土木工程拓展署
Civil Engineering and Development Department

Agreement No. CE 63/2016 (EP)

Environmental Monitoring and Audit for Disposal Facility to the East of Sha Chau (2017-2020) – Investigation

Monthly EM&A Report for Contaminated Mud Pits to the East of Sha Chau and the South of The Brothers – July 2018

Revision 0

August 2018

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Environmental Resources Management

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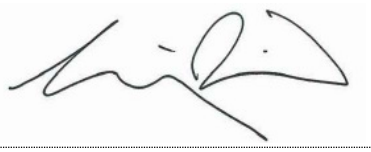
Client:	Project No:
Civil Engineering and Development Department (CEDD)	0400720
Summary: This document presents the Monthly EM&A Report for *Environmental Monitoring and Audit for Disposal Facility to the East of Sha Chau and the South of The Brothers*.	Date: 14 August 2018 Approved by:  Craig A. Reid *Partner*

Revision	Description	By	Checked	Approved	Date
v0	Monthly EM&A Report for ESC CMPs and SB CMPs	CY	RC	CAR	14/8/18

Distribution

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

Environmental Certification Sheet
EP-312/2008/A & EP-427/2011/A

Reference Document/Plan

Document/~~Plan~~ to be ~~Certified~~/ Verified:	Monthly EM&A Report for Contaminated Mud Pits to the East of Sha Chau and the South of The Brothers – July 2018
Date of Report:	14 August 2018
Date prepared by ET:	14 August 2018
Date received by IA:	14 August 2018

Reference EP Condition

Environmental Permit Condition:

Condition 3.4 of EP-312/2008/A and Condition 4.4 of EP-427/2011/A:
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

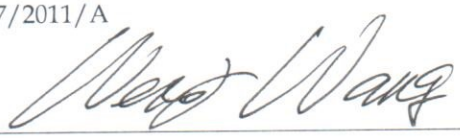
I hereby certify that the above referenced document/~~plan~~ complies with the above referenced condition of EP-312/2008/A and EP-427/2011/A

Craig Reid,
Environmental Team Leader: 

Date: 14/8/2018

IA Verification

I hereby verify that the above referenced document/~~plan~~ complies with the above referenced condition of EP-312/2008/A and EP-427/2011/A

Dr Wang Wen Xiong,
Independent Auditor: 

Date: 14/8/2018

CONTENTS

ANNEXES

Agreement No. CE 63/2016 (EP)
Environmental Monitoring and Audit
for Disposal Facility to the East of Sha Chau (2017-2020) - Investigation

MONTHLY EM&A REPORT FOR JULY 2018

1.1 BACKGROUND

1.1.1 The Civil Engineering and Development Department (CEDD) is managing a number of marine disposal facilities in Hong Kong waters, including the Contaminated Mud Pits (CMPs) to the South of The Brothers (SB) and to the East of Sha Chau (ESC) for the disposal of contaminated sediment, and open-sea disposal grounds located to the South of Cheung Chau (SCC), East of Tung Lung Chau (ETLC) and East of Ninepins (ENP) for the disposal of uncontaminated sediment. Two Environmental Permits (EPs), EP-312/2008/A and EP-427/2011/A, were issued by the Environmental Protection Department (EPD) to the CEDD, the Permit Holder, on 28 November 2008 and 23 December 2011 for the Dredging, Management and Capping of Contaminated Sediment Disposal Facilities at ESC CMP V and SB CMPs, respectively.

1.1.2 Under the requirements of the two EPs for ESC CMP V and SB CMPs, EM&A programmes which encompass water and sediment chemistry, fisheries assessment, tissue and whole body analysis, sediment toxicity and benthic recolonisation studies as set out in the EM&A Manuals are required to be implemented. EM&A programmes have been continuously carried out during the operation of the CMPs at ESC and SB. A review of the collection and analysis of such environmental data from the monitoring programme demonstrated that there had not been any adverse environmental impacts resulting from disposal activities (1) (2). The current programme will assess the impacts resulting from dredging, disposal and capping operations of CMP V as well as capping operations of SB CMPs.

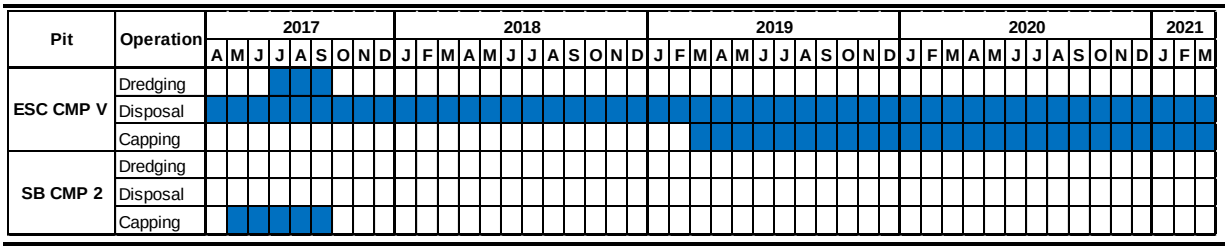
1.1.3 The present EM&A programme under *Agreement No. CE 63/2016 (EP)* covers the dredging, disposal and capping operations of the ESC CMP V as well as the capping operations of the SB CMPs (see *Annex A* for the EM&A programme). Detailed works schedule for ESC CMP V and SB CMPs is shown in *Figure 1.1*. In July 2018, the following work was being undertaken:

- Disposal of contaminated mud at ESC CMP Vd.

(1) ERM (2013) Final Report. Submitted under Agreement No. CE 4/2009 (EP) Environmental Monitoring and Audit for Contaminated Mud Pit at East Sha Chau. For CEDD.

(2) ERM (2017) Final Report. Submitted under 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). For CEDD.

Figure 1.1 Works Schedule for ESC CMP V and SB CMPs



1.2 REPORTING PERIOD

1.2.1 This *Monthly EM&A Report for July 2018* covers the EM&A activities for the reporting month of July 2018.

1.3 DETAILS OF SAMPLING AND LABORATORY TESTING ACTIVITIES

1.3.1 The following monitoring activities were undertaken for ESC CMP V in July 2018:

- *Water Column Profiling of ESC CMP Vd;*
- *Routine Water Quality Monitoring of ESC CMPs;*
- *Pit Specific Sediment Chemistry of ESC CMP Vd;* and
- *Demersal Trawling for ESC CMPs.*

1.3.2 No monitoring activities were scheduled to be undertaken for SB CMP in July 2018.

1.4 DETAILS OF OUTSTANDING SAMPLING AND/OR ANALYSIS

1.4.1 No outstanding sampling remained for July 2018.

1.4.2 The following laboratory analysis was still in progress during the preparation of this monthly report and hence is not presented in this monthly report:

- Laboratory analyses of sediment samples collected for Pit Specific Sediment Chemistry of ESC CMP Vd in July 2018.

1.4.3 The following analyses are in progress and will be presented in the corresponding quarterly report:

- Species identification of the biota samples collected from *Demersal Trawling for ESC CMPs* in July 2018.

1.5 BRIEF DISCUSSION OF THE MONITORING RESULTS FOR ESC CMP V

1.5.1 Brief discussion of the monitoring results of the following activities for ESC CMP V is presented in this *Monthly EM&A Report for July 2018*:

- *Water Column Profiling of ESC CMP Vd* in July 2018;
- *Routine Water Quality Monitoring of ESC CMPs* in July 2018*;*
- *Pit Specific Sediment Chemistry of ESC CMP Vd* in June 2018; and
- *Cumulative Impact Sediment Chemistry of ESC CMP V* in June 2018.

1.5.2 ***Water Column Profiling of ESC CMP Vd – July 2018***

1.5.3 *Water Column Profiling* was undertaken at a total of two sampling stations (Upstream and Downstream stations) on 28 July 2018. The monitoring results have been assessed for compliance with the Water Quality Objectives (WQOs) set by Environmental Protection Department (EPD). This consists of a review of the EPD routine water quality monitoring data for the wet season period (April to October) of 2007 - 2016 from stations in the Northwestern Water Control Zone (WCZ), where the ESC CMPs are located [1]. For Salinity, the averaged value obtained from the Reference (Upstream) station was used for the basis as the WQO. Levels of Dissolved Oxygen (DO) and Turbidity were also assessed for compliance with the Action and Limit Levels (see *Table B1* of *Annex B* for details).

In-situ Measurements

1.5.4 Analyses of results for July 2018 indicated that levels of DO, Salinity and pH complied with the WQOs at both Downstream and Upstream stations (*Table B2* of *Annex B*). In addition, levels of DO and Turbidity at all stations complied with the Action and Limit Levels (*Tables B1* and *B2* of *Annex B*).

Laboratory Measurements for Suspended Solids (SS)

1.5.5 Analyses of results for July 2018 indicated that the SS levels complied with the WQO at both Downstream and Upstream stations (*Tables B1* and *B2* of *Annex B*). Both Upstream and Downstream stations complied with the Action and Limit Level.

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

1.5.7 ***Routine Water Quality Monitoring of ESC CMP V – July 2018***

1.5.8 *Routine Water Quality Monitoring of ESC CMP V* was undertaken on 27 July 2018. The monitoring results have been assessed for compliance with the WQOs (see *Section 1.5.3* for details). The monitoring results are shown in *Tables B3 and B4* of *Annex B* and *Figures 1 - 10* of *Annex C*. A total of sixteen (16) monitoring stations were sampled in July 2018 as shown in *Figure 1.2*.

[1] http://epic.epd.gov.hk/EPICRIVER/marine/?lang=en

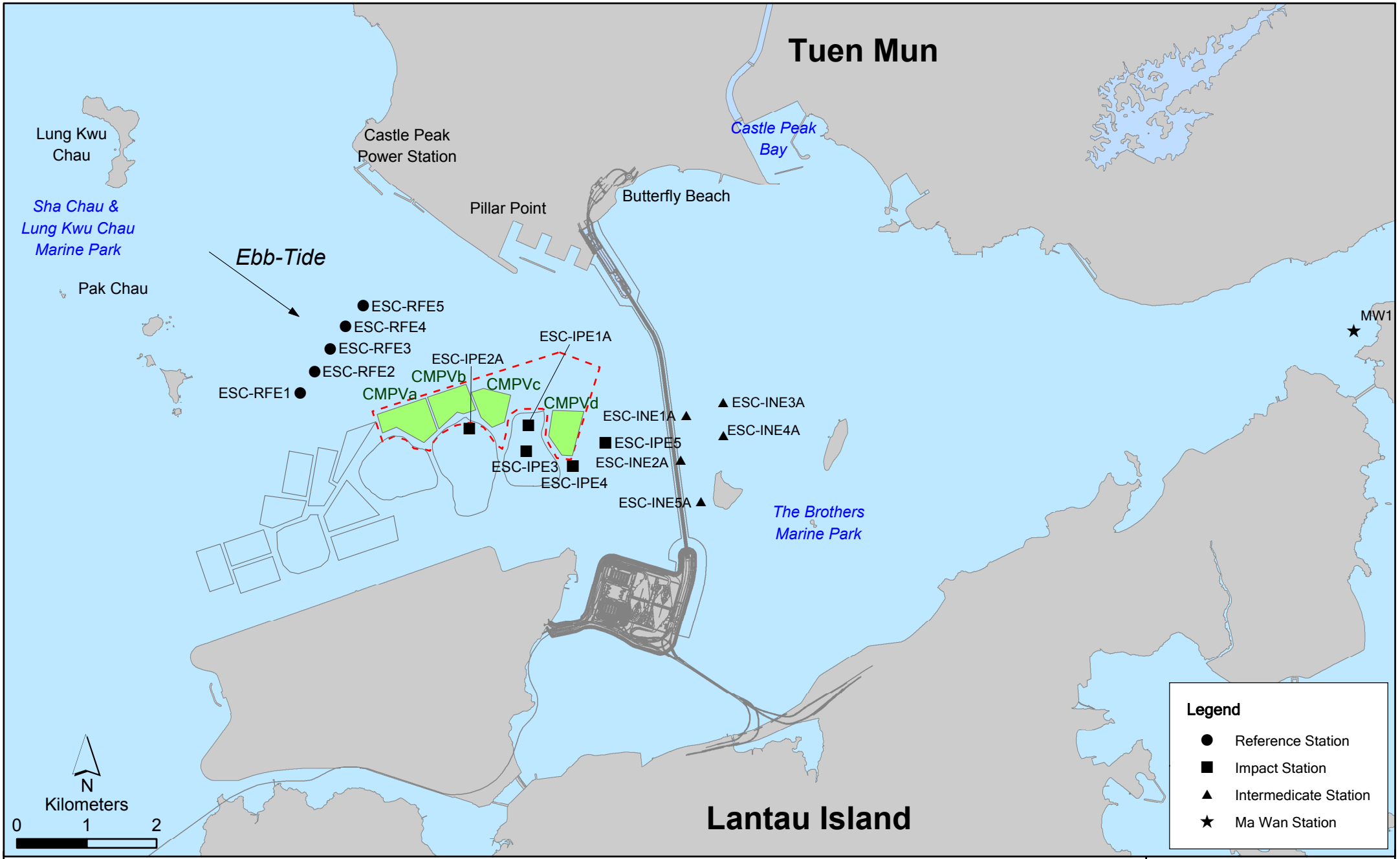


Figure 1.2

Routine & Capping Water Quality Sampling Stations (Ebb-Tide) for ESC CMPs

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Date: 19/4/2017

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In-situ Measurements

1.5.9 Graphical presentation of the monitoring results (Temperature, DO, pH, Salinity and Turbidity) is shown in *Figures 1 - 6* of *Annex C*. Analyses of results for July 2018 indicated that the levels of pH, Salinity and DO complied with the WQOs at all stations (Impact, Intermediate, Reference and Ma Wan stations) in July 2018.

1.5.10 The levels of DO and Turbidity also complied with the Action and Limit Levels at all stations (*Table B3* of *Annex B*; *Figures 3* and *6* of *Annex C*).

1.5.11 Overall, *in-situ* measurement results of the *Routine Water Quality Monitoring* indicated that the disposal operation at ESC CMP Vd did not appear to cause any unacceptable impacts in water quality in July 2018.

Laboratory Measurements

1.5.12 Laboratory analysis of July 2018 results indicated that concentrations of Cadmium, Chromium, Silver and Mercury were below their limit of reporting at all stations. Arsenic, Nickel, Lead, Copper and Zinc were detected in July 2018 samples at most stations and the concentrations of these metals and metalloids were similar amongst the stations (*Table B4* of *Annex B*; *Figure 7* of *Annex C*).

1.5.13 For nutrients, concentrations of Total Inorganic Nitrogen (TIN) at all stations in July 2018 were higher than the WQO (0.5 mg/L) (*Table B4* of *Annex B*; *Figure 8* of *Annex C*). It should be noted that due to the effect of the Pearl River, the North Western WCZ has historically experienced higher levels of TIN [(1)]. Therefore, the exceedances of TIN WQO at these stations are unlikely to be caused by the disposal operation at ESC CMP Vd. Concentrations of Ammonia Nitrogen (NH_3-N) and 5-day Biochemical Oxygen Demand (BOD_5) were generally similar amongst the stations in July 2018 (*Table B4* of *Annex B*; *Figure 8 and 9* of *Annex C*), except higher BOD_5 was detected at Ma Wan station.

1.5.14 Analyses of results for July 2018 indicated that the SS levels at most stations were lower than the WQO (10.8 mg/L for wet season), except the slight exceedance of SS recorded at the Impact station. However, the SS levels compiled with the Action and Limit Levels at all stations (*Tables B1 and B4* of *Annex B*; *Figure 10* of *Annex C*).

1.5.15 Overall, results of the *Routine Water Quality Monitoring* indicated that the disposal operation at ESC CMP Vd did not appear to cause any unacceptable deterioration in water quality in July 2018. Detailed statistical analysis will be presented in the Quarterly Report to investigate any spatial and temporal trends of potential concern.

(1) http://www.epd.gov.hk/epd/misc/marine_quality/1986-2005/textonly/eng/index.htm

1.5.16 ***Pit Specific Sediment Chemistry of ESC CMP Vd – June 2018***

1.5.17 Monitoring locations for *Pit Specific Sediment Chemistry for ESC CMP Vd* are shown in *Figure 1.3.* A total of six (6) monitoring stations were sampled in June 2018.

1.5.18 The concentrations of most inorganic contaminants were lower than the Lower Chemical Exceedance Level (LCEL) at all stations in June 2018, except the concentration of Arsenic slightly exceeded the LCEL at the Active-Pit stations ESC-NPAA and ESC-NPAB (Figures 11 and 12 of Annex C). 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 ESC CMP Vd but rather as a result of naturally occurring deposits.

1.5.19 For organic contaminants, the concentrations of Total Organic Carbon (TOC) were generally similar in June 2018 (*Figure 13* of *Annex C*). The concentration of Tributyltin (TBT) was generally similar amongst stations in June 2018 (*Figure 14* of *Annex C*). Low and High Molecular Weight Polycyclic Aromatic Hydrocarbons (PAHs), Total Polychlorinated Biphenyls (PCBs), Total dichloro-diphenyl-trichloroethane (DDT) and 4,4'-dichlorodiphenyldichloroethylene (DDE) concentrations were below the limit of reporting at all stations in June 2018.

1.5.20 Overall, there is no evidence indicating any unacceptable environmental impacts to sediment quality as a result of the contaminated mud disposal operations at ESC CMP Vd in June 2018. Statistical analysis will be undertaken and presented in the corresponding quarterly report to investigate whether there are any unacceptable impacts in the area caused by the contaminated mud disposal.

(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

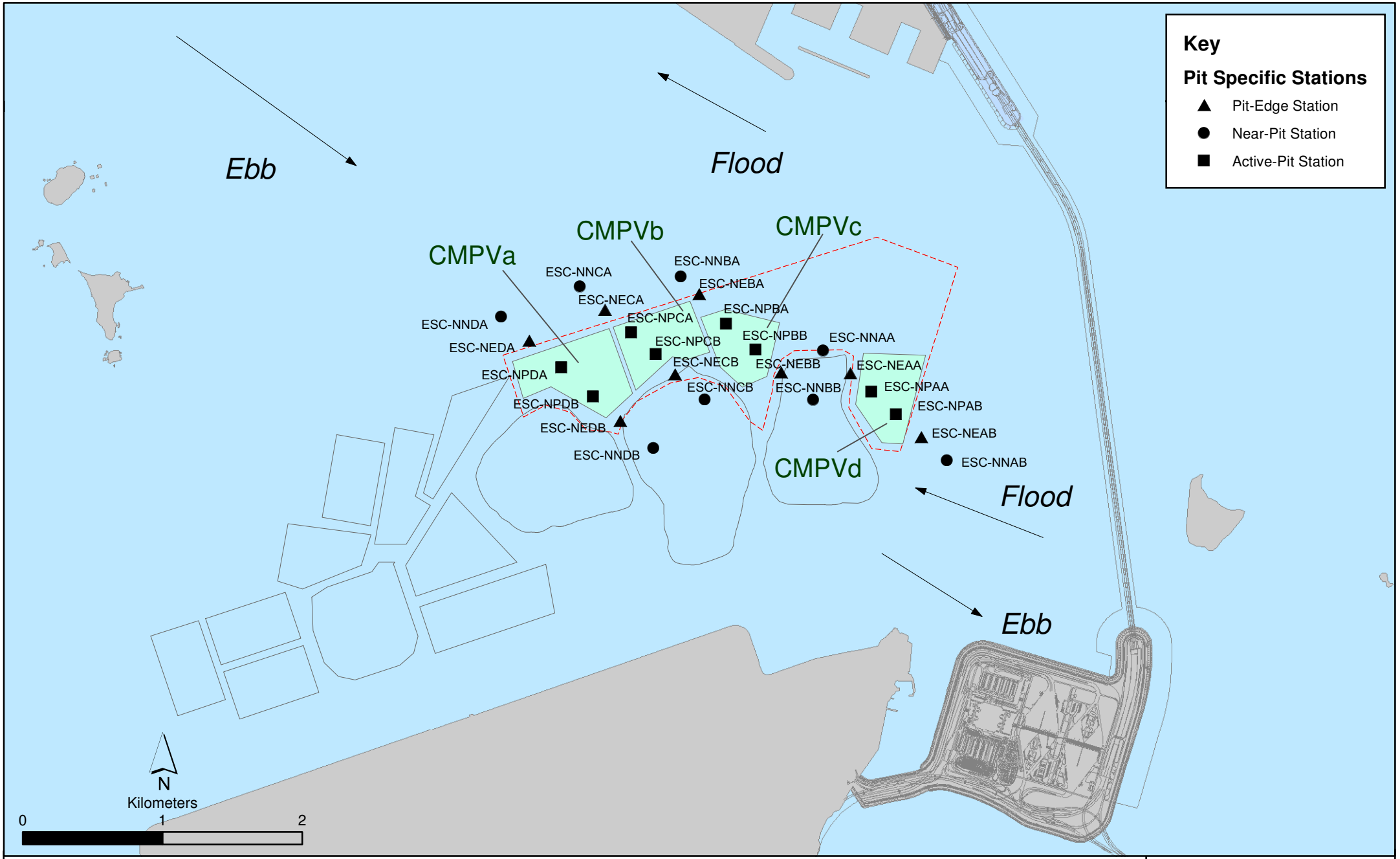

Figure 1.3

Pit Specific Sediment Quality Monitoring Stations for CMPV

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Date: 9/5/2017

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1.5.21 ***Cumulative Impact Sediment Chemistry of ESC CMP V – June 2018***

1.5.22 Monitoring locations for *Cumulative Impact Sediment Chemistry for ESC CMP V* are shown in *Figure 1.4*. A total of nine (9) monitoring stations were sampled in June 2018.

1.5.23 Analyses of results for the *Cumulative Impact Sediment Chemistry Monitoring* indicated that the concentrations of most inorganic contaminants were below the LCEL at all stations in June 2018, except Arsenic exceeded the LCEL at Mid-field stations ESC-RMA and ESC-RMB as well as the Far-field stations ESC-RFA and ESC-RFB (*Figures 15* and 16 of *Annex C*).

1.5.24 As discussed in *Section 1.5.18*, the natural concentrations of Arsenic are relatively high in Hong Kong. Therefore, the LCEL exceedances of Arsenic are unlikely to be caused by the disposal operations at ESC CMP Vd but rather as a result of naturally occurring deposits.

1.5.25 For organic contaminants, the concentrations of TOC were generally similar in June 2018, except higher concentration of TOC recorded at Ma Wan station (*Figure 17* of *Annex C*). The concentrations of TBT recorded were generally similar amongst stations except lower concentrations of TBT were recorded at the Capped-Pit stations ESC-RCA and ESC-RCB (*Figure 18* of *Annex C*). Low and High Molecular Weight PAHs, PCBs, DDT and DDE concentrations were generally recorded below the limit of reporting at all stations, except concentrations of High Molecular Weight PAHs was higher than the limit of reporting at Capped Pit station ESC-RCA (*Figure 19* of *Annex C*).

1.5.26 Overall, there is no evidence indicating any unacceptable environmental impacts to sediment quality as a result of the contaminated mud disposal operations at ESC CMP Vd in June 2018. Statistical analysis will be undertaken and presented in the corresponding quarterly report to investigate whether there are any unacceptable impacts in the area caused by the contaminated mud disposal.

1.6 ACTIVITIES SCHEDULED FOR THE NEXT MONTH

1.6.1 The following monitoring activities will be conducted in the next monthly period of August 2018 for ESC CMP V (see *Annex A* for the sampling schedule):

- *Water Column Profiling of ESC CMP Vd*;
- *Routine Water Quality Monitoring of ESC CMPs;*
- *Pit Specific Sediment Chemistry of ESC CMP Vd;*
- *Cumulative Impact Sediment Chemistry of ESC CMP V;*
- *Sediment Toxicity Tests of ESC CMP V;* and

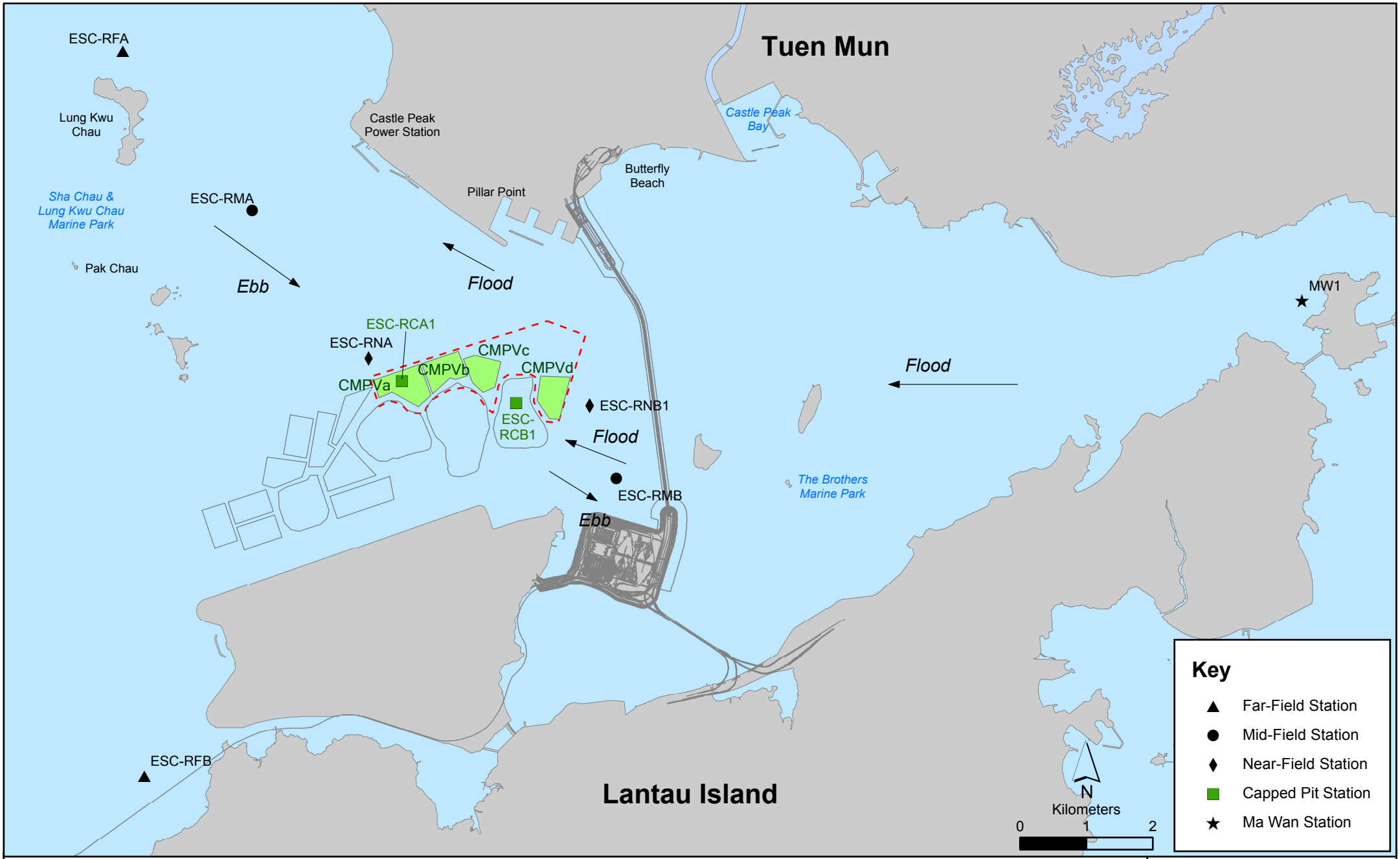

Figure 1.4

Cumulative Impacts Sediment Quality Monitoring Stations for ESC CMPs

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Date: 19/4/2017

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- *Demersal Trawling for ESC CMPs.*

1.6.2 The following monitoring activities will be conducted in the next monthly period of August 2018 for SB CMPs (see *Annex A* for the sampling schedule):

- *Benthic Recolonisation Studies of SB CMPs.*

1.7 STUDY PROGRAMME

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

Annex A

Sampling Schedule

Annex A1 - East of Sha Chau Environmental Monitoring and Audit Sampling Schedule for CMP (April 2017 - March 2021)

			2017									2018												2019												2020												2021		
Pit Specific Sediment Chemistry	**Code**	**Frequency**	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
Active-Pit																																																		
	ESC-NPAA	Monthly	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
	ESC-NPAB	Monthly	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
Pit-Edge																																																		
	ESC-NEAA	Monthly	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
	ESC-NEAB	Monthly	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
Near-Pit																																																			
	ESC-NNAA	Monthly	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
	ESC-NNAB	Monthly	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12

Cumulative Impact Sediment Chemistry			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
Near-field Stations																																																		
	ESC-RNA	4 times per year			12		12				12		12				12		12				12		12				12		12				12		12				12		12				12		12	
	ESC-RNB1	4 times per year			12		12				12		12				12		12				12		12				12		12				12		12				12		12				12		12	
Mid-field Stations																																																		
	ESC-RMA	4 times per year			12		12				12		12				12		12				12		12				12		12				12		12				12		12				12		12	
	ESC-RMB	4 times per year			12		12				12		12				12		12				12		12				12		12				12		12				12		12				12		12	
Capped Pit Stations																																																		
	ESC-RCA1	4 times per year			12		12				12		12				12		12				12		12				12		12				12		12				12		12				12		12	
	ESC-RCB1	4 times per year			12		12				12		12				12		12				12		12				12		12				12		12				12		12				12		12	
Far-Field Stations																																																		
	ESC-RFA	4 times per year			12		12				12		12				12		12				12		12				12		12				12		12				12		12				12		12	
	ESC-RFB	4 times per year			12		12				12		12				12		12				12		12				12		12				12		12				12		12				12		12	
Ma Wan Station																																																		
	MW1	4 times per year			12		12				12		12				12		12				12		12				12		12				12		12				12		12				12		12	

Sediment Toxicity Tests			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
Near-Pit Stations																																																		
	ESC-TDA	2 times per year					5						5						5						5						5						5						5						5	
	ESC-TDB1	2 times per year					5						5						5						5						5						5						5						5	
Reference Stations																																																		
	ESC-TRA	2 times per year					5						5						5						5						5						5						5						5	
	ESC-TRB	2 times per year					5						5						5						5						5						5						5						5	
Ma Wan Station																																																		
	MW1	2 times per year					5						5						5						5						5						5						5						5	

Tissue/ Whole Body Sampling			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
Near-Pit Stations																																																		
	ESC-INA	2 times per year					*						*						*						*						*						*						*						*	
	ESC-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			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
Near Pit Stations																																																		
	ESC-INA	4 times per year				5	5					5	5					5	5					5	5					5	5					5	5					5	5					5	5	
	ESC-INB	4 times per year				5	5					5	5					5	5					5	5					5	5					5	5					5	5					5	5	
Reference North																																																		
	TNA	4 times per year				5	5					5	5					5	5					5	5					5	5					5	5					5	5					5	5	
	TNB	4 times per year				5	5					5	5					5	5					5	5					5	5					5	5					5	5					5	5	
Reference South																																																		
	TSA	4 times per year				5	5					5	5					5	5					5	5					5	5					5	5					5	5					5	5	
	TSB	4 times per year				5	5					5	5					5	5					5	5					5	5					5	5					5	5					5	5	

Capping			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
Ebb Tide																																																		
Impact Station Downcurrent																																																		
	ESC-IPE1A	4 times per year																							3				3		3				3		3				3		3				3		3	
	ESC-IPE2A	4 times per year																							3				3		3				3		3				3		3				3		3	
	ESC-IPE3	4 times per year																							3				3		3				3		3				3		3				3		3	
	ESC-IPE4	4 times per year																							3				3		3				3		3				3		3				3		3	
	ESC-IPE5	4 times per year																							3				3		3				3		3				3		3				3		3	
Intermediate Station Downcurrent																																																		
	ESC-INE1A	4 times per year																							3				3		3				3		3				3		3				3		3	
	ESC-INE2A	4 times per year																							3				3		3				3		3				3		3				3		3	
	ESC-INE3A	4 times per year																							3				3		3				3		3				3		3				3		3	
	ESC-INE4A	4 times per year																							3				3		3				3		3				3		3				3		3	
	ESC-INE5A	4 times per year																							3				3		3				3		3				3		3				3		3	
Reference Station Upcurrent																																																		
	ESC-RFE1	4 times per year																							3				3		3				3		3				3		3				3		3	
	ESC-RFE2	4 times per year																							3				3		3				3		3				3		3				3		3	
	ESC-RFE3	4 times per year																							3				3		3				3		3				3		3				3		3	
	ESC-RFE4	4 times per year																							3				3		3				3		3				3		3				3		3	
	ESC-RFE5	4 times per year																							3				3		3				3		3				3		3				3		3	
Ma Wan Station																																																		
	MW1	4 times per year																							3				3		3				3		3				3		3				3		3	
Flood Tide																																																		
Impact Station Downcurrent																																																		
	ESC-IPF1	4 times per year																							3				3		3				3		3				3		3				3		3	
	ESC-IPF2	4 times per year																							3				3		3				3		3				3		3				3		3	
	ESC-IPF3	4 times per year																							3				3		3				3		3				3		3				3		3	
Intermediate Station Downcurrent																																																		
	ESC-INF1	4 times per year																							3				3		3				3		3				3		3				3		3	
	ESC-INF2	4 times per year																							3				3		3				3		3				3		3				3		3	
	ESC-INF3	4 times per year																							3				3		3				3		3				3		3				3		3	
Reference Station Upcurrent																																																		
	ESC-RFF1A	4 times per year																							3				3		3				3		3				3		3				3		3	
	ESC-RFF2A	4 times per year																							3				3		3				3		3				3		3				3		3	
	ESC-RFF3	4 times per year																							3				3		3				3		3				3		3				3		3	
Ma Wan Station																																																		
	MW1	4 times per year																							3				3		3				3		3				3		3				3		3	

Routine Water Quality Monitoring			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
Ebb Tide																																																		
Impact Station Downcurrent																																																		
	ESC-IPE1A	8 times per year	8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8	
	ESC-IPE2A	8 times per year	8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8	
	ESC-IPE3	8 times per year	8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8	
	ESC-IPE4	8 times per year	8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8	
	ESC-IPE5	8 times per year	8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8	
Intermediate Station Downcurrent																																																		
	ESC-INE1A	8 times per year	8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8	
	ESC-INE2A	8 times per year	8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8	
	ESC-INE3A	8 times per year	8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8	
	ESC-INE4A	8 times per year	8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8	
	ESC-INE5A	8 times per year	8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8	
Reference Station Upcurrent																																																		
	ESC-RFE1	8 times per year	8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8	
	ESC-RFE2	8 times per year	8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8	
	ESC-RFE3	8 times per year	8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8	
	ESC-RFE4	8 times per year	8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8	
	ESC-RFE5	8 times per year	8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8	
Ma Wan Station																																																		
	MW1	8 times per year	8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8	
Flood Tide																																																		
Impact Station Downcurrent																																																		
	ESC-IPF1	8 times per year	8	8		8	8		8	8					8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8	
	ESC-IPF2	8 times per year	8	8		8	8		8	8					8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8	
	ESC-IPF3	8 times per year	8	8		8	8		8	8					8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8	
Intermediate Station Downcurrent																																																		
	ESC-INF1	8 times per year	8	8		8	8		8	8					8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8	
	ESC-INF2	8 times per year	8	8		8	8		8	8					8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8	
	ESC-INF3	8 times per year	8	8		8	8		8	8					8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8	
Reference Station Upcurrent																																																		
	ESC-RFF1A	8 times per year	8	8		8	8		8	8					8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8	
	ESC-RFF2A	8 times per year	8	8		8	8		8	8					8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8	
	ESC-RFF3	8 times per year	8	8		8	8		8	8					8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8	
Ma Wan Station																																																		
	MW1	8 times per year	8	8		8	8		8	8					8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8		8	8	

Water Column Profiling			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
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	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	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4

Benthic Recolonisation Studies			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
Capped Stations at CMPV																																																		
	ESCV-CPA	2 times per year																																																
	ESCV-CPB	2 times per year																																																
	ESCV-CPC	2 times per year																																																
	ESCV-CPD	2 times per year																																																
Reference Stations																																																		
	RBA	2 times per year																																																
	RBB	2 times per year																																																
	RBC1	2 times per year																																																

Impact Monitoring for Dredging			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
Upstream Stations																																																		
	US1	3 times per week				2	2	2																																										
	US2	3 times per week				2	2	2																																										
Downstream Stations																																																		
	DS1	3 times per week				2	2	2																																										
	DS2	3 times per week				2	2	2																																										
	DS3	3 times per week				2	2	2																																										
	DS4	3 times per week				2	2	2																																										
	DS5	3 times per week				2	2	2																																										
Ma Wan Station																																																		
	MW1	3 times per week				2	2	2																																										

Notes:
The number shown in each cell represents the numbers of replicates per monitoring station
Impact Monitoring for Dredging will be scheduled when dredging operations commence.
Benthic Recolonisation Studies for CMP V will be scheduled when capping operation for CMP V is completed.

Annex A2 - Environmental Monitoring and Audit Sampling Schedule for South of The Brothers (April 2017 - December 2018)

			2017									2018												
Capping Water Quality Monitoring			**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	4 times per year		3	3		3	3																
	SB-IPE2	4 times per year		3	3		3	3																
	SB-IPE3	4 times per year		3	3		3	3																
	SB-IPE4	4 times per year		3	3		3	3																
	SB-IPE5	4 times per year		3	3		3	3																
Intermediate Stations Downcurrent																								
	SB-INE1	4 times per year		3	3		3	3																
	SB-INE2	4 times per year		3	3		3	3																
	SB-INE3	4 times per year		3	3		3	3																
	SB-INE4	4 times per year		3	3		3	3																
	SB-INE5	4 times per year		3	3		3	3																
Reference Stations Upcurrent																								
	SB-RFE1	4 times per year		3	3		3	3																
	SB-RFE2	4 times per year		3	3		3	3																
	SB-RFE3	4 times per year		3	3		3	3																
	SB-RFE4	4 times per year		3	3		3	3																
	SB-RFE5	4 times per year		3	3		3	3																
Sensitive Receiver Stations																								
	MW1	4 times per year		3	3		3	3																
	THB1	4 times per year		3	3		3	3																
	THB2	4 times per year		3	3		3	3																
	WSR45C	4 times per year		3	3		3	3																
	WSR46	4 times per year		3	3		3	3																
Flood Tide																								
Impact Stations Downcurrent																								
	SB-IPF1	4 times per year		3	3		3	3																
	SB-IPF2	4 times per year		3	3		3	3																
	SB-IPF3	4 times per year		3	3		3	3																
Intermediate Stations Downcurrent																								
	SB-INF1	4 times per year		3	3		3	3																
	SB-INF2	4 times per year		3	3		3	3																
	SB-INF3	4 times per year		3	3		3	3																
Reference Stations Upcurrent																								
	SB-RFF1	4 times per year		3	3		3	3																
	SB-RFF2	4 times per year		3	3		3	3																
	SB-RFF3	4 times per year		3	3		3	3																
Sensitive Receiver Stations																								
	MW1	4 times per year		3	3		3	3																
	THB1	4 times per year		3	3		3	3																
	THB2	4 times per year		3	3		3	3																
	WSR45C	4 times per year		3	3		3	3																
	WSR46	4 times per year		3	3		3	3																

Benthic Recolonisation Studies			**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
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:
The number shown in each cell represents the numbers of replicates per monitoring station
Capping works are planned to be conducted between May and December 2017.

Annex B

Water Quality Monitoring Results

Table B1 Action and Limit Levels of Water Quality for Dredging, Disposal and Capping Activities at ESC CMP V

Parameter	Action Level	Limit Level
Dissolved Oxygen (DO) (1)	Surface and Mid-depth (2) 5%-ile of baseline data for surface and middle layer = **3.76 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) 1%-ile of baseline data for surface and middle layer = **3.11 mg L^{-1}** (3) and Significantly less than the reference stations mean DO (at the same tide of the same day)
	Bottom 5%-ile of baseline data for bottom layers = **2.96 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 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) (4) (5)	95%-ile of baseline data for depth average = **37.88 mg L^{-1}** and 120% of control station's SS at the same tide of the same day	99%-ile of baseline data for depth average = **61.92 mg L^{-1}** and 130% of control station's SS at the same tide of the same day
Depth-averaged Turbidity (Tby) (4) (5)	95%-ile of baseline data = **28.14 NTU** and 120% of control station's Tby at the same tide of the same day	99%-ile of baseline data = **38.32 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) Given the Action Level for DO for Surface & Middle layers has already been lower than 4 mg L^{-1}, it is proposed to set the Limit Level at 3.11 mg L^{-1} which is the first percentile of the baseline data.

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

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

Table B2 Water Column Profiling Results for ESC CMP Vd in July 2018

Stations	Temp (°C)	Salinity (ppt)	Turbidity (NTU)	Dissolved Oxygen (%)	Dissolved Oxygen (mg L^{-1})	pH	Suspended Solids (mg L^{-1})
WCP 1 (Downstream)	29.73	21.42	10.96	83.18	5.61	7.88	10.43
WCP 2 (Upstream)	29.72	21.90	12.27	81.43	5.49	7.85	8.68
WQO (Wet Season)	N/A	19.71–24.09#	N/A	N/A	>4	6.5-8.5	10.8

Note:
#Not exceeding 10% of natural ambient level which is the result obtained from the Reference Station.
Cell shaded yellow / red indicate value exceeding the Action/Limit levels.
Cell shaded grey indicate value exceeding the WQO.

Table B3 In-situ Monitoring Results for Routine Water Quality Monitoring of ESC CMPs in July 2018

Sampling Period	Stations	Temp (°C)	Salinity (ppt)	Turbidity (NTU)	Dissolved Oxygen (%)	Dissolved Oxygen (mg L^{-1})	pH (mg L^{-1})
July 2018	RFF (Reference)	29.42	21.80	7.74	80.66	5.46	7.94
	IPF (Impact)	29.50	21.45	9.39	83.36	5.65	7.97
	INF (Intermediate)	29.46	22.16	9.66	84.85	5.73	8.00
	Ma Wan	29.66	22.76	4.29	92.62	6.21	8.05
	WQO	N/A	19.62 – 23.98#	N/A	N/A	>4	6.5-8.5

Notes:
#Not exceeding 10% of natural ambient level which is the result obtained from the Reference Station.
Cell shaded yellow / red indicate value exceeding the Action/Limit levels.
Cell shaded grey indicate value exceeding the WQO.

Table B4 Laboratory Results for Routine Water Quality Monitoring of ESC CMPs in July 2018

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)
July 2018	RFE	2.23	<0.5	<1	14.56	1.47	<0.5	1.80	<1	44.05	0.12	0.89	1.84	8.75
	IPE	2.34	<0.5	<1	15.60	1.52	<0.5	1.64	<1	31.27	0.12	0.87	1.04	10.86
	INE	2.27	<0.5	<1	8.17	1.33	<0.5	1.46	<1	24.65	0.11	0.82	1.12	10.43
	Ma Wan	1.96	<0.5	<1	8.68	1.46	<0.5	4.09	<1	29.54	0.08	0.73	3.99	5.53

WQO of TIN: 0.5 mg/L
Wet Season WQO of SS : 10.8 mg/L

Notes:
Cell shaded yellow / red indicate value exceeding the Action/Limit levels.
Cell shaded grey indicate value exceeding the WQO.

Annex C

Graphical Presentations

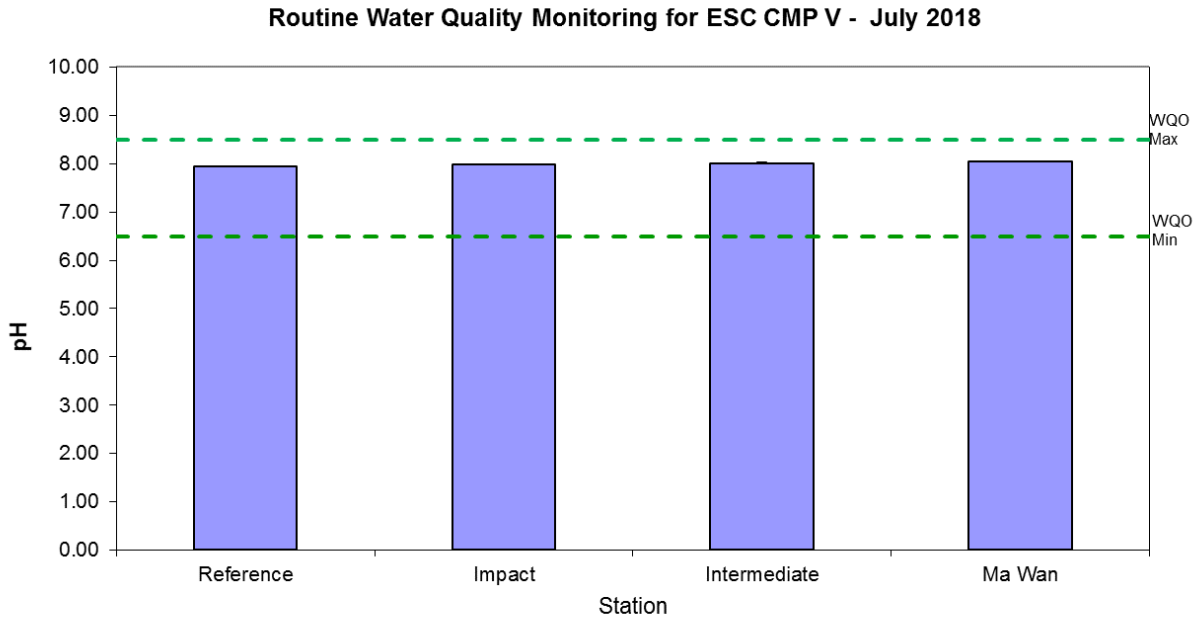


Figure 1: Level of pH recorded during Routine Water Quality Monitoring for disposal operations at ESC CMP V in July 2018.

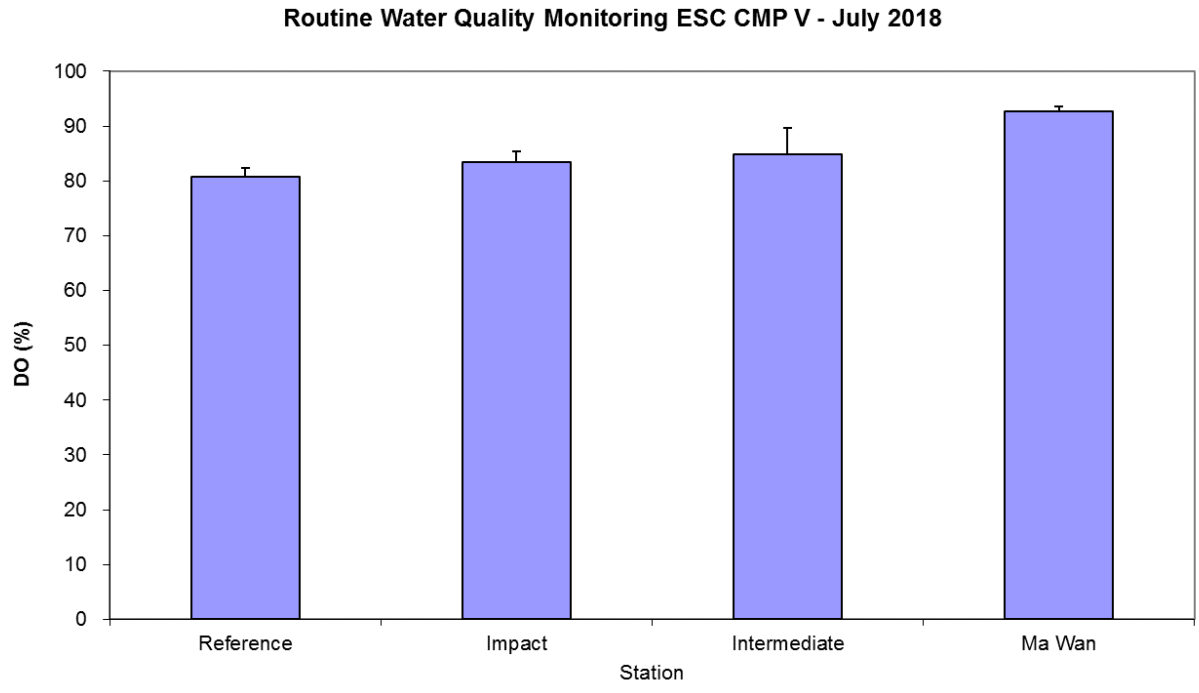


Figure 2: Level of Dissolved Oxygen (DO) (% saturation; mean + SD) recorded during Routine Water Quality Monitoring for disposal operations at ESC CMP V in July 2018.

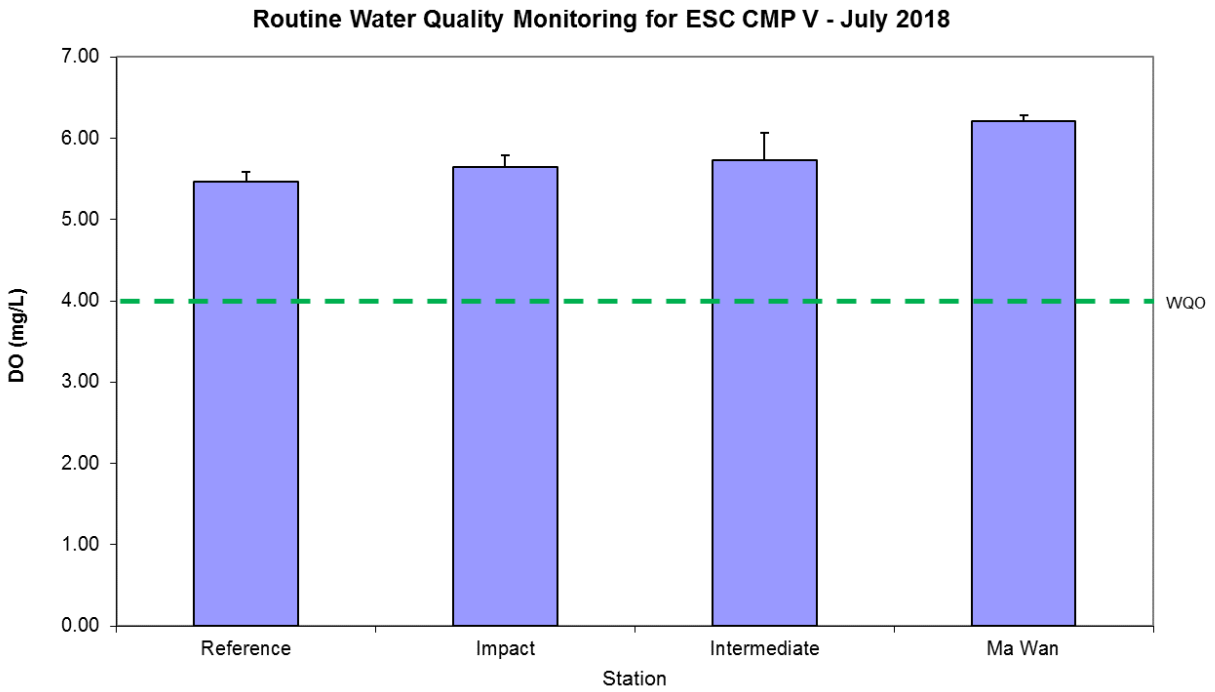


Figure 3: Concentration of Dissolved Oxygen (DO) (mg/L; mean + SD) recorded during Routine Water Quality Monitoring for disposal operations at ESC CMP V in July 2018.

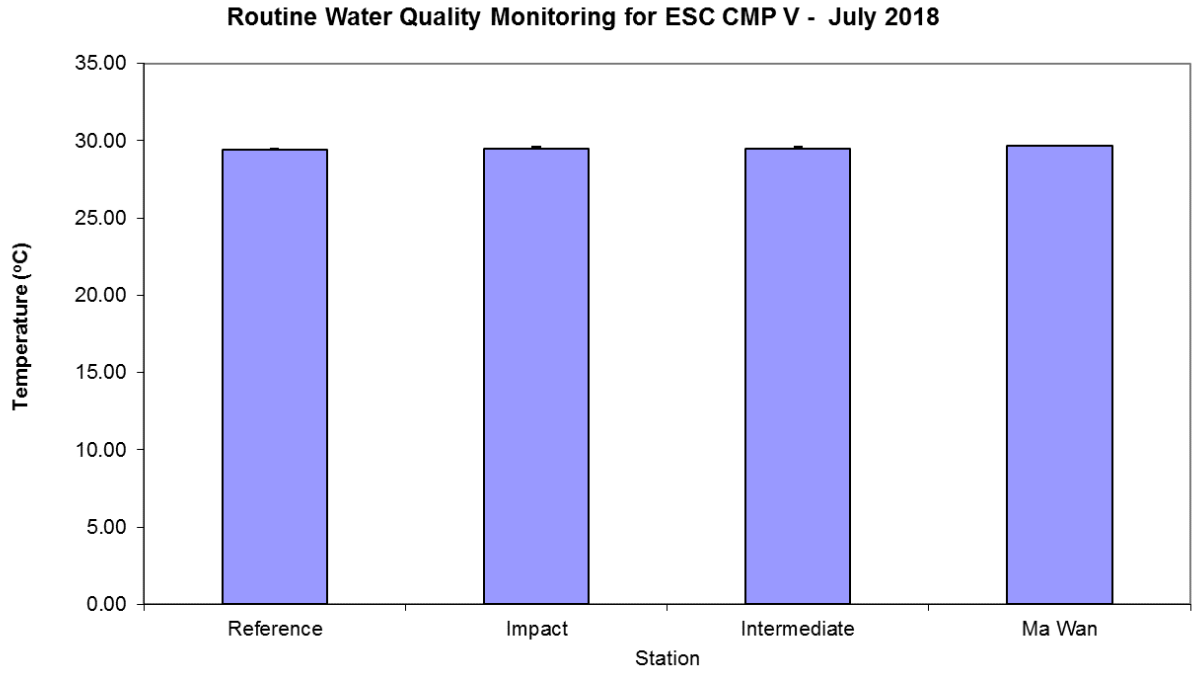


Figure 4: Level of Temperature (˚C; mean + SD) recorded during Routine Water Quality Monitoring for disposal operations at ESC CMP V in July 2018.

Source: H:\Team\EM\GMS Projects\0400720 CEDD CMP EM&A 2017-2020\02 Deliverable\05 CMP Monthly Report\July 2018)

Date: August 2018

Environmental Resources Management

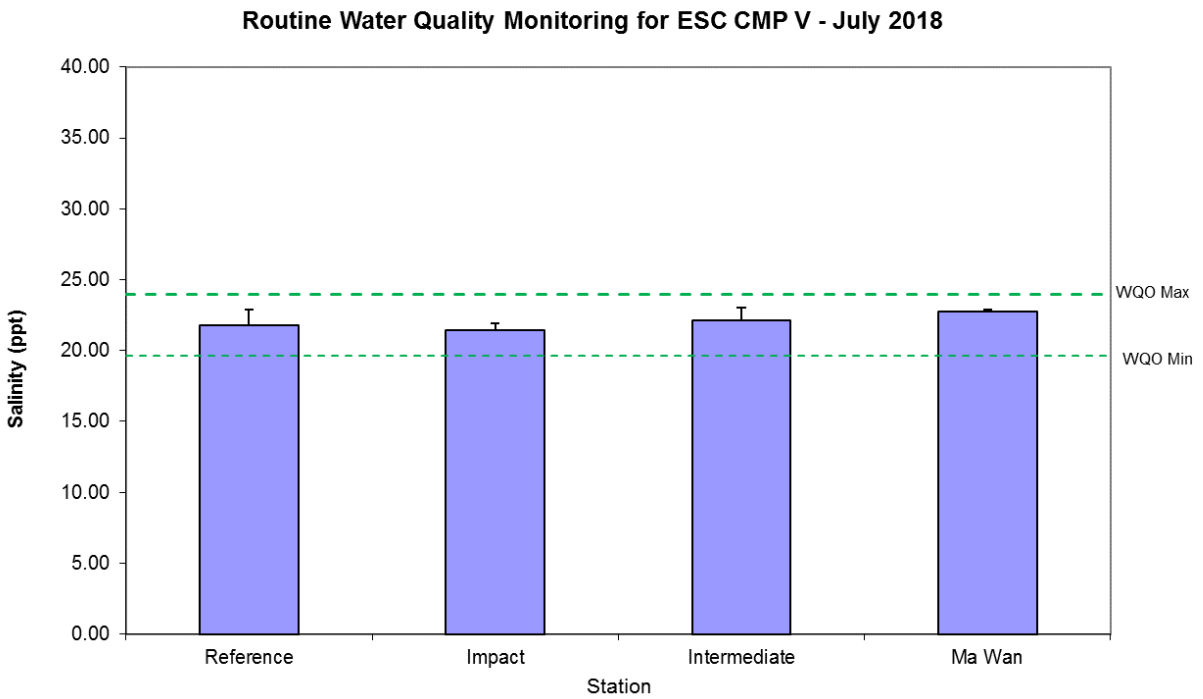


Figure 5: Level of Salinity (ppt; mean + SD) recorded during Routine Water Quality Monitoring for disposal operations at ESC CMP V in July 2018.

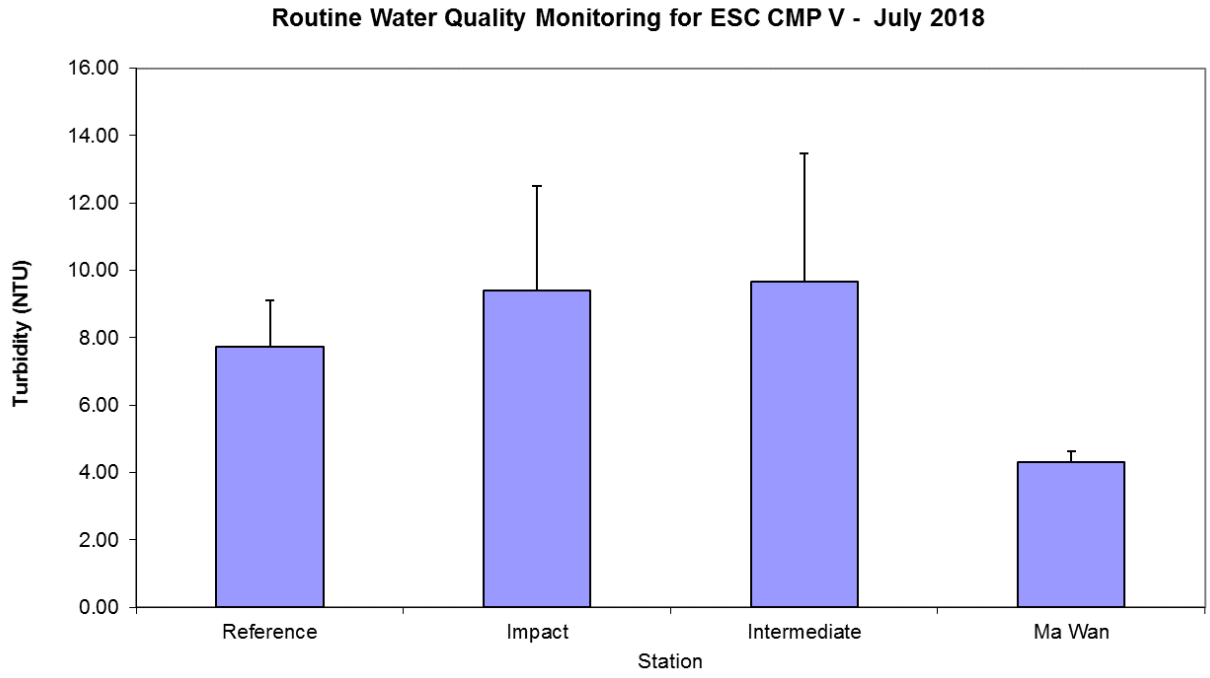


Figure 6: Levels of Turbidity (NTU; mean + SD) recorded during Routine Water Quality Monitoring for disposal operations at ESC CMP V in July 2018.

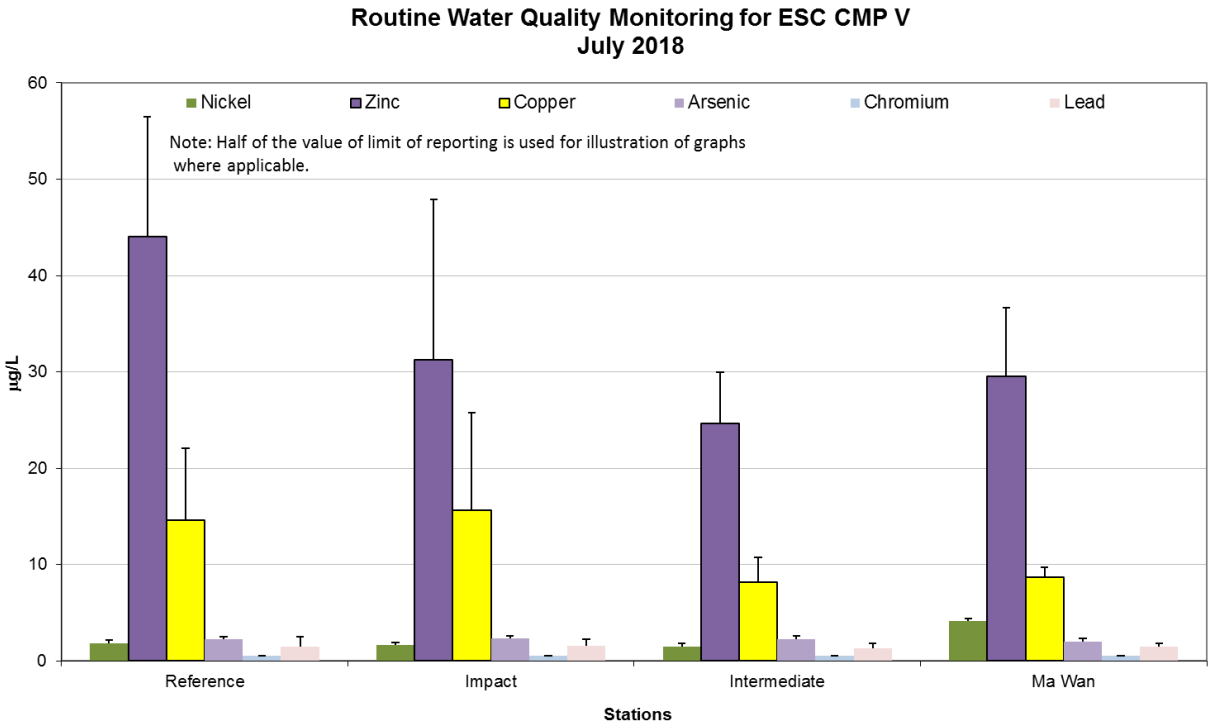


Figure 7: Concentration of Arsenic, Chromium, Nickel, Lead, Copper and Zinc (µg/L; mean + SD) in water samples collected from Routine Water Quality Monitoring for disposal operations at ESC CMP V in July 2018.

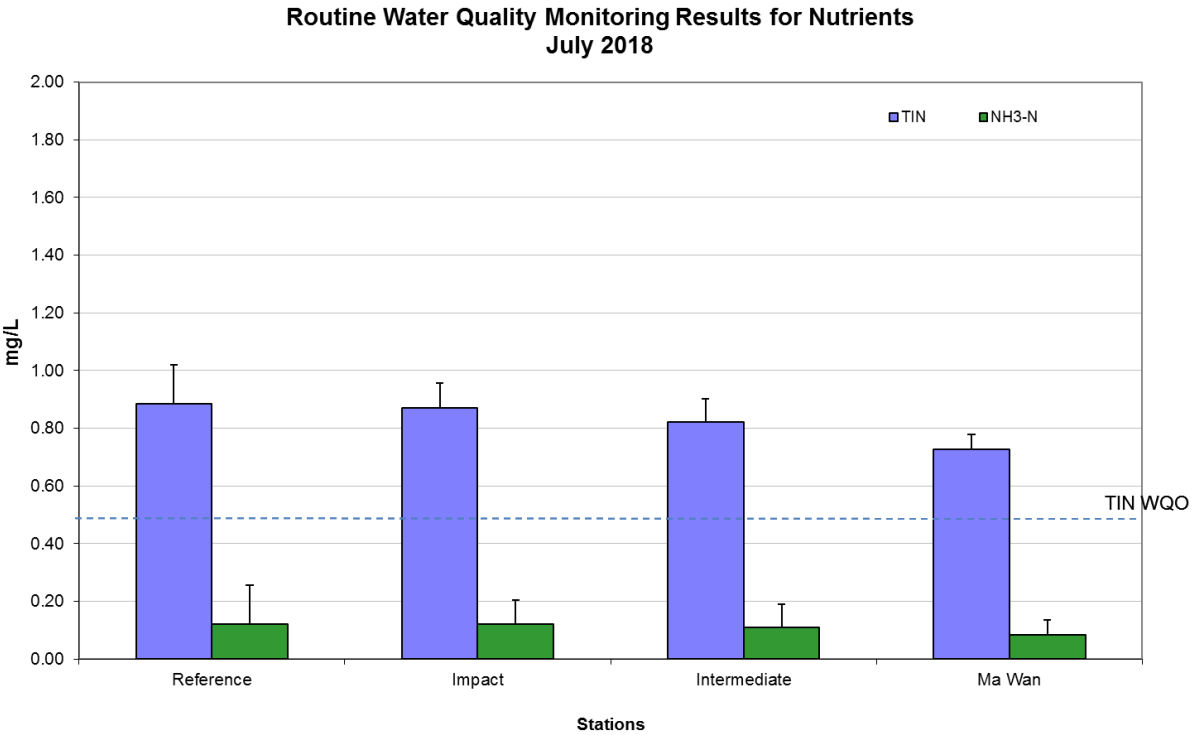


Figure 8: Concentration of Total Inorganic Nitrogen (TIN) and Ammonia Nitrogen (NH3-N) (µg/L; mean + SD) in water samples collected from Routine Water Quality Monitoring for disposal operations at ESC CMP V in July 2018.

Source: H:\Team\EM\GMS Projects\0400720 CEDD CMP EM&A 2017-2020\02 Deliverable\05 CMP Monthly Report\July 2018)

Date: August 2018

Environmental Resources Management

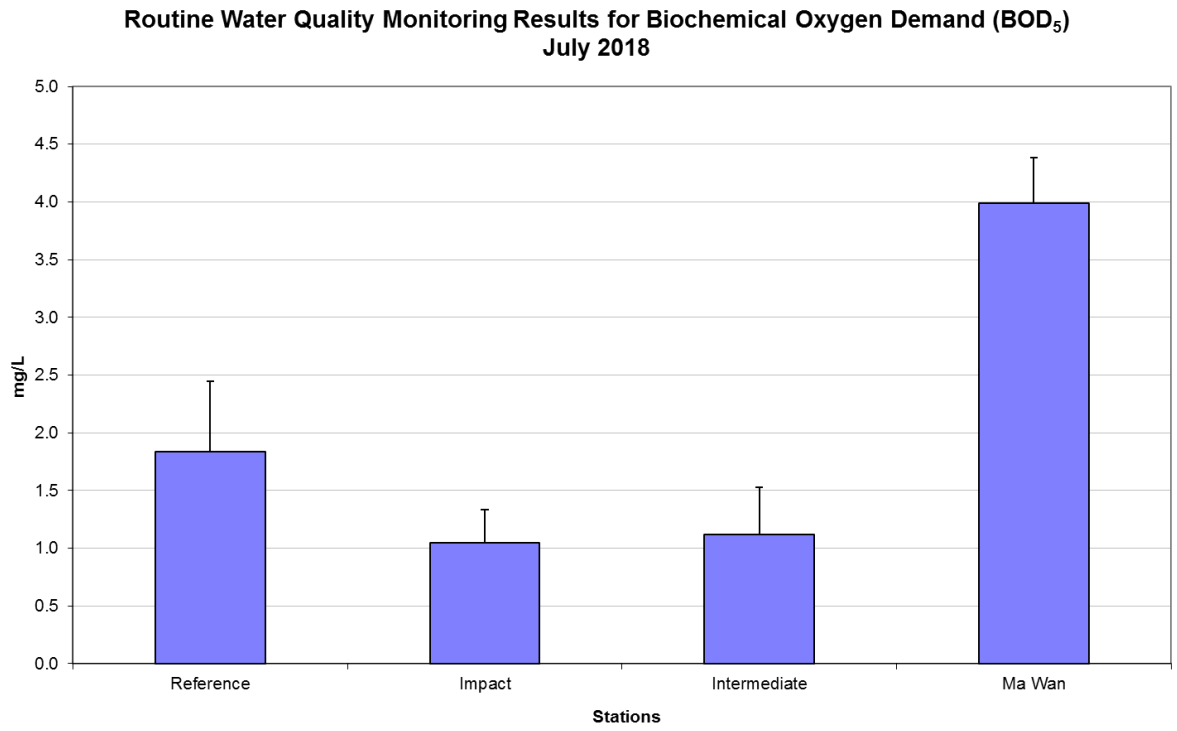


Figure 9: Level of Biochemical Oxygen Demand (BOD_5) (mg/L; mean + SD) in water samples collected from Routine Water Quality Monitoring for disposal operations at ESC CMP V in April 2018.

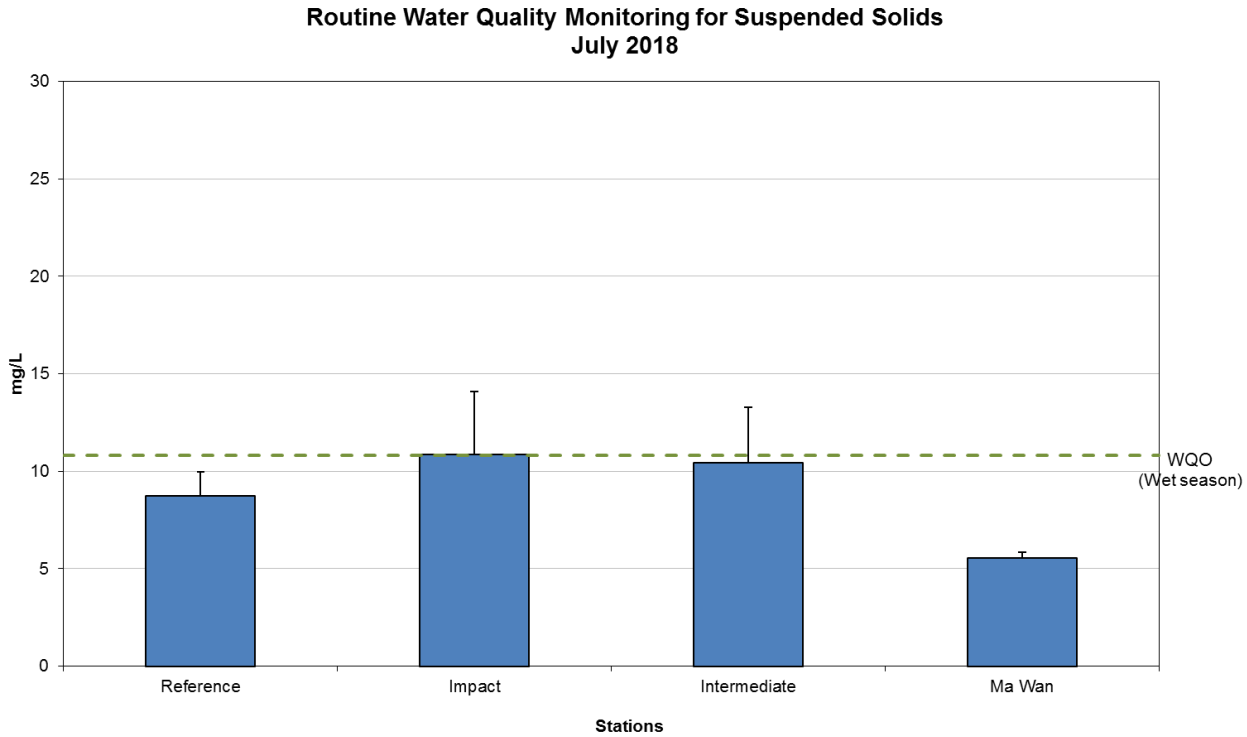


Figure 10: Concentration of Suspended Solids (SS) (mg/L; mean + SD) in water samples collected from Routine Water Quality Monitoring for disposal operations at ESC CMP V in April 2018.

Source: H:\Team\EM\GMS Projects\0400720 CEDD CMP EM&A 2017-2020\02 Deliverable\05 CMP Monthly Report\July 2018)

Date: August 2018

Environmental Resources Management

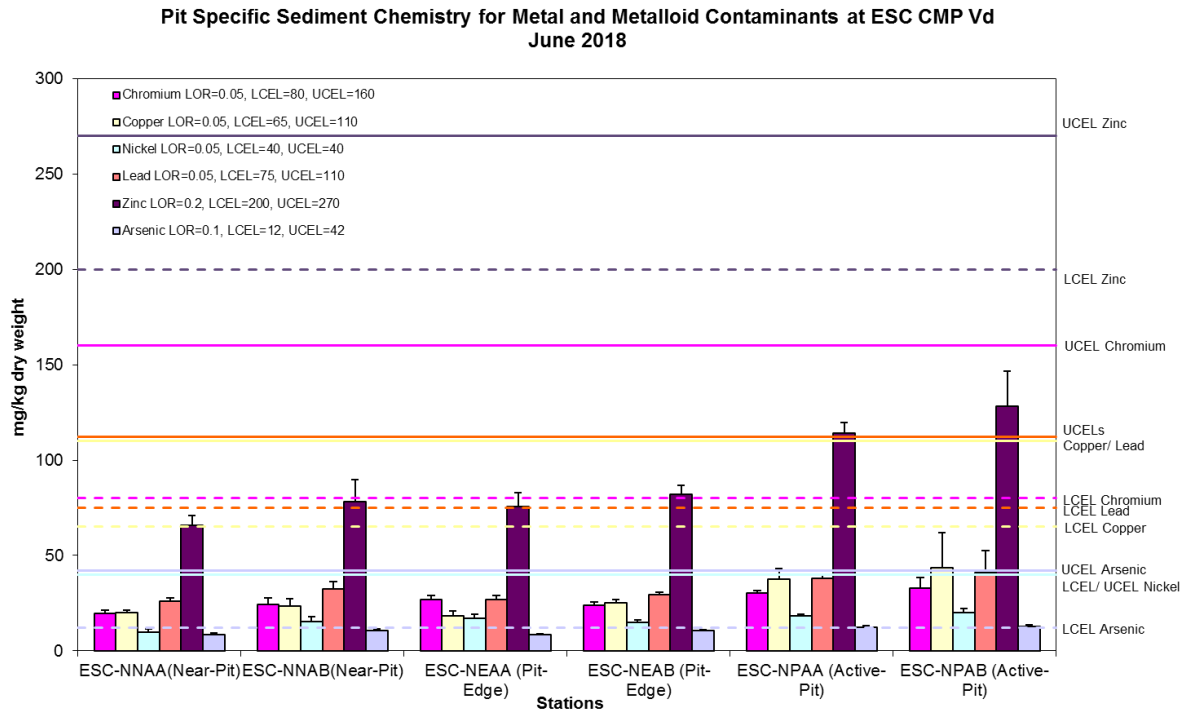


Figure 11: Concentration of Metals and Metalloid (Cr, Cu, Ni, Pb, Zn, As; mg/kg dry weight; mean +SD) in sediment samples collected from Pit Specific Sediment Chemistry Monitoring for ESC CMP Vd in June 2018.

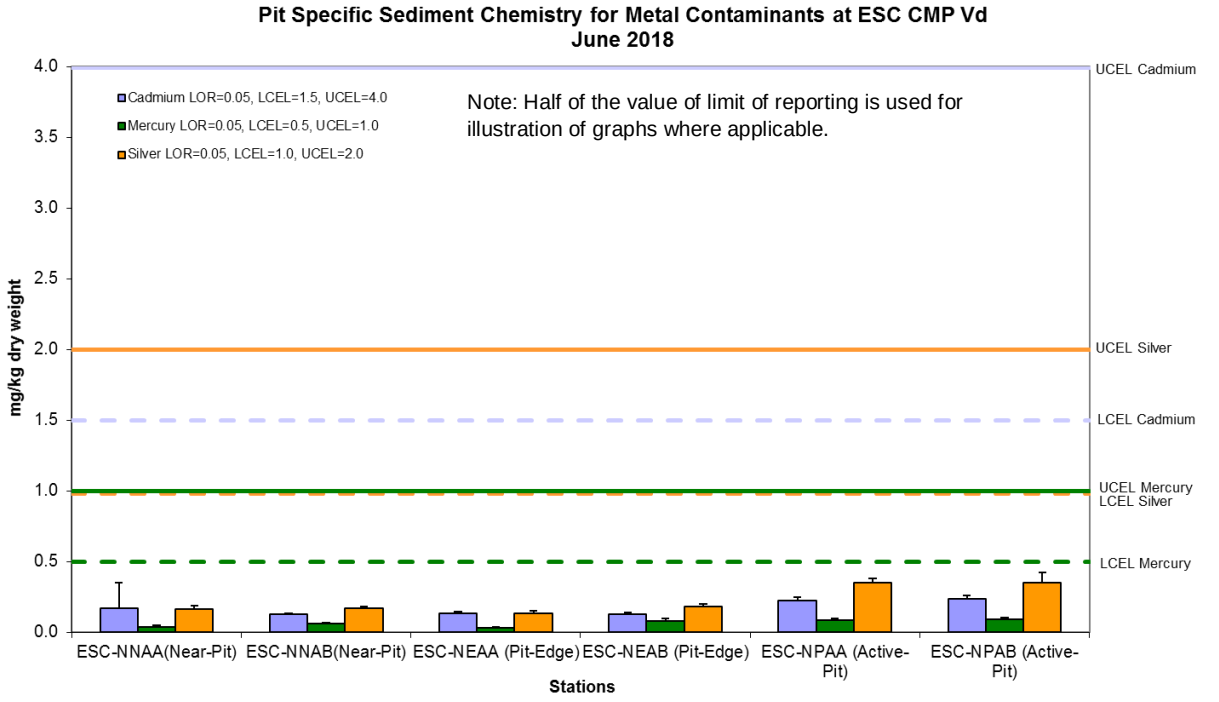


Figure 12: Concentration of Metals (Cd, Hg, Ag; mg/kg dry weight; mean +SD) in sediment samples collected from Pit Specific Sediment Chemistry Monitoring for ESC CMP Vd in June 2018.

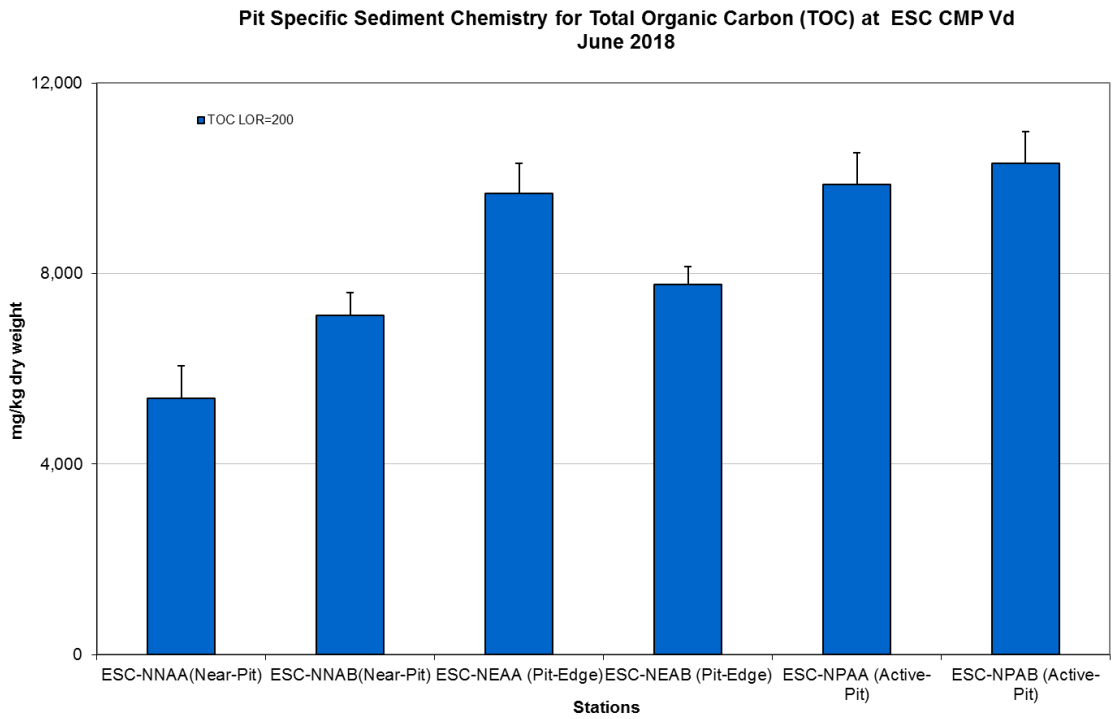


Figure 13: Concentration of Total Organic Carbon (TOC) (mg/kg dry weight; mean +SD) in sediment samples collected from Pit Specific Sediment Chemistry Monitoring for ESC CMP Vd in June 2018.

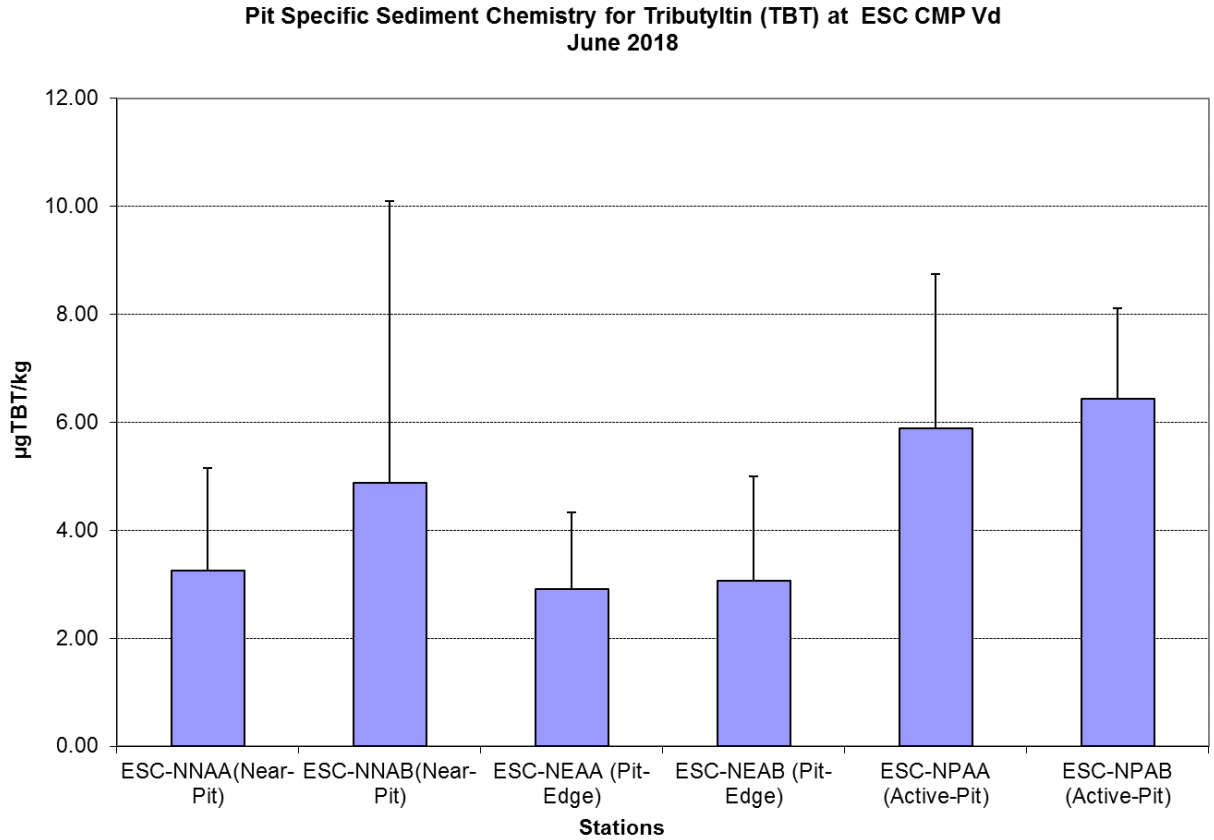


Figure 14: Concentration of Tributyltin (TBT) (µg TBT/kg; mean +SD) in sediment samples collected from Pit Specific Sediment Chemistry Monitoring for ESC CMP Vd in June 2018.

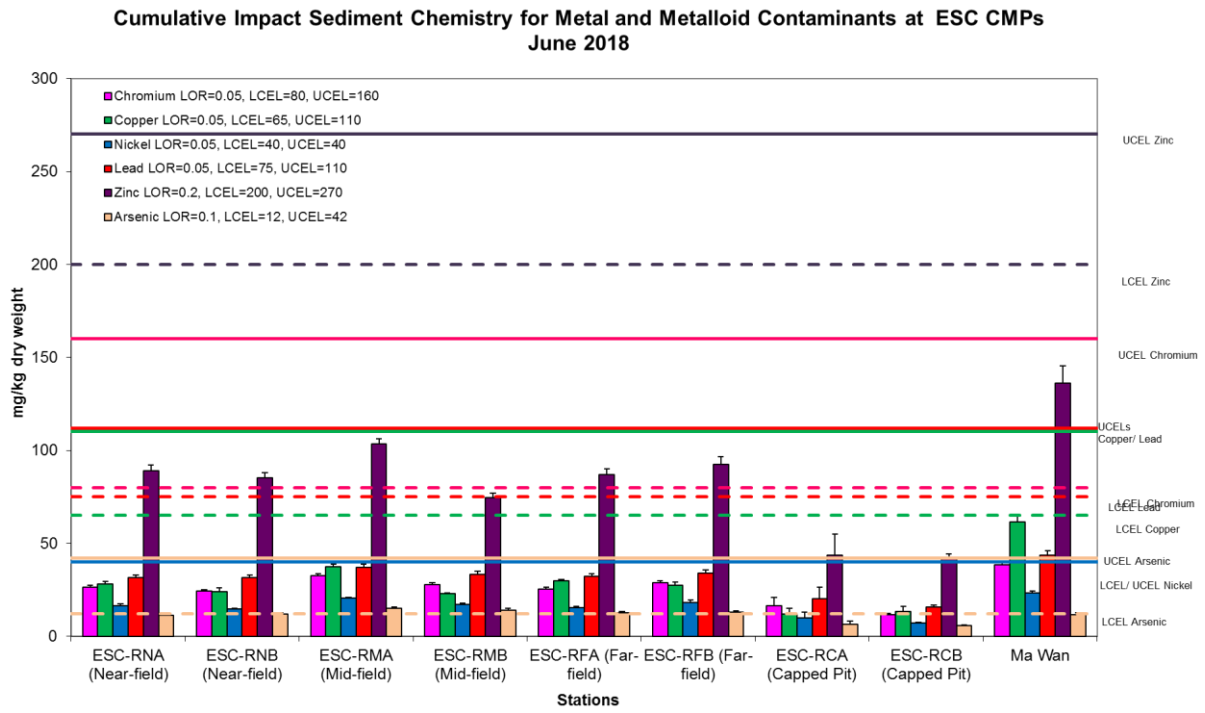


Figure 15: Concentration of Metals and Metalloid (Cr, Cu, Ni, Pb, Zn, As; mean +SD) in sediment samples collected from Cumulative Impact Sediment Chemistry Monitoring for ESC CMPs in June 2018.

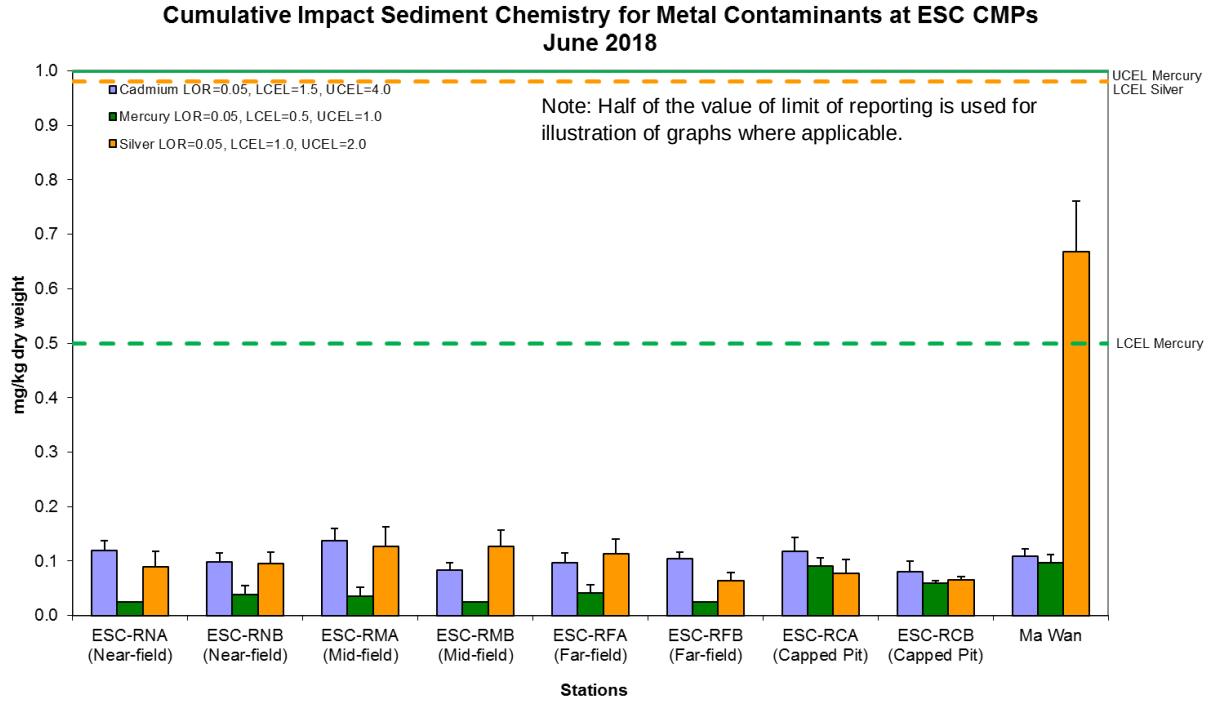


Figure 16: Concentration of Metals (Cd, Hg, Ag; mean +SD) in sediment samples collected from Cumulative Impact Sediment Chemistry Monitoring for ESC CMPs in June 2018.

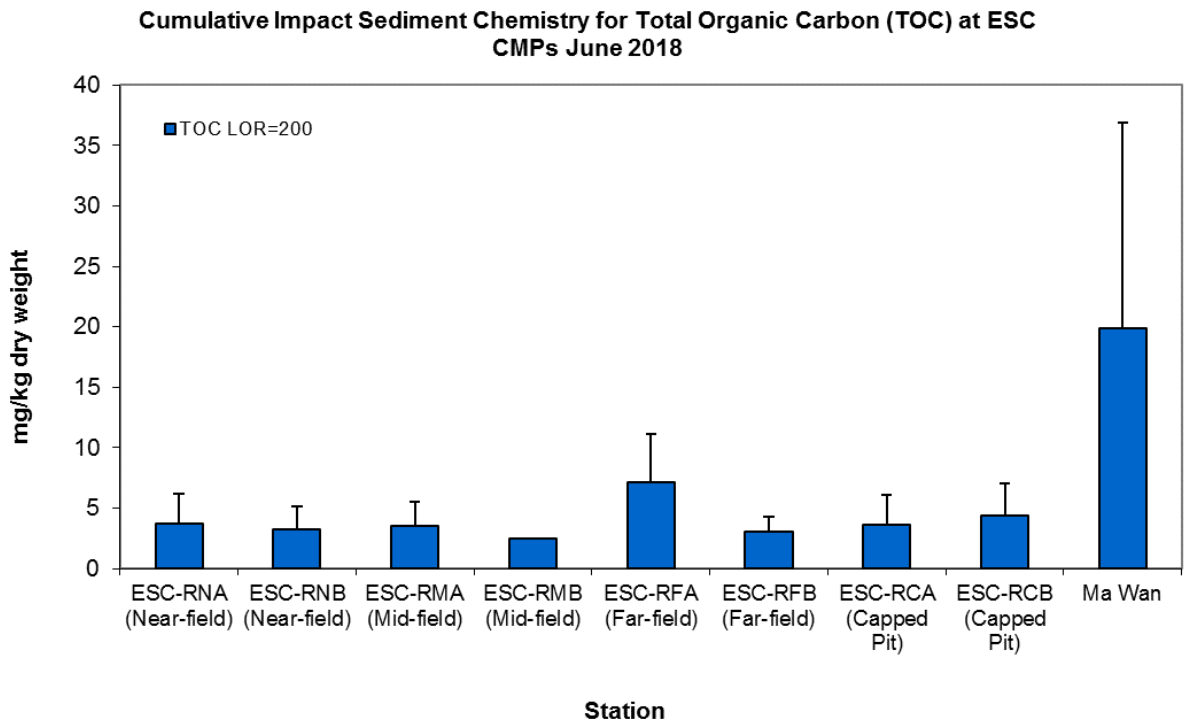


Figure 17: Concentration of Total Organic Carbon (TOC) (mg/kg dry weight; mean +SD) in sediment samples collected from Cumulative Impact Sediment Chemistry Monitoring for ESC CMPs in June 2018.

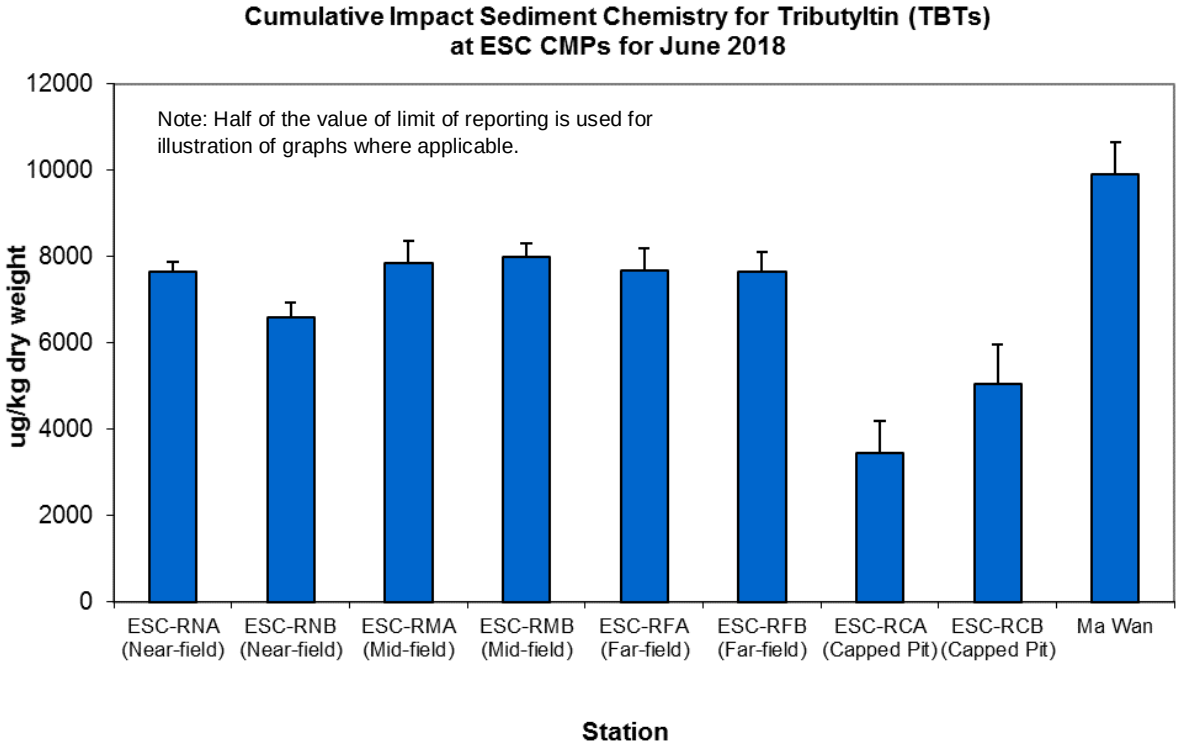


Figure 18: Concentration of Tributyltin (µg TBT/kg; mean +SD) in sediment samples collected from Cumulative Impact Sediment Chemistry Monitoring for ESC CMPs in June 2018.

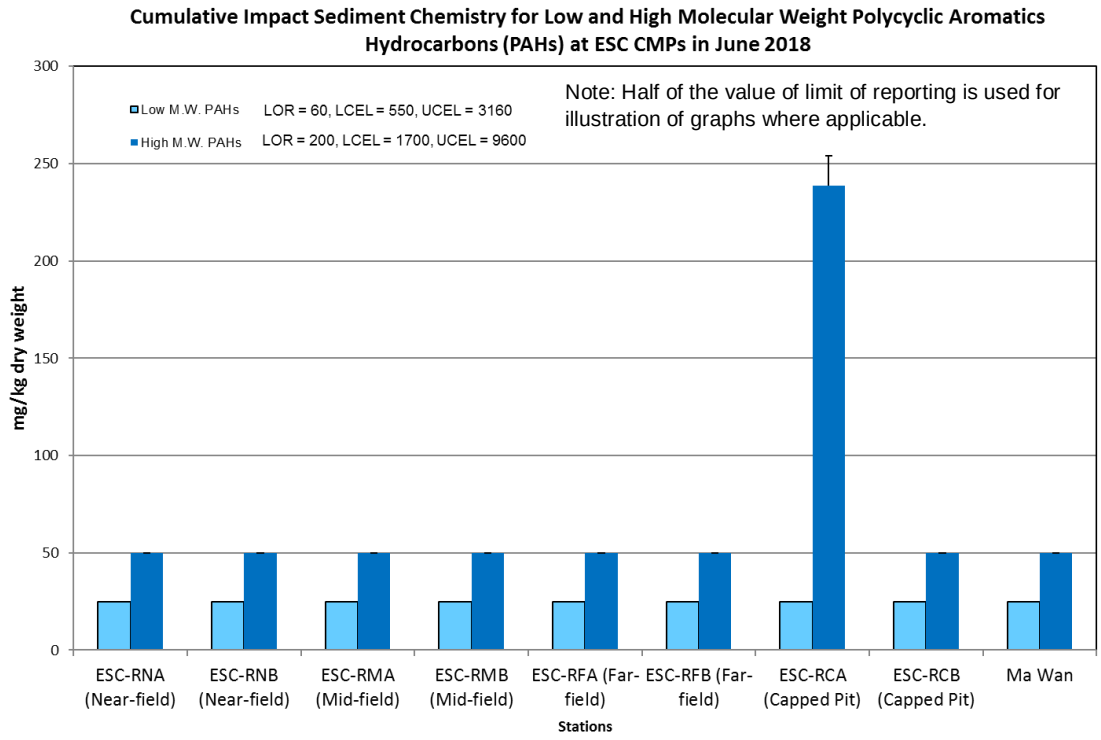
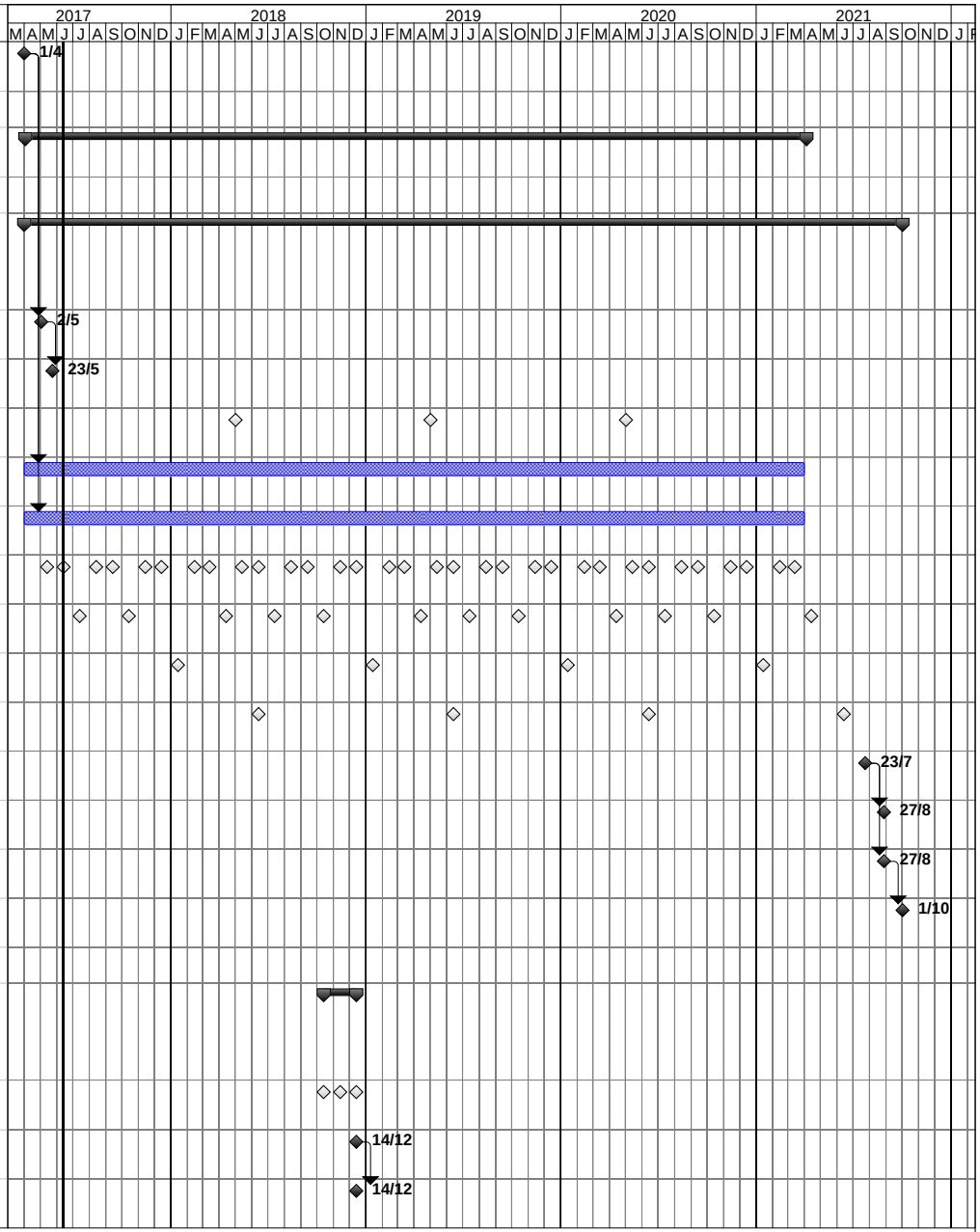


Figure 19: Concentration of Low and High Molecular Weight Polycyclic Aromatics (mg/kg dry weight; mean +SD) in sediment samples collected from Cumulative Impact Sediment Chemistry Monitoring for ESC CMPs in June 2018.

Annex D

Study Programme

Task Name	Start	Finish
Commencement of Agreement No. CE 63/2016 (EP)	Sat 1/4/17	Sat 1/4/17
Project Management and General Deliverables	**Mon 3/4/17**	**Mon 5/4/21**
For the disposal facilities to the East of Sha Chau (ESC) (between 2017 and 2021) and the South of The Brothers (SB) (between 2017 and 2018)	**Sat 1/4/17**	**Fri 1/10/21**
Draft Report on Review of EM&A Manual	Tue 2/5/17	Tue 2/5/17
Final Report on Review of EM&A Manual	Tue 23/5/17	Tue 23/5/17
Regular Review of EM&A Manual	**Wed 2/5/18**	**Sat 2/5/20**
Regular Site Inspections of CMP Contractors	Sat 1/4/17	Wed 31/3/21
Participate in Liaison Group Meetings/ Consultations as required by CEDD	Sat 1/4/17	Wed 31/3/21
Submission of Monthly EM&A Report	**Sun 14/5/17**	**Sun 14/3/21**
Submission of Quarterly EM&A Report	**Fri 14/7/17**	**Wed 14/4/21**
Submission of Annual EM&A Report	**Sun 14/1/18**	**Thu 14/1/21**
Submission of Annual Risk Assessment Report	**Thu 14/6/18**	**Mon 14/6/21**
Submission of Draft Final Report (including database of all data collected)	Fri 23/7/21	Fri 23/7/21
Submission of Final Report (including database of all data collected)	Fri 27/8/21	Fri 27/8/21
Submission of Draft Executive Summary	Fri 27/8/21	Fri 27/8/21
Submission of Final Executive Summary	Fri 1/10/21	Fri 1/10/21
For East Tung Lung Chau Disposal Facility (subject to the actual disposal programme to be confirmed by CEDD)	**Sun 14/10/18**	**Fri 14/12/18**
Submission of Monthly EM&A Report	**Sun 14/10/18**	**Fri 14/12/18**
Submission of Quarterly EM&A Report	Fri 14/12/18	Fri 14/12/18
Submission of Annual EM&A Report	Fri 14/12/18	Fri 14/12/18



Study Programme
Tue 13/6/17

Task | Milestone | Summary | Rolled Up Milestone