

Agreement No. CE 59/2020 (EP) Environmental Monitoring and Audit for Disposal Facility to the East of Sha Chau (2021-2026) – Investigation

Monthly EM&A Report for Contaminated Mud Pits to the East of Sha Chau – May 2025

June 2025

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Dredging, Management and Capping of Contaminated Sediment Disposal

Facility at Sha Chau

Environmental Certification Sheet

Environmental Permit No. EP-312/2008/A

Reference Document /Plan

Document/Plan to be Certified/ Verified:	Monthly EM&A Report for Contaminated Mud Pits to the East of Sha Chau – May 2025
Date of Report:	6 June 2025
Date prepared by ET;	6 June 2025
Date received by IA:	6 June 2025

Reference EP Condition

Environmental Permit Condition:

Condition 3.4 of EP-312/2008/A:

4 hard copies and 1 electronic copy of monthly EM&A Report shall be submitted to the Director within 10 working days 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 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.

Ir Thomas Chan, Environmental Team Leader (ETL):

Date: 6 June 2025

IA Verification

I hereby verify that the above referenced document/plan complies with the above referenced condition of EP-312/2008/A.

Dr Wang Wen Xiong, Independent Auditor (IA):

Date: 6 June 2025

Issue and Revision Record

Revision	Date	Originator	Checker	Approver	Description
A	Jun 2025	Various	Sunny Chan	Thomas Chan	Revision A of Submission
В	Jun 2025	Various	Sunny Chan	Thomas Chan	Revision B of Submission

Document reference: 423134 | 06/05/50 | B

Information class: Standard

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1 Introduction

1.1 Background

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 East of Sha Chau (ESC) for the disposal of contaminated sediment, and various 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.

Environmental Permits (EPs) (Ref. No. EP-312/2008/A) was issued by the Environmental Protection Department (EPD) to the CEDD, the Permit Holder, on 28 November 2008 for the Project - Disposal of Contaminated Sediment – Dredging, Management and Capping of Sediment Disposal Facility at Sha Chau.

Under the requirements of the EP, 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. 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.

A proposal on the change of number of sample replication of water quality and sediment monitoring as well as combination of routine water quality monitoring and water quality monitoring during capping operation was submitted to EPD and agreed by EPD on 3 December 2020. The proposed changes have been effective for the EM&A activities since December 2020. In early 2022, after implementing the Phase 1 optimisation for at least one year, a further data review was conducted. The monitoring data has been reviewed and demonstrated that the data robustness and representativeness are maintained. Therefore, a technical note presenting the data review results served as a supplementary information was submitted to EPD and presented that Phase 2 optimization of sample replication of water quality and sediment monitoring for the Project will be implemented in 2022. EPD expressed no comment on the review and note the implementation of Phase 2 optimization of sample replication on 18 May 2022, and thus this optimization has been effective for the EM&A activities since July 2022.

The latest sampling schedule is provided in Appendix A.

The present EM&A programme under Agreement No. CE 59/2020 (EP) covers the dredging, disposal and capping operations of the ESC CMP V (see **Appendix A** for the EM&A programme.) Detailed works schedule for ESC CMP V is shown in **Table 1.1**. In May 2025, the following works were undertaken:

- Disposal of contaminated mud at ESC CMP Vb; and
- Capping operations 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.

Table 1.1: Works Schedule for ESC CMP V



1.2 Reporting Period

This *Monthly EM&A Report for Contaminated Mud Pits to the East of Sha Chau* – May 2025 covers the EM&A activities for the reporting period of May 2025 (from 1 to 31 May 2025).

1.3 Details of Sampling and Laboratory Testing Activities

The following monitoring activities were undertaken for ESC CMP V during the reporting period:

- Water Column Profiling of ESC CMP Vb;
- Routine Water Quality Monitoring of ESC CMPs; and
- Pit Specific Sediment Chemistry of ESC CMP Vb.

1.4 Details of Outstanding Sampling or Analysis

No outstanding sampling remained for the reporting month (May 2025).

2 Brief Discussion of Monitoring Results for ESC CMP V

2.1 Introduction

This section presents a brief discussion of the results obtained from the following monitoring activities for ESC CMP V during the reporting period:

- Water Column Profiling of ESC CMP Vb;
- Routine Water Quality Monitoring of ESC CMPs; and
- Pit Specific Sediment Chemistry of ESC CMP Vb.

2.2 Water Column Profiling of ESC CMP Vb – in May 2025

Water Column Profiling was undertaken at a total of two sampling stations (Upstream and Downstream stations) on 7 May 2025. 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 2015 – 2024 from stations in the North Western Water Control Zone (WCZ), where the ESC CMPs are located.³ 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 **Appendix B** for details).

2.2.1 In-situ Measurements

Analyses of results for May 2025 indicated that levels of Salinity, pH and DO complied with the WQOs at both Downstream and Upstream stations (**Table B2** of **Appendix B**). Levels of DO and Turbidity at all stations complied with the Action and Limit Levels (**Tables B1 and B2** of **Appendix B**).

2.2.2 Laboratory Measurements for Suspended Solids (SS)

Analyses of results for May 2025 indicated that the SS level at both Upstream and Downstream stations complied with the WQO and the Action and Limit Levels. (**Tables B1 and B2** of **Appendix B**).

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

2.3 Routine Water Quality Monitoring of ESC CMPs – in May 2025

Routine Water Quality Monitoring of ESC CMPs was undertaken on 6 May 2025. The monitoring results have been assessed for compliance with the WQOs (see Section 2.2 above for details). The monitoring results are shown in Tables B3, B4 and B5 of Appendix B and Figures 1 to 11 of Appendix C. A total of ten (10) monitoring stations were sampled in May 2025 as shown in Figure 2.1.

³ http://epic.epd.gov.hk/EPICRIVER/marine/?lang=en

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2.3.1 In-situ Measurements

Graphical presentation of the monitoring results (Temperature, DO, pH, Salinity and Turbidity) is shown in **Figures 1 to 6** of **Appendix C**. Analyses of results indicated that the levels of pH, and DO complied with the WQOs at all stations in May 2025, except for slightly higher levels of Salinity were recorded at Ma Wan station.

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

Overall, *in-situ* measurement results of the Routine Water Quality Monitoring indicated that the disposal and capping operation at ESC CMPs did not appear to cause any unacceptable impacts in water quality in May 2025.

2.3.2 Laboratory Measurements

Laboratory analysis of samples obtained in May 2025 indicated that the concentrations of Arsenic, Cadmium, Chromium, Copper, Mercury, Nickel and Zinc were detected in the samples at some/ all stations and their concentrations were generally similar across stations; except the concentration of Zinc were higher at Intermediate (INF) station (**Table B4** of **Appendix B**; **Figure 7 and 8 of Appendix C**).

For nutrients, concentrations of Total Inorganic Nitrogen (TIN) were higher than the WQO (0.5 mg/L) at Reference, Impact and Intermediate stations. (**Table B5** of **Appendix B**; **Figure 9** of **Appendix 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.⁴. Therefore, the exceedances of TIN WQO at these stations are unlikely to be caused by the disposal operation at ESC CMPs. The concentrations of Ammonia Nitrogen (NH3-N) were similar across all stations while the concentrations of Biochemical Oxygen Demand (BOD5) were slightly higher at Ma Wan station. (Table B5 of Appendix B; Figure 9 and 10 of Appendix C)

Analyses of results for the reporting period indicated that the SS levels complied with the wet season WQO (12.0 mg/L) and Action and Limit Levels at all stations. (**Tables B1 and B5** of **Appendix B**; **Figure 11** of **Appendix C**).

Based on the available results of the Routine Water Quality Monitoring which indicated that the disposal and capping operation at ESC CMPs did not appear to cause any unacceptable deterioration in water quality during the reporting period. Detailed statistical analysis will be presented in the Quarterly EM&A Report to investigate any spatial and temporal trends of potential concern.

2.4 Pit Specific Sediment Chemistry of ESC CMP Vb – in May 2025

Monitoring locations for Pit Specific Sediment Chemistry for ESC CMP Vb are shown in **Figure 2.2**. A total of six (6) monitoring stations were sampled on 8 May 2025.

The concentrations of most inorganic contaminants were lower than the Lower Chemical Exceedance Levels (LCELs) at all stations, except for Copper, Mercury and Silver at Active-Pit stations. The concentrations of Copper were higher than the LCEL at Active-Pit stations ESC-NPCA and ESC-NPCB. The concentrations of Mercury were higher than the LCEL at Active-Pit stations ESC-NPCA. The concentrations of Silver were higher than the LCEL at Active-Pit stations ESC-NPCA and ESC-NPCB. (Figures 12 and 13 of Appendix C)

Considering that the higher levels of Copper, Mercury and Silver occurred within Active-Pit station only but not at the Pit-Edge and Near-Pit stations, there is no evidence indicating any

⁴ https://www.epd.gov.hk/epd/misc/marine_quality/1986-2005/eng/08_western_content.htm

unacceptable environment impacts to sediment quality as a result of the contaminated mud disposal operation at ESC CMP Vb in May 2025.

For organic contaminants, the concentrations of Total Organic Carbon (TOC) were higher at Active-Pit stations ESC-NPCA and ESC-NPCB. (**Figure 14** of **Appendix C**). The concentrations of Low Molecular Weight Polycyclic Aromatic Hydrocarbons (PAHs) were higher than LCEL (Lower Chemical Exceedance Level) at Pit-Edge station ESC-NECA. (**Figure 15** of **Appendix C**)

For High Molecular Weight Polycyclic Aromatic Hydrocarbons (PAHs), the concentrations were higher than LCEL at Pit-Edge station ESC-NECA. (**Figure 15** of **Appendix C**)

The concentration of Tributyltin (TBT) were higher at Active-Pit stations ESC-NPCA and ESC-NPCB. (**Figure 16** of **Appendix C**) The concentration of Total Polychlorinated Biphenyls (PCBs), Total dichloro-diphenyl-trichloroethane (DDT) and 4,4'-dichlorodiphenyldichloroethylene (DDE) were below the limit of reporting at all stations during the reporting period.

It is observed that the elevated level concentration of Low Molecular Weight PAHs and High Molecular Weight PAHs (i.e. higher than LCEL) only occurred at Pit-Edge station ESC-NECA, but the concentrations of other organic and all inorganic contaminants were lower than the LCELs at the Pit-Edge stations.

The slightly elevated level of Low Molecular Weight PAH and High Molecular Weight PAH at Pit-Edge station are possible induced by external factors rather than disposal operations. Therefore, there is no evidence indicating any unacceptable environmental impacts to sediment quality outside the pit area as a result of the contaminated mud disposal operations at ESC CMP Vb during the reporting period.

Therefore, there is no evidence indicating any unacceptable environmental impacts to sediment quality outside the pit area as a result of the contaminated mud disposal operations at ESC CMP Vb during the reporting period.

Statistical analysis will be undertaken and presented in the corresponding Quarterly EM&A Report to investigate whether there are any unacceptable impacts in the area caused by the contaminated mud disposal.

3 Future Key Issues

3.1 Activities Scheduled for the Next Reporting Period

The following monitoring activities will be conducted in the next reporting period of June 2025 for ESC CMP V (see **Appendix A** for the sampling schedule):

- Water Column Profiling of ESC CMP Vb;
- Routine Water Quality Monitoring of ESC CMPs;
- Pit Specific Sediment Chemistry of ESC CMP Vb; and
- Cumulative Impact Sediment Chemistry of ESC CMPs.

3.2 Study Programme

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

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Figures





Appendices

- Appendix A Sampling Schedule
- Appendix B Water Quality Monitoring Results
- Appendix C Graphical Presentations
- Appendix D Study Programme

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Appendix A. Sampling Schedule

East of Sha Chau CMPs Environmental Monitoring and Audit Sampling Schedule (January 2021 - March 2026)

Parameter / Station Type Pit Specific Sediment Ch		Frequency	2021 2022 2020 2025 2025 2025 2025 2025	26 <mark>n Feb M</mark>
Active-Pit Pit-Edge	ESC-NPAA ESC-NPAB	Monthly Monthly	6 6 6 6 6 6 6 6 6 6 6 6 6 6 2	22
Near-Pit	ESC-NEAA ESC-NEAB	Monthly	6 6	2 2 2
	ESC-NNAA ESC-NNAB	Monthly	6 6 6 6 6 6 6 6 6 6 2	2 2 2
Cumulative Impact Sedir Near-field Stations	ESC-RNA	4 times per year	Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec Jan Feb Mar Apr May Jun Jul Au	2
Mid-field Stations	ESC-RNB1 ESC-RMA ESC-RMB	4 times per year 4 times per year 4 times per year	6 6 6 6 6 2	2
Capped Pit Stations		4 times per year 4 times per year 4 times per year		2
Far-field Stations	ESC-RFA ESC-RFB	4 times per year 4 times per year		2 2
Ma Wan Station	MW1	4 times per year		2
Sediment Toxicity Tests Near-pit Stations	ESC-TDA	2 times per year	Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec Jan Feb Mar Apr May Jun Jul Au	5
Reference Stations	ESC-TDB1 ESC-TRA	2 times per year 2 times per year	5 6 5 5 6 5 5 5 5 5 6 5 5 5 5 5 5 5 5	5
Ma Wan Station	ESC-TRB	2 times per year 2 times per year	5 6 5 5 6 5 5 5 5 8 6 5 5 5 5 5 5 5	5
Tissue / Whole Body San Near-pit Stations				n Feb Mi
Reference North	ESC-INA ESC-INB TNA	2 times per year 2 times per year 2 times per year		*
Reference South	TNB	2 times per year 2 times per year		*
Demersal Trawling	TSB	2 times per year	3	* In Feb Ma
Near-pit Stations	ESC-INA ESC-INB	4 times per year 4 times per year	5 5 <th>5 5</th>	5 5
Reference North	TNA TNB	4 times per year 4 times per year	5 5 <th>5 5 5 5</th>	5 5 5 5
	TSA TSB	4 times per year 4 times per year		5 5
Capping * Ebb Tide Impact Station Downcur			Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec Jan Feb Mar Apr May Jun Jul Au	n Feb Ma
	ESC-IPE1A ESC-IPE2A ESC-IPE3 ESC-IPE4	4 times per year * 4 times per year * 4 times per year *		#
Intermediate Station Dov	ESC-IPE5	4 times per year * 4 times per year * 4 times per year *		##
	ESC-INE2A ESC-INE3A	4 times per year * 4 times per year * 4 times per year *		Ħ
Reference Station Upcur	ESC-RFE1	4 times per year * 4 times per year *		
	ESC-RFE3 ESC-RFE4	4 times per year * 4 times per year * 4 times per year * 4 times per year *		Ħ
Ma Wan Station	MW1	4 times per year *		
Flood Tide Impact Station Downcur	ESC-IPF1	4 times per year *		
Intermediate Station Dov		4 times per year * 4 times per year *		
Reference Station Upcu	ESC-INF1 ESC-INF2 ESC-INF3	4 times per year * 4 times per year * 4 times per year *		#
	ESC-RFF1A ESC-RFF2A	4 times per year * 4 times per year * 4 times per year *		Ŧ
Ma Wan Station	MW1	4 times per year *		
Routine Water Quality M Ebb Tide Impact Station Downcur		Monthly*	Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec Jan Feb Mar Apr May Jun Jul Au	
	ESC-IPE2A ESC-IPE3 ESC-IPE4	Monthly* Monthly* Monthly*	4 4 4 4 4 4 4 4 4 2	2 2 2 2 2 2
Intermediate Station Dov	ESC-INE1A	Monthly*	4 4 4 4 4 4 4 2	2 2 2
	ESC-INE2A ESC-INE3A ESC-INE4A ESC-INE5A	Monthly* Monthly* Monthly* Monthly*	4 4 4 4 4 4 4 4 4 2	2 2 2 2 2 2
Reference Station Upcur		Monthly* Monthly*		
	ESC-RFE3 ESC-RFE4 ESC-RFE5	Monthly* Monthly* Monthly*	4 4 4 4 4 4 4 4 4 4 2	2 2 2 2 2 2
Ma Wan Station	MW1	Monthly*		2 2
Flood Tide Impact Station Downcur	rent ESC-IPF1 ESC-IPF2	Monthly* Monthly*	4 4 4 4 4 4 2 <th>2 2</th>	2 2
Intermediate Station Dov	ESC-IPF3 wncurrent ESC-INF1	Monthly* Monthly*	4 4	2 2 2
Reference Station Upcur	ESC-INF2 ESC-INF3 rrent	Monthly* Monthly*	4 4 4 4 4 4 2	2 2 2
Ma Wan Station	ESC-RFF1A ESC-RFF2A ESC-RFF3		4 4 4 4 4 4 4 2	2 2
Ma Wan Station	MW1	Monthly*	4 4 4 4 4 4 4 4 2 <th></th>	
Plume Stations	WCP1 WCP2	Monthly* Monthly*	Contraction Contraction <thcontraction< th=""> <thcontraction< th=""></thcontraction<></thcontraction<>	2 2 2
Benthic Recoloinisation Capped Stations at CMP	Studies V	·		
	ESCV-CPB ESCV-CPC	2 times per year 2 times per year 2 times per year		
Reference Stations	RBA RBB	2 times per year 2 times per year 2 times per year		+++
1	RBC1	2 times per year 2 times per year		++

RBB	2 times per year			
RBC1	2 times per year			

Impact Monitoring for Dredging		Ja	Feb I	Mar A	pr N	lay Jι	ın Ju	I Au	g Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	Ma	ıy J	un .	Jul	Aug	Se	p Oc	t N	ov I	Dec	Jan I	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jar	n Fet	o Ma	ir Aj	pr N	lay	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Ju	n Ju	ΙΑ	ug	Sep	Oct	Nov	De	/ <mark>C J</mark> a	n Fe	/ Mr
Upstream Stations																																																																			
US1	3 times per week	(2	2	2	2		2																																																
US2	3 times per week	(2	2	2	2		2																																														T	T	
Downstream Stations																																																																	T		
DS1	3 times per week	(2	2	2	2		2																																															T	
DS2	3 times per week	(2	2	2	2		2																																														T	T	
DS3	3 times per week	([[\square											2	2	2	2		2																							Т																							T	T	
DS4	3 times per week													2	2	2	2		2																																														T	T	
DS5	3 times per week													2	2	2	2		2																																																
Ma Wan Station			_																																																														T		
MW1	3 times per week	(T						2	2	2	2		2	T					T																T	T		T	T	T																		T	T	T	

Notes: (1) The number shown in each cell represents the numbers of replicates per monitoring station. The number shown in green bolded text represented monitoring works have been conducted before/ during the reporting period of this Monthly EM&A Report, while the number shown in black represent planned monitoring works after the reporting period of this Monthly EM&A Report. EM&A Report.

(2) For the planned Routine Water Quality Monitoring (i.e. the numbers of replicates per monitoring station shown in black), the monitoring will be conducted at mid-ebb OR mid-flood tide. The yearly tidal selection of this monitoring will be based on a principle to obtain 6 moniths monitoring data at mid-ebb, and 6 moniths monitoring data at mid-flood.

(3) Impact Monitoring for Dredging will be scheduled when dredging operations commence.

(3) Impact Monitoring for Dredging will be scheduled when dredging operations commence.
 (4) Benthic Recolonisation Studies for CMP V will be scheduled when dredging operations commence.
 (4) Benthic Recolonisation Studies for CMP V will be scheduled when dredging operations for CMP V is completed.
 * A proposal on the change of number of sample replication of water quality & sediment monitoring and combination of routine water quality monitoring and water quality monitoring during capping operation as submitted to EPD and agreed by EPD on 3 December 2020. The proposed changes have been implemented for the EM&A activities since December 2020. Vater Quality Monitoring third graphing perplication of sample replication of water quality and sediment monitoring are combined such that Routine Water Quality Monitoring have been conducted monthly starting in December 2020. A technical note presenting the data review results served as a supplementary information was submitted to EPD and presented that Phase 2 optimization of sample replication of water quality and devreey affecting the supply of international species adopted in testing programme of Sediment Toxicity Tests, as such, Sediment Toxicity Tests, as such sediment 2022.
 * To enable the required Research Fishing Permit could be granted by the time undertaking the Demensal Traving, trawing originally scheduled in July and August 2022 was postponed to August and September 2022.

Appendix B. Water Quality Monitoring Results



Parameters	Action	Limit
Dissolved Oxygen (DO)	Surface and Middle Depth ⁽²⁾	Surface and Middle Depth ⁽²⁾
in mg L ⁻¹ (Surface, Middle & Bottom) ⁽¹⁾	5%-ile of baseline data for surface and middle layer = 3.76	1%-ile of baseline data for surface and middle layer = 3.11 ⁽³⁾
	and	and
	Significantly less than the reference station's mean DO (at the same tide of the same day)	Significantly less than the reference station's mean DO (at the same tide of the same day)
	Bottom	Bottom
	5%-ile of baseline data for surface and middle layer = 2.96	The average of the impact station readings are < 2
	and	and
	Significantly less than the reference station's mean DO (at the same tide of the same day)	Significantly less than the reference station's mean DO (at the same tide of the same day)
Suspended Solids (SS) in mg L ⁻¹	95%-ile of baseline data for depth- averaged = 37.88	99%-ile of baseline data for depth- averaged = 61.92
(depth-averaged) ⁽⁵⁾	and	and
	120% of control station's SS at the same tide of the same day	130% of control station's SS at the same tide of the same day
Turbidity	95%-ile of baseline data = 28.14	99%-ile of baseline data = 38.32
in NTU	and	and
(depth-averaged) ⁽⁴⁾⁽⁵⁾	120% of control station's Turbidity at the same tide of the same day	130% of control station's Turbidity at the same tide of the same day

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

Notes:

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

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

 Given the Action Level for DO for Surface and 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 Vb in May 2025

Station	Temp.	Salinity	Turbidity	Dissolve	d Oxygen	рН	Suspended Solids
	(°C)	(ppt)	(NTU)	(%)	(mg L ⁻¹)		(mg L ⁻¹)
WCP 1 (Downstream)	25.77	26.69	8.76	85.66	6.00	7.91	11.0
WCP 2 (Upstream)	25.99	26.14	4.09	87.73	6.14	7.92	2.5
WQO (Wet Season)	N/A	23.53-28.75#	N/A	N/A	>4	6.5-8.5	12.0

Notes:

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

2. Cell shaded yellow / red indicates value exceeding the Action/Limit levels.

3. Cell shaded grey indicates value exceeding the WQO.

Table B3: In-situ Monitoring Results for Routine Water Quality Monitoring of ESC CMPs in May 2025

Station	Temp.	Sal	inity	Turbidity	Dissolved Oxygen	рН
	(°C)	(ppt)	(NTU)	(%)	(mg L ⁻¹)	
RFF (Reference)	25.81	27.05	3.28	98.17	6.86	7.93
IPF (Impact)	25.60	27.37	3.93	92.75	6.49	7.90
INF (Intermediate)	25.63	27.27	4.55	91.89	6.43	7.90
Ma Wan	24.89	29.77	3.17	93.56	6.53	7.93
WQO (Wet Season)	N/A	24.35- 29.76 [#]	N/A	N/A	>4	6.5-8.5

Notes:

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

2. Cell shaded yellow / red indicates value exceeding the Action/Limit levels.

3. Cell shaded grey indicates value exceeding the WQO.



Table B4: Laboratory Results for Dissolved Metals and Metalloid in Routine Water Quality Monitoring of ESC CMPs in May 2025

Station	As	Cd	Cr	Cu	Pb	Hg	Ni	Ag	Zn
	(µg/L)								
RFF	1.83	0.03	0.07	0.77	ND	0.001	1.04	ND	1.44
IPF	1.77	0.03	0.15	0.76	ND	0.002	1.13	ND	1.08
INF	1.76	0.04	0.08	0.71	ND	0.002	1.15	ND	2.54
Ma Wan	1.68	0.02	0.15	0.76	ND	0.002	0.82	ND	1.49

Note:

1. "ND" indicates the concentrations of metals and metalloids are not detected.

Table B5: Laboratory Results for Nutrients and Suspended Solid in Routine Water Quality Monitoring of ESC CMPs in May 2025

Station	NH ₃	TIN	BOD ₅	SS
	(mg/L)	(mg/L)	(mg/L)	(mg/L)
RFF	0.07	0.52	0.39	4.7
IPF	0.08	0.57	0.45	4.7
INF	0.08	0.59	0.52	3.7
Ma Wan	0.07	0.36	0.80	4.5
				WOO of TINE 0.5 mg/l

WQO of TIN: 0.5 mg/L Wet Season WQO of SS: 12.0 mg/L

Notes:

1. "<LOR" indicates the concentrations of contaminants are below the limit of reporting.

2. Cell shaded yellow / red indicates value exceeding the Action/Limit levels.

3. Cell shaded grey indicates value exceeding the WQO.

4. Cell shaded yellow / red indicates value exceeding the Action/Limit levels.

5. Cell shaded grey indicates value exceeding the WQO.

Mott MacDonald | Agreement No. CE59/2020(EP) Environmental Monitoring and Audit for Disposal Facility to the East of Sha Chau (2021-2026) – Investigation Monthly EM&A Report for Contaminated Mud Pits to the East of Sha Chau – May 2025

Appendix C. Graphical Presentations



Routine Water Quality Monitoring for ESC CMP V - May 2025

Figure 1: Level of pH recorded during Routine Water Quality Monitoring for disposal operations at ESC CMP V in May 2025



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Figure 2: Level of Dissolved Oxygen (DO) (% saturation; mean + SD) recorded during Routine Water Quality Monitoring for disposal operations at ESC CMP V in May 2025

The mean and standard deviation (SD) for in-situ data are the mean and SD for water columns within the area.









 Figure 4:
 Level of Temperature (°C; mean + SD) recorded during Routine Water Quality Monitoring for disposal operations at ESC CMP V in May 2025

¹ The mean and standard deviation (SD) for in-situ data are the mean and SD for water columns within the area.



 Figure 5:
 Level of Salinity (ppt; mean + SD) recorded during Routine Water Quality Monitoring for disposal operations at ESC CMP V in May 2025



Routine Water Quality Monitoring for ESC CMP V - May 2025

Figure 6: Level of Turbidity (NTU; mean + SD) recorded during Routine Water Quality Monitoring for disposal operations at ESC CMP V in May 2025

¹ The mean and standard deviation (SD) for in-situ data are the mean and SD for water columns within the area.



Figure 7: Concentration of Arsenic, Copper, Nickel, and Zinc (μg/L; mean + SD) in water samples collected from Routine Water Quality Monitoring for disposal operations at ESC CMP V in May 2025



Routine Water Quality Monitoring for ESC CMP V - May 2025

Figure 8: Concentration of Cadmium, Chromium and Mercury (µg/L; mean + SD) in water samples collected from Routine Water Quality Monitoring for disposal operations at ESC CMP V in May 2025



Routine Water Quality Monitoring for Nutrients - May 2025





Routine Water Quality Monitoring for Biochemical Oxygen Demand (BOD5) -





Routine Water Quality Monitoring for Suspended Solids - May 2025









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The LCEL and UCEL of Cadmium, Mercury and Arsenic have been updated according to the standard promulgated starting from 19 January 2024. https://www.cedd.gov.hk/filemanager/eng/content_80/PAH 2022 Chapter 4 Rev 06_240321_Clean.pdf











Pit Specific Sediment Chemistry for Total Organic Carbon (TOC) at ESC CMP Vb - May 2025





Pit Specific Sediment Chemistry for Low and High Molecular Weight Polycyclic Aromatics Hydrocarbons (PAHs) at ESC CMP Vb - May 2025



Figure 15:Concentration of Low and High Molecular Weight Polycyclic Aromatic
Hydrocarbons (μg/kg dry weight; mean + SD) in sediment samples collected from
Pit Specific Sediment Chemistry Monitoring for ESC CMP Vb in May 2025



Pit Specific Sediment Chemistry for Tributyltin (TBT) at ESC CMP Vb - May 2025



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Appendix D. Study Programme

Study Programme

Agreement No. CE 59/2020 (EP) Environmental Monitoring and Audit for Disposal Facility to the East of Sha Chau (2021-2026) - Investigation

Mott MacDonald Hong Kong Limited

		to the E	ast of Sha Cr	1au (2021-202	26) - Investiga	ation								
D	Task Name		Start	Finish		2022 4 Q1 Q2 Q3 NDJFMAMJJAS	2023 Q4 Q1	02 03	202 Q4 Q1		2025 Q4 Q1	02 03 0	2026 24 Q1	02 03
1	COMMENCEMENT OF AGREEMENT NO). CE 59/2020 (EP)	01/04/21		•				SIGINIDIJIE					
2	EAST OF SHA CHAU CONTAMINATED N	NUD PITS (ESC CMPs) BETWEEN 2021 & 2026	01/04/21	25/06/26										-
3	Draft Report of First Review of EM&A Manual	(for ESC CMPs)		30/04/21	•									
4	Final Report of First Review of EM&A Manual	(for ESC CMPs)		20/05/21	•									
5	Draft Report of Subsequent Review of EM&A	Manual (for ESC CMPs) - annual basis assumed	30/04/22	30/04/25		\$		\$		\$		\$		
10	Final Report of Subsequent Review of EM&A I	Manual (for ESC CMPs) - annual basis assumed	20/05/22	20/05/25		\$		\$		\diamond		\$		
15	Regular Site Inspections of CMP Contractors		01/04/21	31/03/26										I
16	Monthly EM&A Report		14/05/21	14/04/26	\$\$\$\$	\$\$\$\$\$\$\$\$\$\$\$	>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>	>>>>>	>>>>>>	\$\$\$\$\$\$\$	><>	0000000	\$\$\$\$\$	\$
77	Quarterly EM&A Report		30/07/21	30/04/26	♦ <	\diamond \diamond \diamond	◊ ◊	◊ ◊	♦ ♦	$\diamond \diamond$	\$	\diamond \diamond	>	\$
98	Annual EM&A Report		30/01/22	30/01/26		\diamond	\$		\$		\$		\$	
104	Annual Risk Assessment Report		31/05/22	31/05/26		\$		\$		\diamond		\$		\$
110	Draft Final Report			30/04/26										•
111	Final Report			04/06/26										•
112	Draft Executive Summary			04/06/26										•
113	Final Executive Summary			25/06/26										•
114	EAST OF TUNG LUNG CHAU (ETLC) DISI SEPTEMBER 2021 & MARCH-APRIL 202	POSAL FACILITY (MONITORING PERIOD: 2)	23/11/21	31/08/22										
115	Monthly EM&A Report		23/11/21	06/06/22		\diamond \diamond \diamond								
119	Quarterly EM&A Report		15/07/22	15/07/22		\diamond								
121	Annual EM&A Report		31/08/22	31/08/22		\$								
	amme Revision: C 11/05/22	Start/End of ET Services Location Repeating Task	Start of Agreen Submission Multiple-Occas	nent sion Submission	 ◆ ◆ ◇ 									