

Contract No. EP/SP/66/12  
Integrated Waste Management Facilities, Phase 1  
7<sup>th</sup> Quarterly EM&A Report





吉寶西格斯 - 振華聯營公司  
KEPPEL SEGHERS - ZHEN HUA JOINT VENTURE

# Quarterly EM&A Report No.7 (Period from 1 January to 31 March 2020)

*(Clause 3.3, Further Environmental Permit FEP-01/429/2012/A)*

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Date:	20 March 2024	20 March 2024	20 March 2024

## Revision History

<b>C</b>	Updated Appendix C&D	8 March 2024
<b>B</b>	Revision based on EPD & AFCD' s comment	16 November 2020
<b>A</b>	First Submission	25 May 2020
<b>Rev.</b>	<b>DESCRIPTION OF MODIFICATION</b>	<b>DATE</b>

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## EXECUTIVE SUMMARY

- A1. The Project, Integrated Waste Management Facility (IWMF), is a Designated Project under the Environmental Impact Assessment Ordinance (Cap. 499) (EIAO) and is currently governed by a Further Environmental Permit (FEP No. FEP-01/429/2012/A) for the construction and operation of the Project.
- A2. In accordance with the Updated Environmental Monitoring and Audit (EM&A) Manual for the Project, EM&A works for marine water quality, noise, waste management and ecology should be carried out by Environmental Team (ET), Acuity Sustainability Consulting Limited (ASCL), during the construction phase of the Project.
- A3. This is the 7<sup>th</sup> Quarterly EM&A Report, prepared by ASCL, for the Project summarizing and concluding the monitoring results and audit findings of the EM&A programme at and around Shek Kwu Chau (SKC) during the reporting period from 1 January 2020 to 31 March 2020.
- A4. The EM&A works for construction noise, water quality, construction waste, coral, marine mammal and White-Bellied Sea Eagle (WBSE) were conducted during the reporting period in accordance with the Updated EM&A Manual.
- A5. Weekly site inspections of the construction works were carried out by ET to audit the mitigation measures implementation status. Monthly joint site inspections were carried out by ET and IEC.



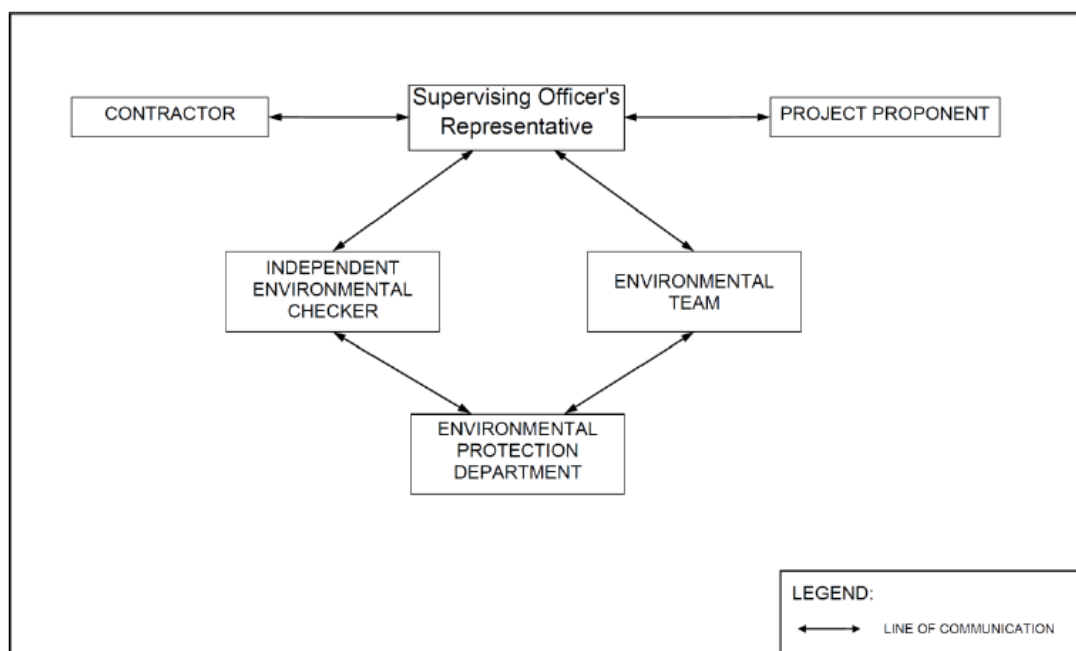
## 1. BASIC PROJECT INFORMATION

### 1.1. The Reporting Scope

1.1.1 This is the 7<sup>th</sup> Quarterly EM&A Report for the Project which summarizes the key findings of the EM&A programme during the reporting period from 1 January 2020 to 31 March 2020.

### 1.2. Project Organization

1.1.2 The Project Organization structure for Construction Phase is presented in **Figure 1.1**.



**Figure 1.1 Project Organization Chart**

1.1.3 Contact details of the key personnel are presented in **Table 1.1** below:

**Table 1.1 Contact Details of Key Personnel**

Party	Position	Name	Telephone no.
Environmental Protection Department	Project Proponent	Cheng Tak-Kuen	2594-6111
Keppel Seghers – Zhen Hua Joint Venture	Project Manager	Kenny Yu	2192-0606
Acuity Sustainability Consulting Limited	Environmental Team Leader	Jacky Leung	2698-6833
ERM-Hong Kong, Limited	Independent Environmental Checker	Mandy To	2271-3000

### 1.3. Summary of Construction Works

1.1.4 Details of the major construction activities undertaken in this reporting period are shown in **Table 1.2** below. The construction programme is presented in **Appendix A**.

**Table 1.2 Summary of the Construction Activities Undertaken during the Reporting Period**

Location of works	Construction activities undertaken	Remarks on progress
Breakwater	• Sand blanket laying	• On-going
	• DCM installation	• On-going
Reclamation area	• Sand blanket laying	• On-going
Seawall portion	• DCM installation	• Completed
	• Coring for DCM cluster	• On-going
	• Dredging	• 66,878.8842 m <sup>3</sup> of dredged sediment in bulk quantity was dumped at relevant dumping site in total up to 31 March 2020.
	• Cone penetration test	• On-going
	• Installation of caisson	• On-going
	• Installation of Prefabricated Vertical Drain	• On-going

1.1.5 The status for all environmental aspects is presented in **Table 1.3**.

**Table 1.3 Summary of Status for Key Environmental Aspects under the Updated EM&A Manual**

Parameters	Status
<b>Water Quality</b>	
Baseline Monitoring under Updated EM&A Manual and Detailed Plan on DCM	The baseline water quality monitoring result has been reported in Baseline Monitoring Report and submitted to EPD under FEP Condition 3.4
Impact Monitoring	On-going
Regular DCM Monitoring	On-going
Initial Intensive DCM Monitoring	Completed over 11 February 2019 to 10 March 2019, to be resumed whenever DCM related parameter exceeded the AL/LL
Baseline Water Quality of wet season	Completed over 13 August 2018 to 7 September 2018
<b>Noise</b>	
Baseline Monitoring	The baseline noise monitoring result has been reported in Baseline Monitoring Report and submitted to EPD under FEP Condition 3.4

<b>Parameters</b>	<b>Status</b>
Impact Monitoring	On-going
<b>Waste Management</b>	
Mitigation Measures in Waste Monitoring Plan	On-going
<b>Coral</b>	
Pre-translocation Survey and Coral Mapping	The Coral Translocation Plan was submitted and approved by EPD under EP Condition 2.12
Coral Translocation	Completed on 28 March 2018
Post-Translocation Coral Monitoring	Survey obstructed due to missing of translocated and tagged coral colonies after typhoons in September 2018; the last post-translocation coral monitoring completed on 28 Mar 2019
Pre-construction Coral Survey and Tagging	Completed on 26 June 2018
Tagged Coral Monitoring	Survey obstructed due to missing of tagged coral colonies after typhoons in September 2018
Coral Survey and Re-tagging	Re-tagging at Indirect Impact Site was conducted on 23 November and Re-tagging at Control Site was conducted on 3 December 2018
Post Re-tagging Coral Monthly Monitoring	On-going
<b>Marine Mammal</b>	
Baseline Monitoring	The baseline marine mammal monitoring result has been reported in Baseline Monitoring Report and submitted to EPD under FEP Condition 3.4
Impact Monitoring	On-going
Land-based Theodolite Tracking	30 days of theodolite surveys were started at 21 Feb 2019 and completed in May 2019
Passive Acoustic Monitoring	30 days of PAM surveys were started at 1 May 2019 and completed until the end of May 2019
<b>White-bellied Sea Eagle</b>	
Baseline Monitoring	The baseline WBSE monitoring result has been reported in Baseline Monitoring Report and submitted to EPD under FEP Condition 3.4
Impact Monitoring	On-going
<b>Environmental Audit</b>	
Site Inspection covering Measures of Air Quality, Noise Impact, Water Quality, Waste, Ecological Quality, Fisheries, Landscape and Visual	On-going
Mitigation Measures in Marine Mammal Watching Plan (MMWP)	On-going
Mitigation Measures in Detailed Monitoring Programme on Finless Porpoise (DMPFP)	On-going
Mitigation Measures in Vessel Travel Details	On-going

<b>Parameters</b>	<b>Status</b>
Daily Site Audit and Monitoring for Dredging Work	On-going

- 1.1.6 Other than the EM&A works by ET, environmental briefings, trainings and regular environmental management meetings were conducted, in order to enhance environmental awareness and closely monitor the environmental performance of the contractors.
- 1.1.7 The EM&A programme has been implemented in accordance with the recommendations presented in the approved EIA Report and the Updated EM&A Manual. A summary of updated implementation status of the environmental mitigation measures for the construction phase of the Project during the reporting period is provided in **Appendix B**.

## 2. MARINE WATER QUALITY MONITORING

### 2.1 Water Quality Parameters

- 2.1.1 Measurement of Dissolved Oxygen (DO), Turbidity, Suspended Solids (SS), Salinity and pH have been undertaken at the eleven monitoring stations during general water quality monitoring. Besides the above parameters, monitoring of Total Alkalinity, Current Velocity and Current Direction have been undertaken at all fourteen monitoring stations (including S1, S2A and S3) during regular DCM monitoring.
- 2.1.2 Current velocity and direction, DO, temperature, salinity, turbidity and pH were measured in-situ and the SS, Total Alkalinity were assayed in a HOKLAS laboratory.
- 2.1.3 In associate with the water quality parameters, other relevant data were also measured, such as monitoring location/position, time, water depth, sampling depth, tidal stages, weather conditions and any special phenomena or work underway nearby were also recorded.
- 2.1.4 Impact water quality monitoring was conducted 3 days per week in the reporting period. All parameters were monitored during mid-flood and mid-ebb tides at three water depths for general water quality monitoring. The interval between two sets of monitoring has not been less than 36 hours.
- 2.1.5 **Table 2.1** summarizes the monitoring parameters, frequency and duration of the impact water quality monitoring.

**Table 2.1 Water Quality Monitoring Parameters, Frequency and Duration**

Parameter, unit	Frequency	No. of Depths
<ul style="list-style-type: none"> <li>• Water Depth(m)</li> <li>• Temperature(°C)</li> <li>• Salinity(ppt)</li> <li>• pH (pH unit)</li> <li>• Dissolved Oxygen (DO)(mg/L and % of saturation)</li> <li>• Turbidity(NTU)</li> <li>• Suspended Solids (SS), mg/L</li> <li>• Total alkalinity (mg/L)</li> <li>• Current velocity (m/s)</li> <li>• Direction (in NESW)</li> </ul>	<p>General water quality monitoring and Regular DCM monitoring:</p> <p>3 days per week, at mid-flood and mid-ebb tides</p>	<p>3 water depths: 1m below sea surface, mid-depth and 1m above sea bed.</p> <p>If the water depth is less than 3m, mid-depth sampling only.</p> <p>If water depth is less than 6m, mid-depth may be omitted.</p>

### 2.2 Water Quality Monitoring Locations

- 2.2.1 Impact water quality monitoring was conducted at eleven monitoring locations during general water quality monitoring and fourteen water monitoring locations during regular DCM monitoring, as shown in **Figure 2.1**.

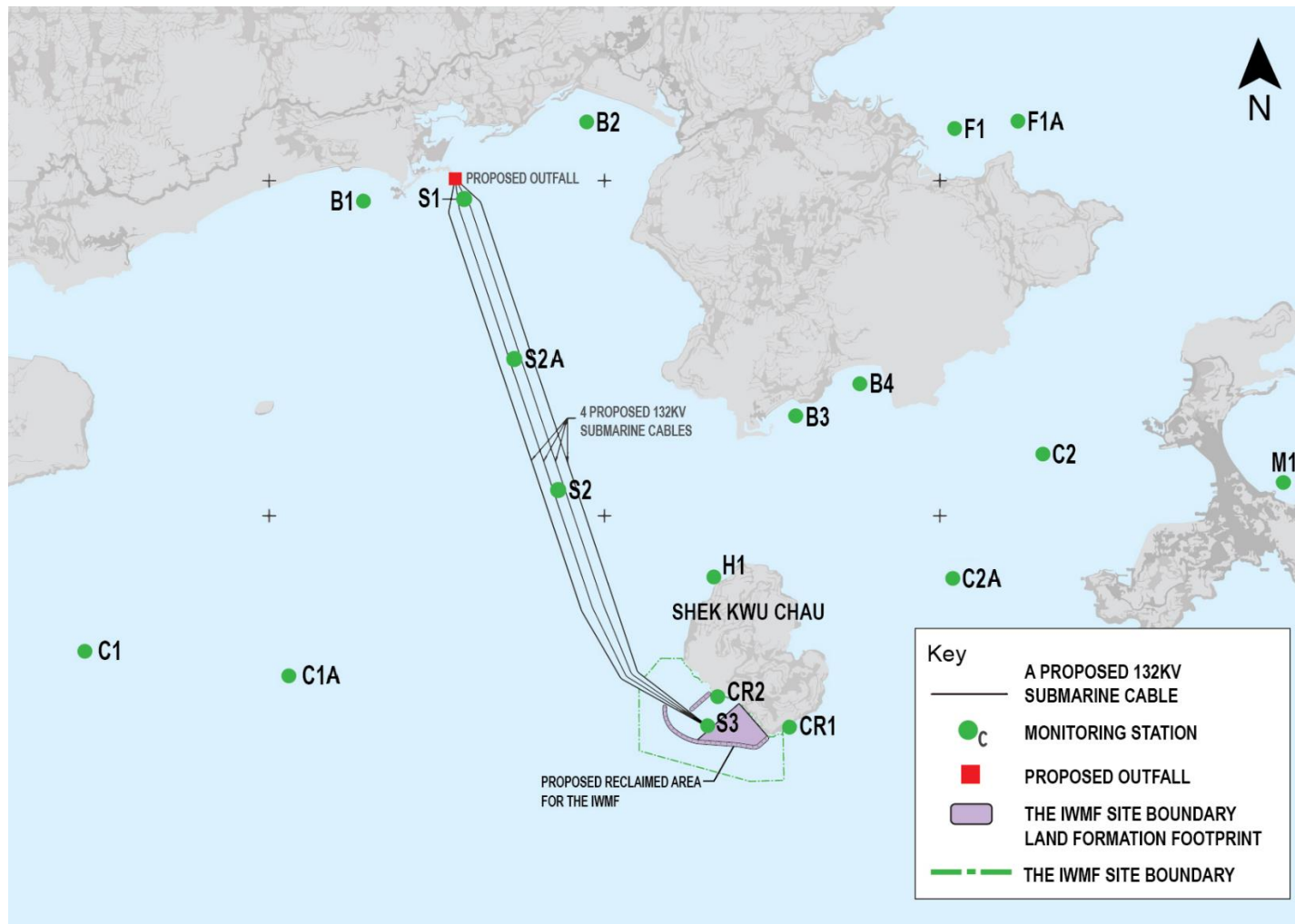


Figure 2.1 Water monitoring locations at Artificial Island near SKC

## 2.3 Action and Limit Levels

2.3.1 Based on the baseline monitoring data and the derivation criteria presented in the Baseline Monitoring Report, the Action/Limit Levels have been derived and are presented in **Table 2.2** and **Table 2.3** for both dry seasons (October – March) and wet seasons (April – September).

**Table 2.2 Derived Action and Limit Levels for Water Quality Monitoring (Dry Season)**

Parameters	Action	Limit
<b>Construction Phase Impact Monitoring</b>		
DO in mg/L	≤ 7.13	≤ 4
SS in mg/L	≥ 8 or 120% of control station's SS at the same tide of the same day of measurement, whichever is higher	≥ 10 or 130% of control station's SS at the same tide of the same day of measurement, whichever is higher
Turbidity in NTU	≥ 5.6 or 120% of control station's turbidity at the same tide of the same day of measurement, whichever is higher	≥ 12.81 or 130% of control station's turbidity at the same tide of the same day of measurement, whichever is higher
Temperature in °C	1.8°C above the temperature recorded at representative control station at the same tide of the same day	2°C above the temperature recorded at representative control station at the same tide of the same day
Total Alkalinity in mg/L	≥ 116 or 120% of control station's Total Alkalinity at the same tide of the same day of measurement, whichever is higher	≥ 118 or 130% of control station's Total Alkalinity at the same tide of the same day of measurement, whichever is higher

Notes:

- i. "Depth-averaged" is calculated by taking the arithmetic means of reading of all three depths.
- ii. For DO, non-compliance of the water quality limits occurs when monitoring result is lower than the limits.
- iii. For turbidity, SS and Salinity, non-compliance of the water quality limits occurs when monitoring result is higher than the limits.

**Table 2.3 Derived Action and Limit Levels for Water Quality (Wet Season)**

Parameters	Action	Limit
<b>Construction Phase Impact Monitoring</b>		
DO in mg/L	≤ 5.28	≤ 4
SS in mg/L	≥ 12 or 120% of control station's SS at the same tide of the same day of measurement, whichever is higher	≥ 14 or 130% of control station's SS at the same tide of the same day of measurement, whichever is higher
Turbidity in NTU	≥ 4.0 or 120% of control station's turbidity at the same tide of the same	≥ 4.3 or 130% of control station's turbidity at the same tide of the same

<b>Parameters</b>	<b>Action</b>	<b>Limit</b>
	day of measurement, whichever is higher	day of measurement, whichever is higher
Temperature in °C	1.8°C above the temperature recorded at representative control station at the same tide of the same day	2°C above the temperature recorded at representative control station at the same tide of the same day
Total Alkalinity in mg/L	≥ 116 mg/L or 120% of representative control station at the same tide of the same day, whichever is higher	≥ 118 mg/L or 130% of representative control station at the same tide of the same day, whichever is higher

Notes:

- i. "Depth-averaged" is calculated by taking the arithmetic means of reading of all three depths.
- ii. For DO, non-compliance of the water quality limits occurs when monitoring result is lower than the limits.
- iii. For turbidity, SS and Salinity, non-compliance of the water quality limits occurs when monitoring result is higher than the limits.

## 2.4 Monitoring Results and Observations

2.4.1 DCM injection works and sand blanket laying works were conducted during the reporting period, thus both general water quality monitoring at the eleven monitoring stations and general DCM monitoring including monitoring stations S1, S2A and S3 were conducted. Monitoring results of 7 key parameters: Salinity, DO, turbidity, SS, pH, temperature and total alkalinity in each month of this reporting period, are summarized in **Table 2.4**, and results trending are presented graphically in **Appendix C**.



**Table 2.4 Summary of Regular DCM Impact Water Quality Monitoring Results**

Locations		Parameters																								
		Salinity (ppt)			Dissolved Oxygen (mg/L)						pH			Turbidity (NTU)			Suspended Solids (mg/L)			Temp. (°C)			Total Alkalinity (mg/L) note ii			
					Surface & Middle			Bottom																		
		Jan	Feb	Mar	Jan	Feb	Mar	Jan	Feb	Mar	Jan	Feb	Mar	Jan	Feb	Mar	Jan	Feb	Mar	Jan	Feb	Mar	Jan	Feb	Mar	Jan
B1	Avg.	31.20	31.86	30.95	8.04	8.84	9.29	8.05	8.86	9.20	8.14	8.13	8.17	2.9	3.2	3.0	5.57	6.45	3.86	21.0	19.7	21.0	114.8	112.4	116.7	
	Min.	30.24	30.20	29.31	7.22	7.51	8.12	7.19	7.51	8.12	7.95	7.96	7.98	1.9	2.3	2.2	2.00	2.00	2.00	20.1	16.8	18.4	113.0	108.0	108.0	
	Max.	32.52	32.57	32.23	9.35	10.05	10.89	9.30	10.05	10.89	8.30	8.26	8.42	4.0	4.4	4.0	15.00	13.00	7.00	22.4	21.3	23.5	117.0	116.0	123.0	
B2	Avg.	31.21	31.84	30.95	8.01	8.73	9.29	8.09	8.85	9.29	8.14	8.11	8.15	3.0	3.2	3.0	5.55	6.36	3.93	21.0	19.7	21.1	114.7	112.6	116.6	
	Min.	30.23	30.28	29.27	7.21	7.34	8.06	7.16	7.55	8.20	7.96	7.96	7.98	1.9	2.4	2.2	2.00	3.00	2.00	20.2	16.7	18.5	112.0	109.0	109.0	
	Max.	32.39	32.60	32.17	9.43	9.66	10.33	9.43	9.82	10.70	8.38	8.27	8.41	4.2	4.2	4.1	14.00	12.00	8.00	22.5	21.2	23.7	118.0	116.0	124.0	
B3	Avg.	31.23	31.87	30.98	8.03	8.88	9.18	8.08	9.00	9.17	8.16	8.12	8.16	3.0	3.3	3.1	5.37	6.43	4.30	21.0	19.7	21.0	114.8	112.7	116.7	
	Min.	30.21	30.23	29.32	7.26	7.30	8.22	7.16	7.54	8.25	7.86	7.96	7.96	1.9	2.2	2.2	2.00	2.00	2.00	20.2	16.8	18.4	112.0	110.0	108.0	
	Max.	32.49	32.88	32.18	9.50	9.80	10.76	9.49	9.80	10.05	8.36	8.27	8.41	4.4	4.6	4.2	13.00	11.00	9.00	22.4	21.1	23.7	118.0	115.0	124.0	
B4	Avg.	31.20	31.84	30.94	8.02	8.88	9.25	8.04	8.90	9.31	8.13	8.13	8.16	3.0	3.3	3.1	5.47	6.32	4.38	21.0	19.7	21.0	114.7	112.6	116.7	
	Min.	30.32	30.50	29.30	7.16	7.43	8.20	7.26	7.38	8.29	7.80	7.96	7.99	1.7	2.3	2.3	2.00	2.00	2.00	20.2	16.7	18.4	113.0	111.0	110.0	
	Max.	32.53	32.54	32.23	9.44	9.76	10.59	9.12	9.81	10.23	8.35	8.27	8.39	4.3	4.6	4.2	15.00	11.00	9.00	22.4	21.1	23.7	118.0	115.0	125.0	
C1A	Avg.	31.20	31.83	30.95	8.04	8.85	9.31	8.04	8.82	9.25	8.13	8.12	8.15	2.9	3.1	2.9	5.90	6.32	4.00	21.0	19.7	21.0	114.8	112.6	116.6	
	Min.	30.22	30.21	29.28	7.24	7.28	8.09	7.21	7.35	8.24	7.78	7.97	7.97	1.9	2.2	2.2	2.00	2.00	2.00	20.2	16.6	18.3	113.0	107.0	109.0	
	Max.	32.56	32.54	32.20	9.49	9.79	10.77	9.44	9.56	10.17	8.37	8.27	8.42	4.2	4.5	4.1	16.00	16.00	8.00	22.3	21.2	23.6	118.0	116.0	123.0	
C2A	Avg.	31.23	31.89	30.95	8.05	8.83	9.16	8.07	8.89	9.25	8.14	8.11	8.17	2.9	3.1	2.9	5.86	6.33	4.20	21.0	19.7	21.0	114.8	112.8	116.6	
	Min.	30.20	30.29	29.30	7.27	7.33	8.21	7.21	7.38	8.11	7.82	7.97	7.96	1.8	2.2	2.1	2.00	2.00	2.00	20.2	16.5	18.3	112.0	110.0	109.0	
	Max.	32.57	32.80	32.20	9.50	9.83	10.17	9.28	9.77	10.36	8.38	8.28	8.37	4.1	4.4	3.8	16.00	17.00	12.00	22.2	21.3	23.6	118.0	115.0	124.0	
CR1	Avg.	31.22	31.88	30.96	8.01	8.89	9.30	8.02	8.87	9.38	8.13	8.11	8.16	2.9	3.2	3.0	5.47	6.56	3.90	21.0	19.7	20.9	114.9	112.7	116.1	
	Min.	30.21	30.32	29.20	7.23	7.25	8.14	7.16	7.54	8.27	7.79	7.96	7.96	1.7	2.1	2.2	2.00	2.00	2.00	20.1	16.5	18.3	113.0	109.0	108.0	
	Max.	32.50	32.69	32.20	9.46	9.97	10.67	9.31	9.60	10.73	8.34	8.29	8.43	4.1	4.4	4.1	13.00	14.00	9.00	22.3	21.3	23.6	118.0	115.0	123.0	
CR2	Avg.	31.21	31.87	30.97	8.05	8.84	9.25	8.04	8.93	9.19	8.14	8.12	8.16	2.9	3.1	2.9	5.38	6.54	3.96	21.0	19.7	21.0	114.8	112.7	116.4	
	Min.	30.25	30.34	29.20	7.16	7.26	8.25	7.34	7.69	8.18	7.88	7.97	7.96	1.8	2.3	2.2	2.00	2.00	2.00	20.2	16.5	18.4	113.0	110.0	109.0	
	Max.	32.52	32.60	32.26	9.49	10.00	10.68	9.21	9.83	10.57	8.38	8.29	8.42	4.2	4.1	3.9	14.00	15.00	8.00	22.4	21.2	23.6	118.0	116.0	124.0	
F1A	Avg.	31.20	31.88	30.97	8.03	8.88	9.31	8.04	8.85	9.23	8.14	8.12	8.17	2.9	3.1	2.9	6.12	6.34	4.17	21.0	19.7	21.0	114.8	112.8	116.4	
	Min.	30.20	30.32	29.32	7.21	7.34	8.31	7.24	7.44	8.05	7.85	7.96	7.96	1.7	2.2	2.2	2.00	2.00	2.00	20.1	16.5	18.3	113.0	110.0	109.0	
	Max.	32.60	32.94	32.25	9.39	9.85	10.77	9.10	9.74	10.77	8.38	8.29	8.42	4.2	4.3	4.0	15.00	15.00	8.00	22.4	21.1	23.8	117.0	115.0	123.0	
H1	Avg.	31.20	31.86	30.94	8.03	8.89	9.24	8.08	8.85	9.27	8.14	8.12	8.17	2.9	3.2	2.9	5.60	6.50	4.44	21.0	19.7	21.0	114.6	112.6	116.7	
	Min.	30.20	30.21	29.30	7.15	7.49	8.27	7.18	7.37	8.15	7.79	7.96	7.97	1.7	2.3	2.2	2.00	2.00	2.00	20.2	16.7	18.3	113.0	110.0	109.0	
	Max.	32.60	32.93	32.23	9.40	9.82	10.24	9.51	10.09	10.69	8.37	8.27	8.43	4.1	4.5	3.9	14.00	12.00	8.00	22.3	21.1	23.8	118.0	115.0	123.0	

Locations		Parameters																								
		Salinity (ppt)			Dissolved Oxygen (mg/L)						pH			Turbidity (NTU)			Suspended Solids (mg/L)			Temp. (°C)			Total Alkalinity (mg/L) note ii			
					Surface & Middle			Bottom																		
		Jan	Feb	Mar	Jan	Feb	Mar	Jan	Feb	Mar	Jan	Feb	Mar	Jan	Feb	Mar	Jan	Feb	Mar	Jan	Feb	Mar	Jan	Feb	Mar	
M1	Avg.	31.22	31.86	30.96	8.04	8.92	9.32	8.10	8.93	9.20	8.15	8.12	8.17	2.9	3.2	3.0	5.82	6.27	4.21	21.0	19.6	21.0	114.8	112.7	116.2	
	Min.	30.29	30.24	29.32	7.17	7.52	8.22	7.43	7.28	8.38	7.81	7.96	7.96	1.7	2.2	2.2	2.00	2.00	2.00	20.1	16.6	18.4	113.0	109.0	108.0	
	Max.	32.54	32.72	32.26	9.44	9.85	10.74	9.26	9.72	10.77	8.39	8.29	8.42	4.1	4.4	4.0	20.00	11.00	8.00	22.4	21.1	23.8	118.0	117.0	123.0	
S1	Avg.	31.23	31.86	30.95	8.06	8.88	9.29	8.09	8.99	9.18	8.15	8.12	8.16	2.9	3.2	3.0	5.55	5.90	4.26	21.0	19.7	21.0	114.8	112.6	116.5	
	Min.	30.22	30.20	29.24	7.22	7.27	8.39	7.27	7.25	8.07	7.93	7.96	7.98	1.6	2.2	2.2	2.00	2.00	2.00	20.2	16.7	18.4	113.0	110.0	109.0	
	Max.	32.56	32.55	32.25	9.49	9.91	10.54	9.47	10.07	10.33	8.34	8.29	8.41	4.1	4.5	4.0	16.00	13.00	11.00	22.4	21.2	23.6	117.0	115.0	123.0	
S2A	Avg.	31.19	31.87	30.95	8.03	8.85	9.26	8.02	8.97	9.26	8.13	8.11	8.17	2.9	3.1	2.9	5.58	6.74	4.03	21.0	19.7	21.0	114.8	112.9	116.5	
	Min.	30.21	30.30	29.27	7.16	7.31	8.11	7.17	7.51	8.32	7.77	7.96	7.96	1.9	2.2	2.1	2.00	2.00	2.00	20.2	16.7	18.4	113.0	109.0	108.0	
	Max.	32.51	32.75	32.25	9.26	9.66	10.49	9.47	10.03	10.53	8.37	8.26	8.42	4.2	4.3	4.1	13.00	13.00	9.00	22.4	21.3	23.6	118.0	115.0	124.0	
S3	Avg.	31.21	31.87	30.95	8.05	8.84	9.30	8.02	8.98	9.37	8.14	8.12	8.16	3.0	3.2	3.0	5.35	6.69	4.01	21.0	19.7	21.0	114.9	112.7	116.4	
	Min.	30.27	30.21	29.35	7.15	7.27	8.42	7.23	7.40	8.05	7.78	7.96	7.96	1.7	2.3	2.2	2.00	2.00	2.00	20.2	16.6	18.4	112.0	110.0	109.0	
	Max.	32.58	32.85	32.18	9.47	9.96	10.77	9.35	9.73	10.61	8.35	8.29	8.43	4.3	4.3	3.9	14.00	15.00	8.00	22.2	21.2	23.6	118.0	115.0	124.0	

Notes:

- i. "Avg", "Min" and "Max" is the average, minimum and maximum respectively of the data from measurements conducted under mid-flood and mid-ebb tides at three water depths, except that of DO where the data for "Surface & Middle" and "Bottom" are calculated separately.
- ii. Total alkalinity test is only conducted on DCM working day with reference to master programme in **Appendix A**.
- iii. Monitoring at S1, S2A and S3 shall only be conducted during DCM work period referring to master programme in **Appendix A**.

- 2.4.2 All of the monitoring results for DO, turbidity, temperature and total alkalinity obtained in the reporting period complied with their corresponding Action and Limit levels, while numbers of result for SS triggered their corresponding Action or Limit Levels, and investigations were conducted accordingly. For the salinity, pH, DO, turbidity, temperature, SS and total alkalinity, their trends were fluctuated independent to the site activities and presented in **Appendix C**.
- 2.4.3 No major pollution source and extreme weather which might affect the results were observed during the impact monitoring.
- 2.4.4 During the regular DCM impact monitoring period for January to March 2020, nineteen (19) exceedances of the Action Level for SS were recorded and eight (8) of the monitoring results for SS obtained during the reporting period had exceeded the relevant Limit Level. Investigations were conducted, and results indicated the SS exceedances were not attributable to the Project works. Details of the exceedance are presented in **Section 8**.
- 2.4.5 Implemented mitigation measures minimizing the adverse impacts on water are listed in the implementation schedule given in **Appendix B**.

### 3. NOISE MONITORING

#### 3.1 Noise Monitoring Parameters

3.1.1 Impact noise monitoring was conducted weekly in the reporting period between 0700-1900 hours on normal weekdays. Additional impact noise monitoring was conducted weekly in the reporting period between 1900-0700 hours on all days as well as public holidays and Sundays.

3.1.2 Construction noise level measured in terms of the A-weighted equivalent continuous sound pressure level (LAeq). Leq 30min was used as the monitoring parameter for the time period between 0700 and 1900 hours on normal weekdays. Leq 5mins was used as the monitoring parameter for the time period between 1900 and 0700 hours as well as public holidays and Sundays. **Table 3.1** summarizes the monitoring parameters, frequency and duration of the impact noise monitoring and additional impact noise monitoring.

**Table 3.1 Noise Monitoring Parameters, Time, Frequency and Duration**

Monitoring Station	Time	Duration	Parameters
M1/ N_S1, M2/ N_S2, M3/ N_S3	Day time: 0700-1900 hrs (during normal weekdays)	Once per week Leq 5min/Leq 30min (average of 6 consecutive Leq 5min)	Leq, L10 & L90
	Evening time: 1900-2300 hrs (including normal weekdays, also public holidays and Sundays)	Once per week Leq 5min (3 sets of Leq 5min)	Leq, L10 & L90
	Night time: 2300-0700 hrs (including normal weekdays, also public holidays and Sundays)	Once per week Leq 5min (3 sets of Leq 5min)	Leq, L10 & L90
Alternative location (MA)	Day time: 0700-1900 hrs (during normal weekdays)	Once per week until further notification Leq 5min/Leq 30min (average of 6 consecutive Leq 5min)	Leq, L10 & L90
	Evening time: 1900-2300 hrs (including normal weekdays, also public holidays and Sundays)	Once per week until further notification Leq 5min (3 sets of Leq 5min)	Leq, L10 & L90
	Night time: 2300-0700 hrs (including normal weekdays, also public holidays and Sundays)	Once per week until further notification Leq 5min (3 sets of Leq 5min)	Leq, L10 & L90

#### 3.2 Noise Monitoring Locations

3.2.1 Three noise monitoring locations for impact monitoring and additional impact monitoring at the nearby sensitive receivers are shown in **Figure 3.1**

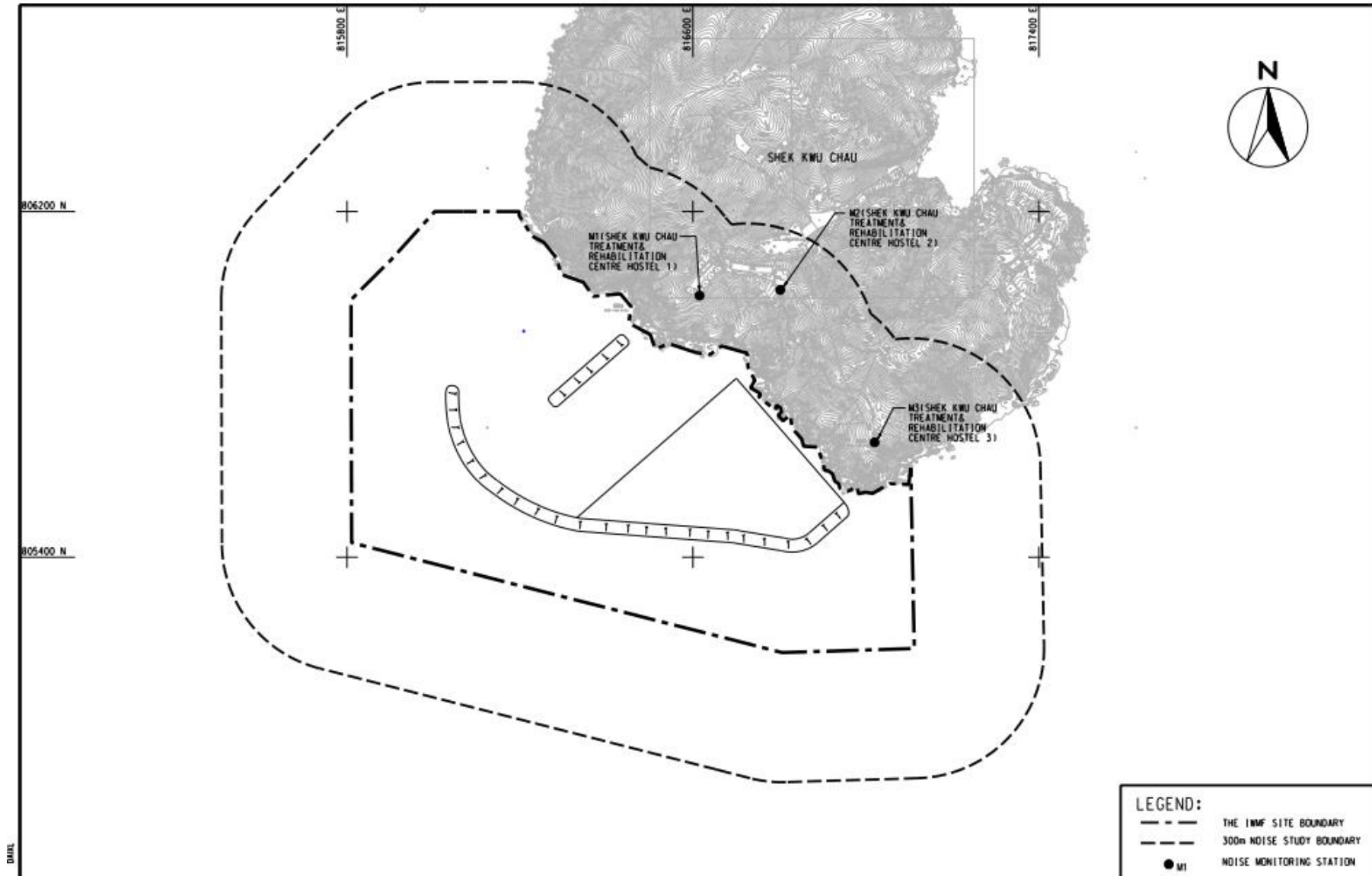


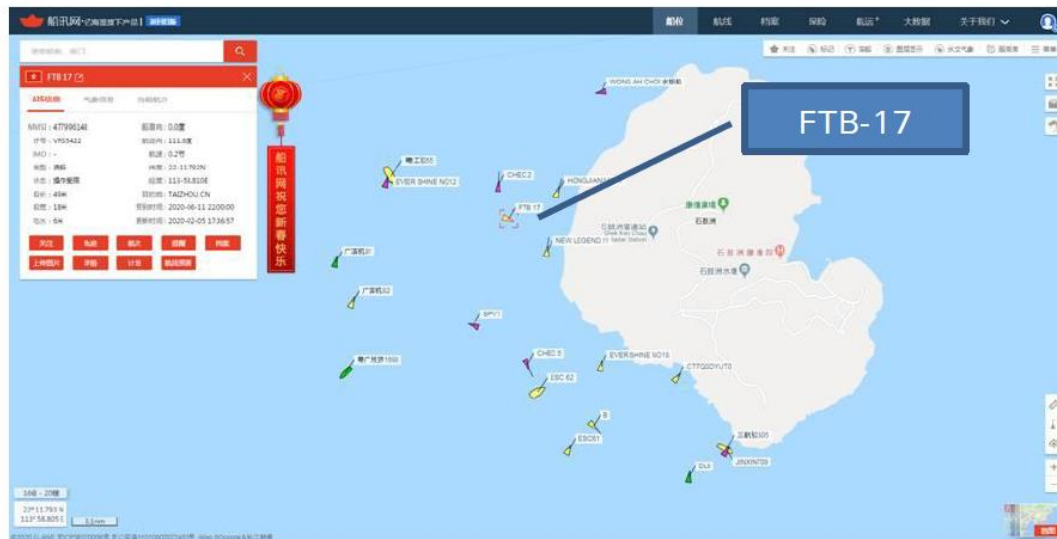
Figure 3.1 Noise monitoring locations at SKC

- 3.2.2 M1, M2 and M3 are Shek Kwu Chau Treatment and Rehabilitation Centre Hostel 1, 2 and 3 respectively of The Society for the Aid and Rehabilitation of Drug Abusers (SARDA) located at southern part of Shek Kwu Chau.
- 3.2.3 Measurements at M1 & M3 were conducted at a point 1m from the exterior of the sensitive receivers building façade and at a position 1.2m above the ground. Measurement setup at M3 has been varying with minor adjustment to minimize the disturbance to the users of Treatment Centre. Measurement at M2 was conducted at a point 1m from building façade of the ceiling of 1st floor level for avoidance of mutual disturbance with users of Treatment Centre. The minor adjustment of monitoring locations, which were in favour to mutual convenience with the users of Treatment Centre, were found with no effect on monitoring result based on on-site observation and experience from the Baseline monitoring of the Project.
- 3.2.4 Based on the concern of novel coronavirus in Feb 2020, the Society for the Aid and Rehabilitation of Drug Abusers (SARDA) issued a notice on rejection of access for noise monitoring practice effective from 31 Jan 2020. Hence, the weekly noise monitoring at the selected noise sensitive receivers (M1, M2 & M3) as per the monitoring schedule were suspended in February & March 2020.
- 3.2.5 Considering the absence of noise sensitive receivers except SARDA in close proximity of the Project site. ET proposed and IEC agreed to perform the alternative noise monitoring at the farthest barge (MA) available “i.e. FTB-17 or equivalent barge subject to site condition” outside the site boundary with no construction works as shown in **Figure 3.2** below.
- 3.2.6 The noise monitoring stations are summarized in **Table 3.2** below.

**Table 3.2 Noise Monitoring Location**

Station	NSR ID in EIA Report	Noise Monitoring Location	Type of sensitive receiver(s)	Measurement Type
M1*	N_S1	Shek Kwu Chau Treatment & Rehabilitation Centre Hostel 1	Residential	Façade
M2*	N_S2	Shek Kwu Chau Treatment & Rehabilitation Centre Hostel 2	Residential	Façade
M3*	N_S3	Shek Kwu Chau Treatment & Rehabilitation Centre Hostel 3	Residential	Façade
MA	-	The farthest barge outside the site boundary with no construction works subject to site condition	-	Free field

Note (\*): Temporary suspended due to denied access from SARDA starting from Feb 2020.



**Figure 3.2 Proposed alternative noise monitoring location at barge FTB-17 at Shek Kwu Chau**

### 3.3 Action and Limit Levels

3.3.1 The Action/Limit Levels in line with the criteria of Practice Note for Professional Persons (ProPECC PN 2/93) “Noise from Construction Activities – Non-statutory Controls” and Technical Memorandum on Environmental Impact Assessment Process issued by HKSAR Environmental Protection Department [“EPD”] under the Environmental Impact Assessment Ordinance, Cap 499, S.16 is presented in **Table 3.3**.

**Table 3.3 Action and Limit Levels for Noise per Updated EM&A Manual**

Time Period	Action	Limit (dB(A))
0700-1900 hrs on normal weekdays	When one documented complaint is received	75 dB(A)

Notes: If works are to be carried out during restricted hours, the conditions stipulated in the Construction Noise Permit (CNP) issued by the Noise Control Authority have to be followed.

### 3.4 Monitoring Results and Observations

3.4.1 Impact monitoring for noise impact for daytime was conducted in the reporting period. The impact noise levels at Noise Monitoring Stations at SKC (i.e. M1/ N\_S1 to M3/ N\_S3) and alternative monitoring location (i.e. MA) are summarized in **Table 3.5**. Additional impact monitoring during restricted hours was conducted in the reporting period. The additional impact noise levels at Noise Monitoring Stations at SKC (i.e. M1/ N\_S1 to M3/ N\_S3) and alternative monitoring location (i.e. MA) are summarized in **Table 3.6** and **Table 3.7** respectively. Trending of the noise monitoring results is presented graphically in **Appendix D**.

3.4.2 Major construction activity, major noise source and extreme weather which might affect the results were recorded during the impact monitoring.

3.4.3 According to our field observations, the major noise source identified at the designated noise monitoring station in the reporting month are summarised in **Table 3.4**. No

noticeable noise source was found near the monitoring station M1, M2 & M3 and sound of sea waves was found near the monitoring station MA.

**Table 3.4 Summary of Field Observation**

Monitoring Station	Major Noise Source
M1	Nil
M2	Nil
M3	Nil
MA	Sound of sea waves

3.4.4 No data from impact monitoring during daytime has exceeded the stipulated limit level at 75 dB(A).

**Table 3.5 Summary of Impact Noise Monitoring Results during Daytime (0700 – 1900 hrs)**

Location	Noise in dB(A)								
	Range of L <sub>eq 30min</sub>			Range of L <sub>10 5min</sub>			Range of L <sub>90 5min</sub>		
	Jan	Feb	Mar	Jan	Feb	Mar	Jan	Feb	Mar
M1	53.7 – 60.4	-	-	53.9 – 66.6	-	-	48.3 – 53.1	-	-
M2	54.5 – 56.3	-	-	54.8 – 60.4	-	-	47.6 – 53.8	-	-
M3	51.7 – 56.2	-	-	50.9 – 59.4	-	-	47.5 – 53.7	-	-
MA	-	61.1 – 63.2	65.2 – 68.2	-	61.3 – 69.5	65.5 – 75.4	-	57.2 – 62.3	57.4 – 65.4

3.4.5 Applicable mitigation measures for construction works are fully implemented as shown in **Appendix B**, where double-glazed windows and air conditioning system were also installed and confirmed operable for the NSRs (N\_S1, N\_S2 & N\_S3).

3.4.6 During the noise monitoring event, frontline staff of ET have inquired the treatment centre users on any noise disturbance from the construction activities at evening and night time, where no complaint and adverse opinions was received.

3.4.7 Data from impact monitoring during evening time and night time were compared with the NCO criteria. Where site inspection and auditing on Contractor’s record have shown that the conditions stipulated in the Construction Noise Permit (CNP) issued by the Noise Control Authority for construction works during restricted hours were followed. No inappropriate practice were spotted during evening time and night time construction works, thus the stipulated requirement on noise impact control during night time and evening time was achieved.



**Table 3.6 Summary of the Additional Impact Noise Monitoring Results during Evening Time (1900-2300 hrs)**

Location	Noise in dB(A)								
	Range of L <sub>eq</sub> 5min			Range of L <sub>10</sub> 5min			Range of L <sub>90</sub> 5min		
	Jan	Feb	Mar	Jan	Feb	Mar	Jan	Feb	Mar
M1	49.2 – 56.2	-	-	50.6 – 58.7	-	-	47.4 – 52.3	-	-
M2	50.2 – 54.9	-	-	52.1 – 58.0	-	-	46.7 – 51.5	-	-
M3	48.7 – 56.3	-	-	50.2 – 59.1	-	-	46.4 – 53.6	-	-
MA	-	61.5 – 65.6	59.9 – 72.2	-	62.9 – 72.4	60.9 – 72.8	-	57.3 – 61.4	58.4 – 71.2

**Table 3.7 Summary of Additional Impact Noise Monitoring Results during Night Time (2300 – 0700 hrs)**

Location	Noise in dB(A)								
	Range of L <sub>eq</sub> 5min			Range of L <sub>10</sub> 5min			Range of L <sub>90</sub> 5min		
	Jan	Feb	Mar	Jan	Feb	Mar	Jan	Feb	Mar
M1	45.0 – 54.6	-	-	45.6 – 55.7	-	-	43.4 – 53.4	-	-
M2	44.7 – 54.5	-	-	45.9 – 55.5	-	-	43.4 – 53.4	-	-
M3	46.8 – 56.4	-	-	48.4 – 57.3	-	-	44.8 – 52.3	-	-
MA	-	57.3 – 61.4	58.5 – 71.3	-	58.2 – 68.4	59.7 – 72.3	-	55.1 – 60.0	56.7 – 70.1

## 4. WASTE

- 4.1 The waste generated from this Project includes inert construction and demolition (C&D) materials, and non-inert C&D materials. Non-inert C&D materials are made up of general refuse, vegetative wastes and recyclable wastes such as plastics and paper/cardboard packaging waste. Steel materials generated from the project are also grouped into non-inert C&D materials as the materials were not disposed of with other inert C&D materials.
- 4.2 As advised by the Contractor, for C&D waste, no metals were generated and collected by registered recycling collector. 0 tonnes of paper was generated on site and collected by registered recycling collector. No plastic waste was collected by registered recycling collector. 7.2 L of chemical waste was collected by licensed chemical waste collector. 19.5 m<sup>3</sup> of other types of wastes (e.g. general refuse) were generated on site and disposed of at Landfill. 87,512.9 m<sup>3</sup> of fill sand and 70,069.8 m<sup>3</sup> of fill rock were imported during the reporting period.
- 4.3 27,706 m<sup>3</sup> of dredged sediment in bulk quantity was dumped according to its dumping permit (EP/MD/20-051 & EP/MD/20-125) during the reporting period.
- 4.4 Chemical waste generated from the cleaning of oil stain and leakage on deck of barges was stored in the chemical waste storage area on the barges.
- 4.5 With reference to relevant handling records and trip tickets of this Project, the quantities of different types of waste generated in the reporting period are summarised in **Table 4.1**. Details of cumulative waste management data are presented as a waste flow table in **Appendix E**.

**Table 4.1 Quantities of Waste Generated from the Project**

Reporting Month	Actual Quantities of Inert C&D Materials Generated Monthly								Actual Quantities of C&D Wastes Generated Monthly					
	Total Quantity Generated	Hard Rock and Large Broken Concrete (see Note 1)	Reused in the Contract	Reused in other Projects	Disposed as Public Fill	Imported Fill			Metals	Paper / cardboard packaging	Plastics (see Note 2)	Chemical Waste		Others, e.g. general refuse (see Note 3)
						Sand	Public Fill	Rock				(in ,000kg)	(in ,000L)	
(in ,000m <sup>3</sup> )	(in ,000m <sup>3</sup> )	(in ,000m <sup>3</sup> )	(in ,000m <sup>3</sup> )	(in ,000m <sup>3</sup> )	(in ,000m <sup>3</sup> )	(in ,000m <sup>3</sup> )			(in ,000kg)	(in ,000kg)	(in ,000kg)	(in ,000kg)	(in ,000L)	(in ,000m <sup>3</sup> )
Jan 2020	0	0	0	0	0	37.155	0	25.0812	0	0	0	0	0	0.0065
Feb 2020	0	0	0	0	0	27.791	0	18.83	0	0	0	0	0	0.0065
Mar 2020	0	0	0	0	0	22.5669	0	26.1586	0	0	0	0	7.2	0.0065

Notes:

1. Broken concrete for recycling into aggregates.
2. Plastic refer to plastic bottles / containers, plastic sheets / foam from packaging materials.
3. Use the conversion factor: 1 full load of dumping truck being equivalent to 6.5 m<sup>3</sup> by volume.

4.6 Although there is not much waste generation in the reporting period from the Project, the Contractor is reminded to sort and store any solid and liquid waste on-site properly prior to disposal.

## 5. CORAL

### 5.1 Coral Monitoring Parameters

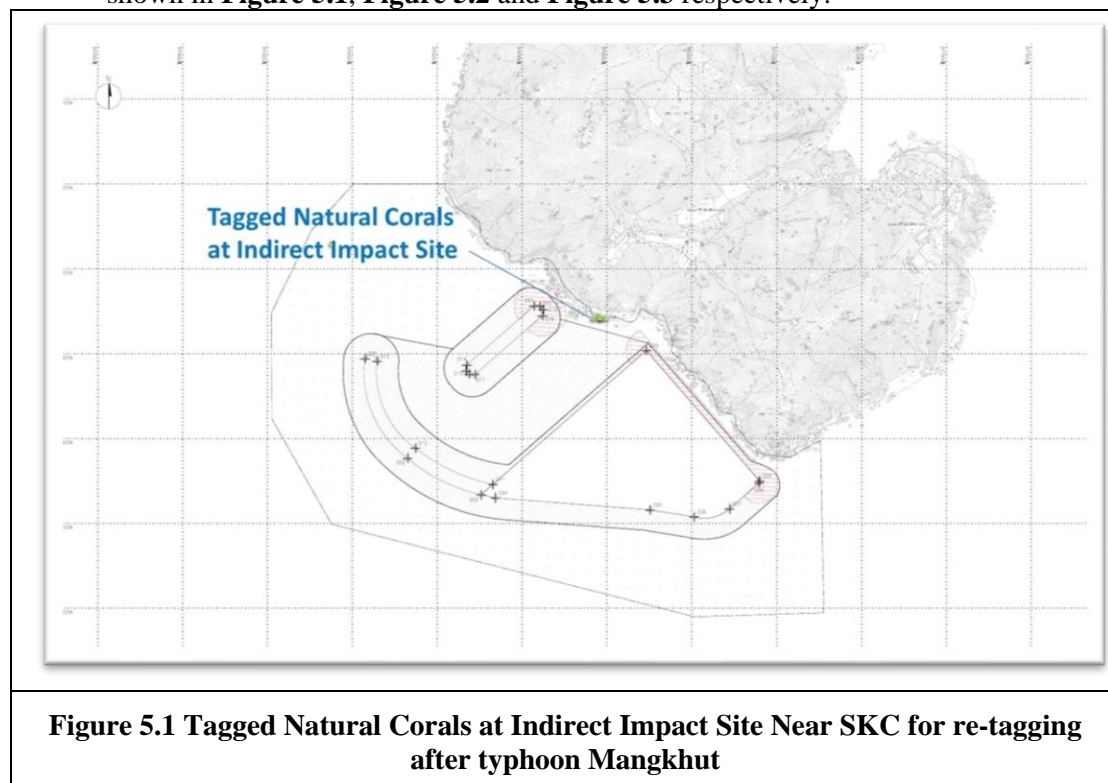
5.1.1 Ten (10) tagged coral colonies at each site of suggested control site and indirect impact site are being monitored weekly for the first month and followed by monthly monitoring for three months. The selected Control Site is located at Yuen Kong Chau of Soko Islands about 7 km away from the project area. After the hitting of super typhoon Mangkhut in mid-September 2018, the coral re-tagging activities at indirect impact site and control site were conducted in November and December 2018 respectively. Tagged coral colonies at the proposed recipient site are being monitored quarterly for one year and the last post-translocation coral monitoring was completed on 28 Mar 2019. The selected recipient site R3 is located the opposite side of the Project area at about 2 km away.

5.1.2 Monitoring recorded the following parameters (using the same methodology adopted during the pre-translocation survey); the size, presence, health conditions (percentage of mortality/bleaching) and percentage of sediment of each trans-located coral colony. The general environmental conditions including weather, sea, and tidal conditions of survey sites were monitored.

5.1.3 Health status of coral was assessed by the following criteria:  
Hard coral: Percentage of surface area exhibiting partial mortality and blanched/bleached area of each coral colony and degree of sedimentation.

### 5.2 Coral Monitoring Locations

Location of the ten tagged coral colonies at each of the proposed indirect impact site, control site, the recipient site R3 and REA transect at proposed indirect impact site are shown in **Figure 5.1**, **Figure 5.2** and **Figure 5.3** respectively:





**Figure 5.2 Tagged Natural Corals at Control Site Near Yuen Kong Chau for re-tagging after typhoon Mangkhut**



**Figure 5.3 Tagged Translocation Corals at Recipient Site R3 near SKC**

5.2.1 The GPS coordinates of the tagged coral colonies and retagged coral colonies at both indirect impact site, control site and recipient site R3 were shown in **Table 5.1**, **Table 5.2** and **Table 5.3** respectively.

**Table 5.1 Tagged Natural Corals during Baseline and Re-tagged Natural Corals after Typhoon Manghkut at Control Site near Yuen Long Chau**

Coral # <sup>note i</sup>	GPS Coordinates	
1	N22°09'45.96"	E113°54'57.81"
2R	N22°11'29.12"	E113°59'09.01"
3	N22°09'45.81"	E113°54'57.78"
4	N22°09'45.70"	E113°54'57.95"
5R	N22°11'29.10"	E113°59'09.18"
6	N22°09'45.75"	E113°54'58.02"
7R	N22°11'29.17"	E113°59'08.86"
7	N22°09'45.65"	E113°54'57.94"
8	N22°09'45.53"	E113°54'57.90"
9	N22°09'46.23"	E113°54'54.70"
10R	N22°11'29.18"	E113°59'08.91"

Notes:

- i. The re-tagged corals were marked as ##R.

**Table 5.2 Re-tagged Natural Corals after Typhoon Manghkut at Indirect Impact Site near SKC**

Coral # <sup>note i</sup>	GPS Coordinates	
11R	N22°11'29.14"	E113°59'08.92"
12R	N22°11'29.12"	E113°59'09.01"
13R	N22°11'29.11"	E113°59'09.07"
14R	N22°11'29.13"	E113°59'09.12"
15R	N22°11'29.10"	E113°59'09.18"
16R	N22°11'29.07"	E113°59'09.23"
17R	N22°11'29.17"	E113°59'08.86"
18R	N22°11'29.14"	E113°59'08.94"
19R	N22°11'29.20"	E113°59'08.81"
20R	N22°11'29.18"	E113°59'08.91"

Notes:

- i. The re-tagged corals were marked as ##R.

**Table 5.3 GPS Coordinates of Recipient Site R3**

Site	GPS Coordinates	
R3	N22°11'43.69"	E113°28.99"

### 5.3 Action and Limit Levels

- 5.3.1 Monitoring result was reviewed and compared against the below Action Level and Limit Level (AL/LL) as set with the below **Table 5.4** and **Table 5.5**.

**Table 5.4 Action and Limit Levels for Construction Phase Coral Monitoring**

Parameter	Action Level	Limit Level
Mortality	If during Impact Monitoring a 15% increase in the percentage of partial mortality on the corals occurs at more than 20% of the tagged indirect impact site coral colonies that is not recorded on the tagged corals at the control site, then the Action Level is exceeded.	If during Impact Monitoring a 25% increase in the percentage of partial mortality on the corals occurs at more than 20% of the tagged indirect impact site coral colonies that is not recorded on the tagged corals at the control site, then the Limit Level is exceeded.

**Table 5.5 Action and Limit Levels for Post-Translocation Coral Monitoring**

Parameter	Action Level	Limit Level
Mortality	If during Post-Translocation Monitoring a 15% increase in the percentage of partial mortality on the corals occurs at more than 20% of the translocated coral colonies that is not recorded on the original corals in the recipient site, then the Action Level is exceeded.	If during Post-Translocation Monitoring a 25% increase in the percentage of partial mortality on the corals occurs at more than 20% of the translocated coral colonies that is not recorded on the original corals in the recipient site, then the Limit Level is exceeded.

#### 5.4 Monitoring Results and Observations

- 5.4.1 Ten (10) hard coral colonies were monitored at each site of Control and Indirect Impact sites as suggested in the Construction Phase Monitoring Plan. The general health conditions (size, mortality, bleaching and sediment) were recorded and summarized in **Table 5.7** and **Table 5.8**. Photos of each tagged coral colonies were taken during the monitoring activities and shown in **Appendix F**.
- 5.4.2 The 5<sup>th</sup> quarterly coral monitoring during construction phase at both Indirect Impact Site and Control Site was conducted on 4 Mar 2020 and the weather condition was summarized in **Table 5.6**.

**Table 5.6 Weather Condition for the 5<sup>th</sup> Quarterly Coral Monitoring during Construction Phase at both Indirect Impact Site and Control Site**

<b>Date</b>	<b>Condition</b>	<b>Average Underwater Visibility</b>
04 Mar 2020	- North wind force 3 - Sunny period	Less than 0.5m



**Table 5.7 Sizes, Condition, Mortality, Bleaching and Sediment of 10 Natural Coral Colonies at Control Site of 5<sup>th</sup> Quarterly Coral Monitoring (04 Mar 2020) during 19<sup>th</sup> to 21<sup>st</sup> Months Construction Phase Monitoring**

Coral #	Species	Size (cm) – Max. Diameter	Condition	Mortality (%)		Bleaching (%)		Sediment (%)	
				Baseline (26 Jun 2018 & 3 Dec 2018)	04 Mar 2020	Baseline (26 Jun 2018 & 3 Dec 2018)	04 Mar 2020	Baseline (26 Jun 2018 & 3 Dec 2018)	04 Mar 2020
1	<i>Goniopora stutchburyi</i>	25	Fair	0	0	0	0	0	0
2R	<i>Goniopora stutchburyi</i>	10	Good	0	0	0	0	0	0
3	<i>Psammocora superficialis</i>	18	Fair	0	0	0	0	0	0
4	<i>Turbinaria peltata</i>	13	Good	0	0	0	0	0	0
5R	<i>Goniopora stutchburyi</i>	18	Good	0	0	0	0	0	0
6	<i>Cyphastrea serailia</i>	43	Fair	0	0	0	0	0	0
7R	<i>Coscinaraea</i> sp.	15	Good	0	0	0	0	0	0
8	<i>Goniopora stutchburyi</i>	21	Good	0	0	0	0	0	0
9	<i>Goniopora stutchburyi</i>	11	Fair	0	0	0	0	0	0
10R	<i>Goniopora stutchburyi</i>	20	Good	0	0	0	0	0	0

Notes:

- i. The re-tagged corals were marked as ##R.

**Table 5.8 Sizes, Condition, Mortality, Bleaching and Sediment of 10 Natural Coral Colonies at Indirect Impact Site of 5<sup>th</sup> Quarterly Coral Monitoring (04 Mar 2020) during 19<sup>th</sup> to 21<sup>st</sup> Months Construction Phase Monitoring**

Coral #	Species	Size (cm) – Max. Diameter	Condition	Mortality (%)		Bleaching (%)		Sediment (%)	
				Baseline (23 Nov 2018)	04 Mar 2020	Baseline (23 Nov 2018)	04 Mar 2020	Baseline (23 Nov 2018)	04 Mar 2020
11R	<i>Cyphastrea serailia</i>	48	Good	0	0	0	0	0	0
12R	<i>Favites chinensis</i>	27	Good	0	0	0	0	0	0
13R	<i>Turbinaria peltata</i>	21	Good	0	0	0	0	0	0
14R	<i>Favites chinensis</i>	8	Good	0	0	0	0	0	0
15R	<i>Goniopora stutchburyi</i>	11	Good	0	0	0	0	0	0
16R	<i>Psammocora superficialis</i>	27	Good	0	0	0	0	0	0
17R	<i>Favites chinensis</i>	15	Good	0	0	0	0	0	0
18R	<i>Psammocora superficialis</i>	39	Good	0	0	0	0	0	0
19R	<i>Psammocora superficialis</i>	42	Good	0	0	0	0	0	0
20R	<i>Psammocora superficialis</i>	29	Good	0	0	0	0	0	0

Notes:

- i. The re-tagged corals were marked as ##R.

- 5.4.3 The re-tagging activity had been done at both Indirect Impact Site and Control Site on November 2018 and December 2018 respectively. A total of 20 tagged coral colonies (10 at control site and 10 at indirect impact site including the re-tagged coral colonies) were monitored. Similar to the baseline results performed in June, November and December 2018 and the results of the previous four quarterly coral monitoring during construction phase, the health condition of all tagged and re-tagged coral colonies at Indirect Impact Site and Control site were good in general. No increased mortality was recorded during the survey in March 2020.
- 5.4.4 No sediment, bleaching or increased mortality in the general condition of coral colonies were observed during the 5<sup>th</sup> quarterly coral monitoring period. No deterioration of the coral community was observed in the ecological monitoring results when compared with the baseline ecological monitoring results. There is no AL/LL exceedance during the monitoring period.

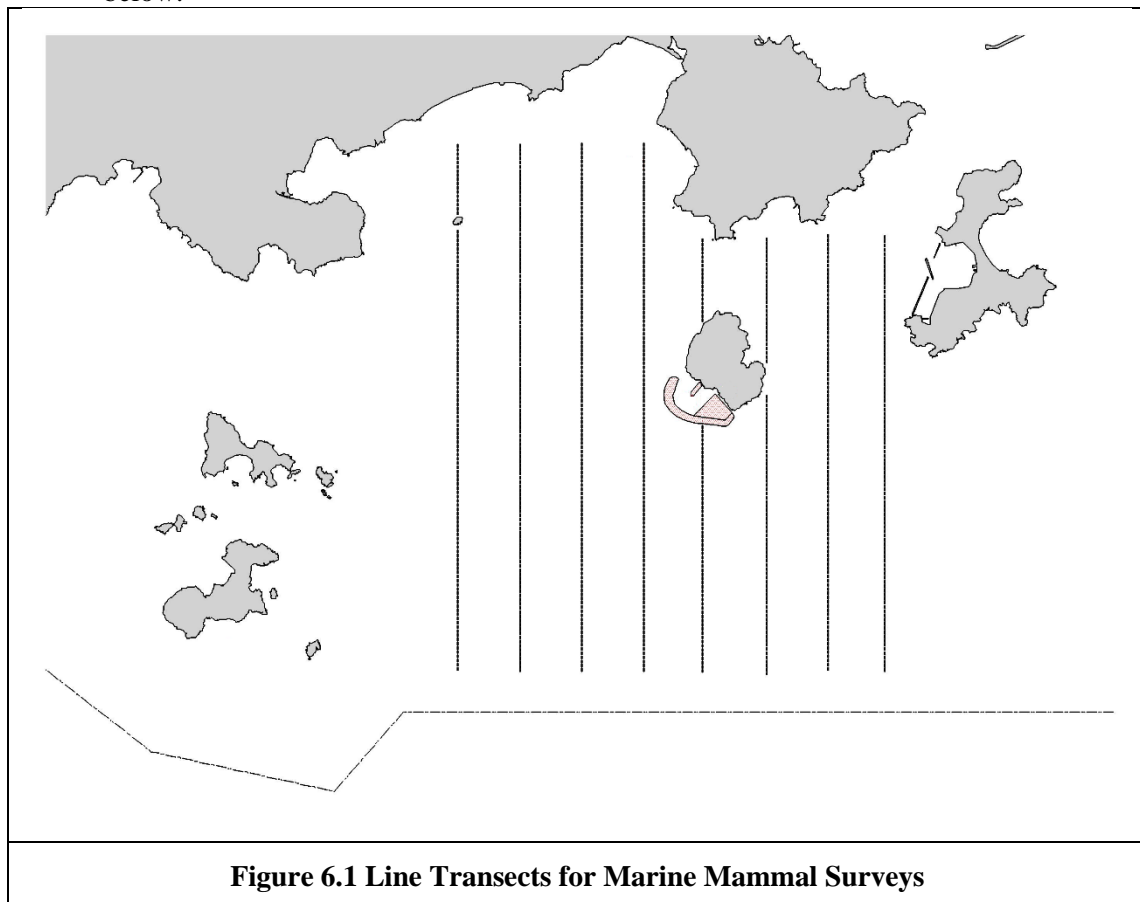
## 6. MARINE MAMMAL

### 6.1 Survey Methods

#### 6.1.1 Vessel-based Line-transect Survey

For the vessel-based marine mammal surveys, the monitoring team adopted the standard line-transect method (Buckland et al. 2001) as same as that adopted during the EIA study and pre-construction phase monitoring to allow fair comparison of marine mammal monitoring results.

Eight transect lines are set at Southeast Lantau survey area, including Shek Kwu Chau, waters between Shek Kwu Chau and the Soko Islands, inshore waters of Lantau Island (e.g. Pui O Wan) as well as southwest corner of Cheung Chau as shown in **Figure 6.1** below:

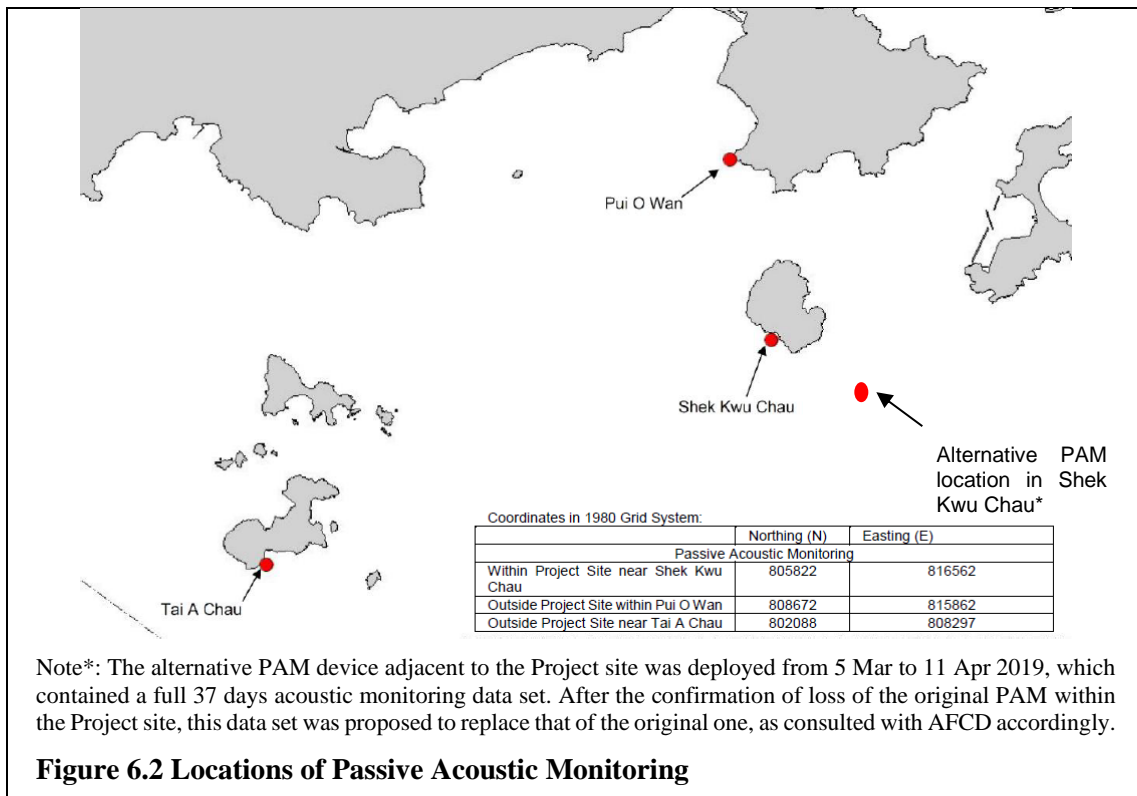


In comparison to the baseline monitoring results, results from the analyzed construction phase monitoring data would allow the detection of any changes of their usage of habitat, in response to the scheduled construction works.

#### 6.1.2 Passive Acoustic Monitoring (PAM)

The PAM aims to study the usage of an area by Finless Porpoise by using an array of automated static porpoise detectors (e.g. C-POD) which would be deployed at different locations to detect the unique ultra-high frequency sounds produced by Finless Porpoise. During the construction period, the PAM survey will be conducted including placement of two passive porpoise detectors outside the Project Area as control site (i.e.

within Pui O Wan and to the south of Tai A Chau) and one porpoise detector within the Project Area (i.e. near Shek Kwu Chau) as shown in **Figure 6.2** below.



These three detectors will be deployed on-site to carry out 24-hours monitoring for a period listed as **Table 6.1** below during the construction phase.

**Table 6.1 PAM Deployment Period**

Season	Months	Deployment Period
Peak Season	December, January, February, March, April or May	At least 30 days during the peak months of porpoise occurrence in South Lantau waters

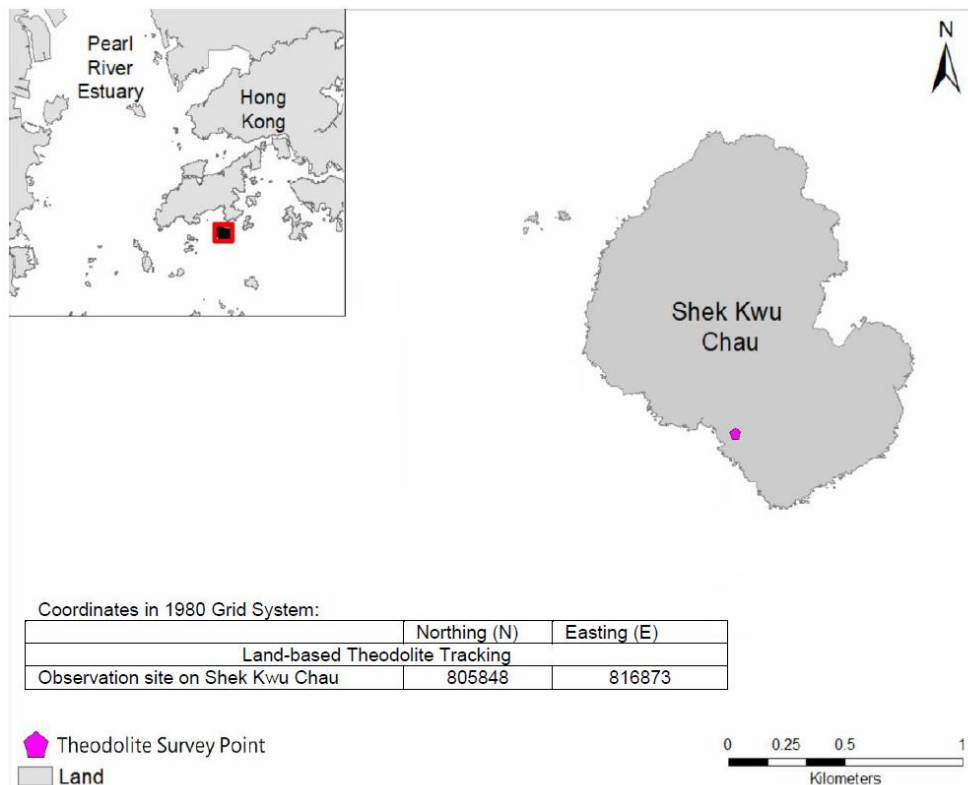
6.1.2.1 The automated static porpoise detectors shall detect the presence and number of finless porpoise and Chinese White Dolphins respectively over the deployment period, with the false signal such as boat sonar and sediment transport noise distinguished and filtered out. The detectors shall be deployed and retrieved by professional dive team on the seabed of the three selected location shown in **Figure 6.2**. During each deployment, the C-POD unit serial numbers as well as the time and date of deployments shall be recorded. Information including the GPS positions and water depth at each of the deployment locations shall also be obtained.

6.1.2.2 The diel patterns (i.e. 24-hour activity pattern) of finless porpoise occurrence among the three sites at Shek Kwu Chau, Tai A Chau and Pui O Wan shall be analyzed. Peaks and troughs of finless porpoise occurrence per hour of day would be identified and compared with the results obtained from pre-construction monitoring.

6.1.3 Land-based Theodolite Tracking

The Land-based Theodolite Tracking study would use the same station as in the AFCD monitoring study (same as the baseline monitoring location), which is situated

at the southwest side of Shek Kwu Chau (GPS position: 22°11.47' N and 113°59.33' E) as shown in below **Figure 6.3**. The station was selected based on its height above sea level (at least 20 metres), close proximity to shore, and relatively unobstructed views of the entire Project Area to the southwest of Shek Kwu Chau. The height of the Shek Kwu Chau Station established by the HKCRP team is 74.6 m high at mean low water, and only a few hundred metres to the IWMF reclamation site, which is ideal for the purpose for the present behavioural and movement monitoring of finless porpoises as well during construction phase considering there as an un-obstructed vantage point at a height above the Project Site.



**Figure 6.3 Locations of Land-based Theodolite Tracking**

6.1.3.1 During the construction phase, Land-based Theodolite Tracking will be carried out for approximately six hours of tracking for each day of field work for a period listed as **Table 6.2** below, preferably at the initial stage of the construction period (i.e. December 2018 to May 2019).

**Table 6.2 Land-based Theodolite Tracking Survey Period**

Season	Months	Survey Period
Peak Season	December, January, February, March, April or May	30 days during the peak months of porpoise occurrence in South Lantau waters

6.1.3.2 The monitoring period for land-based theodolite tracking will be proposed to be overlapped with the PAM. The monitoring team consists of one experienced theodolite operator and at least two field observers for assistance. To conduct theodolite tracking, the observers will search systematically for Finless Porpoise using the unaided eye and 7 x 50 handheld binoculars on each survey day throughout the study area. When an individual or group of porpoises is located, a theodolite tracking session will be initiated and focal follow methods will be used to track the

porpoise(s). Behavioural state data (i.e. resting, milling, travelling, feeding and socializing) shall also be recorded every 5 minutes for the focal individual or group. Positions of porpoises and boats shall be measured using a digital theodolite connected to a laptop computer. This tracking survey will be conducted during the peak season between December 2018 and May 2019 for 30 surveys spanning across 15-16 weeks during the peak season to provide good temporal coverage during the initial stage of the construction period.

## 6.2 Specific Mitigation Measures

### 6.2.1 Monitored exclusion zones

During the installation/re-installation/relocation process of floating type silt curtains, in order to avoid the accidental entrance and entrapment of marine mammals within the silt curtains, a monitored exclusion zone of 250 m radius from silt curtain should be implemented and monitored by competent Marine Mammal Observers (MMOs). Marine Mammal Exclusion Zone (MMEZ) would also be implemented for precautionary purpose for DCM works.

### 6.2.2 Marine mammal watching plan

Upon the completion of silt curtain installation/re-installation/relocation, marine mammal watching plan would be implemented to observe the presence of any marine mammal around the localized silt curtain or being trapped by the localized silt curtain.

## 6.3 Results and Observations

### 6.3.1 Vessel-based Line-transect Survey

6.3.1.1 Six monthly surveys were conducted during the reporting period. As this is covering designated peak season (December – May), two survey were completed in January, February and March 2020 separately. A total on effort (transects only) survey length of 246.1 km was completed, 217.7 km at Beaufort Sea State 2 or better (**Table 6.3**). Twenty-two sightings were recorded during the reporting period (**Table 6.4**).

**Table 6.3 Summary of Vessel-based Line-transect Survey Effort**

Date	Area*	Beaufort	Effort (km)	Season	Vessel	Effort Type**
7 Jan 2020	SEL	1	41.2	WINTER	SMRUHK	P
20 Jan 2020	SEL	1	14.5	WINTER	SMRUHK	P
		2	25.5			
		3	1.8			
3 Feb 2020	SEL	1	15.5	WINTER	SMRUHK	P
		2	20.1			
		3	4.8			
17 Feb 2020	SEL	2	18.5	WINTER	SMRUHK	P
		3	18.3			
		4	3.0			
18 Mar 2020	SEL	1	25.5	SPRING	SMRUHK	P
		2	15.4			
		3	0.5			
23 Mar 2020	SEL	1	41.5	SPRING	SMRUHK	P

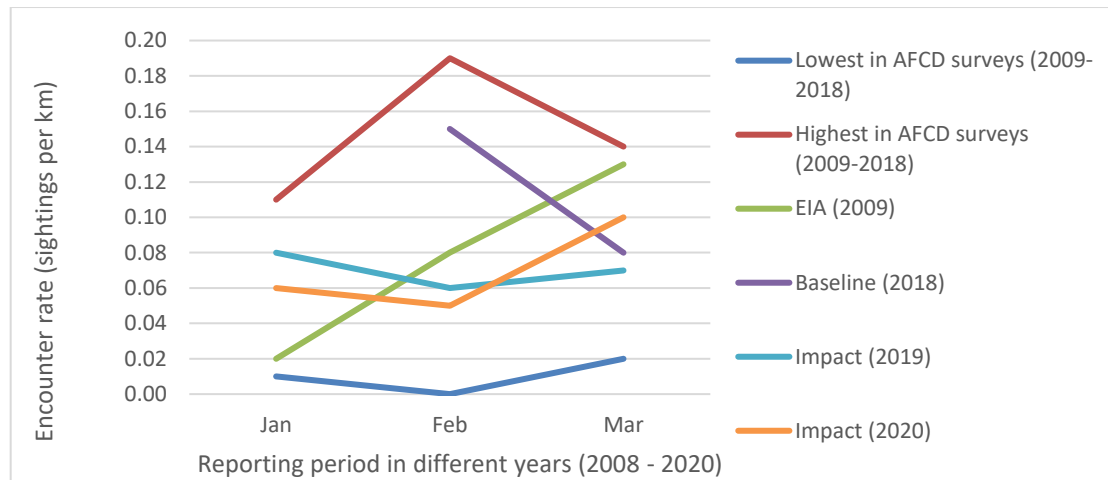
\* As shown in **Figure. 6.1**

\*\* P (from AFCD) denotes the ON EFFORT survey on the transect line, not the adjoining passages

**Table 6.4 Sightings recorded during Jan to Mar 2020 Vessel-based Line-transect Survey**

Date	Species	Sighting No.	Time	Group Size	PSD	Behaviour	Lat.	Long.	Area	Effort	Season
7 Jan	Finless Porpoise	29	13:07	1	105	Travelling	22.19117	113.9436	SEL	ON	WINTER
20 Jan	Finless Porpoise	30	11:01	2	140	Travelling	22.19041	113.9542	SEL	ON	WINTER
	Finless Porpoise	31	11:09	1	43	Travelling	22.16874	113.9544	SEL	ON	
	Chinese White Dolphin	32	11:35	1	194	Travelling	22.22142	113.9642	SEL	ON	
	Finless Porpoise	33	12:39	1	N/A	Travelling	22.19158	113.9964	SEL	OPP	
	Finless Porpoise	34	13:18	1	135	Unknown	22.20979	114.0129	SEL	ON	
3 Feb	Finless Porpoise	35	13:22	3	113	Travelling	22.19905	114.0133	SEL	ON	WINTER
	Finless Porpoise	36	10:40	5	43	Travelling	22.20035	114.0032	SEL	ON	
	Finless Porpoise	37	11:15	2	N/A	Unknown	22.19597	113.9958	SEL	OPP	
17 Feb	Finless Porpoise	38	12:15	2	20	Travelling	22.21154	113.9741	SEL	ON	WINTER
	Finless Porpoise	39	12:28	2	37	Travelling	22.22073	113.9739	SEL	ON	
18 Mar	Finless Porpoise	40	13:34	2	30	Travelling	22.18299	114.0029	SEL	ON	SPRING
	Finless Porpoise	41	12:14	1	600	Travelling	22.20346	113.9644	SEL	ON	
	Finless Porpoise	42	12:41	3	88	Travelling	22.18274	113.9539	SEL	ON	
	Finless Porpoise	43	12:49	1	N/A	Travelling	22.16543	113.9510	SEL	OPP	
	Finless Porpoise	44	13:01	1	77	Travelling	22.17594	113.9442	SEL	ON	
	Finless Porpoise	45	13:08	1	6	Travelling	22.19230	113.9442	SEL	ON	
23 Mar	Finless Porpoise	46	13:55	10	N/A	Surface active	22.21393	113.9770	SEL	OPP	SPRING
	Finless Porpoise	47	10:09	6	178	Travelling	22.18127	114.0129	SEL	ON	
	Finless Porpoise	48	11:46	3	80	Travelling	22.18235	113.9736	SEL	ON	
	Finless Porpoise	49	12:39	2	293	Travelling	22.18070	113.9542	SEL	ON	
	Finless Porpoise	50	12:43	2	139	Travelling	22.17079	113.9539	SEL	ON	





**Figure 6.4 Plot of encounter rate during January to March in 2008 – 2020 from different surveys**

- 6.3.1.2 A review of the long term AFCD marine mammal monitoring programme, the EIA and the pre-construction baseline monitoring report for this project was conducted. Both the EIA and the pre-construction baseline monitoring were conducted during the peak porpoise months Dec 2008 to May 2009 and Feb to April 2018, respectively. The AFCD long term monitoring data, EIA data, baseline monitoring in 2018 and impact monitoring in 2019 should be compared directly to Impact Survey results of the reporting periods.
- 6.3.1.3 A review of the Beaufort Sea state survey conditions between 2009 and 2018 (only data available from AFCD at time of writing; (AFCD 2018; 2017; 2016; 2015; 2014; 2013; 2012; 2011; 2010)) shows that survey conditions in January to March 2020 were within the % limits of previous AFCD surveys, similar to impact monitoring surveys conducted in 2019.
- 6.3.1.4 A review of all the porpoise sightings in the survey area for January to March between 2009-2018 indicates that there is more sightings usually recorded in January to March. Given the similar survey conditions and the encounter rate recorded for porpoise in the project area during the reporting period, the encounter rate for January to March 2020 was 0.06, 0.05, 0.10 km<sup>-1</sup> respectively (see **Figure 6.4**), it is noted that the encounter rate of impact survey is similar when compared to other years. It is noted that the reporting period was covering peak season and that works at IWMF are increasing, both which may impact encounter rates. It is also noted that the impact survey focuses on a relatively small populations of highly mobile individuals and the survey area conducted for this monitoring is very small. For January to March 2020, as was similar to the case in 2019 impact monitoring conducted by ET and the encounter rates of impact surveys were lying within the range of encounter rate in AFCD surveys.
- 6.3.1.5 Data and records of the implemented mitigation measures, including construction vessel routing and speed control, marine mammal watching plan and avoidance of noisy work during the peak season, are collected from the Contractor and now under detail review. As surveys continue for this project, data shall be constantly re-evaluated across survey months to discern trends and impacts, if any.
- 6.3.2 PAM and Land-based Theodolite Tracking
- 6.3.2.1 30 days of PAM surveys were started at 1 May 2019 and completed until the end of May 2019. Multiple PAM systems were deployed at three sites. The PAM system

located at the IWMF was lost, however, an alternative data set has been identified. The PAM systems at the two control sites Tai A Chau and Pui O were recovered on 3 August 2019. A summary of marine mammal detections shows that porpoise were recorded every day of deployment at each site, but at varying frequencies. The detailed theodolite result was presented in 17<sup>th</sup> Monthly EM&A report (November 2019) while detailed PAM result was presented in 18<sup>th</sup> Monthly EM&A report (December 2019).

6.3.2.2 For the baseline study, the DPM for each site was 11,160 (Shek Kwu Chau), 16,089 (Tai A Chau) and 3645 (Pui O Wan), totalling 30,894 DPM across all three sites, compared to DPMs of 4740 (Shek Kwu Chau), 7725 (Tai A Chau) and 23,986 (Pui O Wan), totalling 36,451 DPM, for the impact phase study. As the impact phase study was longer than the baseline study, it is not appropriate to directly compare total counts of DPM, however, the DPM rate (the average number of detections per day) for each site can be more directly compared. During the baseline study, Shek Kwu Chau averaged 338.2 DPM per day compared to 124.8 DPM per day, during the impact phase study. This showed a decrease in the daily average of porpoise detection at Shek Kwu Chau. During the baseline study, Tai A Chau averaged 487.6 DPM per day compared to 179.7 DPM per day, during the impact phase study. This showed a decrease in the daily average of porpoise detection at Tai A Chau. During the baseline study, Pui O Wan averaged 98.5 DPM per day compared to 557.8 DPM per day, during the impact phase study. This showed a significant increase in the daily average of porpoise detections at Pui O Wan (**Table 6.5**).

6.3.2.3 Overall, the PAM study showed that porpoise continue to consistently utilise the Shek Kwu Chau habitat immediately adjacent to the IWMF construction activities, although to a lesser degree than that prior to construction activities. In addition, the Pui O Wan site, which is 2.5 km away from the IWMF construction area, was also consistently utilised during the impact phase PAM study. A continued assessment of fine scale habitat use, particularly through PAM which yields large quantities of data, would allow a more comprehensive assessment of the EIA predictions.

**Table 6.5 Summary Statistic Comparison of Baseline (2018) and Impact Phase (2019) Passive Acoustic Monitoring**

Baseline data									
Site	Unit ID	Start	End	Days	DPD % Days	Total DPM	DPM /Day	% False Positive DPM	Time Lost %
Shek Kwu Chau	2891	2018/02/09	2018/03/13	32.11	100	11160	338.2	0.0	1.00
Tai A Chau	2868	2018/02/09	2018/03/13	32.5	100	16089	487.6	1.0	2.00
Pui O Wan	2891	2018/03/13	2018/04/17	34.85	97.3	3645	98.5	2.0	31.87
Total				99.01		30894	312.0		
Impact Phase									
Site	Unit ID	Start	End	Days	DPD % Days	Total DPM	DPM /Day	% False Positive DPM	Time Lost %
Shek Kwu Chau	IWMF_BU_20190305_01	2019/03/05	2019/04/11	37.91	100	4740	124.8	0.0	0
Tai A Chau	IWMF_20190411_02	2019/04/11	2019/05/23	41.94	100	7725	179.7	0.0	0
Pui O Wan	IWMF_20190411_01	2019/04/11	2019/05/23	42.02	100	23986	557.8	0.0	0
Total				121.9		36451	299.1		

6.3.2.4 Theodolite surveys were completed in May 2019. In total, thirty four days of theodolite tracking were completed between February - May 2019, comprising 167 hours and 49 minutes of observation. No Chinese white dolphin was observed and only one finless was recorded. The finless porpoise encounter rate was calculated as 0.006 finless porpoise per hour, in all weather conditions.

- 6.3.2.5 A total of 2620 vessels of ten different types were observed and tracked within or in the proximity of the IWWMF construction site. These comprised fishing boats (236), speed boats (29), container boats (155), government boats (22), high speed ferries (53), others (13) and IWWMF-Related construction platforms (974), tug boats(240), transportation boats (363), construction boats (531 and approximately 8 buoys were present marking the site boundary. The detailed Land-based Theodolite Tracking Report was presented in 5<sup>th</sup> Quarterly EM&A report and 17<sup>th</sup> Monthly EM&A report.
- 6.3.2.6 The baseline theodolite tracking was conducted immediately prior to and during the site preparation activities of the site. The baseline data records a decrease in porpoise sightings as site preparation activities commenced and notes that the decrease was most likely due to the onset of site preparation activities. The impact theodolite tracking conducted for this study records a marked increase in the number of Project related vessels and platforms and, in agreement with baseline conclusions, shows a concomitant decrease in finless porpoise sightings.
- 6.3.2.7 Photo records of the marine mammal monitoring taken during the reporting period are presented in **Appendix G**.

### 6.3.3 Specific Mitigation Measures

- 6.3.3.1 Silt curtains were deployed for sand blanket laying works and DCM during the reporting period. At least two MMO were on duty for continuous monitoring of the Marine Mammal Exclusion Zone (MMEZ) for DCM works and installation/re-installation/relocation process of silt curtains, and the marine mammal trapping checking and silt curtains inspection in accordance with the Detailed Monitoring Programme of Finless Porpoise and Marine Mammal Watching Plan respectively. Trainings for the MMO were provided by the ET prior to the aforementioned works, with a cumulative total of 98 individuals being trained and the training records kept by the ET. From the Marine Mammal Watching observation records and MMEZ monitoring log records, no Finless Porpoise or other marine mammals were observed within or around the MMEZ and silt curtains in the reporting month.

## 7. WHITE-BELLIED SEA EAGLE

### 7.1 WBSE Monitoring Parameters

7.1.1 The objective of the construction phase monitoring should be to verify the utilisation of the area by WBSE, their responses to construction disturbance, as well as the effectiveness of the proposed mitigation measures. Throughout the construction phase, field surveys should be conducted twice per month during their core breeding season (from December to May), and once per month outside their core breeding season (from June to November). The monitoring frequency should be increased to weekly during the incubation period of each year. In order to confirm their foraging ground near the construction site, it is necessary to conduct daily monitoring during the first week of nestling period in each year.

7.1.2 Since the location of the WBSE nest was located at the southwest of SKC within the hillside shrubland, it is impossible to observe the eggs during incubation period. Therefore, monitoring with increased frequency during incubation period could not be carried out. Daily monitoring will be carried out once any chick is recorded during the monitoring day.

### 7.2 Results and Observations

7.2.1 Thirteen monitoring for monthly construction phase were conducted during the reporting period. Since there is no landing point along the western part of SKC, boat survey was used for the monitoring survey. In order to increase the chance of finding the WBSEs, monitoring survey was carried out either early in the morning or later in the afternoon. The weather conditions of monitoring survey were shown in **Table 7.1**.

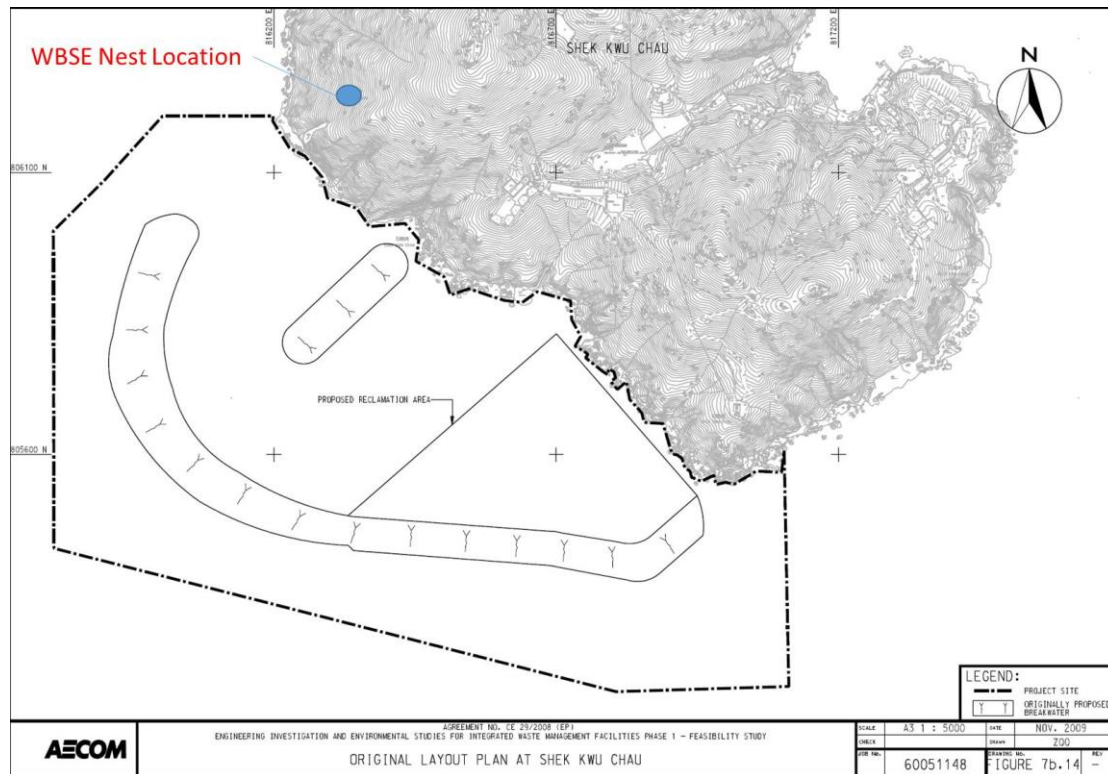
**Table 7.1 Weather Conditions during the WBSE Monitoring (Monthly)**

Date	Condition	Temperature (°C)
3 Jan 2020	- Northeast wind force 4 to 5 - Sunny	22
9 Jan 2020	- North wind force 4 to 5 - Sunny	21
16 Jan 2020	- East wind force 5 - Sunny	20
23 Jan 2020	- Northeast wind force 4 to 5 - Sunny	23
31 Jan 2020	- East wind force 4 to 5 - Sunny	24
07 Feb 2020	- East wind force 4 to 5 - Sunny	18
14 Feb 2020	- East wind force 4 - Sunny	20
21 Feb 2020	- Northeast wind force 4 to 5 - Sunny	23
28 Feb 2020	- Northeast wind force 5 - Sunny	25
04 Mar 2020	- East wind force 3 - Sunny	25
13 Mar 2020	- East wind force 3 to 4 - Sunny	26
20 Mar 2020	- North wind force 4 to 5 - Sunny	22
27 Mar 2020	- Northeast wind force 4 - Sunny	24

7.2.2 Two WBSE adults were recorded having incubation and stayed in the nest area on SKC Island during the survey in Jan, Feb & Mar 2020. However, during the weekly survey on 27 Mar 2020, the two adults of WBSE were only recorded during the survey time. It was believed that incubation period finished in Mar 2020. No abnormal behaviour of the adults were recorded during the reporting period.

7.2.3 Since the incubation period was finished, the monthly construction phase monitoring (twice per month) will be resumed during the breeding season (between December to May) in order to monitor the incubation period, utilization of the area by WBSE and their responses to construction disturbance. The nest will be inspected daily during the first week of nesting period when the chick was recorded according to the updated EM&A Manual.

7.2.4 No disturbances from anthropogenic activities on the island were recorded during the monitoring surveys. However, fishing boats moving close to the shore were recorded. Since the nest is about 160m away from the shore and it is not accessible, fishing boat activities did not show any direct disturbance to the WBSE nest.



**Figure 7.1 Location of WBSE Nest on SKC**

- 7.2.5 No invasion of other fauna species was recorded and no sign of using the construction site as a foraging ground was recorded as well.
- 7.2.6 During the reporting period, no abnormal behaviour of the recorded adults and chick was shown. All marine works during 19<sup>th</sup> to 21<sup>st</sup> month construction period did not show any influence on the WBSE.
- 7.2.7 Photo records of the WBSE taken during the reporting period are presented in **Appendix H**.

## **8. SUMMARY OF MONITORING EXCEEDANCE, COMPLAINTS, NOTIFICATION OF SUMMONS AND PROSECUTIONS**

- 8.1 No exceedance of the Action and Limit Levels of the regular construction noise, coral and WBSE monitoring was recorded during the reporting period.
- 8.2 For general & regular DCM water monitoring, nineteen (19) of the water quality monitoring results for Suspended Solid (SS) recorded during the reporting period had exceeded the relevant Action Level and eight (8) of them had exceeded the relevant Limit Level. Three (3) & two (2) of the water quality monitoring results for SS reported had exceeded the Action and Limit Level during January 2020 respectively, sixteen (16) & six (6) of the water quality monitoring results for SS reported had exceeded the Action & Limit Level during February 2020 respectively and none of the water quality monitoring results for SS reported had exceeded the Action & Limit Level during March 2020.
- 8.3 Investigations carried out immediately for each of the exceedance cases during the reporting period had shown that these exceedances were unrelated to the Project, however, environmental deficiencies of the Contractor on the implementation of silt curtain deployment system were spotted.
- 8.4 Further investigation was made with the Contractor on the silt curtain design and checking procedure as stated in the deposited Silt Curtain Deployment Plan. Rectification actions regarding to the improper implementation of silt curtain system shall be carried out immediately.
- 8.5 The Contractor has been reminded that all measures recommended in the deposited Silt Curtain Deployment Plan shall be fully and properly implemented for the Project as per Clause 2.6A of the FEP.
- 8.6 No notification of summons and prosecution was received in the reporting period.
- 8.7 Statistics on complaints, notifications of summons and successful prosecutions are summarized in **Appendix I**.

## 9. EM&A SITE INSPECTION

- 9.1 Site inspections were carried out on a weekly basis to monitor the implementation of proper environmental pollution control and mitigation measures under the Contract. Site inspections were carried out at the Site Portions 1, 1A & 1B and Portion 7 & 7A during the reporting period. Portions 1, 1A & 1B were the sites near SKC within the Site boundary while Portions 7 & 7A was the site at Tung Chung for stockpiling of construction materials.
- 9.2 Joint site inspection with IEC was carried out on a monthly basis.
- 9.3 Minor deficiencies were observed during weekly site inspection. Key observations during the site inspections are summarized below:
- Site tidiness were not maintained properly
  - Prevention actions for oil/chemical spillage were not carried out properly
  - Silt curtains were not deployed properly
  - Damage of deployed silt curtains was found
  - Good housekeeping practice were not well-maintained
  - The bottom dumping method was not implemented strictly for the grab content
- 9.4 The Contractor has rectified all of the observations identified during environmental site inspections in the reporting period.
- 9.5 During site inspection, installed silt curtains were found damaged for some idling works. The contractor was reminded to properly fix and maintain the deployed silt curtains prior to the operation of concerned construction works during the site walk by ET and IEC. The Contractor conducted the maintenance of deployed silt curtain immediately before resuming any construction works.
- 9.6 According to the EIA Study Report, Environmental Permit, contract documents and Updated EM&A Manual, the mitigation measures detailed in the documents, except the silt curtain system, are implemented as much as practical during the reporting period. An updated Implementation Status of Environmental Mitigation Measures (EMIS) is provided in **Appendix B**.



## 10. CONCLUSION AND RECOMMENDATIONS

- 10.1 This 7<sup>th</sup> Quarterly Environmental Monitoring and Audit (EM&A) Report summarizes the EM&A works undertaken during the period from 1 January 2020 to 31 March 2020 in accordance with the Updated EM&A Manual and the requirement under EP-429/2012/A and FEP-01/429/2012/A.
- 10.2 Construction noise, water quality, construction waste, coral, marine mammal and White-Bellied Sea Eagle (WBSE) monitoring were carried out in the reporting period. No project-related exceedance of the Action and Limit Level was recorded during the reporting period, however, environmental deficiencies of the Contractor on the implementation of silt curtain deployment system were spotted.
- 10.3 Weekly environmental site inspections were conducted during the reporting period. Environmental deficiencies were observed during site inspection and were rectified.
- 10.4 According to the environmental site inspections performed in the reporting period, the Contractor was reminded to pay attention on on-site housekeeping, and the proper storage of the chemicals and construction waste.
- 10.5 According to the field observation by MMO during the reporting period, temporary silt plume floating was observed at close proximity of the outside of silt curtains, moving out from the sand laying working area. The Contractor has ceased the malpractice and no silt plume was observed at the working area within 30 minutes upon discovery. The Contractor is reminded to ensure the proper implementation of mitigation measures as specified in the Updated EM&A Manual and Silt Curtain Deployment Plan.
- 10.6 According to the observation during weekly inspection on 30 March 2020, dumping rocky material above water surface instead of bottom of the sea was observed. As confirmed by the Contractor, the concerned barge was laying rock to form rubble mound, which is not applicable to the requirement of bottom dumping method as specified in the Silt Curtain Deployment Plan (Rev I). Further briefing on the bottom dumping method was arranged for the crane operators by the Contractor. In accordance with the Silt Curtain Deployment Plan, the Contractor is reminded to use the bottom dumping method for laying of sand blanket.
- 10.7 Regarding to the deployment of silt curtains as a principal water quality impact mitigation measures on various marine works, the Contractor has been reminded to follow strictly to the design and checking procedure as specified in the Silt Curtain Deployment Plan. The Contractor has been reminded to pay extra attention on the status of deployed silt curtain. The Contractor is reminded that all measures recommended in the deposited silt curtain deployment plan shall be fully and properly implemented for the Project as per EP condition 2.6 of the FEP.
- 10.8 As dredging works was conducted in the reporting month, the Contractor had been reminded to follow strictly to the design and checking procedure as specified in the Silt Curtain Deployment Plan for the dredging works. The Contractor had been reminded to follow the regulation on rate and means for dredging works as stipulated in FEP Clause 2.17 – 2.21 or the approved Supporting Document for Reviewing Dredging Rate and Filling Rate, whichever is applicable. The Contractor is reminded to follow Dumping At Sea Ordinance (DASO) for the storage, handling and disposal of dredged materials.
- 10.9 No environmental complaint was received in the reporting period.

- 10.10 No notification of summons or prosecution was received since commencement of the Contract.
- 10.11 The ET will keep track on the construction works to confirm compliance of environmental requirements and the proper implementation of all necessary mitigation measures.

## Appendix A Master Programme







Activity ID	Activity Name	Primary Constraint	At Completion Duration	Current Start	Current Finish	Actual Start	Actual Finish	Latest Start	Latest Finish	Total Float	Activity % Complete	M28 Remarks
05-1020	Ash Cranes	Start On or After	244			07-Sep-18 A	09-May-19 A				100%	
05-1030	Leachate Collection and Treatment	Start On or After	245			25-May-18 A	25-Jan-19 A				100%	
05-1040	Waste Water Treatment System	Start On or After	361			06-Jul-18 A	02-Jul-19 A				100%	
05-1050	Overall Plan Water Scheme	Start On or After	350			24-May-18 A	09-May-19 A				100%	
05-1060	Boiler Feed Water System	Start On or After	223			21-Mar-18 A	30-Oct-18 A				100%	
EP_SP_66_12-WP-3-M28.05.01.01.2	MSW treatment process design for mechanical treatment (2.1.02)		707	31-Mar-20	13-Jul-20	07-Aug-18 A	13-Jul-20	02-May-20	15-Aug-20	32		
05-1090	Mechanical Treatment Plant (2.1.02.01)	Start On or After	105	31-Mar-20	13-Jul-20	31-Mar-20*	13-Jul-20	02-May-20	15-Aug-20	32	0%	
05-1100	Desalination Plant and Boiler Water Treatment (Demin Unit) Plant (2.1.02.02)	Start On or After	345			07-Aug-18 A	18-Jul-19 A				100%	
EP_SP_66_12-WP-3-M28.05.01.01.3	Waste heat recovery and Power generation system (2.1.03)		323			24-May-18 A	12-Apr-19 A					
05-1110	Power Island (Steam Turbine Generator, Pressure Reducing and Desuperheating Station, Air Cooled Cond)	Start On or After	323			24-May-18 A	12-Apr-19 A				100%	
05-1120	Closed Circuit Cooling Water System	Start On or After	323			24-May-18 A	12-Apr-19 A				100%	
05-1130	Compressed Air Plants	Start On or After	232			04-Jul-18 A	21-Feb-19 A				100%	
EP_SP_66_12-WP-3-M28.05.01.01.4	Flue gas treatment process design for incineration (2.1.04)		270			15-Mar-18 A	10-Dec-18 A					
05-1070	Flue Gas Treatment System	Start On or After	242			15-Mar-18 A	12-Nov-18 A				100%	
05-1080	Boiler ash and APC residue handling and solidification	Start On or After	199			25-May-18 A	10-Dec-18 A				100%	
EP_SP_66_12-WP-3-M28.05.01.01.5	Logistic arrangement design for MSW and Ash and Residues (2.1.05)		384			05-Jul-18 A	24-Jul-19 A					
05-1140	Weighbridge Systems	Start On or After	152			05-Sep-18 A	04-Feb-19 A				100%	
05-1150	Waste Crane and Grapple System	Start On or After	221			05-Jul-18 A	11-Feb-19 A				100%	
05-1160	Mechanical Shredder	Start On or After	243			23-Nov-18 A	24-Jul-19 A				100%	
EP_SP_66_12-WP-3-M28.05.01.01.6	Site Master Layout Plan and Plant Layout (2.1.06)		766	31-Mar-20	31-May-20	27-Apr-18 A	31-May-20	31-Dec-20	03-Mar-21	275		
05-3020	Site Master Layout Plan and Plant Layout		766	31-Mar-20	31-May-20	27-Apr-18 A	31-May-20	31-Dec-20	03-Mar-21	275	65%	
EP_SP_66_12-WP-3-M28.05.01.01.7	Statutory Fire Compliance (2.1.25)		123	31-Mar-20	31-Jul-20	31-Mar-20*	31-Jul-20	10-Apr-19	26-Feb-21	209		
05-2990	Fire Safety Compliance	Start On or After	123	31-Mar-20	31-Jul-20	31-Mar-20*	31-Jul-20	10-Apr-19	10-Aug-19	-356	0%	
05-3000	Fire Engineering Report	Start On or After	123	31-Mar-20	31-Jul-20	31-Mar-20*	31-Jul-20	10-Apr-19	10-Aug-19	-356	0%	
05-3010	Fire Compartmentation / FS compliance	Start On or After	123	31-Mar-20	31-Jul-20	31-Mar-20*	31-Jul-20	26-Oct-20	26-Feb-21	209	0%	
EP_SP_66_12-WP-3-M28.05.01.02	AIP Ground Treatment, Reclamation, Seawall, Breakwater, Berth (2.2)		913	31-Mar-20	12-Aug-20	12-Feb-18 A	12-Aug-20	26-Nov-19	20-Jul-21	341		
05-1170	Deep Cement Mixing Design (2.2.00)	Start On or After	136			27-Mar-18 A	10-Aug-18 A				100%	
05-1180	Ground Investigation Proposal (2.2.01.01)	Start On or After	143			12-Feb-18 A	05-Jul-18 A				100%	
05-1190	Preliminary Geotechnical Interpretative Report (2.2.01.02)	Start On or After	120			03-Apr-18 A	31-Jul-18 A				100%	
05-1200	DCM Static Load Test Proposal (2.2.03)	Start On or After	224			03-Apr-18 A	13-Nov-18 A				100%	
05-1280	Draft plan of 2D/3D modelling works for seawall and breakwater design (2.2.05)	Start On or After	728	31-Mar-20	29-Apr-20	03-May-18 A	29-Apr-20	26-Nov-19	26-Dec-19	-126	80%	
05-2930	Reclamation design (2.2.07)	Start On or After	91			03-Aug-18 A	02-Nov-18 A				100%	
05-2940	Seawall design (2.2.08)	Start On or After	323			11-Apr-18 A	28-Feb-19 A				100%	
05-2950	Breakwater design (2.2.09)	Start On or After	293			02-May-18 A	19-Feb-19 A				100%	
05-2960	Berth design (2.2.10)	Start On or After	342			11-Apr-18 A	19-Mar-19 A				70%	
05-2970	Onshore crane Facility (2.2.11)	Start On or After	135	31-Mar-20	12-Aug-20	31-Mar-20*	12-Aug-20	07-Mar-21	20-Jul-21	341	0%	
05-2980	Onshore vessel power supply system (2.2.12)	Start On or After	135	31-Mar-20	12-Aug-20	31-Mar-20*	12-Aug-20	15-Dec-19	28-Apr-20	-107	0%	
EP_SP_66_12-WP-3-M28.05.01.03	AIP Incineration Plant Buildings (2.3)		961	31-Mar-20	25-Dec-20	10-May-18 A	25-Dec-20	30-Aug-18	26-Jul-22	577		
EP_SP_66_12-WP-3-M28.05.01.03.1	Architectural Design (2.3.00)		740	31-Mar-20	12-Aug-20	04-Aug-18 A	12-Aug-20	15-Dec-20	12-Aug-21	364		
05-1210	Process Building	Start On or After	605	31-Mar-20	29-May-20	03-Oct-18 A	29-May-20	15-Dec-20	13-Feb-21	259	65%	
05-1220	ACC Equipment Structure	Start On or After	135	31-Mar-20	12-Aug-20	31-Mar-20*	12-Aug-20	16-Feb-21	01-Jul-21	322	0%	
05-1230	Turbine Hall Building	Start On or After	410			30-Aug-18 A	14-Oct-19 A				100%	
05-1240	Air Compressor Building	Start On or After	433			30-Aug-18 A	06-Nov-19 A				100%	
05-1250	Chimney and viewing platform	Start On or After	135	31-Mar-20	12-Aug-20	31-Mar-20*	12-Aug-20	28-Jan-21	12-Jun-21	303	0%	
05-1260	Elevated Drive Way and Associated Structures	Start On or After	464			04-Aug-18 A	11-Nov-19 A				100%	
05-1270	Reception Pavilion	Start On or After	665	31-Mar-20	29-May-20	04-Aug-18 A	29-May-20	13-Jun-21	12-Aug-21	439	65%	
EP_SP_66_12-WP-3-M28.05.01.03.2	Foundation design (2.3.01)		252	31-Mar-20	31-Mar-20	23-Jul-19 A	31-Mar-20	02-Jul-21	19-Jun-22	810		
05-3030	Process Building (2 Packages)	Start On or After	0	31-Mar-20	31-Mar-20	31-Mar-20*	31-Mar-20	02-Jul-21	02-Jul-21	458	0%	
05-3040	ACC Equipment Structure	Start On or After	0	31-Mar-20	31-Mar-20	31-Mar-20*	31-Mar-20	18-Oct-21	18-Oct-21	566	0%	
05-3050	Turbine Hall Building	Start On or After	59			23-Jul-19 A	20-Sep-19 A				100%	
05-3060	Air Compressor Building	Start On or After	0	31-Mar-20	31-Mar-20	31-Mar-20*	31-Mar-20	27-Jan-22	27-Jan-22	667	0%	
05-3070	Chimney and viewing platform	Start On or After	0	31-Mar-20	31-Mar-20	31-Mar-20*	31-Mar-20	29-Sep-21	29-Sep-21	547	0%	
05-3080	Elevated Drive Way and Associated Structures Foundation Design	Start On or After	77	31-Mar-20	31-Mar-20	14-Jan-20 A	31-Mar-20	06-Feb-22	06-Feb-22	677	45%	
05-3090	Reception Pavilion	Start On or After	0	31-Mar-20	31-Mar-20	31-Mar-20*	31-Mar-20	19-Jun-22	19-Jun-22	810	0%	
EP_SP_66_12-WP-3-M28.05.01.03.3	Structural design (2.3.02)		487	31-Mar-20	31-Mar-20	30-Nov-18 A	31-Mar-20	14-Nov-20	26-Jul-22	847		
05-1290	Process Building	Start On or After	386	31-Mar-20	31-Mar-20	11-Mar-19 A	31-Mar-20	20-Sep-21	20-Sep-21	538	5%	
05-1300	ACC Equipment Structure	Start On or After	0	31-Mar-20	31-Mar-20	31-Mar-20*	31-Mar-20	14-Nov-20	14-Nov-20	228	0%	
05-1310	Turbine Hall Building	Start On or After	154			30-Nov-18 A	03-May-19 A				100%	
05-1320	Air Compressor Building	Start On or After	98			14-Jun-19 A	20-Sep-19 A				100%	
05-1330	Chimney	Start On or After	305	31-Mar-20	31-Mar-20	31-May-19 A	31-Mar-20	26-Jul-22	26-Jul-22	847	5%	
05-1340	Access Ramp associated structures	Start On or After	237			19-Mar-19 A	11-Nov-19 A				100%	
05-1350	Reception Pavilion Structural Design	Start On or After	101			29-Jul-19 A	07-Nov-19 A				100%	
EP_SP_66_12-WP-3-M28.05.01.03.4	Electrical and Instrumentation works design (2.3.03)		456			10-May-18 A	09-Aug-19 A					
05-3150	11kV/380V Power Transformers and 11kV Earthing Transformer	Start On or After	315			06-Sep-18 A	18-Jul-19 A				100%	
05-3160	E&IC Package 1 (Process Island)	Start On or After	391			10-May-18 A	05-Jun-19 A				100%	
05-3170	E&IC Package 2 (Power Island)	Start On or After	288			25-Oct-18 A	09-Aug-19 A				100%	
05-3175(3)(M12)	E&IC Package 3 (Balance of Plant)	Start On or After	288			25-Oct-18 A	09-Aug-19 A				100%	
EP_SP_66_12-WP-3-M28.05.01.03.8	Operation Management System (2.3.03.04)		721	31-Mar-20	29-Apr-20	10-May-18 A	29-Apr-20	28-Apr-20	10-Sep-20	133		
05-3180	Supervisory Control/Data Acquisition/Distributed Control (SCADA/DCS) System	Start On or After	721	31-Mar-20	29-Apr-20	10-May-18 A	29-Apr-20	28-Apr-20	28-May-20	28	65%	
05-3210	Automatic License Plate and Container Recognition System (ALPCRS)	Start On or After	603	31-Mar-20	29-Apr-20	05-Sep-18 A	29-Apr-20	11-Aug-20	10-Sep-20	133	65%	
EP_SP_66_12-WP-3-M28.05.01.03.5	Mechanical works design (2.3.04)		433			17-May-18 A	24-Jul-19 A					
EP_SP_66_12-WP-3-M28.05.01.03.5.1	Plant and Equipment		419			31-May-18 A	24-Jul-19 A					
05-2800	Weighbridge Systems	Start On or After	152			05-Sep-18 A	04-Feb-19 A				100%	
05-2810	Waste Crane and Grapple System	Start On or After	221			05-Jul-18 A	11-Feb-19 A				100%	
05-2820	Mechanical Shredder	Start On or After	243			23-Nov-18 A	24-Jul-19 A				100%	
05-2830	Incineration System	Start On or After	165			31-May-18 A	12-Nov-18 A				100%	
05-2840	Heat Recovery Boiler	Start On or After	145			08-Jun-18 A	31-Oct-18 A				100%	
05-2850	Boiler Feed Water Systems	Start On or After	68			05-Sep-18 A	12-Nov-18 A				100%	
05-2860	Ash cranes	Start On or After	136			24-Dec-18 A	09-May-19 A				100%	
05-2870	Leachate collection and treatment	Start On or After	73			15-Dec-18 A	26-Feb-19 A				100%	
05-2880	Flue Gas Treatment System	Start On or After	184			11-Jun-18 A	12-Dec-18 A				100%	
05-2890	Boiler ash and APC residue handling and solidification	Start On or After	100			24-Dec-18 A	03-Apr-19 A				100%	
05-2900	Steam Turbine Generator (STG) and Pressure Reducing and Desuperheating Station (PRDS)	Start On or After	325			03-Aug-18 A	24-Jun-19 A				100%	
05-2910	Air cooled condenser	Start On or After	325			03-Aug-18 A	24-Jun-19 A				100%	
05-2915(3)	Closed Circuit Cooling Water System	Start On or After	321			31-Jul-18 A	17-Jun-19 A				100%	
05-2920	Compressed Air Plants	Start On or After	232			04-Jul-18 A	21-Feb-19 A				100%	
EP_SP_66_12-WP-3-M28.05.01.03.5.2	Process Pipeworks (Incl. Ductworks) and Valves		404			24-May-18 A	02-Jul-19 A					
05-1360	Process Island (furnace-boiler-FGC)	Start On or After	224			24-May-18 A	03-Jan-19 A				100%	

Programme for Design and Construction Works  
 March 2020 Update (Rev WP-3-M28)

Primary Baseline	Critical Remaining Work	Actual Milestone
WP3 BL Critical Works	Baseline Milestone	Critical Milestone
Remaining Work	WP3 BL Critical Milestone	
Actual Work	Milestone	

Date	Revision	Checked	Approved
04/12/17	Rev. 0 - 1st Issue		
31-Jan-20	Rev 3 - Jan 2020 Update		
29-Feb-			

Activity ID	Activity Name	Primary Constraint	At Completion Duration	Current Start	Current Finish	Actual Start	Actual Finish	Latest Start	Latest Finish	Total Float	Activity % Complete	M28 Remarks
05-1370	Pipebridge (Between Process Island & Turbine Hall)	Start On or After	404			24-May-18 A	02-Jul-19 A				100%	
05-1380	Compressed Air Plant area	Start On or After	273			02-Oct-18 A	02-Jul-19 A				100%	
05-1390	Pipebridge (Between CCGW Area & Turbine Hall)	Start On or After	119			02-Oct-18 A	29-Jan-19 A				100%	
05-1400	Pipebridge (Between Turbine Hall & ACC Yard)	Start On or After	119			02-Oct-18 A	29-Jan-19 A				100%	
05-1410	Turbine Hall	Start On or After	273			02-Oct-18 A	02-Jul-19 A				100%	
05-1420	ACC Yard	Start On or After	273			02-Oct-18 A	02-Jul-19 A				100%	
05-1540	CCGW Area	Start On or After	273			02-Oct-18 A	02-Jul-19 A				100%	
<b>EP_SP_66_12-WP-3-M28.05.01.03.5.3 Process steel structure support (For equipment, piping &amp; duct, cable tray etc)</b>												
05-3100	Process island (furnace-boiler-FGC)	Start On or After	246			17-May-18 A	29-Jan-19 A				100%	
05-3110	Pipebridge (Between Process Island & Turbine Hall)	Start On or After	112			09-Oct-18 A	29-Jan-19 A				100%	
05-3120	Turbine Hall	Start On or After	112			09-Oct-18 A	29-Jan-19 A				100%	
05-3130	Pipebridge (Between CCGW Area & Turbine Hall)	Start On or After	112			09-Oct-18 A	29-Jan-19 A				100%	
05-3140	Pipebridge (Between Turbine Hall & ACC Yard)	Start On or After	112			09-Oct-18 A	29-Jan-19 A				100%	
<b>EP_SP_66_12-WP-3-M28.05.01.03.5.4 Equipment and piping insulation</b>												
05-1430	Incineration System	Start On or After	150			15-Jun-18 A	12-Nov-18 A				100%	
05-1440	Heat Recovery Boiler	Start On or After	138			15-Jun-18 A	31-Oct-18 A				100%	
05-1450	Boiler Feed Water Systems	Start On or After	150			15-Jun-18 A	12-Nov-18 A				100%	
05-1460	Flue Gas Treatment System	Start On or After	180			15-Jun-18 A	12-Dec-18 A				100%	
05-1470	Boiler ash and APC residue handling and solidification	Start On or After	292			15-Jun-18 A	03-Apr-19 A				100%	
05-1480	Steam Turbine Generator (STG) and Pressure Reducing and Desuperheating Station (PRDS)	Start On or After	181			11-Jan-19 A	11-Jul-19 A				100%	
05-1490	Air cooled condenser	Start On or After	251			02-Nov-18 A	11-Jul-19 A				100%	
05-1500	Closed Circuit Cooling Water System	Start On or After	321			31-Jul-18 A	17-Jun-19 A				100%	
<b>EP_SP_66_12-WP-3-M28.05.01.03.6 Fire services installation design (2.3.05)</b>												
<b>EP_SP_66_12-WP-3-M28.05.01.03.6.1 Process Building (2.3.05.01)</b>												
05-1510	Fire Systems	Finish On or Before	626	31-Mar-20	26-Sep-20	10-Jan-19 A	26-Sep-20	10-Apr-19	07-Oct-19	-355	5%	
05-1520	Fire engineering	Finish On or Before	569	01-Aug-20	01-Aug-20	10-Jan-19 A	01-Aug-20*	07-Oct-19	07-Oct-19	-298	0%	
05-1530	FS schematics	Finish On or Before	180	31-Mar-20	26-Sep-20	10-Jan-19 A	26-Sep-20	10-Apr-19	06-Oct-19	-356	0%	
<b>EP_SP_66_12-WP-3-M28.05.01.03.6.2 Turbin Hall Building (2.3.05.03)</b>												
05-5400	Fire Systems (2.3.05.03.01)	Finish On or Before	453	31-Mar-20	06-Apr-20	10-Jan-19 A	06-Apr-20*	01-Oct-19	07-Oct-19	-182	5%	
05-5410 (M2)	Fire engineering	Finish On or Before	729	31-Mar-20	25-Dec-20	28-Dec-18 A	25-Dec-20	17-Apr-19	11-Jan-20	-349	0%	
05-5420 (M2)	FS schematics (2.3.05.03.03)	Finish On or Before	564	31-Mar-20	13-Jul-20	28-Dec-18 A	13-Jul-20*	22-Jun-19	04-Oct-19	-283	25%	
<b>EP_SP_66_12-WP-3-M28.05.01.03.6.4 Air Compressor Building (2.3.05.04)</b>												
05-5430 (M2)	Fire Systems	Finish On or Before	270	31-Mar-20	25-Dec-20	31-Mar-20	25-Dec-20	30-Aug-18	26-May-19	-579	0%	
05-5440 (M2)	FS schematics	Finish On or Before	270	31-Mar-20	25-Dec-20	31-Mar-20	25-Dec-20	30-Aug-18	26-May-19	-579	0%	
<b>EP_SP_66_12-WP-3-M28.05.01.03.6.5 Elevated Drive Way and Associated Structures (2.3.05.05)</b>												
05-5445 (M2)	Fire Systems	Finish On or Before	255	31-Mar-20	26-Aug-20	16-Dec-19 A	26-Aug-20*	29-Oct-19	25-Mar-20	-154	5%	
05-5450 (M2)	FS schematics	Finish On or Before	255	31-Mar-20	26-Aug-20	16-Dec-19 A	26-Aug-20*	29-Oct-19	25-Mar-20	-154	5%	
<b>EP_SP_66_12-WP-3-M28.05.01.03.6.6 Reception Pavilion (2.3.05.06)</b>												
05-5460 (M2)	Fire Systems (2.3.05.06.01)	Finish On or Before	357	31-Mar-20	24-Sep-20	04-Oct-19 A	24-Sep-20*	16-Dec-19	10-Jun-20	-106	5%	
05-5470 (M2)	FS schematics (2.3.05.06.03)	Finish On or Before	357	31-Mar-20	24-Sep-20	04-Oct-19 A	24-Sep-20*	16-Dec-19	10-Jun-20	-106	5%	
<b>EP_SP_66_12-WP-3-M28.05.01.03.6.7 Compressor &amp; Closed Circuit (2.3.05.07)</b>												
05-5480 (M2)	Fire Systems (2.3.05.07.01)	Finish On or Before	307	31-Mar-20	13-Jul-20	11-Sep-19 A	13-Jul-20*	13-Oct-19	25-Jan-20	-170	45%	
05-5490 (M2)	FS schematics (2.3.05.07.03)	Finish On or Before	307	31-Mar-20	13-Jul-20	11-Sep-19 A	13-Jul-20*	13-Oct-19	25-Jan-20	-170	45%	
<b>EP_SP_66_12-WP-3-M28.05.01.03.7 Building services design (excluding fire services installation design) (2.3.05)</b>												
05-1550	Electrical Services and Lighting (7 Packages)	Start On or After	774	31-Mar-20	12-Aug-20	11-Jul-18 A	12-Aug-20	19-May-20	29-Apr-21	259	12.5%	
05-1560	MVAC (6 Packages)	Start On or After	569	31-Mar-20	09-Aug-20	10-Jan-19 A	09-Aug-20	23-Jul-20	02-Dec-20	115	5%	
05-1570	Odour Control	Start On or After	476	31-Mar-20	29-Apr-20	10-Jan-19 A	29-Apr-20	12-Oct-20	11-Nov-20	195	5%	
05-1580	Plumbing (7 Packages)	Start On or After	719	31-Mar-20	28-Jun-20	11-Jul-18 A	28-Jun-20	13-Aug-20	11-Nov-20	135	5%	
05-1590	Drainage (7 Packages)	Start On or After	441	31-Mar-20	31-Mar-20	15-Jan-19 A	31-Mar-20	16-Nov-20	16-Nov-20	230	5%	
05-1600	ELV (7 Packages)	Start On or After	531	31-Mar-20	28-Jun-20	15-Jan-19 A	28-Jun-20	18-Aug-20	16-Nov-20	140	5%	
05-1610	Lifts and Escalators (2 Packages)	Start On or After	536	31-Mar-20	28-Jun-20	10-Jan-19 A	28-Jun-20	17-Nov-20	15-Feb-21	231	5%	
05-1630	Building Management System (BMS) (7 Packages)	Start On or After	227	31-Mar-20	12-Aug-20	30-Dec-19 A	12-Aug-20	04-Jun-20	17-Oct-20	65	5%	
05-1770	Vehicle & Container Wash System	Start On or After	135	31-Mar-20	12-Aug-20	31-Mar-20*	12-Aug-20	19-May-20	30-Sep-20	49	0%	
05-1770-1(M20)	Water Cannon System	Start On or After	135	31-Mar-20	12-Aug-20	31-Mar-20*	12-Aug-20	01-Oct-20	13-Feb-21	184	0%	
05-1770-1(M20)	Water Cannon System	Start On or After	294	31-Mar-20	31-Mar-20	11-Jun-19 A	31-Mar-20	29-Apr-21	29-Apr-21	394	5%	
<b>EP_SP_66_12-WP-3-M28.05.01.04 AIP Mechanical Treatment Plant Building (2.4)</b>												
05-1640	Architectural Design (2.4.00)	Start On or After	706	31-Mar-20	12-Aug-20	07-Sep-18 A	12-Aug-20	19-Nov-19	25-Oct-21	438	65%	
05-1650	Foundation design (2.4.01)	Start On or After	631	31-Mar-20	29-May-20	07-Sep-18 A	29-May-20	22-Nov-20	21-Jan-21	236	65%	
05-1660	Structural design (2.4.02)	Start On or After	268	31-Mar-20	31-Mar-20	07-Jul-19 A	31-Mar-20	25-Oct-21	25-Oct-21	573	65%	
05-1670	Electrical and instrumentation works design (2.4.03)	Start On or After	206	31-Mar-20	13-Jul-20	21-May-19 A	13-Dec-19 A			100%	0%	
05-1680	Mechanical works design (2.4.04)	Start On or After	105	31-Mar-20	13-Jul-20	31-Mar-20*	13-Jul-20	19-Nov-19	03-Mar-20	-133	0%	
05-1690	Fire services installation design (2.4.05) (3 Packages)	Start On or After	105	31-Mar-20	13-Jul-20	31-Mar-20*	13-Jul-20	19-Nov-19	03-Mar-20	-133	0%	
<b>EP_SP_66_12-WP-3-M28.05.01.04.7 Building services design (excluding fire services installation design) (2.4.06)</b>												
05-1700	Electrical Services and Lighting (2.4.06.01)	Start On or After	472	31-Mar-20	04-Jul-20	20-Mar-19 A	04-Jul-20	31-Jan-21	06-May-21	306	9.5%	
05-1710	MVAC	Start On or After	512	31-Mar-20	12-Aug-20	20-Mar-19 A	12-Aug-20	15-Apr-20	15-May-21	275	5%	
05-1720	Odour Control	Start On or After	377	31-Mar-20	31-Mar-20	20-Mar-19 A	31-Mar-20	02-Dec-20	02-Dec-20	246	5%	
05-1730	Plumbing	Start On or After	507	31-Mar-20	12-Aug-20	25-Mar-19 A	12-Aug-20	15-Apr-20	28-Aug-20	15	5%	
05-1740	Drainage	Start On or After	135	31-Mar-20	12-Aug-20	31-Mar-20*	12-Aug-20	15-Apr-20	28-Aug-20	15	0%	
05-1750	ELV	Start On or After	512	31-Mar-20	12-Aug-20	20-Mar-19 A	12-Aug-20	04-Jul-20	16-Nov-20	95	5%	
05-1760	Lifts and Escalators	Start On or After	512	31-Mar-20	12-Aug-20	20-Mar-19 A	12-Aug-20	04-Jul-20	16-Nov-20	95	5%	
05-1760-1(M20)	Building Management System (BMS)	Start On or After	227	31-Mar-20	12-Aug-20	20-Mar-19 A	12-Aug-20	20-Jul-20	02-Dec-20	111	5%	
05-1760-1(M20)	Building Management System (BMS)	Start On or After	227	31-Mar-20	12-Aug-20	30-Dec-19 A	12-Aug-20	31-Dec-20	15-May-21	275	5%	
05-1760-1(M20)	Building Management System (BMS)	Start On or After	89	31-Mar-20	27-Jun-20	31-Mar-20*	27-Jun-20	04-Jul-20	30-Sep-20	95	0%	
<b>EP_SP_66_12-WP-3-M28.05.01.05 AIP Wastewater Treatment Plant (2.5)</b>												
05-1780	Architectural Design (2.5.00)	Start On or After	715	31-Mar-20	16-Sep-20	03-Oct-18 A	16-Sep-20	15-Apr-20	04-Jul-21	230	65%	
05-1790	Foundation design (2.5.01)	Start On or After	605	31-Mar-20	29-May-20	03-Oct-18 A	29-May-20	26-Dec-20	24-Feb-21	270	65%	
05-1800	Structural design (2.5.02)	Start On or After	0	31-Mar-20	31-Mar-20	31-Mar-20*	31-Mar-20	04-Jul-21	04-Jul-21	460	0%	
05-1810	Electrical and instrumentation works design (2.5.03)	Start On or After	556	31-Mar-20	16-Sep-20	11-Mar-19 A	16-Sep-20	30-May-20	16-Nov-20	60	45%	
05-1820	Mechanical works design (2.5.04)	Start On or After	289	31-Mar-20	09-Aug-19 A	24-Oct-18 A	09-Aug-19 A			100%	100%	
05-2790	Fire services installation design (2.5.05)	Start On or After	282	31-Mar-20	12-Jul-19 A	03-Oct-18 A	12-Jul-19 A			100%	100%	
<b>EP_SP_66_12-WP-3-M28.05.01.05.7 Building services design (excluding fire services installation design) (2.5.06)</b>												
05-1830	Electrical Services and Lighting for Wastewater Treatment Plant Building (2.5.06.01)	Start On or After	530	31-Mar-20	28-Jun-20	16-Jan-19 A	28-Jun-20	05-Feb-21	06-May-21	311	5%	
05-1840	MVAC (2.5.06.02)	Start On or After	575	31-Mar-20	12-Aug-20	16-Jan-19 A	12-Aug-20	15-Apr-20	02-Dec-20	111	25%	
05-1850	Odour Control (2.5.06.03)	Start On or After	470	31-Mar-20	29-Apr-20	16-Jan-19 A	29-Apr-20	02-Nov-20	02-Dec-20	216	25%	
05-1860	Plumbing (2.5.06.04)	Start On or After	560	31-Mar-20	28-Jul-20	16-Jan-19 A	28-Jul-20	30-Apr-20	28-Aug-20	30	25%	
05-1870	Drainage (2.5.06.05)	Start On or After	135	31-Mar-20	12-Aug-20	31-Mar-20*	12-Aug-20	15-Apr-20	28-Aug-20	15	0%	
05-1880	ELV (2.5.06.06)	Start On or After	560	31-Mar-20	28-Jul-20	16-Jan-19 A	28-Jul-20	19-Jul-20	16-Nov-20	110	25%	
05-1880	ELV (2.5.06.06)	Start On or After	560	31-Mar-20	28-Jul-20	16-Jan-19 A	28-Jul-20	19-Jul-20	16-Nov-20	110	25%	
05-1880	ELV (2.5.06.06)	Start On or After	560	31-Mar-20	28-Jul-20	16-Jan-19 A	28-Jul-20	04-Aug-20	02-Dec-20	126	25%	
<b>EP_SP_66_12-WP-3-M28.05.01.06 AIP Desalination Plant Building (2.6)</b>												
05-1900	Architectural Design (2.6.00)	Start On or After	706	31-Mar-20	12-Aug-20	07-Sep-18 A	12-Aug-20	15-Apr-20	25-Sep-21	408	65%	
05-1910	Foundation design (2.6.01)	Start On or After	631	31-Mar-20	29-May-20	07-Sep-18 A	29-May-20	22-Nov-20	21-Jan-21	236	65%	

Primary Baseline	Critical Remaining Work	Actual Milestone
WP3 BL Critical Works	Baseline Milestone	Critical Milestone
Remaining Work	WP3 BL Critical Milestone	
Actual Work	Milestone	



Activity ID	Activity Name	Primary Constraint	At Completion Duration	Current Start	Current Finish	Actual Start	Actual Finish	Latest Start	Latest Finish	Total Float	Activity % Complete	M28 Remarks
05-1920	Structural design (2.6.02)	Start On or After	206			21-May-19 A	13-Dec-19 A				100%	
05-1930	Electrical and instrumentation works design (2.6.03)	Start On or After	289			24-Oct-18 A	09-Aug-19 A				100%	
05-1940	Mechanical works design (2.6.04)	Start On or After	195			30-Nov-18 A	13-Jun-19 A				100%	
05-1950	Fire services installation design (2.6.05) (3 Packages)	Start On or After	462	31-Mar-20	24-Jun-20	20-Mar-19 A	24-Jun-20	09-Feb-21	06-May-21	316	19%	
EP_SP_66_12-WP-3-M28.05.01.06.7	Building services design (excluding fire services installation design) (2.6.06)		512	31-Mar-20	12-Aug-20	20-Mar-19 A	12-Aug-20	15-Apr-20	02-Dec-20	111	5%	
05-1960	Electrical Services and Lighting (2.6.06.01)	Start On or After	512	31-Mar-20	12-Aug-20	20-Mar-19 A	20-Jul-20	02-Dec-20			111	5%
05-1970	MVAC	Start On or After	507	31-Mar-20	12-Aug-20	25-Mar-19 A	12-Aug-20	15-Apr-20	28-Aug-20	15	5%	
05-1980	Odour Control	Start On or After	135	31-Mar-20	12-Aug-20	31-Mar-20*	12-Aug-20	15-Apr-20	28-Aug-20	15	0%	
05-1990	Plumbing	Start On or After	512	31-Mar-20	12-Aug-20	20-Mar-19 A	12-Aug-20	04-Jul-20	16-Nov-20	95	5%	
05-2000	Drainage	Start On or After	512	31-Mar-20	12-Aug-20	20-Mar-19 A	12-Aug-20	04-Jul-20	16-Nov-20	95	5%	
05-2010	ELV	Start On or After	512	31-Mar-20	12-Aug-20	20-Mar-19 A	20-Jul-20	02-Dec-20			111	5%
EP_SP_66_12-WP-3-M28.05.01.07	AIP Administration Building (2.7)		806	31-Mar-20	16-Oct-20	03-Aug-18 A	16-Oct-20	15-Apr-20	27-Apr-22	557	65%	
05-2020	Architectural Design (2.7.00)	Start On or After	666	31-Mar-20	29-May-20	03-Aug-18 A	29-May-20	23-Oct-20	22-Dec-20	206	65%	
05-2030	Foundation design (2.7.01)	Start On or After	142			30-Sep-19 A	19-Feb-20 A				100%	
05-2040	Structural design (2.7.02)	Start On or After	446	31-Mar-20	16-Oct-20	29-Jul-19 A	16-Oct-20	09-Oct-21	27-Apr-22	557	65%	
05-2050	Electrical and instrumentation works design (2.7.03)	Start On or After	135	31-Mar-20	12-Aug-20	31-Mar-20*	12-Aug-20	04-Oct-20	16-Feb-21	187	0%	
05-2060	Fire services installation design (3 Packages) (2.7.04)	Start On or After	332	31-Mar-20	31-Jul-20	03-Sep-19 A	31-Jul-20	04-Dec-20	06-Apr-21	249	9.5%	
EP_SP_66_12-WP-3-M28.05.01.07.6	Building services design (excluding fire services installation design) (2.7.05)		345	31-Mar-20	12-Aug-20	03-Sep-19 A	12-Aug-20	15-Apr-20	02-Dec-20	111	5%	
05-2070	Electrical Services and Lighting (2.7.05.01)	Start On or After	345	31-Mar-20	12-Aug-20	03-Sep-19 A	12-Aug-20	20-Jul-20	02-Dec-20	111	5%	
05-2080	MVAC	Start On or After	345	31-Mar-20	12-Aug-20	03-Sep-19 A	12-Aug-20	15-Apr-20	28-Aug-20	15	5%	
05-2090	Odour Control	Start On or After	135	31-Mar-20	12-Aug-20	31-Mar-20*	12-Aug-20	15-Apr-20	28-Aug-20	15	0%	
05-2100	Plumbing	Start On or After	345	31-Mar-20	12-Aug-20	03-Sep-19 A	12-Aug-20	04-Jul-20	16-Nov-20	95	5%	
05-2110	Drainage	Start On or After	345	31-Mar-20	12-Aug-20	03-Sep-19 A	12-Aug-20	04-Jul-20	16-Nov-20	95	5%	
05-2120	ELV	Start On or After	345	31-Mar-20	12-Aug-20	03-Sep-19 A	12-Aug-20	20-Jul-20	02-Dec-20	111	5%	
05-2130	Lifts and Escalators	Start On or After	227	31-Mar-20	12-Aug-20	30-Dec-19 A	12-Aug-20	04-Jun-20	17-Oct-20	65	5%	
05-2130-1(M20)	Building Management System (BMS)	Start On or After	89	31-Mar-20	27-Jun-20	31-Mar-20*	27-Jun-20	04-Jul-20	30-Sep-20	95	0%	
EP_SP_66_12-WP-3-M28.05.01.08	AIP IWMF Substation (2.8)		741	31-Mar-20	12-Aug-20	03-Aug-18 A	12-Aug-20	01-Mar-20	21-Jan-21	161	100%	
05-2140	Architectural Design (2.8.00)	Start On or After	437			03-Aug-18 A	14-Oct-19 A				100%	
05-2150	Foundation design (2.8.01)	Start On or After	124			17-May-19 A	18-Sep-19 A				100%	
05-2160	Structural design (2.8.02)	Start On or After	168			31-Oct-18 A	17-Apr-19 A				100%	
05-2170	Electrical and instrumentation works design (2.8.03) (14 Packages)	Start On or After	245	31-Mar-20	25-Jun-20	25-Oct-19 A	25-Jun-20	02-Jul-20	27-Sep-20	93	51.67%	
05-2180	Mechanical works design (2.8.04)	Start On or After	135	31-Mar-20	12-Aug-20	31-Mar-20*	12-Aug-20	01-Mar-20	14-Jul-20	-30	0%	
05-2190	Fire services installation design (2.8.05) (2 Packages)	Start On or After	612	31-Mar-20	30-Jul-20	27-Nov-18 A	30-Jul-20	21-Sep-20	21-Jan-21	174	28.5%	
EP_SP_66_12-WP-3-M28.05.01.08.7	Building services design (excluding fire services installation design) (2.8.06)		591	31-Mar-20	09-Jul-20	27-Nov-18 A	09-Jul-20	19-May-20	02-Dec-20	145	36%	
05-2200	Electrical Services and Lighting (2.8.06.01)	Start On or After	576	31-Mar-20	25-Jun-20	27-Nov-18 A	25-Jun-20	06-Sep-20	02-Dec-20	160	36%	
05-2210	MVAC	Start On or After	591	31-Mar-20	09-Jul-20	27-Nov-18 A	09-Jul-20	19-May-20	28-Aug-20	49	65%	
05-2220	Plumbing	Start On or After	591	31-Mar-20	09-Jul-20	27-Nov-18 A	09-Jul-20	07-Aug-20	16-Nov-20	129	65%	
05-2230	Drainage	Start On or After	387	31-Mar-20	28-Jun-20	27-Nov-18 A	28-Jun-20	03-Sep-20	02-Dec-20	156	65%	
05-2240	ELV	Start On or After	580	31-Mar-20	28-Jun-20	27-Nov-18 A	28-Jun-20	03-Sep-20	02-Dec-20	156	65%	
05-2240-1(M20)	Building Management System (BMS)	Start On or After	89	31-Mar-20	27-Jun-20	31-Mar-20*	27-Jun-20	03-Jul-20	29-Sep-20	94	0%	
EP_SP_66_12-WP-3-M28.05.01.09	AIP Air Quality Monitoring Stations (2.9)		120	31-Mar-20	28-Jul-20	31-Mar-20*	28-Jul-20	06-Jul-20	03-Nov-20	97	0%	
05-2250	Design of the Air Quality Monitoring Stations (2.9.01)	Start On or After	120	31-Mar-20	28-Jul-20	31-Mar-20*	28-Jul-20	06-Jul-20	03-Nov-20	97	0%	
EP_SP_66_12-WP-3-M28.05.01.10	AIP Roads and Utilities (2.10)		1050	31-Mar-20	11-Oct-21	27-Nov-18 A	11-Oct-21	30-Nov-19	07-Jun-23	603	57%	
EP_SP_66_12-WP-3-M28.05.01.10.1	Permanent road works layout on the Artificial Island (2.10.01)		135	17-Dec-20	30-Apr-21	17-Dec-20*	30-Apr-21	26-Aug-22	07-Jun-23	767	0%	
05-2260	Roads and hardstandings layout	Start On or After	135	17-Dec-20	30-Apr-21	17-Dec-20*	30-Apr-21	26-Aug-22	08-Jan-23	617	0%	
05-2270	Road signage and markings	Start On or After	135	17-Dec-20	30-Apr-21	17-Dec-20*	30-Apr-21	23-Jan-23	07-Jun-23	767	0%	
EP_SP_66_12-WP-3-M28.05.01.10.2	Sewerage design on the Artificial Island (2.10.02)		330	31-Mar-20	12-Aug-20	18-Sep-19 A	12-Aug-20	03-Aug-20	30-Jan-22	535	65%	
05-2280	Foul Sewerage concept sizing	Start On or After	330	31-Mar-20	12-Aug-20	18-Sep-19 A	12-Aug-20	03-Aug-20	16-Dec-20	125	65%	
05-2290	Contaminated Sewerage concept / sizing	Start On or After	330	31-Mar-20	12-Aug-20	18-Sep-19 A	12-Aug-20	17-Sep-21	30-Jan-22	535	65%	
EP_SP_66_12-WP-3-M28.05.01.10.3	Drainage system design on the Artificial Island (2.10.03)		449	31-Mar-20	12-Aug-20	22-May-19 A	12-Aug-20	03-Aug-20	05-Apr-21	235	65%	
05-2300	Surface Water Drainage System concept / sizing	Start On or After	449	31-Mar-20	12-Aug-20	22-May-19 A	12-Aug-20	03-Aug-20	16-Dec-20	125	65%	
05-2310	First Flush Drainage System concept / sizing	Start On or After	449	31-Mar-20	12-Aug-20	22-May-19 A	12-Aug-20	21-Nov-20	05-Apr-21	235	65%	
EP_SP_66_12-WP-3-M28.05.01.10.4	Water supply system design on the Artificial Island (2.10.04)		349	31-Mar-20	12-Aug-20	30-Aug-19 A	12-Aug-20	30-Nov-19	01-Mar-22	565	5%	
05-2320	Potable Water Distribution System (2.10.04.01)	Start On or After	273	31-Mar-20	12-Aug-20	14-Nov-19 A	12-Aug-20	28-Aug-21	10-Jan-22	515	5%	
05-2330	Recycled Water System (2.10.04.02)	Start On or After	272	31-Mar-20	12-Aug-20	15-Nov-19 A	12-Aug-20	28-Aug-21	10-Jan-22	515	5%	
05-2340	Irrigation System (2 Packages) (2.10.04.03)	Start On or After	135	31-Mar-20	12-Aug-20	31-Mar-20*	12-Aug-20	03-Aug-20	16-Dec-20	125	0%	
05-2350	Rainwater harvesting System (2.10.04.04)	Start On or After	135	31-Mar-20	12-Aug-20	31-Mar-20*	12-Aug-20	03-Aug-20	16-Dec-20	125	0%	
05-2360	Water Tanks (2.10.04.05)	Start On or After	135	31-Mar-20	12-Aug-20	31-Mar-20*	12-Aug-20	17-Oct-21	01-Mar-22	565	0%	
05-2370	External FS Systems (2.10.04.06)	Start On or After	283	31-Mar-20	12-Aug-20	04-Nov-19 A	12-Aug-20	17-Oct-21	01-Mar-22	565	5%	
05-2370-1(M24)	E&M system for seawater intake and brine discharge (2.10.04.07)	Finish On or Before	307	31-Mar-20	01-Jul-20	30-Aug-19 A	01-Jul-20*	30-Nov-19	01-Mar-20	-122	5%	
05-2370-2(M24)	Building Services system for seawater intake and brine discharge (2.10.04.09)	Finish On or Before	88	31-Mar-20	26-Jun-20	31-Mar-20	26-Jun-20*	30-Nov-19	25-Feb-20	-122	0%	
EP_SP_66_12-WP-3-M28.05.01.10.6	Design of telecommunication and other utilities (2.10.06)		790	31-Mar-20	24-Jan-21	27-Nov-18 A	24-Jan-21	18-Dec-19	23-Jan-23	728	92%	
05-2380	Power Distribution System concept / schematics	Start On or After	135	31-Mar-20	12-Aug-20	31-Mar-20*	12-Aug-20	31-Dec-20	15-May-21	275	0%	
05-2390	Site Lighting Concept / Schematics	Start On or After	239	31-Mar-20	12-Aug-20	18-Dec-19 A	12-Aug-20	26-Jan-20	09-Jun-20	-65	5%	
05-2400	Lightning Protection System concept / schematics	Start On or After	239	31-Mar-20	12-Aug-20	18-Dec-19 A	12-Aug-20	13-Aug-20	26-Dec-20	135	5%	
05-2410	Site ELV Network System - Communications System concept / schematics	Start On or After	135	31-Mar-20	12-Aug-20	31-Mar-20*	12-Aug-20	31-Dec-20	15-May-21	275	0%	
05-2420	Site ELV Network System - Security Systems concept / schematics	Start On or After	135	31-Mar-20	12-Aug-20	31-Mar-20*	12-Aug-20	31-Dec-20	15-May-21	275	0%	
05-2430	Site ELV Network System - Navigation aids concept / schematics	Start On or After	135	31-Mar-20	12-Aug-20	31-Mar-20*	12-Aug-20	31-Dec-20	15-May-21	275	0%	
05-2440	Microwave transmission of FS direct link (2.10.06.07)	Start On or After	580	31-Mar-20	28-Jun-20	27-Nov-18 A	28-Jun-20	14-Feb-21	15-May-21	320	45%	
05-2450	Fuel Handling System concept / schematics (2.10.06.08)	Start On or After	202	31-Mar-20	12-Aug-20	24-Jan-20 A	12-Aug-20	10-Sep-22	23-Jan-23	893	0%	
05-3190	Computerised Maintenance Management System (CMMS)	Start On or After	380	31-Mar-20	13-Jul-20	30-Jun-19 A	13-Jul-20	28-May-20	10-Sep-20	58	0%	
05-3200	Information and Document Management System (IDMS)	Start On or After	448	31-Mar-20	13-Jul-20	23-Apr-19 A	13-Jul-20	28-May-20	10-Sep-20	58	0%	
05-3840 (M22)	Automatic Traffic Control System (ATCS)	Start On	300	31-Mar-20	24-Jan-21	31-Mar-20*	24-Jan-21	18-Dec-19	12-Oct-20	-104	0%	
EP_SP_66_12-WP-3-M28.05.01.10.7	Utility ducts/Pipebridges design (2.10.25)		560	31-Mar-20	11-Oct-21	31-Mar-20	11-Oct-21	19-Apr-20	03-May-23	568	0%	
05-2460	Design of Pipe / Utilities Trenches concept	Start On or After	135	30-May-21	11-Oct-21	30-May-21*	11-Oct-21	19-Dec-22	03-May-23	568	0%	
05-2470	Utility ducts network	Start On or After	135	31-Mar-20	12-Aug-20	31-Mar-20*	12-Aug-20	19-Apr-20	01-Sep-20	19	0%	
05-2480	Pipebridge network - Layout	Start On or After	120	31-Mar-20	28-Jul-20	31-Mar-20*	28-Jul-20	04-May-20	01-Sep-20	34	0%	
05-2490	Pipebridge network - Foundation Plan	Start On or After	135	31-Mar-20	12-Aug-20	31-Mar-20*	12-Aug-20	19-Apr-20	01-Sep-20	19	0%	
05-2500	Pipebridge network - Structure Plan	Start On or After	135	31-Mar-20	12-Aug-20	31-Mar-20*	12-Aug-20	19-Apr-20	01-Sep-20	19	0%	
EP_SP_66_12-WP-3-M28.05.01.11	AIP Architectural, Finishes and Landscaping Works (2.11)		137	31-Mar-20	14-Aug-20	31-Mar-20	14-Aug-20	04-Aug-20	11-Mar-22	573	0%	
EP_SP_66_12-WP-3-M28.05.01.11.1	External and internal finishes design for Incineration Plant Buildings (2.11.01)		137	31-Mar-20	14-Aug-20	31-Mar-20	14-Aug-20	28-Jun-21	10-Feb-			













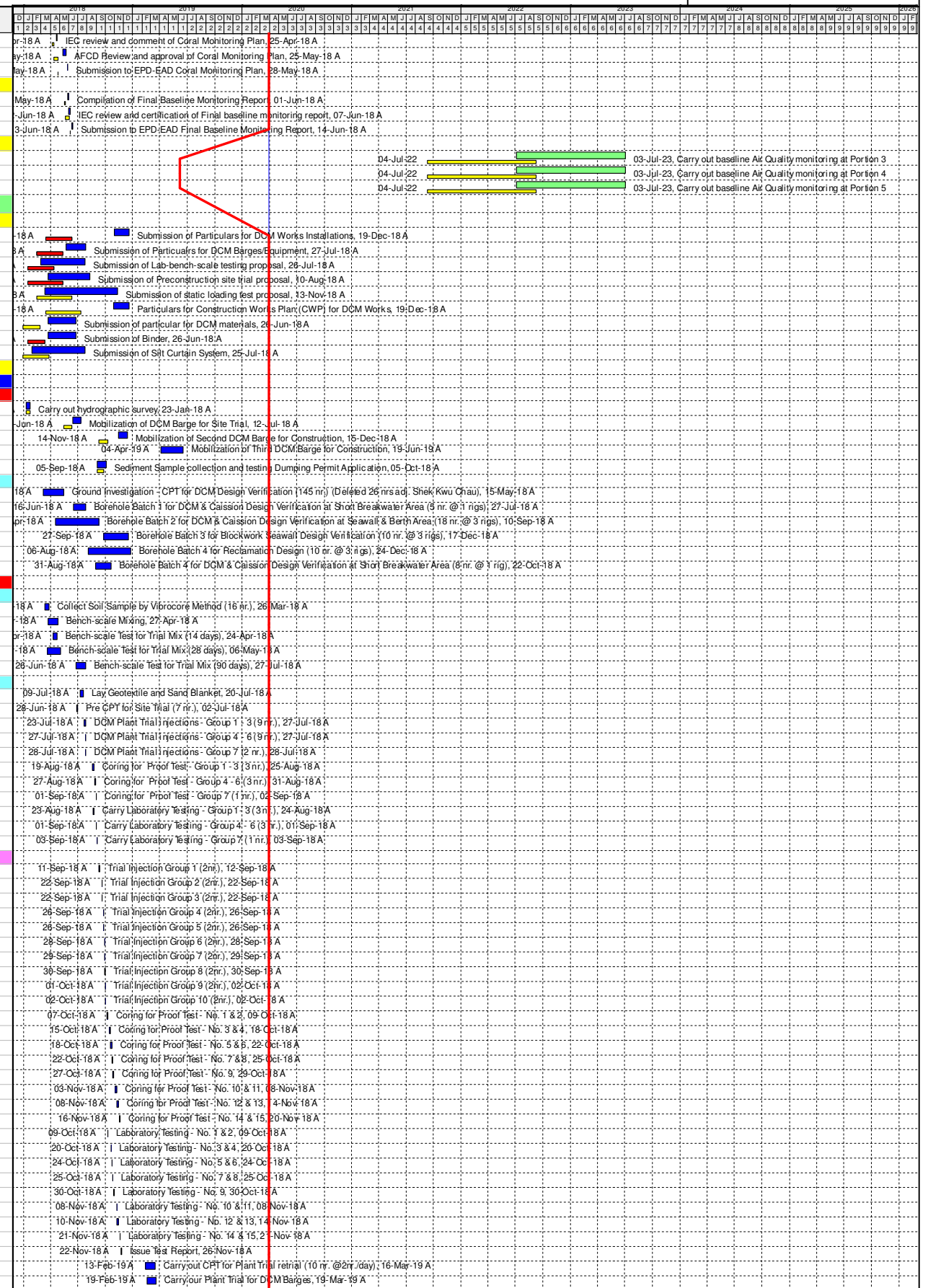








Activity ID	Activity Name	Primary Constraint	At Completion Duration	Current Start	Current Finish	Actual Start	Actual Finish	Latest Start	Latest Finish	Total Float	Activity % Complete	M28 Remarks
07-2720(1)	IEC review and comment of Coral Monitoring Plan		4			21-Apr-18 A	25-Apr-18 A				100%	
07-2730(1)	AFCD Review and approval of Coral Monitoring Plan		11			14-May-18 A	25-May-18 A				100%	
07-2740(1)	Submission to EPD-EAD Coral Monitoring Plan		0			28-May-18 A	28-May-18 A				100%	
<b>EP_SP_66_12-WP-3-M28.07.5 Baseline Monitoring Information and Report</b>												
07-2680(1)	Compilation of Final Baseline Monitoring Report		3			29-May-18 A	01-Jun-18 A				100%	
07-2690(1)	IEC review and certification of Final baseline monitoring report		5			02-Jun-18 A	07-Jun-18 A				100%	
07-2700(1)	Submission to EPD-EAD Final Baseline Monitoring Report		1			13-Jun-18 A	14-Jun-18 A				100%	
<b>EP_SP_66_12-WP-3-M28.07.4 Baseline Air Quality Monitoring Works</b>												
07-1220	Carry out baseline Air Quality monitoring at Portion 3		365	04-Jul-22	03-Jul-23	04-Jul-22	03-Jul-23	09-Oct-22	09-Oct-23		97%	
07-1230	Carry out baseline Air Quality monitoring at Portion 4		365	04-Jul-22	03-Jul-23	04-Jul-22	03-Jul-23	09-Oct-22	09-Oct-23		97%	
07-1240	Carry out baseline Air Quality monitoring at Portion 5		365	04-Jul-22	03-Jul-23	04-Jul-22	03-Jul-23	09-Oct-22	09-Oct-23		97%	
<b>EP_SP_66_12-WP-3-M28.08 Maritime Works</b>												
<b>EP_SP_66_12-WP-3-M28.08.3 Submissions</b>												
08-900	Submission of Particulars for DCM Works Installations	Mandatory Start	47			29-Jan-18 A	19-Dec-18 A				100%	
08-910	Submission of Particulars for DCM Barges/Equipment	Mandatory Start	65			23-May-18 A	27-Jul-18 A				50%	
08-920	Submission of Lab-bench-scale testing proposal	Mandatory Start	147			01-Mar-18 A	26-Jul-18 A				100%	
08-930	Submission of Preconstruction site trial proposal	Mandatory Start	137			26-Mar-18 A	10-Aug-18 A				100%	
08-940	Submission of static loading test proposal		245			13-Mar-18 A	13-Nov-18 A				100%	
08-950	Particulars for Construction Works Plan (CWP) for DCM Works		51			29-Oct-18 A	19-Dec-18 A				100%	
08-960	Submission of particular for DCM materials		92			26-Mar-18 A	26-Jun-18 A				100%	
08-970	Submission of Binder		92			26-Mar-18 A	26-Jun-18 A				100%	
08-980	Submission of Silt Curtain System		177			29-Jan-18 A	25-Jul-18 A				100%	
<b>EP_SP_66_12-WP-3-M28.08.1 Marine Construction</b>												
<b>EP_SP_66_12-WP-3-M28.08.1.1 Phase I - Construction of Perimeter Seawalls</b>												
<b>EP_SP_66_12-WP-3-M28.08.1.1.3 Marine Works Preparations</b>												
08-0900	Carry out hydrographic survey		13			10-Jan-18 A	23-Jan-18 A				100%	
08-1010	Mobilization of DCM Barge for Site Trial		28			14-Jun-18 A	12-Jul-18 A				100%	
08-1020	Mobilization of Second DCM Barge for Construction		31			14-Nov-18 A	15-Dec-18 A				100%	
08-1030(3)(M15)	Mobilization of Third DCM Barge for Construction	Start On or After	76			04-Apr-19 A	19-Jun-19 A				100%	
08-1340(2)	Sediment Sample collection and testing Dumping Permit Application	Start On or After	30			05-Sep-18 A	05-Oct-18 A				100%	
<b>EP_SP_66_12-WP-3-M28.08.1.1.3.2 Marine Ground Investigation Works</b>												
08-1005-1	Ground Investigation - CPT for DCM Design Verification (145 nr.) (Deleted 26 nrs adj. Shek Kwu Chau)		67			09-Mar-18 A	15-May-18 A				100%	
08-1005-2	Borehole Batch 1 for DCM & Caisson Design Verification at Short Breakwater Area (5 nr. @ 1 rigs)	Start On or After	41			16-Jun-18 A	27-Jul-18 A				100%	
08-1005-3	Borehole Batch 2 for DCM & Caisson Design Verification at Seawall & Berth Area (18 nr. @ 3 rigs)	Start On or After	146			17-Apr-18 A	10-Sep-18 A				100%	
08-1005-4	Borehole Batch 3 for Blockwork Seawall Design Verification (10 nr. @ 3 rigs)	Finish On or Before	81			27-Sep-18 A	17-Dec-18 A				100%	
08-1005-5	Borehole Batch 4 for Reclamation Design (10 nr. @ 3 rigs)		140			06-Aug-18 A	24-Dec-18 A				100%	
08-1005-6	Borehole Batch 4 for DCM & Caisson Design Verification at Short Breakwater Area (8 nr. @ 1 rig)		52			31-Aug-18 A	22-Oct-18 A				100%	
<b>EP_SP_66_12-WP-3-M28.08.1.1.1 Seawall and Berth at DCM Area</b>												
<b>EP_SP_66_12-WP-3-M28.08.1.1.1.1 Bench-scale Testing</b>												
08-1030-01(1)(A)	Collect Soil Sample by Vibrocore Method (16 nr.)		14			13-Mar-18 A	26-Mar-18 A				100%	
08-1030-02(1)(A)	Bench-scale Mixing		32			26-Mar-18 A	27-Apr-18 A				100%	
08-1030-03(1)(A)	Bench-scale Test for Trial Mix (14 days)		15			09-Apr-18 A	24-Apr-18 A				100%	
08-1030-04(1)(A)	Bench-scale Test for Trial Mix (28 days)		44			23-Mar-18 A	06-May-18 A				100%	
08-1030-05(1)(A)	Bench-scale Test for Trial Mix (90 days)		31			26-Jun-18 A	27-Jul-18 A				100%	
<b>EP_SP_66_12-WP-3-M28.08.1.1.1.2 DCM Plant &amp; Site Trial</b>												
08-1040-01(1)(A)	Lay Geotextile and Sand Blanket		11			09-Jul-18 A	20-Jul-18 A				100%	
08-1040-02(1)(A)	Pre CPT for Site Trial (7 nr.)	Start On or After	4			28-Jun-18 A	02-Jul-18 A				100%	
08-1040-03(1)(A)	DCM Plant Trial Injections - Group 1 - 3 (9 nr.)		4			23-Jul-18 A	27-Jul-18 A				100%	
08-1040-04(1)(A)	DCM Plant Trial Injections - Group 4 - 6 (9 nr.)		0			27-Jul-18 A	27-Jul-18 A				100%	
08-1040-05(1)(A)	DCM Plant Trial Injections - Group 7 (2 nr.)		0			28-Jul-18 A	28-Jul-18 A				100%	
08-1040-06(1)(A)	Coring for Proof Test - Group 1 - 3 (3 nr.)		6			19-Aug-18 A	25-Aug-18 A				100%	
08-1040-07(1)(A)	Coring for Proof Test - Group 4 - 6 (3 nr.)		4			27-Aug-18 A	31-Aug-18 A				100%	
08-1040-08(1)(A)	Coring for Proof Test - Group 7 (1 nr.)		2			01-Sep-18 A	02-Sep-18 A				100%	
08-1040-09(1)(A)	Carry Laboratory Testing - Group 1 - 3 (3 nr.)		1			23-Aug-18 A	24-Aug-18 A				100%	
08-1040-10(1)(A)	Carry Laboratory Testing - Group 4 - 6 (3 nr.)		1			01-Sep-18 A	01-Sep-18 A				100%	
08-1040-11(1)(A)	Carry Laboratory Testing - Group 7 (1 nr.)		1			03-Sep-18 A	03-Sep-18 A				100%	
<b>EP_SP_66_12-WP-3-M28.08.1.1.2.1 Plant &amp; Site Trial Retrial</b>												
08-1040-13(1)(A)	Trial Injection Group 1 (2nr.)		1			11-Sep-18 A	12-Sep-18 A				100%	
08-1040-14(1)(A)	Trial Injection Group 2 (2nr.)		0			22-Sep-18 A	22-Sep-18 A				100%	
08-1040-15(1)(A)	Trial Injection Group 3 (2nr.)		0			22-Sep-18 A	22-Sep-18 A				100%	
08-1040-16(1)(A)	Trial Injection Group 4 (2nr.)		1			26-Sep-18 A	26-Sep-18 A				100%	
08-1040-17(1)(A)	Trial Injection Group 5 (2nr.)		0			26-Sep-18 A	26-Sep-18 A				100%	
08-1040-18(1)(A)	Trial Injection Group 6 (2nr.)		1			28-Sep-18 A	28-Sep-18 A				100%	
08-1040-19(1)(A)	Trial Injection Group 7 (2nr.)		1			29-Sep-18 A	29-Sep-18 A				100%	
08-1040-20(1)(A)	Trial Injection Group 8 (2nr.)		1			30-Sep-18 A	30-Sep-18 A				100%	
08-1040-21(1)(A)	Trial Injection Group 9 (2nr.)		1			01-Oct-18 A	02-Oct-18 A				100%	
08-1040-22(1)(A)	Trial Injection Group 10 (2nr.)		0			02-Oct-18 A	02-Oct-18 A				100%	
08-1040-23(1)(A)	Coring for Proof Test - No. 1 & 2		3			07-Oct-18 A	09-Oct-18 A				100%	
08-1040-24(1)(A)	Coring for Proof Test - No. 3 & 4		4			15-Oct-18 A	18-Oct-18 A				100%	
08-1040-25(1)(A)	Coring for Proof Test - No. 5 & 6		5			18-Oct-18 A	22-Oct-18 A				100%	
08-1040-26(1)(A)	Coring for Proof Test - No. 7 & 8		4			22-Oct-18 A	25-Oct-18 A				100%	
08-1040-27(1)(A)	Coring for Proof Test - No. 9		3			27-Oct-18 A	29-Oct-18 A				100%	
08-1040-28(1)(A)	Coring for Proof Test - No. 10 & 11		5			03-Nov-18 A	08-Nov-18 A				100%	
08-1040-29(1)(A)	Coring for Proof Test - No. 12 & 13		6			08-Nov-18 A	14-Nov-18 A				100%	
08-1040-30(1)(A)	Coring for Proof Test - No. 14 & 15		4			16-Nov-18 A	20-Nov-18 A				100%	
08-1040-33(1)(A)	Laboratory Testing - No. 1 & 2		0			09-Oct-18 A	09-Oct-18 A				100%	
08-1040-34(1)(A)	Laboratory Testing - No. 3 & 4		1			20-Oct-18 A	20-Oct-18 A				100%	
08-1040-35(1)(A)	Laboratory Testing - No. 5 & 6		1			24-Oct-18 A	24-Oct-18 A				100%	
08-1040-36(1)(A)	Laboratory Testing - No. 7 & 8		1			25-Oct-18 A	25-Oct-18 A				100%	
08-1040-37(1)(A)	Laboratory Testing - No. 9		1			30-Oct-18 A	30-Oct-18 A				100%	
08-1040-38(1)(A)	Laboratory Testing - No. 10 & 11		0			08-Nov-18 A	08-Nov-18 A				100%	
08-1040-39(1)(A)	Laboratory Testing - No. 12 & 13		4			10-Nov-18 A	14-Nov-18 A				100%	
08-1040-40(1)(A)	Laboratory Testing - No. 14 & 15		0			21-Nov-18 A	21-Nov-18 A				100%	
08-1040-43(1)(A)	Issue Test Report		4			22-Nov-18 A	26-Nov-18 A				100%	
08-1040-44(3)(A)	Carry out CPT for Plant Trial retiral (10 nr. @2nr./day)		31			13-Feb-19 A	16-Mar-19 A				100%	
08-1040-45(3)(A)	Carry out Plant Trial for DCM Barges		3			19-Feb-19 A	19-Mar-19 A				100%	



Primary Baseline	Critical Remaining Work	Actual Milestone
WP3 BL Critical Works	Baseline Milestone	Critical Milestone
Remaining Work	WP3 BL Critical Milestone	
Actual Work	Milestone	

Date	Revision	Checked	Approved
04/12/17	Rev. 0 - 1st Issue		
31-Jan-20	Rev 3 - Jan 2020 Update		
29-Feb-20	Rev 3 - Feb 2020 Update		
30-Mar-20	Rev 3 - Mar 2020 Update		

































## Appendix B Summary of Implementation Status of Environmental Mitigation

**Appendix B**

**Table B.1 Implementation Schedule for Air Quality Measures for the IWMF at the artificial island near SKC**

EIA Ref	Environmental Protection Measures / Mitigation Measures	Location / Timing	Implementation Agent	Implementation Stages*				Relevant Legislation and Guidelines	Implementation Status and Remarks
				Des	C	O	Dec		
S3b.8.1	<p><u>Air Pollution Control (Construction Dust) Regulation &amp; Good Site Practices</u></p> <ul style="list-style-type: none"> <li>• Use of regular watering, with complete coverage, to reduce dust emissions from exposed site surfaces and unpaved roads, particularly during dry weather.</li> <li>• Use of frequent watering for particularly dusty construction areas and areas close to ASRs.</li> <li>• Side enclosure and covering of any aggregate or dusty material storage piles to reduce emissions. Where this is not practicable owing to frequent usage, watering shall be applied to aggregate fines.</li> <li>• Open stockpiles shall be avoided or covered. Where possible, prevent placing dusty material storage piles near ASRs.</li> <li>• Tarpaulin covering of all dusty vehicle loads transported to, from and between site locations.</li> <li>• Establishment and use of vehicle wheel and body washing facilities at the exit points of the site.</li> </ul>	Work site / During the construction period	Contractor		✓			Air Pollution Control (Construction Dust) Regulation	N/A

EIA Ref	Environmental Protection Measures / Mitigation Measures	Location / Timing	Implementation Agent	Implementation Stages*				Relevant Legislation and Guidelines	Implementation Status and Remarks
				Des	C	O	Dec		
	<ul style="list-style-type: none"> <li>Provision of wind shield and dust extraction units or similar dust mitigation measures at the loading points, and use of water sprinklers at the loading area where dust generation is likely during the loading process of loose material, particularly in dry seasons/ periods.</li> <li>Imposition of speed controls for vehicles on unpaved site roads. Ten kilometers per hour is the recommended limit.</li> <li>Where possible, routing of vehicles and positioning of construction plant should be at the maximum possible distance from ASRs</li> <li>Instigation of an environmental monitoring and auditing program to monitor the construction process in order to enforce controls and modify method of work if dusty conditions arise.</li> </ul>								
S3b.6.3	<p><u>Odour Removal by Deodorizers</u></p> <ul style="list-style-type: none"> <li>Deodorizers with 95% odour removal efficiency would be installed for the air ventilated from the mechanical treatment plant before discharge to the atmosphere</li> </ul>	Waste reception halls, the waste storage area,	IWMF Operator	✓		✓		EIAO-TM	N/A
S3b.8.2	<p><u>Air Pollution Control and Stack Monitoring</u></p> <ul style="list-style-type: none"> <li>Air pollution control and stack monitoring system will be installed for the IWMF to ensure that the</li> </ul>	IWMF stack emissions / During design &	IWMF Operator	✓		✓		EIAO-TM, Supporting Document for Application for	N/A

EIA Ref	Environmental Protection Measures / Mitigation Measures	Location / Timing	Implementation Agent	Implementation Stages*				Relevant Legislation and Guidelines	Implementation Status and Remarks
				Des	C	O	Dec		
	<p>emissions from the IWMF stack will meet the proposed target emission limits.</p> <ul style="list-style-type: none"> <li>Voluntary Enhancement Measures in Flue Gas Cleaning and Emission Monitoring:                             <ol style="list-style-type: none"> <li>Two-stage bag filter system with reagent recirculation;</li> <li>In addition to SCR, provide SNCR for removal of NO<sub>x</sub>; tighten emission limit for half-hourly and daily NO<sub>x</sub> to 160 mg/m<sup>3</sup> and 80 mg/m<sub>3</sub> respectively;</li> <li>Well-mixed feed waste: to minimize the fluctuation of pollutant loading on the flue gas treatment system;</li> <li>Two more AQMSs would be set up at South Lantau and Shek Kwu Chau respectively;</li> <li>Limit levels will be set under the IWMF DBO contract to require that waste feed shall cease if any of the air pollutant has exceeded 95% of the emission concentration limit as stipulated in the Special Process license; and</li> <li>Each incineration chamber shall be fitted with auxiliary burners to ensure complete burn out of the combustion gases.</li> </ol> </li> </ul>	operation phase						Variation of Environmental Permit (EP-429/2012)	
-	<u>Treated Fly Ash and Air Pollution Control Residues:</u>	IWMF stack emissions /	IWMF Operator	✓		✓		Supporting Document for	N/A

EIA Ref	Environmental Protection Measures / Mitigation Measures	Location / Timing	Implementation Agent	Implementation Stages*				Relevant Legislation and Guidelines	Implementation Status and Remarks
				Des	C	O	Dec		
	<ul style="list-style-type: none"> <li>During testing and commissioning, the Contractor shall sample and test every container of treated fly ash and air pollution control residues for conformance to the Incineration Residue Pollution Control Limits and leachability criteria shown in Table 2 of the Environmental Permit. If a test result confirms that any one of the samples does not conform to the limits and the criteria, the Contractor shall be required to sample and test every container of treated fly ash and air pollution control residues for conformance to the Incineration Residue Pollution Control Limits and leachability criteria for the next six months.</li> <li>During the first six months of operation, if the requirements in (a) could be fully conformed with, the Contractor shall sample and test every shipload of treated fly ash and air pollution control residues for conformance to the Incineration Residue Pollution Control Limits and leachability criteria shown in Table 2 of the Environmental Permit. The Contractor shall take two samples from each shipload for testing and the Contractor shall not dispose of any of that shipload of treated fly ash and air pollution control residues until the test</li> </ul>	During design & operation phase						Application for Variation of Environmental Permit (EP-429/2012)	

EIA Ref	Environmental Protection Measures / Mitigation Measures	Location / Timing	Implementation Agent	Implementation Stages*				Relevant Legislation and Guidelines	Implementation Status and Remarks
				Des	C	O	Dec		
	<p>results confirm that the two samples conform to the limits and the criteria. If a test result confirms that any one of the two samples does not conform to the limits and the criteria, the Contractor shall be required to sample and test every shipload of treated fly ash and air pollution control residues for conformance to the Incineration Residue Pollution Control Limits and leachability criteria for the next six months. The Contractor shall make due allowance in the Design and the Operation for the time to sample and test treated fly ash and air pollution control residues before disposal.</p> <ul style="list-style-type: none"> <li>• Provided that there is no non-conformance to the Incineration Residue Pollution Control Limits and leachability criteria shown in Table 2 of the Environmental Permit throughout a continuous sixmonth period in the Operation Period, the testing frequency shall be reduced to monthly interval. Two samples from one shipload of treated fly ash and air pollution control residues shall be collected and tested for conformance to the Incineration Residue Pollution Control Limits and leachability criteria. The Contractor shall not dispose of any of the treated fly ash and air pollution control residues in the</li> </ul>								



EIA Ref	Environmental Protection Measures / Mitigation Measures	Location / Timing	Implementation Agent	Implementation Stages*				Relevant Legislation and Guidelines	Implementation Status and Remarks
				Des	C	O	Dec		
	<p>shipload which the samples are taken until the test results confirm that the samples conform to the limits and the criteria. If the test result confirm that any one of the samples does not conform to the limits and the criteria, the Contractor shall be required to sample and test every shipload of treated fly ash and air pollution control residues for conformance to the Incineration Residue Pollution Control Limits and leachability criteria shown in Table 2 of the Environmental Permit for the next six months.</p>								
-	<p><u>Bottom Ash:</u></p> <ul style="list-style-type: none"> <li>During testing and commissioning, the Contractor shall sample and test every container of bottom ash for conformance to the leachability criteria shown in Table 2 of the Environmental Permit. If a test result confirms that any one of the samples does not conform to the criteria, the Contractor shall be required to sample and test every container of bottom ash for conformance to the leachability criteria for the next six months.</li> <li>During the first six months of operation, if the requirements in (d) could be fully conformed with, the Contractor shall sample and test one shipload of bottom ash each month</li> </ul>	<p>IWMF stack emissions / During design &amp; operation phase</p>	IWMF Operator	✓		✓		<p>Supporting Document for Application for Variation of Environmental Permit (EP-429/2012)</p>	N/A

EIA Ref	Environmental Protection Measures / Mitigation Measures	Location / Timing	Implementation Agent	Implementation Stages*				Relevant Legislation and Guidelines	Implementation Status and Remarks
				Des	C	O	Dec		
	<p>for conformance to the leachability criteria shown in Table 2 of the Environmental Permit. The Contractor shall take two samples from the shipload for testing and the Contractor shall not dispose of any of that shipload of bottom ash until the test results confirm that the two samples conform to the criteria. If a test result confirms that any one of the two samples does not conform to the criteria, the Contractor shall be required to sample and test each shipload of bottom ash for conformance to the leachability criteria for the next six months. The Contractor shall make due allowance in the Design and the Operation for the time to sample and test bottom ash before disposal.</p> <ul style="list-style-type: none"> <li>• Provided that there is no non-conformance to the leachability criteria shown in Table 2 of the Environmental Permit throughout a continuous six month period in the Operation Period, the Contractor shall be allowed to take two samples from any one shipload of bottom ash once every six months for conformance to the leachability criteria. The Contractor shall not dispose of any of the bottom ash in the shipload which the samples are</li> </ul>								

EIA Ref	Environmental Protection Measures / Mitigation Measures	Location / Timing	Implementation Agent	Implementation Stages*				Relevant Legislation and Guidelines	Implementation Status and Remarks
				Des	C	O	Dec		
	taken until the test results confirm that the samples conform to the criteria. If the test result confirm that any one of the samples does not conform to the criteria, the Contractor shall be required to sample and test one shipload of bottom ash each month for conformance to the leachability criteria shown in Table 2 of the Environmental Permit for the next six months as stipulated above.								

\* Des - Design, C - Construction, O – Operation, and Dec - Decommissioning

**Table B.2 Implementation Schedule for Noise Impact Measures for the IWMF at the artificial island near SKC**

EIA Ref	Environmental Protection Measures / Mitigation Measures	Location / Timing	Implementation Agent	Implementation Stages*				Relevant Legislation and Guidelines	Implementation Status and Remarks
				Des	C	O	Dec		
S4b.8	Good site practices to limit noise emissions at source and use of quiet plant and working methods, whenever practicable.	Work Sites / Construction Period	EPD and its contractors		✓			EIAO-TM	Implemented
S4b.6 & S4b.8	<p>All the ventilation fans installed in the below will be provided with silencers or acoustics treatment.</p> <p>(i) Stack of the incinerator (ii) Ventilation systems within the IWMF Enclosure and discharge silencer or other acoustic treatment equipment should be installed in the air-cooled chillers</p> <p>Other than provision of silencer or other acoustic treatment equipment for the stack of the incinerator and ventilation system, the detailed design should incorporate the following good practice in order to minimize the nuisance on the neighboring NSRs.</p> <p>(i) The exhaust of the ventilation system and any opening of the building should be located facing away from any NSRs; and (ii) Louver or other acoustic treatment equipment could also be applied to the exhaust of the ventilation system.</p>	Within IWMF area / Construction Period	EPD and its contractors	✓		✓		EIAO-TM	N/A

-	<u>Voluntary Enhancement Measure</u> <ul style="list-style-type: none"> <li>Provision of air-conditioner and double glazed windows to nearby NSR at Shek Kwu Chau (i.e. SARDA) as precautionary measures.</li> </ul>	IWMF site	Design team, contractor, IWMF operator	✓	✓			Supporting Document for Application for Variation of Environmental Permit (EP-429/2012)	Implemented
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\* Des - Design, C - Construction, O – Operation, and Dec - Decommissioning

**Table B.3 Implementation Schedule for Water Quality Measures for the Artificial Island near SKC**

EIA Ref	Environmental Protection Measures / Mitigation Measures	Location / Timing	Implementation Agent	Implementation Stages*				Relevant Legislation and Guidelines	Implementation Status and Remarks
				Des	C	O	Dec		
S5b.8.1.1	<p><u>Drainage and Construction Site Runoff</u></p> <p>The site practices outlined in ProPECC PN 1/94 "Construction Site Drainage" should be followed as far as practicable in order to minimise surface runoff and the chance of erosion. These practices include the following items:</p> <ul style="list-style-type: none"> <li>• At the start of site establishment, perimeter cut-off drains to direct off-site water around the site should be constructed with internal drainage works and erosion and sedimentation control facilities implemented to the commencement of construction.</li> <li>• Boundaries of earthworks should be surrounded by dykes or embankments for flood protection, as necessary.</li> <li>• Sand/silt removal facilities such as sand/silt traps and sediment basins should be provided to remove sand/silt particles from runoff to meet the requirements of the TM-DSS. The design of efficient silt removal facilities should be based on the guidelines in Appendix A1 of ProPECC PN 1/94, which states that the retention time for silt/sand traps should be 5 minutes under maximum flow conditions. The detailed design of the sand/silt traps shall be undertaken by the contractor</li> <li>• Water pumped out from foundation</li> </ul>	Work site / During the construction period	Contractor		✓			EIAO-TM; ProPECC PN 1/94; WPCO	N/A

EIA Ref	Environmental Protection Measures / Mitigation Measures	Location / Timing	Implementation Agent	Implementation Stages*				Relevant Legislation and Guidelines	Implementation Status and Remarks
				Des	C	O	Dec		
	<p>piles must be discharged into silt removal facilities.</p> <ul style="list-style-type: none"> <li>Measures should be taken to minimize the ingress of site runoff and drainage into excavations. Drainage water pumped out from excavations should be discharged into storm drains via silt removal facilities.</li> <li>During rainstorms, exposed slope/soil surfaces should be covered by a tarpaulin or other means, as far as practicable. Other measures that need to be implemented before, during and after rainstorms are summarized in ProPECC PN 1/94.</li> <li>Exposed soil areas should be minimized to reduce potential for increased siltation and contamination of runoff.</li> <li>Earthwork final surfaces should be well compacted and subsequent permanent work or surface protection should be immediately performed.</li> <li>Open stockpiles of construction materials or construction wastes on-site should be covered with tarpaulin or similar fabric during rainstorms.</li> </ul>								
S5b.8.1.2	<p><u>General Construction Activities</u></p> <p>Construction solid waste should be collected, handled and disposed of properly to avoid entering to the nearby watercourses and public drainage</p>	Work site / During the construction period	Contractor		✓			EIAO-TM; ProPECC PN 1/94; WPCO	Implemented

EIA Ref	Environmental Protection Measures / Mitigation Measures	Location / Timing	Implementation Agent	Implementation Stages*				Relevant Legislation and Guidelines	Implementation Status and Remarks
				Des	C	O	Dec		
	system. Rubbish and litter from construction sites should also be collected to prevent spreading of rubbish and litter from the site area.								
S5b.8.1.3	There is a need to apply to EPD for a discharge license for discharge of effluent from the construction site under the WPCO. The discharge quality must meet the requirements specified in the discharge license. All the run-off and wastewater generated from the works areas should be treated so that it satisfies all the standards listed in the TM-DSS. The beneficial uses of the treated effluent for other on-site activities such as dust suppression and general cleaning etc., can minimize water consumption and reduce the effluent discharge volume. If monitoring of the treated effluent quality from the works areas is required during the construction phase of the Project, the monitoring should be carried out in accordance with the relevant WPCO license which is under the ambit of regional office of EPD.	Work site / During the construction period	Contractor		✓			EIAO-TM; ProPECC PN 1/94; WPCO	Discharge License was issued on 22/08/2019.
S5b.8.1.4	<u>Accidental Spillage</u> Contractor must register as a chemical waste producer if chemical wastes would be produced from construction activities. The Waste Disposal Ordinance (Cap 354) and its subsidiary regulations in particular the Waste Disposal (Chemical Waste) (General) Regulation should be observed and complied with for control of chemical wastes.	Work site / During the construction period	Contractor		✓			EIAO-TM; ProPECC PN 1/94; WPCO; WDO	Implemented



EIA Ref	Environmental Protection Measures / Mitigation Measures	Location / Timing	Implementation Agent	Implementation Stages*				Relevant Legislation and Guidelines	Implementation Status and Remarks
				Des	C	O	Dec		
S5b.8.1.5	Maintenance of vehicles and equipment involving activities with potential for leakage and spillage should only be undertaken within the areas which appropriately equipped to control these discharges.	Work site / During the construction period	Contractor		✓			EIAO-TM; ProPECC PN 1/94; WPCO; WDO	Deficiency of Mitigation Measures but rectified by the Contractor.
S5b.8.1.6	Oils and fuels should only be used and stored in designated areas which have pollution prevention facilities. All fuel tanks and storage areas should be sited on sealed areas in order to prevent spillage of fuels and solvents to the nearby watercourses. All waste oils and fuels should be collected in designated tanks prior to disposal.	Work site / During the construction period	Contractor		✓			EIAO-TM; ProPECC PN 1/94; WPCO; WDO	Deficiency of Mitigation Measures but rectified by the Contractor.
S5b.8.1.7	<p>Disposal of chemical wastes should be carried out in compliance with the Waste Disposal Ordinance. The Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes published under the Waste Disposal Ordinance details the requirements to deal with chemical wastes. General requirements are given as follows:</p> <ul style="list-style-type: none"> <li>• Suitable containers should be used to hold the chemical wastes to avoid leakage or spillage during storage, handling and transport.</li> <li>• Chemical waste containers should be suitably labelled, to notify and warn the personnel who are handling the wastes, to avoid accidents.</li> <li>• Storage area should be selected at a safe location on site and adequate space should be allocated to the</li> </ul>	Work site / During the construction period	Contractor		✓			EIAO-TM; ProPECC PN 1/94; WPCO; WDO	Deficiency of Mitigation Measures but rectified by the Contractor.

EIA Ref	Environmental Protection Measures / Mitigation Measures	Location / Timing	Implementation Agent	Implementation Stages*				Relevant Legislation and Guidelines	Implementation Status and Remarks
				Des	C	O	Dec		
	storage area.								
S5b.8.1.8	<p><u>Sewage Effluent</u></p> <p>Temporary sanitary facilities, such as portable chemical toilets, should be employed on-site where necessary to handle sewage from the workforce. A licensed contractor would be responsible.</p>	Work site / During the construction period	Contractor		✓			EIAO-TM; ProPECC PN 1/94; WPCO	N/A
S5b.8.1.9	<p><u>Reclamation and Construction of Breakwaters</u></p> <ul style="list-style-type: none"> <li>The proposed dredging and reclamation should be commenced in phases. The breakwaters and seawalls should be constructed and the reclamation should be started within the enclosed breakwaters after the completion of the breakwater. Silt curtain should be applied around caissons / blockwork during the filling of the cell to prevent the loss of fine in the filling material.</li> <li>The maximum production rate for dredging for the anti-scouring protection layer shall not exceed the permitted maximum daily dredging rate and carried out within its respective distance from the nearest non-translocatable coral community by the dredging contractor as specified in S.2.18 of the Further Environmental Permit (no.:FEP-01/429/2012/A). It is recommended to employ closed grab with small capacity of 2 m<sup>3</sup> to control the dredging rate.</li> <li>Any gap that may need to be provided for marine access will be located at the middle of the North Western seawall, away from the identified coral communities and will be shielded by silt curtains systems to control</li> </ul>	Work site / During the marine construction period	Contractor		✓			EIAO-TM; WPCO, Supporting Document for Application for Variation of Environmental Permit (EP-429/2012) Further Environmental Permit No. FEP-01/429/2012/A	Deficiency of Mitigation Measures but rectified by the Contractor.

EIA Ref	Environmental Protection Measures / Mitigation Measures	Location / Timing	Implementation Agent	Implementation Stages*				Relevant Legislation and Guidelines	Implementation Status and Remarks
				Des	C	O	Dec		
	<p>sediment plume dispersion.</p> <ul style="list-style-type: none"> <li>The silt curtain system at marine access opening should be closed as soon as the barges passes through the marine access opening in order to minimize the period of curtain opening. Filling should only be carried out behind the silt curtain when the silt curtain is completely closed.</li> <li>To enhance the effectiveness of the silt curtain at the marine access, the northern breakwater would be built before the commencement of the reclamation to reduce the current velocity towards the marine access opening.</li> <li>The silt curtain system at marine access opening should be regularly checked and maintained to ensure proper functioning.</li> <li>Where public fill is proposed for filling below +2.5mPD, the fine content in the public fill will be controlled to 25% which is in line with the CEDD's General Specification;</li> <li>The filling for reclamation should be carried out behind the seawall. The filling material should only consist of public fill, rock and sand. The filling composition and filling rates at each filling area should follow those delineated in Table 1 of the FEP-01/429/2012/. The filling above high watermark is not restricted;</li> <li>No dredging should be carried out within 16m to the nearest non-translocatable coral community;</li> </ul>								

EIA Ref	Environmental Protection Measures / Mitigation Measures	Location / Timing	Implementation Agent	Implementation Stages*				Relevant Legislation and Guidelines	Implementation Status and Remarks
				Des	C	O	Dec		
	<ul style="list-style-type: none"> <li>• Daily site audit including full-time on-site monitoring by the ET is recommended during the dredging for anti-scouring protection layer for checking the compliance with the permitted no. of grab;</li> <li>• Closed grab dredger should be used to minimize the loss of sediment during the raising of the loaded grabs through the water column;</li> <li>• Frame-type silt curtains should be deployed around the dredging operations;</li> <li>• Floating-type silt curtains should be used to surround the circular cell during the sheetpiling work;</li> <li>• The descent speed of grabs should be controlled to minimize the seabed impact speed;</li> <li>• Barges should be loaded carefully to avoid splashing of material;</li> <li>• All barges used for the transport of dredged materials should be fitted with tight bottom seals in order to prevent leakage of material during loading and transport;</li> <li>• No concurrence works between laying of submarine cables and dredging/reclamation works within the same location is allowed. For works close to each other, the construction program should be arranged so that the dredging/reclamation works within area bounded by the breakwaters and the laying of cables would not operate within a</li> </ul>								

EIA Ref	Environmental Protection Measures / Mitigation Measures	Location / Timing	Implementation Agent	Implementation Stages*				Relevant Legislation and Guidelines	Implementation Status and Remarks
				Des	C	O	Dec		
	<p>distance of 80m from each other to avoid any accumulative impact on the environment (in case if such tight schedule is necessary).</p> <ul style="list-style-type: none"> <li>All barges should be filled to a level which ensures that material does not spill over during loading and transport to the disposal site and that adequate freeboard is maintained to ensure that the decks are not washed by wave action.</li> <li>No DCM works should be carried out within 100m to the nearest non-translocatable coral colony / colonies.</li> <li>Silt curtains should be employed to enclose DCM field trial and any full scale DCM work to minimize the potential impacts on water aspect.</li> <li>A sand blanket is to be placed on top of the marine deposit using tremie pipes prior to the DCM ground treatment to avoid seabed sediment disturbance.</li> </ul>								
S5b.8.2.3	<p><u>Operational Phase Discharges</u></p> <p>A pipeline drainage system will serve the development area collecting surface runoff from paved areas, roof, etc. Sustainable drainage principle would be adopted in the drainage system design to minimize peak surface runoff, maximize permeable surface and maximize beneficial use of rainwater.</p>	Within IWMF site / During the operational phase	IWMF Operator	✓		✓		WPCO	N/A
S5b.8.2.4	Oil interceptors should be provided in the drainage system of any potentially contaminated areas (such as truck parking area and maintenance workshop) and	Within IWMF site / During the operational	IWMF Operator	✓		✓		WPCO; WDO	N/A

EIA Ref	Environmental Protection Measures / Mitigation Measures	Location / Timing	Implementation Agent	Implementation Stages*				Relevant Legislation and Guidelines	Implementation Status and Remarks
				Des	C	O	Dec		
	regularly cleaned to prevent the release of oil products into the storm water drainage system in case of accidental spillages. Accidental spillage should be cleaned up as soon as practicable and all waste oils and fuels should be collected and handled in compliance with the Waste Disposal Ordinance.	phase							
S5b.8.2.5	<u>Refuse Entrapment</u> Collection and removal of floating refuse should be performed at regular intervals for keeping the water within the Project site boundary and the neighboring water free from rubbish.	Within the Project site / During the operational phase	IWMF Operator			✓		WPCO	N/A
S5b.8.2.6	<u>Transportation of bottom ash, fly ash and APC residues to WENT Landfill for disposal</u> Covered container should be used in the shipping of the incineration waste to limit the contact between the incineration waste and the marine water. A comprehensive emergency response plan for any accidental spillage should be submitted by the operation contractor to the EPD for agreement before the operation of the facilities. Salvage and cleanup action to recover the spilled incineration waste containers following the spillage should be carried out according to the emergency response plan to mitigate the environmental impact in case of spillage.	Transportation of Incineration Ash / During the operational phase	IWMF Operator			✓			N/A

\* Des - Design, C - Construction, O – Operation, and Dec - Decommissioning

**Table B.4 Implementation Schedule for Waste Management Measures for the IWMF at the artificial island near SKC**

EIA Ref	Environmental Protection Measures / Mitigation Measures	Location / Timing	Implementation Agent	Implementation Stages*				Relevant Legislation and Guidelines	Implementation Status and Remarks
				Des	C	O	Dec		
6b.5.1.2	<p><u>Good Site Practices</u></p> <p>Adverse environmental impacts in relation to waste management are not expected, provided that good site practices are strictly followed. Recommendations for good site practices during the construction activities would include:</p> <ul style="list-style-type: none"> <li>• Obtain relevant waste disposal permits from appropriate authorities, in accordance with the Waste Disposal Ordinance (Cap. 354) and subsidiary Regulations and the Land (Miscellaneous Provisions) Ordinance (Cap. 28);</li> <li>• Provide staff training for proper waste management and chemical handling procedures;</li> <li>• Provide sufficient waste disposal points and regular waste collection;</li> <li>• Provide appropriate measures to minimize windblown litter and dust during transportation of waste by either covering trucks or by transporting wastes in enclosed containers; and</li> <li>• Carry out regular cleaning and maintenance programme for drainage systems, sumps and oil interceptors;</li> <li>• Separate chemical wastes for special handling and disposed of to licensed facility for treatment; and</li> <li>• Employ licensed waste collector to collect waste.</li> </ul>	Work Site/ During Construction Period	Contractor		✓			WDO; LDO; ETWB TCW No. 19/2005; EIAO-TM	Implemented

EIA Ref	Environmental Protection Measures / Mitigation Measures	Location / Timing	Implementation Agent	Implementation Stages*				Relevant Legislation and Guidelines	Implementation Status and Remarks
				Des	C	O	Dec		
6b.5.1.3	<p><u>Waste Reduction Measures</u></p> <p>Good management and control can prevent the generation of a significant amount of waste. Waste reduction is best achieved at the planning and design stage, as well as by ensuring the implementation of good site practices.</p> <p>Recommendations to achieve waste reduction include:</p> <ul style="list-style-type: none"> <li>• Design foundation works that could minimize the amount of excavated material to be generated.</li> <li>• Provide training to workers on the importance of site cleanliness and appropriate waste management procedures, including waste reduction, reuse and recycling;</li> <li>• Sort out demolition debris and excavated materials from demolition works to recover reusable/recyclable portions (i.e. soil, broken concrete, metal etc.);</li> <li>• Segregate and store different types of waste in different containers, skips or stockpiles to enhance reuse or recycling of materials and their proper disposal;</li> <li>• Encourage the collection of aluminum cans by providing separate labelled bins to enable this waste to be segregated from other general refuse generated by the work force;</li> <li>• Proper storage and site practices to minimize the potential for damage or contamination of construction materials; and</li> </ul>	Work Site/ During Design & Construction Period	Contractor	✓	✓			Implemented; N/A for foundation and demolition items	



EIA Ref	Environmental Protection Measures / Mitigation Measures	Location / Timing	Implementation Agent	Implementation Stages*				Relevant Legislation and Guidelines	Implementation Status and Remarks
				Des	C	O	Dec		
	<ul style="list-style-type: none"> <li>Plan and stock construction materials carefully to minimize amount of waste to be generated and to avoid unnecessary generation of waste.</li> </ul>								
6b.5.1.7	<p><u>Dredged Sediment – Application of Dumping Permit</u></p> <p>The project proponent should agree in advance with MFC of CEDD on the site allocation. The project proponent or contractor for the dredging works shall then apply for the site allocations of marine sediment disposal based on the prior agreement with MFC/CEDD. The project proponent or contractor should also be responsible for the application of all necessary permits from relevant authorities, including the dumping permit as required under DASO from EPD, for the disposal of dredged sediment prior to the commencement of the dredging works.</p>	Seawall and Reclamation site / Construction Period	EPD and its contractor	✓	✓			DASO ETWB TCW 34/2002	Implemented
6b.5.1.8	<p><u>Dredged Sediment – Sediment Quality Report</u></p> <p>The project proponent or contractor will need to satisfy the appropriate authorities that the quality of the marine sediment to be dredged has been identified according to the requirements of ETWB TCW 34/2002. This should be completed well before the dredging works and would include at least the submission of a formal Sediment Quality Report under Tier I of ETWB TCW No. 34/2002 to DEP for approval. Subject to advice from DEP, it is possible that further marine SI in accordance with ETWB TCW 34/2002</p>	Seawall and Reclamation site / Construction Period	EPD and its contractor	✓				DASO ETWB TCW 34/2002	Implemented

EIA Ref	Environmental Protection Measures / Mitigation Measures	Location / Timing	Implementation Agent	Implementation Stages*				Relevant Legislation and Guidelines	Implementation Status and Remarks
				Des	C	O	Dec		
	might be necessary for the application of dumping permit under DASO. In such case, a sediment sampling and testing proposal shall be submitted to and approved by DEP before the additional marine SI works.								
6b.5.1.9	<p><u>Dredged Sediment – Sediment Transportation</u></p> <p>The barge transporting the sediments to the designated disposal sites should be equipped with tight fitting seals to prevent leakage and should not be filled to a level that would cause overflow of materials or laden water during loading or transportation. In addition, monitoring of the barge loading shall be conducted to ensure that loss of material does not take place during transportation. Transport barges or vessels shall be equipped with automatic self-monitoring devices as specified by the DEP.</p>	Seawall and Reclamation site / Construction Period	EPD and its contractor		✓			DASO ETWB TCW 34/2002	Implemented
6b.5.1.10	<p><u>Construction and Demolition Materials</u></p> <p>In order to minimize the impact resulting from collection and transportation of C&amp;D materials for off-site disposal, the excavated material arising from site formation and foundation works should be reused on-site as backfilling material and for landscaping works as far as practicable. Other mitigation requirements are listed below:</p> <ul style="list-style-type: none"> <li>• A Waste Management Plan (WMP), which becomes part of the Environmental Management Plan (EMP), should be prepared in accordance with ETWB TCW No.19/2005;</li> </ul>	Work Site/ During Design & Construction Period	Contractor	✓	✓			ETWB TCW No. 19/2005	Implemented

EIA Ref	Environmental Protection Measures / Mitigation Measures	Location / Timing	Implementation Agent	Implementation Stages*				Relevant Legislation and Guidelines	Implementation Status and Remarks
				Des	C	O	Dec		
	<ul style="list-style-type: none"> <li>A recording system for the amount of wastes generated, recycled and disposed (including the disposal sites) should be adopted for easy tracking; and</li> <li>In order to monitor the disposal of C&amp;D materials at public filling facilities and landfills and to control fly-tipping, a trip-ticket system should be adopted (refer to <i>ETWB TCW No. 31/2004</i>).</li> </ul>								
6b.5.1.11 – 6b.5.1.12	<p>The Contactor should prepare and implement an EMP in accordance with ETWB TCW No.19/2005, which describes the arrangements for avoidance, reuse, recovery, recycling, storage, collection, treatment and disposal of different categories of waste to be generated from construction activities. Such a management plan should incorporate site specific factors, such as the designation of areas for segregation and temporary storage of reusable and recyclable materials. The EMP should be submitted to the Engineer for approval. The Contractor</p> <p>All surplus C&amp;D materials arising from or in connection with construction works should become the property of the Contractor when it is removed unless otherwise stated. The Contractor would be responsible for devising a system to work for on-site sorting of C&amp;D materials and promptly removing all sorted and process materials arising from the construction activities to minimize temporary stockpiling on-site. The system should be</p>	Work Site/ During Design & Construction Period	Contractor	✓	✓			ETWB TCW No. 19/2005	Implemented

EIA Ref	Environmental Protection Measures / Mitigation Measures	Location / Timing	Implementation Agent	Implementation Stages*				Relevant Legislation and Guidelines	Implementation Status and Remarks
				Des	C	O	Dec		
	included in the EMP identifying the source of generation, estimated quantity, arrangement for on-site sorting, collection, temporary storage areas and frequency of collection by recycling Contractors or frequency of removal off-site.								
6b.5.1.13	<p><u>Chemical Wastes</u></p> <p>Should chemical wastes be produced at the construction site, the Contractor would be required to register with EPD as a Chemical Waste Producer and to follow the guidelines stated in the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes. Good quality containers compatible with the chemical wastes should be used, and incompatible (corrosive). The Contractor should employ a licensed collector to transport and dispose of the chemical wastes, to either the Chemical Waste Treatment Centre at Tsing Yi, or another licensed facility, in accordance with the Waste Disposal (Chemical Waste) (General) Regulation.</p>	Work Site/ During Construction Period	Contractor		✓			Waste Disposal (Chemical Waste) (General) Regulation	Implemented
6b.5.1.14	<p><u>General Refuse</u></p> <p>General refuse should be stored in enclosed bins or compaction units separate from C&amp;D materials. A licensed waste collector should be employed by the Contractor to remove general refuse from the site, separately from C&amp;D materials. Preferably an enclosed and covered area should be provided to reduce the occurrence of 'wind blown' light material.</p>	Work Site/ During Construction Period	Contractor		✓			Public Health and Municipal Services Ordinance	Deficiency of Mitigation Measures but rectified by the Contractor.

EIA Ref	Environmental Protection Measures / Mitigation Measures	Location / Timing	Implementation Agent	Implementation Stages*				Relevant Legislation and Guidelines	Implementation Status and Remarks
				Des	C	O	Dec		
6b.5.1.16 – 6b.5.1.133	<p><u>Biogas Generation</u></p> <p>The Contractor shall review the data and analysis results, and the data from further Site Investigation, if any. Subject to the review findings, the following gas protection measures may be considered if necessary:</p> <ul style="list-style-type: none"> <li>- gas monitoring after reclamation;</li> <li>- passive ventilation;</li> <li>- gas impermeable membrane;</li> <li>- ventilation with “at risk” rooms;</li> <li>- protection of utilities or below ground services;</li> <li>- precautions during construction works;</li> <li>- precautions prior to entry of belowground services</li> </ul>	Reclamation site (if dredging at the reclamation site is not required) / Design & Construction Period	Designer and/or contractor	✓	✓			EPD/TR8/97	N/A
6b.5.2.1	<p><u>Good Site Practices</u></p> <p>It is recommended that the following good operational practices should be adopted to minimise waste management impacts:</p> <ul style="list-style-type: none"> <li>• Obtain the necessary waste disposal permits from the appropriate authorities, in accordance with the Waste Disposal Ordinance (Cap. 354) and Waste Disposal (Chemical</li> </ul>	IWMF Site/During Operation Period	IWMF Operator			✓		Waste Disposal Ordinance (Cap.354); Waste Disposal (Chemical Waste) (General) Regulation; ETWB TCW No. 1/2004	N/A

EIA Ref	Environmental Protection Measures / Mitigation Measures	Location / Timing	Implementation Agent	Implementation Stages*				Relevant Legislation and Guidelines	Implementation Status and Remarks
				Des	C	O	Dec		
	<ul style="list-style-type: none"> <li>• Waste) (General) Regulation;</li> <li>• Nomination of an approved person to be responsible for good site practice, arrangements for collection and effective disposal to an appropriate facility of all wastes generated at the site;</li> <li>• Use of a waste haulier licensed to collect specific category of waste;</li> <li>• A trip-ticket system should be included as one of the contractual requirements and implemented by the Environmental Team to monitor the disposal of solid wastes at landfills, and to control fly tipping. Reference should be made to ETWB TCW No. 31/2004.</li> <li>• Training of site personnel in proper waste management and chemical waste handling procedures;</li> <li>• Separation of chemical wastes for special handling and appropriate treatment at a licensed facility;</li> <li>• Routine cleaning and maintenance programme for drainage systems, sumps and oil interceptors;</li> <li>• Provision of sufficient waste disposal points and regular collection for disposal;</li> <li>• Adoption of appropriate measures to minimize windblown litter and dust during transportation of waste, such as covering trucks or transporting wastes in enclosed containers; and</li> <li>• Implementation of a recording system for the amount of wastes generated, and disposed of (including recycled</li> </ul>								

EIA Ref	Environmental Protection Measures / Mitigation Measures	Location / Timing	Implementation Agent	Implementation Stages*				Relevant Legislation and Guidelines	Implementation Status and Remarks
				Des	C	O	Dec		
	the disposal sites).								
6b.5.2.2	<p><u>Waste Reduction Measures</u></p> <p>Good management and control can prevent the generation of significant amounts of waste. It is recommended that the following good operational practices should be adopted to ensure waste reduction:</p> <ul style="list-style-type: none"> <li>• Segregation and storage of different types of waste in different containers, skips or stockpiles to enhance reuse or recycling of materials and their proper disposal;</li> <li>• Encourage collection of aluminum cans, plastic bottles and packaging material (e.g. carton boxes) and office paper by individual collectors. Separate labelled bins should be provided to help segregate this waste from other general refuse generated by the work force; and</li> <li>• Any unused chemicals or those with remaining functional capacity should be reused as far as practicable.</li> </ul>	IWMF Site/ During Operation Period	IWMF Operator			✓			Implemented
6b.5.2.3	<p><u>Storage, Handling, Treatment, Collection and Disposal of Incineration By-Products</u></p> <p>The following measures are recommended for the storage, handling and collection of the incineration by-products:</p> <ul style="list-style-type: none"> <li>• Ash should be stored in storage silos;</li> <li>• Ash should be handled and conveyed in closed systems fully</li> </ul>	IWMF Site/ During Operation Period	IWMF Operator			✓		Incineration Residue Pollution Control Limits	N/A

EIA Ref	Environmental Protection Measures / Mitigation Measures	Location / Timing	Implementation Agent	Implementation Stages*				Relevant Legislation and Guidelines	Implementation Status and Remarks
				Des	C	O	Dec		
	<p>segregated from the ambient environment;</p> <ul style="list-style-type: none"> <li>Ash should be wetted with water to control fugitive dust, where necessary;</li> <li>All fly ash and APC residues should be treated, e.g. by cement solidification or chemical stabilization, for compliance with the proposed Incineration Residue Pollution Control Limits and leachability criteria prior to disposal;</li> <li>The ash should be transported in covered trucks or containers to the designated landfill site.</li> </ul> <p>The Contractor should provide EPD with chemical analysis results of the bottom ash, and treated fly ash and APC residues to confirm that the ash/residue can comply with the proposed Incineration Residue Pollution Control Limits before disposal.</p>								
6b.6.3.1	<p><u>Fuel Oil Tank Construction and Test</u></p> <ul style="list-style-type: none"> <li>The fuel tank to be installed should be of specified durability.</li> <li>Double skin tanks are preferred.</li> <li>Underground fuel storage tank should be placed within a concrete pit.</li> <li>The concrete pit shall be accessible</li> </ul>	Fuel Oil Storage Tank/ During Design, Construction and Operation Periods	IWMF Contractor	✓	✓	✓		N/A	



EIA Ref	Environmental Protection Measures / Mitigation Measures	Location / Timing	Implementation Agent	Implementation Stages*				Relevant Legislation and Guidelines	Implementation Status and Remarks
				Des	C	O	Dec		
	<p>to allow regular tank integrity tests to be carried out at regular intervals.</p> <ul style="list-style-type: none"> <li>Tank integrity tests should be conducted by an independent qualified surveyor or structural engineer.</li> <li>Any potential problems identified in the test should be rectified as soon as possible.</li> </ul>								
6b.6.3.1	<p><u>Fuel Oil Pipeline Construction and Test</u></p> <ul style="list-style-type: none"> <li>Installation of aboveground fuel oil pipelines is preferable; if underground pipelines are unavoidable, concrete lined trenches should be constructed to contain the pipelines.</li> <li>Double skin pipelines are preferred.</li> <li>Distance between the fuel oil refuelling points and the fuel oil storage tank shall be minimized.</li> <li>Integrity tests for the pipelines should be conducted by an independent qualified surveyor or structural engineer at regular intervals.</li> <li>Any potential problems identified in the test should be rectified as soon as possible.</li> </ul>	Fuel Oil Pipelines/ During Design, Construction and Operation Periods	IWMF Contractor	✓	✓	✓		N/A	
6b.6.3.1	<p><u>Fuel Oil Leakage Detection</u></p> <ul style="list-style-type: none"> <li>Installation of leak detection device at storage tank and pipelines.</li> </ul>	Fuel Oil Storage Tank and Pipelines/	IWMF Contractor	✓	✓	✓		N/A	

EIA Ref	Environmental Protection Measures / Mitigation Measures	Location / Timing	Implementation Agent	Implementation Stages*				Relevant Legislation and Guidelines	Implementation Status and Remarks
				Des	C	O	Dec		
	<ul style="list-style-type: none"> <li>Installation and use of pressure gauges (e.g. at the two ends of a filling line) in fuel filling, which allows unexpected pressure drop or difference and sign of leakage to be detected.</li> </ul>	During Design, Construction and Operation Periods							
6b.6.3.1	<p><u>Fuel Oil Storage Tank Refuelling</u></p> <ul style="list-style-type: none"> <li>Storage tank refuelling (from road tanker) should only be conducted by authorized staff of the oil company using the company's standard procedures.</li> </ul>	Fuel Oil Refuelling Point/ During Operation Period	IWMF Operator			✓		N/A	
6b.6.3.1	<p><u>Fuel Oil Spillage Response</u></p> <p>An Oil Spill Response Plan should be prepared by the operator to document the appropriate response procedures for oil spillage incidents in detail. General procedures to be taken in case of fuel oil spillage are presented below.</p> <ul style="list-style-type: none"> <li>Training</li> </ul> <p>- Training on oil spill response actions should be given to relevant staff. The training shall cover the followings:</p> <ul style="list-style-type: none"> <li>➤Tools &amp; resources to combat oil spillage and fire, e.g. locations of oil spill handling equipment and fire fighting equipment;</li> <li>➤General methods to deal with oil spillage and fire incidents;</li> <li>➤Procedures for emergency drills in the event of oil spills and fire; and</li> </ul>	IWMF Site/ During Operation Period	IWMF Operator			✓		N/A	

EIA Ref	Environmental Protection Measures / Mitigation Measures	Location / Timing	Implementation Agent	Implementation Stages*				Relevant Legislation and Guidelines	Implementation Status and Remarks
				Des	C	O	Dec		
	<p>➤Regular drills shall be carried out.</p> <ul style="list-style-type: none"> <li>• Communication                             <ul style="list-style-type: none"> <li>-Establish communication channel with the Fire Services Department (FSD) and EPD to report any oil spillage incident so that necessary assistance from relevant department can be quickly sought.</li> </ul> </li> <li>• Response Procedures                             <ul style="list-style-type: none"> <li>-Any fuel oil spillage within the IWMF site should be immediately reported to the Plant Manager with necessary details including location, source, possible cause and extent of the spillage.</li> <li>-Plant Manager should immediately attend to the spillage and initiate any appropriate action to confine and clean up the spillage. The response procedures shall include the following:                                     <ul style="list-style-type: none"> <li>➤Identify and isolate the source of spillage as soon as possible.</li> <li>➤Contain the oil spillage and avoid infiltration into soil/ groundwater and discharge to storm water channels.</li> <li>➤Remove the oil spillage.</li> <li>➤Clean up the contaminated area.</li> <li>➤If the oil spillage occurs during storage tank refuelling, the refueling operation should immediately be</li> </ul> </li> </ul> </li> </ul>								

EIA Ref	Environmental Protection Measures / Mitigation Measures	Location / Timing	Implementation Agent	Implementation Stages*				Relevant Legislation and Guidelines	Implementation Status and Remarks
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	<p>stopped.</p> <p>➤Recovered contaminated fuel oil and the associated material to remove the spilled oil should be considered as chemical waste. The handling and disposal procedures for chemical wastes are discussed in the following paragraphs.</p>								
6b.6.3.2	<p><u>Chemicals and Chemical Wastes Handling &amp; Storage</u></p> <ul style="list-style-type: none"> <li>• Chemicals and chemical wastes should only be stored in suitable containers in purpose-built areas.</li> <li>• The storage of chemical wastes should comply with the requirements of the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes.</li> <li>• The storage areas for chemicals and chemical wastes shall have an impermeable floor or surface. The impermeable floor/ surface shall possess the following properties:                             <ul style="list-style-type: none"> <li>- Not liable to chemically react with the materials and their containers to be stored.</li> <li>- Able to withstand normal loading and physical damage caused by container handling</li> <li>- The integrity and condition of the impermeable floor or surface should</li> </ul> </li> </ul>	Chemicals and Chemical Wastes Storage Area / During Operation Period	IWMF Operator			✓		N/A	

EIA Ref	Environmental Protection Measures / Mitigation Measures	Location / Timing	Implementation Agent	Implementation Stages*				Relevant Legislation and Guidelines	Implementation Status and Remarks
				Des	C	O	Dec		
	<p>be inspected at regular intervals to ensure that it is satisfactorily maintained</p> <ul style="list-style-type: none"> <li>➤ For liquid chemicals and chemical wastes storage, the storage area should be bunded to contain at least 110% of the storage capacity of the largest containers or 20% of the total quantity of the chemicals/chemical wastes stored, whichever is the greater.</li> <li>➤ Storage containers shall be checked at regular intervals for their structural integrity and to ensure that the caps or fill points are tightly closed.</li> <li>➤ Chemical handling shall be conducted by trained workers under supervision.</li> </ul>								
6b.6.3.2	<p><u>Chemicals and Chemical Wastes Spillage Response</u></p> <p>A Chemicals and/ or Chemical Wastes Spillage Response Plan shall be prepared by the operator to document in detail the appropriate response procedures for chemicals or chemical wastes spillage incidents. General procedures to be undertaken in case of chemicals/ chemical waste spillages are presented below.</p> <ul style="list-style-type: none"> <li>• Training</li> <li>- Training on spill response actions</li> </ul>	IWMF Site/ During Operation Period	IWMF Operator			✓			N/A

EIA Ref	Environmental Protection Measures / Mitigation Measures	Location / Timing	Implementation Agent	Implementation Stages*				Relevant Legislation and Guidelines	Implementation Status and Remarks
				Des	C	O	Dec		
	<p>should be given to relevant staff. The training shall cover the followings:</p> <ul style="list-style-type: none"> <li>➤ Tools &amp; resources to handle spillage, e.g. locations of spill handling equipment;</li> <li>➤ General methods to deal with spillage; and</li> <li>➤ Procedures for emergency drills in the event of spills.</li> </ul> <ul style="list-style-type: none"> <li>• Communication                             <ul style="list-style-type: none"> <li>- Establish communication channel with FSD and EPD to report the spillage incident so that necessary assistance from relevant department can be quickly sought.</li> </ul> </li> <li>• Response Procedures                             <ul style="list-style-type: none"> <li>- Any spillage within the IWMF site should be reported to the Plant Manager.</li> <li>- Plant Manager shall attend to the spillage and initiate any appropriate actions needed to confine and clean up the spillage. The response procedures shall include the followings:                                     <ul style="list-style-type: none"> <li>➤ Identify and isolate the source of spillage as soon as possible;</li> <li>➤ Contain the spillage and avoid infiltration into soil/</li> </ul> </li> </ul> </li> </ul>								

EIA Ref	Environmental Protection Measures / Mitigation Measures	Location / Timing	Implementation Agent	Implementation Stages*				Relevant Legislation and Guidelines	Implementation Status and Remarks
				Des	C	O	Dec		
	<p>groundwater and discharge to storm water channels (in case the spillage occurs at locations out of the designated storage areas);</p> <ul style="list-style-type: none"> <li>➤ Remove the spillage; the removal method/ procedures documented in the Material Safety Data Sheet (MSDS) of the chemicals spilled should be observed;</li> <li>➤ Clean up the contaminated area (in case the spillage</li> <li>➤ The waste arising from the cleanup operation should be considered as chemical wastes.</li> </ul>								
6b.6.3.3	<p><u>Preventive Measures for Incineration By-products Handling</u></p> <p>The recommended measures listed below can minimize the potential contamination to the surrounding environment due to the incineration by-products:</p> <ul style="list-style-type: none"> <li>• Ash should be stored in storage silos;</li> <li>• Ash should be handled and conveyed in closed systems fully</li> <li>• Ash should be wetted with water to control fugitive dust, where necessary;</li> <li>• All fly ash and APC residues should be treated, e.g. by cement solidification or chemical</li> </ul>	Storage, Handling & Collection of Incineration Ash at IWMF/ During Operation Period	IWMF Operator			✓		N/A	

EIA Ref	Environmental Protection Measures / Mitigation Measures	Location / Timing	Implementation Agent	Implementation Stages*				Relevant Legislation and Guidelines	Implementation Status and Remarks
				Des	C	O	Dec		
	stabilization, for compliance with the proposed Incineration Residue Pollution Control Limits and leachability criteria prior to disposal; <ul style="list-style-type: none"> <li>The ash should be transported in covered trucks or containers to the designated landfill site.</li> </ul>								
6b.6.3.4 - 6b.6.3.6	<p><u>Incident Record</u></p> <p>After any spillage, an incident report should be prepared by the Plant Manager. The incident report should contain details of the incident including the cause of the incident, the material spilled and estimated spillage amount, and also the response actions undertaken. The incident record should be kept carefully and able to be retrieved when necessary.</p> <p>The incident report should provide sufficient details for the evaluation of any environmental impacts due to the spillage and assessment of the effectiveness of measures taken.</p> <p>In case any spillage or accidents results in significant land contamination, EPD should be informed immediately and the IWMF operator should be responsible for the cleanup of the affected area. The responses procedures described in <b>Section 6b.6.3.1</b> and <b>Section 6b.6.3.2</b> of EIA report should be followed accordingly together with the land contamination assessment and remediation guidelines</p>	IWMF Site/ During Operation Period	IWMF Operator			✓		Guidance Manual for Use of Risk-based Remediation Goals for Contaminated Land Management and the Guidance Note for Contaminated Land and Remediation.	N/A



EIA Ref	Environmental Protection Measures / Mitigation Measures	Location / Timing	Implementation Agent	Implementation Stages*				Relevant Legislation and Guidelines	Implementation Status and Remarks
				Des	C	O	Dec		
	stipulated in the <i>Guidance Manual for Use of Risk-based Remediation Goals for Contaminated Land Management and the Guidance Note for Contaminated Land and Remediation.</i>								

\* Des - Design, C - Construction, O – Operation, and Dec - Decommissioning

**Table B.5 Implementation Schedule for Ecological Quality Measures for the IWMF at the artificial island near SKC**

EIA Ref	Environmental Protection Measures / Mitigation Measures	Location / Timing	Implementation Agent	Implementation Stages*				Relevant Legislation and Guidelines	Implementation Status and Remarks
				Des	C	O	Dec		
7b.8.2.1	<u>Measures to avoid direct loss of intertidal habitat</u> <ul style="list-style-type: none"> <li>The site boundary has been proposed to avoid direct contact with the intertidal natural rocky shore of Shek Kwu Chau. It avoids direct loss of intertidal communities and the existing natural rocky shore habitat, where Reef Egret and White-bellied Sea Eagle have been recorded within and in the vicinity of this habitat.</li> </ul>	IWMF site	Design team	✓				EIAO-TM	N/A
7b.8.2.2	<u>Measures to minimise loss of coastal subtidal habitat</u> <ul style="list-style-type: none"> <li>Extensive coral colonies were recorded at the coastal hard bottom habitat at Shek Kwu Chau. To avoid and minimise the extensive direct impact on the coral colonies, the proposed reclamation area has been moved further offshore to minimise loss of subtidal habitat near shore.</li> </ul>	IWMF site	Design team	✓				EIAO-TM	N/A
7b.8.2.3	<u>Zero Discharge Scheme</u> <ul style="list-style-type: none"> <li>The design scheme of the Project has avoided discharge of wastewater into the marine environment. mechanical treatment plant, or for onsite washdown and landscape.</li> </ul>	IWMF site	Design team, IWMF operator	✓		✓		WPCO	N/A
7b.8.2.4	<u>Measures to avoid loss of plant species of conservation importance</u> <ul style="list-style-type: none"> <li>Landing portal construction works would not cause direct lost to the recorded individual of protected plant species,</li> </ul>	Cheung Sha landing portal	Design team, Contractor	✓	✓		✓	EIAO-TM	N/A

EIA Ref	Environmental Protection Measures / Mitigation Measures	Location / Timing	Implementation Agent	Implementation Stages*				Relevant Legislation and Guidelines	Implementation Status and Remarks
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	<ul style="list-style-type: none"> <li><i>Aquilaria sinensis</i>, at the coastal shrubland habitat at Cheung Sha. As a precautionary measure, the plant should be tagged with eye-catching tape and fenced off prior to works, in order to avoid any damage by workers.</li> </ul>								
7b.8.3.1-7b.8.3.15	<p><u>Measures to minimise water quality impact</u></p> <ul style="list-style-type: none"> <li>Measures for water quality as recommended in <b>Section 5b</b> of the EIA Report should be implemented.</li> </ul>	Work site	Design team, contractor, IWMF operator	✓	✓	✓	✓	EIAO-TM; ProPECC PN 1/94; WPCO	Implemented
7b.8.3.16 - 7b.8.3.30	<p><u>Measures to minimise disturbance on Finless Porpoise</u></p> <p><i>Minimisation of Habitat Loss for Finless Porpoise</i></p> <ul style="list-style-type: none"> <li>Substantial revision has been made on the layout plan and form of the breakwater, in order to minimise the potential loss of important habitat for Finless Porpoise. The revision has greatly reduced the size of the embayment area, as well as the Project footprint. As a result, the size of habitat loss for Finless Porpoise has reduced from the original ~50 ha, down to ~31 ha.</li> </ul> <p><i>Avoidance of peak season for finless porpoise occurrence</i></p> <ul style="list-style-type: none"> <li>To minimise potential acoustic disturbance from construction activities</li> </ul>	IWMF site,	Design team, contractor, IWMF operator	✓	✓	✓	✓	EIAO-TM, Supporting Document for Application for Variation of the Environmental Permit (EP-429/2012)	Implemented for avoidance of construction works that may produce underwater acoustic disturbance, Vessel Travel Route implementation, training of staff, MMEZ and marine mammal watching works during deployment of silt curtain; N/A for others

EIA Ref	Environmental Protection Measures / Mitigation Measures	Location / Timing	Implementation Agent	Implementation Stages*				Relevant Legislation and Guidelines	Implementation Status and Remarks
				Des	C	O	Dec		
	<p>on Finless Porpoise, construction works that may produce underwater acoustic disturbance should be scheduled outside the months with peak Finless Porpoise occurrence (December to May), including:</p> <ul style="list-style-type: none"> <li>- sheet piling works for construction of cofferdam surrounding the reclamation area (Phase 1);</li> <li>- sheet piling works for construction of the shorter section of breakwater (Phase 1);</li> <li>- sheet piling works for construction of the remaining section of breakwater (Phase 3);</li> <li>- bored piling works for berth area (Phase 3); and</li> <li>- submarine cable installation works between Shek Kwu Chau and Cheung Sha.</li> </ul> <p>Such works should be restricted within June to November. This approach would not only avoid the peak season for Finless Porpoise occurrence, the magnitude of impacts arise from acoustic disturbance would also be minimised.</p> <ul style="list-style-type: none"> <li>• Submarine cable installation works</li> <li>• Since the DCM ground treatment and the installation of precast seawalls and</li> </ul>								

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	<p>breakwaters should generate no underwater acoustic disturbance to Finless Porpoise, no specific mitigation measures are required.</p> <p><i>Opt for quieter construction methods and plants</i></p> <ul style="list-style-type: none"> <li>Considering the sensitivity of marine mammals to underwater acoustic disturbance, instead of the previously proposed conventional breakwater and reclamation peripheral structure, which requires noisy piling works, the current circular cells structure for breakwater and reclamation peripheral structure is proposed. A quieter sheet piling method using vibratory hammer or hydraulic impact hammer, should be adopted for the installation of circular cells for cellular cofferdam and northern breakwater during Phase 1, and southern breakwater Phase 3;</li> <li>Non-percussive bore piling method would be adopted for the installation of tubular piles for the berth construction during Phase 3.</li> </ul> <p><i>Monitored exclusion zones</i></p> <ul style="list-style-type: none"> <li>During the installation/re-installation/relocation process of floating type silt curtains, in order to avoid the accidental entrance and entrapment of marine</li> </ul>								

EIA Ref	Environmental Protection Measures / Mitigation Measures	Location / Timing	Implementation Agent	Implementation Stages*				Relevant Legislation and Guidelines	Implementation Status and Remarks
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	<p>mammals within the silt curtains, a monitored exclusion zone of 250 m radius from silt curtain should be implemented. The exclusion zone should be closely monitored by an experienced marine mammal observer at least 30 minutes before the start of installation/re-installation/relocation process. If a marine mammal is noted within the exclusion zone, all marine works should stop immediately and remain idle for 30 minutes, or until the exclusion zone is free from marine mammals.</p> <ul style="list-style-type: none"> <li>The experienced marine mammal observer should be well trained to detect marine mammals. Binoculars should be used to search the exclusion zone from an elevated platform with unobstructed visibility. The observer should also be independent from the project proponent and has the power to call-off construction activities.</li> <li>In addition, as marine mammals cannot be effectively monitored within the proposed monitored exclusion zone at night, or during adverse weather conditions (i.e. Beaufort 5 or above, visibility of 300 meters or below), marine works should be avoided under weather conditions with low visibility.</li> </ul>								



EIA Ref	Environmental Protection Measures / Mitigation Measures	Location / Timing	Implementation Agent	Implementation Stages*				Relevant Legislation and Guidelines	Implementation Status and Remarks
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	<p><i>Marine mammal watching plan</i></p> <ul style="list-style-type: none"> <li>Upon the completion of the installation/re-installation/relocation of floating type silt curtain, all marine works would be conducted within a fully enclosed environment within the silt curtain, hence exclusion zone monitoring would no longer be required. Subsequently, a marine mammal watching plan should be implemented.</li> </ul> <p>The plan should include regular inspection of silt curtains, and visual inspection of the waters surrounded by the curtains. Special attention should be paid to Phase 2 (reclamation) where the floating type still curtain would be opened occasionally for vessel access, leaving a temporary 50 m opening. An action plan should be devised to cope with any unpredicted incidents such as the case when marine mammals are found within the waters surrounded by the silt curtains.</p> <p><i>Small openings at silt curtains</i></p> <ul style="list-style-type: none"> <li>The openings for vessel access at the silt curtains should be as small as possible to minimise the risk of accidental entrance.</li> </ul> <p><i>Adoption of regular travel route</i></p>								

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	<ul style="list-style-type: none"> <li>During construction and operation, captains of all vessels should adopt regular travel route, in order to minimize the chance of vessel collision with marine mammals, which may otherwise result in damage to health or mortality. The regular travel route should avoid areas with high sighting density of Finless Porpoise as much as possible.</li> </ul> <p><i>Vessel speed limit</i></p> <ul style="list-style-type: none"> <li>The frequent vessel traffic in the vicinity of works area may increase the chance of mammal mammals being killed or seriously injured by vessel collision. A speed limit of ten knots should be strictly enforced within areas with high density of Finless Porpoise.</li> <li>Passive acoustic monitoring and land-based theodolite monitoring surveys should be adopted to verify the predicted impacts and effectiveness of the proposed mitigation measures.</li> </ul> <p><i>Training of Staff</i></p> <ul style="list-style-type: none"> <li>Staff, including captains of vessels, should be aware of the guidelines for safe vessel operations in the presence of cetaceans during construction and</li> </ul>								

EIA Ref	Environmental Protection Measures / Mitigation Measures	Location / Timing	Implementation Agent	Implementation Stages*				Relevant Legislation and Guidelines	Implementation Status and Remarks
				Des	C	O	Dec		
	operation phases. Adequate trainings should be provided								
7b.8.3.31 - 7b.8.3.34	<p><u>Measures to minimise impact on corals</u></p> <p><i>Coral translocation</i></p> <ul style="list-style-type: none"> <li>• Coral communities within and in proximity to the proposed dredging sites would be disturbed by the Project due to the dredging operations. In order to minimise direct loss of coral communities, translocation of corals that are attached to movable rocks with diameter less than 50 cm are recommended. In order to avoid disturbance to corals during the spawning period, the spawning season of corals (June to August) should be avoided; and that translocation should be carried out during the winter season (November-March).</li> <li>• The REA survey results suggest that the 198 directly affected coral colonies were attached to movable rocks (less than 50 cm in diameter). It is technically feasible to translocate them to avoid direct loss.</li> <li>• Prior to coral translocation, a more detailed baseline survey, including event / action plan for coral monitoring should be submitted upon approval of this Project, prior to commencement of</li> </ul>	IWMF site	Design team, contractor, IWMF operator	✓	✓	✓	✓	EIAO-TM	<p>Implemented, tagged coral found missing after hitting by typhoons</p> <p>Re-tagging of 10 coral colonies at indirect impact site and control site were conducted in November and December 2018 respectively.</p>

EIA Ref	Environmental Protection Measures / Mitigation Measures	Location / Timing	Implementation Agent	Implementation Stages*				Relevant Legislation and Guidelines	Implementation Status and Remarks
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	<p>construction works. Advice from relevant governmental departments (i.e. AFCD) and professionals would be sought after, in order to identify a desirable location for the relocation of coral communities. Post-translocation monitoring on the translocated corals should also be considered.</p> <p><i>Coral monitoring programme</i></p> <ul style="list-style-type: none"> <li>A coral monitoring programme is recommended to assess any adverse and unacceptable impacts to the coral communities at the coasts of Shek Kwu Chau during construction of the Project.</li> </ul> <p><i>Phasing of Works</i></p> <ul style="list-style-type: none"> <li>To minimize environmental impacts, the proposed phasing of construction works has been carefully designed to reduce the amount of concurrent works, hence minimize SS elevation and the associated impacts on corals.</li> </ul>								
7b.8.3.35 - 7b.8.3.41	<p><u>Specific measures to minimize disturbance on breeding White-bellied Sea Eagle</u></p> <p><i>Avoidance of noisy works during the breeding season of White-bellied Sea Eagle</i></p> <ul style="list-style-type: none"> <li>To minimize potential noise disturbance</li> </ul>	IWMF site, marine traffic route	Design Team, Contractor, IWMF operator	✓	✓	✓	✓	EIAO-TM	Implemented

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	<p>from construction activities on WBSE, noisy construction works should be scheduled outside their breeding season (December to May) to minimise potential degradation in breeding ground quality and breeding activities, including:</p> <ul style="list-style-type: none"> <li>- sheet piling works for construction of cofferdam surrounding the reclamation area (Phase 1);</li> <li>- sheet piling works for construction of the shorter section of breakwater (Phase 1);</li> <li>- sheet piling works for construction of the remaining section of breakwater (Phase 3); and</li> <li>- bored piling works for berth area (Phase 3).</li> </ul> <p><i>Opt for quieter construction methods and plants</i></p> <ul style="list-style-type: none"> <li>• To minimise potential construction noise disturbance on WBSE, quieter construction methods and plants should be adopted. The recommended noise mitigation measures in the <b>Noise</b> chapter (<b>Section 4b.8</b> of the EIA Report) should be implemented to minimise potential noise disturbance to acceptable levels.</li> </ul> <p><i>Restriction on vessel access near the nest of White-bellied Sea Eagle</i></p>								

EIA Ref	Environmental Protection Measures / Mitigation Measures	Location / Timing	Implementation Agent	Implementation Stages*				Relevant Legislation and Guidelines	Implementation Status and Remarks
				Des	C	O	Dec		
	<ul style="list-style-type: none"> <li>During construction and operation, in order to minimize disturbance on the existing WBSE nest, a pre-defined practical route to restrict vessel access near the nest should be adopted to keep vessels and boats as far away from the nest as possible.</li> </ul> <p><i>White-bellied Sea Eagle monitoring programme</i></p> <ul style="list-style-type: none"> <li>A WBSE monitoring programme is recommended to assess any adverse and unacceptable impacts to the breeding activities of WBSE during construction and operation of the Project. Monitoring surveys for WBSE would include pre-construction phase (twice per month for duration of three months during their breeding season -between December and May, immediately before the commencement of works), construction phase, and operation phase (two years after the completion of construction works).</li> <li>Surveys should be conducted twice per month during their breeding season (from December to May); and once per month outside breeding season (June to November). More details on monitoring for WBSE are presented in the EM&amp;A Manual.</li> </ul>								

EIA Ref	Environmental Protection Measures / Mitigation Measures	Location / Timing	Implementation Agent	Implementation Stages*				Relevant Legislation and Guidelines	Implementation Status and Remarks
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	<p><i>Education of staff</i></p> <ul style="list-style-type: none"> <li>Staff, including captains of all vessels during construction and operation phases, should be aware of the ecological importance of WBSE. Awareness should be raised among staff to minimise any intentional or unintentional disturbance to the nest.</li> </ul> <p><i>Minimisation of Glare Disturbance</i></p> <ul style="list-style-type: none"> <li>To minimise glare disturbance on WBSE, which may cause disorientation of birds by interfering with their magnetic compass, and disruption in behavioural patterns such as reproduction, fat storage and foraging pattern, any unnecessary outdoor lighting should be avoided, and in-ward and down-ward pointing of lights should be adopted.</li> </ul>								
-	<p><u>Construction of Seawall/Breakwaters</u></p> <ul style="list-style-type: none"> <li>To widen the open channel between the Artificial Island and Shek Kwu Chau.</li> <li>To design the precast concrete seawall with environmental friendly features.</li> </ul>	IWMF site	Design team, contractor, IWMF operator	✓	✓			Supporting Document for Application for Variation of Environmental Permit (EP-429/2012)	N/A
7b.8.3.42	<p><u>Opt for Quieter Construction Methods and Plants</u></p> <ul style="list-style-type: none"> <li>Quieter construction methods and plants</li> </ul>	Work site	Design team, contractor, IWMF operator	✓	✓	✓	✓	EIAO-TM	Implemented



EIA Ref	Environmental Protection Measures / Mitigation Measures	Location / Timing	Implementation Agent	Implementation Stages*				Relevant Legislation and Guidelines	Implementation Status and Remarks
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	should be used to minimise disturbance to the nearby terrestrial habitat and the associated wildlife.								
7b.8.3.43	<p><u>Measures to minimize impacts from artificial lighting</u></p> <ul style="list-style-type: none"> <li>Unnecessary lighting should be avoided, and shielding of lights should be provided to minimize disturbance from light pollution on fauna groups.</li> </ul>	IWMF site	Design team, contractor, IWMF operator	✓	✓	✓		EIAO-TM	Implemented
7b.8.3.44 - 7b.8.3.45	<p><u>Measures to minimize accidental spillage</u></p> <ul style="list-style-type: none"> <li>Regular maintenance of vessels, vehicles and equipment that may cause leakage and spillage should only be undertaken within pre-designated areas, which are appropriately equipped to control the associated discharges.</li> <li>Oils, fuels and chemicals should be contained in suitable containers, and only be used and stored in designated areas which have pollution prevention facilities. All fuel tanks and storage areas should be sited on sealed areas in order to prevent spillage of fuels and solvents to the nearby watercourses. All waste oils and fuels should be collected in designated tanks prior to disposal.</li> </ul>	Work site	Contractor, IWMF operator		✓	✓	✓	EIAO-TM	Implemented
7b.8.3.46	<p><u>Measures to minimise sewage effluent</u></p> <ul style="list-style-type: none"> <li>Temporary sanitary facilities, such as</li> </ul>	Work site	Contractor		✓			EIAO-TM	N/A

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				Des	C	O	Dec		
	portable chemical toilets, should be employed on-site where necessary to handle sewage from the workforce.								
7b.8.3.47	<p><u>Measures to minimise drainage and construction runoff</u></p> <ul style="list-style-type: none"> <li>• Potential ecological impacts resulted from potential degradation of water quality due to unmitigated surface runoff could be minimised via the detailed mitigation measures in <b>Section 5b.8</b> of the EIA Report. The following presents some of the mitigation measures:                             <ul style="list-style-type: none"> <li>- On-site drainage system with implemented sedimentation control facilities.</li> <li>- Channels, earth bunds or sand bag barriers should be provided on site to direct storm water to silt removal facilities.</li> <li>- Provision of embankment at boundaries of earthworks for flood protection.</li> <li>- Water pumped out from foundation piles must be discharged into silt removal facilities.</li> <li>- During rainstorms, exposed slope/soil surfaces should be covered by tarpaulin or other means, as far as practicable.</li> <li>- Exposed soil surface should be minimized to reduce siltation and runoff.</li> <li>- Earthwork final surfaces should be</li> </ul> </li> </ul>	Work site	Contractor		✓		✓	EIAO-TM	N/A

EIA Ref	Environmental Protection Measures / Mitigation Measures	Location / Timing	Implementation Agent	Implementation Stages*				Relevant Legislation and Guidelines	Implementation Status and Remarks
				Des	C	O	Dec		
	<p>well compacted. Subsequent permanent surface protection should be immediately performed.</p> <ul style="list-style-type: none"> <li>- Open stockpiles of construction materials, and construction wastes on-site should be covered with tarpaulin or similar fabric during rainstorms.</li> </ul>								
7b.8.3.48	<p><u>Measures to minimise impacts from general construction activities</u></p> <ul style="list-style-type: none"> <li>• To avoid the entering of construction solid waste into the nearby habitats, construction solid waste should be collected, handled and disposed of properly to avoid entering to the nearby habitats. It is recommended to clean the construction sites on a regular basis.</li> </ul>	Work site	Contractor		✓			EIAO-TM	Implemented
7b.8.3.49	<p><u>Pest Control</u></p> <p>Good waste management practices should be adopted at the IWMF in order to minimise the risk of introduction of pest to the island:</p> <ul style="list-style-type: none"> <li>- Transportation of wastes in enclosed containers</li> <li>- Waste storage area should be well maintained and cleaned</li> <li>- Waste should only be disposed of at designated areas</li> <li>- Timely removal of the newly arrived waste</li> <li>- Removal of items that are capable of</li> </ul>	IWMF site	IWMF operator			✓			N/A

EIA Ref	Environmental Protection Measures / Mitigation Measures	Location / Timing	Implementation Agent	Implementation Stages*				Relevant Legislation and Guidelines	Implementation Status and Remarks
				Des	C	O	Dec		
	retaining water - Rapid clean up of any waste spillages - Maintenance of a tidy and clean site environment - Regular application of pest control - Education of staff the importance of site cleanliness								
7b.8.3.50	<u>Control of Marine Habitat Quality during Operation Phase</u>  <ul style="list-style-type: none"> <li>Depending on the seabed condition of the approach channel for marine vessels during operation phase of the IWMF, maintenance dredging may be required to ensure safe access. In order to avoid degradation in water quality due to elevation in SS and dispersion of sediment plume due to dredging works, it is recommended that any future maintenance dredging works should not be carried out within 100 m from the shore, similar to that of the dredging for anti-scouring protection layer during construction phase. All maintenance dredging works should be carried out with the implementation of silt curtain to control the dispersion of SS. The production rate should comply with the permit dredging rate and number of grab per hour.</li> </ul>	IWMF site	IWMF operator			✓		EIAO-TM; WPCO	N/A
7b.8.4.1 – 7b.8.4.8	<u>Compensation of loss of important habitat of Finless Porpoise</u>	Waters between Shek Kwu Chau and Soko Islands	Project Proponent	✓		✓		EIAO-TM	N/A

EIA Ref	Environmental Protection Measures / Mitigation Measures	Location / Timing	Implementation Agent	Implementation Stages*				Relevant Legislation and Guidelines	Implementation Status and Remarks
				Des	C	O	Dec		
	<p><i>Designation of Marine Park</i></p> <ul style="list-style-type: none"> <li>The Project Proponent has made a firm commitment to seek to designate a marine park of approximately 700 ha in the waters between Soko Islands and Shek Kwu Chau, in accordance with the statutory process stipulated in the Marine Parks Ordinance, as a compensation measure for the habitat loss arising from the construction of the IWMF at the artificial island near SKC.</li> <li>The Project Proponent shall seek to complete the designation by 2018 to tie in with the operation of the IWMF at the artificial island near SKC.</li> <li>A further study should be carried out to review relevant previous studies and collate available information on the ecological characters of the proposed area for marine park designation; and review available survey data for Finless Porpoise, water quality, fisheries, marine traffic and planned development projects in the vicinity. Based on the findings, ecological profiles of the proposed area for marine park designation should be established, and the extent and location of the proposed marine park be determined. The adequacy of enhancement measures should also be reviewed.</li> </ul>								

EIA Ref	Environmental Protection Measures / Mitigation Measures	Location / Timing	Implementation Agent	Implementation Stages*				Relevant Legislation and Guidelines	Implementation Status and Remarks
				Des	C	O	Dec		
	<ul style="list-style-type: none"> <li>In addition, a management plan for the proposed marine park should be proposed, covering information on the responsible departments for operation and management (O&amp;M) of the marine park, as well as the O&amp;M duties of each of the departments involved. Consultation with relevant government departments and stakeholders should be conducted under the study. The study should be submitted to Director of Environmental Protection (DEP) for approval before the commencement of construction works.</li> <li>The Project Proponent should provide assistance to AFCD during the process of the marine park designation. .</li> </ul>								
7b.8.5.1 – 7b.8.5.4	<p><u>Additional Enhancement or Precautionary Measures Deployment of Artificial Reefs</u></p> <ul style="list-style-type: none"> <li>Deployment of artificial reefs (ARs) is an enhancement measure for the marine habitats. ARs are proposed to be deployed within the proposed marine park under this Project. The exact location, dimension and type of ARs to be deployed are to be further investigated along with the further study of the proposed marine park under this Project. The proposed ARs would be deployed at the same time as the complete</li> </ul>	Within the proposed marine park under this study	Project Proponent	✓		✓		EIAO-TM	N/A

EIA Ref	Environmental Protection Measures / Mitigation Measures	Location / Timing	Implementation Agent	Implementation Stages*				Relevant Legislation and Guidelines	Implementation Status and Remarks
				Des	C	O	Dec		
	<p>designation of marine park.</p> <p><i>Release of Fish Fry at Artificial Reefs and Marine Park</i></p> <ul style="list-style-type: none"> <li>Release of fish fry at the proposed ARs, as well as the proposed marine park under this study, should enhance the fish resources in the nearby waters, and subsequently food sources for Finless Porpoise. The proposed ARs with various micro-habitats would have the potential to provide shelter and nursery ground for the released fish fry. The frequency and quantity of fry to be released should be agreed by AFCD.</li> </ul>								

\* Des - Design, C - Construction, O – Operation, and Dec - Decommissioning



**Table B.6 Implementation Schedule for Fisheries Measures for the IWMF at the artificial island near SKC**

EIA Ref	Environmental Protection Measures / Mitigation Measures	Location / Timing	Implementation Agent	Implementation Stages*				Relevant Legislation and Guidelines	Implementation Status and Remarks
				Des	C	O	Dec		
8b.8.1.2	<p><u>Measure to minimize loss of and disturbance on fisheries resources</u></p> <ul style="list-style-type: none"> <li>Alteration to the phasing of works, construction method, and layout plan of the IWMF at the artificial island near SKC has been made. The total fishing ground to be permanently lost due to the project has been significantly reduced from ~50 ha to ~31 ha. By adopting the current circular cells instead of the conventional seawall construction method, SS elevation would be greatly reduced, minimizing adverse impact on the health of fisheries resources.</li> </ul>	IWMF site	Design team, contractor	✓	✓		✓	EIAO-TM	N/A
8b.8.1.3	<p><u>Measure to minimize impingement and entrainment</u></p> <ul style="list-style-type: none"> <li>Provision of a screen at the water intake point for desalination plant would be essential to minimize the risk of impingement and entrainment of fisheries resources (including fish, larvae and egg) through the intake point.</li> </ul>	IWMF site	Design team, contractor, IWMF operator	✓	✓	✓		EIAO-TM	N/A

EIA Ref	Environmental Protection Measures / Mitigation Measures	Location / Timing	Implementation Agent	Implementation Stages*				Relevant Legislation and Guidelines	Implementation Status and Remarks
				Des	C	O	Dec		
8b.8.1.4-8b.8.1.6	<p><u>Measures to control water quality</u></p> <ul style="list-style-type: none"> <li>No wastewater effluent, anti-fouling agent, heavy metals and other contaminants would be released during operation phase of the Project.</li> <li>Mitigation measures recommended in the water quality impact assessment during construction and operation would serve to protect fisheries resources from indirect impacts resulted from the Project</li> </ul>	Work site, IWMF site	Design team, contractor, IWMF operator	✓	✓	✓	✓	EIAO-TM	Implemented
8b.8.1.7 – 8b.8.1.8	<p><u>Additional Enhancement / Precautionary Measures</u></p> <ul style="list-style-type: none"> <li>Artificial Reefs (ARs) are proposed to be deployed within the proposed marine park under this Project as an enhancement measure for the marine habitats. This enhancement feature would bring positive impacts to the previously identified important spawning and nursery ground for fisheries resources.</li> </ul> <p><i>Release of Fish Fry at Artificial Reefs</i></p> <ul style="list-style-type: none"> <li>Release of fish fry has been proposed under this Project. The proposed deployment of ARs within the proposed marine park would provide shelter and nursery ground for the released fish fry. The frequency and quantity of fry to be released should be agreed by AFCD.</li> </ul>	Within the proposed marine park in the waters between Soko Islands and Shek Kwu Chau	Project Proponent	✓		✓		EIAO-TM	N/A

\* Des - Design, C - Construction, O – Operation, and Dec - Decommissioning

**Table B.7 Implementation Schedule for Landscape and Visual Measures for the IWMF at the artificial island near SKC**

EIA Ref	Environmental Protection Measures / Mitigation Measures	Location / Timing	Implementation Agent	Implementation Stages*				Relevant Legislation and Guidelines	Implementation Status and Remarks
				Des	C	O	Dec		
S10b.10 MLVC- 01	Grass-hydroseeded bare soil surface and stock pile area	Work site / During construction phase	Contractor		✓				N/A
S10b.10 MLVC-02	<p><u>Landscape Design</u></p> <p>1) Early planting using fast grow trees and tall shrubs at strategic locations within site as buffer to block view corridors to the site from the VSRs, and to locally screen haul roads, excavation works and site preparation works.</p> <p>2) Use of tree species of dense tree crown to serve as visual barrier.</p> <p>3) Hard and soft landscape treatment (e.g. trees and shrubs) of open areas within development to provide a background for the outdoor containers from open view, shade and shelter, and a green appearance from surrounding viewpoints.</p> <p>4) Planting strip along the periphery of the project site.</p> <p>5) Selected tree species suitable for the coastal condition.</p>	Work site / During design & construction phases	Contractor	✓	✓				N/A

EIA Ref	Environmental Protection Measures / Mitigation Measures	Location / Timing	Implementation Agent	Implementation Stages*				Relevant Legislation and Guidelines	Implementation Status and Remarks
				Des	C	O	Dec		
S10b.10 MLVC-03	<p><u>Adoption of Natural Features of the Existing Shoreline</u></p> <p>1) Use of boulders in different sizes and with the similar textures of the existing rocky shores for the construction of breakwater and artificial shoreline in order to blend into the existing natural shoreline.</p> <p>2) Use of cellular cofferdam together with the natural boulders to form a curvature shoreline for the reclamation area to echo with the natural shoreline of SKC.</p>	Work site / During construction phase	Contractor		✓				N/A
S10b.10 MLVC-04	<p><u>Greening Design (Rooftop &amp; Vertical Greening)</u></p> <p>1) Implementation of rooftop and vertical greening (vertical building envelope) along the periphery of each building block to increase the amenity value of the work, moderate temperature extremes and enhance building energy performance. The greening appearance of the building shall enhance its visual harmony with the natural surroundings as well as reduce the apparent visual mass of the structure.</p> <p>2) Sufficient space between concrete enclosure and stack to minimize heat transfer.</p> <p>3) Introduction of landscape decks at the stack to further enhance the overall natural and green concept unique for this site.</p>	Work site / During design & construction phases	Contractor	✓	✓				N/A

EIA Ref	Environmental Protection Measures / Mitigation Measures	Location / Timing	Implementation Agent	Implementation Stages*				Relevant Legislation and Guidelines	Implementation Status and Remarks
				Des	C	O	Dec		
S10b.10 MVC-01	<p><u>Visual Mitigation and Aesthetic Design</u></p> <ol style="list-style-type: none"> <li>1) Use of natural materials with recessive color to minimize the bulkiness of the building.</li> <li>2) Adoption of innovative aesthetic design to the chimney to minimize or visually mitigate the massing of the chimney so as to reduce its visual impact to the surroundings.</li> <li>3) Color of the chimney in a gradual changing manner to match with the color of the sky.</li> <li>4) Provision of observation deck for public enjoyment at the top of the chimney to diminish the feeling of chimney.</li> <li>5) Provision of sky gardens between the two stacks to allow additional greening for enhancing the aesthetic quality. Maintenance access (elevator and staircase) from the ground floor to the sky gardens will be provided to allow maintenance of the sky gardens.</li> <li>6) Integration of the visitor's walkway with different material façade design of incinerator plant to enhance the aesthetic quality.</li> </ol>	Structures in IWMF / During design & construction phases	Contractor	✓	✓			N/A	
S10b.10 MVC-02	Control of the security floodlight for construction areas at night to avoid excessive glare to the surrounding receiver.	Work site / During construction phase	Contractor		✓			Implemented	

EIA Ref	Environmental Protection Measures / Mitigation Measures	Location / Timing	Implementation Agent	Implementation Stages*				Relevant Legislation and Guidelines	Implementation Status and Remarks
				Des	C	O	Dec		
S10b.10 MVC-03	Optimization of the construction sequence and construction programme to minimize the duration of impact.	Work site / During design & construction phases	Contractor	✓	✓				Implemented
S10b.10 MVC-04	Storage of the backfilling materials for site formation & construction materials / wastes on site at a maximum height of 2m, covered with an impermeable material of visually un-obtrusive material (in earth tone).	Work site / During construction phase	Contractor		✓				N/A
S10b.10 MVC-05	Reduction of the number of construction traffic at the site to practical minimum.	Work site / During construction phase	Contractor		✓				Implemented
S10b.10 MLVO-01	<u>Planting Maintenance</u> Provision of proper planting maintenance and replacement of defective plant species on the new planting areas to enhance aesthetic and landscape quality.	Project site / During Operation phase	Contractor			✓			N/A
S10b.10 MVO-01	<u>Environmental Education Centre</u> Development of an Environmental Education Center, in which regular exhibitions and lectures to promote environmental awareness and waste reduction concept would be provided, as a part of the IWMF for the general public to alleviate negative public perceptions of the development.	Project site / During Operation phase	Contractor			✓			N/A
S10b.10 MVO-02	<u>Control of Light</u> Control the numbers of lights and their intensity to a level that is good enough to meet the safety requirements at night but not excessive.	Project site / During Operation phase	Contractor			✓			N/A

EIA Ref	Environmental Protection Measures / Mitigation Measures	Location / Timing	Implementation Agent	Implementation Stages*				Relevant Legislation and Guidelines	Implementation Status and Remarks
				Des	C	O	Dec		
S10b.10 MVO-03	<u>Control of Operation Time</u> Minimization of the frequency of waste transportation to practical minimum (e.g. limit the reception of MSW from 8 am to 8 pm)	Project site / During Operation phase	Contractor			✓			N/A

\* Des - Design, C - Construction, O – Operation, and Dec - Decommissioning

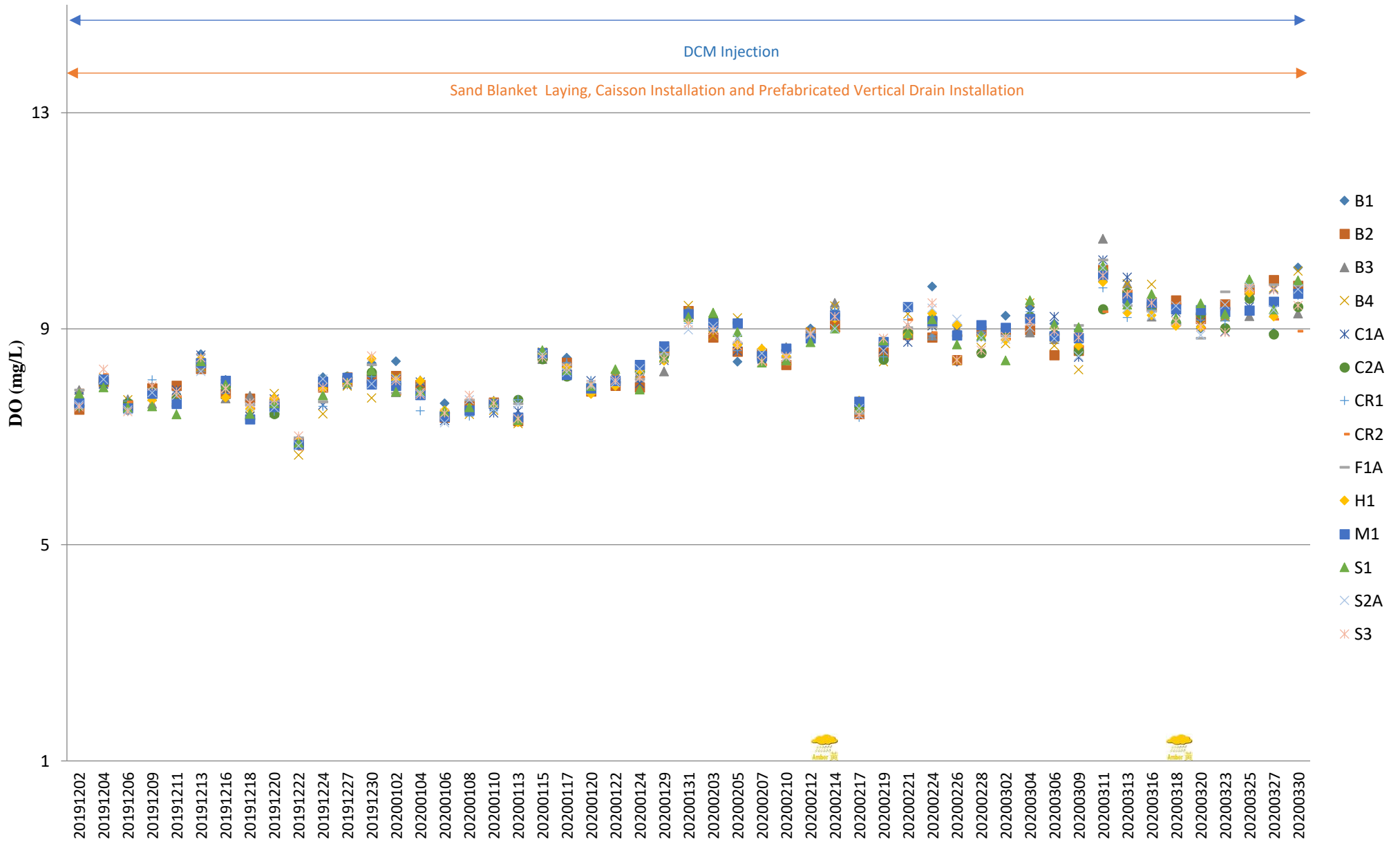


## Appendix C Water Quality Monitoring Data Trending



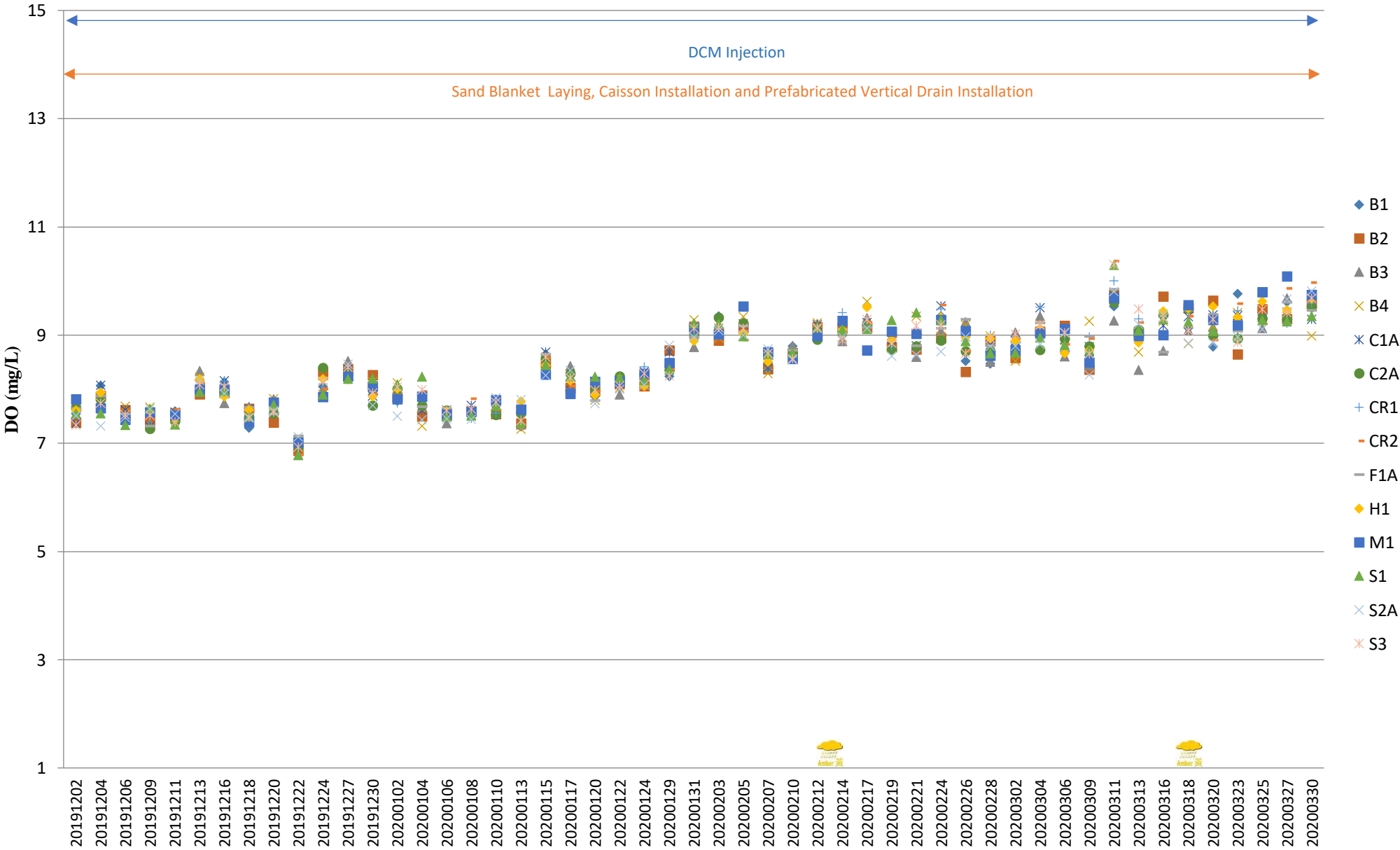


# Dissolved Oxygen (Surface & Middle) during MID-FLOOD



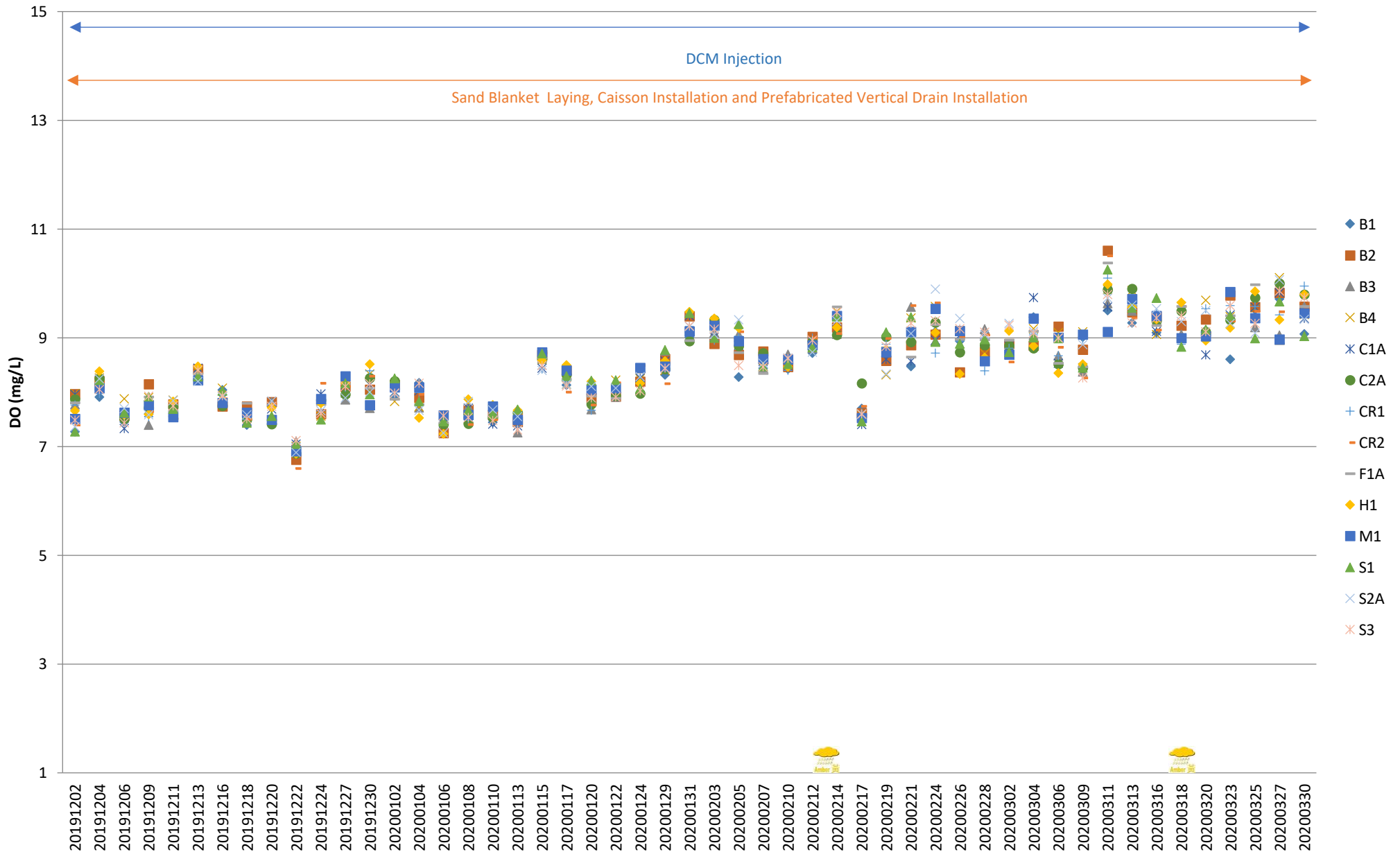
Note: The Action and Limit Level of dissolved oxygen can be referred to **Table 2.2** of the quarterly EM&A report.

# Dissolved Oxygen (Surface & Middle) during MID-EBB



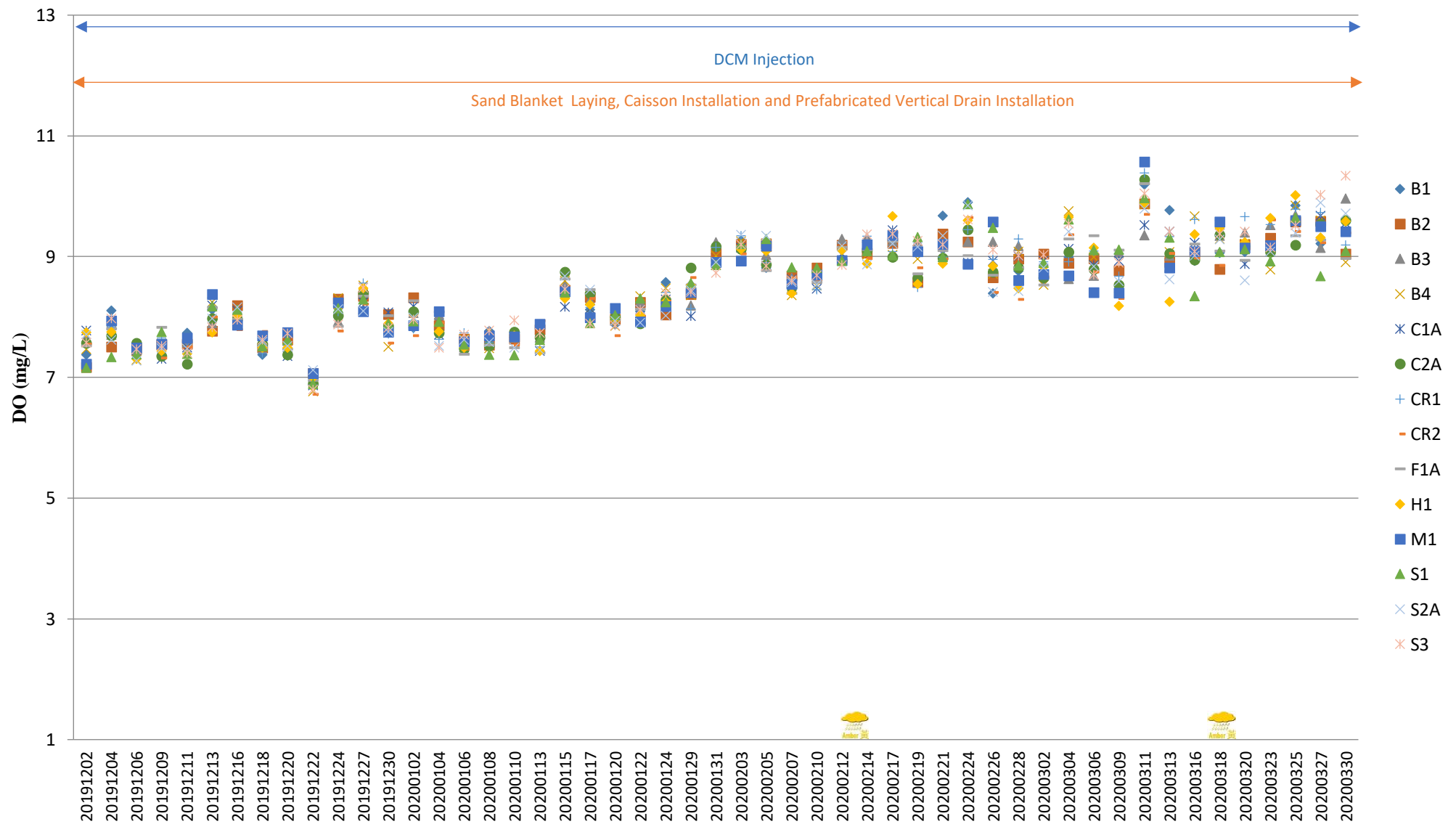
Note: The Action and Limit Level of dissolved oxygen can be referred to **Table 2.2** of the quarterly EM&A report.

# Dissolved Oxygen (Bottom) during MID-FLOOD



Note: The Action and Limit Level of dissolved oxygen can be referred to **Table 2.2** of the quarterly EM&A report.

# Dissolved Oxygen (Bottom) during MID-EBB



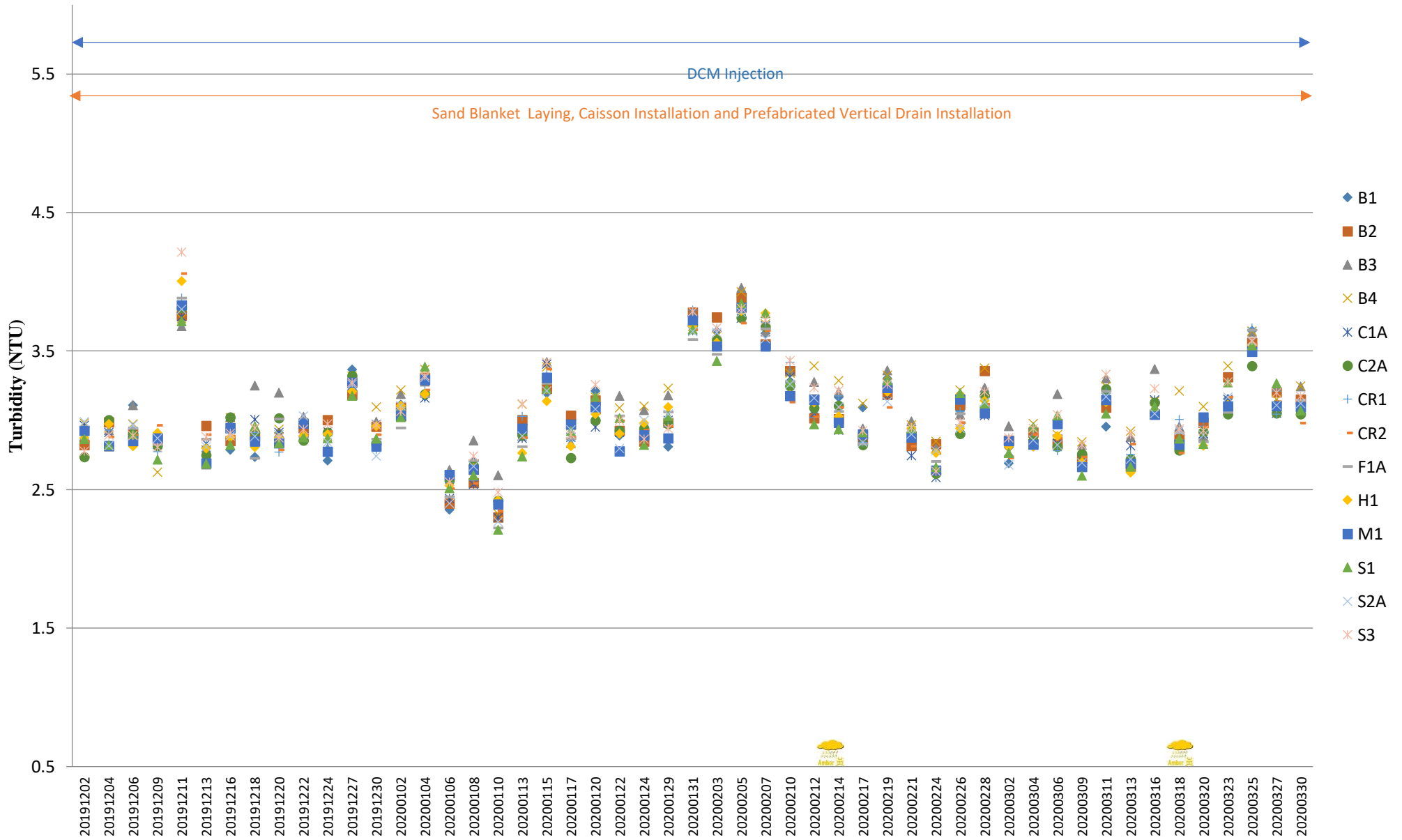
Note: The Action and Limit Level of dissolved oxygen can be referred to **Table 2.2** of the quarterly EM&A report.





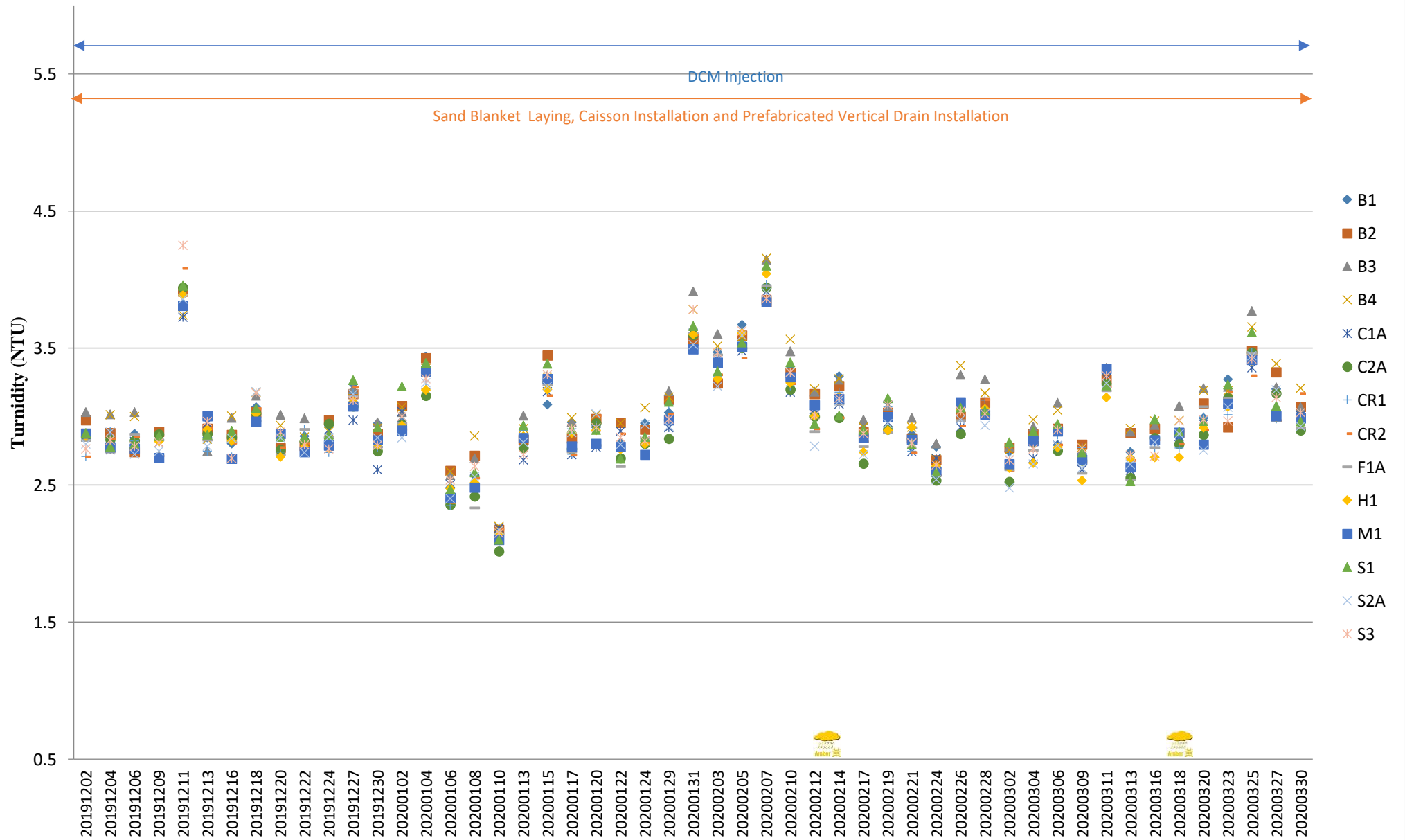


# Turbidity (Depth-averaged) during MID-FLOOD



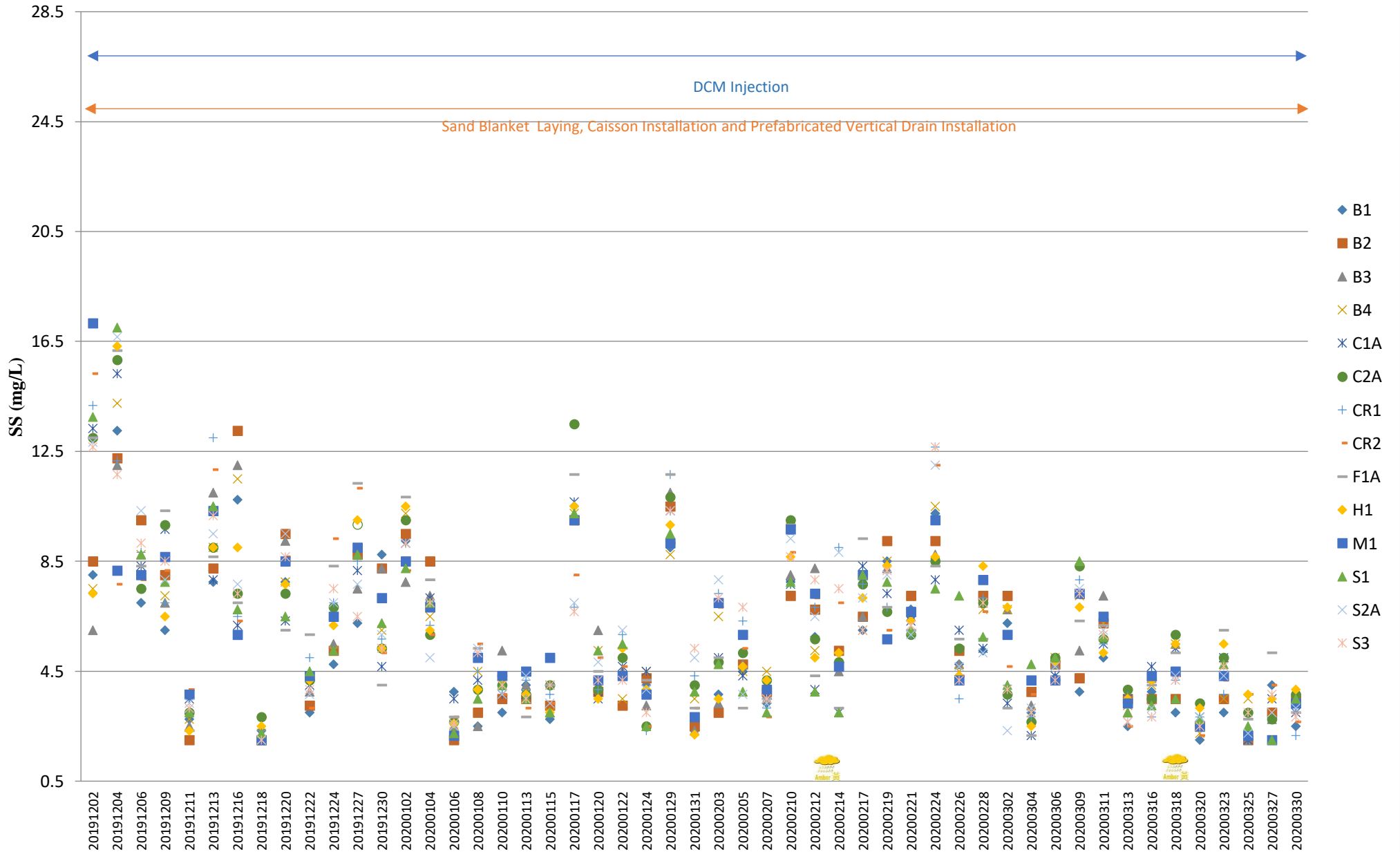
Note: The Action and Limit Level of turbidity can be referred to **Table 2.2** of the quarterly EM&A report.

# Turbidity (Depth-averaged) during MID-EBB



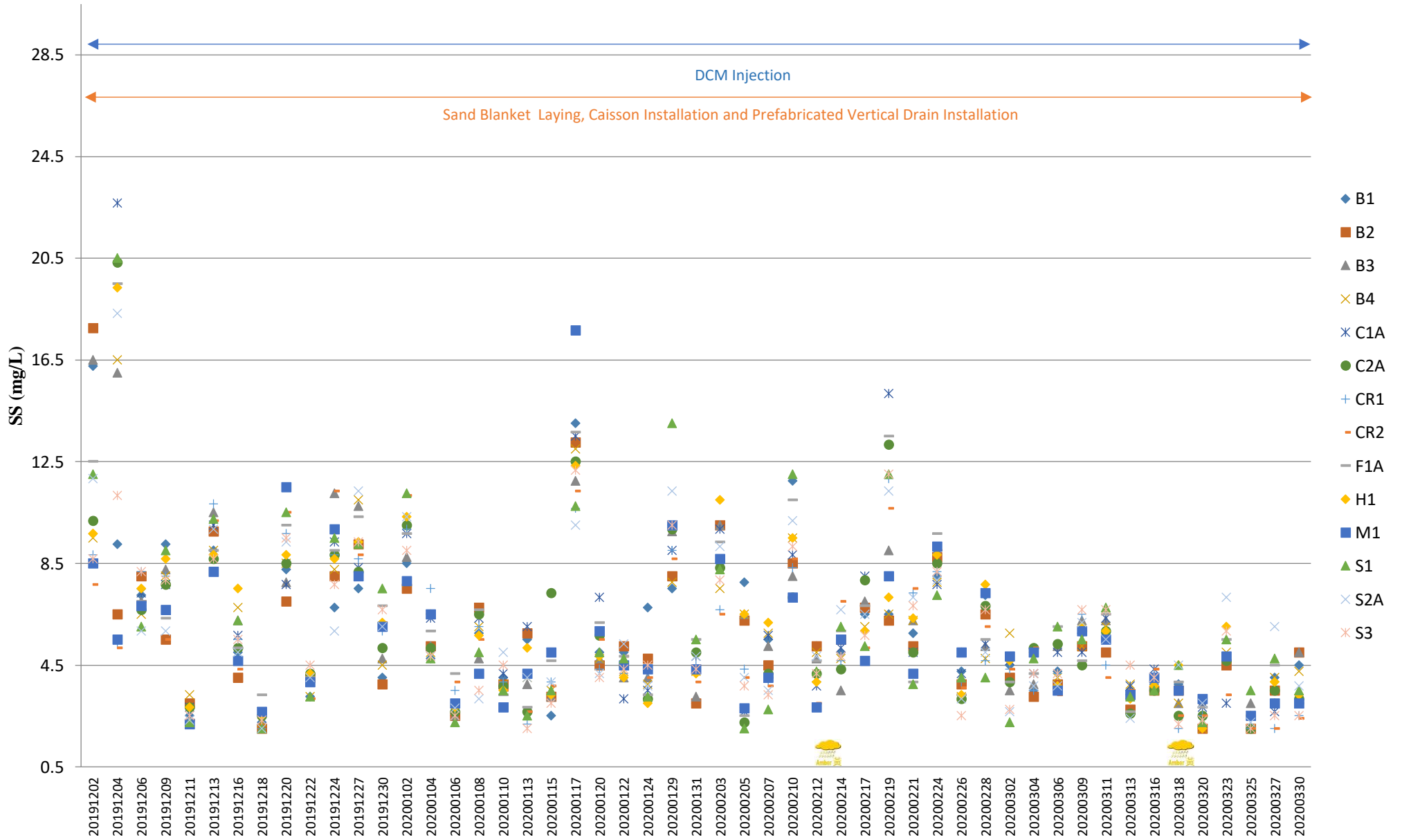
Note: The Action and Limit Level of turbidity can be referred to **Table 2.2** of the quarterly EM&A report.

# Suspended Solids (Depth-averaged) during MID-FLOOD



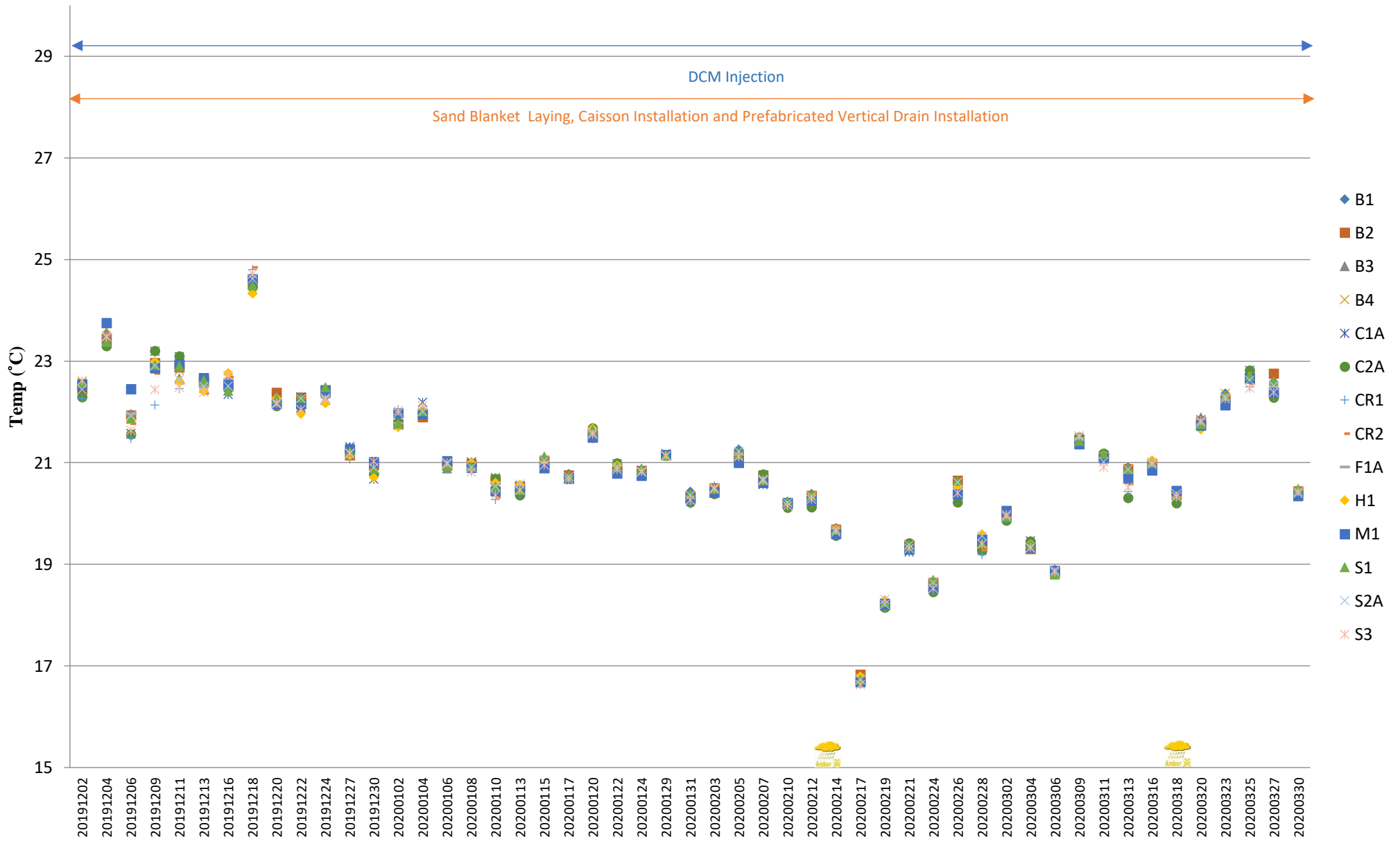
Note: The Action and Limit Level of suspended solids can be referred to **Table 2.2** of the quarterly EM&A report.

# Suspended Solids (Depth-averaged) during MID-EBB



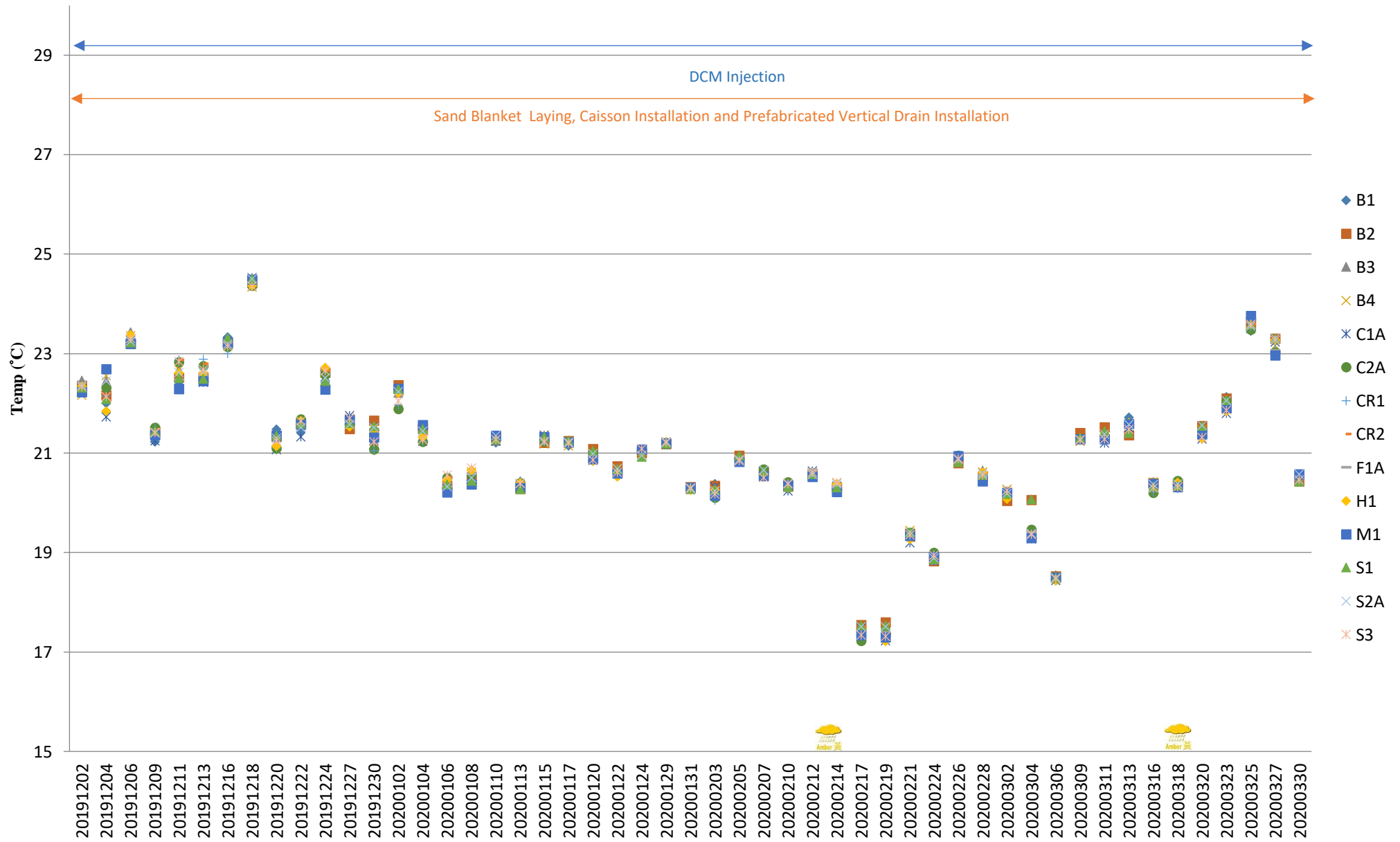
Note: The Action and Limit Level of suspended solids can be referred to **Table 2.2** of the quarterly EM&A report.

# Temperature (Depth-averaged) during MID-FLOOD



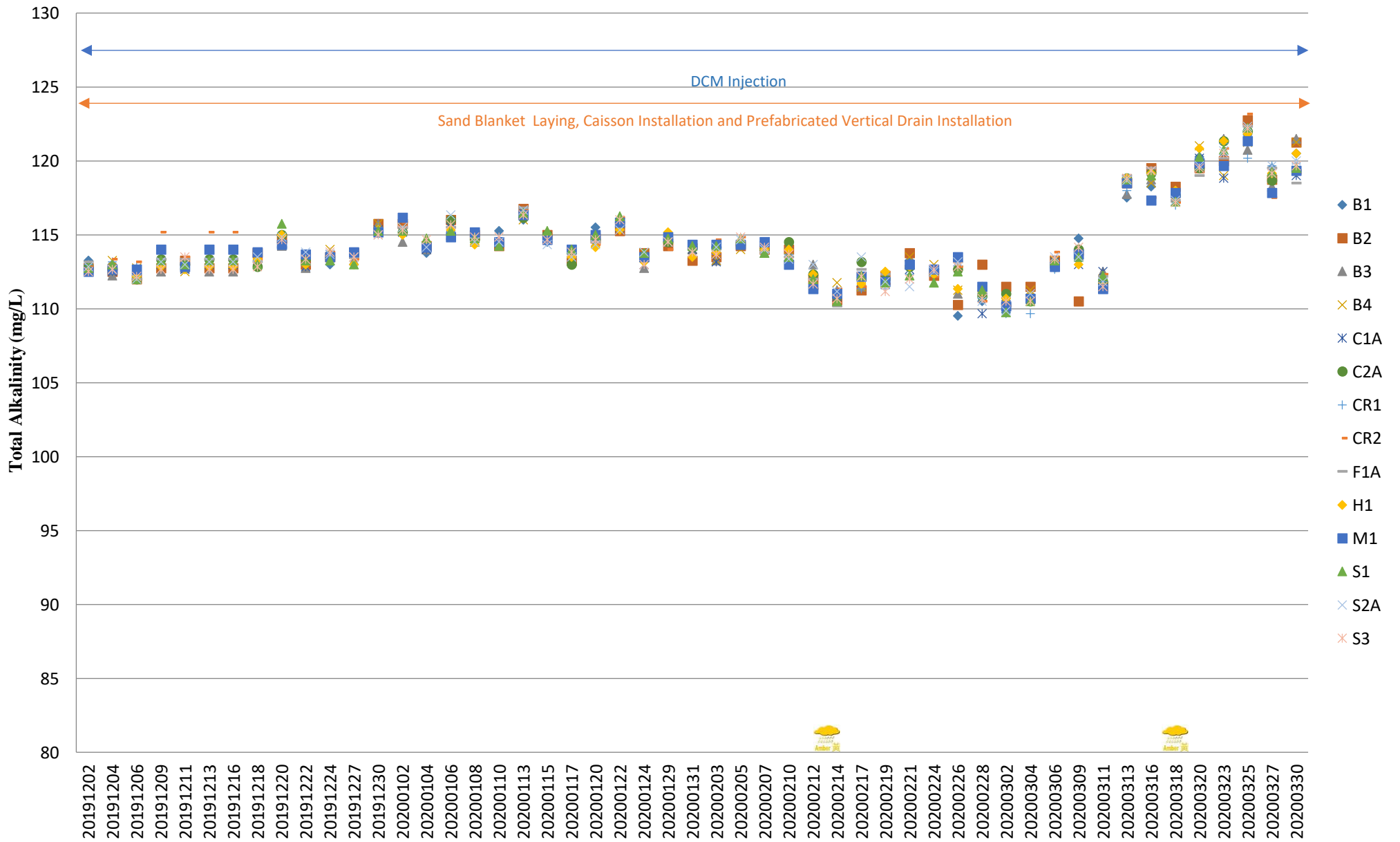
Note: The Action and Limit Level of temperature can be referred to **Table 2.2** of the quarterly EM&A report.

# Temperature (Depth-averaged) during MID-EBB



Note: The Action and Limit Level of temperature can be referred to **Table 2.2** of the quarterly EM&A report.

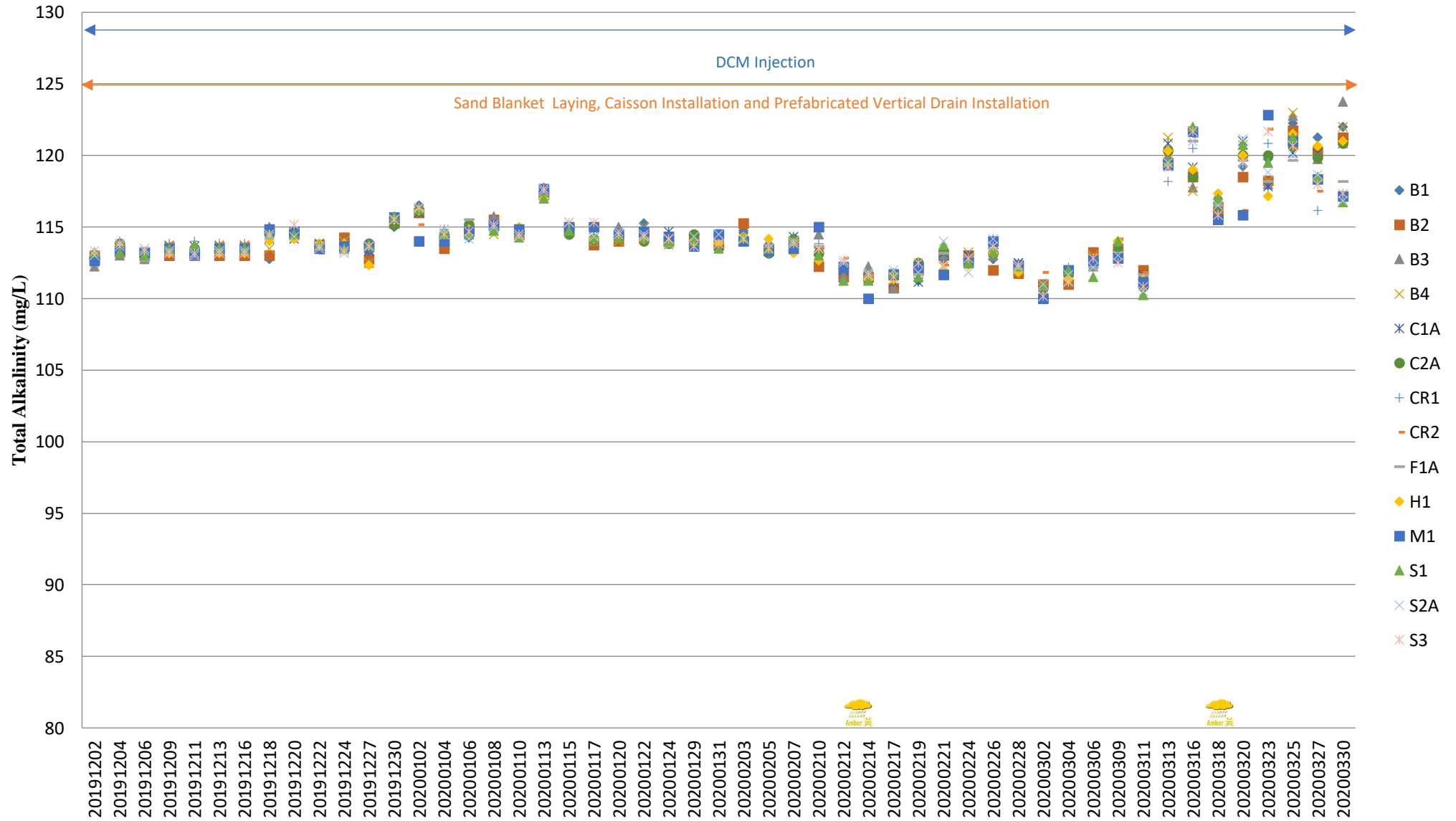
# Total Alkalinity (Depth-averaged) during MID-FLOOD



Note: The Action and Limit Level of total alkalinity can be referred to **Table 2.2** of the quarterly EM&A report.



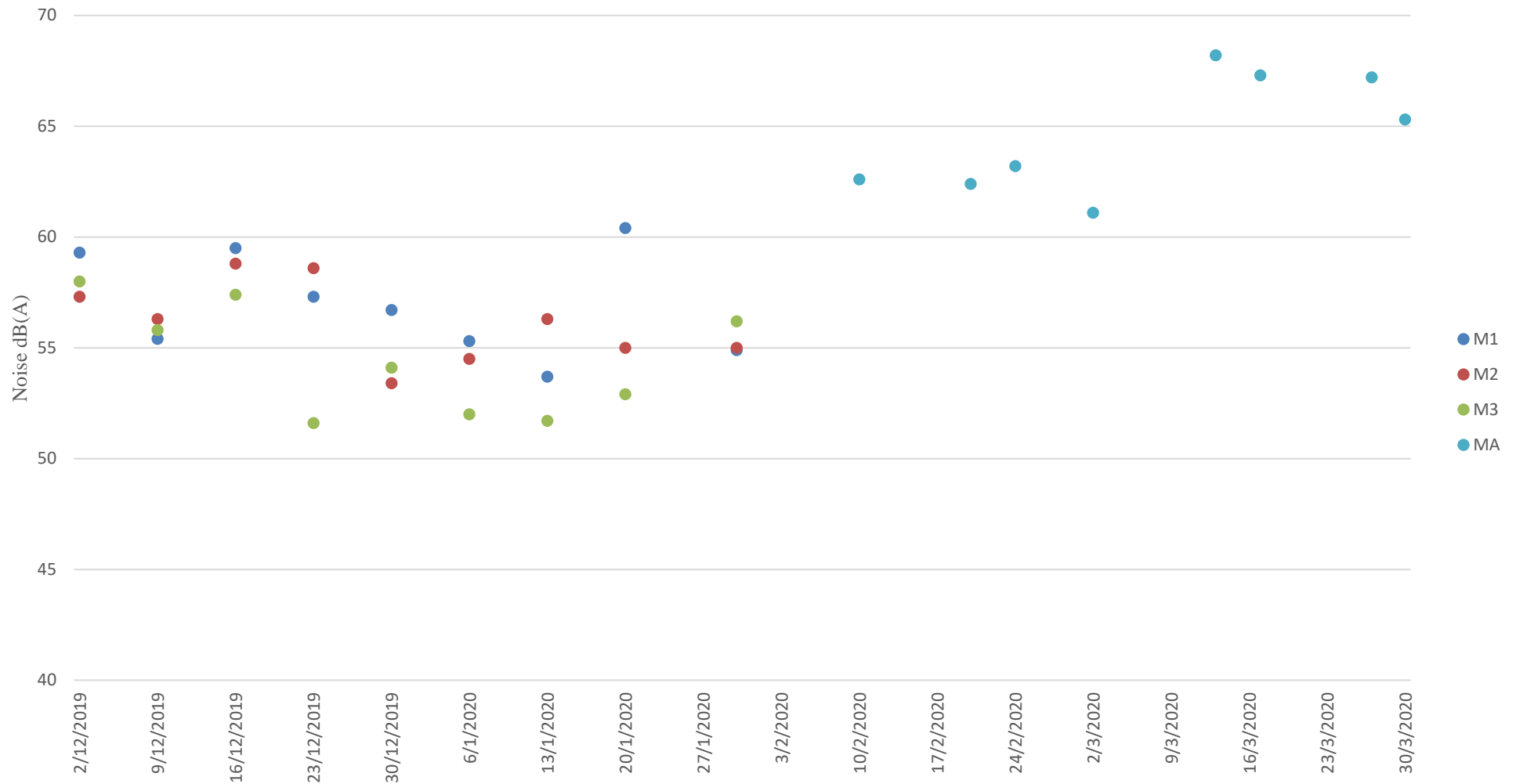
# Total Alkalinity (Depth-averaged) during MID-EBB



Note: The Action and Limit Level of total alkalinity can be referred to **Table 2.2** of the quarterly EM&A report.

## Appendix D Noise Monitoring Data Trending

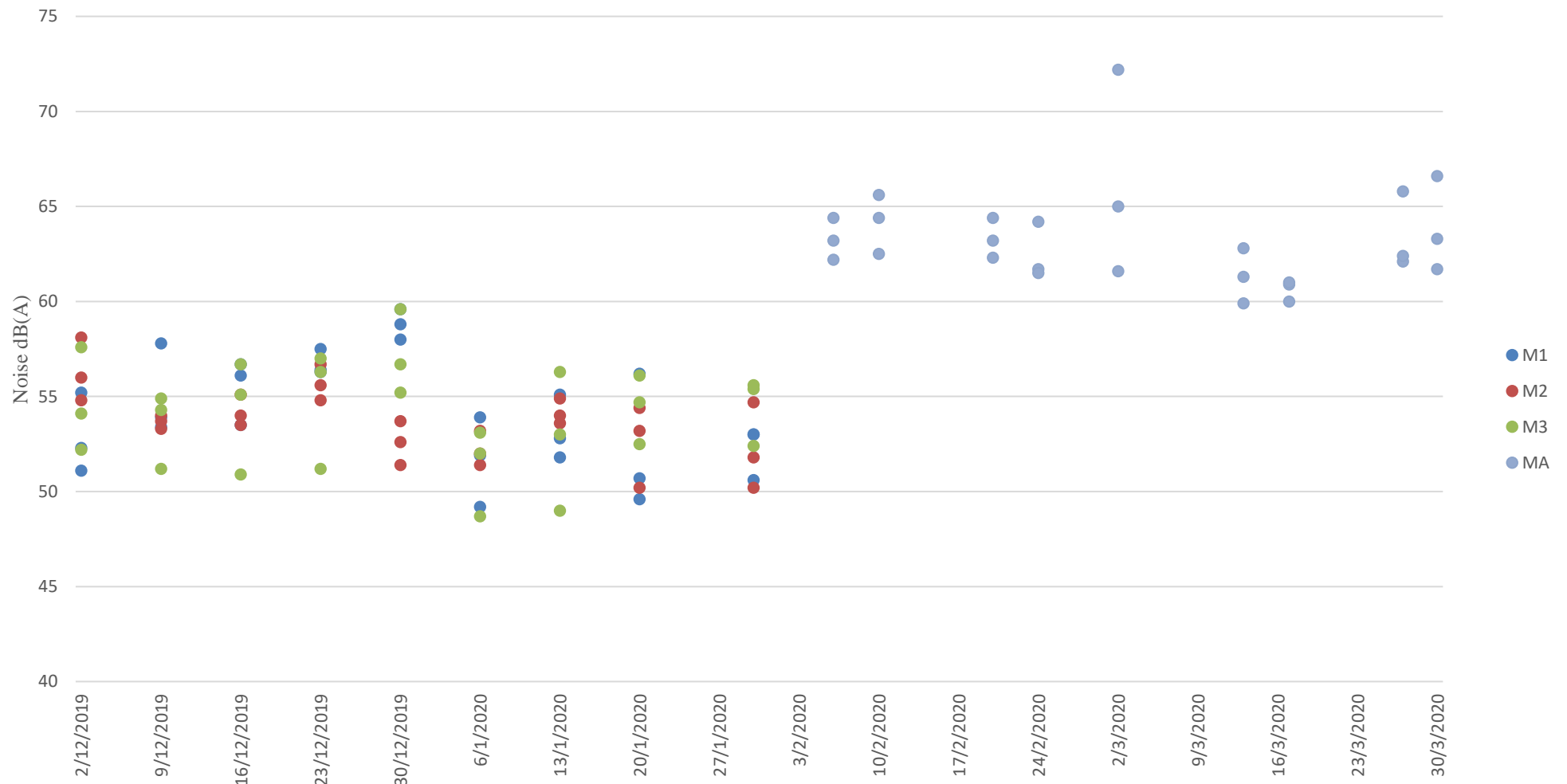
### Impact Noise Monitoring Results during Daytime (0700 - 1900hrs)



\*Based on the concern of novel coronavirus in Feb 2020, access to Shek Kwu Chau was rejected by SADRA. Hence, the alternative noise monitoring location (MA) at the farthest barge outside the site boundary was proposed by ET and agreed by IEC which subject to EPD approval.

\*\*A correction of +3 dB(A) would be made to the free field measurements.

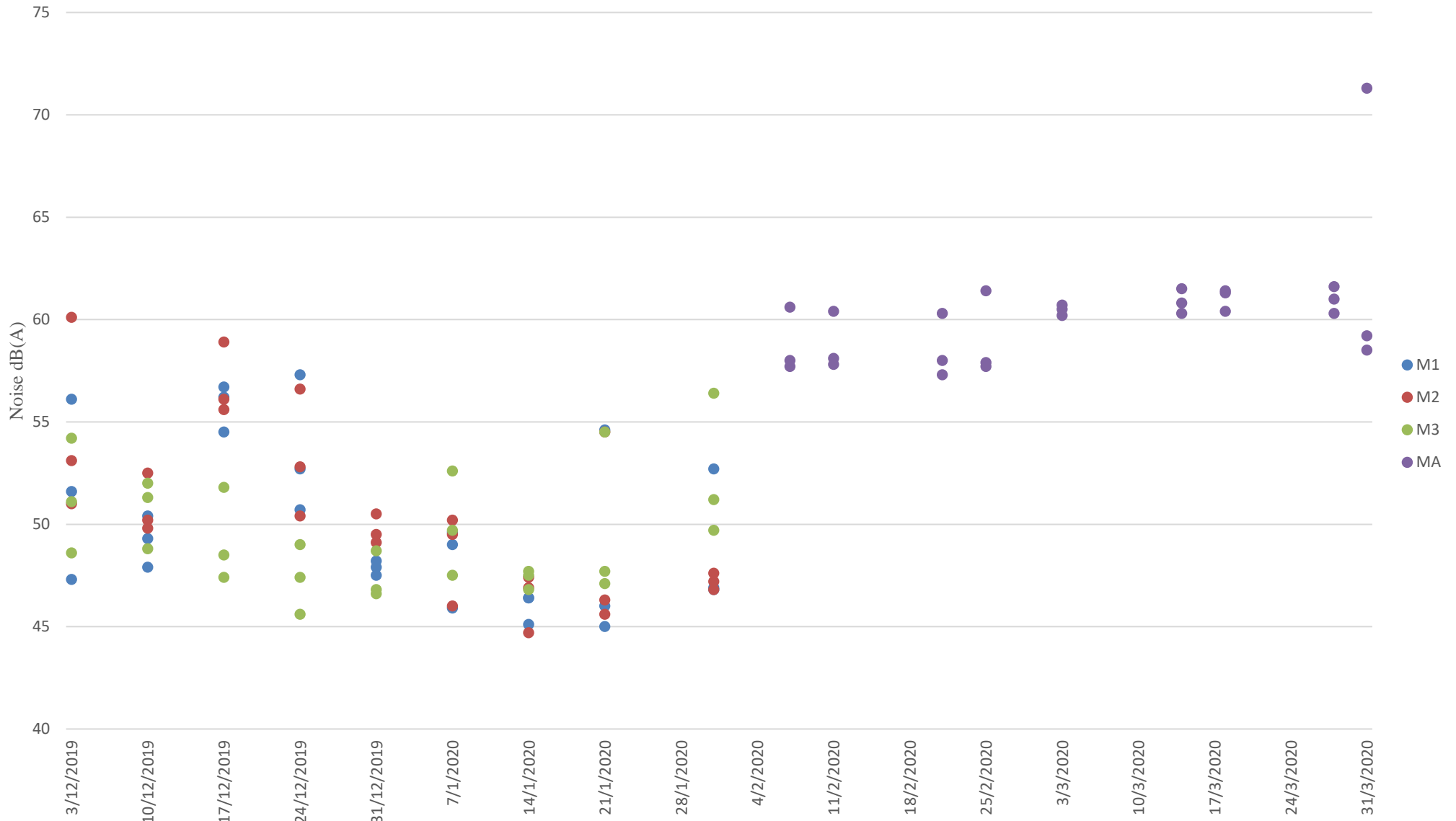
### Additional Impact Noise Monitoring Results during Evening Time (1900 - 2300hrs)



\*Based on the concern of novel coronavirus in Feb 2020, access to Shek Kwu Chau was rejected by SADRA. Hence, the alternative noise monitoring location (MA) at the farthest barge outside the site boundary was proposed by ET and agreed by IEC which subject to EPD approval.

\*\*A correction of +3 dB(A) would be made to the free field measurements.

### Additional Impact Noise Monitoring Results during Night Time (2300 - 0700hrs)



\*Based on the concern of novel coronavirus in Feb 2020, access to Shek Kwu Chau was rejected by SADRA. Hence, the alternative noise monitoring location (MA) at the farthest barge outside the site boundary was proposed by ET and agreed by IEC which subject to EPD approval.

\*\*A correction of +3 dB(A) would be made to the free field measurements.

**Summary of the Construction Activities Undertaken during the Reporting Period**

Location of works	Construction activities undertaken	Remarks on progress
Breakwater	<ul style="list-style-type: none"> <li>• Sand blanket laying</li> <li>• DCM installation</li> </ul>	<ul style="list-style-type: none"> <li>• On-going</li> <li>• On-going</li> </ul>
Reclamation area	<ul style="list-style-type: none"> <li>• Sand blanket laying</li> </ul>	<ul style="list-style-type: none"> <li>• On-going</li> </ul>
Seawall portion	<ul style="list-style-type: none"> <li>• DCM installation</li> <li>• Coring for DCM cluster</li> <li>• Dredging</li> <li>• Cone penetration test</li> <li>• Installation of caisson</li> <li>• Installation of Prefabricated Vertical Drain</li> </ul>	<ul style="list-style-type: none"> <li>• Completed</li> <li>• On-going</li> <li>• 66,878.8842 m<sup>3</sup> of dredged sediment in bulk quantity was dumped at relevant dumping site in total up to 31 March 2020.</li> <li>• On-going</li> <li>• On-going</li> <li>• On-going</li> </ul>

Location: Shek Kwu Chau Treatment & Rehabilitation Centre Hostel 1 (M1 / N\_S1)

Monitoring date: 6, 13, 20 & 30 January 2020 (Daytime)  
 6&7, 13&14, 20&21, 30&31 January 2020 (Evening & Night time)

Parameter :  $L_{eq\ 30min}$  (Daytime),  $L_{eq\ 5min}$  (Evening & Night time)

Noise source other than construction activities from the Project: Nil

Noise Monitoring data:

Date	Start time		End time	Weather	$L_{eq\ 30min}$ dB(A) / $L_{eq\ 5min}$ dB(A)	Sound Level Meter Used	Calibrator Used
6 Jan 2020	16:10	-	16:40	Sunny	55.3	XL2 (Serial No. A2A-13548-E0)	SV33B (No. 83042)
6 Jan 2020	19:10	-	19:15	Fine	53.9	XL2 (Serial No. A2A-13548-E0)	SV33B (No. 83042)
	20:10	-	20:15		51.9		
	21:10	-	21:15		49.2		
7 Jan 2020	1:10	-	01:15	Fine	49.0	XL2 (Serial No. A2A-13548-E0)	SV33B (No. 83042)
	3:10	-	03:15		49.6		
	5:10	-	05:15		45.9		
13 Jan 2020	16:10	-	16:40	Sunny	53.7	XL2 (Serial No. A2A-13548-E0)	SV33B (No. 83042)
13 Jan 2020	19:10	-	19:15	Fine	51.8	XL2 (Serial No. A2A-13548-E0)	SV33B (No. 83042)
	20:10	-	20:15		55.1		
	21:10	-	21:15		52.8		
14 Jan 2020	1:10	-	01:15	Fine	46.4	XL2 (Serial No. A2A-13548-E0)	SV33B (No. 83042)
	3:10	-	03:15		45.1		
	5:10	-	05:15		46.4		
20 Jan 2020	16:14	-	16:44	Sunny	60.4	XL2 (Serial No. A2A-13548-E0)	SV33B (No. 83042)
20 Jan 2020	19:14	-	19:19	Fine	49.6	XL2 (Serial No. A2A-13548-E0)	SV33B (No. 83042)
	20:14	-	20:19		50.7		
	21:14	-	21:19		56.2		
21 Jan 2020	1:14	-	01:19	Fine	54.6	XL2 (Serial No. A2A-13548-E0)	SV33B (No. 83042)
	3:14	-	03:19		45.0		
	5:14	-	05:19		46.0		

<b>Date</b>	<b>Start time</b>		<b>End time</b>	<b>Weather</b>	<b><math>L_{eq\ 30min}</math> dB(A) / <math>L_{eq\ 5min}</math> dB(A)</b>	<b>Sound Level Meter Used</b>	<b>Calibrator Used</b>
30 Jan 2020	16:08	-	16:38	Sunny	54.9	XL2 (Serial No. A2A-13548-E0)	SV33B (No. 83042)
30 Jan 2020	19:08	-	19:13	Fine	50.6	XL2 (Serial No. A2A-13548-E0)	SV33B (No. 83042)
	20:08	-	20:13		53.0		
	21:08	-	21:13		53.0		
31 Jan 2020	1:08	-	01:13	Fine	52.7	XL2 (Serial No. A2A-13548-E0)	SV33B (No. 83042)
	3:08	-	03:13		46.9		
	5:08	-	05:13		46.8		



Location: Shek Kwu Chau Treatment & Rehabilitation Centre Hostel 2 (M2 / N\_S2)

Monitoring date: 6, 13, 20 & 30 January 2020 (Daytime)  
 6&7, 13&14, 20&21, 30&31 January 2020 (Evening & Night time)

Parameter :  $L_{eq\ 30min}$  (Daytime),  $L_{eq\ 5min}$  (Evening & Night time)

Noise source other than construction activities from the Project: Nil

Noise Monitoring data:

Date	Start time		End time	Weather	$L_{eq\ 30min}$ dB(A) / $L_{eq\ 5min}$ dB(A)	Sound Level Meter Used	Calibrator Used
6 Jan 2020	16:08	-	16:38	Sunny	54.5	XL2 (Serial No. A2A-13661-E0)	SV33B (No. 83042)
6 Jan 2020	19:08	-	19:13	Fine	51.4	XL2 (Serial No. A2A-13661-E0)	SV33B (No. 83042)
	20:08	-	20:13		53.2		
	21:08	-	21:13		52.0		
7 Jan 2020	1:08	-	01:13	Fine	49.5	XL2 (Serial No. A2A-13661-E0)	SV33B (No. 83042)
	3:08	-	03:13		50.2		
	5:08	-	05:13		46.0		
13 Jan 2020	16:05	-	16:35	Sunny	56.3	XL2 (Serial No. A2A-13663-E0)	SV33B (No. 83042)
13 Jan 2020	19:05	-	19:10	Fine	54	XL2 (Serial No. A2A-13663-E0)	SV33B (No. 83042)
	20:05	-	20:10		54.9		
	21:05	-	21:10		53.6		
14 Jan 2020	1:05	-	01:10	Fine	46.9	XL2 (Serial No. A2A-13663-E0)	SV33B (No. 83042)
	3:05	-	03:10		44.7		
	5:05	-	05:10		47.4		
20 Jan 2020	16:19	-	16:49	Sunny	55.0	XL2 (Serial No. A2A-13663-E0)	SV33B (No. 83042)
20 Jan 2020	19:19	-	19:24	Fine	53.2	XL2 (Serial No. A2A-13663-E0)	SV33B (No. 83042)
	20:19	-	20:24		50.2		
	21:19	-	21:24		54.4		
21 Jan 2020	1:19	-	01:24	Fine	54.5	XL2 (Serial No. A2A-13663-E0)	SV33B (No. 83042)
	3:19	-	03:24		45.6		
	5:19	-	05:24		46.3		

<b>Date</b>	<b>Start time</b>		<b>End time</b>	<b>Weather</b>	<b><math>L_{eq\ 30min}</math> dB(A) / <math>L_{eq\ 5min}</math> dB(A)</b>	<b>Sound Level Meter Used</b>	<b>Calibrator Used</b>
30 Jan 2020	16:18	-	16:48	Sunny	55.0	XL2 (Serial No. A2A-13663-E0)	SV33B (No. 83042)
30 Jan 2020	19:18	-	19:23	Fine	51.8	XL2 (Serial No. A2A-13663-E0)	SV33B (No. 83042)
	20:18	-	20:23		50.2		
	21:18	-	21:23		54.7		
31 Jan 2020	1:18	-	01:23	Fine	47.6	XL2 (Serial No. A2A-13663-E0)	SV33B (No. 83042)
	3:18	-	03:23		47.2		
	5:18	-	05:23		46.8		

Location: Shek Kwu Chau Treatment & Rehabilitation Centre Hostel 3 (M3 / N\_S3)

Monitoring date: 6, 13, 20 & 30 January 2020 (Daytime)  
 6&7, 13&14, 20&21, 30&31 January 2020 (Evening & Night time)

Parameter :  $L_{eq\ 30min}$  (Daytime),  $L_{eq\ 5min}$  (Evening & Night time)

Noise source other than construction activities from the Project: Nil

Noise Monitoring data:

Date	Start time		End time	Weather	$L_{eq\ 30min}$ dB(A) / $L_{eq\ 5min}$ dB(A)	Sound Level Meter Used	Calibrator Used
6 Jan 2020	16:10	-	16:40	Sunny	52.0	SVAN 971 (Serial No. 77731)	SV33B (No. 83042)
6 Jan 2020	19:10	-	19:15	Fine	52.0	SVAN 971 (Serial No. 77731)	SV33B (No. 83042)
	20:10	-	20:15		53.1		
	21:10	-	21:15		48.7		
7 Jan 2020	1:10	-	01:15	Fine	49.7	SVAN 971 (Serial No. 77731)	SV33B (No. 83042)
	3:10	-	03:15		52.6		
	5:10	-	05:15		47.5		
13 Jan 2020	16:11	-	16:41	Sunny	51.7	SVAN 971 (Serial No. 77731)	SV33B (No. 83042)
13 Jan 2020	19:11	-	19:16	Fine	49.0	SVAN 971 (Serial No. 77731)	SV33B (No. 83042)
	20:11	-	20:16		53.0		
	21:11	-	21:16		56.3		
14 Jan 2020	1:11	-	01:16	Fine	47.7	SVAN 971 (Serial No. 77731)	SV33B (No. 83042)
	3:11	-	03:16		46.8		
	5:11	-	05:16		47.5		
20 Jan 2020	16:10	-	16:40	Sunny	52.9	SVAN 971 (Serial No. 77731)	SV33B (No. 83042)
20 Jan 2020	19:10	-	19:15	Fine	52.5	SVAN 971 (Serial No. 77731)	SV33B (No. 83042)
	20:10	-	20:15		54.7		
	21:10	-	21:15		56.1		
21 Jan 2020	1:10	-	01:15	Fine	54.5	SVAN 971 (Serial No. 77731)	SV33B (No. 83042)
	3:10	-	03:15		47.7		
	5:10	-	05:15		47.1		

<b>Date</b>	<b>Start time</b>		<b>End time</b>	<b>Weather</b>	<b><math>L_{eq\ 30min}</math> dB(A) / <math>L_{eq\ 5min}</math> dB(A)</b>	<b>Sound Level Meter Used</b>	<b>Calibrator Used</b>
30 Jan 2020	16:13	-	16:43	Sunny	56.2	SVAN 971 (Serial No. 77731)	SV33B (No. 83042)
30 Jan 2020	19:13	-	19:18	Fine	52.4	SVAN 971 (Serial No. 77731)	SV33B (No. 83042)
	20:13	-	20:18		55.6		
	21:13	-	21:18		55.4		
31 Jan 2020	1:13	-	01:18	Fine	56.4	SVAN 971 (Serial No. 77731)	SV33B (No. 83042)
	3:13	-	03:18		51.2		
	5:13	-	05:18		49.7		

Location: Alternative noise monitoring location (FTB-17)

Monitoring date: 6, 10, 20 & 24 February 2020 (Daytime)  
 6&7, 10&11, 20&21, 24&25 February 2020 (Evening & Night time)

Parameter :  $L_{eq\ 30min}$  (Daytime),  $L_{eq\ 5min}$  (Evening & Night time)

Noise source other than construction activities from the Project: Sound of sea waves

Noise Monitoring data:

Date	Start time		End time	Weather	$L_{eq\ 30min}$ dB(A) / $L_{eq\ 5min}$ dB(A)	Free-field Corr., dB(A)	Sound Level Meter Used	Calibrator Used
6 Feb 2020	16:14	-	16:44	Sunny	59.6	62.6	XL2 (Serial No. A2A-13548-E0)	Rion NC-74 (No. 34504770)
6 Feb 2020	19:14	-	19:19	Fine	59.2	62.2	XL2 (Serial No. A2A-13548-E0)	Rion NC-74 (No. 34504770)
	20:14	-	20:19		61.4	64.4		
	21:14	-	21:19		60.2	63.2		
7 Feb 2020	01:14	-	01:19	Fine	54.7	57.7	XL2 (Serial No. A2A-13548-E0)	Rion NC-74 (No. 34504770)
	03:14	-	03:19		55	58		
	05:14	-	05:19		57.6	60.6		
10 Feb 2020	16:19	-	16:49	Sunny	59.4	62.4	XL2 (Serial No. A2A-13548-E0)	Rion NC-74 (No. 34504770)
10 Feb 2020	19:19	-	19:24	Fine	61.4	64.4	XL2 (Serial No. A2A-13548-E0)	Rion NC-74 (No. 34504770)
	20:19	-	20:24		62.6	65.6		
	21:19	-	21:24		59.5	62.5		
11 Feb 2020	01:19	-	01:24	Fine	54.8	57.8	XL2 (Serial No. A2A-13548-E0)	Rion NC-74 (No. 34504770)
	03:19	-	03:24		55.1	58.1		
	05:19	-	05:24		57.4	60.4		
20 Feb 2020	16:24	-	16:54	Sunny	60.2	63.2	XL2 (Serial No. A2A-13548-E0)	Rion NC-74 (No. 34504770)
20 Feb 2020	19:24	-	19:29	Fine	59.3	62.3	XL2 (Serial No. A2A-13548-E0)	Rion NC-74 (No. 34504770)
	20:24	-	20:29		61.4	64.4		
	21:24	-	21:29		60.2	63.2		
21 Feb 2020	01:24	-	01:29	Fine	55	58	XL2 (Serial No. A2A-13548-E0)	Rion NC-74 (No. 34504770)
	03:24	-	03:29		54.3	57.3		
	05:24	-	05:29		57.3	60.3		

<b>Date</b>	<b>Start time</b>		<b>End time</b>	<b>Weather</b>	<b><math>L_{eq\ 30min}</math> dB(A) / <math>L_{eq}</math> <math>5min</math> dB(A)</b>	<b>Free- field Corr., dB(A)</b>	<b>Sound Level Meter Used</b>	<b>Calibrator Used</b>
24 Feb 2020	16:29	-	16:59	Sunny	58.1	61.1	XL2 (Serial No. A2A-13548-E0)	Rion NC-74 (No. 34504770)
24 Feb 2020	19:29	-	19:34	Fine	58.7	61.7	XL2 (Serial No. A2A-13548-E0)	Rion NC-74 (No. 34504770)
	20:29	-	20:34		58.5	61.5		
	21:29	-	21:34		61.2	64.2		
25 Feb 2020	01:29	-	01:34	Fine	54.7	57.7	XL2 (Serial No. A2A-13548-E0)	Rion NC-74 (No. 34504770)
	03:29	-	03:34		54.9	57.9		
	05:29	-	05:34		58.4	61.4		

**Location:** Alternative noise monitoring location (FTB-17)

**Monitoring date:** 2, 13, 17, 27 & 30 March 2020 (Daytime)  
 2&3, 13&14, 17&18, 27&28, 30&31 March 2020 (Evening & Night time)

**Parameter :**  $L_{eq\ 30min}$  (Daytime),  $L_{eq\ 5min}$  (Evening & Night time)

**Noise source other than construction activities from the Project:** Sound of sea waves

Noise Monitoring data:

Date	Start time		End time	Weather	$L_{eq\ 30min}$ dB(A) / $L_{eq\ 5min}$ dB(A)	Free-field Corr., dB(A)	Sound Level Meter Used	Calibrator Used
2 Mar 2020	16:04	-	16:34	Sunny	65.2	68.2	SVANTEK 971 (Serial No. 77731)	Rion NC-74 (No. 34504770)
2 Mar 2020	19:04	-	19:09	Fine	69.2	72.2	SVANTEK 971 (Serial No. 77731)	Rion NC-74 (No. 34504770)
	20:04	-	20:09		58.6	61.6		
	21:04	-	21:09		62.0	65.0		
3 Mar 2020	01:04	-	01:09	Fine	57.7	60.7	SVANTEK 971 (Serial No. 77731)	Rion NC-74 (No. 34504770)
	03:04	-	03:09		57.5	60.5		
	05:04	-	05:09		57.2	60.2		
13 Mar 2020	16:09	-	16:39	Sunny	64.3	67.3	SVANTEK 971 (Serial No. 77731)	Rion NC-74 (No. 34504770)
13 Mar 2020	19:09	-	19:14	Fine	59.8	62.8	SVANTEK 971 (Serial No. 77731)	Rion NC-74 (No. 34504770)
	20:09	-	20:14		58.3	61.3		
	21:09	-	21:14		56.9	59.9		
14 Mar 2020	01:09	-	01:14	Fine	57.8	60.8	SVANTEK 971 (Serial No. 77731)	Rion NC-74 (No. 34504770)
	03:09	-	03:14		58.5	61.5		
	05:09	-	05:14		57.3	60.3		
17 Mar 2020	16:14	-	16:44	Sunny	64.2	67.2	SVANTEK 971 (Serial No. 77731)	Rion NC-74 (No. 34504770)
17 Mar 2020	19:14	-	19:19	Fine	57.9	60.9	SVANTEK 971 (Serial No. 77731)	Rion NC-74 (No. 34504770)
	20:14	-	20:19		58.0	61.0		
	21:14	-	21:19		57.0	60.0		
18 Mar 2020	01:14	-	01:19	Fine	58.3	61.3	SVANTEK 971 (Serial No. 77731)	Rion NC-74 (No. 34504770)
	03:14	-	03:19		58.4	61.4		
	05:14	-	05:19		57.4	60.4		

<b>Date</b>	<b>Start time</b>		<b>End time</b>	<b>Weather</b>	<b>L<sub>eq</sub> 30min dB(A) / L<sub>eq</sub> 5min dB(A)</b>	<b>Free- field Corr., dB(A)</b>	<b>Sound Level Meter Used</b>	<b>Calibrator Used</b>
27 Mar 2020	16:05	-	16:35	Sunny	62.3	65.3	SVANTEK 971 (Serial No. 77731)	Rion NC-74 (No. 34504770)
27 Mar 2020	19:05	-	19:10	Fine	62.8	65.8	SVANTEK 971 (Serial No. 77731)	Rion NC-74 (No. 34504770)
	20:05	-	20:10		59.1	62.1		
	21:05	-	21:10		59.4	62.4		
28 Mar 2020	01:05	-	01:10	Fine	58.0	61.0	SVANTEK 971 (Serial No. 77731)	Rion NC-74 (No. 34504770)
	03:05	-	03:10		58.6	61.6		
	05:05	-	05:10		57.3	60.3		
30 Mar 2020	16:10	-	16:40	Sunny	62.2	65.2	SVANTEK 971 (Serial No. 77731)	Rion NC-74 (No. 34504770)
30 Mar 2020	19:10	-	19:15	Fine	60.3	63.3	SVANTEK 971 (Serial No. 77731)	Rion NC-74 (No. 34504770)
	20:10	-	20:15		58.7	61.7		
	21:10	-	21:15		63.6	66.6		
31 Mar 2020	01:10	-	01:15	Fine	55.5	58.5	SVANTEK 971 (Serial No. 77731)	Rion NC-74 (No. 34504770)
	03:10	-	03:15		56.2	59.2		
	05:10	-	05:15		68.3	71.3		



## Appendix E Waste Flow Table



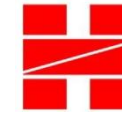
Monthly Summary Waste Flow Table for 2018 (year)

Project : Integrated Waste Management Facilities, Phase 1

Contract No.: EP/SP/66/12

Month	Actual Quantities of Inert C&D Materials Generated Monthly								Actual Quantities of C&D Wastes Generated Monthly					
	Total Quantity Generated	Hard Rock and Large Broken Concrete (see Note 1)	Reused in the Contract	Reused in other Projects	Disposed as Public Fill	Imported Fill Sand	Imported Fill Public fill	Imported Fill Rock	Metals	Paper/ cardboard packaging	Plastics (see Note 2)	Chemical Waste		Others, e.g. general refuse (see Note 3)
	(in ,000m <sup>3</sup> )	(in ,000m <sup>3</sup> )	(in ,000m <sup>3</sup> )	(in ,000m <sup>3</sup> )	(in ,000m <sup>3</sup> )	(in ,000m <sup>3</sup> )			(in ,000 kg)	(in ,000kg)	(in ,000kg)	(in ,000kg)	(in ,000L)	(in ,000 m <sup>3</sup> )
Jan	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Feb	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mar	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Apr	0	0	0	0	0	0	0	0	0	0	0	0	0	0
May	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Jun	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sub-total	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Jul	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Aug	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0065
Sep	0	0	0	0	0	2.9619	0	0	0	0	0	0	0	0
Oct	0	0	0	0	0	3.0771	0	0	0	0	0	0	0	0.013
Nov	0	0	0	0	0	6.7871	0	0	0	0	0	0	0	0
Dec	0	0	0	0	0	59.0709	0	0	0	0	0	0.200	0.8700	0
Total	0	0	0	0	0	71.8970	0	0	0	0	0	0.200	0.8700	0.0195

- Notes:
- (1) Broken concrete for recycling into aggregates.
  - (2) Plastics refer to plastic bottles/ containers, plastic sheets/ foam from packaging materials.
  - (3) Use the conversion factor : 1 full load of dumping truck being equivalent to 6.5m<sup>3</sup> by volume.



Monthly Summary Waste Flow Table for 2019 (year)

Project : Integrated Waste Management Facilities, Phase 1

Contract No.: EP/SP/66/12

Month	Actual Quantities of Inert C&D Materials Generated Monthly								Actual Quantities of C&D Wastes Generated Monthly					
	Total Quantity Generated	Hard Rock and Large Broken Concrete (see Note 1)	Reused in the Contract	Reused in other Projects	Disposed as Public Fill	Imported Fill Sand	Imported Fill Public fill	Imported Fill Rock	Metals	Paper/ cardboard packaging	Plastics (see Note 2)	Chemical Waste		Others, e.g. general refuse (see Note 3)
	(in ,000m <sup>3</sup> )	(in ,000m <sup>3</sup> )	(in ,000m <sup>3</sup> )	(in ,000m <sup>3</sup> )	(in ,000m <sup>3</sup> )	(in ,000m <sup>3</sup> )			(in ,000 kg)	(in ,000kg)	(in ,000kg)	(in ,000kg)	(in ,000L)	(in ,000 m <sup>3</sup> )
Jan	0	0	0	0	0	82.6139	0	0	0	0	0	0	0	0.0065
Feb	0	0	0	0	0	46.7821	0	0	0	0	0	0	0	0
Mar	0	0	0	0	0	97.1000	0	0.7552	0	0.2560	0	0	0	0
Apr	0	0	0	0	0	58.0413	0	0	0	0	0	0	0	0
May	0	0	0	0	0	14.5625	0	1.4648	0	0	0	0	0	0.0065
Jun	0	0	0	0	0	0	0	6.8421	0	0	0	0	0	0
Sub-total	0	0	0	0	0	299.0998	0	9.0621	0	0.2560	0	0	0	0.013
Jul	0	0	0	0	0	0	0	0.4289	0	0	0	0	8.4000	0.013
Aug	0	0	0	0	0	2.5775	0	10.5600	0	0	0	0	0	0
Sep	0	0	0	0	0	6.1081	0	8.4704	0	0.3530	0	0	0	0.0065
Oct	0	0	0	0	0	9.8875	0	7.1900	0	0	0	0	0	0
Nov	0	0	0	0	0	38.3088	0	19.3105	0	0	0	0	0	0.0195
Dec	0	0	0	0	0	54.3469	0	26.9807	0	0	0	0	0	0.091
Total	0	0	0	0	0	410.3286	0	82.0026	0	0.6090	0	0	8.4000	0.143

- Notes:
- (1) Broken concrete for recycling into aggregates.
  - (2) Plastics refer to plastic bottles/ containers, plastic sheets/ foam from packaging materials.
  - (3) Use the conversion factor : 1 full load of dumping truck being equivalent to 6.5m<sup>3</sup> by volume.



Monthly Summary Waste Flow Table for 2020 (year)

Project : Integrated Waste Management Facilities, Phase 1

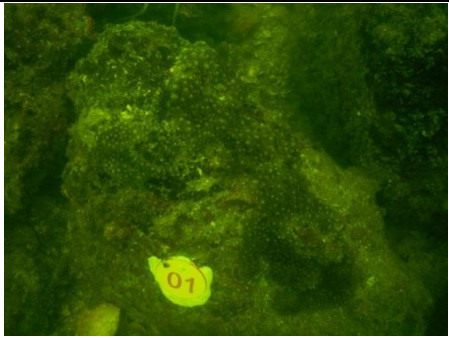
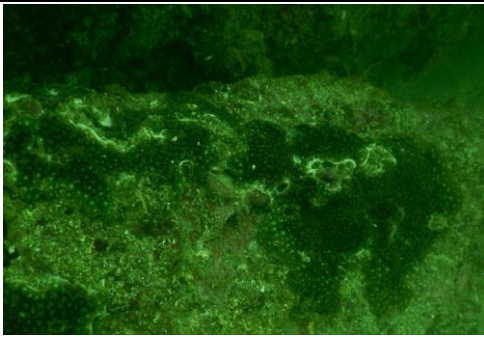


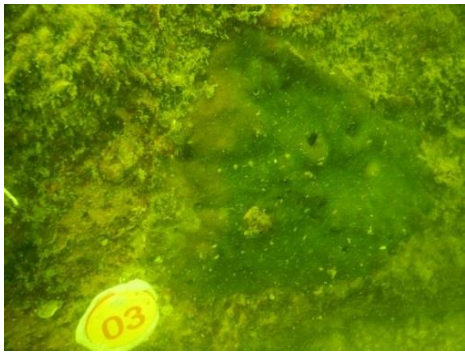
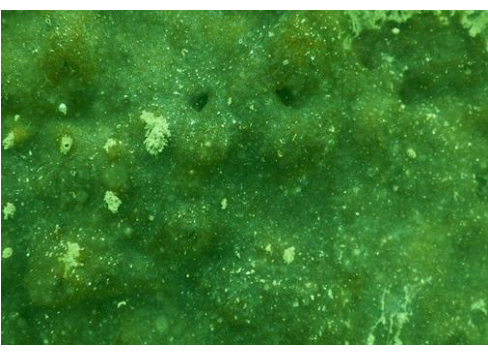
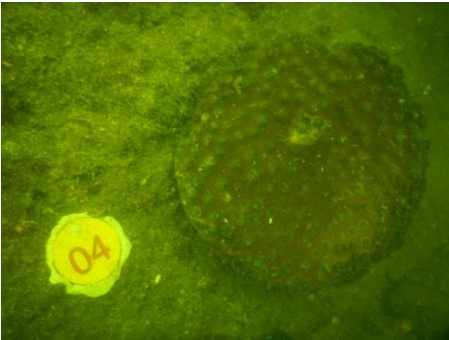
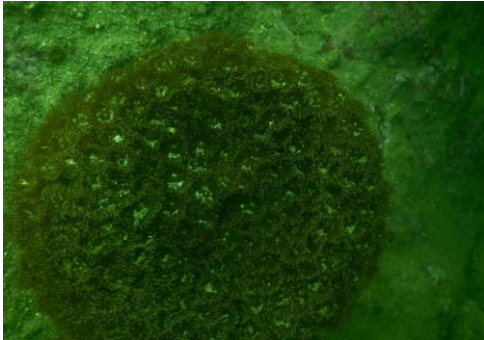
Contract No.: EP/SP/66/12

Month	Actual Quantities of Inert C&D Materials Generated Monthly								Actual Quantities of C&D Wastes Generated Monthly					
	Total Quantity Generated	Hard Rock and Large Broken Concrete (see Note 1)	Reused in the Contract	Reused in other Projects	Disposed as Public Fill	Imported Fill Sand	Imported Fill Public fill	Imported Fill Rock	Metals	Paper/ cardboard packaging	Plastics (see Note 2)	Chemical Waste		Others, e.g. general refuse (see Note 3)
	(in ,000m <sup>3</sup> )	(in ,000m <sup>3</sup> )	(in ,000m <sup>3</sup> )	(in ,000m <sup>3</sup> )	(in ,000m <sup>3</sup> )	(in ,000m <sup>3</sup> )			(in ,000 kg)	(in ,000kg)	(in ,000kg)	(in ,000kg)	(in ,000L)	(in ,000 m <sup>3</sup> )
Jan	0	0	0	0	0	37.1550	0	25.0812	0	0	0	0	0	0.0065
Feb	0	0	0	0	0	27.7910	0	18.8300	0	0	0	0	0	0.0065
Mar	0	0	0	0	0	22.5669	0	26.1586	0	0	0	0	7.2000	0.0065
Apr														
May														
Jun														
<b>Sub-total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>87.5129</b>	<b>0</b>	<b>70.0698</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>7.2000</b>	<b>0.0195</b>
Jul														
Aug														
Sep														
Oct														
Nov														
Dec														
<b>Total</b>														




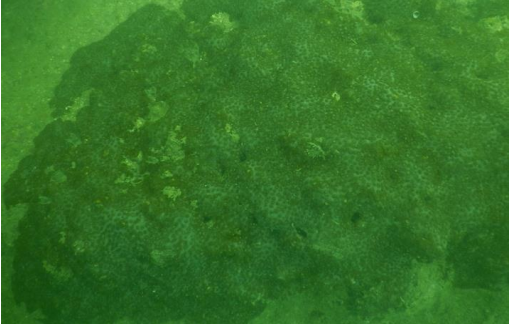

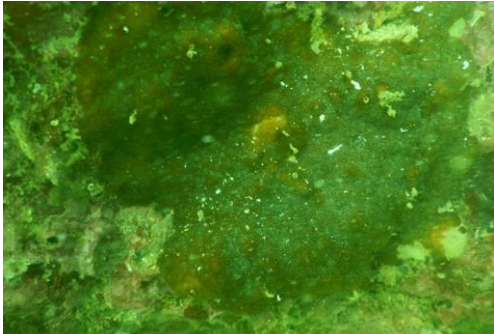

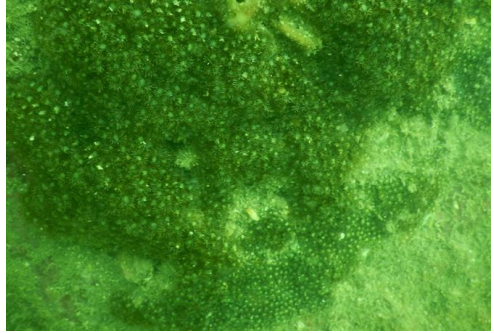
- Notes:
- (1) Broken concrete for recycling into aggregates.
  - (2) Plastics refer to plastic bottles/ containers, plastic sheets/ foam from packaging materials.
  - (3) Use the conversion factor : 1 full load of dumping truck being equivalent to 6.5m<sup>3</sup> by volume.


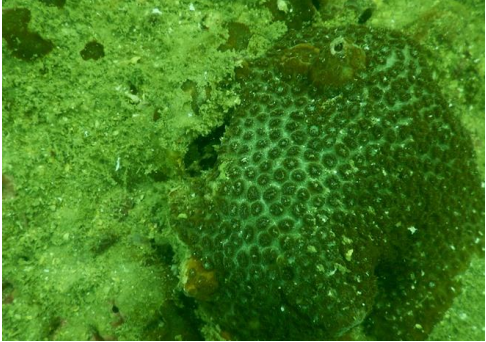

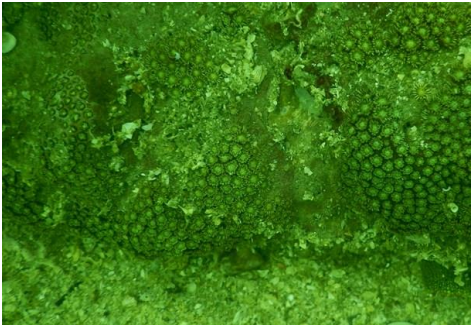
## Appendix F Photo Records for Coral Monitoring

**Photo Plate for Tagged and Re-tagged Corals at Control Site during the 5<sup>th</sup> Quarterly Coral Monitoring during Construction Phase on 04 March 2020**

Tag #	Baseline (26 June 2018 & 3 December 2018)	04 Mar 2020
#1	 <p data-bbox="389 636 639 669"><i>Goniopora stutchburyi</i></p>	 <p data-bbox="1034 636 1284 669"><i>Goniopora stutchburyi</i></p>
#2R	 <p data-bbox="389 1021 639 1055"><i>Goniopora stutchburyi</i></p>	 <p data-bbox="1034 1021 1284 1055"><i>Goniopora stutchburyi</i></p>
#3	 <p data-bbox="368 1451 659 1485"><i>Psammocora superficialis</i></p>	 <p data-bbox="1015 1429 1305 1462"><i>Psammocora superficialis</i></p>
#4	 <p data-bbox="411 1883 617 1917"><i>Turbinaria peltata</i></p>	 <p data-bbox="1054 1883 1260 1917"><i>Turbinaria peltata</i></p>



Tag #	Baseline (26 June 2018 & 3 December 2018)	04 Mar 2020
#5R	 <p data-bbox="389 539 638 568"><i>Goniopora stutchburyi</i></p>	 <p data-bbox="1034 539 1283 568"><i>Goniopora stutchburyi</i></p>
#6	 <p data-bbox="405 972 622 1001"><i>Cyphastrea serailia</i></p>	 <p data-bbox="1050 949 1267 978"><i>Cyphastrea serailia</i></p>
#7R	 <p data-bbox="424 1382 603 1411"><i>Coscinaraea</i> sp.</p>	 <p data-bbox="1072 1406 1251 1435"><i>Coscinaraea</i> sp.</p>
#8	 <p data-bbox="389 1789 638 1818"><i>Goniopora stutchburyi</i></p>	 <p data-bbox="1034 1789 1283 1818"><i>Goniopora stutchburyi</i></p>





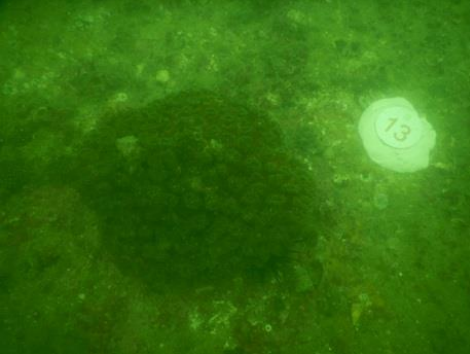
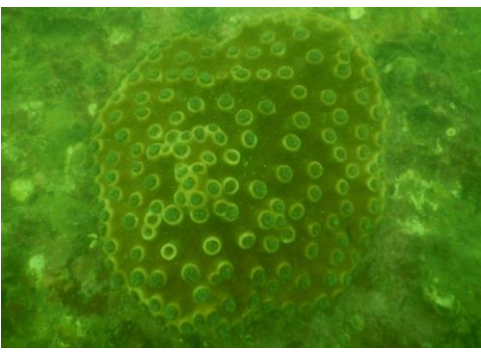

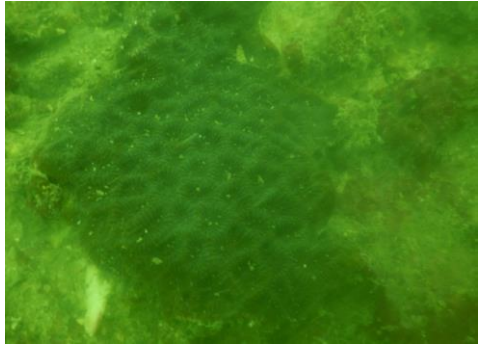
Tag #	Baseline (26 June 2018 & 3 December 2018)	04 Mar 2020
#9	 <p data-bbox="389 589 639 618"><i>Goniopora stutchburyi</i></p>	 <p data-bbox="1035 589 1286 618"><i>Goniopora stutchburyi</i></p>
#10R	 <p data-bbox="389 1016 639 1046"><i>Goniopora stutchburyi</i></p>	 <p data-bbox="1035 996 1286 1025"><i>Goniopora stutchburyi</i></p>

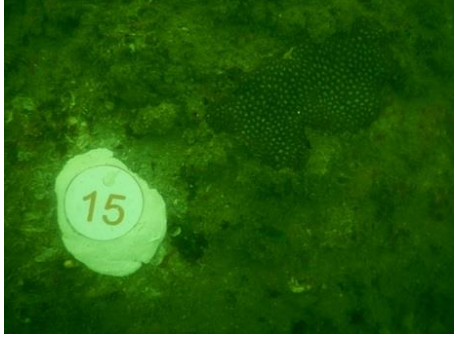
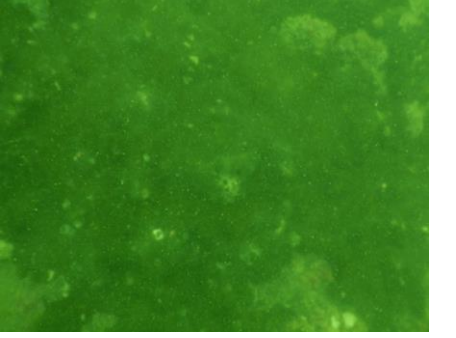
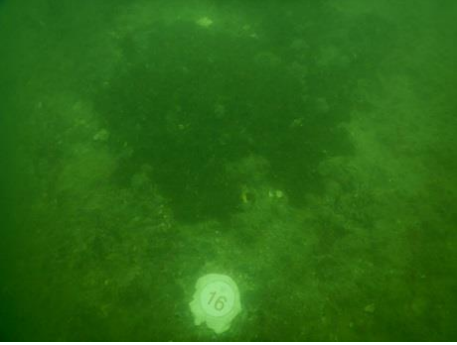
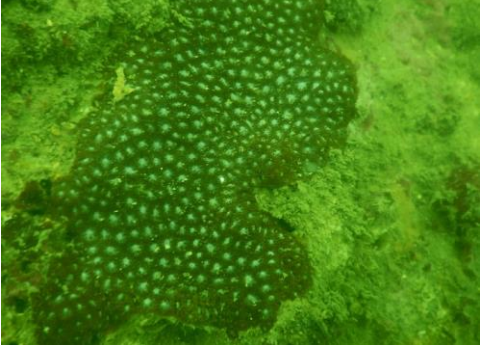
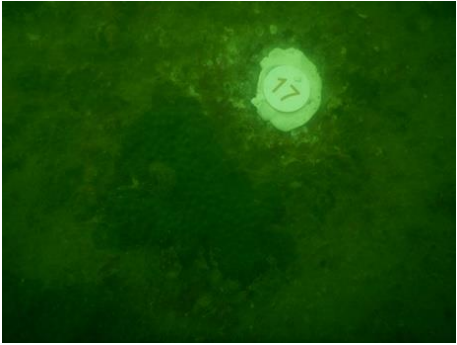
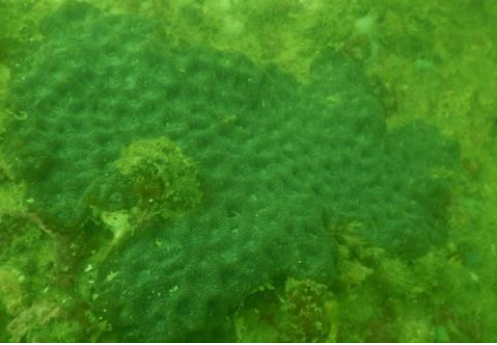


Notes:




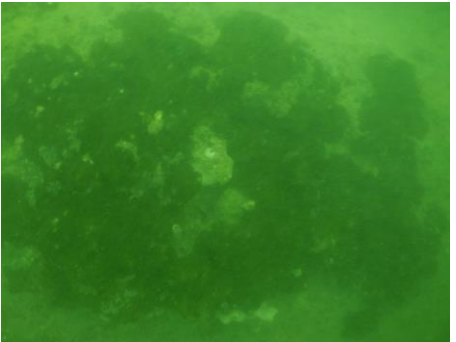
- i. The re-tagged corals were marked as ##**R**.



**Photo Plate for Re-tagged Corals at Indirect Impact during the 5<sup>th</sup> Quarterly Coral Monitoring during Construction Phase on 04 Mar 2020**

Tag #	Baseline (23 November 2018)	04 Mar 2020
#11R	 <p align="center"><i>Cyphastrea serailia</i></p>	 <p align="center"><i>Cyphastrea serailia</i></p>
#12R	 <p align="center"><i>Favites chinensis</i></p>	 <p align="center"><i>Favites chinensis</i></p>
#13R	 <p align="center"><i>Turbinaria peltata</i></p>	 <p align="center"><i>Turbinaria peltata</i></p>
#14R	 <p align="center"><i>Favites chinensis</i></p>	 <p align="center"><i>Favites chinensis</i></p>

Tag #	Baseline (23 November 2018)	04 Mar 2020
#15R	 <p data-bbox="424 539 675 573"><i>Goniopora stutchburyi</i></p>	 <p data-bbox="1058 539 1308 573"><i>Goniopora stutchburyi</i></p>
#16R	 <p data-bbox="405 972 692 1005"><i>Psammocora superficialis</i></p>	 <p data-bbox="1038 972 1326 1005"><i>Psammocora superficialis</i></p>
#17R	 <p data-bbox="451 1404 643 1438"><i>Favites chinensis</i></p>	 <p data-bbox="1086 1404 1278 1438"><i>Favites chinensis</i></p>
#18R	 <p data-bbox="405 1836 692 1870"><i>Psammocora superficialis</i></p>	 <p data-bbox="1038 1836 1326 1870"><i>Psammocora superficialis</i></p>

Tag #	Baseline (23 November 2018)	04 Mar 2020
#19R	 <p data-bbox="405 584 691 618"><i>Psammocora superficialis</i></p>	 <p data-bbox="1043 584 1329 618"><i>Psammocora superficialis</i></p>
#20R	 <p data-bbox="405 1014 691 1048"><i>Psammocora superficialis</i></p>	 <p data-bbox="1043 1014 1329 1048"><i>Psammocora superficialis</i></p>

Notes:

- i. The re-tagged corals were marked as ##**R**.

## Appendix G Photo Records for Marine Mammal Monitoring



**Photo records of Vessel-based Line-Transect Survey Effort during the reporting period**





## Appendix H Photo Records for White-bellied Sea Eagle Monitoring

**Photo Plate for 19<sup>th</sup> Monthly WBSE monitoring**



Adult WBSE flying over the nest area



Adult WBSEs staying in the nest



**Photo Plate for 20<sup>th</sup> Monthly WBSE monitoring**



Adult WBSE flying over the nest area



Adult WBSEs staying in the nest

**Photo Plate for 21<sup>st</sup> Monthly WBSE monitoring**



Adult WBSE flying over the nest area

## Appendix I Complaint Log

**Statistical Summary of Environmental Complaints**

<b>Reporting Period</b>	<b>Environmental Complaint Statistics</b>		
	<b>Frequency</b>	<b>Cumulative</b>	<b>Complaint Nature</b>
1 Jan 2020 – 31 Jan 2020	0	0	N/A
1 Feb 2020 – 29 Feb 2020	0	0	N/A
1 Mar 2020 – 31 Mar 2020	0	0	N/A

**Statistical Summary of Environmental Summons**

<b>Reporting Period</b>	<b>Environmental Summons Statistics</b>		
	<b>Frequency</b>	<b>Cumulative</b>	<b>Details</b>
1 Jan 2020 – 31 Jan 2020	0	0	N/A
1 Feb 2020 – 29 Feb 2020	0	0	N/A
1 Mar 2020 – 31 Mar 2020	0	0	N/A

**Statistical Summary of Environmental Prosecution**

<b>Reporting Period</b>	<b>Environmental Prosecution Statistics</b>		
	<b>Frequency</b>	<b>Cumulative</b>	<b>Details</b>
1 Jan 2020 – 31 Jan 2020	0	0	N/A
1 Feb 2020 – 29 Feb 2020	0	0	N/A
1 Mar 2020 – 31 Mar 2020	0	0	N/A