<LOR	2.38	0.04	0.26	0.85	4.75
1/25	RFF	1.58	<LOR	<LOR	0.65	<LOR	<LOR	1.33	<LOR	5.79	0.11	0.32	1.15	4.54
	IPF	1.38	<LOR	<LOR	0.60	<LOR	<LOR	1.50	<LOR	2.42	0.10	0.30	0.91	15.52
	INF	1.92	<LOR	<LOR	<LOR	<LOR	<LOR	1.10	<LOR	2.17	0.11	0.30	0.94	4.19
	Ma Wan Station	1.38	<LOR	<LOR	<LOR	<LOR	<LOR	0.75	<LOR	<LOR	0.12	0.28	0.94	3.88
	Shum Shui Kok Station	1.38	<LOR	<LOR	<LOR	<LOR	<LOR	1.00	<LOR	4.63	0.12	0.32	1.14	4.44
	Tai Mo To Station	2.00	<LOR	<LOR	<LOR	<LOR	<LOR	1.13	<LOR	2.88	0.09	0.29	1.01	8.69
	Tai Ho Bay Station 1	1.25	<LOR	<LOR	<LOR	<LOR	<LOR	1.00	<LOR	2.75	0.10	0.30	1.10	8.50
	Tai Ho Bay Station 2	1.13	<LOR	<LOR	0.69	<LOR	<LOR	1.25	<LOR	15.71	0.01	0.17	1.39	6.50
1/27	RFF	1.63	<LOR	<LOR	5.20	0.56	<LOR	1.34	<LOR	5.28	0.07	0.27	0.72	3.49
	IPF	1.35	<LOR	<LOR	0.58	<LOR	<LOR	1.83	<LOR	3.70	0.08	0.32	0.97	4.58
	INF	1.50	<LOR	<LOR	0.53	<LOR	<LOR	1.36	<LOR	2.58	0.02	0.22	1.14	14.28
	Ma Wan Station	1.38	0.11	1.88	29.43	1.75	<LOR	3.25	<LOR	26.38	0.07	0.27	0.79	3.19
	Shum Shui Kok Station	1.13	<LOR	<LOR	0.63	<LOR	<LOR	1.00	<LOR	2.25	0.08	0.30	0.86	3.75
	Tai Mo To Station	<LOR	<LOR	<LOR	2.44	<LOR	<LOR	1.88	<LOR	3.75	0.06	0.30	0.38	4.94
	Tai Ho Bay Station 1	1.25	<LOR	<LOR	0.56	<LOR	<LOR	1.00	<LOR	2.38	0.01	0.14	0.80	6.38
	Tai Ho Bay Station 2	<LOR	<LOR	<LOR	2.13	0.81	<LOR	2.00	<LOR	75.50	0.01	0.19	0.58	8.75
1/29	RFF	1.38	<LOR	0.53	2.44	0.66	<LOR	1.28	<LOR	4.63	0.07	0.30	1.16	4.88
	IPF	1.08	<LOR	<LOR	6.04	<LOR	<LOR	1.93	<LOR	7.65	0.06	0.38	1.53	4.44
	INF	1.30	<LOR	0.53	5.43	0.51	<LOR	1.93	<LOR	8.15	0.01	0.26	2.07	5.03

Date	Stations	As (µg/L)	Cd (µg/L)	Cr (µg/L)	Cu (µg/L)	Pb (µg/L)	Hg (µg/L)	Ni (µg/L)	Ag (µg/L)	Zn (µg/L)	NH_3 (mg/L)	TIN (mg/L)	BOD_5 (mg/L)	SS (mg/L)
	Ma Wan Station	1.13	<LOR	<LOR	1.38	<LOR	<LOR	1.00	<LOR	2.63	0.09	0.27	1.56	6.31
	Shum Shui Kok Station	1.50	<LOR	<LOR	0.81	<LOR	<LOR	1.63	<LOR	3.13	0.06	0.31	0.81	5.00
	Tai Mo To Station	1.13	<LOR	<LOR	1.81	<LOR	<LOR	2.00	<LOR	2.75	0.08	0.42	1.18	7.13
	Tai Ho Bay Station 1	1.13	<LOR	<LOR	1.13	<LOR	<LOR	2.00	<LOR	<LOR	0.04	0.34	1.30	4.63
	Tai Ho Bay Station 2	1.13	<LOR	<LOR	1.00	0.94	<LOR	2.00	<LOR	5.25	0.04	0.35	0.63	4.38
													WQO of TIN: 0.5 µg/L	
													Dry Season WQO of SS: 14.4 mg/L	

Note: Cell shaded grey indicated value exceeding WQO.

Table C6 ***Monthly Averaged In-situ Monitoring Results for Routine Water Quality Monitoring of CMP 1 in January 2014***

Sampling Period	Stations	Temp (°C)	Salinity (ppt)	Turbidity (NTU)	Dissolved Oxygen (%)	Dissolved Oxygen (mg L^{-1})	pH (mg L^{-1})
2014/01	RFF (Reference)	16.82	32.21	4.63	96.22	7.69	7.89
	IPF (Impact)	16.78	31.91	8.85	97.56	7.81	7.99
	INF (Intermediate)	16.84	32.03	8.08	99.01	7.91	8.00
	Ma Wan Station	16.85	32.43	5.26	93.97	7.49	7.88
	Shum Shui Kok Station	16.77	32.14	6.17	95.36	7.63	7.99
	Tai Mo To Station	16.77	31.91	8.63	97.71	7.83	7.92
	Tai Ho Bay Station 1	16.80	31.73	6.14	100.10	8.02	8.01
	Tai Ho Bay Station 2	16.88	31.50	5.98	99.13	7.94	7.99
	WQO	N/A	28.99-35.43#	N/A	N/A	>4	6.5-8.5

Note: #Not exceeding 10% of natural ambient level which is the result obtained from the Reference Station.

Table C7 ***Monthly Averaged Laboratory Results for Routine Water Quality Monitoring of CMP 1 in January 2014***

Sampling Period	Stations	As (µg/L)	Cd (µg/L)	Cr (µg/L)	Cu (µg/L)	Pb (µg/L)	Hg (µg/L)	Ni (µg/L)	Ag (µg/L)	Zn (µg/L)	NH_3 (mg/L)	TIN (mg/L)	BOD_5 (mg/L)	SS (mg/L)
2014/01	RFF	1.55	<LOR	0.52	1.54	0.54	<LOR	1.31	<LOR	3.76	0.11	0.32	0.74	7.72
	IPF	1.57	<LOR	0.58	2.08	0.58	<LOR	1.66	<LOR	4.68	0.11	0.34	0.88	10.71
	INF	1.46	<LOR	0.58	1.53	0.58	<LOR	1.49	<LOR	4.07	0.09	0.31	0.97	12.73
	Ma Wan Station	1.49	<LOR	0.62	5.76	0.61	<LOR	1.25	<LOR	6.92	0.11	0.29	1.08	7.23
	Shum Shui Kok Station	1.55	<LOR	0.53	1.11	0.51	<LOR	1.47	<LOR	3.66	0.11	0.33	0.71	8.46
	Tai Mo To Station	1.51	<LOR	<LOR	1.12	<LOR	<LOR	1.56	<LOR	2.75	0.11	0.34	0.75	10.88
	Tai Ho Bay Station 1	1.42	<LOR	0.54	5.63	0.60	<LOR	2.29	<LOR	5.24	0.10	0.35	0.89	9.15
	Tai Ho Bay Station 2	1.19	<LOR	0.52	1.75	0.57	<LOR	1.79	<LOR	14.63	0.05	0.28	0.83	6.75

WQO of TIN: 0.5 mg/L
Dry Season WQO of SS: 14.4 mg/L

Table C8 ***Water Column Profiling Results for CMP 1 on 21 February 2014***

Stations	Temp (°C)	Salinity (ppt)	Turbidity (NTU)	Dissolved Oxygen (%)	Dissolved Oxygen (mg L^{-1})	pH (mg L^{-1})	Suspended Solids (mg L^{-1})
WCP 1 (Downstream)	16.21	33.12	6.60	89.63	7.20	7.94	4.25
WCP 2 (Upstream)	16.40	33.20	5.00	88.80	7.10	7.90	4.25
WQO	N/A	29.85-36.53#	N/A	N/A	>4	6.5-8.5	14.40

Note: #Not exceeding 10% of natural ambient level which is the result obtained from the Reference Station.

Annex D

Dredging Record for CMP 2 in January and February 2014

Table D1 Dredging Record at SB CMP 2

Date	Daily Dredging Volume (m^3)	Weekly Dredging Volume (m^3) (From Sunday to Saturday)
29-Dec-2013	6,500	
30-Dec-2013	5,850	
31-Dec-2013	5,200	
01-Jan-2014	5,850	36,400
02-Jan-2014	4,550	
03-Jan-2014	3,250	
04-Jan-2014	5,200	
05-Jan-2014	3,900	
06-Jan-2014	3,250	
07-Jan-2014	7,150	
08-Jan-2014	7,150	42,900
09-Jan-2014	8,450	
10-Jan-2014	7,150	
11-Jan-2014	5,850	
12-Jan-2014	7,150	
13-Jan-2014	5,850	
14-Jan-2014	7,800	
15-Jan-2014	8,450	59,800
16-Jan-2014	9,100	
17-Jan-2014	9,750	
18-Jan-2014	11,700	
19-Jan-2014	9,750	
20-Jan-2014	9,750	
21-Jan-2014	11,700	
22-Jan-2014	10,400	70,850
23-Jan-2014	9,750	
24-Jan-2014	9,100	
25-Jan-2014	10,400	
26-Jan-2014	12,350	
27-Jan-2014	7,800	
28-Jan-2014	9,750	
29-Jan-2014	9,100	40,950
30-Jan-2014	1,950	
31-Jan-2014	0	
01-Feb-2014	0	
02-Feb-2014	0	
03-Feb-2014	1,950	
04-Feb-2014	12,350	
05-Feb-2014	14,300	61,100
06-Feb-2014	13,000	
07-Feb-2014	12,350	
08-Feb-2014	7,150	

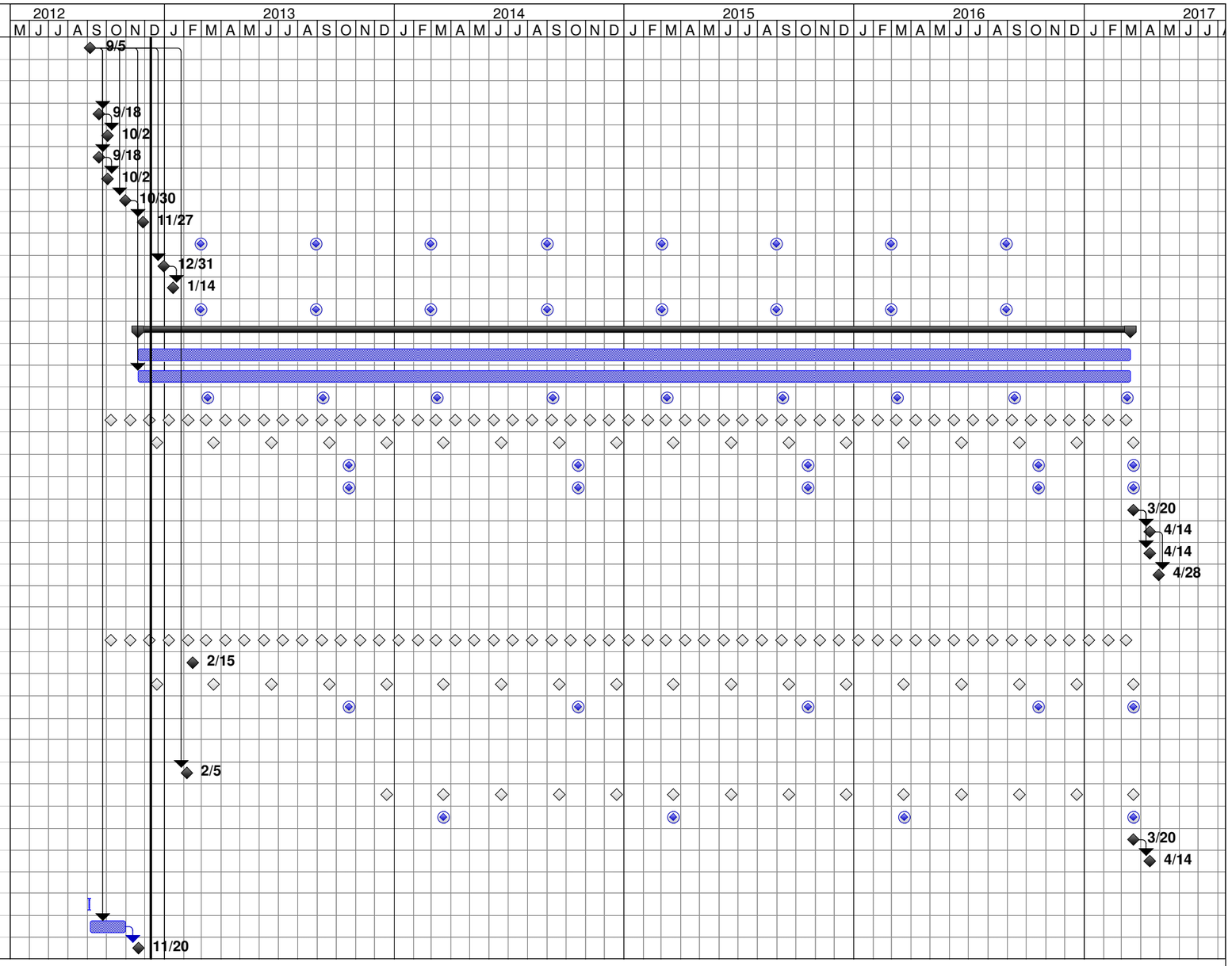
Table D1 Dredging Record at SB CMP 2

Date	Daily Dredging Volume (m^3)	Weekly Dredging Volume (m^3) (From Sunday to Saturday)
09-Feb-2014	11,700	61,750
10-Feb-2014	9,750	
11-Feb-2014	8,450	
12-Feb-2014	7,150	
13-Feb-2014	9,100	
14-Feb-2014	7,800	
15-Feb-2014	7,800	
16-Feb-2014	7,800	42,250
17-Feb-2014	6,500	
18-Feb-2014	3,900	
19-Feb-2014	6,500	
20-Feb-2014	5,850	
21-Feb-2014	5,850	
22-Feb-2014	5,850	
23-Feb-2014	6,500	51,350
24-Feb-2014	6,500	
25-Feb-2014	7,150	
26-Feb-2014	8,450	
27-Feb-2014	7,150	
28-Feb-2014	7,800	
01-Mar-2014	7,800	

Annex E

Study Programme

Task Name
Project Commencement
For South Brothers CMPs and East of Sha Chau CMPs
Submission of Draft Inception Report & Draft Programme
Submission of Final Inception Report & Final Programme
Submission of Draft EM&A Manual (First Review)
Submission of Final EM&A Manual (First Review)
Submission of Draft EM&A Manual (Second Review)
Submission of Final EM&A Manual (Second Review)
Submission of Subsequent EM&A Manual Updates
Submission of Draft Operations Manual
Submission of Final Operations Manual
Submission of Operations Manual Updates
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
Submission of Monthly Progress Report
Submission of Quarterly EM&A Report
Submission of Annual Review Report
Submission of Annual Risk Assessment Report
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
Submission of Initial Review Report (assume disposal commences in November 2012)
Submission of Quarterly EM&A Report
Submission of Annual Report
Alternative / Modified Capping Design
Submission of Investigation Report
Submission of Quarterly Report
Submission of Annual Report
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



Study Programme	Task	Milestone	Summary	Rolled Up Task	Rolled Up Milestone

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