環境保護署
Environmental Protection Department

Contract No. EP/SP/66/12

Integrated Waste Management Facilities, Phase 1

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

Monthly EM&A Report No.6
(Period from 1 December to 31 December 2018)

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

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EXECUTIVE SUMMARY

Introduction

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 6th Monthly EM&A Report, prepared by ASCL, for the Project summarizing the monitoring results and audit findings of the EM&A programme at and around Shek Kwu Chau (SKC) during the reporting period from 1 December 2018 to 31 December 2018.

Summary of Main Works Undertaken & Key Mitigation Measures Implemented

A4. Key activities carried out in this reporting period for the Project included the following:

- Marine Site Investigation Works
- Coring of DCM samples conducted at site trial location
- Coring of DCM samples conducted at DCM Static Loading Test sites
- Coring for Instrumentation at DCM Static Loading Test sites
- Laying of Geotextile and Sand Blanket for DCM Injection Works
- DCM Installation Works

A5. The major environmental impacts brought by the above construction activities include:

- Water quality impact from DCM installation and laying of sand blanket
- Disturbance and possible trapping of Finless Porpoise by silt curtains

A6. The key environmental mitigation measures implemented for the Project in this reporting period associated with the construction activities include:

- Reduction of noise from equipment and machinery on-site;
- Installation of silt curtains for DCM installation and sand blanket laying works;
- Sorting and storage of general refuse and construction waste;
- Management of chemicals and avoidance of oil spillage on-site; and
- Implementation of cluster MMEZ (Marine Mammal Exclusion Zone) and inspection of enclosed environment within silt curtains as per DMPFP (Detailed Monitoring Programme of Finless Porpoise)

Summary of Exceedance & Investigation & Follow-up

A7. 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.

A8. No exceedance of the Action or Limit Levels in relation to the construction noise, construction waste, coral and WBSE monitoring was recorded in the reporting month.

A9. Eighty-eight of the water quality monitoring results for Suspended Solid (SS) obtained during the reporting period had exceeded the relevant Action or Limit Levels, where findings from investigations carried out immediately for each of the exceedance cases had showed that these exceedances were unrelated to the Project, except for the exceedances on 27, 29 and 31 December 2018, where the investigation is undergoing and those corresponding incident reports would be marked as interim incident report. The investigation results on 27, 29 & 31 December 2018 will be presented in the next monthly report.

A10. No project-related Action Level & Limit Level exceedance was recorded from 1 to 19 December 2018.

A11. Weekly site inspections of the construction works by ET were carried out on 4, 14, 18 & 27 December to audit the mitigation measures implementation status. Monthly joint site inspection was carried out on 18 December 2018 by ET and IEC. Observations have been recorded in the site inspection checklists and provided to the contractors together with the appropriate follow-up actions where necessary.

Complaint Handling and Prosecution

A12. No project-related environmental complaint was received during the reporting period.

A13. Neither notifications of summons nor prosecution was received for the Project.

Reporting Change

A14. There were no changes to be reported that may affect the on-going EM&A programme.

Summary of Upcoming Key Issues and Key Mitigation Measures

A15. Key activities anticipated in the next reporting period for the Project will include the following:

- Marine Site Investigation Works
- Coring of DCM samples conducted at site trial location
- Coring of DCM samples conducted at DCM Static Lading Test sites
- Coring for Instrumentation at DCM Static Lading Test sites
- Laying of Geotextile and Sand Blanket for DCM Injection Works
- DCM Installation Works
- Construction of Rockfill Rubble Mound

A16. The major environmental impacts brought by the above construction activities will include:

- Water quality impact from laying of sand blanket
- Disturbance and possible trapping of Finless Porpoise by silt curtains

A17. The key environmental mitigation measures for the Project in the coming reporting period associated with the construction activities will include:

- Reduction of noise from equipment and machinery on-site;
- Installation of silt curtains for the sand blanket laying works;
- Sorting, recycling, storage and disposal of general refuse and construction waste;
- Management of chemicals and avoidance of oil spillage on-site, especially under heavy rains and adverse weather; and
- Implementation of cluster MMEZ and inspection of enclosed environment within silt curtains as per DMPFP

1. BASIC PROJECT INFORMATION

1.1 Background

1.1.1 The Government of Hong Kong SAR will develop the Integrated Waste Management Facilities (IWMF) Phase 1 (hereafter "the Project") with incineration to achieve substantial bulk reduction of unavoidable municipal solid waste (MSW) and to recover energy from the incineration process. The IWMF will be on an artificial island to be formed by reclamation at the south-western coast of Shek Kwu Chau. Keppel Seghers – Zhen Hua Joint Venture (KSZHJV) was awarded the contract under Contract No. EP/SP/66/12 Integrated Waste Management Facilities Phase 1 to construct and operate the Project.

1.1.2 An environmental impact assessment (EIA) study for the Project has been conducted and the EIA Report was approved under the Environmental Impact Assessment Ordinance on 17 January 2012. An Environmental Permit (EP) (EP No.: EP-429/2012) was granted to EPD on 19 January 2012 for the construction and operation of the Project. Subsequently, the EP was amended (EP No.: EP-429/2012/A) and a further EP (FEP) (EP No.: FEP-01/429/2012/A) was granted to the Keppel Seghers – Zhen Hua Joint Venture (KSZHJV) on 27 December 2017.

1.1.3 The key design and construction elements of the Project include the Design and the Works including but not limited to the design, engineering procurement, construction, testing and commissioning of the Facility including:

- Ground Treatment works;
- Seawall and Breakwater construction;
- Non-dredged Reclamation;
- Other Marine works and Harbour and Port Facilities,
- Site formation,
- Municipal Solid Waste (MSW) Treatment Processes,
- Energy Recovery for Power Generation and Surplus Electricity export,
- Wastewater treatment process,
- Desalination and water treatment process,
- Civil works;
- Building and Structural works,
- Electrical and Mechanical works,
- Building Services,
- Architectural and Landscaping works, and
- All other design and works required for the operation and maintenance of the Facility
- according to the Contract requirements

1.1.4 The location of the IWMF near Shek Kwu Chau (SKC) and general layout of IWMF are shown in **Figure 1.1** and **Figure 1.2** respectively.

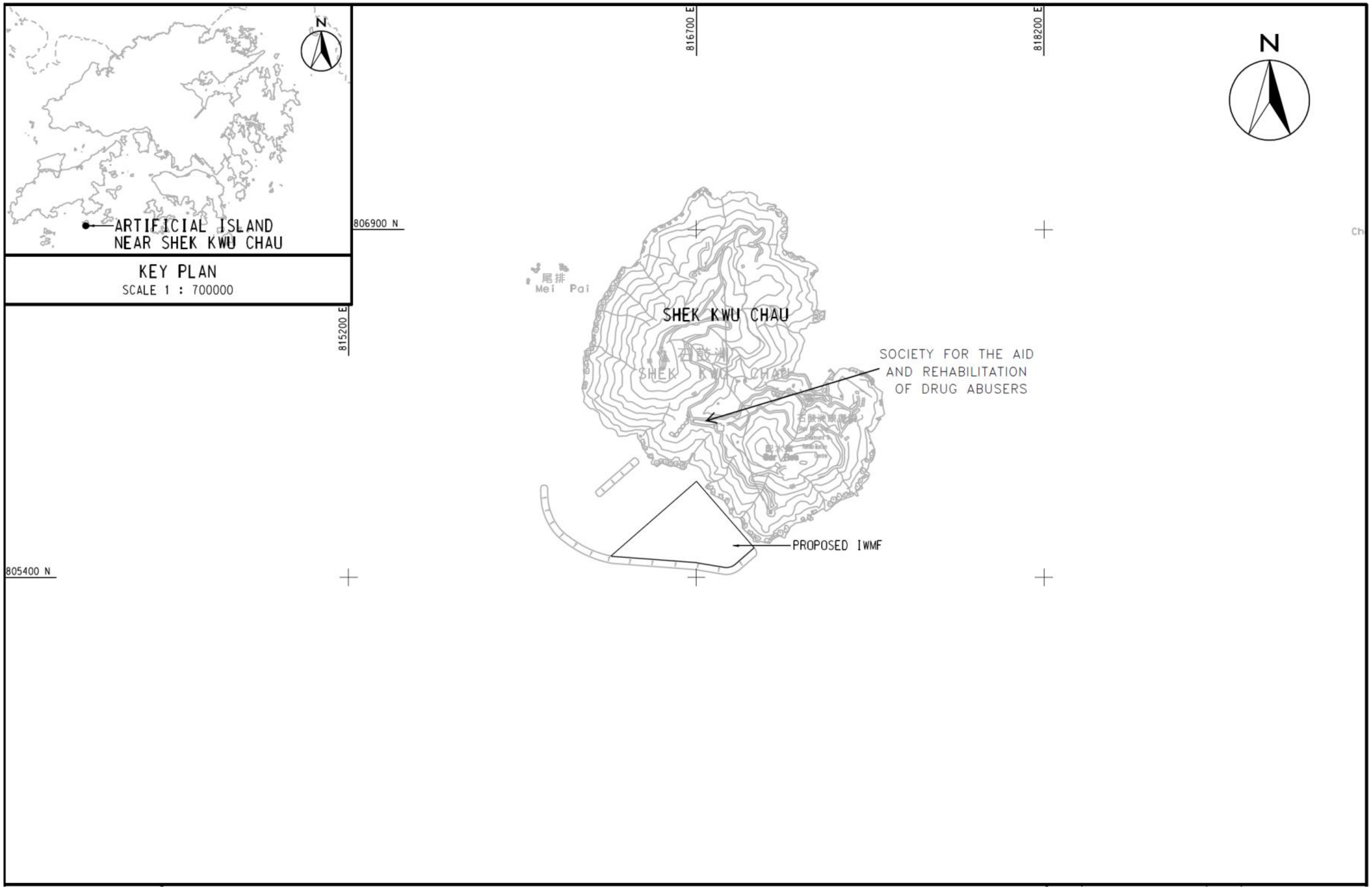


Figure 1.1 Location of the IWMF at the Artificial Island near SKC

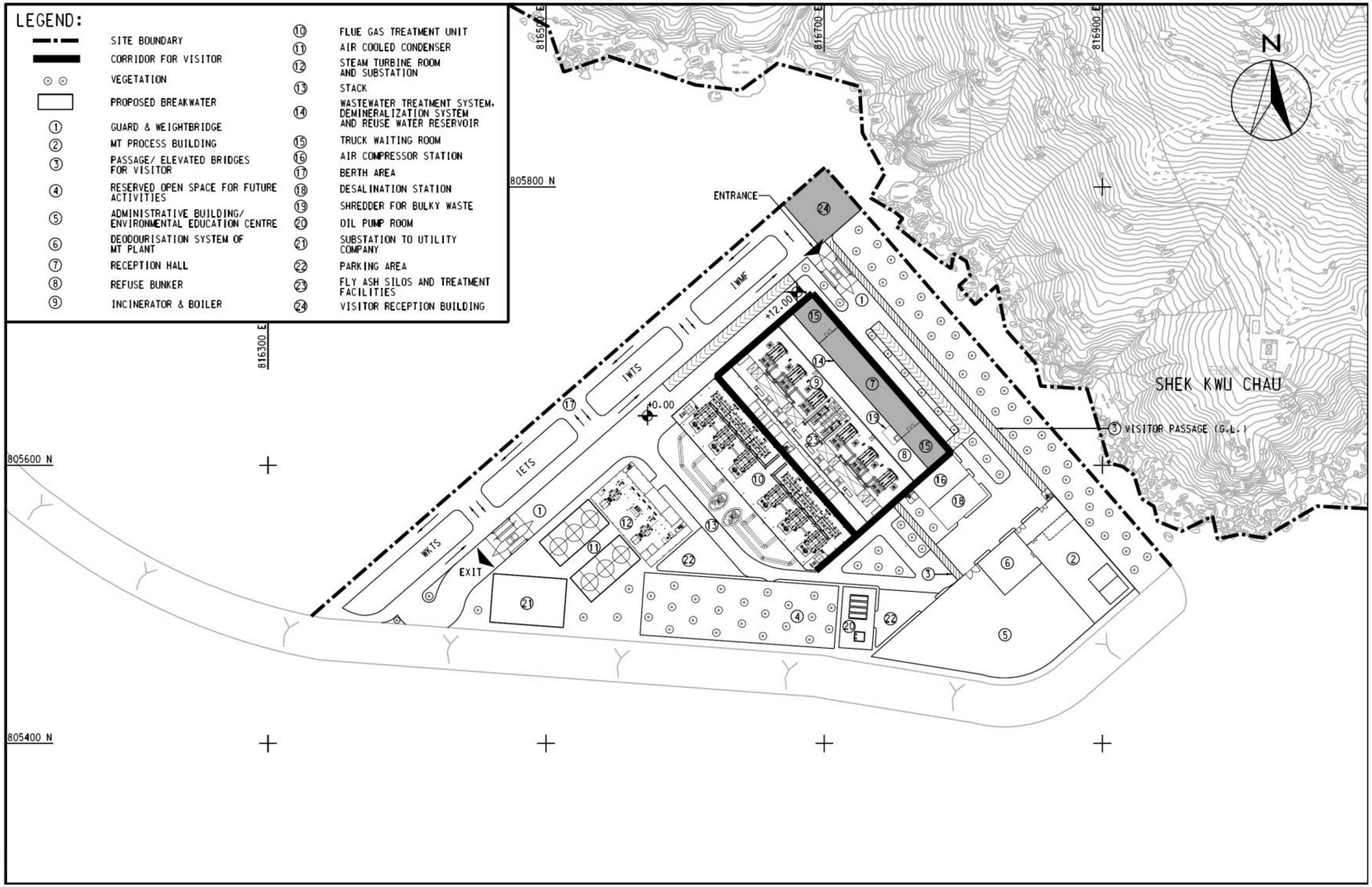


Figure 1.2 General Layout of the IWMF at the Artificial Island near SKC

1.2 The Reporting Scope

1.2.1 This is the 6th Monthly EM&A Report for the Project which summarizes the key findings of the EM&A programme during the reporting period from 1 December 2018 to 31 December 2018.

1.3 Project Organization

1.3.1 The Project Organization structure for Construction Phase is presented in **Figure 1.3**.

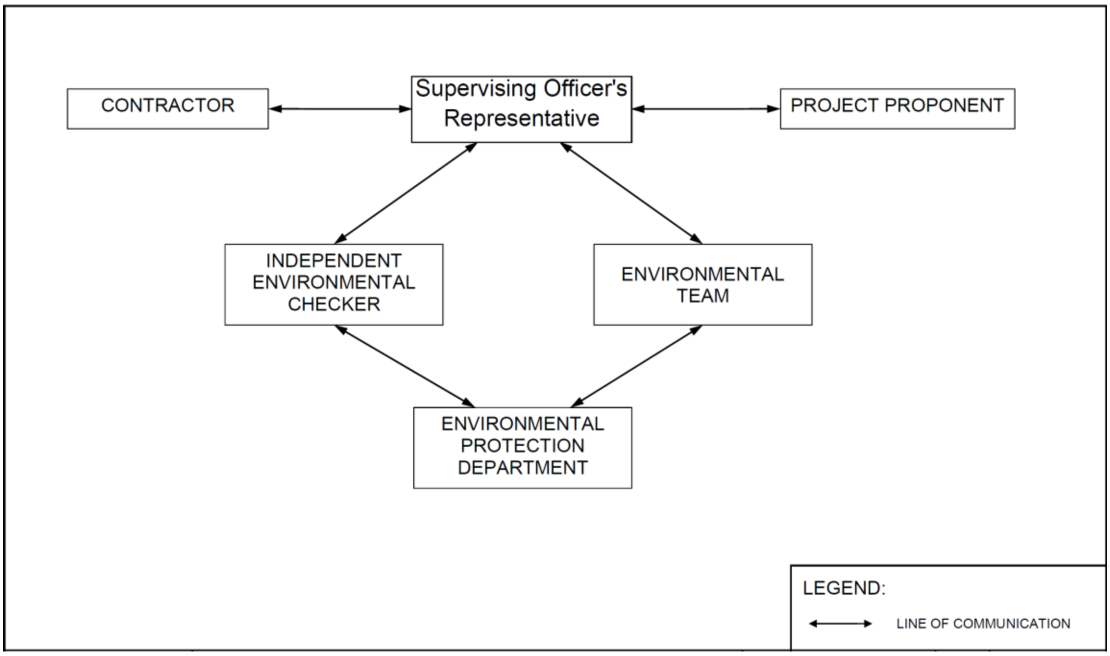


Figure 1.3 Project Organization Chart

1.3.2 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.
Keppel Seghers – Zhen Hua Joint Venture	Project Manager	Kenny Yu	2192-0606
Acuity Sustainability Consulting Limited	Environmental Team Leader	Robin Ho	2698-6833
ERM-Hong Kong, Limited	Independent Environmental Checker	Mandy To	2271-3000

1.4 Summary of Construction Works

1.4.1 Details of the major construction activities undertaken in this reporting period are shown in **Table 1.2** and **Figure 1.4** below. The construction programme is presented in **Appendix A**.

Table 1.2 Summary of the Construction Activities Undertaken during the Reporting Month

Location of works	Construction activities undertaken	Remarks on progress
Seawall and breakwater locations	• Marine site investigation works	• 56 out of 62 drill holes were completed
Location of DCM Site Trial	• Coring of DCM samples	• Completed
Seawall locations	• Collecting of Marine Sediment Samples	• Completed
Location of DCM Static Loading Test	• DCM installation	• Completed
Seawall and breakwater locations	• Laying of Geotextile and Sand Blanket	• 42 out of 48 geotextiles were laid • On-going for sand blanket laying
Seawall and berth area	• DCM installation	• On-going

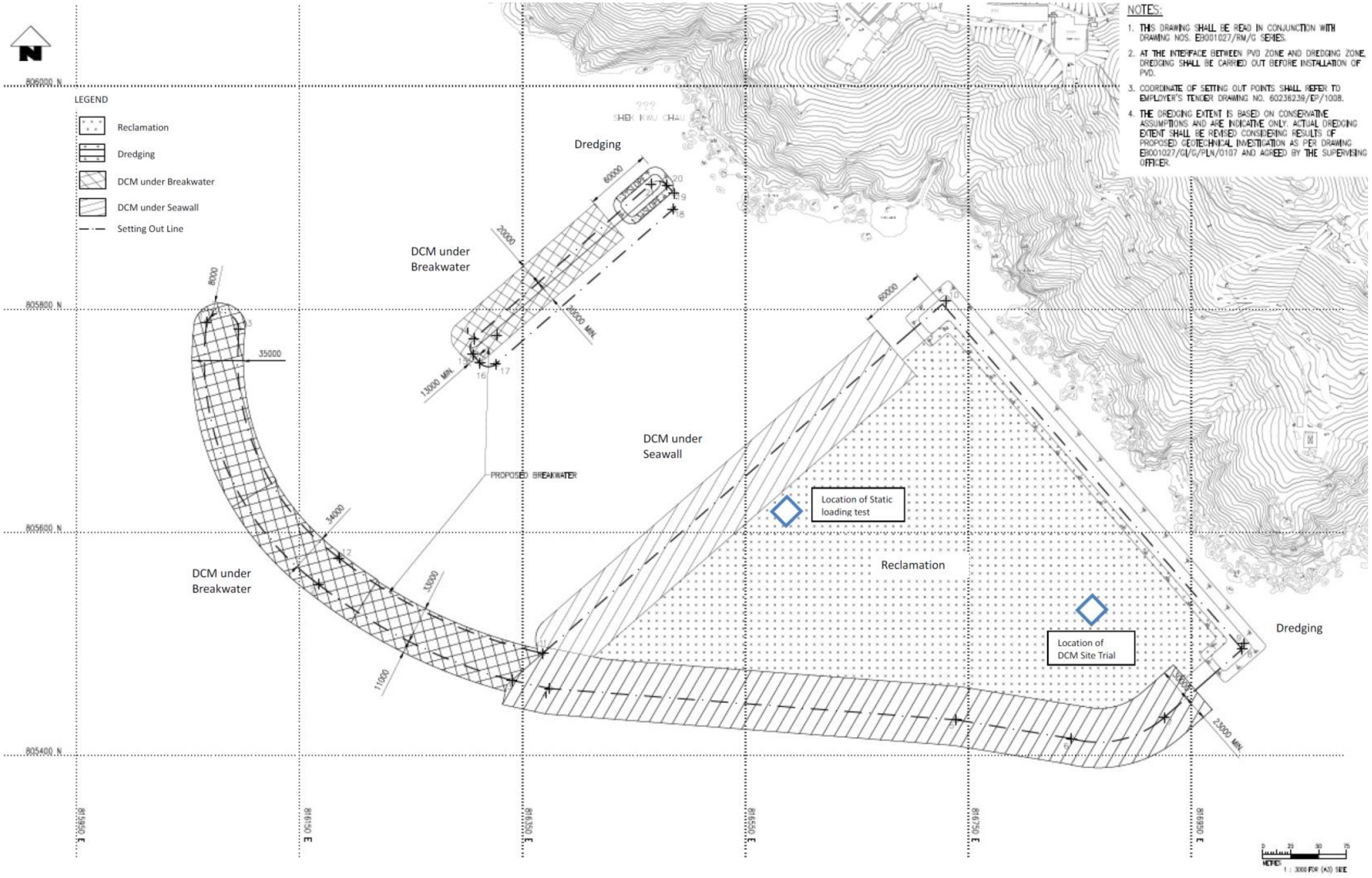


Figure 1.4 Location of Major Construction Activities Undertaken during the Reporting Month

1.5 Summary of Environmental Status

1.5.1 A summary of the valid permits, licences, and /or notifications on environmental protection for this Project is presented in **Table 1.3**

Table 1.3 Summary of the Status of Valid Environmental Licence, Notification, Permit and Documentations

Permit/ Licences/ Notification	Reference	Validity Period	Remarks
Variation of Environmental Permit	EP-429/2012/A	Throughout the Contract	
Further Environmental Permit	FEP-01/429/2012/A	Throughout the Contract	
Notification of Construction Works under the Air Pollution Control (Construction Dust) Regulation (Form NA)	Ref No.: 428778	15/12/2017-22/09/2024	
Wastewater Discharge Licence	-	-	Under Application
	-	-	Under Application
Chemical Waste Producer Registration	WPN0017-933-K3301 -01	Throughout the Contract	
	WPN5213-961-K3301 -02	Throughout the Contract	
Construction Noise Permit	GW-RS0534-18	22/06/2018 – 20/12/2018	
Construction Noise Permit	GW-RS1184-18	20/12/2018 – 18/06/2019	
Construction Noise Permit (24 hours)	-	-	Under Application
Billing Account for Disposal of Construction Waste	A/C No.:7029768	Throughout the Contract	

1.5.2 The status for all environmental aspects is presented **Table 1.4**.

Table 1.4 Summary of Status for Key Environmental Aspects under the Updated EM&A Manual

Parameters	Status
Water Quality	
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	To be commenced according to the Detailed Plan on DCM

Parameters	Status
Baseline Water Quality of wet season	Being carried out from 13 August 2018 to 7 September 2018
Noise	
Baseline Monitoring	The baseline niose monitoring result has been reported in Baseline Monitoring Report and submitted to EPD under FEP Condition 3.4
Impact Monitoring	On-going
Waste Management	
Mitigation Measures in Waste Monitoring Plan	On-going
Coral	
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	On-going, survey affected by missing of translocated and tagged coral colonies after typhoons in September 2018
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	Post Re-tagging Monthly Coral Survey at both Indirect Impact Site and Control Site was conducted on 14 January 2019.
Marine Mammal	
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
White-bellied Sea Eagle	
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
Environmental Audit	
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

1.5.3 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.

1.5.4 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 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 Requirements

2.1.1 To ensure no adverse water quality impact, water quality monitoring is recommended to be carried out at the nearby water sensitive receivers (WSRs) during construction phase including proposed reclamation, breakwater construction, etc.

2.1.2 In accordance with the Updated EM&A Manual, impact water quality monitoring were conducted 3 days per week at mid-flood and mid-ebb tide to obtain impact water quality levels at the eleven monitoring stations during general water quality monitoring and fourteen monitoring stations during regular DCM monitoring for the construction period.

2.2 Water Quality Parameters, Time, Frequency

2.2.1 Dissolved Oxygen (DO), Turbidity, Suspended Solids (SS), Salinity and pH have been undertaken at the eleven monitoring stations during general water quality monitoring. Beside the above parameters, monitoring for Total Alkalinity, Current Velocity and Current Direction have been undertaken at all fourteen monitoring stations (including S1, S2 and S3) during regular DCM monitoring. While the same parameters monitored during regular DCM monitoring would be undertaken at twelve immediate upstream and downstream area to the DCM works location during intensive DCM monitoring. Intensive DCM monitoring was not undertaken during the reporting period.

2.2.2 Current velocity and direction, DO , temperature, salinity, turbidity and pH have been measured in-situ and the SS, Total Alkalinity have been assayed in a HOKLAS laboratory.

2.2.3 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. The monitoring schedule is provided in **Appendix C**.

2.2.4 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.

2.2.5 **Table 2.1** summarizes the monitoring parameters, frequency and duration of the impact water quality monitoring during construction phase.

Table 2.1 Water Quality Monitoring Parameters, Frequency and Duration

Parameter, unit	Frequency	No. of Depths
• Water Depth(m) • Temperature(^{o}C) • Salinity(ppt) • pH (pH unit) • Dissolved Oxygen (DO)(mg/L and % of saturation) • Turbidity(NTU) • Suspended Solids (SS),	Impact monitoring: 3 days per week, at mid-flood and mid-ebb tides	3 water depths: 1m below sea surface, mid-depth and 1m above sea bed. If the water depth is less than 3m, mid-depth sampling only. If water depth less than 6m, mid-depth may be omitted.

Parameter, unit	Frequency	No. of Depths
mg/L • Total alkalinity • Current velocity • Direction		

2.3 Water Quality Monitoring Locations

2.3.1 Impact water quality monitoring was conducted at eleven monitoring locations (B1-B4, H1, C1, C2, F1, CR1, CR2 & M1) during general water quality monitoring and was conducted at fourteen water monitoring locations (B1-B4, H1, C1, C2, F1, S1-S3, CR1, CR2 & M1) during regular DCM monitoring, as shown in **Figure 2.1**.

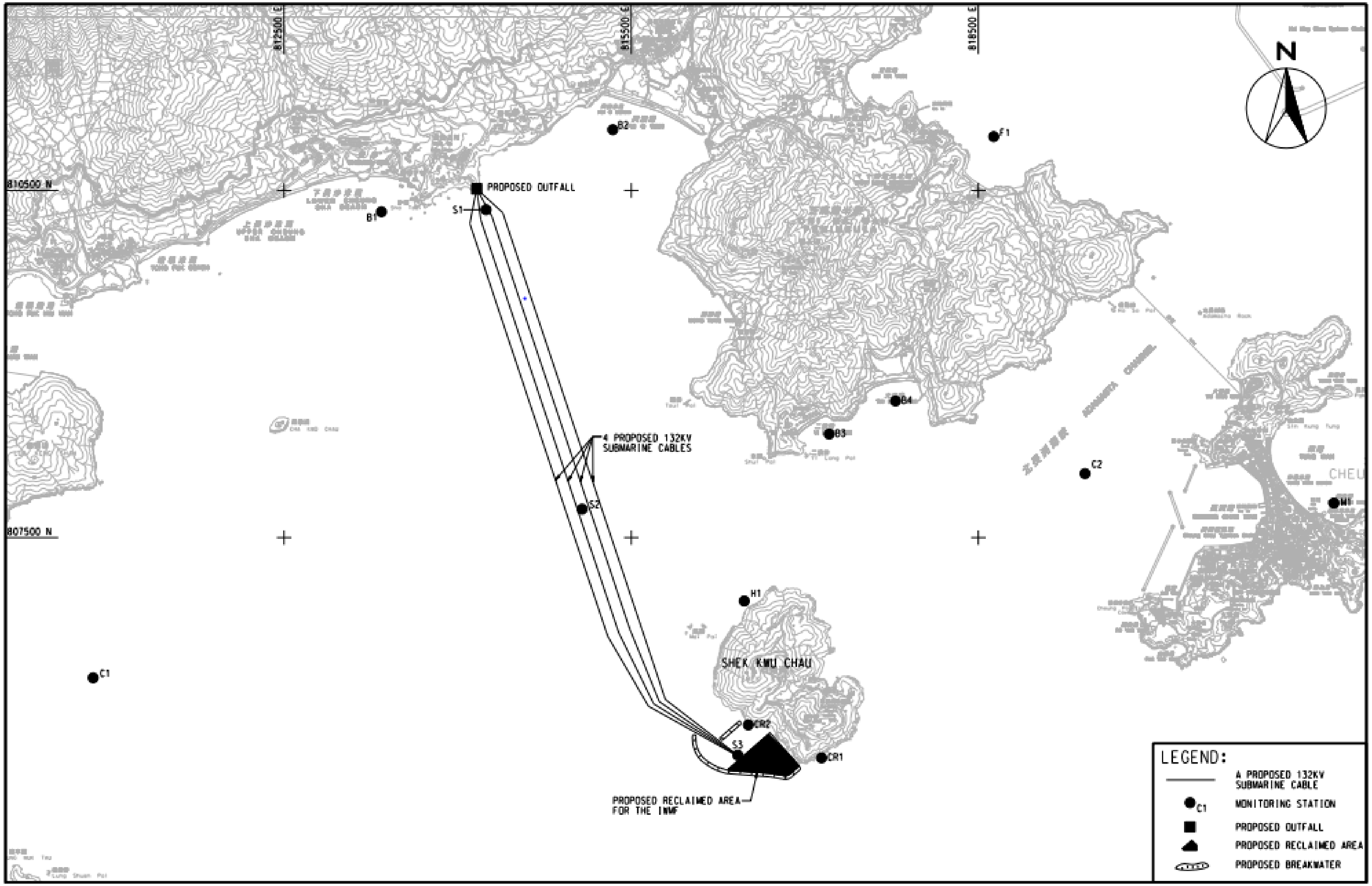


Figure 2.1 Water monitoring locations at Artificial Island near SKC

2.3.2 B1 to B4 are located at 4 beaches respectively at the southern shore of Lantau Island. Monitoring station H1 is located at the horseshoe crab habitat at northern SKC, while CR1 and CR2 are located at the coral communities at southwestern shore of SKC. Monitoring station F1 is located at the Cheung Sha Wan Fish Culture Zone while monitoring station M1 is located at Tung Wan at Cheung Chau. S1, S2 and S3 are located at the northern landing site, midway and southern landing site of the proposed submarine cable, respectively. S1, S2 and S3 are required for monitoring due to the laying of submarine cable. Control stations C1 and C2 at far field locations are for comparison.

2.3.3 Fourteen monitoring stations are listed in **Table 2.2**:

Table 2.2 - Locations of Marine Water Quality Stations

Monitoring station	Description	Easting	Northing
B1	Beach - Cheung Sha Lower	813342	810316
B2	Beach - Pui O	815340	811025
B3	Beach - Yi Long Wan	817210	808395
B4	Beach - Tai Long Wan	817784	808682
H1	Horseshoe Crab - Shek Kwu Chau	816477	806953
C1	Control Station	810850	806288
C2	Control Station	819421	808053
F1	Cheung Sha Wan Fish Culture Zone	818631	810966
S1	Submarine Cable Landing Site	814245	810335
S2	Submarine Cable	815076	807747
S3	Submarine Cable Landing Site	816420	805621
CR1	Coral	817144	805597
CR2	Coral	816512	805882
M1	Tung Wan	821572	807799

2.3.4 For initial intensive DCM monitoring, mobile impact monitoring stations shall be located within fixed distances from the DCM group works area to obtain water quality information in the immediate upstream and downstream area. A total of 12 nos. monitoring stations will be deployed with the following arrangement and illustrated in **Figure 2.2**:

- Two monitoring stations upstream and at 150 m envelope of DCM group works area (Representative Control stations).
- Five monitoring stations downstream and at 150 m envelope of DCM group works area (Impact 1 stations).
- Five monitoring stations downstream and at 250 m envelope of DCM group works area (Impact 2 stations).
- Monitoring stations should be at least 50 m apart;
- Downstream monitoring stations should be perpendicular to the tidal direction.

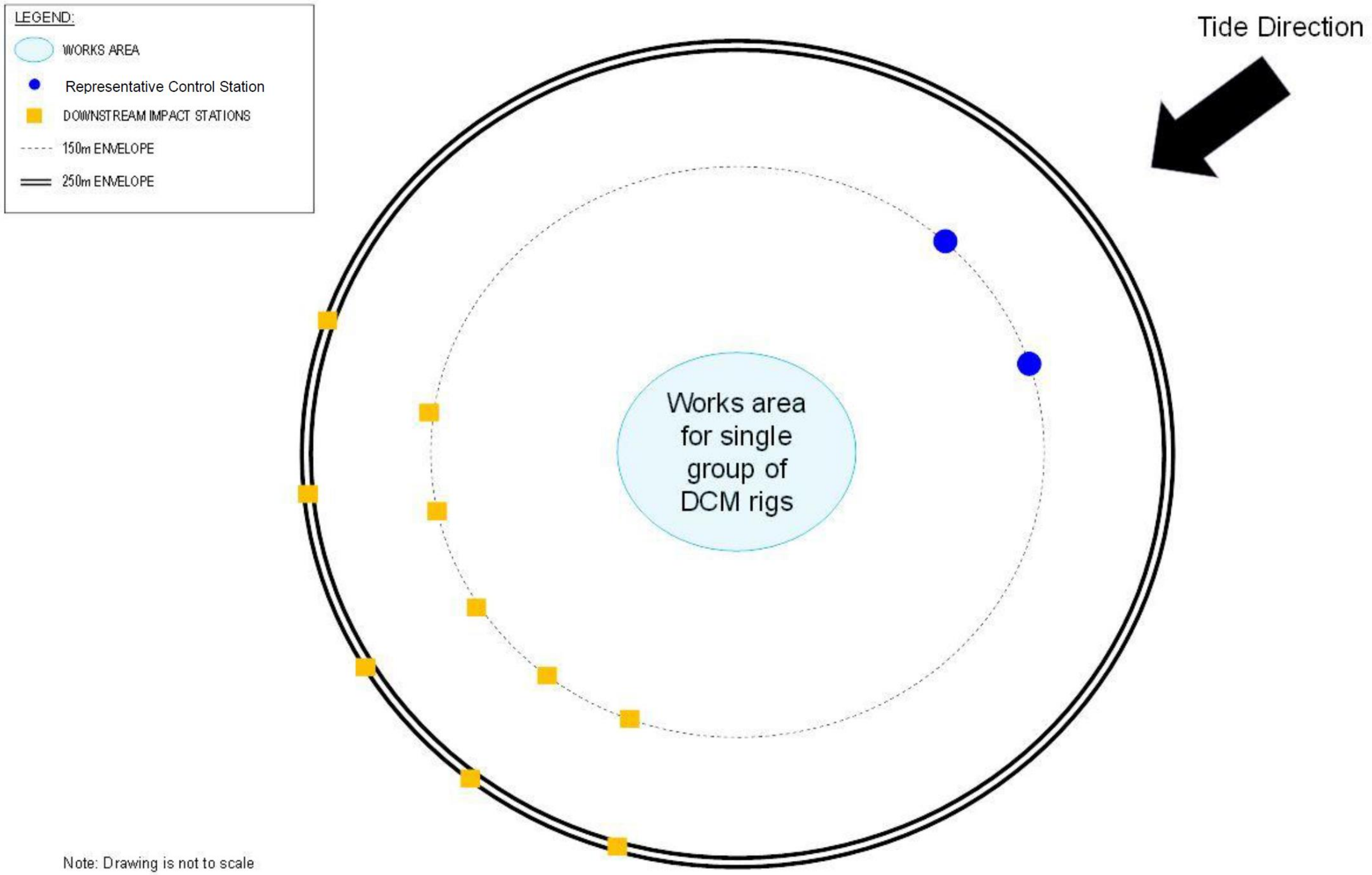


Figure 2.2 Water monitoring locations during intensive DCM monitoring

2.4 Impact Monitoring Methodology

2.4.1 General water quality monitoring was conducted three days per week, at mid-flood and mid-ebb tides, at the designated water quality monitoring stations during the reporting period.

2.4.2 The interval between 2 sets of monitoring was not less than 36 hours. Sampling was collected at three water depths, namely, 1m below water surface, mid-depth and 1m above seabed, except where the water depth is less than 6m, the mid-depth was omitted. If the water depth was less than 3m, only the mid-depth station was monitored.

2.4.3 All observations and results were recorded in the data record sheets in **Appendix D**. Duplicate in-situ measurements and water sampling were carried out in each sampling event. The monitoring probes were retrieved out of water after the first measurement and then redeployed for the second measurement. When the difference in value between the first and second readings of DO or turbidity is more than 25% of the value of the first reading, the reading was discarded and further readings were taken.

<u>In-situ Measurement</u>

2.4.4 Levels of DO, pH, temperature, turbidity and salinity would be measured in-situ by portable and weatherproof measuring instrument, e.g. YSI ProDSS and Horiba U-53 Multiparameter complete with cable and sensor. (Refer to http://www.ysi.com/ProDSS for YSI ProDSS technical specification and http://www.horiba.com/process-environmental/products/water-treatment-environment/details/u-50-multiparameter-water-quality-checker-368/ for Horiba U-53 technical specification). Water current velocity and Water Current direction would be measured by portable and weatherproof current meter, e.g. SonTek Hydrosurveyor (Refer to https://www.sontek.com/media/pdfs/riversurveyor-s5-m9-brochure.pdf for SonTek Hydrosurveyor M9 technical specification). Parameters measured by in-situ measurement is tabulated in **Table 2.3**

Table 2.3 - Parameters Measured by In-situ Measurement

Parameter	Resolution	Range
Temperature	0.1 ^{o}C	-5-70 ^{o}C
Dissolved Oxygen (DO)	0.01 mg/L	0-50.0 mg/L
Turbidity	0.1 NTU	0-1000 NTU
pH	0.01 pH	pH 0-14
Salinity	0.01 ppt	0-40 ppt
Water Current Velocity	0.001m/s	±20m/s
Water Current Direction	±1^{o}	±2^{o}

<u>Laboratory Analysis</u>

2.4.5 Analysis of Total Alkalinity and SS should be carried out in a HOKLAS accredited laboratory, as shown in **Appendix E**. Sufficient water samples shall be collected at the monitoring stations for carrying out the laboratory determinations. The determination work should be started within 24 hours after collection of the water samples. Analytical methods and detection limits for SS and total alkalinity are present in **Table 2.4**.

Table 2.4 - Analytical Methods Applied to Water Quality Samples

Parameter	Analytical method	Detection Level
Suspended Solids, SS	APHA 2540 D$_i$	1 mg/L
Total Alkalinity	APHA 2320	0.01 mg/L

Footnote:

i. "APHA 2540 D" stands for American Public Health Association Standard Methods for the Examination of Water and Wastewater, 23rd Edition.

Field Log

2.4.6 Other relevant data was recorded, such as: monitoring location / position, time, water depth, weather conditions and any special phenomena underway near the monitoring station.

2.5 Monitoring Equipment

2.5.1 Equipment used in the impact water quality monitoring programme is summarized in **Table 2.5** below. Calibration certificates for the water quality monitoring equipment are attached in **Appendix F**.

Table 2.5 Impact Water Quality Monitoring Equipment

Monitored Parameter	Equipment	Brand and Model
DO, Temperature, Salinity, pH and Turbidity	Multi-functional Meter	YSI ProDSS
Coordinates	Positioning Equipment	Garmin GPSMAP 78s
Water depth	Water Depth Detector	Hummingbird 160 Portable
SS	Water Sampler	Wildco 2 L Water Sampler with messenger

2.5.2 Dissolved Oxygen and Temperature Measuring Equipment

The instrument was a portable and weatherproof DO probe mounted on the multi-functional meter complete with cable and sensor, and use a DC power source. The equipment was capable of measuring:

- A DO level in the range of 0 - 50 mg/L; and
- Temperature of -5 - 70 degree Celsius.

2.5.3 Turbidity Measurement Instrument

The instrument was a portable and weatherproof turbidity-measuring probe mounted on the multi-functional meter using a DC power source. It had a photoelectric sensor capable of measuring turbidity between 0 - 1000 NTU.

2.5.4 pH Measurement Instrument

The probe was consisted of a potentiometer, a glass electrode, a reference electrode and a temperature-compensating device mounted on the multi-functional meter. It was readable to 0.1 pH in a range of 0 to 14. Standard buffer solutions of at least pH 7 and pH 10 were used for calibration of the instrument before and after use.

2.5.5 Salinity Measurement Instrument

A portable salinometer mounted on the multi-functional meter capable of measuring salinity in the range of 0-40 parts per thousand (ppt) was provided for measuring salinity of the water at each monitoring location.

2.5.6 Sampler

The water sampler comprised a transparent PVC cylinder, with a capacity of not less than 2 litres, which can be effectively sealed with latex cups at both ends. The sampler have a positive latching system to keep it open and prevent premature closure until released by a messenger when the sampler is at the selected water depth.

2.5.7 Sample Containers and Storage

Water samples for SS were stored in high density polythene bottles with no preservative added, packed in ice (cooled to 4°C without being frozen) and delivered to the laboratory and analysed as soon as possible after collection. Sufficient volume of samples was collected to achieve the detection limit stated in **Table 2.4**.

2.5.8 Water Depth Detector

A portable, battery-operated echo sounder was used for the determination of water depth at each designated monitoring station. This unit could either be hand held or affixed to the bottom of the work boat, if the same vessel is to be used throughout the monitoring programme.

2.5.9 Monitoring Position Equipment

Hand-held digital Differential Global Positioning System (DGPS) with way point bearing indication and Radio Technical Commission for maritime (RTCM) Type 16 error message 'screen pop-up' facilities (for real-time auto-display of error messages and DGPS corrections from the Hong Kong Hydrographic Office) was provided and used to ensure that the water sampling locations were correct during the water quality monitoring work.

2.6 Maintenance and Calibration

2.6.1 The multi-functional meters were checked and calibrated before use. Multi-functional meters were certified by a laboratory accredited under HOKLAS or any other international accreditation scheme, and subsequently re-calibrated at three monthly intervals throughout all stages of the water quality monitoring. Responses of sensors and electrodes were checked with certified standard solutions before each use. Wet bulb calibration for a DO meter was carried out before commencement of monitoring and after completion of all measurements each day. Calibration was not conducted at each monitoring location as daily calibration is adequate for the type of DO meter employed.

2.6.2 Sufficient stocks of spare parts were provided and maintained for replacements when necessary. Backup monitoring equipment was prepared for uninterrupted monitoring during equipment maintenance or calibration during monitoring.

2.7 Action and Limit Levels

2.7.1 The Action and Limit Levels have been set based on the derivation criteria specified in the Updated EM&A Manual and Detailed DCM Plan, as shown in **Table 2.6** below.

Table 2.6 Criteria of Action and Limit Levels for Water Quality

Parameters	**Action**	**Limit**
Construction Phase Impact Monitoring		
DO in mg/L	≤ 5 %-ile of baseline data	≤ 4
SS in mg/L	≥ 95 %-ile of baseline data or 120% of control station’s SS at the same tide of the same day of measurement, whichever is higher	≥ 99 %-ile of baseline data or 130% of control station's SS at the same tide of the same day of measurement, whichever is higher
Turbidity in NTU	≥ 95 %-ile of baseline data or 120% of control station’s turbidity at the same tide of the same day of measurement, whichever is higher	≥ 99 %-ile of baseline data 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	≥ 95 %-ile of baseline data or 120% of representative control station at the same tide of the same day, whichever is higher	≥ 99 %-ile of baseline data or 130% of representative control station at the same tide of the same day, whichever is higher

2.7.2 Based on the baseline monitoring data and the derivation criteria specified above, the Action/Limit Levels have been derived and are presented in **Table 2.7** and **Table 2.8** for both dry seasons (October – March) and wet seasons (April – September).

Table 2.7 Derived Action and Limit Levels for Water Quality Monitoring (Dry Season)

Parameters	**Action**	**Limit**
Construction Phase Impact Monitoring		
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	≥ 12.8 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	2°C above the temperature recorded at

Parameters	Action	Limit
	recorded at representative control station at the same tide of the same day	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 2.8 Derived Action and Limit Levels for Water Quality (Wet Season)

Parameters	Action	Limit
Construction Phase Impact Monitoring		
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 day of measurement, whichever is higher	≥ 4.3 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 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.

2.7.3 If exceedances were found during water quality monitoring, the actions in accordance with the Event and Action Plan shall be carried out according to **Appendix G**.

2.8 Monitoring Results and Observations

2.8.1 During the reporting period, general water quality monitoring was conducted on 3, 5 & 7 December 2018 at all the eleven monitoring station and regular DCM monitoring including monitoring station S1, S2 and S3 were conducted on 10, 12, 15, 17, 19, 21, 24, 27, 29 & 31 December 2018. Monitoring results of 7 key parameters: Salinity, DO, turbidity, SS, pH, temperature and total alkalinity in this reporting month, are summarized in **Table 2.9**, and details results are presented in **Appendix D**.

Table 2.9 Summary of 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					
B1	Avg.	30.12	8.69	8.69	8.08	4.1	9.21	21.5	113.4
	Min.	29.11	7.70	7.70	8.00	1.1	3.00	17.1	111.0
	Max.	30.99	9.39	9.47	8.20	8.6	24.00	24.9	116.0
B2	Avg.	30.10	8.76	8.76	8.10	4.1	9.48	21.5	113.3
	Min.	29.00	7.81	7.86	8.00	1.1	2.00	17.1	111.0
	Max.	31.00	9.81	9.76	8.20	8.8	23.00	24.9	115.0
B3	Avg.	30.01	8.70	8.69	8.08	4.1	8.33	21.5	113.3
	Min.	28.62	7.72	7.72	8.00	1.0	2.00	17.1	111.0
	Max.	30.94	9.55	9.48	8.20	7.8	16.00	24.9	115.0
B4	Avg.	30.11	8.75	8.75	8.09	4.1	8.28	21.5	113.3
	Min.	28.91	7.73	7.68	8.00	1.0	2.00	17.1	111.0
	Max.	31.88	9.41	9.45	8.20	7.9	17.00	24.9	115.0
C1	Avg.	29.97	8.71	8.70	8.09	4.1	8.52	21.5	113.1
	Min.	27.53	7.77	7.74	8.00	1.1	2.00	17.1	110.0
	Max.	30.96	9.60	9.49	8.20	8.4	22.00	24.9	116.0
C2	Avg.	30.13	8.65	8.66	8.10	4.2	7.73	21.5	113.3
	Min.	28.91	7.88	7.92	8.00	1.1	2.00	17.1	111.0
	Max.	31.50	9.32	9.46	8.20	8.6	15.00	24.9	115.0
CR1	Avg.	30.11	8.75	8.74	8.09	4.1	10.20	21.5	113.3
	Min.	28.95	7.94	8.03	8.00	1.1	2.00	17.1	110.0
	Max.	30.94	9.65	9.50	8.20	8.4	24.00	24.9	115.0
CR2	Avg.	30.10	8.67	8.69	8.09	4.1	10.10	21.5	113.4
	Min.	28.91	7.64	7.61	8.00	1.0	2.00	17.1	111.0
	Max.	30.98	9.41	9.39	8.20	8.6	25.00	24.9	115.0
F1	Avg.	30.09	8.75	8.75	8.09	4.1	8.14	21.5	113.2
	Min.	28.98	7.88	7.85	8.00	1.1	2.00	17.1	111.0
	Max.	31.05	9.66	9.56	8.20	8.1	18.00	24.9	115.0
H1	Avg.	30.06	8.78	8.79	8.09	4.1	8.30	21.5	113.4
	Min.	27.49	7.68	7.70	8.00	1.0	2.00	17.1	111.0
	Max.	31.49	9.62	9.63	8.20	7.9	19.00	24.9	116.0
M1	Avg.	30.13	8.83	8.83	8.09	4.1	9.07	21.5	113.4
	Min.	28.91	7.88	7.91	8.00	1.2	2.00	17.1	111.0
	Max.	31.18	9.67	9.60	8.20	7.6	18.00	24.9	117.0
S1	Avg.	30.11	8.91	8.90	8.10	4.3	10.77	20.9	113.1
	Min.	28.60	7.72	7.76	8.00	1.3	2.00	17.1	111.0
	Max.	31.17	9.63	9.65	8.20	8.8	24.00	24.9	116.0
S2	Avg.	30.06	8.89	8.89	8.09	4.4	10.56	20.9	113.2
	Min.	28.24	7.85	7.92	8.00	1.2	2.00	17.1	111.0
	Max.	31.00	9.65	9.67	8.20	8.3	24.00	24.9	116.0
S3	Avg.	30.15	8.87	8.86	8.11	4.3	10.73	20.9	113.4
	Min.	29.43	7.79	7.86	8.00	1.2	2.00	17.1	111.0
	Max.	31.61	9.45	9.44	8.20	8.0	26.00	24.9	117.0

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 only conducted on DCM working day with referring master programme in **Appendix A**.

iii. Monitoring at S1, S2 and S3 shall only be conducted during DCM work period referring to master programme in **Appendix A**.

2.8.2 The weather conditions during the monitoring period were mainly sunny and cloudy. Sea conditions for the majority of monitoring days were either light or moderate. No major pollution source and extreme weather which might affect the results were observed during the impact monitoring.

2.8.3 During the impact monitoring period for December 2018, eighty-eight of the water quality monitoring results for Suspended Solid (SS) obtained during the reporting period had exceeded the relevant Action or Limit Levels, where findings from investigations during 1 to 19 December 2018 carried out immediately for each of the exceedance cases had showed that these exceedances were unrelated to the Project, however, environmental deficiencies of the Contractor on the implementation of silt curtain deployment system were spotted. For the exceedances on 27, 29 and 31 December 2018, the investigation is undergoing and those corresponding incident reports would be marked as interim incident report. The investigation results on 27, 29 & 31 December 2018 will be presented in the next monthly report. Details of the exceedance are presented in **Section 8**.

2.8.4 Implemented mitigation measures minimizing the adverse impacts on water are listed in the implementation schedule given in **Appendix B**.

3. NOISE MONITORING

3.1 Monitoring Requirements

3.1.1 To ensure no adverse noise impact, noise monitoring is recommended to be carried out at the nearby noise sensitive receivers (NSRs) during construction phase.

3.1.2 In accordance with the Updated EM&A Manual, baseline noise level at the noise monitoring stations was established as presented in the Baseline Monitoring Report. Impact nois e monitoring was conducted once per week in the form of 30-minutes measurements Leq, L10 and L90 levels recorded at each monitoring station between 0700 and 1900 on normal weekdays.

3.2 Noise Monitoring Parameters, Time, Frequency

3.2.1 Impact noise monitoring was conducted weekly in the reporting period between 0700-1900 on normal weekdays.

3.2.2 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. **Table 3.1** summarizes the monitoring parameters, frequency and duration of the impact noise monitoring. The monitoring schedule is provided in **Appendix C**.

Table 3.1 Noise Monitoring Parameters, Time, Frequency and Duration

Monitoring Station	Time	Duration	Parameters
M1/ N_S1, M2/ N_S2, M3/ N_S3	Daytime: 0700-1900 hrs (during normal weekdays, not include Sunday or general holiday)	Once per week $L_{eq\ 5min}$/$L_{eq\ 30min}$ (average of 6 consecutive $L_{eq\ 5min}$)	L_{eq}, L_{10} & L_{90}

3.3 Noise Monitoring Locations

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

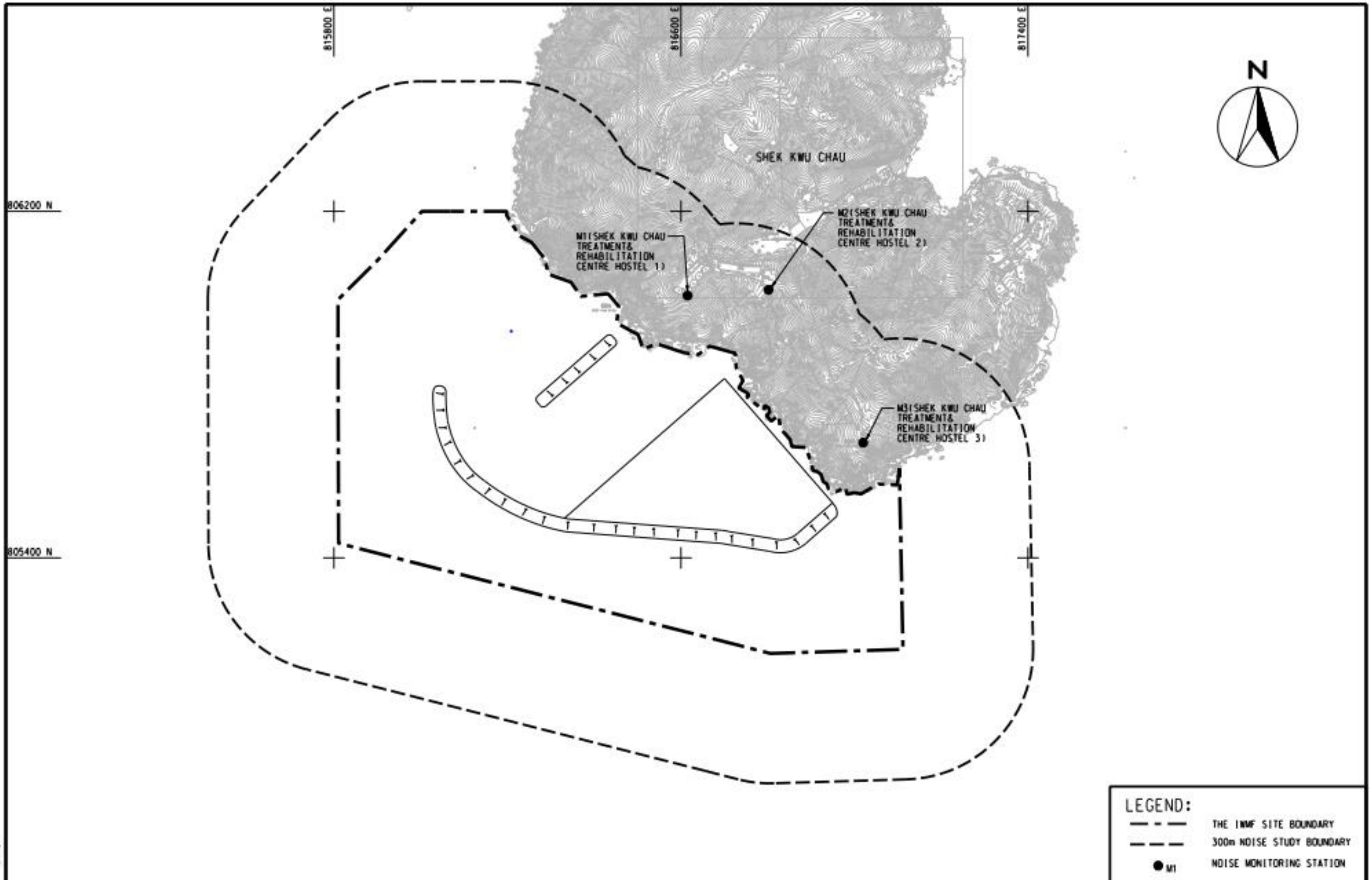


Figure 3.1 Noise monitoring locations at SKC

3.3.2 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.

3.3.3 Measurement at M1, M2 and 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. 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

3.4 Impact Monitoring Methodology

3.4.1 At each designated monitoring location, measurements of six 5-minutes A-weighted equivalent sound pressure level [“$L_{eq\ 5min}$”] was carried out between 0700 and 1900 for daytime measurements on a normal weekdays (exclude Sunday or general holiday). The measured six impact noise levels at each monitoring location shall then be averaged in logarithmic scale and expressed in terms of the 30 minutes A-weighted equivalent continuous sound pressure level ($L_{eq\ 30min}$) for the time period between 0700 and 1900 hours on normal weekdays.

3.4.2 The monitoring procedures are as follows:

- The microphone head of the lead level meter was normally positioned 1m exterior of the noise sensitive façade and lowered sufficiently so that the building’s external wall acts as a reflecting surface.
- The battery condition was checked to ensure good functioning of the meter.
- Parameters such as frequency weighting, the time weighting and the measurement time were set as follows:
  - Frequency weight: A
  - Time weighting: Fast
  - Measurement time: 5 minutes
- Prior to and after noise measurement, the meter was calibrated using the calibrator for 94.0 dB at 1000Hz. If the difference in the calibration level before and after measurement is more than 1.0 dB, the measurement was considered invalid and repeat of noise measurement was required after re-calibration or repair of the equipment.
- Noise monitoring was carried out for 30 mins by sound level meter. At the end of the monitoring period, noise levels in term of L_{eq}, L_{10},and L_{90} were recorded. In addition, site conditions and noise sources were recorded when the equipment were checked and inspected.
- All the monitoring data within the sound level meter system was downloaded through the computer software.

3.5 Monitoring Equipment

3.5.1 Integrated sound level meter was used for the noise monitoring. The meter shall be in compliance with the International Electrotechnical Commission Publications 651: 1979 (Type 1) and 804: 1985 (Type 1) specifications.

3.5.2 Equipment used in the impact noise monitoring programme is summarized in **Table 3.3** below. Calibration certificates for the noise monitoring equipment are attached in **Appendix H**.

Table 3.3 Impact Noise Monitoring Equipment

Equipment	Brand and Model
Sound Level Meter	Nti XL2
Sound Level Meter Calibrator	Pulsar 105

3.6 Maintenance and Calibration

3.6.1 The maintenance and calibration procedures were as follows:

- The microphone head of the sound level meter and calibrator were cleaned with a soft cloth at quarterly intervals.
- The sound level meter and calibrator were checked and calibrated at yearly intervals
- Immediately prior to and following each noise measurement the accuracy of the sound level meter shall be checked using an acoustic calibrator generating a known sound pressure level at a known frequency. Measurements may be accepted as valid only if the calibration levels from before and after the noise measurement agree to within 1.0dB.

3.7 Action and Limit Levels

3.7.1 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 are presented in **Table 3.4.**

Table 3.4 Action and Limit Levels for Noise

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

3.7.2 If exceedances were found during noise monitoring. The actions in accordance with the Event and Action Plan shall be carried out according to **Appendix I**.

3.8 Monitoring Results and Observations

3.8.1 Impact monitoring for noise impact was carried out on 3, 10, 17, 24 & 31 December 2018. The impact noise levels at Noise Monitoring Stations at SKC (i.e. M1/ N_S1 to M3/ N_S3) are summarized in **Table 3.6**. Details of noise monitoring results are presented in **Appendix J**.

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

3.8.3 According to our field observations, the major noise source identified at the designated noise monitoring station in the reporting month are summarised in **Table 3.5**:

Table 3.5 Summary of Field Observation

Monitoring Station	Major Noise Source
M1	Nil
M2	Nil
M3	Air-conditioning units nearby

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

Table 3.6 Summary of Impact Noise Monitoring Results

Location	Noise in dB(A)		
	Range of $L_{eq\ 30min}$	Range of $L_{10\ 5min}$	Range of $L_{90\ 5min}$
M1	50.2 – 52.4	50.2 – 55.9	45.2 – 48.1
M2	53.9 – 55.8	55.2 – 61.2	48.1 – 54.2
M3	49.7 – 52.9	52.0 – 55.0	45.2 – 48.5

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, 0 tons of C&D material was generated on site in the reporting month. For C&D waste, no metals was generated and collected by registered recycling collector. No paper cardboard packing were generated on site and collected by registered recycling collector. No plastic waste was collected by registered recycling collector. 870L and 200kg of chemical waste were collected by the licensed chemical waste collector. 0 tons of other types of wastes (e.g. general refuse) were generated on site and disposed of at Landfill.

4.3 Chemical waste generated from the cleaning of oil stain and leakage on deck of barges was now stored in the chemical waste storage area on the barges. The Contractor has reported that the chemical waste was collected by licensed collector on 14 December 2018.

4.4 With reference to relevant handling records and trip tickets of this Project, the quantities of different types of waste generated in the reporting month are summarised in **Table 4.1**. Details of cumulative waste management data are presented as a waste flow table in **Appendix K**.

Table 4.1 Quantities of Waste Generated from the Project

Reporting period	Quantity						
				Non-inert C&D Materials			
					Recycled materials		
	Inert C&D Materials (in'000kg)	Chemical Waste (in'000L)	Chemical Waste (in'000kg)	Others, e.g. General Refuse disposed at Landfill (in'000kg)	Paper/card board (in'000kg)	Plastics (in'000kg)	Metals (in'000kg)
December 2018	0	0.87	0.2	0	0	0	0

4.5 Although there is not much waste generation anticipated in the coming month from the Project, the Contractor is advised to sort and store any solid and liquid waste on-site properly prior to disposal.

5. CORAL

5.1 Coral Monitoring Requirements

5.1.1 To monitor the health condition of corals during different phases, corals located within areas likely to be affected by the Project, corals located at control sites (areas unlikely to be affected by the Project), the trans-located coral colonies as well as the tagged natural coral colonies at the recipient site were chosen, in order to identify any adverse indirect impact from the marine works. The size, percentage cover and health condition of corals (i.e. any sign of abnormal appearance, such as layer of mucus, bleaching, partial mortality etc.) at representative transects should be recorded during each monitoring.

5.2 Coral Monitoring Parameters, Time, Frequency

5.2.1 Rapid Ecological Assessment (REA) survey was conducted on 26 June 2018 at the suggested control site and indirect impact site within two week before commencement of the construction work which was 29 June 2018. 10 selected hard coral colonies with the similar species were tagged at both control and indirect impact site. Following coral translocation in the recipient site R3, 16 coral colonies attached to rocks less than 50 cm in diameter were translocated and tagged, as well as 10 selected natural coral colonies, at the recipient site. One additional REA survey was conducted in December 2018 to further assess the seabed condition at Indirect Impact Site after Typhoon Mangkhut.

5.2.2 Tagged coral colonies at the suggested control site and indirect impact site are being monitored weekly for the first month and followed by monthly monitoring for two months. Quarterly monitoring will be carried out after the first three-months monthly monitoring for until the end of the construction phase. The selected Control Site is located at Yuen Kong Chau of Soko Islands about 7 km away from the project area. Tagged coral colonies at the proposed recipient site are being monitored quarterly for one year. The selected recipient site R3 is located the opposite side of the Project area at about 2 km away. The detailed survey of the Control Site and Impact Site were conducted before the commencement of the Construction Phase.

5.2.3 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 tagged coral colony. The general environmental conditions including weather, sea, and tidal conditions of impact site, control site and recipient site were monitored.

5.2.4 **Table 5.1** summarizes the monitoring locations, time and frequency of the tagged coral colonies monitoring. The monitoring schedule is provided in **Appendix C**.

Table 5.1 Tagged Coral Monitoring Locations, Time and Frequency

<table>
<tr><th>Monitoring Location</th><th>Monitoring Month/Year</th><th>Frequency</th><th>No. of Monitoring Survey</th></tr>
<tr><td rowspan="3">10 selected hard coral colonies at control site / indirect impact site</td><td>1st Month</td><td>Weekly Survey</td><td>4</td></tr>
<tr><td>2nd to 3th Months</td><td>Monthly Survey</td><td>2</td></tr>
<tr><td>4th Month (postponed to 5th month due to diver accident in Shek Kwu Chau in October 2018)</td><td colspan="2">Re-tagging of Coral Colonies in Indirect Impact Site after Typhoon Mangkhut</td></tr>
</table>

Monitoring Location	Monitoring Month/Year	Frequency	No. of Monitoring Survey
	4th Month (postponed to 5th month due to diver accident in Shek Kwu Chau in October 2018 and further postpone to 6th month due to adverse weather)	Re-tagging of Coral Colonies in Control Site after Typhoon Mangkhut	
	5th Month (postponed to 6th month due to diver accident in Shek Kwu Chau and further postponed to 7th month due to delay of re-tagging activities at both Indirect Impact Site and Control Site)	Post Re-tagging Monthly Survey	1
	7th to 76th Months (postponed to 8th to 76th month due to diver accident in Shek Kwu Chau in October 2018)	Quarterly Survey	23
16 translocated hard coral colonies and 10 selected natural hard coral colonies at recipient site R3	1st Year	Quarterly Survey	4

5.3 Coral Monitoring Locations

5.3.1 Location of the ten tagged coral colonies at each of the proposed indirect impact site (re-tagging after typhoon Mangkhut), control site (baseline), the recipient site R3 and REA transect at proposed indirect impact site are shown in **Figure 5.1**, **Figure 5.2**, **Figure 5.3** and **Figure 5.4** respectively:

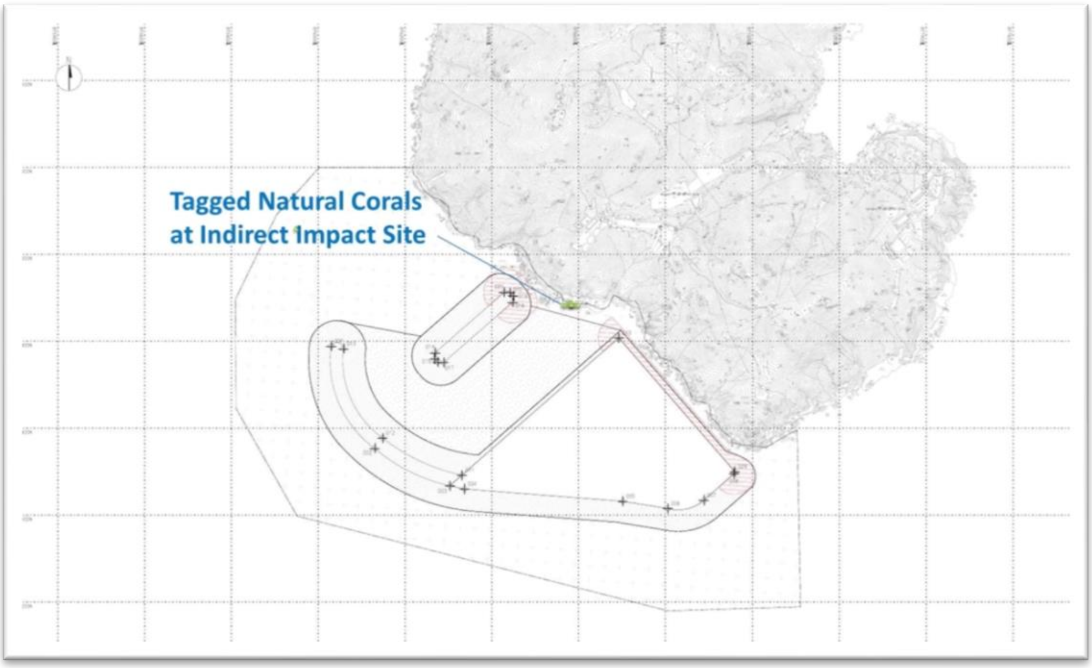


Figure 5.1 Tagged Natural Corals at Indirect Impact Site Near SKC for re-tagging after typhoon Mangkhut

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

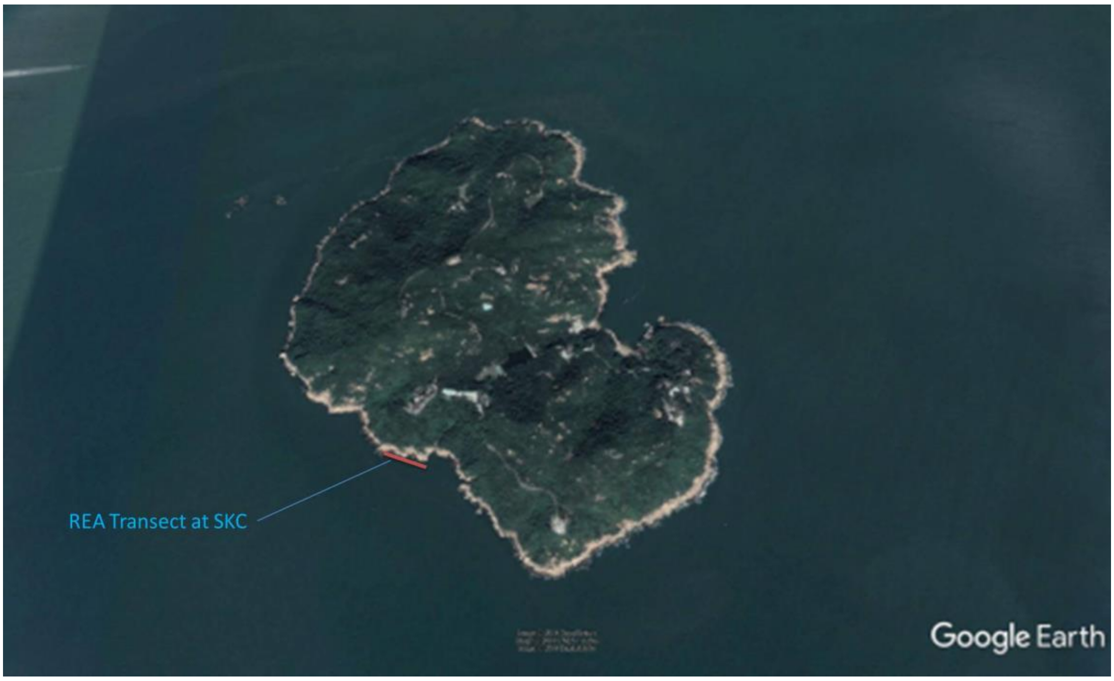


Figure 5.4 REA Transect at Indirect Impact Site near SKC

5.3.2 The GPS coordinates of the tagged coral colonies and retagged coral colonies were shown in **Table 5.2**, **Table 5.3, Table 5.3** and **Table 5.4** respectively.

Table 5.2 Tagged Natural Corals during Baseline at Control Site near Yuen Long Chau

Coral #	GPS Coordinates	
1	N22°09’45.96”	E113°54’57.81”
2	N22°09’45.88”	E113°54’57.89”
3	N22°09’45.81”	E113°54’57.78”

Coral #	GPS Coordinates	
4	N22°09’45.70”	E113°54’57.95”
5	N22°09’45.83”	E113°54’57.81”
6	N22°09’45.75”	E113°54’58.02”
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”
10	N22°09’46.40”	E113°54’57.79”

Table 5.3 Tagged Natural Corals during Baseline at Indirect Impact Site near SKC

Coral #	GPS Coordinates	
11	N22°11’29.12”	E113°59’08.98”
12	N22°11’29.08”	E113°59’09.06”
13	N22°11’29.01”	E113°59’09.21”
14	N22°11’29.01”	E113°59’09.29”
15	N22°11’29.00”	E113°59’09.37”
16	N22°11’29.00”	E113°59’09.50”
17	N22°11’28.94”	E113°59’09.48”
18	N22°11’28.99”	E113°59’09.36”
19	N22°11’28.95”	E113°59’09.29”
20	N22°11’29.00”	E113°59’09.18”

Table 5.4 Re-tagged Natural Corals after Typhoon Manghkut at Control Site near Yuen Long Chau

Coral # note i	GPS Coordinates	
2R	N22°11’29.12”	E113°59’09.01”
5R	N22°11’29.10”	E113°59’09.18”
7R	N22°11’29.17”	E113°59’08.86”
10R	N22°11’29.18”	E113°59’08.91”

Notes:

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

Table 5.5 Re-tagged Natural Corals after Typhoon Manghkut at Indirect Impact Site near SKC

Coral # note i	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**.

5.3.3 The ET leader will review the number and location of monitoring stations and parameters every six months, or on as needed basis, in order to cater for any changes in the surrounding environment and the nature of works in progress.

5.4 Impact Monitoring Methodology

5.4.1 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.

5.5 Action and Limit Levels

5.5.1 Monitoring result was reviewed and compared against the below Action Level and Limit Level (AL/LL) as set with the below **Table 5.6** and **Table 5.7**.

Table 5.6 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 5.7 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.

5.5.2 If exceedance was found during coral monitoring. The actions in accordance with the Event and Action Plan should be carried out according to **Appendix L.**

5.6 Monitoring Results and Observations

5.6.1 The coral re-tagging activity at Indirect Impact Site (**Figure 5.1**) was conducted in November 2018, however, the scheduled coral re-tagging activity at control site in November 2018 was postponed due to high swell condition, then rescheduled and conducted on 3 December 2018 (**Figure 5.2**); and the weather condition was summarized in **Table 5.8**. After the re-tagging at Indirect Impact Site and Control Site are both finished, one more additional monthly monitoring survey will be conducted in January 2019 which shown in **Appendix P**.

Table 5.8 Weather Condition for the Re-tagging Coral Colonies at Control Site

Date	Condition	Average Underwater Visibility
3 December 2018	- North force 2 to 3 - Sunny period	Less than 0.5m

5.6.2 Four hard coral colonies were re-tagged at Control Site (**Figure 5.2**) and their size and health condition were shown in **Table 5.12**. The six remained hard coral colonies at Control Site will be scheduled to monitor in January 2019 which shown in **Appendix P**. The GPS coordinates of the re-tagged coral colonies were shown in **Table 5.4**. Photographs of each re-tagged coral colonies were taken and shown in **Photo Plate 5.1**. All re-tagged coral are common species in Hong Kong. In general, all re-tagged colonies are in good condition.

5.6.3 The third Post-Translocation Monitoring was performed on 3 December 2018 for the Recipient Site R3 (**Figure 5.3**) and the weather conditions were summarized in **Table 5.9**. Seven (7) translocated and nine (9) natural hard coral colonies were remained to monitor after the typhoon Mangkhut. The general health conditions (size, condition, mortality, bleaching and sediment) at Recipient Site were recorded and summarized in **Table 5.13** and **Table 5.14** respectively. Photos of each tagged corals colonies were taken and shown in **Photo Plates 5.2** and **5.3**.

Table 5.9 Weather Condition for the Re-tagging Coral Colonies at Recipient Site R3

Date	Condition	Average Underwater Visibility
3 December 2018	- North force 2 to 3 - Sunny period	Less than 0.5m

5.6.4 The REA surveys were performed on 3 December 2018 at Indirect Impact Site and the weather condition was summarized in **Table 5.10**.

Table 5.10 Weather condition for the REA survey

Date	Condition	Average Underwater Visibility
3 December 2018	- North force 2 to 3 - Sunny period	Less than 0.5m

5.6.5 A 100m transect was laid at the Indirect Impact site (**Figure 5.4**). GPS coordinates of REA Transect starting and ending points, maximum depth and bottom substrate of the site were summarized in **Table 5.11**.

Table 5.11 GPS coordinates of REA Transect Starting and Ending points, maximum depth and bottom substrate at Indirect Impact Site

Site	GPS Location at Starting Point	GPS Location at Ending Point	Max. Depth	Bottom Substrate
Indirect Impact Site	E 113°59’08.19”	E 113°59’11,511”	3.5 m	Natural Bedrock and Boulders
	N 22°11’29.09”	N 22°11’28.45”		

Table 5.12 Sizes, Condition, Mortality, Bleaching and Sediment of 4 Re-tagged Natural Coral Colonies at Control Site

Tag #	Species	Size (cm) – Max. Diameter	Condition	Mortality (%)	Bleaching (%)	Sediment (%)
2R	*Goniopora stutchburyi*	10	Good	0	0	0
5R	*Goniopora stutchburyi*	18	Good	0	0	0
7R	*Coscinaraea* sp.	15	Good	0	0	0
10R	*Goniopora stutchburyi*	20	Good	0	0	0

Table 5.13 Sizes, Condition, Mortality, Bleaching and Sediment of 7 Translocated Coral Colonies at Recipient Site for 3rd Post-Translocation Coral Monitoring

Coral #	Species	Size (cm) – Max. Diameter/ Height	Mortality (%)		Bleaching (%)		Sediment (%)	
			Baseline	3-Dec	Baseline	3-Dec	Baseline	3-Dec
1	*Psammocora superficialis*	35	0	15	0	0	0	0
2	*Psammocora superficialis*	N/A	35	N/A	0	N/A	0	N/A
3	*Psammocora superficialis*	N/A	0	N/A	0	N/A	0	N/A
4	*Turbinaria peltata*	9	0	10	0	0	0	0
5	*Goniopora stutchburyi*	N/A	0	N/A	0	N/A	0	N/A
6	*Psammocora superficialis*	26	0	15	0	0	0	0
7	*Psammocora superficialis*	23	0	5	0	0	5	0
8	*Psammocora superficialis*	N/A	0	N/A	0	N/A	0	N/A
9	*Goniopora stutchburyi*	N/A	0	N/A	0	N/A	0	N/A
10	*Coscinaraea n sp.*	21	0	5	0	0	1	0
11	*Psammocora superficialis*	13	0	0	0	0	0	0
12	*Psammocora superficialis*	N/A	0	N/A	0	N/A	0	N/A
13	*Psammocora superficialis*	N/A	0	N/A	0	N/A	0	N/A
14	*Psammocora superficialis*	N/A	0	N/A	0	NA	0	N/A
15	*Goniopora stutchburyi*	N/A	0	N/A	0	N/A	0	N/A
16	*Psammocora superficialis*	26	0	10	0	N/A	0	0

*N/A: Non Applicable as coral colonies were missing.

Table 5.14 Sizes, Condition, Mortality, Bleaching and Sediment of 9 Natural Control Coral Colonies at Recipient Site for 3rd Post-Translocation Coral Monitoring

Coral #	Species	Size (cm) – Max. Diameter/ Height	Mortality (%)		Bleaching (%)		Sediment (%)	
			Baseline	3-Dec	Baseline	3-Dec	Baseline	3-Dec
1	*Coscinaraea n* sp.	16	0	0	0	0	0	0
2	*Psammocora superficialis*	24	0	0	0	0	0	0
3	*Psammocora superficialis*	23	0	0	0	0	0	0

Coral #	Species	Size (cm) – Max. Diameter/ Height	Mortality (%)		Bleaching (%)		Sediment (%)	
			Baseline	3-Dec	Baseline	3-Dec	Baseline	3-Dec
4	*Coscinaraea n* sp.	15	0	0	0	0	0	0
5	*Cyphastrea serailia*	42	0	0	0	0	0	0
6	*Cyphastrea serailia*	12	0	0	0	0	0	0
7	*Cyphastrea serailia*	46	0	0	0	0	0	0
8	*Psammocora superficialis*	21	0	0	0	0	0	0
9	*Psammocora superficialis*	19	0	0	0	0	0	0
10	*Goniopora stutchburyi*	N/A	0	N/A	0	N/A	0	N/A

*N/A: Non Applicable as coral colonies were missing.

Table 5.15 Ecological and Substratum Attributes of Indirect Impact Site

Ecological Attributes	Rank
Hard Corals	0.5
Dead Coral	0
Octocoral	0
Sea anemone beds	0
Dead Standing Corals	0
Other Benthos	1
Macroalgae	0
Substratum Attributes	**Rank**
Bedrock	5
Boulders (diameter >50cm)	4
Cobbles (diameter <50cm)	0
Rubble (dead corals)	0
Sand with gravel	0
Mud & Silt	0

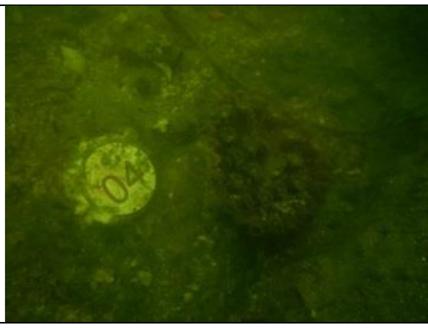
Table 5.16 Taxon Abundance of Indirect Impact Site

Benthic Communities	Abundance in the Site
Corals	
Goniopora stutchburyi	1
Psammocora superficialis	1
Favites chinensis	1
Other Benthos	
Thais luteostoma	1
Septifer virgatus	1
Anthocidaris crassispina	1

Photo Plate 5.1 Re-tagged Corals at Control Site

Tag #	3 December 2018
#2R	
#5R	
#7R	
#10R	

Photo Plate 5.2 Seven (7) Translocated Corals at Recipient Site

	
Coral #01	**Coral #04**

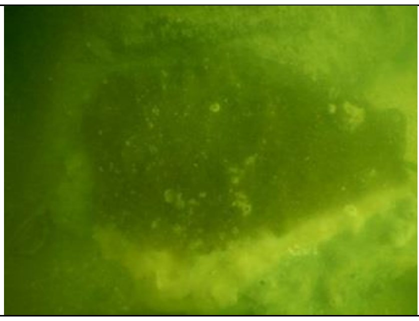
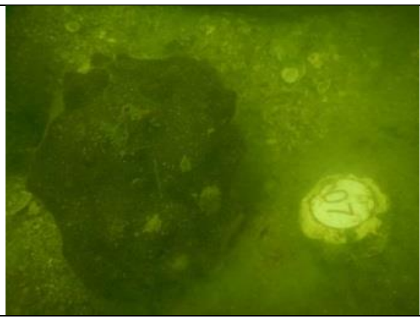
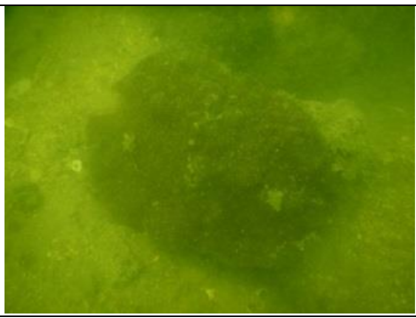
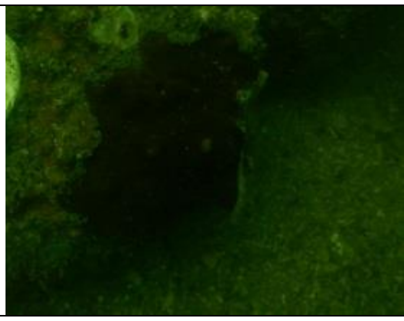
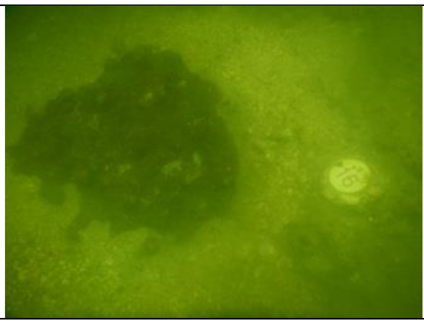
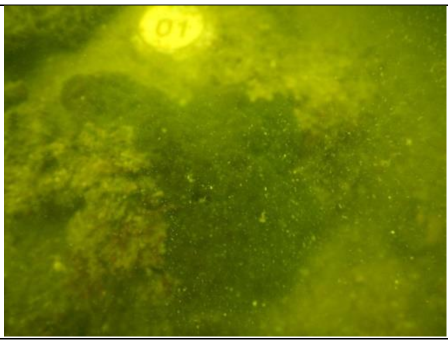
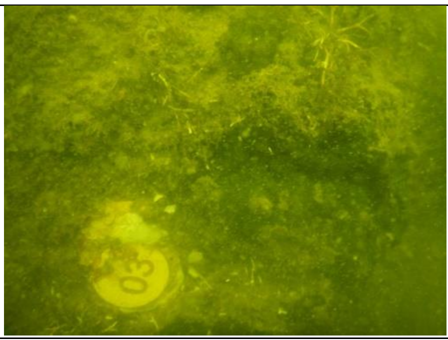
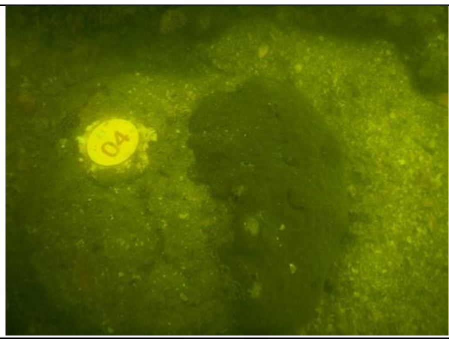
	
Coral #06	**Coral #07**
	
Coral #10	**Coral #11**
	
Coral #16	

Photo Plate 5.3 Nine (9) Natural Control Corals at Recipient Site

	
Coral #01	**Coral #02**
	
Coral #03	**Coral #04**

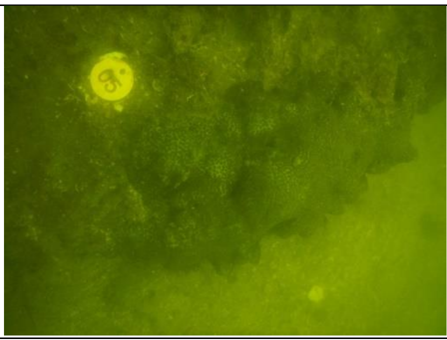
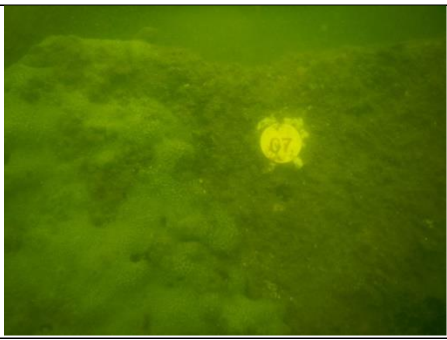
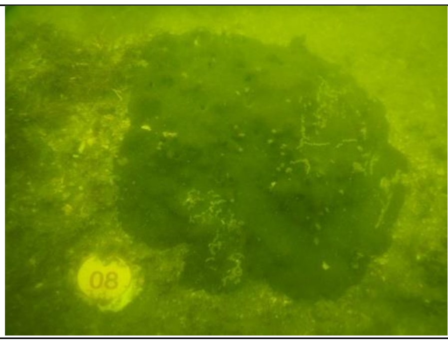
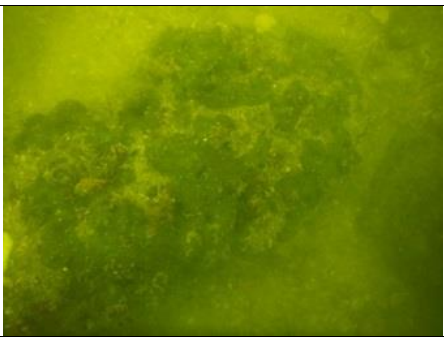
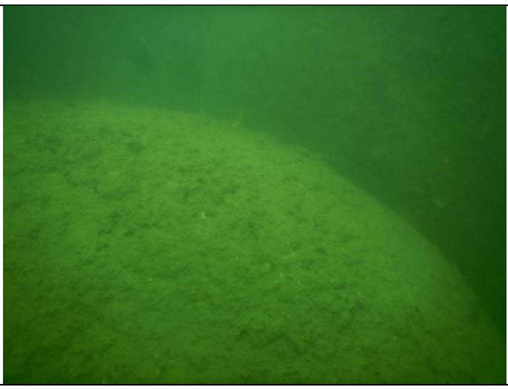
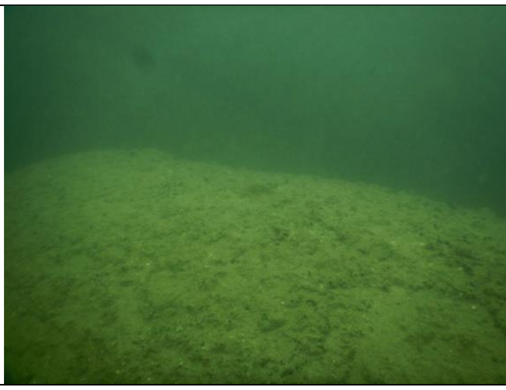
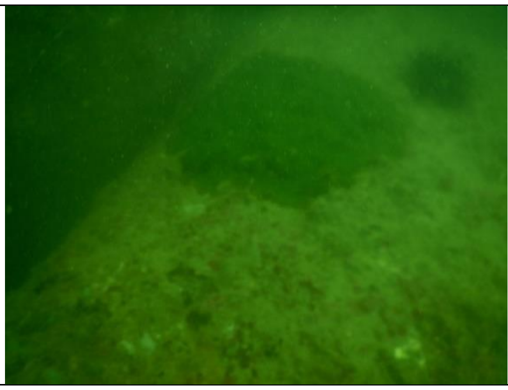
	
Coral #05	**Coral #06**
	
Coral #07	**Coral #08**
	**Missing**
Coral #09	**Coral #10**

Photo Plate 5.4 Representative photo records during the REA survey

	
Big Boulders	

	
Anthocidaris crassispina	*Septifer virgatus*
	
Psammocora superficialis	

5.6.6 The first post-translocation coral monitoring was carried out on 26 June 2018. Sixteen (16) movable hard coral colonies were monitored at the recipient site R3. However, 9 translocated coral colonies were missing during the monitoring survey and only 7 left. The remaining seven translocated coral colonies also showed an increased mortality from 5% to 15%. The missing colonies probably were swept away by the strong wave action caused by the Super Typhoon Mangkhut hitting Hong Kong on 15th and 16th September 2018.

5.6.7 Nine (9) remaining natural hard coral colonies were monitoring at the recipient site as control and 1 coral colony was missing during the monitoring survey. Similar to the translocated coral colonies, the missing tagged coral colony probably was swept away by the strong wave action caused by the Super Typhoon Mangkhut hitting Hong Kong on 15th and 16th September 2018.

5.6.8 The mortality of 2 translocated coral colonies had reached to 15%. Since 9 translocated coral colonies were missing due to the hitting of super typhoon Mangkhut in mid-September 2018, only 12.5% of translocated coral colonies had reached to 15% mortality, thus the AL/LL limit level for post-translocation coral monitoring in **Table 5.7** was not exceeded.

5.6.9 The REA survey was carried out in on 3 December 2018 in the Indirect Impact Site. Only three species of hard coral were recorded during the survey and most of them are in fair condition after the typhoon. Some common coral colonies still appeared in shallow water which are suitable for re-tagging during the construction phase monitoring. All the coral colonies recorded along the transect were all common hard coral species in Hong Kong (**Photo Plate 5.4**).

5.6.10 From the REA survey, the monitoring site was mainly composed of natural bedrock and big boulders down to 3.5 meters water depth along the surveyed route (**Table 5.15**). Scattered hard coral colonies were recorded along the REA transect and only 3 species of hard coral were recorded. The abundance of hard coral species recorded along the transect was shown in **Table 5.16**. Besides, some invertebrates such as common sea snail: Thais luteostoma, Sea urchins: Anthocidaris crassispina and common green mussel: Septifer virgatus were found at the surface of the boulders.

5.6.11 This site supported a sparse and patchy cover (<1%) of hard corals. All the recorded coral colonies grow on the big boulders and bedrock surfaces. All hard coral colonies recorded along the transect were common hard coral species in Hong Kong water and in fair health condition.

5.6.12 Post-translocation monitoring survey will be continued to monitor the remaining tagged coral colonies for both translocated coral and natural coral colonies.

5.6.13 Construction phase monitoring survey will be carried out to audit any effect to the health of tagged coral colonies during the whole construction period at both sites.

6. MARINE MAMMAL

6.1 Monitoring Requirements

6.1.1 The marine mammal monitoring programme would focus on Finless Porpoise, as the study area near Shek Kwu Chau has been identified as a hotspot for this species, while the Chinese White Dolphins rarely occurred there in the past.

6.1.2 The monitoring would verify the predicted impacts on marine mammals, and examine whether the mitigation measures recommended in the EIA report have been effectively implemented to protect marine mammals from negative impacts from construction activities.

6.1.3 The Vessel-based Line-transect Survey, the Passive Acoustic Monitoring and the Land-based Theodolite Tracking will be conducted to provide systematic, quantitative measurements of occurrence, encounter rate, habitat use, movement and behavioural patterns of marine mammals within or near the Project Area during construction and operational phases.

6.1.4 The mammal monitoring works during construction consist of the following three survey methods:

- Vessel-based Line-transect Survey – to monitor the occurrence of Finless Porpoises (and Chinese White Dolphins) in the study area during construction works, by comparing with the findings of the pre-construction marine mammal monitoring;
- Passive Acoustic Monitoring – to study the usage of the Project Area and two control sites in South Lantau Waters by Finless Porpoise during construction works, in reference with the baseline findings of the pre-construction marine mammal monitoring; and
- Land-based Theodolite Tracking – to study the movement and behavioral pattern of Finless Porpoise within and around the Project Area during construction works.

6.1.5 The marine mammal observation works of Marine Mammal Exclusion Zone (MMEZ) and Marine Mammal Watching as two of the specific mitigation measures recommended in the approved EIA report shall be fully and properly implemented for the Project to minimize disturbance on Finless Porpoise during construction and operational phases.

6.2 Survey Methods

6.2.1 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:

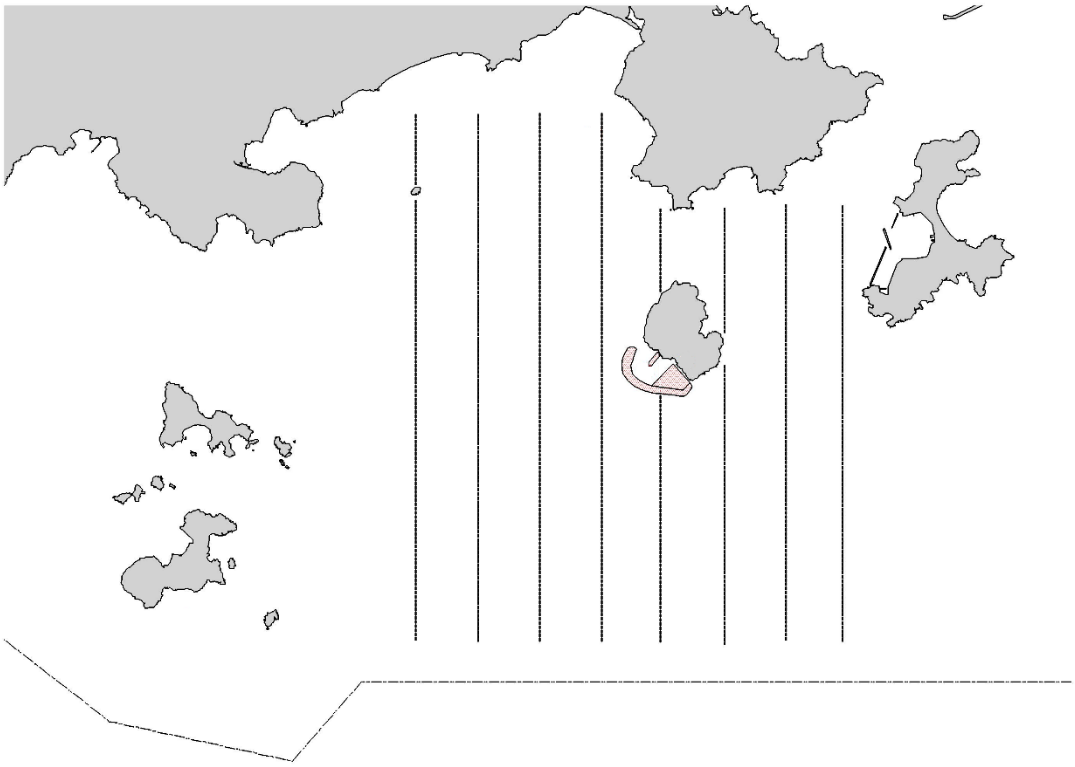


Figure 6.1 Line Transects for Marine Mammal Surveys

The surveys should cover all 4 seasons in order to take natural fluctuation and seasonal variations into account for data analysis of distribution, encounter rate, density and habitat use of both porpoises and dolphins (if any). In comparison to the baseline monitoring results, results from the analysed construction phase monitoring data would allow the detection of any changes of their usage of habitat, in response to the scheduled construction works. The monitoring surveys shall be conducted throughout the entire construction period with the frequency shown in **Table 6.1** below:

Table 6.1 Vessel-based Line-transect Survey Frequency

Season	Months	Frequency
Peak Season	December, January, February, March, April & May	Twice per month
Non-peak Season	June, July, August, September, October & November	Once per month

For each vessel survey, a 15-m inboard vessel with an open upper deck (about 4.5 m above water surface) would be used to make observations from the flying bridge area. Two experienced marine mammal observers (a data recorder and a primary observer) would make up the on-effort survey team, and the survey vessel would transit different transect lines at a constant speed of 13-15 km per hour. The data recorder shall search with unaided eyes and fill out the datasheets, while the primary observer shall search for dolphins and porpoises continuously through 7 x 50 marine binoculars. Both observers shall search the sea ahead of the vessel, between 270^{o} and 90^{o} (in relation to the bow, which is defined as 0o). Two additional experienced observers shall be available on the boat to work in shift (i.e. rotate every 30 minutes) in order to minimize fatigue of the survey team members. All observers shall be experienced in small cetacean survey techniques and identifying local cetacean species with extensive training by marine mammal specialist of the ET

During on-effort survey periods, the survey team shall record effort data including time, position (latitude and longitude), weather conditions (Beaufort sea state and visibility), and distance travelled in each series (a continuous period of search effort) with the assistance of a handheld GPS (Garmin eTrex Legend). Data including time, position and vessel speed would also be automatically and continuously logged by handheld GPS throughout the entire survey for subsequent review.

When porpoises or dolphins are sighted, the survey team shall end the survey effort, and immediately record the initial sighting distance and angle of the porpoise or dolphin group from the survey vessel, as well as the sighting time and position. Then the research vessel shall be diverted from its course to approach the animals for species identification, group size estimation, assessment of group composition, behavioural observations, and collection of identification photos (feasible only for Chinese White Dolphin). The perpendicular distance (PSD) of the porpoise or dolphin group to the transect line would then be calculated from the initial sighting distance and angle, which shall be used in the line-transect analysis for density and abundance estimation.

The line-transect survey data shall be integrated with a Geographic Information System (GIS) to visualize and interpret different spatial and temporal patterns of porpoise and dolphin distribution using their sighting positions collected from vessel surveys. Location data of porpoise and dolphin groups would be plotted on map layers of Hong Kong using a desktop GIS (e.g. ArcView© 3.1) to examine their distribution patterns in details. The encounter rate could be used as an indicator to determine areas or time periods of importance to porpoises within the study area. For encounter rate analysis of finless porpoises, only survey data collected under Beaufort 2 or below condition would be used for encounter rate analysis.

To take into account of the variations of survey effort across different sections within survey area, the quantitative grid analysis of habitat use would be conducted to examine finless porpoise usage among 1-km^2 grids within the Southeast Lantau survey area. For the grid analysis, SPSE (sighting density) and DPSE (porpoise density) values would be deduced for evaluation on level of porpoise usage. First, positions of on-effort porpoise sightings from the study period are plotted onto 68 grids (1 km x 1 km each) within the survey area. Sighting density grids and porpoise density grids shall then be normalized with the amount of survey effort conducted within each grid. The total amount of survey effort spent on each grid shall be calculated by examining the survey coverage on each line-transect survey to determine how many times the grid had been surveyed during study period. With the amount of survey effort calculated for each grid, the sighting density and porpoise density of each grid shall be further normalized (i.e. divided by the unit of survey effort).

The newly-derived unit for sighting density was termed SPSE, representing the number of on-effort sightings per 100 units of survey effort. In addition, the derived unit for actual porpoise density was termed DPSE, representing the number of dolphins/porpoise per 100 units of survey effort. Among the 1-km^2 grids that were partially covered by land, the percentage of sea area was calculated using GIS tools, and their SPSE and DPSE values were adjusted accordingly. The following formulae shall be used to estimate SPSE and DPSE in each 1-km^2 grid within the study area:

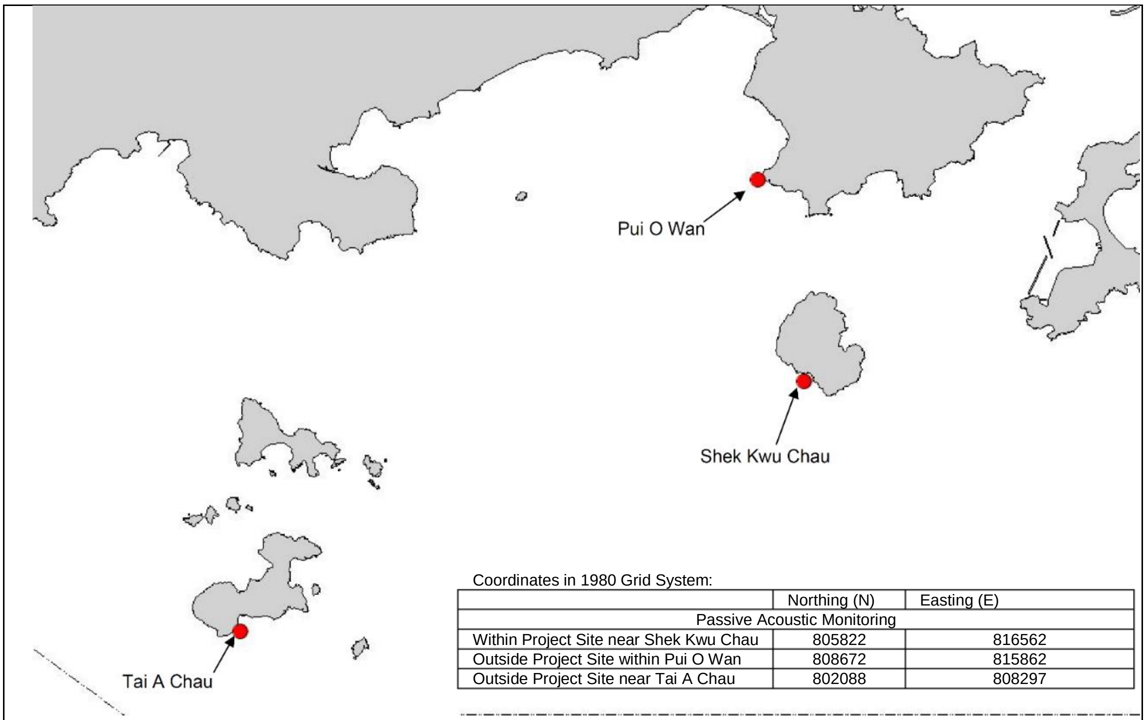
$$SPSE = ((S / E) \times 100) / SA\%$$

$$DPSE = ((D / E) \times 100) / SA\%$$

where S = total number of on-effort sightings
D = total number of dolphins/porpoises from on-effort sightings
E = total number of units of survey effort
SA% = percentage of sea area

6.2.2 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.



	Northing (N)	Easting (E)
Passive Acoustic Monitoring		
Within Project Site near Shek Kwu Chau	805822	816562
Outside Project Site within Pui O Wan	808672	815862
Outside Project Site near Tai A Chau	802088	808297

Figure 6.2 Locations of Passive Acoustic Monitoring

6.2.3 These three detectors will be deployed on-site to carry out 24-hours monitoring for a period listed as **Table 6.2** below during the construction phase.

Table 6.2 PAM Deployment Period

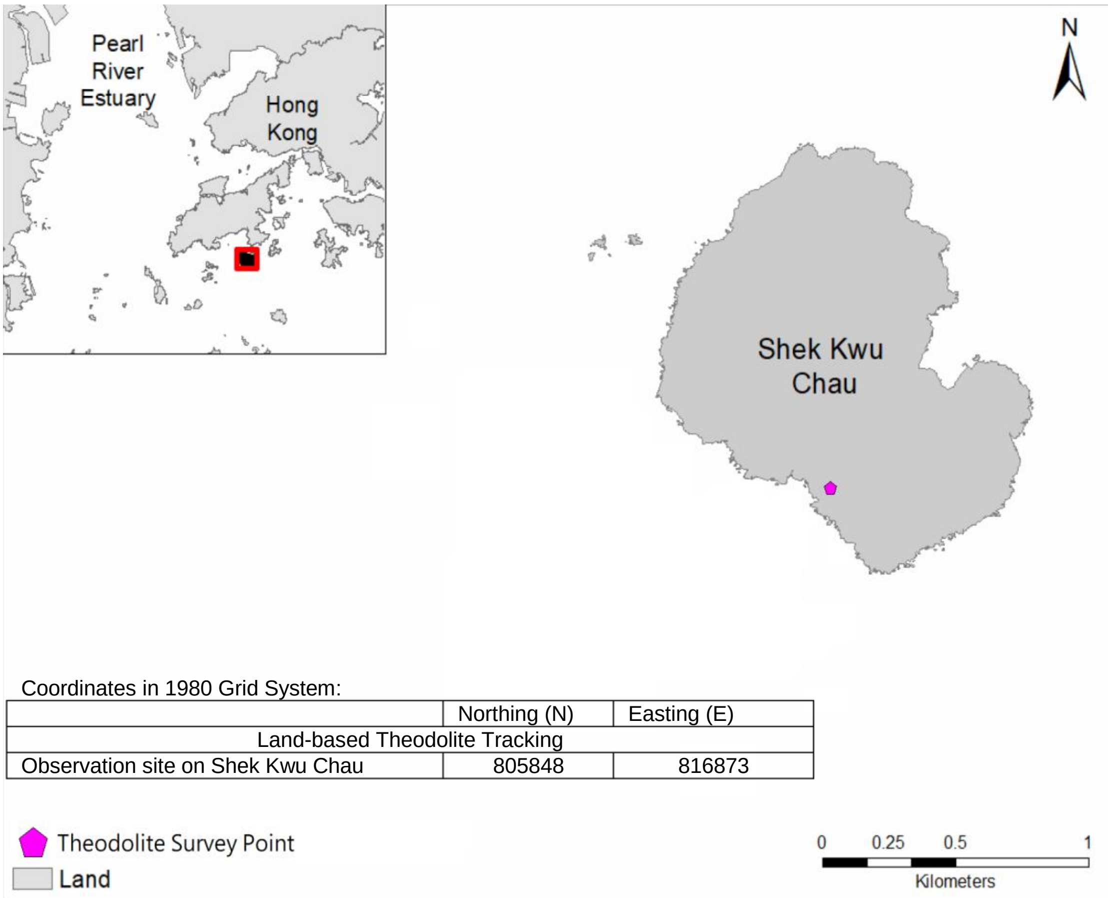
Season	Months	Deployment Period
Peak Season	December, January, February, March, April or May	At least 30 days during the peak months of porpoise occurrence in South Lantau waters

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.

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.

6.2.4 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.



Coordinates in 1980 Grid System:

	Northing (N)	Easting (E)
Land-based Theodolite Tracking		
Observation site on Shek Kwu Chau	805848	816873

Figure 6.3 Locations of Land-based Theodolite Tracking

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 6.3** below, preferably at the initial stage of the construction period (i.e. December 2018 to May 2019).

Table 6.3 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

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, our 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.

6.3 Specific Mitigation Measures

6.3.1 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. The exclusion zone should be closely monitored by an experienced marine mammal observer (MMO) for 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. 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 marine mammal observer(s) shall be independent of the construction contractor and shall form part of the Environmental Team and have the power to call-off construction activities.

According to the Condition 2.25 of the FEP, MMEZ should be implemented 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. Also, marine construction works expected to produce underwater acoustic disturbance as per Condition 2.27 of the FEP, especially within December and May, would require the implementation of MMEZ, which currently all those specific construction activities have been replaced by less acoustically disturbing construction methods such as Deep Cement Mixing (DCM) and Precast Concrete Blocks Installation as discussed in Section 5.3 of the Detailed Monitoring Programme on Finless Porpoise, however, MMEZ would also be implemented for precautionary purpose for DCM works.

A MMEZ with 250 m distance from the boundary of a work area shall be established during the above situation. A typical MMEZ is indicated in **Figure 6.4** for reference. The MMEZ serves as a monitoring approach to provide appropriate and immediate actions once finless porpoise or Chinese White Dolphin is sighted within the MMEZ. All MMEZ will be monitored by competent Marine Mammal Observers (MMOs) to be provided by the Environmental Team (ET) for the IWMF and trained by the Marine Mammal Monitoring Specialist of the ET who is independent from JV.

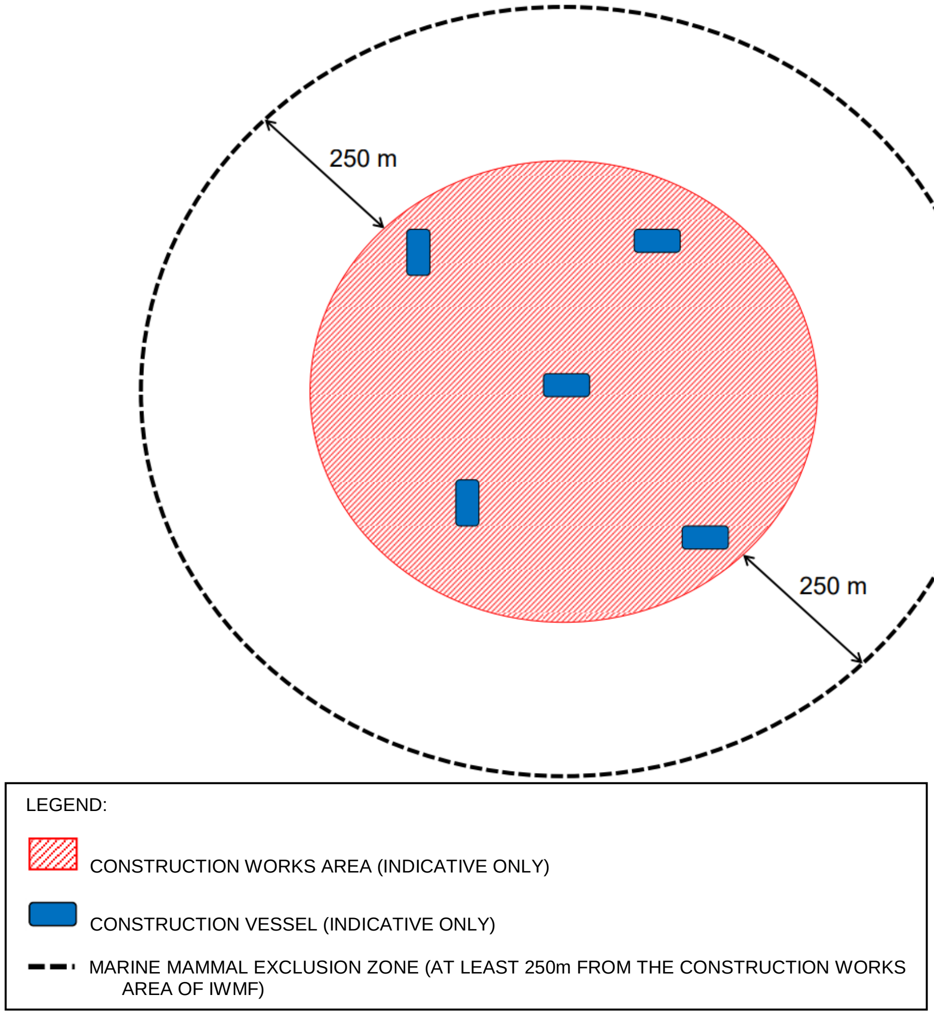


Figure 6.4 Illustration of Typical MMEZ

Prior to the commencement of construction activity, our MMOs shall ensure the boundary of a marine work area and setting up of the MMEZ for the work area and get access to the monitoring location on a barge or a lookout point where there is no obstructed views for monitoring the MMEZ during the construction activity. The MMEZ shall be scanned thoroughly by a MMO for any presence of marine mammal e.g. finless porpoise for an initial period of 30 minutes. Construction activity shall only be commenced after the MMO has confirmed that the MMEZ is clear of the marine mammal for the initial period of 30 minutes. The MMO shall then inform the construction superintendent through mobile phone or handheld transceivers to certify the commencement of construction activity. The MMEZ monitoring shall be carried on throughout the period for all active construction activities requiring implementation of MMEZ.

When any mammal marine, e.g. Finless Porpoise, is detected by the MMO within the MMEZ during construction, the MMO shall inform the construction superintendent immediately through mobile phone or handheld transceivers to cease construction activity within the MMEZ. Construction activity shall not be re-commenced until the MMO confirms that the MMEZ is continuously clear of marine mammal for a period of 30 minutes. The MMO shall then inform the construction superintendent through mobile phone or handheld transceivers to certify the re-commencement of construction activity.

As there could be a number of Contractors working at the same time within a work area for the IWMF project, a full contact list of MMEZ monitoring team members of the ET and the relevant responsible construction superintendents of the Contractor at the site shall be prepared, updated regularly and circulated to all parties involved in the MMEZ monitoring. With a full contact list, our MMOs shall be able to find out the contacts of corresponding persons in case of marine mammal sighting within and near the MMEZ or emergent occurrence of any unpredictable impact on marine mammal.

If a marine mammal is still observed in close vicinity but outside the MMEZ, the MMO shall inform the construction superintendent about the presence of marine mammal. The MMO shall remain in position and closely observe the movement of the marine mammal as well as searching for the appearance of any other marine mammal within the MMEZ. No matter the marine mammal is observed within or in close vicinity but outside the MMEZ, the construction superintendent or relevant persons shall inform all vessel captains involved in construction activities around the MMEZ to pay special attention of the presence of the marine mammal in order to reduce chance of collision with them. In case of injury or live-stranded marine mammal being found within the MMEZ, the marine mammal observer shall immediately inform the construction superintendent to suspend construction activities within the works area and contact AFCD through “1823” marine mammal stranding hotline.

6.3.2 Marine mammal watching plan

Upon the completion of silt curtain installation/re-installation/relocation, 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 would be implemented.

Before commencement of dredging/sand blanket laying work at each designated area, a trained MMO shall check whether position frame silt curtains are ready, well prepared and operated without any obvious damage. Also, the MMO shall confirm the presence of the relevant frontline staff of the main contractor or its sub-contractors and engineers on board to ensure the effective communication, coordination and implementation of the response plan in relation to any incidents involving marine mammals within the waters surrounded by the position frame type silt curtains and the work areas. Also, there are lookout points at an elevated level on each barge, clear and safe access at the edges of the derrick lighter/ flag-top barge for inspection during dredging/sand blanket laying works, provision of sufficient lighting is required if working at night.

During the operation, the inspection will be conducted daily. The MMO will walk along the edge of derrick lighter (DL) and flag-top barge (FB) along the position frame silt curtain or proper location without obstacles where appropriate to inspect the position frame silt curtain with naked eyes, the MMO will check that the position frame silt curtains are maintained in the correct positions with no obvious defects / entanglement and there is no observable muddy water passing through the position frame silt curtain system. Any floating refuse trapped by the silt curtain shall be removed as part of the regular inspection. For night inspection, spotlight will be used to provide sufficient brightness to assist the inspection in dark condition.

For the localized silt curtain re-deployment, MMO will conduct visual inspection to confirm that there is no presence of marine mammal within the localized silt curtain. Visual inspection will be conducted every an hour by MMO till confirming that there is not any marine mammal observed in the surrounding area of the frame type silt curtain. The duration will be subject to various conditions, e.g. weather or angle of observation. The works can only commence after confirming that the surrounding waters of the localized silt curtains has not contain any marine mammal. Thereafter, frontline staff, i.e. foremen, site agent, superintendents and engineers will assist our MMO in implementing the plan from the active work fronts within the waters surrounded by the silt curtains throughout the work period. The MMO will conduct regular check every 60 minutes to observe the presence of any marine mammal around the localized silt curtain or being trapped by the localized silt curtain. The MMOs will also check if the localized silt curtains are in correct positions..

The MMO shall fill up our Marine Mammal Sighting Record Sheet. After inspection, those records should be kept properly and submitted to the project team. In case there is any marine mammal being found, the MMO should carry out the response actions and communicate with relevant parties to stop and then resume work after the discovered marine mammal leaves. After lifting up and mobilization of silt curtain, the MMO will repeat the procedures of regular and visual inspection until the end of the construction works.

Each lookout point will have an unobstructed view to waters around the DL and FB. The MMO will move around the DL and FB to establish a clear and unobstructed view as much as they can without compromising the safety concern. When appropriate, the lookout point can be replaced by a proper location if unobstructed view can be assured.

6.4 Results and Observations

6.4.1 Vessel-based Line-transect Survey

The monthly survey was conducted on 6 and 20 December 2018. As this is the designated peak season (December - May), two surveys were completed. A total on effort (transects only) survey length of 79.5 km was completed, 78.6 km at Beaufort Sea State 2 or better (**Table 6.4**). Five finless porpoise sightings were recorded, three (3) “on effort” and two (2) while transiting between transect lines (referred to as secondary line in AFCD reports (**Table 6.5, Figure 6.5**).

Table 6.4 Summary of Vessel-based Line-transect Survey Effort

Date	Area*	Beaufort	Effort (km)	Season	Vessel	Effort Type**
06-12-18	SEL	1	8.9	WINTER	SMRUHK	P
06-12-18	SEL	2	29.9	WINTER	SMRUHK	P
06-12-18	SEL	3	0.9	WINTER	SMRUHK	P
20-12-18	SEL	0	0.8	WINTER	SMRUHK	P
20-12-18	SEL	1	29.4	WINTER	SMRUHK	P
20-12-18	SEL	2	9.6	WINTER	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 6.5 Sightings recorded during December 2018 Vessel-based Line-transect Survey

Date	Species	Sighting No.	Time	Group Size	PSD	Behaviour	Latitude	Longitude	Area	Effort Type	Season
06-12-18	Finless Porpoise	2	11:30	1	N/A	Travel	22.1645	113.9681	SEL	IMPACT	WINTER
06-12-18	Finless Porpoise	3	12:37	2	3	Travel	22.1804	113.993	SEL	IMPACT	WINTER
20-12-18	Finless Porpoise	4	01:38	1	N/A	Unknown	22.2127	113.9557	SEL	IMPACT	WINTER
20-12-18	Finless Porpoise	5	11:26	2	52	Travel	22.2097	113.9541	SEL	IMPACT	WINTER
20-12-18	Finless Porpoise	6	12:53	1	65	Travel	22.1724	113.9853	SEL	IMPACT	WINTER

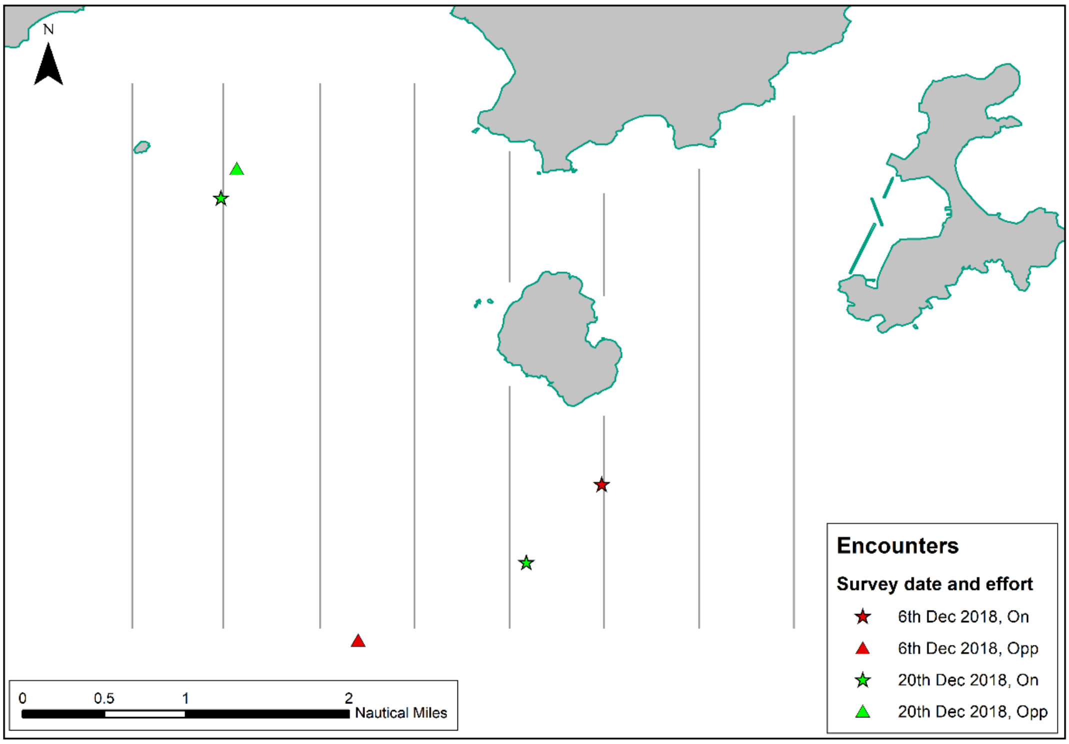


Figure 6.5 Location of sightings recorded during December 2018 Vessel-based Line-transect Survey

Figure 6.6 Photo taken of sighting recorded during December 2018 Vessel-based Line-transect Survey

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-May 2008 and Feb-April 2018, respectively). Only the AFCD long term monitoring data could be compared directly to the December 2018 Impact Survey results.

A review of the Beaufort Sea state December survey conditions between 2009 and 2017 (only data available from AFCD at time of writing; (AFCD 2018; 2017; 2016; 2015; 2014; 2013; 2012; 2011; 2010)) show that between 33.1% and 100% of survey effort has been conducted at Beaufort Sea State 2 or better in the past. For this project in December 2018, 98.9% of the survey was conducted at Beaufort Sea State 2 or better and, as such, survey conditions in December 2018 were within the % limits of previous AFCD surveys.

A review of all the porpoise sightings in the survey area for December between 2009-2017 indicate that there are fluctuations between the numbers of sightings usually recorded in December. For all weather conditions, and for the nine years data available, 2 years recorded no (0) sightings (2011 and 2012),2 years recorded 1 sighting (2010, 2015), 2 years recorded two (2) sightings (2016, 2017), 1 year recorded three (3) sightings (2013), 1 year recorded four (4) sightings (2009) and 1 year recorded five (5) sightings (2014). Effort varied considerably between years and the average number of sightings (per km) varied between 0 and 0.06 km^{-1}. There is no trend in encounter rates recorded by the AFCD long term monitoring programme, i.e., the highest encounter rate was recorded in 2009 and 2014 at 0.06 sightings km^{-1} (4 and 5 sightings, respectively), with encounter rates of 0 sightings km^{-1}, in 2011 and 2012. For December 2018, an encounter rate of 0.05 sightings km^{-1} is calculated, which is slightly less than the highest encounter rate recorded for this month previously, with reference to the AFCD long term marine mammal monitoring data (and higher than the December average 0.03 sightings km^{-1}). It must be highlighted that the very small survey area conducted for this monitoring typically result in 0 to 1 sightings per survey.

It is difficult to draw conclusions with regards to impacts on marine mammals as predicted in the EIA and the effectiveness of project mitigation measures during the initial phase of construction activities when porpoise sightings are typically absent or very low during the survey month. As surveys continue for this project, data shall be constantly re-evaluated across survey months to discern trends and impacts, if any. It is noted that an increase in sightings in the month of December is in agreement with the trend detailed in AFCD long term monitoring data.

6.4.2 PAM and Land-based Theodolite Tracking

These tracking surveys will be conducted during the peak season between December 2018 and May 2019 for 30 surveys during the peak season to provide good temporal coverage during the initial stage of the construction period.

6.4.3 Specific Mitigation Measures

Silt curtains were deployed for sand blanket laying works and DCM trial during the reporting period. Teams of two MMO were on duty for continuous monitoring of the Marine Mammal Exclusion Zone (MMEZ) for DCM works, cluster MMEZ 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 63 individuals being trained and the training records kept by the ET. From the Marine Mammal observation records and MMEZ monitoring log records, sightings of Finless Porpoise were observed within the cluster MMEZ on 29 December 2018 during this reporting month. The sightings of finless porpoise were first seen at 08:25 and last seen 08:55 on 29 December 2018. After the first observation of finless porpoise by MMO, all construction activities were ceased until 09:25 which was 30 minutes later the last seen of finless porpoise.

7. WHITE-BELLIED SEA EAGLE

7.1 Monitoring Requirement

7.1.1 On Shek Kwu Chau Island, a nest of WBSE is located about 60 m above ground within a hillside shrubland habitat, 130 m in-land from shore, about 550 m away from the proposed reclaimed land, with no human access. 3 phases monitoring programme will be comprise including: pre-construction phase, construction phase and operation phase.

7.1.2 The Pre-Construction WBSE monitoring was started on 30 January 2018 and the location of WBSE nest was confirmed on 21 February 2018 and it is located at the western part of SKC Island (Figure 1). Two adults and two chicks were also recorded on 5th March 2018 survey till the end of the Pre-construction monitoring on 15th May 2018. Construction Phase monitoring were carried out followed by the commencement of the Construction Phase on 28th June 2018.

7.2 WBSE Monitoring Parameters, Time, Frequency

7.2.1 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 and weekly monitoring will be continued for another ten weeks with daily monitoring at first week. The monitoring schedule during the reporting period is provided in **Appendix C**.

7.3 Monitoring Location

7.3.1 Since there is no suitable land-based along the coast of SKC, only boat surveys were conducted. On Shek Kwu Chau Island, a nest of WBSE is located about 60 m above ground within a hillside shrubland habitat, 130 m in-land from shore, about 550 m away from the proposed reclaimed land, with no human access.

7.4 Monitoring Methodology

7.4.1 Information to be collected included feeding, perching/roosting, preening, soaring, flying, nesting and territorial guarding and the time spent on each activity. The responses and reactions to any disturbance to the WBSEs were also recorded and examined in conjunction with the construction noise and/or other events in the vicinity. Other disturbances such as weather condition, or invasion by other fauna species were also recorded.

7.4.2 Binocular, scope, camera, lens and GPS device used are summarized as **Table 7.1** below:

Table 7.1 List of Equipment Used during Construction Phase Monitoring

Equipment	Quantity
Swarovski EL 8.5 x 42 Binocular	1

Equipment	Quantity
Swarovski EL Range 8 x 42 Binocular	1
Swarovski ATX 25-60 x 85 Spotting Scope	1
Canon 1Dx Mark II Camera	1
Canon EF300mm F2.8 Lens with Canon 2x Teleconverter	1
Canon PowerShot G7X Camera	1
Garmin GPSMAP 64S	1

7.4.3 If event such as absence of White-bellied Sea Eagle during a whole day of monitoring was found during WBSE monitoring, the actions in accordance with the Event and Action Plan should be carried out according to **Appendix M.**

7.5 Results and Observations

7.5.1 The sixth monthly construction phase monitoring was conducted on 3 and 18 December 2018 twice per month. Since there is no landing point long the western part of SKC, boat survey were used for the monitoring survey. In order to increase the chance of finding the WBSEs, monitoring survey was carried out early in the morning. The weather conditions of monitoring survey were shown in **Table 7.2**.

Table 7.2 Weather Conditions during the WBSE Monitoring

Date	Condition	Temperature (℃)
3 December 2018	- North force 2 to 3 - Sunny period	25
18 December 2018	- Northeast force 4 to 5 - Sunny period	18

7.5.2 During the monitoring survey, two adult WBSEs were recorded; one was standing on a tree and the other one was flying around the area next to the nest. Any disturbances from anthropogenic activities on the island were not recorded during the monitoring survey. However, there were fishing boats moving close the shore were recorded. Since the nesting tree is about 160m away from the shore and it is not accessible, fishing boat activities didn't show any direct disturbance to the WBSE nest. No invasion of other faun species was recorded as well.

7.5.3 No abnormal behaviour of the recorded adults during the December 2018 construction phase monitoring. Only two adults WBSE were recorded (**Figure 7.2**). All marine works during the fifth month construction period did not show any affects to the WBSE.

7.5.4 A construction phase monitoring will be continued during the core breeding season (between December and May) in order to monitor the utilization of the area by WBSE and their responses to construction disturbance.

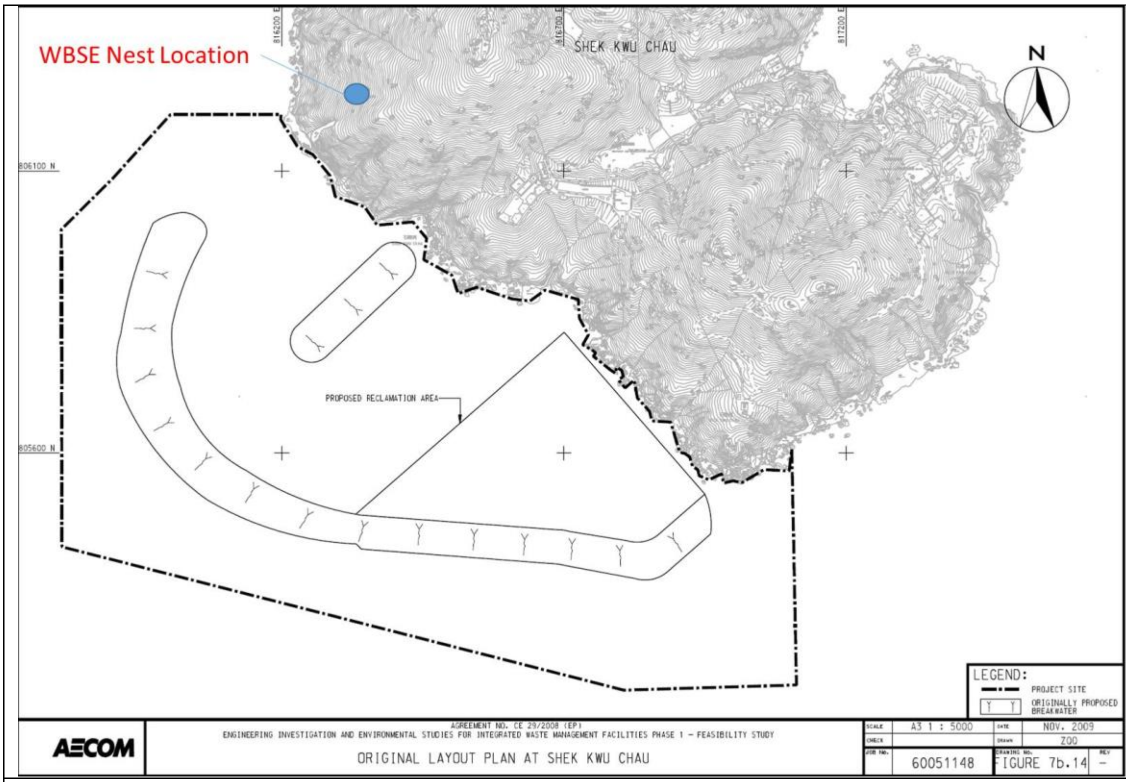


Figure 7.1 Location of WBSE Nest on SKC

7.5.5 Photo record of WBSE from the survey this month is shown below:

Figure 7.2 Photo Record of WBSE on SKC During the Reporting Period

8. Summary of Monitoring Exceedance, Complaints, Notification of Summons and Prosecutions

8.1 The Environmental Complaint Handling Procedure is shown in below **Figure 8.1**:

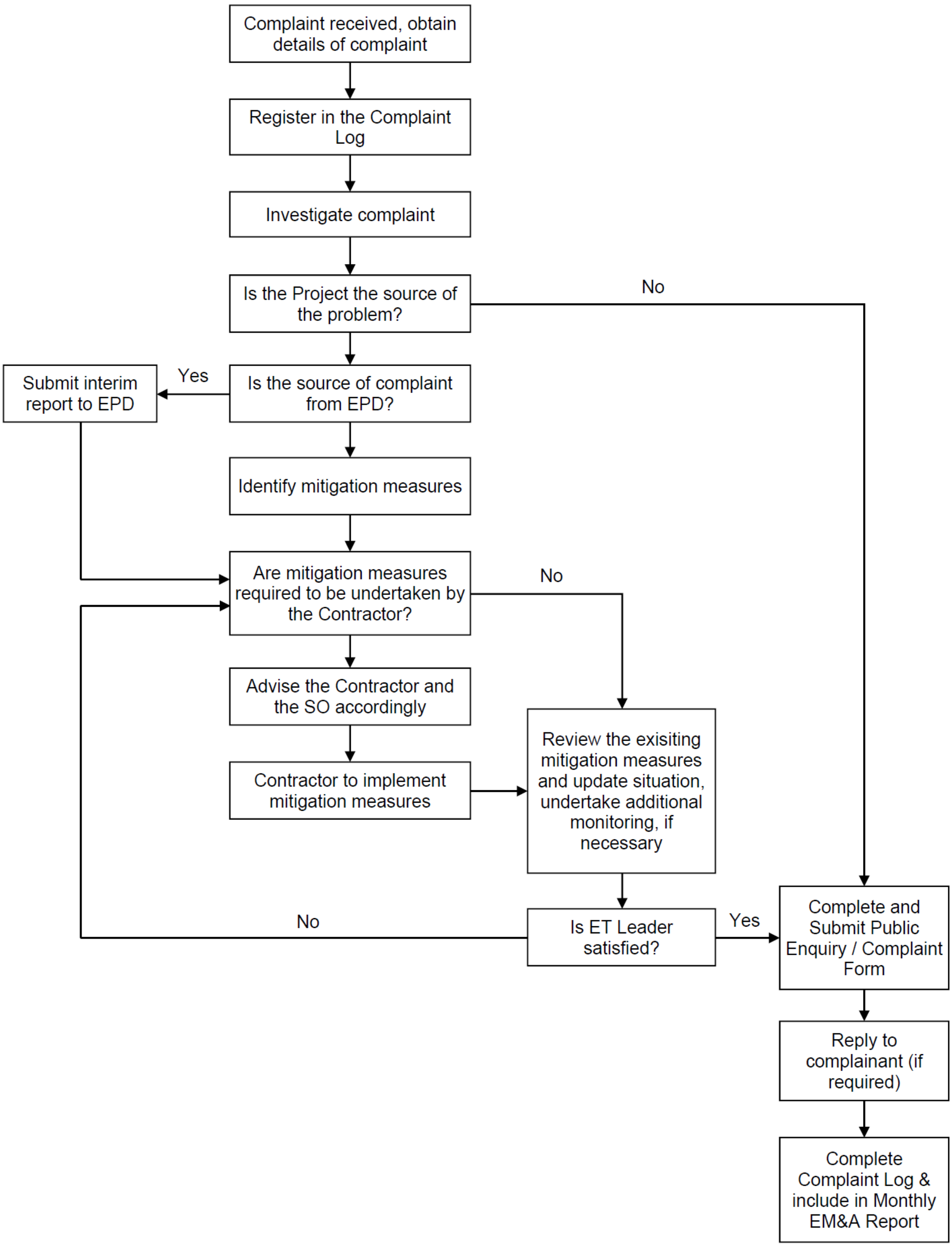


Figure 8.1 Environmental Complaint Handling Procedures

8.2 No exceedance of the Action and Limit Levels of the regular construction noise, coral and WBSE monitoring was recorded during the reporting period.

8.3 Eighty-eight of the water quality monitoring results for Suspended Solid (SS) obtained during the reporting period had exceeded the relevant Action or Limit Levels as summarized in **Table 8.1** and **Table 8.2**, where findings from investigations carried out immediately for the reporting period, had showed that these exceedances were unrelated to the Project as shown in **Appendix N**, however, environmental deficiencies of the Contractor on the implementation of silt curtain deployment system were spotted.

8.4 The Contractor has been reminded to facilitate the ET's investigation in the time frame stated at Event and Action plan under the updated EM&A Manual by promptly providing site records and information.

Table 8.1 Summary of SS Compliance Status at Impact Stations (Mid-Ebb Tide)

Date	B1	B2	B3	B4	CR1	CR2	F1	H1	S1	S2	S3	M1
3-12-2018												
5-12-2018												
7-12-2018												
10-12-2018												
12-12-2018												
15-12-2018												
17-12-2018												
19-12-2018												
21-12-2018												
24-12-2018												
27-12-2018												
29-12-2018												
31-12-2018												
No. of SS Exceedances	2	3	2	3	4	3	1	2	4	2	2	5

Note 1: Detailed results are presented in **Appendix D**

Legend:

	No exceedance of Action Level and Limit Level
	Exceedance of Action Level recorded at monitoring station located downstream of the Project based on dominant tidal flow
	Exceedance of Action Level recorded at monitoring station located upstream/unrelated stream (neither upstream nor downstream, far away) of the Project based on dominant tidal flow
	Exceedance of Limit Level recorded at monitoring station located downstream of the Project based on dominant tidal flow
	Exceedance of Limit Level recorded at monitoring station located upstream/unrelated stream of the Project based on dominant tidal flow
	Upstream/unrelated stream station with respect to IWMF Project during the respective tide based on dominant tidal flow
	Downstream station with respect to IWMF Project during the respective tide based on dominant tidal flow/station within the Project site
	NA for measurement
	Cancelled due to incident or adverse weather

Table 8.2 Summary of SS Compliance Status at Impact Stations (Mid-Flood Tide)

Date	B1	B2	B3	B4	CR1	CR2	F1	H1	S1	S2	S3	M1
3-12-2018												
5-12-2018												
7-12-2018												
10-12-2018												
12-12-2018												
15-12-2018												
17-12-2018												
19-12-2018												
21-12-2018												
24-12-2018												
27-12-2018												
29-12-2018												
31-12-2018												
No. of SS Exceedances	**8**	**6**	**6**	**6**	**4**	**4**	**4**	**3**	**3**	**3**	**4**	**4**

Note 1: Detailed results are presented in **Appendix D**

Legend:

	No exceedance of Action Level and Limit Level
	Exceedance of Action Level recorded at monitoring station located downstream of the Project based on dominant tidal flow
	Exceedance of Action Level recorded at monitoring station located upstream/unrelated stream (neither upstream nor downstream, far away) of the Project based on dominant tidal flow
	Exceedance of Limit Level recorded at monitoring station located downstream of the Project based on dominant tidal flow
	Exceedance of Limit Level recorded at monitoring station located upstream/unrelated stream of the Project based on dominant tidal flow
	Upstream/unrelated stream station with respect to IWMF Project during the respective tide based on dominant tidal flow
	Downstream station with respect to IWMF Project during the respective tide based on dominant tidal flow/station within the Project site
	NA for measurement
	Cancelled due to adverse weather

8.5 No project-related Action Level & Limit Level exceedance was recorded from 1 to 19 December 2018, however, environmental deficiencies of the Contractor on the implementation of silt curtain deployment system were spotted. For the exceedances on 27, 29 and 31 December 2018, where the investigation is undergoing and those corresponding incident reports would be marked as interim incident report. The investigation results on 27, 29 & 31 December 2018 will be presented in the next monthly report.

8.6 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.

8.7 No notification of summons and prosecution was received in the reporting period.

8.8 Statistics on complaints, notifications of summons and successful prosecutions are summarized in **Appendix O**.

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. In the reporting period, site inspections were carried out on 4, 14, 18 and 27 December 2018 at the site portions list in **Table 9.1** below.

Table 9.1 Site Inspection Record

Date	Inspected Site Portion	Time
4 December 2018	Portion 1, 1A & 1B (near SKC)	10:30-11:40
14 December 2018	Portion 1, 1A & 1B (near SKC)	10:20-11:40
18 December 2018	Portion 1, 1A & 1B (near SKC)	11:40-12:30
27 December 2018	Portion 1, 1A & 1B (near SKC)	10:30-11:25

9.2 One joint site inspection with IEC was carried out on 18 December 2018.

9.3 Environmental deficiencies were observed during weekly site inspection. Key observations during the site inspections and during the reporting period are summarized in **Table 9.2**.

Table 9.2 Site Observations

Date	Environmental Observations	Follow-up Status
4 December 2018 (Site inspection)	Observation(s) and Recommendation(s) 1. On FTB 19, sand on the pontoon surface nearly overflowed to the sea. 2. On 祥記 7, a big lump of sand was observed at the edge of the barge surface. Reminder: 1. Sewage and sullage on DL 9 should be properly treated before discharged.	1. Sand on the pontoon surface was picked up and pour into the hopper regularly to prevent overflow to the sea. Bounding would be installed around the pontoon to prevent overflowing. The Contractor was reminded to use an elongated soft hose to avoid the sand accumulation on the pontoon surface during sand blanket laying process. 2. A big lump of sand was cleaned at the edge of the barge surface.
14 December 2018 (Site inspection)	Observation(s) and Recommendation(s) 1. There was no major observation.	NA
17 December 2018 (Supervising Office's information)	Observation(s) and Recommendation(s) 1. Silt plume was observed near the pelican barge YGZH 1332. 2. On Shun Tat 32, sandy water was found outside the silt curtain.	1. Silt plume near pelican barge "YGZH 1332" vanished immediately after switching off the propeller of the barge. 2. The process of sand blanket laying was stopped immediately, and the silt curtain was repaired and then conducted with follow up diver inspection.

Date	Environmental Observations	Follow-up Status
18 December 2018 (Site inspection)	Observation(s) and Recommendation(s) 1. There was no major observation Reminded by SO: 1. The silt curtain of DCM barge should be kept at more higher than the water level.	NA
19 December 2018 (MMO observation)	Observation(s) and Recommendation(s) 1. Pelican barge deployed for the on-going sand blanket laying works was found left with track of observable silt plume from the back of the barge.	1. After switching off the propeller of the pelican barge, the observable silt plume had vanished. The Contractor designed to use the tugboat to manoeuvre the pelican barge especially in shallow water.
27 December 2018 (Site inspection)	Observation(s) and Recommendation(s) 1. There was no major observation. Reminder: 1. On ESC 62, good house keeping should be maintained. 2. On FTB 19, silt curtain of the pontoon should be ensured in good position before starting work.	NA

9.4 The Contractor has rectified all of the observations identified during environmental site inspections in the reporting period. Yet, the Contractor has been reminded to suspend the related works immediately if silt curtain is found any damage in the future, until fixing of damaged silt curtain is completed.

9.5 As deficiency of Silt Curtain system was spotted, 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.

9.6 According to the EIA Study Report, Environmental Permit, contract documents and Updated EM&A Manual, the mitigation measures detailed in the documents 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. FUTURE KEY ISSUES

10.1 Works to be undertaken in the next reporting month are:

- Marine Site Investigation Works
- Laying of Geotextile and Sand Blanket for DCM Injection Works
- DCM Injection Works
- Construction of Rockfill Rubble Mound

10.2 Potential environmental impacts arising from the above construction activities are mainly associated with water quality, construction noise, waste management and ecology.

10.3 The key environmental mitigation measures for the Project in the coming reporting period expected to be associated with the construction activities include:

- Reduction of noise from equipment and machinery on-site;
- Installation of silt curtains for the sand blanket laying works;
- Sorting, recycling, storage and disposal of general refuse and construction waste;
- Management of chemicals and avoidance of oil spillage on-site, especially under heavy rains and adverse weather; and
- Implementation of cluster MMEZ and inspection of enclosed environment within silt curtains as per DMPFP

10.4 The tentative schedule of regular construction noise, water quality and ecology monitoring in the next reporting period is presented in **Appendix P**. The regular construction noise, water quality and ecology monitoring will be conducted at the same monitoring locations in the next reporting period.

11. CONCLUSION AND RECOMMENDATIONS

11.1 This 6th monthly Environmental Monitoring and Audit (EM&A) Report presents the EM&A works undertaken during the period from 1 December 2018 to 31 December 2018, in accordance with the Updated EM&A Manual and the requirement under EP-429/2012/A and FEP-01/429/2012/A.

11.2 Construction noise, water quality, construction waste, marine mammal and WBSE monitoring were carried out in the reporting period. No project-related exceedance of the Action and Limit Level was recorded during 1 to 19 December 2018, however, environmental deficiencies of the Contractor on the implementation of silt curtain deployment system were spotted. For the exceedances on 27, 29 and 31 December 2018, where the investigation is undergoing and those corresponding incident reports would be marked as interim incident report. The investigation results on 27, 29 & 31 December 2018 will be presented in the next monthly report.

11.3 The Contractor has been reminded to facilitate the ET's investigation by promptly providing site records and information.

11.4 Weekly environmental site inspection was conducted during the reporting period. Environmental deficiencies were observed during site inspection and were rectified.

11.5 According to the environmental site inspections performed in the reporting month, the Contractor is reminded to pay attention on maintaining site tidiness and avoidance of sand accumulation on the pontoon surface during sand blanket laying works.

11.6 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 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.

11.7 No environmental complaint was received in the reporting period.

11.8 No notification of summons or prosecution was received since commencement of the Contract.

11.9 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	Remaining Duration	Start	Finish
EP_SP_66_12-WP-2-M0	Programme for Design and Construction Works	2835	22-Nov-17 A	26-Aug-25
EP_SP_66_12-WP-2-M0.01	Key Dates	2496	22-Nov-17	21-Sep-24
EP_SP_66_12-WP-2-M0.02	Contract Preliminaries	2807	19-Dec-17	26-Aug-25
EP_SP_66_12-WP-2-M0.03	Licence/Permit Applications	2252	15-Dec-17	13-Feb-24
EP_SP_66_12-WP-2-M0.04	General Submissions	1320	22-Nov-17	03-Jul-21
EP_SP_66_12-WP-2-M0.05	Design Submissions	1724	22-Nov-17 A	11-Aug-22
EP_SP_66_12-WP-2-M0.06	Procurement of Major Equipment	1903	13-Sep-18	28-Nov-23
EP_SP_66_12-WP-2-M0.07	Environmental Works	1708	05-Jan-18	09-Sep-22
EP_SP_66_12-WP-2-M0.08	Maritime Works	1277	29-Dec-17	27-Jun-21
EP_SP_66_12-WP-2-M0.08.3	Submissions	196	29-Dec-17	12-Jul-18
EP_SP_66_12-WP-2-M0.08.1	Marine Construction	1265	10-Jan-18	27-Jun-21
EP_SP_66_12-WP-2-M0.08.1.1	Phase I - Construction of Perimeter Seawalls	740	10-Jan-18	19-Jan-20
EP_SP_66_12-WP-2-M0.08.1.1.3	Marine Works Preparations	274	10-Jan-18	10-Oct-18
08-0900	Carry out hydrographic survey	14	10-Jan-18	23-Jan-18
08-1005	Ground Investigation for DCM Design	180	13-Feb-18	11-Aug-18
08-1010	Mobilization of DCM Barge for Load Test	30	14-May-18	12-Jun-18
08-1020	Mobilization of Remaining DCM Barge for Construction	30	11-Sep-18	10-Oct-18
08-1340(2)	Sediment Sample collection and testing Dumping Permit Application	21	05-Sep-18*	25-Sep-18
EP_SP_66_12-WP-2-M0.08.1.1.1	Seawall and Berth at DCM Area	676	15-Mar-18	19-Jan-20
08-1030	DCM Mix Trial (incl. Bench-scale testing and Lab Tests)	106	15-Mar-18	28-Jun-18
08-1040	DCM Pre-construction Site Trial and testing	43	29-Jun-18	10-Aug-18
08-1050	Static Load Test Preparation	31	11-Aug-18	10-Sep-18
08-1060	Carry out static loading test	22	11-Sep-18	02-Oct-18
08-1065(2)	Static load test report submission	8	03-Oct-18	10-Oct-18
08-1070	Geotextile Laying	60	11-Aug-18	09-Oct-18
08-1075(2)	Sand Blanket Laying	60	11-Aug-18	09-Oct-18
08-1080	DCM Injection Works (575,000m3, approx 6300 nr.)	120	11-Oct-18	07-Feb-19
08-1090	DCM Final Completion Tests	180	10-Nov-18	08-May-19
08-1100	Rubble Mound Laying (100,000m3 approx, @550m3/d)	180	09-Jan-19	07-Jul-19
08-1105(1)	Prefabrication for Caisson	282	24-Nov-18	01-Sep-19
08-1110	Caisson Laying (Total 50nrs, @2 nrs/week)	182	24-Mar-19	21-Sep-19
08-1120	Wave Wall Construction	120	22-Sep-19	19-Jan-20
EP_SP_66_12-WP-2-M0.08.1.1.2	Seawall at Dredging Area	295	25-Dec-18	15-Oct-19
08-1130	Dredging Works (26,000m3 @ 285m3/d avg. to comply EP Conditions 2.18)	110	25-Dec-18	13-Apr-19
08-1140	Lay Rock & Sand Fill	50	15-Mar-19	03-May-19
08-1150	Place Rubble Mound (35,000m3 approx., @550m3/d)	88	30-Mar-19	25-Jun-19
08-1155(2)	Fabrication and delivery of Precast Seawall Blocks (12,000nr. approx)	90	15-Mar-19	12-Jun-19
08-1160	Lay Concrete Block Walls (300m length approx. @4m/d)	80	29-Apr-19	17-Jul-19
08-1170	Insitu Concrete Wall Construction	90	18-Jul-19	15-Oct-19
EP_SP_66_12-WP-2-M0.08.1.2	Phase II - Reclamation, Breakwater and Berth Construction	999	03-Oct-18	27-Jun-21
EP_SP_66_12-WP-2-M0.08.1.2.1	Reclamation	999	03-Oct-18	27-Jun-21
08-1180	Geotextile Laying	100	03-Oct-18	10-Jan-19
08-1185(2)	Sand Blanket Laying	100	03-Oct-18	10-Jan-19
08-1190	Install Vertical Band Drain by Barge	160	10-Feb-19	19-Jul-19
08-1200	Reclamation fill up to +2.5mPD	375	22-Sep-19	30-Sep-20
08-1210	Reclamation fill from +2.5 to Formation Level	120	03-Jul-20	30-Oct-20
08-1220	Lay Surcharge	80	11-Sep-20	29-Nov-20
08-1230	Surcharge Period	180	30-Nov-20	28-May-21
08-1240	Remove Surcharge	85	04-Apr-21	27-Jun-21
EP_SP_66_12-WP-2-M0.08.1.2.2	Breakwater	583	02-Sep-19	06-Apr-21
08-1250	Geotextile and Sand Blanket Laying	45	22-Sep-19	05-Nov-19
08-1260	DCM Injection Works (290,000m3, approx 3200 nr.)	65	06-Nov-19	09-Jan-20
08-1270	DCM Final Completion Test	71	05-Jan-20	15-Mar-20
08-1280	Rubble Mound Laying (100,000m3 approx, @550m3/d)	188	05-Mar-20	08-Sep-20
08-1285(1)	Prefabrication for Caisson	411	02-Sep-19	16-Oct-20
08-1290	Caisson Laying (Total 43nrs, @2 nrs/week)	150	11-Jul-20	07-Dec-20
08-1300	Wave Wall Construction	120	08-Dec-20	06-Apr-21
EP_SP_66_12-WP-2-M0.08.1.2.3	Seawall and Berth at Marine Access	150	03-Jul-20	29-Nov-20
08-1310(2)	Prefabrication for Caisson (4nrs)	90	03-Jul-20	30-Sep-20
08-1320(2)	Caisson Laying (4nrs)	30	01-Oct-20	30-Oct-20
08-1330(2)	Wave Wall Construction	30	31-Oct-20	29-Nov-20
EP_SP_66_12-WP-2-M0.09	Foundation Works	397	12-Apr-21	13-May-22
EP_SP_66_12-WP-2-M0.09.0	Site Investigation and Preliminary Pile	46	12-Apr-21	27-May-21
EP_SP_66_12-WP-2-M0.09.1	Administration Bld Foundation	138	25-Nov-21	11-Apr-22
EP_SP_66_12-WP-2-M0.09.2	Waste Bunker & Tipping Hall Bld Foundation	203	13-May-21	01-Dec-21
EP_SP_66_12-WP-2-M0.09.3	Boiler & Flue Gas Bld Foundation	331	12-Apr-21	08-Mar-22
EP_SP_66_12-WP-2-M0.09.4	ACC Area Foundation	129	20-Sep-21	26-Jan-22
EP_SP_66_12-WP-2-M0.09.5	Turbine Hall Bld Foundation	142	28-Jun-21	16-Nov-21
EP_SP_66_12-WP-2-M0.09.6	Air Compressor Bld Foundation	28	17-Nov-21	14-Dec-21

Progarmme for Design and Construction Works
Summary Programme

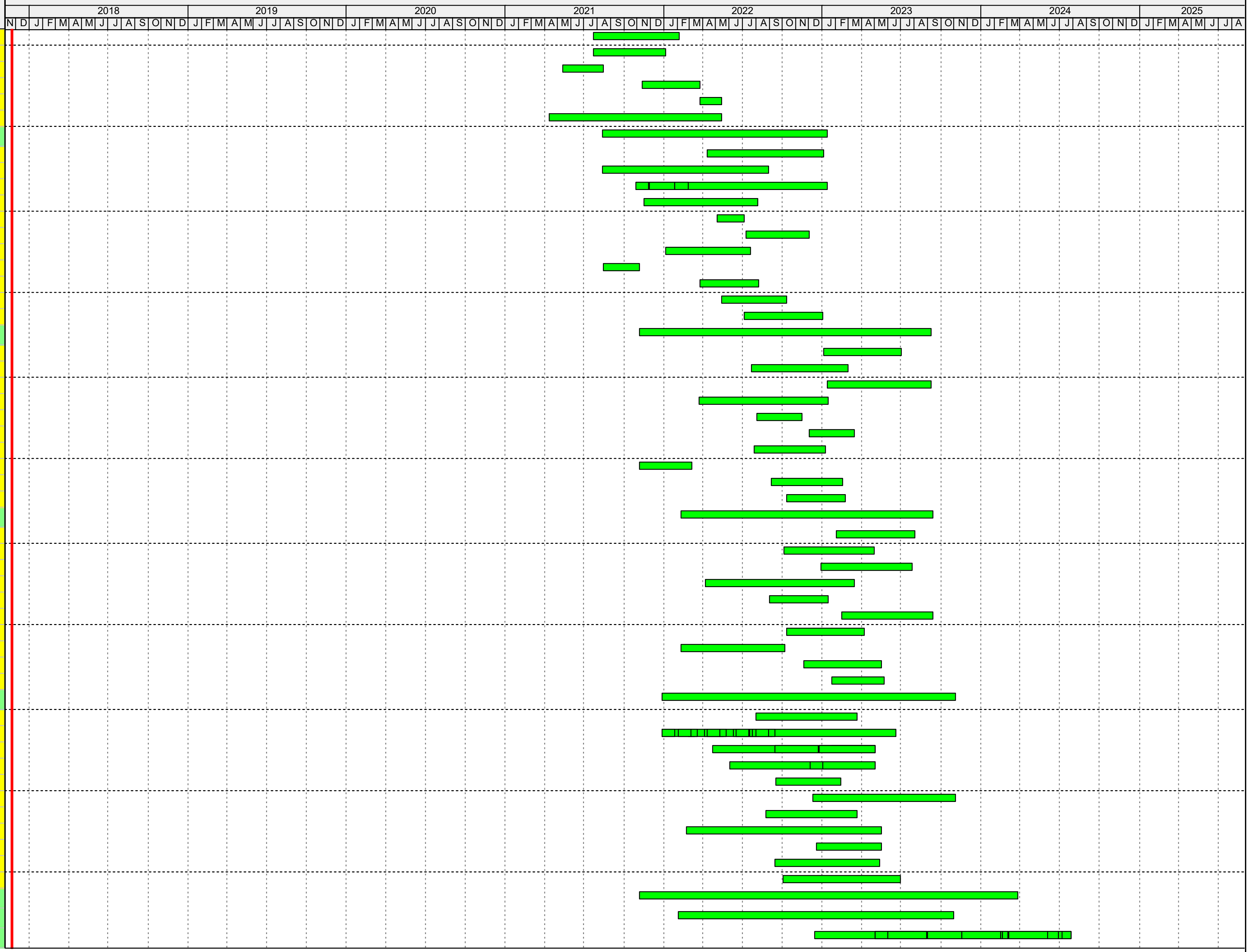
Date	Revision	Checked	Approved
04-Dec-17	Rev. 0 - 1st Issue		
16-Jul-18	Rev. 1 - Revised to SO's comments		
03-Sep-18	Rev. 2 - Revised to SO's comments		

Contract No. EP/SP/66/12
Integrated Waste Management Facilities, Phase 1

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

環境保護署 Environmental Protection Department

Activity ID	Activity Name	Remaining Duration	Start	Finish
EP_SP_66_12-WP-2-M0.09.7	Chimney Foundation	198	23-Jul-21	05-Feb-22
EP_SP_66_12-WP-2-M0.09.8	MT Plant & Desalination Bld Foundation	168	22-Jul-21	05-Jan-22
EP_SP_66_12-WP-2-M0.09.9	IWMF Substation Building Foundation	94	13-May-21	14-Aug-21
EP_SP_66_12-WP-2-M0.09.10	Access Ramp Bld Foundation	133	13-Nov-21	25-Mar-22
EP_SP_66_12-WP-2-M0.09.11	Reception Bld Foundation	49	26-Mar-22	13-May-22
EP_SP_66_12-WP-2-M0.09.12	Pipe Bridge Foundation	397	12-Apr-21	13-May-22
EP_SP_66_12-WP-2-M0.10	**Superstructural Works**	519	12-Aug-21	12-Jan-23
EP_SP_66_12-WP-2-M0.10.1	Administration Bld Structure	267	12-Apr-22	03-Jan-23
EP_SP_66_12-WP-2-M0.10.2	Waste Bunker & Tipping Hall Bld Sturcture	384	12-Aug-21	30-Aug-22
EP_SP_66_12-WP-2-M0.10.3	Boiler & Flue Gas Treatment Bld Structure	441	29-Oct-21	12-Jan-23
EP_SP_66_12-WP-2-M0.10.5	Turbine Hall Bld Structure	262	17-Nov-21	05-Aug-22
EP_SP_66_12-WP-2-M0.10.6	Air Compressor Bld Structure	63	04-May-22	05-Jul-22
EP_SP_66_12-WP-2-M0.10.7	Chimney Structure	145	10-Jul-22	01-Dec-22
EP_SP_66_12-WP-2-M0.10.8	MT Plant & Desalination Bld Structure	196	06-Jan-22	20-Jul-22
EP_SP_66_12-WP-2-M0.10.9	IWMF Substation Structure	84	15-Aug-21	06-Nov-21
EP_SP_66_12-WP-2-M0.10.10	Access Ramp Bld Structure	135	26-Mar-22	07-Aug-22
EP_SP_66_12-WP-2-M0.10.11	Reception Bld Structure	150	14-May-22	10-Oct-22
EP_SP_66_12-WP-2-M0.10.13	Pipe Bridge Structure	180	06-Jul-22	01-Jan-23
EP_SP_66_12-WP-2-M0.11	**Architectual Builders Works & Finishes**	672	07-Nov-21	09-Sep-23
EP_SP_66_12-WP-2-M0.11.1	Administration Bld ABWF Works	180	04-Jan-23	02-Jul-23
EP_SP_66_12-WP-2-M0.11.2	Weste Bunker & Tipping Hall Bld ABWF Works	225	21-Jul-22	02-Mar-23
EP_SP_66_12-WP-2-M0.11.3	Boiler & Flue Gas Bld ABWF Works	240	13-Jan-23	09-Sep-23
EP_SP_66_12-WP-2-M0.11.5	Turbine Hall Bld ABWF Works	299	23-Mar-22	15-Jan-23
EP_SP_66_12-WP-2-M0.11.6	Air Compress Bld ABWF Works	105	03-Aug-22	15-Nov-22
EP_SP_66_12-WP-2-M0.11.7	Chimney ABWF Works	105	02-Dec-22	16-Mar-23
EP_SP_66_12-WP-2-M0.11.8	MT Plant & Desalination Bld ABWF Works	165	28-Jul-22	08-Jan-23
EP_SP_66_12-WP-2-M0.11.9	IWMF Substation ABWF Works	120	07-Nov-21	06-Mar-22
EP_SP_66_12-WP-2-M0.11.10	Access Ramp Bld ABWF Works	165	05-Sep-22	16-Feb-23
EP_SP_66_12-WP-2-M0.11.11	Reception Bld ABWF Works	135	11-Oct-22	22-Feb-23
EP_SP_66_12-WP-2-M0.12	**Building Services Installation**	581	09-Feb-22	12-Sep-23
EP_SP_66_12-WP-2-M0.12.1	Administration Bld BS Works	180	03-Feb-23	01-Aug-23
EP_SP_66_12-WP-2-M0.12.2	Weste Bunker & Tipping Hall Bld BS Works	210	04-Oct-22	01-May-23
EP_SP_66_12-WP-2-M0.12.3	Boiler & Flue Gas Bld BS Works	210	29-Dec-22	26-Jul-23
EP_SP_66_12-WP-2-M0.12.5	Turbine Hall Bld BS Works	344	07-Apr-22	16-Mar-23
EP_SP_66_12-WP-2-M0.12.6	Air Compressor Bld BS Works	135	02-Sep-22	14-Jan-23
EP_SP_66_12-WP-2-M0.12.4	Chimney BS Works	210	15-Feb-23	12-Sep-23
EP_SP_66_12-WP-2-M0.12.8	MT Plant & Desalination Bld BS Works	180	11-Oct-22	08-Apr-23
EP_SP_66_12-WP-2-M0.12.9	IWMF Substation BS Works	241	09-Feb-22	07-Oct-22
EP_SP_66_12-WP-2-M0.12.10	Access Ramp Bld BS Works	180	19-Nov-22	17-May-23
EP_SP_66_12-WP-2-M0.12.11	Reception Bld BS Works	120	24-Jan-23	23-May-23
EP_SP_66_12-WP-2-M0.13	**Process Equipment Installation**	677	28-Dec-21	04-Nov-23
EP_SP_66_12-WP-2-M0.13.2	Waste Bunker & Tipping Hall Bld Process Equipment Installation	233	01-Aug-22	21-Mar-23
EP_SP_66_12-WP-2-M0.13.3	Boiler House & Flue Gas Treatment Bld Process Equipment Installation	539	28-Dec-21	19-Jun-23
EP_SP_66_12-WP-2-M0.13.4	ACC Area Equipment Installation	375	23-Apr-22	02-May-23
EP_SP_66_12-WP-2-M0.13.5	Turbine Hall Bld Equipment Installation	335	02-Jun-22	02-May-23
EP_SP_66_12-WP-2-M0.13.6	Air Compressor Bld Equipment Installation	150	17-Sep-22	13-Feb-23
EP_SP_66_12-WP-2-M0.13.8a	MT Process Bld Process Equipment Installation	330	10-Dec-22	04-Nov-23
EP_SP_66_12-WP-2-M0.13.8b	Desalination Bld Process Equipment Installation	210	24-Aug-22	21-Mar-23
EP_SP_66_12-WP-2-M0.13.09	IWMF Substation Bld Equipment Installation	450	22-Feb-22	17-May-23
EP_SP_66_12-WP-2-M0.13.10	Ramp & Storage Bld Process Equipment Installation	150	19-Dec-22	17-May-23
EP_SP_66_12-WP-2-M0.13.12	Equipment Installaion at External Area	240	15-Sep-22	12-May-23
EP_SP_66_12-WP-2-M0.13.13	External Process Pipe Works	271	03-Oct-22	30-Jun-23
EP_SP_66_12-WP-2-M0.14	**Landscape, External Road and Drains Works**	872	07-Nov-21	27-Mar-24
EP_SP_66_12-WP-2-M0.15	**Works By CLP**	633	04-Feb-22	30-Oct-23
EP_SP_66_12-WP-2-M0.16	**Testing & Commissioning**	591	15-Dec-22	27-Jul-24



Progarmme for Design and Construction Works
Summary Programme

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04-Dec-17	Rev. 0 - 1st Issue		
16-Jul-18	Rev. 1 - Revised to SO's comments		
03-Sep-18	Rev. 2 - Revised to SO's comments		

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	Air Pollution Control (Construction Dust) Regulation & Good Site Practices • Use of regular watering, with complete coverage, to reduce dust emissions from exposed site surfaces and unpaved roads, particularly during dry weather. • Use of frequent watering for particularly dusty construction areas and areas close to ASRs. • 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. • Open stockpiles shall be avoided or covered. Where possible, prevent placing dusty material storage piles near ASRs. • Tarpaulin covering of all dusty vehicle loads transported to, from and between site locations. • Establishment and use of vehicle wheel and body washing facilities at the exit points of the site. • Provision of wind shield and dust extraction units or similar dust mitigation measures at the loading	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* Des	C	O	Dec	Relevant Legislation and Guidelines	Implementation Status and Remarks
	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. • Imposition of speed controls for vehicles on unpaved site roads. Ten kilometers per hour is the recommended limit. • Where possible, routing of vehicles and positioning of construction plant should be at the maximum possible distance from ASRs • 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.								
S3b.6.3	Odour Removal by Deodorizers • Deodorizers with 95% odour removal efficiency would be installed for the air ventilated from the mechanical treatment plant before discharge to the atmosphere	Waste reception halls, the waste storage area,	IWMF Operator	✓		✓		EIAO-TM	N/A
S3b.8.2	Air Pollution Control and Stack Monitoring • Air pollution control and stack monitoring system will be installed for the IWMF to ensure that the emissions from the IWMF stack will meet the proposed target emission limits.	IWMF stack emissions / During design & operation phase	IWMF Operator	✓		✓		EIAO-TM, Supporting Document for Application for Variation of Environmental Permit (EP-	N/A

EIA Ref	Environmental Protection Measures / Mitigation Measures	Location / Timing	Implementation Agent	Implementation Stages* Des	C	O	Dec	Relevant Legislation and Guidelines	Implementation Status and Remarks
	• Voluntary Enhancement Measures in Flue Gas Cleaning and Emission Monitoring: 1. Two-stage bag filter system with reagent recirculation; 2. In addition to SCR, provide SNCR for removal of NO_x; tighten emission limit for half-hourly and daily NO_x to 160 mg/m^3 and 80 mg/m_3 respectively; 3. Well-mixed feed waste: to minimize the fluctuation of pollutant loading on the flue gas treatment system; 4. Two more AQMSs would be set up at South Lantau and Shek Kwu Chau respectively; 5. 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 6. Each incineration chamber shall be fitted with auxiliary burners to ensure complete burn out of the combustion gases.							429/2012)	
-	<u>Treated Fly Ash and Air Pollution Control Residues:</u> • During testing and commissioning, the Contractor shall sample and test every container of treated fly ash and air	IWMF stack emissions / During design & operation	IWMF Operator	✓		✓		Supporting Document for Application for Variation of Environmental	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		
	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. • 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 results confirm that the two samples conform to the limits and the criteria. If a test result confirms that any one of	phase						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		
	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. • 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 shipload which the samples are taken until the test results confirm that the samples conform to the limits and the								

EIA Ref	Environmental Protection Measures / Mitigation Measures	Location / Timing	Implementation Agent	Implementation Stages* Des	C	O	Dec	Relevant Legislation and Guidelines	Implementation Status and Remarks
	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.								
-	<u>Bottom Ash:</u> • 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. • 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 for conformance to the leachability criteria shown in Table 2 of the Environmental Permit. The	IWMF stack emissions / During design & operation phase	IWMF Operator	✓		✓		Supporting Document for Application for Variation of Environmental Permit (EP-429/2012)	N/A

EIA Ref	Environmental Protection Measures / Mitigation Measures	Location / Timing	Implementation Agent	Implementation Stages* Des	C	O	Dec	Relevant Legislation and Guidelines	Implementation Status and Remarks
	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. • Provided that there is no non-conformance to the leachability criteria shown in Table 2 of the Environmental Permit throughout a continuous sixmonth 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 taken until the test results confirm that the samples conform to the criteria. If the test result confirm that								

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		
	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	All the ventilation fans installed in the below will be provided with silencers or acoustics treatment. (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 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. (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.	Within IWMF area / Construction Period	EPD and its contractors	✓		✓		EIAO-TM	N/A

-	Voluntary Enhancement Measure • Provision of air-conditioner and double glazed windows to nearby NSR at Shek Kwu Chau (i.e. SARDA) as precautionary measures.	IWMF site	Design team, contractor, IWMF operator	✓	✓			Supporting Document for Application for Variation of Environmental Permit (EP-429/2012)	Implemented

* 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	<u>Drainage and Construction Site Runoff</u> 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: • 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. • Boundaries of earthworks should be surrounded by dykes or embankments for flood protection, as necessary. • 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	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* Des	C	O	Dec	Relevant Legislation and Guidelines	Implementation Status and Remarks
	• Water pumped out from foundation piles must be discharged into silt removal facilities. • 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. • 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. • Exposed soil areas should be minimized to reduce potential for increased siltation and contamination of runoff. • Earthwork final surfaces should be well compacted and subsequent permanent work or surface protection should be immediately performed. • Open stockpiles of construction materials or construction wastes on-site should be covered with tarpaulin or similar fabric during rainstorms.								
S5b.8.1.2	General Construction Activities Construction solid waste should be	Work site / During the	Contractor		✓			EIAO-TM; ProPECC PN 1/94;	Reminders provided to 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		
	collected, handled and disposed of properly to avoid entering to the nearby watercourses and public drainage system. Rubbish and litter from construction sites should also be collected to prevent spreading of rubbish and litter from the site area.	construction period						WPCO	
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	Under application of Discharge License
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)	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* Des	C	O	Dec	Relevant Legislation and Guidelines	Implementation Status and Remarks
	(General) Regulation should be observed and complied with for control of chemical wastes.								
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	Implemented
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	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: • Suitable containers should be used to hold the chemical wastes to avoid leakage or spillage during storage, handling and transport. • Chemical waste containers should be suitably labelled, to notify and warn the personnel who are handling the wastes, to avoid accidents.	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* Des	C	O	Dec	Relevant Legislation and Guidelines	Implementation Status and Remarks
	• Storage area should be selected at a safe location on site and adequate space should be allocated to the storage area.								
S5b.8.1.8	<u>Sewage Effluent</u> 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.	Work site / During the construction period	Contractor		✓			EIAO-TM; ProPECC PN 1/94; WPCO	N/A
S5b.8.1.9	<u>Reclamation and Construction of Breakwaters</u> • 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. • 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^3 to control the dredging rate. • Any gap that may need to be provided for marine access will be located at the middle of	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	Reminder was given to Contractor on proper silt curtains checking and reinforcement of silt curtains efficiency.

EIA Ref	Environmental Protection Measures / Mitigation Measures	Location / Timing	Implementation Agent	Implementation Stages* Des	C	O	Dec	Relevant Legislation and Guidelines	Implementation Status and Remarks
	the North Western seawall, away from the identified coral communities and will be shielded by silt curtains systems to control sediment plume dispersion. • 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. • 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. • The silt curtain system at marine access opening should be regularly checked and maintained to ensure proper functioning. • 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; • 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;								

EIA Ref	Environmental Protection Measures / Mitigation Measures	Location / Timing	Implementation Agent	Implementation Stages* Des	C	O	Dec	Relevant Legislation and Guidelines	Implementation Status and Remarks
	• No dredging should be carried out within 16m to the nearest non-translocatable coral community; • 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; • Closed grab dredger should be used to minimize the loss of sediment during the raising of the loaded grabs through the water column; • Frame-type silt curtains should be deployed around the dredging operations; • Floating-type silt curtains should be used to surround the circular cell during the sheetpiling work; • The descent speed of grabs should be controlled to minimize the seabed impact speed; • Barges should be loaded carefully to avoid splashing of material; • 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; • 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								

EIA Ref	Environmental Protection Measures / Mitigation Measures	Location / Timing	Implementation Agent	Implementation Stages* Des	C	O	Dec	Relevant Legislation and Guidelines	Implementation Status and Remarks
	that the dredging/reclamation works within area bounded by the breakwaters and the laying of cables would not operate within a distance of 80m from each other to avoid any accumulative impact on the environment (in case if such tight schedule is necessary). • 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. • No DCM works should be carried out within 100m to the nearest non-translocatable coral colony / colonies. • Silt curtains should be employed to enclose DCM field trial and any full scale DCM work to minimize the potential impacts on water aspect. • 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.								
S5b.8.2.3	<u>Operational Phase Discharges</u> 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.	Within IWMF site / During the operational phase	IWMF Operator	✓		✓		WPCO	N/A

EIA Ref	Environmental Protection Measures / Mitigation Measures	Location / Timing	Implementation Agent	Implementation Stages* Des	C	O	Dec	Relevant Legislation and Guidelines	Implementation Status and Remarks
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 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.	Within IWMF site / During the operational phase	IWMF Operator	✓		✓		WPCO; WDO	N/A
S5b.8.2.5	Refuse Entrapment 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	Transportation of bottom ash, fly ash and APC residues to WENT Landfill for disposal 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	<u>Good Site Practices</u> 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: • 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); • Provide staff training for proper waste management and chemical handling procedures; • Provide sufficient waste disposal points and regular waste collection; • 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 • Carry out regular cleaning and maintenance programme for drainage systems, sumps and oil interceptors; • Separate chemical wastes for special handling and disposed of to licensed facility for treatment; and • Employ licensed waste collector to collect waste.	Work Site/ During Construction Period	Contractor		✓			WDO; LDO; ETWB TCW No. 19/2005; EIAO-TM	Implemented; Chemical waste were collected by licensed chemical waste collector on 14/12/2018.

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	Waste Reduction Measures 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. Recommendations to achieve waste reduction include: • Design foundation works that could minimize the amount of excavated material to be generated. • Provide training to workers on the importance of site cleanliness and appropriate waste management procedures, including waste reduction, reuse and recycling; • Sort out demolition debris and excavated materials from demolition works to recover reusable/recyclable portions (i.e. soil, broken concrete, metal etc.); • Segregate and store different types of waste in different containers, skips or stockpiles to enhance reuse or recycling of materials and their proper disposal; • 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; • Proper storage and site practices to minimize the potential for damage or contamination of construction materials; and	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		
	• Plan and stock construction materials carefully to minimize amount of waste to be generated and to avoid unnecessary generation of waste.								
6b.5.1.7	Dredged Sediment – Application of Dumping Permit 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.	Seawall and Reclamation site / Construction Period	EPD and its contractor	✓	✓			DASO ETWB TCW 34/2002	Implemented, marine sediment samples have been collected.
6b.5.1.8	Dredged Sediment – Sediment Quality Report 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	Seawall and Reclamation site / Construction Period	EPD and its contractor	✓				DASO ETWB TCW 34/2002	Undergoing

EIA Ref	Environmental Protection Measures / Mitigation Measures	Location / Timing	Implementation Agent	Implementation Stages* Des	C	O	Dec	Relevant Legislation and Guidelines	Implementation Status and Remarks
	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	Dredged Sediment – Sediment Transportation 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.	Seawall and Reclamation site / Construction Period	EPD and its contractor		✓			DASO ETWB TCW 34/2002	N/A
6b.5.1.10	Construction and Demolition Materials In order to minimize the impact resulting from collection and transportation of C&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: • 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;	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		
	• A recording system for the amount of wastes generated, recycled and disposed (including the disposal sites) should be adopted for easy tracking; and • In order to monitor the disposal of C&D materials at public filling facilities and landfills and to control fly-tipping, a trip-ticket system should be adopted (refer to *ETWB TCW No. 31/2004*).								
6b.5.1.11 – 6b.5.1.12	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 All surplus C&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&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	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	Chemical Wastes 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.	Work Site/ During Construction Period	Contractor		✓			Waste Disposal (Chemical Waste) (General) Regulation	Implemented
6b.5.1.14	General Refuse General refuse should be stored in enclosed bins or compaction units separate from C&D materials. A licensed waste collector should be employed by the Contractor to remove general refuse from the site, separately from C&D materials. Preferably an enclosed and covered area should be provided to reduce the occurrence of 'wind blown' light material.	Work Site/ During Construction Period	Contractor		✓			Public Health and Municipal Services Ordinance	Reminders provided to 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.5.1.33	Biogas Generation 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: - gas monitoring after reclamation; - passive ventilation; - gas impermeable membrane; - ventilation with “at risk” rooms; - protection of utilities or below ground services; - precautions during construction works; - precautions prior to entry of belowground services	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	Good Site Practices It is recommended that the following good operational practices should be adopted to minimise waste management impacts: • Obtain the necessary waste disposal permits from the appropriate authorities, in accordance with the Waste Disposal Ordinance (Cap. 354) and Waste Disposal (Chemical	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* Des	C	O	Dec	Relevant Legislation and Guidelines	Implementation Status and Remarks
	Waste) (General) Regulation; • 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; • Use of a waste haulier licensed to collect specific category of waste; • 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. • Training of site personnel in proper waste management and chemical waste handling procedures; • Separation of chemical wastes for special handling and appropriate treatment at a licensed facility; • Routine cleaning and maintenance programme for drainage systems, sumps and oil interceptors; • Provision of sufficient waste disposal points and regular collection for disposal; • 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 • Implementation of a recording system for the amount of wastes generated, and disposed of (including recycled								

EIA Ref	Environmental Protection Measures / Mitigation Measures	Location / Timing	Implementation Agent	Implementation Stages* Des	C	O	Dec	Relevant Legislation and Guidelines	Implementation Status and Remarks
	the disposal sites).								
6b.5.2.2	Waste Reduction Measures 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: • 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; • 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 • Any unused chemicals or those with remaining functional capacity should be reused as far as practicable.	IWMF Site/ During Operation Period	IWMF Operator			✓			Implemented
6b.5.2.3	Storage, Handling, Treatment, Collection and Disposal of Incineration By-Products The following measures are recommended for the storage, handling and collection of the incineration by-products: • Ash should be stored in storage silos; • Ash should be handled and conveyed in closed systems fully	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* Des	C	O	Dec	Relevant Legislation and Guidelines	Implementation Status and Remarks
	segregated from the ambient environment; • Ash should be wetted with water to control fugitive dust, where necessary; • 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; • The ash should be transported in covered trucks or containers to the designated landfill site. 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.								
6b.6.3.1	<u>Fuel Oil Tank Construction and Test</u> • The fuel tank to be installed should be of specified durability. • Double skin tanks are preferred. • Underground fuel storage tank should be placed within a concrete pit.	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		
	• The concrete pit shall be accessible to allow regular tank integrity tests to be carried out at regular intervals. • Tank integrity tests should be conducted by an independent qualified surveyor or structural engineer. • Any potential problems identified in the test should be rectified as soon as possible.								
6b.6.3.1	<u>Fuel Oil Pipeline Construction and Test</u> • Installation of aboveground fuel oil pipelines is preferable; if underground pipelines are unavoidable, concrete lined trenches should be constructed to contain the pipelines. • Double skin pipelines are preferred. • Distance between the fuel oil refuelling points and the fuel oil storage tank shall be minimized. • Integrity tests for the pipelines should be conducted by an independent qualified surveyor or structural engineer at regular intervals. • Any potential problems identified in the test should be rectified as soon as possible.	Fuel Oil Pipelines/ 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		
6b.6.3.1	<u>Fuel Oil Leakage Detection</u> • Installation of leak detection device at storage tank and pipelines. • 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.	Fuel Oil Storage Tank and Pipelines/ During Design, Construction and Operation Periods	IWMF Contractor	✓	✓	✓			N/A
6b.6.3.1	<u>Fuel Oil Storage Tank Refuelling</u> • Storage tank refuelling (from road tanker) should only be conducted by authorized staff of the oil company using the company's standard procedures.	Fuel Oil Refuelling Point/ During Operation Period	IWMF Operator			✓			N/A
6b.6.3.1	<u>Fuel Oil Spillage Response</u> 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. • Training - Training on oil spill response actions should be given to relevant staff. The training shall cover the followings: ➢Tools & resources to combat oil spillage and fire, e.g. locations of	IWMF Site/ During Operation Period	IWMF Operator			✓			N/A

EIA Ref	Environmental Protection Measures / Mitigation Measures	Location / Timing	Implementation Agent	Implementation Stages* Des	C	O	Dec	Relevant Legislation and Guidelines	Implementation Status and Remarks
	oil spill handling equipment and fire fighting equipment; ➢General methods to deal with oil spillage and fire incidents; ➢Procedures for emergency drills in the event of oil spills and fire; and ➢Regular drills shall be carried out. • Communication -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. • Response Procedures -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. -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: ➢Identify and isolate the source of spillage as soon as possible. ➢Contain the oil spillage and avoid infiltration into soil/ groundwater and discharge to storm water channels.								

EIA Ref	Environmental Protection Measures / Mitigation Measures	Location / Timing	Implementation Agent	Implementation Stages* Des	C	O	Dec	Relevant Legislation and Guidelines	Implementation Status and Remarks
	➢Remove the oil spillage. ➢Clean up the contaminated area. ➢If the oil spillage occurs during storage tank refuelling, the refueling operation should immediately be stopped. ➢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.								
6b.6.3.2	Chemicals and Chemical Wastes Handling & Storage • Chemicals and chemical wastes should only be stored in suitable containers in purpose-built areas. • The storage of chemical wastes should comply with the requirements of the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes. • The storage areas for chemicals and chemical wastes shall have an impermeable floor or surface. The impermeable floor/ surface shall possess the following properties: - Not liable to chemically react with the materials and their containers to	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		
	be stored. - Able to withstand normal loading and physical damage caused by container handling - The integrity and condition of the impermeable floor or surface should be inspected at regular intervals to ensure that it is satisfactorily maintained ➢ 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. ➢ Storage containers shall be checked at regular intervals for their structural integrity and to ensure that the caps or fill points are tightly closed. ➢ Chemical handling shall be conducted by trained workers under supervision.								
6b.6.3.2	<u>Chemicals and Chemical Wastes Spillage Response</u> 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	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		
	incidents. General procedures to be undertaken in case of chemicals/ chemical waste spillages are presented below. • Training - Training on spill response actions should be given to relevant staff. The training shall cover the followings: ➢ Tools & resources to handle spillage, e.g. locations of spill handling equipment; ➢ General methods to deal with spillage; and ➢ Procedures for emergency drills in the event of spills. • Communication - Establish communication channel with FSD and EPD to report the spillage incident so that necessary assistance from relevant department can be quickly sought. • Response Procedures - Any spillage within the IWMF site should be reported to the Plant Manager. - Plant Manager shall attend to the spillage and initiate any appropriate actions needed to confine and clean up the spillage. The response								

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		
	procedures shall include the followings: ➢ Identify and isolate the source of spillage as soon as possible; ➢ Contain the spillage and avoid infiltration into soil/ groundwater and discharge to storm water channels (in case the spillage occurs at locations out of the designated storage areas); ➢ Remove the spillage; the removal method/ procedures documented in the Material Safety Data Sheet (MSDS) of the chemicals spilled should be observed; ➢ Clean up the contaminated area (in case the spillage ➢ The waste arising from the cleanup operation should be considered as chemical wastes.								
6b.6.3.3	<u>Preventive Measures for Incineration By-products Handling</u> The recommended measures listed below can minimize the potential contamination to the surrounding environment due to the incineration by-products: • Ash should be stored in storage silos; • Ash should be handled and	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		
	conveyed in closed systems fully • Ash should be wetted with water to control fugitive dust, where necessary; • 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; • The ash should be transported in covered trucks or containers to the designated landfill site.								
6b.6.3.4 - 6b.6.3.6	<u>Incident Record</u> 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. 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. In case any spillage or accidents results in significant land contamination, EPD should	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		
	be informed immediately and the IWMF operator should be responsible for the cleanup of the affected area. The responses procedures described in **Section 6b.6.3.1** and **Section 6b.6.3.2** of EIA report should be followed accordingly together with the land contamination assessment and remediation guidelines stipulated in the *Guidance Manual for Use of Risk-based Remediation Goals for Contaminated Land Management and the Guidance Note for Contaminated Land and Remediation.*								

* 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* Des	C	O	Dec	Relevant Legislation and Guidelines	Implementation Status and Remarks
7b.8.2.1	Measures to avoid direct loss of intertidal habitat • 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.	IWMF site	Design team	✓				EIAO-TM	N/A
7b.8.2.2	Measures to minimise loss of coastal subtidal habitat • 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 subtial habitat near shore.	IWMF site	Design team	✓				EIAO-TM	N/A
7b.8.2.3	Zero Discharge Scheme • The design scheme of the Project has avoided discharge of wastewater into the marine environment. mechanical treatment plant, or for onsite washdown and landscape.	IWMF site	Design team, IWMF operator	✓		✓		WPCO	N/A
7b.8.2.4	Measures to avoid loss of plant species of conservation importance • Landing portal construction works would not cause direct lost to the recorded	Cheung Sha landing portal	Design team, Contractor	✓	✓		✓	EIAO-TM	N/A

EIA Ref	Environmental Protection Measures / Mitigation Measures	Location / Timing	Implementation Agent	Implementation Stages* Des	C	O	Dec	Relevant Legislation and Guidelines	Implementation Status and Remarks
	individual of protected plant species, *Aquilaria sinensis*, 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.								
7b.8.3.1-7b.8.3.15	Measures to minimise water quality impact • Measures for water quality as recommended in **Section 5b** of the EIA Report should be implemented.	Work site	Design team, contractor, IWMF operator	✓	✓	✓	✓	EIAO-TM; ProPECC PN 1/94; WPCO	Implemented, deficiency on deployed silt curtain checking was spotted Reminder was given to Contractor on proper silt curtains checking
7b.8.3.16 - 7b.8.3.30	Measures to minimise disturbance on Finless Porpoise *Minimisation of Habitat Loss for Finless Porpoise* • 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.	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		
	Avoidance of peak season for finless porpoise occurrence • To minimise potential acoustic disturbance from construction activities 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: - sheet piling works for construction of cofferdam surrounding the reclamation area (Phase 1); - sheet piling works for construction of the shorter section of breakwater (Phase 1); - sheet piling works for construction of the remaining section of breakwater (Phase 3); - bored piling works for berth area (Phase 3); and - submarine cable installation works between Shek Kwu Chau and Cheung Sha. 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.								

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		
	• Submarine cable installation works • Since the DCM ground treatment and the installation of precast seawalls and breakwaters should generate no underwater acoustic disturbance to Finless Porpoise, no specific mitigation measures are required. *Opt for quieter construction methods and plants* • 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; • Non-percussive bore piling method would be adopted for the installation of tubular piles for the berth construction during Phase 3.								

EIA Ref	Environmental Protection Measures / Mitigation Measures	Location / Timing	Implementation Agent	Implementation Stages* Des	C	O	Dec	Relevant Legislation and Guidelines	Implementation Status and Remarks
	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. 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. • 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. • In addition, as marine mammals cannot be effectively monitored within the								

EIA Ref	Environmental Protection Measures / Mitigation Measures	Location / Timing	Implementation Agent	Implementation Stages* Des	C	O	Dec	Relevant Legislation and Guidelines	Implementation Status and Remarks
	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. *Marine mammal watching plan* • 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. 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. *Small openings at silt curtains*								

EIA Ref	Environmental Protection Measures / Mitigation Measures	Location / Timing	Implementation Agent	Implementation Stages* Des	C	O	Dec	Relevant Legislation and Guidelines	Implementation Status and Remarks
	• The openings for vessel access at the silt curtains should be as small as possible to minimise the risk of accidental entrance. *Adoption of regular travel route* • 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. *Vessel speed limit* • 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. • Passive acoustic monitoring and land-based theodolite monitoring surveys should be adopted to verify the predicted impacts and effectiveness of the proposed								

EIA Ref	Environmental Protection Measures / Mitigation Measures	Location / Timing	Implementation Agent	Implementation Stages* Des	C	O	Dec	Relevant Legislation and Guidelines	Implementation Status and Remarks
	mitigation measures. *Training of Staff* • Staff, including captains of vessels, should be aware of the guidelines for safe vessel operations in the presence of cetaceans during construction and operation phases. Adequate trainings should be provided								
7b.8.3.31 - 7b.8.3.34	<u>Measures to minimise impact on corals</u> *Coral translocation* • 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). • The REA survey results suggest that the 198 directly affected coral colonies were	IWMF site	Design team, contractor, IWMF operator	✓	✓	✓	✓	EIAO-TM	Implemented, tagged coral found missing after hitting by typhoons Re-tagging of 10 coral colonies at indirect impact site was conducted, retagging of coral colonies at control site will be carried out in December 2018 due to adverse weather.

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		
	attached to movable rocks (less than 50 cm in diameter). It is technically feasible to translocate them to avoid direct loss. • 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 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. *Coral monitoring programme* • 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. *Phasing of Works* • To minimize environmental impacts, the proposed phasing of construction works has been carefully designed to reduce the								

EIA Ref	Environmental Protection Measures / Mitigation Measures	Location / Timing	Implementation Agent	Implementation Stages* Des	C	O	Dec	Relevant Legislation and Guidelines	Implementation Status and Remarks
	amount of concurrent works, hence minimize SS elevation and the associated impacts on corals.								
7b.8.3.35 - 7b.8.3.41	<u>Specific measures to minimize disturbance on breeding White-bellied Sea Eagle</u> *Avoidance of noisy works during the breeding season of White-bellied Sea Eagle* • To minimize potential noise disturbance 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: - sheet piling works for construction of cofferdam surrounding the reclamation area (Phase 1); - sheet piling works for construction of the shorter section of breakwater (Phase 1); - sheet piling works for construction of the remaining section of breakwater (Phase 3); and - bored piling works for berth area (Phase 3). *Opt for quieter construction methods and plants* • To minimise potential construction noise	IWMF site, marine traffic route	Design Team, Contractor, IWMF operator	✓	✓	✓	✓	EIAO-TM	Implemented

EIA Ref	Environmental Protection Measures / Mitigation Measures	Location / Timing	Implementation Agent	Implementation Stages* Des	C	O	Dec	Relevant Legislation and Guidelines	Implementation Status and Remarks
	disturbance on WBSE, quieter construction methods and plants should be adopted. The recommended noise mitigation measures in the **Noise** chapter (**Section 4b.8** of the EIA Report) should be implemented to minimise potential noise disturbance to acceptable levels. *Restriction on vessel access near the nest of White-bellied Sea Eagle* • 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. *White-bellied Sea Eagle monitoring programme* • 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								

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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	after the completion of construction works). • 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&A Manual. *Education of staff* • 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. *Minimisation of Glare Disturbance* • 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 un-necessary outdoor lighting should be avoided, and in-ward and down-ward pointing of lights should be adopted.								

EIA Ref	Environmental Protection Measures / Mitigation Measures	Location / Timing	Implementation Agent	Implementation Stages* Des	C	O	Dec	Relevant Legislation and Guidelines	Implementation Status and Remarks
-	Construction of Seawall/Breakwaters • To widen the open channel between the Artificial Island and Shek Kwu Chau. • To design the precast concrete seawall with environmental friendly features.	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	Opt for Quieter Construction Methods and Plants • Quieter construction methods and plants should be used to minimise disturbance to the nearby terrestrial habitat and the associated wildlife.	Work site	Design team, contractor, IWMF operator	✓	✓	✓	✓	EIAO-TM	Implemented
7b.8.3.43	Measures to minimize impacts from artificial lighting • Unnecessary lighting should be avoided, and shielding of lights should be provided to minimize disturbance from light pollution on fauna groups.	IWMF site	Design team, contractor, IWMF operator	✓	✓	✓		EIAO-TM	Implemented
7b.8.3.44 - 7b.8.3.45	Measures to minimize accidental spillage • 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.	Work site	Contractor, IWMF operator		✓	✓	✓	EIAO-TM	Deficiency of Mitigation Measures but rectified by the Contractor

EIA Ref	Environmental Protection Measures / Mitigation Measures	Location / Timing	Implementation Agent	Implementation Stages* Des	C	O	Dec	Relevant Legislation and Guidelines	Implementation Status and Remarks
	• 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.								
7b.8.3.46	<u>Measures to minimise sewage effluent</u> • Temporary sanitary facilities, such as portable chemical toilets, should be employed on-site where necessary to handle sewage from the workforce.	Work site	Contractor		✓			EIAO-TM	N/A
7b.8.3.47	<u>Measures to minimise drainage and construction runoff</u> • Potential ecological impacts resulted from potential degradation of water quality due to unmitigated surface runoff could be minimised via the detailed mitigation measures in **Section 5b.8** of the EIA Report. The following presents some of the mitigation measures: - On-site drainage system with implemented sedimentation control facilities. - Channels, earth bunds or sand bag barriers should be provided on site to	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		
	direct storm water to silt removal facilities. - Provision of embankment at boundaries of earthworks for flood protection. - Water pumped out from foundation piles must be discharged into silt removal facilities. - During rainstorms, exposed slope/soil surfaces should be covered by tarpaulin or other means, as far as practicable. - Exposed soil surface should be minimized to reduce siltation and runoff. - Earthwork final surfaces should be well compacted. Subsequent permanent surface protection should be immediately performed. - Open stockpiles of construction materials, and construction wastes on-site should be covered with tarpaulin or similar fabric during rainstorms.								
7b.8.3.48	Measures to minimise impacts from general construction activities • 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	Work site	Contractor		✓			EIAO-TM	Implemented

EIA Ref	Environmental Protection Measures / Mitigation Measures	Location / Timing	Implementation Agent	Implementation Stages* Des	C	O	Dec	Relevant Legislation and Guidelines	Implementation Status and Remarks
	construction sites on a regular basis.								
7b.8.3.49	Pest Control Good waste management practices should be adopted at the IWMF in order to minimise the risk of introduction of pest to the island: - Transportation of wastes in enclosed containers - Waste storage area should be well maintained and cleaned - Waste should only be disposed of at designated areas - Timely removal of the newly arrived waste - Removal of items that are capable of 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	IWMF site	IWMF operator			✓			N/A
7b.8.3.50	Control of Marine Habitat Quality during Operation Phase • 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	IWMF site	IWMF operator			✓		EIAO-TM; WPCO	N/A

EIA Ref	Environmental Protection Measures / Mitigation Measures	Location / Timing	Implementation Agent	Implementation Stages* Des	C	O	Dec	Relevant Legislation and Guidelines	Implementation Status and Remarks
	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.								
7b.8.4.1 – 7b.8.4.8	<u>Compensation of loss of important habitat of Finless Porpoise</u> *Designation of Marine Park* • 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. • 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.	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		
	• 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. • In addition, a management plan for the proposed marine park should be proposed, covering information on the responsible departments for operation and management (O&M) of the marine park, as well as the O&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. • The Project Proponent should provide								

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		
	assistance to AFCD during the process of the marine park designation. .								
7b.8.5.1 – 7b.8.5.4	Additional Enhancement or Precautionary Measures *Deployment of Artificial Reefs* • 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 designation of marine park. *Release of Fish Fry at Artificial Reefs and Marine Park* • 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.	Within the proposed marine park under this study	Project Proponent	✓		✓		EIAO-TM	N/A

* 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	<u>Measure to minimize loss of and disturbance on fisheries resources</u> • 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.	IWMF site	Design team, contractor	✓	✓		✓	EIAO-TM	N/A
8b.8.1.3	<u>Measure to minimize impingement and entrainment</u> • 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.	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	<u>Measures to control water quality</u> • No wastewater effluent, anti-fouling agent, heavy metals and other contaminants would be released during operation phase of the Project. • 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	Work site, IWMF site	Design team, contractor, IWMF operator	✓	✓	✓	✓	EIAO-TM	Implemented, deficiency on deployed silt curtain checking was spotted Reminder was given to Contractor on proper silt curtains checking
8b.8.1.7 – 8b.8.1.8	<u>Additional Enhancement / Precautionary Measures</u> • 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. *Release of Fish Fry at Artificial Reefs* • 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.	Within the proposed marine park in the waters between Soko Islands and Shek Kwu Chau	Project Proponent	✓		✓		EIAO-TM	N/A

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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	Landscape Design 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. 2) Use of tree species of dense tree crown to serve as visual barrier. 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. 4) Planting strip along the periphery of the project site. 5) Selected tree species suitable for the coastal condition.	Work site / During design & construction phases	Contractor	✓	✓				N/A

EIA Ref	Environmental Protection Measures / Mitigation Measures	Location / Timing	Implementation Agent	Implementation Stages* Des	C	O	Dec	Relevant Legislation and Guidelines	Implementation Status and Remarks
S10b.10 MLVC-03	<u>Adoption of Natural Features of the Existing Shoreline</u> 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. 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.	Work site / During construction phase	Contractor		✓				N/A
S10b.10 MLVC-04	<u>Greening Design (Rooftop & Vertical Greening)</u> 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. 2) Sufficient space between concrete enclosure and stack to minimize heat transfer. 3) Introduction of landscape decks at the stack to further enhance the overall natural and green concept unique for this site.	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	Visual Mitigation and Aesthetic Design 1) Use of natural materials with recessive color to minimize the bulkiness of the building. 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. 3) Color of the chimney in a gradual changing manner to match with the color of the sky. 4) Provision of observation deck for public enjoyment at the top of the chimney to diminish the feeling of chimney. 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. 6) Integration of the visitor’s walkway with different material façade design of incinerator plant to enhance the aesthetic quality.	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	Control of Operation Time 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

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Appendix C Impact Monitoring Schedule of the Reporting Month

Impact Monitoring Schedule for IWMF

Dec-18

Sun	Mon	Tue	Wed	Thu	Fri	Sat
						1
2	3 Impact Coral REA Survey + Coral Post-Translocation Monitoring + Coral Re-tagging + Ecology monitroing for WBSE Water Quality monitoring for B1, B2, B3, B4, H1, C1, C2, F1, CR1, CR2 & M1 <u>Tidal Period:</u> Ebb Tide: 06:28 - 12:11 Flood Tide: 12:11 - 19:14 <u>Monitoring Time:</u> ***** Mid-ebb: 08:00 - 11:04 Mid-flood: 13:57 - 17:27 Daytime Noise monitoring for M1, M2 & M3	4	5 Impact Water Quality monitoring for B1, B2, B3, B4, H1, C1, C2, F1, CR1, CR2 & M1 <u>Tidal Period:</u> Ebb Tide: 08:38 - 13:31 Flood Tide: 13:31 - 20:03 <u>Monitoring Time:</u> Mid-ebb: 09:19 - 12:49 Mid-flood: 15:02 - 18:32	6 Impact Ecology monitoring for Marine Mammals by Vessel-based Line-transect Survey	7 Impact Water Quality monitoring for B1, B2, B3, B4, H1, C1, C2, F1, CR1, CR2 & M1 <u>Tidal Period:</u> Ebb Tide: 10:33 - 14:40 Flood Tide: 14:40 - 20:56 <u>Monitoring Time:</u> Mid-ebb: 10:51 - 14:21 Mid-flood: 16:03 - 19:33	8
9	10 Impact Water Quality monitoring for B1, B2, B3, B4, H1, C1, C2, F1, CR1, CR2, M1, S1, S2 & S3 <u>Tidal Period:</u> Ebb Tide: 12:45 - 16:00 Flood Tide: 05:29 - 12:45 <u>Monitoring Time:</u> Mid-ebb: 12:37 - 16:07 ***#** Mid-flood: 08:00 - 10:52 Daytime Noise monitoring for M1, M2 & M3	11	12 Impact Water Quality monitoring for B1, B2, B3, B4, H1, C1, C2, F1, CR1, CR2, M1, S1, S2 & S3 <u>Tidal Period:</u> Ebb Tide: 14:00 - 17:00 Flood Tide: 06:45 - 14:00 <u>Monitoring Time:</u> **#$** Mid-ebb: 14:09 - 16:51 Mid-flood: 08:37 - 12:07	13	14	15 Impact Water Quality monitoring for B1, B2, B3, B4, H1, C1, C2, F1, CR1, CR2, M1, S1, S2 & S3 <u>Tidal Period:</u> Ebb Tide: 17:55 - 20:36 Flood Tide: 09:00 - 17:55 <u>Monitoring Time:</u> **#$** Mid-ebb: 18:03 - 20:28 Mid-flood: 11:42 - 15:12
16	17 Impact Water Quality monitoring for B1, B2, B3, B4, H1, C1, C2, F1, CR1, CR2, M1, S1, S2 & S3 <u>Tidal Period:</u> Ebb Tide: 03:23 - 10:36 Flood Tide: 10:36 - 18:35 <u>Monitoring Time:</u> ***#** Mid-ebb: 08:00 - 08:44 Mid-flood: 12:50 - 16:20 Daytime Noise monitoring for M1, M2 & M3	18 Impact Ecology monitroing for WBSE	19 Impact Water Quality monitoring for B1, B2, B3, B4, H1, C1, C2, F1, CR1, CR2, M1, S1, S2 & S3 <u>Tidal Period:</u> Ebb Tide: 06:32 - 11:20 Flood Tode: 11:20 - 18:45 <u>Monitoring Time:</u> ***#** Mid-ebb: 08:00 - 10:41 Mid-flood: 13:17 - 16:47	20 Impact Ecology monitoring for Marine Mammals by Vessel-based Line-transect Survey	21 Impact Water Quality monitoring for B1, B2, B3, B4, H1, C1, C2, F1, CR1, CR2, M1, S1, S2 & S3 <u>Tidal Period:</u> Ebb Tide: 08:48 - 13:22 Flood Tide: 13:22 - 19:57 <u>Monitoring Time:</u> Mid-ebb: 09:20 - 12:50 Mid-flood: 14:54 - 18:24	22
23	24 Impact Water Quality monitoring for B1, B2, B3, B4, H1, C1, C2, F1, CR1, CR2, M1, S1, S2 & S3 <u>Tidal Period:</u> Ebb Tide: 11:38 - 15:27 Flood Tide: 05:00 - 11:38 <u>Monitoring Time:</u> Mid-ebb: 11:47 - 15:17 ***#** Mid-flood: 08:00 - 10:04 Daytime Noise monitoring for M1, M2 & M3	25	26	27 Impact Water Quality monitoring for B1, B2, B3, B4, H1, C1, C2, F1, CR1, CR2, M1, S1, S2 & S3 <u>Tidal Period:</u> Ebb Tide: 11:38 - 15:27 Flood Tode: 05:00 - 11:38 <u>Monitoring Time:</u> Mid-ebb: 14:26 - 17:56 Mid-flood: 08:59 - 12:29	28	29 Impact Water Quality monitoring for B1, B2, B3, B4, H1, C1, C2, F1, CR1, CR2, M1, S1, S2 & S3 <u>Tidal Period:</u> Ebb Tide: 16:00 - 20:26 Flood Tide: 08:50 - 16:00 <u>Monitoring Time:</u> Mid-ebb: 16:28 - 19:58 Mid-flood: 10:40 - 14:10
30	31 Impact Water Quality monitoring for B1, B2, B3, B4, H1, C1, C2, F1, CR1, CR2, M1, S1, S2 & S3 <u>Tidal Period:</u> Ebb Tide: 04:58 - 10:33 Flood Tide: 10:33 - 18:00 <u>Monitoring Time:</u> ***#** Mid-ebb: 08:00 - 09:30 Mid-flood: 12:31 - 16:00 Daytime Noise monitoring for M1, M2 & M3					

Remarks:
1. Daytime Noise Monitoring (07:00-1900), Evening Time Noise Monitoring (1900-2300), Night Time Noise Monitoring (2300-0700)
2. Water Quality Monitoring for S1,S2 and S3 will only conduct during DCM works, refer to Detailed DCM Plan

Note:
* - as per Marine Department Notice No 107 of 2018, all vessels employed for the works should stay in the works area outside the hours of works (0700 to 2300). Due to safty concern, Water Quality Monitoring would start at 0800 and end at 2200.
# - Prioritized routing: Mid-Ebb: C1→S3→CR2→CR1→H1→Remaining stations and Mid-Flood: C2→CR1→S3→CR2→H1→Remaining stations
$ - Since predicted tide is shorter than 3.5 hours, method of 90% tidal period as monitoring time is approached.

Appendix D Water Quality Monitoring Data

Location	Date (YYYYMMDD)	Weather	Sea Condition	Tidal	Water Level note 1	Depth (m)	Time (HH:MM)	DO (mg/L)	pH	Sal (ppt)	Temp (°C)	Turbidity (NTU) note 4	SS (mg/L)	Total Alkalinity (mg/L) note 3	Current Velocity note 3	Direction in NESW note 3
C1	20181203	Sunny	Light	Mid-Ebb	B	10.5	8:29	7.74	8	29.02	23.5	4.83	7	-	-	-
C1	20181203	Sunny	Light	Mid-Ebb	B	10.5	8:29	7.74	8.01	29.07	23.5	4.83	8	-	-	-
C1	20181203	Sunny	Light	Mid-Ebb	M	5.8	8:29	7.79	8.06	28.94	23.4	3.33	6	-	-	-
C1	20181203	Sunny	Light	Mid-Ebb	M	5.8	8:30	7.82	8.06	29.5	23.4	3.29	7	-	-	-
C1	20181203	Sunny	Light	Mid-Ebb	S	1	8:30	7.78	8.06	29.36	23.4	2.64	5	-	-	-
C1	20181203	Sunny	Light	Mid-Ebb	S	1	8:30	7.77	8	29.4	23.4	2.61	5	-	-	-
B1	20181203	Sunny	Light	Mid-Ebb	B	4.3	8:58	7.7	8.1	29.11	23.4	4.85	7	-	-	-
B1	20181203	Sunny	Light	Mid-Ebb	B	4.3	8:58	7.7	8.03	29.24	23.5	4.88	7	-	-	-
B1	20181203	Sunny	Light	Mid-Ebb	S	1	8:59	7.7	8.07	29.21	23.5	2.25	7	-	-	-
B1	20181203	Sunny	Light	Mid-Ebb	S	1	8:59	7.71	8.06	29.4	23.4	2.2	6	-	-	-
B2	20181203	Sunny	Light	Mid-Ebb	B	4.4	9:17	7.9	8.1	29	23.4	4.5	7	-	-	-
B2	20181203	Sunny	Light	Mid-Ebb	B	4.4	9:18	7.86	8.06	29.28	23.5	4.48	7	-	-	-
B2	20181203	Sunny	Light	Mid-Ebb	S	1	9:18	7.9	8.11	29.34	23.5	2.83	8	-	-	-
B2	20181203	Sunny	Light	Mid-Ebb	S	1	9:18	7.94	8	29.08	23.5	2.79	9	-	-	-
H1	20181203	Sunny	Light	Mid-Ebb	B	7.6	9:36	8.23	8.14	29.1	23.4	4.12	6	-	-	-
H1	20181203	Sunny	Light	Mid-Ebb	B	7.6	9:36	8.24	8.13	29.12	23.4	4.09	6	-	-	-
H1	20181203	Sunny	Light	Mid-Ebb	M	4.3	9:37	8.28	8.12	29.38	23.5	3.44	4	-	-	-
H1	20181203	Sunny	Light	Mid-Ebb	M	4.3	9:37	8.27	8.01	29.04	23.4	3.4	5	-	-	-
H1	20181203	Sunny	Light	Mid-Ebb	S	1	9:37	8.27	8.13	29.02	23.4	2.36	4	-	-	-
H1	20181203	Sunny	Light	Mid-Ebb	S	1	9:38	8.27	8.09	29.45	23.4	2.32	5	-	-	-
CR1	20181203	Sunny	Light	Mid-Ebb	B	7.4	9:51	8.22	8.09	29.09	23.5	4.17	6	-	-	-
CR1	20181203	Sunny	Light	Mid-Ebb	B	7.4	9:52	8.21	8.05	29.28	23.5	4.15	6	-	-	-
CR1	20181203	Sunny	Light	Mid-Ebb	M	4.2	9:52	8.16	8.12	29.45	23.5	3.16	6	-	-	-
CR1	20181203	Sunny	Light	Mid-Ebb	M	4.2	9:52	8.21	8.09	29.07	23.4	3.11	6	-	-	-
CR1	20181203	Sunny	Light	Mid-Ebb	S	1	9:53	8.26	8.15	29.06	23.4	2.79	6	-	-	-
CR1	20181203	Sunny	Light	Mid-Ebb	S	1	9:53	8.21	8.04	29.43	23.5	2.74	7	-	-	-
B3	20181203	Sunny	Light	Mid-Ebb	B	4.2	10:23	7.84	8.15	29.17	23.5	4.15	4	-	-	-
B3	20181203	Sunny	Light	Mid-Ebb	B	4.2	10:24	7.89	8.15	29.21	23.5	4.19	4	-	-	-
B3	20181203	Sunny	Light	Mid-Ebb	S	1	10:24	7.94	8.12	29.28	23.5	2.7	5	-	-	-
B3	20181203	Sunny	Light	Mid-Ebb	S	1	10:25	7.97	8.13	29.3	23.5	2.7	4	-	-	-

Location	Date (YYYYMMDD)	Weather	Sea Condition	Tidal	Water Level note 1	Depth (m)	Time (HH:MM)	DO (mg/L)	pH	Sal (ppt)	Temp (°C)	Turbidity (NTU) note 4	SS (mg/L)	Total Alkalinity (mg/L) note 3	Current Velocity note 3	Direction in NESW note 3
B4	20181203	Sunny	Light	Mid-Ebb	B	4.4	10:28	7.73	8.02	28.91	23.5	4.65	4	-	-	-
B4	20181203	Sunny	Light	Mid-Ebb	B	4.4	10:28	7.68	8.13	29.42	23.4	4.63	5	-	-	-
B4	20181203	Sunny	Light	Mid-Ebb	S	1	10:29	7.73	8.14	29.02	23.4	2.02	4	-	-	-
B4	20181203	Sunny	Light	Mid-Ebb	S	1	10:29	7.77	8.12	29.47	23.5	1.97	4	-	-	-
CR2	20181203	Sunny	Light	Mid-Ebb	B	7.5	10:48	7.66	8.14	29.03	23.5	4.7	6	-	-	-
CR2	20181203	Sunny	Light	Mid-Ebb	B	7.5	10:48	7.61	8.09	28.92	23.5	4.74	7	-	-	-
CR2	20181203	Sunny	Light	Mid-Ebb	M	4.3	10:48	7.64	8.13	29.15	23.5	3.61	6	-	-	-
CR2	20181203	Sunny	Light	Mid-Ebb	M	4.3	10:49	7.69	8.11	29.22	23.4	3.59	6	-	-	-
CR2	20181203	Sunny	Light	Mid-Ebb	S	1	10:49	7.72	8.07	29.17	23.5	2.21	6	-	-	-
CR2	20181203	Sunny	Light	Mid-Ebb	S	1	10:49	7.74	8.15	28.95	23.4	2.24	6	-	-	-
C2	20181203	Sunny	Light	Mid-Ebb	B	9.1	11:18	8	8.01	28.91	23.4	4.6	7	-	-	-
C2	20181203	Sunny	Light	Mid-Ebb	B	9.1	11:18	7.97	8.05	29.19	23.4	4.58	8	-	-	-
C2	20181203	Sunny	Light	Mid-Ebb	M	5.2	11:19	8	8.02	29.44	23.5	3.91	7	-	-	-
C2	20181203	Sunny	Light	Mid-Ebb	M	5.2	11:19	7.98	8.15	29.03	23.4	3.87	7	-	-	-
C2	20181203	Sunny	Light	Mid-Ebb	S	1	11:19	7.93	8.01	28.95	23.5	2.74	5	-	-	-
C2	20181203	Sunny	Light	Mid-Ebb	S	1	11:20	7.94	8.14	29.19	23.4	2.72	6	-	-	-
F1	20181203	Sunny	Light	Mid-Ebb	B	7.7	11:43	8.05	8.03	29.41	23.5	4.55	5	-	-	-
F1	20181203	Sunny	Light	Mid-Ebb	B	7.7	11:44	8.04	8	29.2	23.5	4.58	5	-	-	-
F1	20181203	Sunny	Light	Mid-Ebb	M	4.4	11:44	8.09	8	29.13	23.4	3.12	6	-	-	-
F1	20181203	Sunny	Light	Mid-Ebb	M	4.4	11:44	8.08	8.03	29.32	23.5	3.14	6	-	-	-
F1	20181203	Sunny	Light	Mid-Ebb	S	1	11:45	8.06	8.06	29.12	23.4	2.44	7	-	-	-
F1	20181203	Sunny	Light	Mid-Ebb	S	1	11:45	8.08	8.15	29.34	23.4	2.39	8	-	-	-
M1	20181203	Sunny	Light	Mid-Ebb	B	7.6	12:09	7.96	8.08	29.23	23.5	4.21	7	-	-	-
M1	20181203	Sunny	Light	Mid-Ebb	B	7.6	12:10	7.91	8.1	29.09	23.5	4.18	6	-	-	-
M1	20181203	Sunny	Light	Mid-Ebb	M	4.3	12:10	7.89	8.01	29.32	23.4	3.93	5	-	-	-
M1	20181203	Sunny	Light	Mid-Ebb	M	4.3	12:11	7.92	8.07	29.14	23.4	3.89	6	-	-	-
M1	20181203	Sunny	Light	Mid-Ebb	S	1	12:11	7.89	8.03	28.92	23.4	2.9	6	-	-	-
M1	20181203	Sunny	Light	Mid-Ebb	S	1	12:11	7.88	8.12	28.95	23.5	2.85	6	-	-	-
C2	20181203	Cloudy	Moderate	Mid-Flood	B	9.4	13:57	7.99	8.15	29.09	23.5	4.52	7	-	-	-
C2	20181203	Cloudy	Moderate	Mid-Flood	B	9.4	13:57	7.96	8.01	29.1	23.4	4.55	6	-	-	-

Location	Date (YYYYMMDD)	Weather	Sea Condition	Tidal	Water Level note 1	Depth (m)	Time (HH:MM)	DO (mg/L)	pH	Sal (ppt)	Temp (°C)	Turbidity (NTU) note 4	SS (mg/L)	Total Alkalinity (mg/L) note 3	Current Velocity note 3	Direction in NESW note 3
C2	20181203	Cloudy	Moderate	Mid-Flood	M	5.2	13:58	7.93	8	29.38	23.5	3.51	6	-	-	-
C2	20181203	Cloudy	Moderate	Mid-Flood	M	5.2	13:58	7.97	8	29.01	23.5	3.5	7	-	-	-
C2	20181203	Cloudy	Moderate	Mid-Flood	S	1	13:58	7.96	8.15	29.14	23.5	2.96	7	-	-	-
C2	20181203	Cloudy	Moderate	Mid-Flood	S	1	13:59	7.95	8.13	29.43	23.5	2.96	6	-	-	-
CR1	20181203	Cloudy	Moderate	Mid-Flood	B	7.9	14:13	8.03	8.1	28.95	23.5	4.21	8	-	-	-
CR1	20181203	Cloudy	Moderate	Mid-Flood	B	7.9	14:13	8.04	8.02	28.99	23.4	4.2	8	-	-	-
CR1	20181203	Cloudy	Moderate	Mid-Flood	M	4.5	14:14	8	8.08	29.15	23.5	3.2	8	-	-	-
CR1	20181203	Cloudy	Moderate	Mid-Flood	M	4.5	14:14	8.04	8.13	29.08	23.5	3.19	9	-	-	-
CR1	20181203	Cloudy	Moderate	Mid-Flood	S	1	14:15	8.06	8.06	29.38	23.4	2.95	6	-	-	-
CR1	20181203	Cloudy	Moderate	Mid-Flood	S	1	14:15	8.06	8	29.25	23.5	2.93	6	-	-	-
CR2	20181203	Cloudy	Moderate	Mid-Flood	B	7.8	14:19	8	8.15	28.99	23.4	4.64	7	-	-	-
CR2	20181203	Cloudy	Moderate	Mid-Flood	B	7.8	14:20	8.02	8.15	29.38	23.4	4.67	8	-	-	-
CR2	20181203	Cloudy	Moderate	Mid-Flood	M	4.4	14:20	8.01	8.02	29.44	23.4	3.57	7	-	-	-
CR2	20181203	Cloudy	Moderate	Mid-Flood	M	4.4	14:20	7.99	8.03	29.5	23.5	3.61	6	-	-	-
CR2	20181203	Cloudy	Moderate	Mid-Flood	S	1	14:21	7.95	8.12	28.91	23.5	2.57	6	-	-	-
CR2	20181203	Cloudy	Moderate	Mid-Flood	S	1	14:21	7.97	8.01	29.08	23.4	2.54	7	-	-	-
C1	20181203	Cloudy	Moderate	Mid-Flood	B	11.2	14:51	7.97	8.13	29	23.4	4.25	7	-	-	-
C1	20181203	Cloudy	Moderate	Mid-Flood	B	11.2	14:51	7.99	8.07	29.13	23.4	4.26	6	-	-	-
C1	20181203	Cloudy	Moderate	Mid-Flood	M	6.1	14:51	7.99	8.12	29.16	23.5	3.93	7	-	-	-
C1	20181203	Cloudy	Moderate	Mid-Flood	M	6.1	14:52	8.02	8.11	29.39	23.5	3.93	7	-	-	-
C1	20181203	Cloudy	Moderate	Mid-Flood	S	1	14:52	8.07	8.06	29.06	23.5	2.84	7	-	-	-
C1	20181203	Cloudy	Moderate	Mid-Flood	S	1	14:53	8.11	8.1	29.19	23.4	2.8	6	-	-	-
B1	20181203	Cloudy	Moderate	Mid-Flood	B	4.8	15:15	8.23	8	29.24	23.5	4.14	9	-	-	-
B1	20181203	Cloudy	Moderate	Mid-Flood	B	4.8	15:15	8.21	8	29.43	23.4	4.14	10	-	-	-
B1	20181203	Cloudy	Moderate	Mid-Flood	S	1	15:16	8.21	8.1	29.41	23.4	2.44	7	-	-	-
B1	20181203	Cloudy	Moderate	Mid-Flood	S	1	15:16	8.22	8.08	29.45	23.4	2.41	8	-	-	-
B2	20181203	Cloudy	Moderate	Mid-Flood	B	4.7	15:28	7.99	8.02	29.32	23.5	4.7	6	-	-	-
B2	20181203	Cloudy	Moderate	Mid-Flood	B	4.7	15:29	7.94	8.05	29.18	23.4	4.72	7	-	-	-
B2	20181203	Cloudy	Moderate	Mid-Flood	S	1	15:29	7.89	8.15	29.1	23.4	2.33	9	-	-	-
B2	20181203	Cloudy	Moderate	Mid-Flood	S	1	15:30	7.84	8.1	29.31	23.4	2.32	10	-	-	-

Location	Date (YYYYMMDD)	Weather	Sea Condition	Tidal	Water Level note 1	Depth (m)	Time (HH:MM)	DO (mg/L)	pH	Sal (ppt)	Temp (°C)	Turbidity (NTU) note 4	SS (mg/L)	Total Alkalinity (mg/L) note 3	Current Velocity note 3	Direction in NESW note 3
H1	20181203	Cloudy	Moderate	Mid-Flood	B	7.6	15:50	7.7	8.12	28.9	23.5	4.79	6	-	-	-
H1	20181203	Cloudy	Moderate	Mid-Flood	B	7.6	15:50	7.75	8.08	29.13	23.4	4.81	6	-	-	-
H1	20181203	Cloudy	Moderate	Mid-Flood	M	4.3	15:51	7.72	8.15	28.98	23.5	3.88	8	-	-	-
H1	20181203	Cloudy	Moderate	Mid-Flood	M	4.3	15:51	7.7	8.07	29.2	23.5	3.84	9	-	-	-
H1	20181203	Cloudy	Moderate	Mid-Flood	S	1	15:52	7.68	8.01	29.36	23.5	2.42	10	-	-	-
H1	20181203	Cloudy	Moderate	Mid-Flood	S	1	15:52	7.72	8.09	29.47	23.5	2.45	10	-	-	-
B3	20181203	Cloudy	Moderate	Mid-Flood	B	4.7	15:59	7.75	8.14	29.29	23.5	4.15	8	-	-	-
B3	20181203	Cloudy	Moderate	Mid-Flood	B	4.7	16:00	7.72	8.03	29.47	23.4	4.12	8	-	-	-
B3	20181203	Cloudy	Moderate	Mid-Flood	S	1	16:00	7.76	8.09	29.07	23.5	2.68	8	-	-	-
B3	20181203	Cloudy	Moderate	Mid-Flood	S	1	16:00	7.72	8.04	29.17	23.5	2.69	8	-	-	-
B4	20181203	Cloudy	Moderate	Mid-Flood	B	4.6	16:09	8.23	8.09	29.49	23.5	4.13	6	-	-	-
B4	20181203	Cloudy	Moderate	Mid-Flood	B	4.6	16:09	8.23	8.06	29.03	23.4	4.13	6	-	-	-
B4	20181203	Cloudy	Moderate	Mid-Flood	S	1	16:10	8.19	8.12	29.36	23.4	2.58	6	-	-	-
B4	20181203	Cloudy	Moderate	Mid-Flood	S	1	16:10	8.24	8.06	29.46	23.5	2.63	5	-	-	-
F1	20181203	Cloudy	Moderate	Mid-Flood	B	8	16:36	8.07	8.05	29.44	23.5	4.84	9	-	-	-
F1	20181203	Cloudy	Moderate	Mid-Flood	B	8	16:37	8.12	8.08	29.14	23.4	4.87	9	-	-	-
F1	20181203	Cloudy	Moderate	Mid-Flood	M	4.5	16:37	8.09	8.1	29.33	23.4	3.06	8	-	-	-
F1	20181203	Cloudy	Moderate	Mid-Flood	M	4.5	16:38	8.06	8.03	29.04	23.5	3.04	9	-	-	-
F1	20181203	Cloudy	Moderate	Mid-Flood	S	1	16:38	8.01	8.1	29.07	23.5	2.57	6	-	-	-
F1	20181203	Cloudy	Moderate	Mid-Flood	S	1	16:38	8.05	8.13	28.98	23.4	2.55	7	-	-	-
M1	20181203	Cloudy	Moderate	Mid-Flood	B	8.1	17:06	8.23	8	29.41	23.4	4.26	6	-	-	-
M1	20181203	Cloudy	Moderate	Mid-Flood	B	8.1	17:06	8.22	8.01	29.32	23.4	4.21	6	-	-	-
M1	20181203	Cloudy	Moderate	Mid-Flood	M	4.6	17:06	8.2	8.14	29.5	23.4	3.62	6	-	-	-
M1	20181203	Cloudy	Moderate	Mid-Flood	M	4.6	17:07	8.2	8.06	29.35	23.5	3.57	8	-	-	-
M1	20181203	Cloudy	Moderate	Mid-Flood	S	1	17:07	8.24	8.06	28.91	23.5	2.41	8	-	-	-
M1	20181203	Cloudy	Moderate	Mid-Flood	S	1	17:08	8.25	8.14	29.22	23.4	2.41	5	-	-	-
C1	20181205	Cloudy	Moderate	Mid-Ebb	B	10.6	9:32	8.49	8.1	30.2	22.9	4.85	8	-	-	-
C1	20181205	Cloudy	Moderate	Mid-Ebb	B	10.6	9:32	8.54	8.07	29.95	22.9	4.85	7	-	-	-
C1	20181205	Cloudy	Moderate	Mid-Ebb	M	5.8	9:32	8.59	8.04	29.88	22.9	3.61	7	-	-	-
C1	20181205	Cloudy	Moderate	Mid-Ebb	M	5.8	9:33	8.56	8.12	29.89	22.9	3.63	6	-	-	-

Location	Date (YYYYMMDD)	Weather	Sea Condition	Tidal	Water Level note 1	Depth (m)	Time (HH:MM)	DO (mg/L)	pH	Sal (ppt)	Temp (°C)	Turbidity (NTU) note 4	SS (mg/L)	Total Alkalinity (mg/L) note 3	Current Velocity note 3	Direction in NESW note 3
C1	20181205	Cloudy	Moderate	Mid-Ebb	S	1	9:33	8.56	8.13	30.43	22.9	2.76	6	-	-	-
C1	20181205	Cloudy	Moderate	Mid-Ebb	S	1	9:33	8.52	8.13	29.91	22.9	2.73	4	-	-	-
B1	20181205	Cloudy	Moderate	Mid-Ebb	B	4.4	9:55	8.07	8.07	29.85	22.9	4.01	7	-	-	-
B1	20181205	Cloudy	Moderate	Mid-Ebb	B	4.4	9:55	8.09	8.05	30.18	22.8	3.96	6	-	-	-
B1	20181205	Cloudy	Moderate	Mid-Ebb	S	1	9:55	8.05	8.08	30.45	22.8	2.94	9	-	-	-
B1	20181205	Cloudy	Moderate	Mid-Ebb	S	1	9:56	8.01	8.02	30.04	22.9	2.95	8	-	-	-
B2	20181205	Cloudy	Moderate	Mid-Ebb	B	4.2	10:11	8.58	8.12	30.17	22.8	4.53	8	-	-	-
B2	20181205	Cloudy	Moderate	Mid-Ebb	B	4.2	10:11	8.56	8.07	29.98	22.9	4.56	8	-	-	-
B2	20181205	Cloudy	Moderate	Mid-Ebb	S	1	10:12	8.57	8	30.15	22.9	2.35	7	-	-	-
B2	20181205	Cloudy	Moderate	Mid-Ebb	S	1	10:12	8.56	8.12	30.24	22.8	2.31	8	-	-	-
H1	20181205	Cloudy	Moderate	Mid-Ebb	B	7.7	10:32	7.92	8.04	30.49	22.8	4.4	7	-	-	-
H1	20181205	Cloudy	Moderate	Mid-Ebb	B	7.7	10:32	7.87	8.05	30.03	22.9	4.36	7	-	-	-
H1	20181205	Cloudy	Moderate	Mid-Ebb	M	4.4	10:32	7.83	8.04	30.49	22.8	3.23	8	-	-	-
H1	20181205	Cloudy	Moderate	Mid-Ebb	M	4.4	10:33	7.79	8.02	30.11	22.8	3.18	7	-	-	-
H1	20181205	Cloudy	Moderate	Mid-Ebb	S	1	10:33	7.82	8.06	30.32	22.8	2.69	9	-	-	-
H1	20181205	Cloudy	Moderate	Mid-Ebb	S	1	10:33	7.82	8.15	29.95	22.8	2.65	8	-	-	-
CR2	20181205	Cloudy	Moderate	Mid-Ebb	B	7.6	11:03	8.28	8.05	30.04	22.9	4.08	5	-	-	-
CR2	20181205	Cloudy	Moderate	Mid-Ebb	B	7.6	11:03	8.33	8.12	30.34	22.9	4.12	6	-	-	-
CR2	20181205	Cloudy	Moderate	Mid-Ebb	M	4.3	11:04	8.3	8.01	29.93	22.9	3.54	6	-	-	-
CR2	20181205	Cloudy	Moderate	Mid-Ebb	M	4.3	11:04	8.27	8.15	30.22	22.9	3.54	6	-	-	-
CR2	20181205	Cloudy	Moderate	Mid-Ebb	S	1	11:04	8.3	8.07	30.49	22.9	2.7	4	-	-	-
CR2	20181205	Cloudy	Moderate	Mid-Ebb	S	1	11:05	8.3	8.13	29.89	22.8	2.71	5	-	-	-
CR1	20181205	Cloudy	Moderate	Mid-Ebb	B	7.4	11:23	8.4	8.01	29.88	22.9	4.73	8	-	-	-
CR1	20181205	Cloudy	Moderate	Mid-Ebb	B	7.4	11:24	8.44	8.06	29.96	22.8	4.74	8	-	-	-
CR1	20181205	Cloudy	Moderate	Mid-Ebb	M	4.2	11:24	8.39	8	30.35	22.9	3.2	10	-	-	-
CR1	20181205	Cloudy	Moderate	Mid-Ebb	M	4.2	11:24	8.41	8.12	29.83	22.8	3.24	9	-	-	-
CR1	20181205	Cloudy	Moderate	Mid-Ebb	S	1	11:25	8.42	8.07	30.41	22.8	2.75	9	-	-	-
CR1	20181205	Cloudy	Moderate	Mid-Ebb	S	1	11:25	8.41	8.04	30.02	22.9	2.78	9	-	-	-
B3	20181205	Cloudy	Moderate	Mid-Ebb	B	4.3	11:46	8.39	8.13	30.27	22.9	4.23	8	-	-	-
B3	20181205	Cloudy	Moderate	Mid-Ebb	B	4.3	11:47	8.36	8.04	29.99	22.9	4.28	8	-	-	-

Location	Date (YYYYMMDD)	Weather	Sea Condition	Tidal	Water Level note 1	Depth (m)	Time (HH:MM)	DO (mg/L)	pH	Sal (ppt)	Temp (°C)	Turbidity (NTU) note 4	SS (mg/L)	Total Alkalinity (mg/L) note 3	Current Velocity note 3	Direction in NESW note 3
B3	20181205	Cloudy	Moderate	Mid-Ebb	S	1	11:47	8.34	8.06	30.34	22.9	2.39	11	-	-	-
B3	20181205	Cloudy	Moderate	Mid-Ebb	S	1	11:48	8.36	8.14	30.3	22.8	2.37	10	-	-	-
B4	20181205	Cloudy	Moderate	Mid-Ebb	B	4.2	11:53	8.01	8.08	30.39	22.9	4.64	9	-	-	-
B4	20181205	Cloudy	Moderate	Mid-Ebb	B	4.2	11:53	8.05	8.05	29.93	22.8	4.68	9	-	-	-
B4	20181205	Cloudy	Moderate	Mid-Ebb	S	1	11:54	8	8.06	30.06	22.9	2.48	8	-	-	-
B4	20181205	Cloudy	Moderate	Mid-Ebb	S	1	11:54	8.04	8.11	29.87	22.9	2.49	9	-	-	-
C2	20181205	Cloudy	Moderate	Mid-Ebb	B	9.4	12:04	7.97	8.15	30	22.9	4.81	11	-	-	-
C2	20181205	Cloudy	Moderate	Mid-Ebb	B	9.4	12:04	7.92	8	29.88	22.9	4.79	10	-	-	-
C2	20181205	Cloudy	Moderate	Mid-Ebb	M	5.2	12:04	7.88	8.03	30.22	22.9	3.67	10	-	-	-
C2	20181205	Cloudy	Moderate	Mid-Ebb	M	5.2	12:05	7.91	8.13	29.97	22.9	3.72	9	-	-	-
C2	20181205	Cloudy	Moderate	Mid-Ebb	S	1	12:05	7.95	8.12	30.07	22.8	2.17	10	-	-	-
C2	20181205	Cloudy	Moderate	Mid-Ebb	S	1	12:05	7.97	8.11	29.98	22.9	2.12	9	-	-	-
F1	20181205	Cloudy	Moderate	Mid-Ebb	B	7.8	12:27	8.12	8.03	30.21	22.8	4.48	9	-	-	-
F1	20181205	Cloudy	Moderate	Mid-Ebb	B	7.8	12:27	8.17	8.09	30.46	22.8	4.44	10	-	-	-
F1	20181205	Cloudy	Moderate	Mid-Ebb	M	4.4	12:28	8.17	8.12	30.21	22.8	3.12	7	-	-	-
F1	20181205	Cloudy	Moderate	Mid-Ebb	M	4.4	12:28	8.15	8.15	30.11	22.8	3.11	7	-	-	-
F1	20181205	Cloudy	Moderate	Mid-Ebb	S	1	12:28	8.11	8.15	30.24	22.8	2.35	6	-	-	-
F1	20181205	Cloudy	Moderate	Mid-Ebb	S	1	12:29	8.1	8.07	30.5	22.9	2.4	6	-	-	-
M1	20181205	Cloudy	Moderate	Mid-Ebb	B	7.5	12:54	8.6	8.08	30.28	22.8	4.08	12	-	-	-
M1	20181205	Cloudy	Moderate	Mid-Ebb	B	7.5	12:55	8.6	8.06	29.86	22.8	4.12	12	-	-	-
M1	20181205	Cloudy	Moderate	Mid-Ebb	M	4.3	12:55	8.59	8.13	30.05	22.9	3.82	10	-	-	-
M1	20181205	Cloudy	Moderate	Mid-Ebb	M	4.3	12:55	8.62	8.09	30.12	22.8	3.8	11	-	-	-
M1	20181205	Cloudy	Moderate	Mid-Ebb	S	1	12:56	8.63	8.08	30.33	22.8	2.15	9	-	-	-
M1	20181205	Cloudy	Moderate	Mid-Ebb	S	1	12:56	8.62	8.13	29.86	22.9	2.14	10	-	-	-
C2	20181205	Cloudy	Moderate	Mid-Flood	B	9.3	15:08	8.55	8.13	29.95	22.8	4.76	8	-	-	-
C2	20181205	Cloudy	Moderate	Mid-Flood	B	9.3	15:09	8.5	8.03	30.05	22.8	4.77	8	-	-	-
C2	20181205	Cloudy	Moderate	Mid-Flood	M	5.2	15:09	8.5	8.05	29.98	22.8	3.65	8	-	-	-
C2	20181205	Cloudy	Moderate	Mid-Flood	M	5.2	15:10	8.46	8.1	30.28	22.8	3.67	8	-	-	-
C2	20181205	Cloudy	Moderate	Mid-Flood	S	1	15:10	8.41	8.1	30.34	22.9	2.13	9	-	-	-
C2	20181205	Cloudy	Moderate	Mid-Flood	S	1	15:10	8.44	8.14	29.86	22.9	2.15	9	-	-	-

Location	Date (YYYYMMDD)	Weather	Sea Condition	Tidal	Water Level note 1	Depth (m)	Time (HH:MM)	DO (mg/L)	pH	Sal (ppt)	Temp (°C)	Turbidity (NTU) note 4	SS (mg/L)	Total Alkalinity (mg/L) note 3	Current Velocity note 3	Direction in NESW note 3
CR1	20181205	Cloudy	Moderate	Mid-Flood	B	7.8	15:26	8.52	8.15	30.44	22.9	4.87	9	-	-	-
CR1	20181205	Cloudy	Moderate	Mid-Flood	B	7.8	15:26	8.48	8.05	29.83	22.8	4.89	8	-	-	-
CR1	20181205	Cloudy	Moderate	Mid-Flood	M	4.4	15:27	8.48	8.11	30.49	22.8	3.65	8	-	-	-
CR1	20181205	Cloudy	Moderate	Mid-Flood	M	4.4	15:27	8.5	8	29.93	22.9	3.66	9	-	-	-
CR1	20181205	Cloudy	Moderate	Mid-Flood	S	1	15:27	8.5	8	29.88	22.9	2.99	8	-	-	-
CR1	20181205	Cloudy	Moderate	Mid-Flood	S	1	15:28	8.48	8.02	30.16	22.9	3.04	8	-	-	-
CR2	20181205	Cloudy	Moderate	Mid-Flood	B	8	15:37	8.26	8	30.41	22.8	4.51	8	-	-	-
CR2	20181205	Cloudy	Moderate	Mid-Flood	B	8	15:37	8.28	8.11	30.09	22.8	4.47	9	-	-	-
CR2	20181205	Cloudy	Moderate	Mid-Flood	M	4.5	15:37	8.23	8.04	30.31	22.8	3.87	6	-	-	-
CR2	20181205	Cloudy	Moderate	Mid-Flood	M	4.5	15:38	8.25	8.04	30.06	22.9	3.83	8	-	-	-
CR2	20181205	Cloudy	Moderate	Mid-Flood	S	1	15:38	8.29	8.03	30.31	22.9	2.33	8	-	-	-
CR2	20181205	Cloudy	Moderate	Mid-Flood	S	1	15:38	8.32	8	30.45	22.9	2.29	8	-	-	-
C1	20181205	Cloudy	Moderate	Mid-Flood	B	11.4	16:03	8.37	8.03	30.09	22.8	4.21	7	-	-	-
C1	20181205	Cloudy	Moderate	Mid-Flood	B	11.4	16:03	8.33	8.01	30.04	22.8	4.19	7	-	-	-
C1	20181205	Cloudy	Moderate	Mid-Flood	M	6.2	16:04	8.29	8.06	30.24	22.8	3.25	8	-	-	-
C1	20181205	Cloudy	Moderate	Mid-Flood	M	6.2	16:04	8.27	8	30.43	22.9	3.29	8	-	-	-
C1	20181205	Cloudy	Moderate	Mid-Flood	S	1	16:04	8.26	8.08	30.49	22.9	2.6	7	-	-	-
C1	20181205	Cloudy	Moderate	Mid-Flood	S	1	16:05	8.27	8	29.97	22.9	2.63	6	-	-	-
B1	20181205	Cloudy	Moderate	Mid-Flood	B	4.9	16:27	8.7	8	30.04	22.8	4.56	7	-	-	-
B1	20181205	Cloudy	Moderate	Mid-Flood	B	4.9	16:27	8.74	8.07	30.39	22.9	4.61	7	-	-	-
B1	20181205	Cloudy	Moderate	Mid-Flood	S	1	16:28	8.7	8.09	30.06	22.8	2.43	6	-	-	-
B1	20181205	Cloudy	Moderate	Mid-Flood	S	1	16:28	8.65	8.02	30.24	22.8	2.38	6	-	-	-
B2	20181205	Cloudy	Moderate	Mid-Flood	B	4.8	16:40	8.21	8.12	30.06	22.9	4.75	9	-	-	-
B2	20181205	Cloudy	Moderate	Mid-Flood	B	4.8	16:40	8.25	8.02	30.29	22.8	4.71	8	-	-	-
B2	20181205	Cloudy	Moderate	Mid-Flood	S	1	16:40	8.24	8.13	30.31	22.9	2.74	7	-	-	-
B2	20181205	Cloudy	Moderate	Mid-Flood	S	1	16:41	8.21	8.03	30.12	22.9	2.79	8	-	-	-
H1	20181205	Cloudy	Moderate	Mid-Flood	B	7.7	17:16	8.4	8.15	30.33	22.8	4.21	6	-	-	-
H1	20181205	Cloudy	Moderate	Mid-Flood	B	7.7	17:17	8.41	8.14	30.43	22.9	4.24	5	-	-	-
H1	20181205	Cloudy	Moderate	Mid-Flood	M	4.4	17:17	8.43	8.02	30.1	22.8	3.78	5	-	-	-
H1	20181205	Cloudy	Moderate	Mid-Flood	M	4.4	17:17	8.38	8.06	30.23	22.8	3.82	6	-	-	-

Location	Date (YYYYMMDD)	Weather	Sea Condition	Tidal	Water Level note 1	Depth (m)	Time (HH:MM)	DO (mg/L)	pH	Sal (ppt)	Temp (°C)	Turbidity (NTU) note 4	SS (mg/L)	Total Alkalinity (mg/L) note 3	Current Velocity note 3	Direction in NESW note 3
H1	20181205	Cloudy	Moderate	Mid-Flood	S	1	17:18	8.4	8.09	29.98	22.8	2.8	6	-	-	-
H1	20181205	Cloudy	Moderate	Mid-Flood	S	1	17:18	8.45	8	30.11	22.8	2.8	6	-	-	-
B3	20181205	Cloudy	Moderate	Mid-Flood	B	4.6	17:26	8.6	8.07	30.21	22.8	4.67	7	-	-	-
B3	20181205	Cloudy	Moderate	Mid-Flood	B	4.6	17:27	8.58	8.01	29.85	22.9	4.7	7	-	-	-
B3	20181205	Cloudy	Moderate	Mid-Flood	S	1	17:27	8.6	8.04	29.83	22.9	2.68	7	-	-	-
B3	20181205	Cloudy	Moderate	Mid-Flood	S	1	17:28	8.56	8.01	30.13	22.8	2.72	7	-	-	-
B4	20181205	Cloudy	Moderate	Mid-Flood	B	4.7	17:32	8.44	8.13	30.48	22.9	4.86	7	-	-	-
B4	20181205	Cloudy	Moderate	Mid-Flood	B	4.7	17:32	8.41	8.14	30.22	22.8	4.84	8	-	-	-
B4	20181205	Cloudy	Moderate	Mid-Flood	S	1	17:33	8.4	8.07	30.2	22.9	2.9	6	-	-	-
B4	20181205	Cloudy	Moderate	Mid-Flood	S	1	17:33	8.37	8.15	29.95	22.9	2.92	6	-	-	-
F1	20181205	Cloudy	Moderate	Mid-Flood	B	8.1	18:03	8.56	8.12	29.86	22.9	4.17	8	-	-	-
F1	20181205	Cloudy	Moderate	Mid-Flood	B	8.1	18:03	8.61	8.13	30.43	22.8	4.14	9	-	-	-
F1	20181205	Cloudy	Moderate	Mid-Flood	M	4.6	18:03	8.61	8.06	29.84	22.9	3.04	8	-	-	-
F1	20181205	Cloudy	Moderate	Mid-Flood	M	4.6	18:04	8.6	8.11	29.92	22.9	3.09	9	-	-	-
F1	20181205	Cloudy	Moderate	Mid-Flood	S	1	18:04	8.62	8.12	29.86	22.9	2.27	8	-	-	-
F1	20181205	Cloudy	Moderate	Mid-Flood	S	1	18:04	8.59	8.12	29.94	22.8	2.28	8	-	-	-
M1	20181205	Cloudy	Moderate	Mid-Flood	B	8	18:33	8.11	8.1	30.13	22.9	4.04	13	-	-	-
M1	20181205	Cloudy	Moderate	Mid-Flood	B	8	18:33	8.08	8.03	30.39	22.8	4.05	13	-	-	-
M1	20181205	Cloudy	Moderate	Mid-Flood	M	4.5	18:34	8.03	8.12	30.29	22.8	3.68	10	-	-	-
M1	20181205	Cloudy	Moderate	Mid-Flood	M	4.5	18:34	8.05	8.11	29.87	22.8	3.64	11	-	-	-
M1	20181205	Cloudy	Moderate	Mid-Flood	S	1	18:34	8.08	8.05	29.93	22.8	2.68	9	-	-	-
M1	20181205	Cloudy	Moderate	Mid-Flood	S	1	18:35	8.09	8.15	30.27	22.9	2.63	10	-	-	-
C1	20181207	Rainy	Moderate	Mid-Ebb	B	10.4	10:32	8.4	8	30.29	24	5.48	8	-	-	-
C1	20181207	Rainy	Moderate	Mid-Ebb	B	10.4	10:32	8.39	8.04	30.62	23.9	5.44	7	-	-	-
C1	20181207	Rainy	Moderate	Mid-Ebb	M	5.7	10:32	8.37	8.04	30.18	24	3.32	7	-	-	-
C1	20181207	Rainy	Moderate	Mid-Ebb	M	5.7	10:33	8.38	8.02	30.82	23.9	3.34	6	-	-	-
C1	20181207	Rainy	Moderate	Mid-Ebb	S	1	10:33	8.42	8.11	30.28	24	1.13	6	-	-	-
C1	20181207	Rainy	Moderate	Mid-Ebb	S	1	10:33	8.39	8.03	30.47	24	1.17	4	-	-	-
B1	20181207	Rainy	Moderate	Mid-Ebb	B	4.3	11:15	8.47	8.07	30.48	23.9	5.52	7	-	-	-
B1	20181207	Rainy	Moderate	Mid-Ebb	B	4.3	11:15	8.49	8.1	30.81	23.9	5.57	6	-	-	-

Location	Date (YYYYMMDD)	Weather	Sea Condition	Tidal	Water Level note 1	Depth (m)	Time (HH:MM)	DO (mg/L)	pH	Sal (ppt)	Temp (°C)	Turbidity (NTU) note 4	SS (mg/L)	Total Alkalinity (mg/L) note 3	Current Velocity note 3	Direction in NESW note 3
B1	20181207	Rainy	Moderate	Mid-Ebb	S	1	11:16	8.47	8.08	30.1	23.9	1.53	9	-	-	-
B1	20181207	Rainy	Moderate	Mid-Ebb	S	1	11:16	8.47	8.01	30.39	23.9	1.57	8	-	-	-
B2	20181207	Rainy	Moderate	Mid-Ebb	B	4.4	11:29	8.47	8.07	30.98	23.9	5.52	8	-	-	-
B2	20181207	Rainy	Moderate	Mid-Ebb	B	4.4	11:30	8.48	8.1	30.12	24	5.47	8	-	-	-
B2	20181207	Rainy	Moderate	Mid-Ebb	S	1	11:30	8.52	8.01	30.74	24	1.29	7	-	-	-
B2	20181207	Rainy	Moderate	Mid-Ebb	S	1	11:30	8.53	8.09	30.25	24	1.3	8	-	-	-
H1	20181207	Rainy	Moderate	Mid-Ebb	B	7.7	11:52	8.32	8.12	30.36	24	5.48	7	-	-	-
H1	20181207	Rainy	Moderate	Mid-Ebb	B	7.7	11:52	8.34	8.04	30.38	24	5.47	7	-	-	-
H1	20181207	Rainy	Moderate	Mid-Ebb	M	4.4	11:53	8.36	8.04	30.95	24	3.77	8	-	-	-
H1	20181207	Rainy	Moderate	Mid-Ebb	M	4.4	11:53	8.41	8.06	30.41	24	3.73	7	-	-	-
H1	20181207	Rainy	Moderate	Mid-Ebb	S	1	11:53	8.43	8.11	30.29	23.9	1.05	9	-	-	-
H1	20181207	Rainy	Moderate	Mid-Ebb	S	1	11:54	8.43	8.09	30.08	23.9	1.05	8	-	-	-
CR2	20181207	Rainy	Moderate	Mid-Ebb	B	7.8	12:05	8.23	8.11	30.39	23.9	5.3	5	-	-	-
CR2	20181207	Rainy	Moderate	Mid-Ebb	B	7.8	12:06	8.2	8.1	30.28	24	5.32	6	-	-	-
CR2	20181207	Rainy	Moderate	Mid-Ebb	M	4.4	12:06	8.25	8.08	30.16	24	3.21	6	-	-	-
CR2	20181207	Rainy	Moderate	Mid-Ebb	M	4.4	12:06	8.23	8.1	30.9	23.9	3.18	6	-	-	-
CR2	20181207	Rainy	Moderate	Mid-Ebb	S	1	12:07	8.23	8.02	30.56	23.9	1.48	4	-	-	-
CR2	20181207	Rainy	Moderate	Mid-Ebb	S	1	12:07	8.28	8.1	30.62	24	1.51	5	-	-	-
CR1	20181207	Rainy	Moderate	Mid-Ebb	B	7.6	12:17	8.39	8	30.38	24	5.97	8	-	-	-
CR1	20181207	Rainy	Moderate	Mid-Ebb	B	7.6	12:18	8.41	8.04	30.49	24	6	8	-	-	-
CR1	20181207	Rainy	Moderate	Mid-Ebb	M	4.3	12:18	8.44	8.08	30.12	23.9	3.32	10	-	-	-
CR1	20181207	Rainy	Moderate	Mid-Ebb	M	4.3	12:19	8.41	8.11	30.7	23.9	3.29	9	-	-	-
CR1	20181207	Rainy	Moderate	Mid-Ebb	S	1	12:19	8.42	8.04	30.65	23.9	1.6	9	-	-	-
CR1	20181207	Rainy	Moderate	Mid-Ebb	S	1	12:19	8.42	8.14	30.52	23.9	1.58	9	-	-	-
B3	20181207	Rainy	Moderate	Mid-Ebb	B	4.2	12:38	8.28	8.07	30.57	23.9	5.45	8	-	-	-
B3	20181207	Rainy	Moderate	Mid-Ebb	B	4.2	12:38	8.28	8.06	30.93	23.9	5.4	8	-	-	-
B3	20181207	Rainy	Moderate	Mid-Ebb	S	1	12:39	8.27	8	30.94	23.9	1.03	11	-	-	-
B3	20181207	Rainy	Moderate	Mid-Ebb	S	1	12:39	8.22	8.02	30.44	23.9	1	10	-	-	-
B4	20181207	Rainy	Moderate	Mid-Ebb	B	4.3	12:48	8.51	8.06	30.98	23.9	5.74	9	-	-	-
B4	20181207	Rainy	Moderate	Mid-Ebb	B	4.3	12:49	8.46	8.09	30.45	24	5.72	9	-	-	-

Location	Date (YYYYMMDD)	Weather	Sea Condition	Tidal	Water Level note 1	Depth (m)	Time (HH:MM)	DO (mg/L)	pH	Sal (ppt)	Temp (°C)	Turbidity (NTU) note 4	SS (mg/L)	Total Alkalinity (mg/L) note 3	Current Velocity note 3	Direction in NESW note 3
B4	20181207	Rainy	Moderate	Mid-Ebb	S	1	12:49	8.48	8.08	30.72	23.9	1.76	8	-	-	-
B4	20181207	Rainy	Moderate	Mid-Ebb	S	1	12:49	8.51	8.06	30.7	23.9	1.81	9	-	-	-
C2	20181207	Rainy	Moderate	Mid-Ebb	B	8.8	13:00	8.37	8.14	30.28	24	5.74	11	-	-	-
C2	20181207	Rainy	Moderate	Mid-Ebb	B	8.8	13:00	8.36	8.07	30.06	23.9	5.7	10	-	-	-
C2	20181207	Rainy	Moderate	Mid-Ebb	M	4.9	13:01	8.34	8.06	30.44	23.9	3.65	10	-	-	-
C2	20181207	Rainy	Moderate	Mid-Ebb	M	4.9	13:01	8.37	8.1	30.85	24	3.61	9	-	-	-
C2	20181207	Rainy	Moderate	Mid-Ebb	S	1	13:01	8.35	8.13	30.28	23.9	1.82	10	-	-	-
C2	20181207	Rainy	Moderate	Mid-Ebb	S	1	13:02	8.33	8.12	30.48	23.9	1.87	9	-	-	-
F1	20181207	Rainy	Moderate	Mid-Ebb	B	7.6	13:22	8.44	8.14	30.68	24	5.87	9	-	-	-
F1	20181207	Rainy	Moderate	Mid-Ebb	B	7.6	13:22	8.44	8.01	30.87	24	5.88	10	-	-	-
F1	20181207	Rainy	Moderate	Mid-Ebb	M	4.3	13:23	8.4	8.13	30.49	23.9	3.47	7	-	-	-
F1	20181207	Rainy	Moderate	Mid-Ebb	M	4.3	13:23	8.43	8.06	30.69	24	3.48	7	-	-	-
F1	20181207	Rainy	Moderate	Mid-Ebb	S	1	13:24	8.44	8.15	30.96	23.9	1.46	6	-	-	-
F1	20181207	Rainy	Moderate	Mid-Ebb	S	1	13:24	8.39	8.09	30.2	24	1.51	6	-	-	-
M1	20181207	Rainy	Moderate	Mid-Ebb	B	7.5	13:49	8.52	8.08	30.85	23.9	5.59	12	-	-	-
M1	20181207	Rainy	Moderate	Mid-Ebb	B	7.5	13:50	8.54	8.01	30.03	23.9	5.61	12	-	-	-
M1	20181207	Rainy	Moderate	Mid-Ebb	M	4.3	13:50	8.51	8.02	30.49	24	3.96	10	-	-	-
M1	20181207	Rainy	Moderate	Mid-Ebb	M	4.3	13:50	8.48	8.15	30.1	24	3.99	11	-	-	-
M1	20181207	Rainy	Moderate	Mid-Ebb	S	1	13:51	8.46	8.15	30.74	23.9	1.96	9	-	-	-
M1	20181207	Rainy	Moderate	Mid-Ebb	S	1	13:51	8.5	8.15	30.79	24	1.98	10	-	-	-
C2	20181207	Fine	Moderate	Mid-Flood	B	9.3	16:07	8.35	8.13	30.46	23.9	5.65	8	-	-	-
C2	20181207	Fine	Moderate	Mid-Flood	B	9.3	16:07	8.36	8.12	30.78	24	5.61	8	-	-	-
C2	20181207	Fine	Moderate	Mid-Flood	M	5.2	16:07	8.39	8.13	30.44	24	3.67	8	-	-	-
C2	20181207	Fine	Moderate	Mid-Flood	M	5.2	16:08	8.44	8.01	30.77	23.9	3.7	8	-	-	-
C2	20181207	Fine	Moderate	Mid-Flood	S	1	16:08	8.44	8.04	30.89	24	1.38	9	-	-	-
C2	20181207	Fine	Moderate	Mid-Flood	S	1	16:08	8.4	8.14	30.97	23.9	1.34	9	-	-	-
CR1	20181207	Fine	Moderate	Mid-Flood	B	8.1	16:25	8.28	8.13	30.61	23.9	5.47	9	-	-	-
CR1	20181207	Fine	Moderate	Mid-Flood	B	8.1	16:25	8.23	8.07	30.94	23.9	5.52	8	-	-	-
CR1	20181207	Fine	Moderate	Mid-Flood	M	4.6	16:26	8.18	8.14	30.9	24	3.06	8	-	-	-
CR1	20181207	Fine	Moderate	Mid-Flood	M	4.6	16:26	8.2	8.04	30.39	23.9	3.04	9	-	-	-

Location	Date (YYYYMMDD)	Weather	Sea Condition	Tidal	Water Level note 1	Depth (m)	Time (HH:MM)	DO (mg/L)	pH	Sal (ppt)	Temp (°C)	Turbidity (NTU) note 4	SS (mg/L)	Total Alkalinity (mg/L) note 3	Current Velocity note 3	Direction in NESW note 3
CR1	20181207	Fine	Moderate	Mid-Flood	S	1	16:26	8.19	8.05	30.24	24	1.74	8	-	-	-
CR1	20181207	Fine	Moderate	Mid-Flood	S	1	16:27	8.19	8.08	30.57	24	1.7	8	-	-	-
CR2	20181207	Fine	Moderate	Mid-Flood	B	8.2	16:33	8.48	8.09	30.62	24	5.17	8	-	-	-
CR2	20181207	Fine	Moderate	Mid-Flood	B	8.2	16:34	8.43	8.08	30.13	24	5.21	9	-	-	-
CR2	20181207	Fine	Moderate	Mid-Flood	M	4.6	16:34	8.39	8.03	30.68	23.9	3.15	6	-	-	-
CR2	20181207	Fine	Moderate	Mid-Flood	M	4.6	16:34	8.4	8.12	30.98	24	3.11	8	-	-	-
CR2	20181207	Fine	Moderate	Mid-Flood	S	1	16:35	8.36	8	30.81	24	1.52	8	-	-	-
CR2	20181207	Fine	Moderate	Mid-Flood	S	1	16:35	8.33	8.14	30.38	24	1.55	8	-	-	-
C1	20181207	Fine	Moderate	Mid-Flood	B	11.4	17:01	8.17	8.1	30.9	23.9	5.57	7	-	-	-
C1	20181207	Fine	Moderate	Mid-Flood	B	11.4	17:02	8.17	8.06	30.13	24	5.57	7	-	-	-
C1	20181207	Fine	Moderate	Mid-Flood	M	6.2	17:02	8.17	8.15	30.71	24	3.23	8	-	-	-
C1	20181207	Fine	Moderate	Mid-Flood	M	6.2	17:03	8.22	8.05	30.56	24	3.18	8	-	-	-
C1	20181207	Fine	Moderate	Mid-Flood	S	1	17:03	8.2	8.15	30.63	23.9	1.21	7	-	-	-
C1	20181207	Fine	Moderate	Mid-Flood	S	1	17:03	8.23	8.08	30.28	23.9	1.24	6	-	-	-
B1	20181207	Fine	Moderate	Mid-Flood	B	4.8	17:25	8.04	8.08	30.67	23.9	5.41	7	-	-	-
B1	20181207	Fine	Moderate	Mid-Flood	B	4.8	17:25	7.99	8.15	30.71	24	5.42	7	-	-	-
B1	20181207	Fine	Moderate	Mid-Flood	S	1	17:26	8.01	8.13	30.38	23.9	1.26	6	-	-	-
B1	20181207	Fine	Moderate	Mid-Flood	S	1	17:26	7.99	8.11	30.53	24	1.28	6	-	-	-
B2	20181207	Fine	Moderate	Mid-Flood	B	4.8	17:38	8.56	8.02	30	24	5.78	9	-	-	-
B2	20181207	Fine	Moderate	Mid-Flood	B	4.8	17:39	8.61	8.03	30.37	23.9	5.79	8	-	-	-
B2	20181207	Fine	Moderate	Mid-Flood	S	1	17:39	8.56	8.03	31	23.9	1.47	7	-	-	-
B2	20181207	Fine	Moderate	Mid-Flood	S	1	17:39	8.51	8.02	30.12	24	1.43	8	-	-	-
H1	20181207	Fine	Moderate	Mid-Flood	B	7.8	18:01	8.47	8.1	30.61	24	5.16	6	-	-	-
H1	20181207	Fine	Moderate	Mid-Flood	B	7.8	18:01	8.47	8.05	30.86	24	5.13	5	-	-	-
H1	20181207	Fine	Moderate	Mid-Flood	M	4.4	18:02	8.45	8.09	30.72	24	3.88	5	-	-	-
H1	20181207	Fine	Moderate	Mid-Flood	M	4.4	18:02	8.45	8.08	30.01	24	3.92	6	-	-	-
H1	20181207	Fine	Moderate	Mid-Flood	S	1	18:02	8.4	8.07	30.26	23.9	1.28	6	-	-	-
H1	20181207	Fine	Moderate	Mid-Flood	S	1	18:03	8.43	8.04	30.1	23.9	1.25	6	-	-	-
B3	20181207	Fine	Moderate	Mid-Flood	B	4.9	18:11	8.29	8	30.47	23.9	5.34	7	-	-	-
B3	20181207	Fine	Moderate	Mid-Flood	B	4.9	18:12	8.34	8.11	30.94	24	5.35	7	-	-	-

Location	Date (YYYYMMDD)	Weather	Sea Condition	Tidal	Water Level note 1	Depth (m)	Time (HH:MM)	DO (mg/L)	pH	Sal (ppt)	Temp (°C)	Turbidity (NTU) note 4	SS (mg/L)	Total Alkalinity (mg/L) note 3	Current Velocity note 3	Direction in NESW note 3
B3	20181207	Fine	Moderate	Mid-Flood	S	1	18:12	8.32	8.04	30.18	23.9	1.15	7	-	-	-
B3	20181207	Fine	Moderate	Mid-Flood	S	1	18:12	8.36	8.14	30.13	24	1.13	7	-	-	-
B4	20181207	Fine	Moderate	Mid-Flood	B	4.7	18:20	8.31	8.09	30.96	23.9	5.66	7	-	-	-
B4	20181207	Fine	Moderate	Mid-Flood	B	4.7	18:20	8.28	8.09	30.1	24	5.67	8	-	-	-
B4	20181207	Fine	Moderate	Mid-Flood	S	1	18:20	8.25	8.11	30.85	24	1.71	6	-	-	-
B4	20181207	Fine	Moderate	Mid-Flood	S	1	18:21	8.21	8.14	30.88	24	1.66	6	-	-	-
F1	20181207	Fine	Moderate	Mid-Flood	B	8.2	18:51	8.38	8.1	30.14	24	5.66	8	-	-	-
F1	20181207	Fine	Moderate	Mid-Flood	B	8.2	18:52	8.43	8.08	30.76	24	5.65	9	-	-	-
F1	20181207	Fine	Moderate	Mid-Flood	M	4.6	18:52	8.4	8.14	30.08	23.9	3.7	8	-	-	-
F1	20181207	Fine	Moderate	Mid-Flood	M	4.6	18:52	8.4	8.02	30	24	3.75	9	-	-	-
F1	20181207	Fine	Moderate	Mid-Flood	S	1	18:53	8.36	8.09	30.28	23.9	1.17	8	-	-	-
F1	20181207	Fine	Moderate	Mid-Flood	S	1	18:53	8.33	8.13	30.51	23.9	1.22	8	-	-	-
M1	20181207	Fine	Moderate	Mid-Flood	B	8.1	19:20	8.57	8.08	30.02	23.9	5.78	13	-	-	-
M1	20181207	Fine	Moderate	Mid-Flood	B	8.1	19:20	8.54	8.08	30.86	24	5.82	13	-	-	-
M1	20181207	Fine	Moderate	Mid-Flood	M	4.6	19:20	8.52	8.02	30.54	24	3.22	10	-	-	-
M1	20181207	Fine	Moderate	Mid-Flood	M	4.6	19:21	8.5	8.08	30.8	23.9	3.18	11	-	-	-
M1	20181207	Fine	Moderate	Mid-Flood	S	1	19:21	8.45	8.03	30.59	24	1.81	9	-	-	-
M1	20181207	Fine	Moderate	Mid-Flood	S	1	19:21	8.42	8.02	30.55	23.9	1.78	10	-	-	-
C2	20181210	Cloudy	Moderate	Mid-Flood	B	9.2	8:39	8.11	8.11	30.93	23.4	5.93	8	113	0.55	NE
C2	20181210	Cloudy	Moderate	Mid-Flood	B	9.2	8:39	8.09	8.12	30.59	23.4	5.94	8	113	0.56	NE
C2	20181210	Cloudy	Moderate	Mid-Flood	M	5.1	8:39	8.07	8.14	30.64	23.4	3.01	11	114	0.67	NE
C2	20181210	Cloudy	Moderate	Mid-Flood	M	5.1	8:40	8.09	8.05	30.59	23.3	3.01	8	112	0.73	NE
C2	20181210	Cloudy	Moderate	Mid-Flood	S	1	8:40	8.06	8.01	30.42	23.4	1.65	10	112	0.78	NE
C2	20181210	Cloudy	Moderate	Mid-Flood	S	1	8:40	8.11	8.02	30.28	23.4	1.66	11	114	0.93	NE
CR1	20181210	Cloudy	Moderate	Mid-Flood	B	8	8:46	8.1	8.05	30.29	23.4	5.38	9	113	0.58	NW
CR1	20181210	Cloudy	Moderate	Mid-Flood	B	8	8:46	8.09	8.14	30.35	23.3	5.39	19	112	0.7	NW
CR1	20181210	Cloudy	Moderate	Mid-Flood	M	4.5	8:47	8.14	8	30.24	23.4	3.09	12	113	0.76	NW
CR1	20181210	Cloudy	Moderate	Mid-Flood	M	4.5	8:47	8.11	8.14	30.92	23.4	3.06	12	113	0.87	NW
CR1	20181210	Cloudy	Moderate	Mid-Flood	S	1	8:47	8.16	8.04	30.42	23.4	1.15	6	113	0.83	NW
CR1	20181210	Cloudy	Moderate	Mid-Flood	S	1	8:48	8.12	8.03	30.35	23.3	1.12	8	113	0.86	NW

Location	Date (YYYYMMDD)	Weather	Sea Condition	Tidal	Water Level note 1	Depth (m)	Time (HH:MM)	DO (mg/L)	pH	Sal (ppt)	Temp (°C)	Turbidity (NTU) note 4	SS (mg/L)	Total Alkalinity (mg/L) note 3	Current Velocity note 3	Direction in NESW note 3
S3	20181210	Cloudy	Moderate	Mid-Flood	B	11.2	9:00	7.86	8	30.35	23.3	5.96	10	113	0.73	W
S3	20181210	Cloudy	Moderate	Mid-Flood	B	11.2	9:00	7.9	8.14	30.41	23.3	6	20	113	0.8	W
S3	20181210	Cloudy	Moderate	Mid-Flood	M	6.1	9:01	7.85	8	30.53	23.4	3.96	8	114	0.84	W
S3	20181210	Cloudy	Moderate	Mid-Flood	M	6.1	9:01	7.82	8.14	30.81	23.3	3.92	9	113	0.86	W
S3	20181210	Cloudy	Moderate	Mid-Flood	S	1	9:02	7.79	8.07	30.84	23.4	1.65	23	114	0.95	W
S3	20181210	Cloudy	Moderate	Mid-Flood	S	1	9:02	7.79	8.1	30.06	23.4	1.67	11	113	0.91	W
H1	20181210	Cloudy	Moderate	Mid-Flood	B	7.9	9:03	8.16	8.05	30.05	23.4	5.81	11	113	0.77	NW
H1	20181210	Cloudy	Moderate	Mid-Flood	B	7.9	9:04	8.17	8.11	30.34	23.3	5.8	10	113	0.9	NW
H1	20181210	Cloudy	Moderate	Mid-Flood	M	4.5	9:04	8.15	8.1	30.81	23.4	3.23	7	114	0.91	NW
H1	20181210	Cloudy	Moderate	Mid-Flood	M	4.5	9:05	8.15	8.08	30.25	23.4	3.27	9	112	1.04	NW
H1	20181210	Cloudy	Moderate	Mid-Flood	S	1	9:05	8.11	8.13	30.2	23.3	1.47	9	114	1.07	NW
H1	20181210	Cloudy	Moderate	Mid-Flood	S	1	9:05	8.11	8.04	30.65	23.4	1.45	7	113	1.16	NW
CR2	20181210	Cloudy	Moderate	Mid-Flood	B	8	9:14	8	8.02	30.21	23.3	5.05	11	114	0.7	NW
CR2	20181210	Cloudy	Moderate	Mid-Flood	B	8	9:14	8.01	8.05	30.7	23.4	5.06	9	113	0.83	NW
CR2	20181210	Cloudy	Moderate	Mid-Flood	M	4.5	9:14	8.01	8.11	30.01	23.4	3.38	8	112	0.84	NW
CR2	20181210	Cloudy	Moderate	Mid-Flood	M	4.5	9:15	7.96	8.11	30.27	23.3	3.36	8	112	0.92	NW
CR2	20181210	Cloudy	Moderate	Mid-Flood	S	1	9:15	7.97	8.08	30.7	23.3	1.21	8	112	1.01	NW
CR2	20181210	Cloudy	Moderate	Mid-Flood	S	1	9:16	7.92	8.14	30.06	23.3	1.2	8	113	1.13	NW
B3	20181210	Cloudy	Moderate	Mid-Flood	B	4.8	9:14	8.06	8.08	30	23.3	5.09	14	114	0.72	NW
B3	20181210	Cloudy	Moderate	Mid-Flood	B	4.8	9:14	8.04	8.06	30.5	23.3	5.12	13	114	0.84	NW
B3	20181210	Cloudy	Moderate	Mid-Flood	S	1	9:15	8.07	8.06	30.8	23.3	1.09	16	113	0.96	NW
B3	20181210	Cloudy	Moderate	Mid-Flood	S	1	9:15	8.11	8.15	30.07	23.3	1.08	13	113	1.11	NW
B4	20181210	Cloudy	Moderate	Mid-Flood	B	4.6	9:28	8.1	8	30.34	23.3	5.74	13	113	0.43	N
B4	20181210	Cloudy	Moderate	Mid-Flood	B	4.6	9:28	8.11	8.1	30.35	23.3	5.76	13	113	0.55	N
B4	20181210	Cloudy	Moderate	Mid-Flood	S	1	9:28	8.13	8.1	30.21	23.3	1.8	15	111	0.64	N
B4	20181210	Cloudy	Moderate	Mid-Flood	S	1	9:29	8.11	8.08	30.76	23.4	1.79	12	112	0.63	N
C1	20181210	Cloudy	Moderate	Mid-Flood	B	11.4	9:45	8.26	8.04	30.65	23.4	5	5	111	0.67	NW
C1	20181210	Cloudy	Moderate	Mid-Flood	B	11.4	9:45	8.28	8.15	30.43	23.4	5	6	113	0.71	NW
C1	20181210	Cloudy	Moderate	Mid-Flood	M	6.2	9:46	8.24	8.05	30.29	23.4	3.82	7	113	0.66	NW
C1	20181210	Cloudy	Moderate	Mid-Flood	M	6.2	9:46	8.29	8.13	30.36	23.4	3.83	7	113	0.76	NW

Location	Date (YYYYMMDD)	Weather	Sea Condition	Tidal	Water Level note 1	Depth (m)	Time (HH:MM)	DO (mg/L)	pH	Sal (ppt)	Temp (°C)	Turbidity (NTU) note 4	SS (mg/L)	Total Alkalinity (mg/L) note 3	Current Velocity note 3	Direction in NESW note 3
C1	20181210	Cloudy	Moderate	Mid-Flood	S	1	9:47	8.25	8.14	30.83	23.4	1.67	8	112	0.71	NW
C1	20181210	Cloudy	Moderate	Mid-Flood	S	1	9:47	8.27	8.11	30.58	23.3	1.69	9	113	0.73	NW
F1	20181210	Cloudy	Moderate	Mid-Flood	B	7.8	10:04	7.85	8.12	30.69	23.4	5.11	10	112	0.57	NW
F1	20181210	Cloudy	Moderate	Mid-Flood	B	7.8	10:05	7.85	8.07	30.33	23.4	5.08	8	112	0.6	NW
F1	20181210	Cloudy	Moderate	Mid-Flood	M	4.4	10:05	7.9	8.14	30.92	23.4	3.46	10	112	0.57	NW
F1	20181210	Cloudy	Moderate	Mid-Flood	M	4.4	10:06	7.91	8.08	30.79	23.3	3.41	9	114	0.52	NW
F1	20181210	Cloudy	Moderate	Mid-Flood	S	1	10:06	7.92	8.14	30.75	23.4	1.16	18	113	0.52	NW
F1	20181210	Cloudy	Moderate	Mid-Flood	S	1	10:06	7.88	8.02	30.48	23.3	1.11	18	113	0.66	NW
B1	20181210	Cloudy	Moderate	Mid-Flood	B	4.7	10:08	8	8.11	30.25	23.3	5.68	14	114	0.56	NW
B1	20181210	Cloudy	Moderate	Mid-Flood	B	4.7	10:08	7.95	8.11	30.53	23.4	5.71	12	114	0.69	NW
B1	20181210	Cloudy	Moderate	Mid-Flood	S	1	10:08	7.98	8	30.83	23.4	1.28	12	113	0.71	NW
B1	20181210	Cloudy	Moderate	Mid-Flood	S	1	10:09	7.98	8.06	30.44	23.4	1.3	14	113	0.68	NW
B2	20181210	Cloudy	Moderate	Mid-Flood	B	4.6	10:23	8.62	8.08	30.61	23.3	5.45	14	112	0.78	N
B2	20181210	Cloudy	Moderate	Mid-Flood	B	4.6	10:24	8.58	8.13	30.36	23.4	5.5	14	114	0.73	N
B2	20181210	Cloudy	Moderate	Mid-Flood	S	1	10:24	8.53	8.08	30.01	23.4	1.52	15	112	0.84	N
B2	20181210	Cloudy	Moderate	Mid-Flood	S	1	10:24	8.55	8.01	30.8	23.3	1.53	12	113	0.98	N
S1	20181210	Cloudy	Moderate	Mid-Flood	B	4.6	10:23	7.8	8.13	30.97	23.3	5.83	10	112	0.48	NW
S1	20181210	Cloudy	Moderate	Mid-Flood	B	4.6	10:23	7.76	8.14	30.92	23.3	5.81	10	112	0.57	N
S1	20181210	Cloudy	Moderate	Mid-Flood	S	1	10:24	7.72	8.08	30.94	23.4	1.29	12	114	0.68	NW
S1	20181210	Cloudy	Moderate	Mid-Flood	S	1	10:24	7.77	8.06	30.23	23.4	1.29	10	112	0.66	NW
M1	20181210	Cloudy	Moderate	Mid-Flood	B	7.8	10:42	8.42	8.09	30.63	23.4	5.39	5	112	0.42	SW
M1	20181210	Cloudy	Moderate	Mid-Flood	B	7.8	10:43	8.41	8.01	30.59	23.4	5.41	6	113	0.37	SW
M1	20181210	Cloudy	Moderate	Mid-Flood	M	4.4	10:43	8.36	8.07	30.68	23.3	3.74	6	113	0.37	SW
M1	20181210	Cloudy	Moderate	Mid-Flood	M	4.4	10:43	8.33	8.07	30.98	23.4	3.79	5	113	0.48	SW
M1	20181210	Cloudy	Moderate	Mid-Flood	S	1	10:44	8.38	8.13	30.25	23.4	1.2	12	112	0.53	SW
M1	20181210	Cloudy	Moderate	Mid-Flood	S	1	10:44	8.34	8.08	30.11	23.4	1.24	10	113	0.5	SW
S2	20181210	Cloudy	Moderate	Mid-Flood	B	8.2	10:54	7.94	8.04	30.93	23.3	6	15	113	0.65	NW
S2	20181210	Cloudy	Moderate	Mid-Flood	B	8.2	10:54	7.92	8.01	30.28	23.3	6.02	16	113	0.71	NW
S2	20181210	Cloudy	Moderate	Mid-Flood	M	4.6	10:54	7.9	8.09	30.89	23.3	3.58	18	112	0.8	NW
S2	20181210	Cloudy	Moderate	Mid-Flood	M	4.6	10:55	7.88	8.06	30.92	23.3	3.59	17	112	0.8	NW

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S2	20181210	Cloudy	Moderate	Mid-Flood	S	1	10:55	7.89	8.01	30.97	23.4	1.56	18	112	0.9	NW
S2	20181210	Cloudy	Moderate	Mid-Flood	S	1	10:55	7.85	8.06	30.54	23.3	1.57	8	113	0.88	NW
C1	20181210	Fine	Light	Mid-Ebb	B	10.6	12:44	7.91	8.07	30.74	23.4	5.21	9	113	0.3	SE
C1	20181210	Fine	Light	Mid-Ebb	B	10.6	12:44	7.91	8.15	30.03	23.4	5.26	7	112	0.28	SE
C1	20181210	Fine	Light	Mid-Ebb	M	5.8	12:45	7.91	8.12	30.92	23.4	3.09	7	113	0.29	SE
C1	20181210	Fine	Light	Mid-Ebb	M	5.8	12:45	7.86	8.04	30.73	23.3	3.05	6	114	0.33	SE
C1	20181210	Fine	Light	Mid-Ebb	S	1	12:45	7.9	8.04	30.69	23.4	1.52	7	113	0.31	SE
C1	20181210	Fine	Light	Mid-Ebb	S	1	12:46	7.91	8.07	30.23	23.3	1.47	5	112	0.27	SE
M1	20181210	Fine	Light	Mid-Ebb	B	7.4	12:46	8.77	8	30.89	23.4	5.59	9	113	0.44	N
M1	20181210	Fine	Light	Mid-Ebb	B	7.4	12:47	8.77	8.02	30.85	23.4	5.56	9	113	0.44	N
M1	20181210	Fine	Light	Mid-Ebb	M	4.2	12:47	8.82	8.12	30.43	23.4	3.35	10	114	0.44	N
M1	20181210	Fine	Light	Mid-Ebb	M	4.2	12:47	8.8	8.02	30.07	23.3	3.39	10	112	0.42	N
M1	20181210	Fine	Light	Mid-Ebb	S	1	12:48	8.8	8.15	30.05	23.3	1.19	9	114	0.43	N
M1	20181210	Fine	Light	Mid-Ebb	S	1	12:48	8.77	8.11	30.6	23.3	1.17	11	113	0.46	N
B1	20181210	Fine	Light	Mid-Ebb	B	4.4	12:48	8.2	8.09	30.47	23.4	5.69	11	112	0.21	NE
B1	20181210	Fine	Light	Mid-Ebb	B	4.4	12:49	8.21	8.03	30.67	23.4	5.73	14	112	0.16	NE
B1	20181210	Fine	Light	Mid-Ebb	S	1	12:49	8.23	8.01	30.3	23.3	2	8	111	0.12	NE
B1	20181210	Fine	Light	Mid-Ebb	S	1	12:50	8.24	8.12	30.09	23.3	2.03	10	113	0.15	NE
S1	20181210	Fine	Light	Mid-Ebb	B	4.2	12:50	8.64	8.14	30.05	23.3	5.8	6	112	0.38	NE
S1	20181210	Fine	Light	Mid-Ebb	B	4.2	12:50	8.67	8.11	30.28	23.4	5.76	5	114	0.39	NE
S1	20181210	Fine	Light	Mid-Ebb	S	1	12:51	8.68	8.03	30.09	23.4	1.49	7	114	0.41	NE
S1	20181210	Fine	Light	Mid-Ebb	S	1	12:51	8.64	8.1	30.85	23.3	1.5	8	114	0.43	NE
F1	20181210	Fine	Light	Mid-Ebb	B	7.2	12:52	8.38	8.13	30.28	23.3	5.18	5	112	0.3	SE
F1	20181210	Fine	Light	Mid-Ebb	B	7.2	12:52	8.4	8.12	30.64	23.3	5.21	5	113	0.25	SE
F1	20181210	Fine	Light	Mid-Ebb	M	4.1	12:52	8.44	8	30.64	23.4	3.78	6	114	0.27	SE
F1	20181210	Fine	Light	Mid-Ebb	M	4.1	12:53	8.41	8.1	30.9	23.3	3.75	7	113	0.29	SE
F1	20181210	Fine	Light	Mid-Ebb	S	1	12:53	8.44	8.15	30.26	23.3	1.53	6	113	0.25	SE
F1	20181210	Fine	Light	Mid-Ebb	S	1	12:53	8.48	8.1	30.87	23.3	1.5	7	112	0.25	SE
C2	20181210	Fine	Light	Mid-Ebb	B	8.6	12:54	8.17	8.03	30.87	23.3	5.8	7	113	0.26	S
C2	20181210	Fine	Light	Mid-Ebb	B	8.6	12:54	8.13	8.11	30.73	23.3	5.85	7	113	0.26	S

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C2	20181210	Fine	Light	Mid-Ebb	M	4.8	12:55	8.18	8.09	30.79	23.3	3.08	6	112	0.25	S
C2	20181210	Fine	Light	Mid-Ebb	M	4.8	12:55	8.23	8.03	30.09	23.3	3.13	7	114	0.2	S
C2	20181210	Fine	Light	Mid-Ebb	S	1	12:55	8.26	8.11	30.11	23.4	1.69	5	113	0.17	S
C2	20181210	Fine	Light	Mid-Ebb	S	1	12:56	8.28	8.15	31	23.4	1.66	5	114	0.12	S
B2	20181210	Fine	Light	Mid-Ebb	B	4.3	12:56	7.89	8.12	30.84	23.3	5.36	11	112	0.36	SE
B2	20181210	Fine	Light	Mid-Ebb	B	4.3	12:57	7.88	8.11	30.71	23.3	5.33	12	113	0.31	SE
B2	20181210	Fine	Light	Mid-Ebb	S	1	12:57	7.86	8.03	30.36	23.3	1.5	9	113	0.3	SE
B2	20181210	Fine	Light	Mid-Ebb	S	1	12:57	7.81	8.03	30.12	23.4	1.47	8	112	0.33	SE
S2	20181210	Fine	Light	Mid-Ebb	B	8.6	12:58	8.37	8.15	30.33	23.3	5.12	5	112	0.42	SE
S2	20181210	Fine	Light	Mid-Ebb	B	8.6	12:58	8.4	8.15	30	23.3	5.08	7	112	0.4	SE
S2	20181210	Fine	Light	Mid-Ebb	M	4.8	12:58	8.42	8.01	30.21	23.4	3.88	8	114	0.39	SE
S2	20181210	Fine	Light	Mid-Ebb	M	4.8	12:59	8.46	8.11	30.68	23.3	3.83	9	112	0.44	SE
S2	20181210	Fine	Light	Mid-Ebb	S	1	12:59	8.41	8	30.19	23.4	1.81	5	112	0.47	SE
S2	20181210	Fine	Light	Mid-Ebb	S	1	13:00	8.45	8.09	30.38	23.4	1.86	7	112	0.5	E
S3	20181210	Fine	Light	Mid-Ebb	B	10.7	13:00	8.12	8.12	30.86	23.4	5.43	8	112	0.2	SE
S3	20181210	Fine	Light	Mid-Ebb	B	10.7	13:00	8.09	8.01	30.11	23.3	5.45	9	112	0.15	SE
S3	20181210	Fine	Light	Mid-Ebb	M	5.9	13:01	8.14	8.09	30.6	23.3	3.95	8	114	0.17	SE
S3	20181210	Fine	Light	Mid-Ebb	M	5.9	13:01	8.18	8.12	30.96	23.4	4	7	112	0.14	SE
S3	20181210	Fine	Light	Mid-Ebb	S	1	13:02	8.15	8.14	30.65	23.4	1.42	6	112	0.18	SE
S3	20181210	Fine	Light	Mid-Ebb	S	1	13:02	8.18	8.11	30.83	23.4	1.47	8	114	0.18	SE
CR2	20181210	Fine	Light	Mid-Ebb	B	7.4	13:02	8.45	8.06	30.94	23.4	5.79	13	112	0.45	SE
CR2	20181210	Fine	Light	Mid-Ebb	B	7.4	13:03	8.4	8	30.76	23.3	5.8	12	113	0.45	SE
CR2	20181210	Fine	Light	Mid-Ebb	M	4.2	13:03	8.36	8.11	30.15	23.4	3.94	12	113	0.44	SE
CR2	20181210	Fine	Light	Mid-Ebb	M	4.2	13:03	8.32	8.11	30.38	23.4	3.97	10	112	0.46	SE
CR2	20181210	Fine	Light	Mid-Ebb	S	1	13:04	8.34	8.12	30.69	23.4	1.18	11	114	0.43	SE
CR2	20181210	Fine	Light	Mid-Ebb	S	1	13:04	8.31	8.06	30.09	23.3	1.17	8	113	0.39	S
H1	20181210	Fine	Light	Mid-Ebb	B	7.5	13:05	8.58	8.14	30.53	23.4	5.32	16	113	0.43	SE
H1	20181210	Fine	Light	Mid-Ebb	B	7.5	13:05	8.63	8.15	30.83	23.4	5.34	12	114	0.4	SE
H1	20181210	Fine	Light	Mid-Ebb	M	4.3	13:05	8.58	8.04	30.5	23.4	3.57	7	113	0.4	SE
H1	20181210	Fine	Light	Mid-Ebb	M	4.3	13:06	8.58	8.07	30.29	23.3	3.52	7	113	0.36	SE

Location	Date (YYYYMMDD)	Weather	Sea Condition	Tidal	Water Level note 1	Depth (m)	Time (HH:MM)	DO (mg/L)	pH	Sal (ppt)	Temp (°C)	Turbidity (NTU) note 4	SS (mg/L)	Total Alkalinity (mg/L) note 3	Current Velocity note 3	Direction in NESW note 3
H1	20181210	Fine	Light	Mid-Ebb	S	1	13:06	8.58	8.07	30.73	23.3	1.51	9	112	0.33	SE
H1	20181210	Fine	Light	Mid-Ebb	S	1	13:06	8.61	8.09	30.34	23.3	1.49	8	111	0.3	SE
B3	20181210	Fine	Light	Mid-Ebb	B	4.4	13:07	8.35	8.12	30.08	23.4	5.7	12	111	0.49	SE
B3	20181210	Fine	Light	Mid-Ebb	B	4.4	13:07	8.37	8.08	30.34	23.3	5.72	10	111	0.48	SE
B3	20181210	Fine	Light	Mid-Ebb	S	1	13:08	8.38	8.06	30.54	23.4	1.83	9	113	0.43	SE
B3	20181210	Fine	Light	Mid-Ebb	S	1	13:08	8.4	8.1	30.24	23.4	1.86	9	112	0.39	SE
B4	20181210	Fine	Light	Mid-Ebb	B	4.3	13:08	8.24	8.14	30.24	23.4	5.34	6	112	0.44	S
B4	20181210	Fine	Light	Mid-Ebb	B	4.3	13:09	8.19	8.09	30.69	23.4	5.32	5	112	0.41	S
B4	20181210	Fine	Light	Mid-Ebb	S	1	13:09	8.23	8	30.59	23.3	1.74	6	112	0.37	S
B4	20181210	Fine	Light	Mid-Ebb	S	1	13:10	8.24	8.14	30.41	23.4	1.74	7	112	0.32	S
CR1	20181210	Fine	Light	Mid-Ebb	B	7.5	13:10	8.6	8.12	30.71	23.4	5.27	10	113	0.43	SE
CR1	20181210	Fine	Light	Mid-Ebb	B	7.5	13:10	8.62	8.06	30.6	23.3	5.22	9	113	0.38	SE
CR1	20181210	Fine	Light	Mid-Ebb	M	4.3	13:11	8.67	8.12	30.56	23.3	3.04	11	112	0.34	SE
CR1	20181210	Fine	Light	Mid-Ebb	M	4.3	13:11	8.63	8.01	30.9	23.3	3.01	13	114	0.32	SE
CR1	20181210	Fine	Light	Mid-Ebb	S	1	13:11	8.63	8.06	30.88	23.3	1.84	10	113	0.27	SE
CR1	20181210	Fine	Light	Mid-Ebb	S	1	13:12	8.62	8.12	30.39	23.4	1.79	11	114	0.26	SE
C2	20181212	Cloudy	Moderate	Mid-Flood	B	9.3	9:07	8.37	8.17	30.19	24.9	5.89	9	113	0.2	NE
C2	20181212	Cloudy	Moderate	Mid-Flood	B	9.3	9:07	8.34	8.19	30.77	24.8	5.85	9	115	0.22	NE
C2	20181212	Cloudy	Moderate	Mid-Flood	M	5.2	9:08	8.34	8.14	30.09	24.9	3.21	9	114	0.37	NE
C2	20181212	Cloudy	Moderate	Mid-Flood	M	5.2	9:08	8.38	8.07	30.5	24.8	3.25	8	113	0.39	NE
C2	20181212	Cloudy	Moderate	Mid-Flood	S	1	9:09	8.38	8.11	30.47	24.8	1.3	11	114	0.5	N
C2	20181212	Cloudy	Moderate	Mid-Flood	S	1	9:10	8.43	8.17	30.26	24.8	1.29	10	114	0.61	NE
CR1	20181212	Cloudy	Moderate	Mid-Flood	B	8.1	9:20	8.73	8.15	30.79	24.8	5.04	13	114	0.26	NW
CR1	20181212	Cloudy	Moderate	Mid-Flood	B	8.1	9:21	8.78	8.02	30.51	24.9	5.08	12	112	0.28	NW
CR1	20181212	Cloudy	Moderate	Mid-Flood	M	4.6	9:21	8.75	8.09	30.38	24.9	3.55	13	112	0.33	NW
CR1	20181212	Cloudy	Moderate	Mid-Flood	M	4.6	9:22	8.74	8.09	30.87	24.9	3.52	13	112	0.44	NW
CR1	20181212	Cloudy	Moderate	Mid-Flood	S	1	9:23	8.69	8.13	30.11	24.9	1.34	14	113	0.41	NW
CR1	20181212	Cloudy	Moderate	Mid-Flood	S	1	9:23	8.64	8.08	30.54	24.8	1.35	15	112	0.47	NW
S3	20181212	Cloudy	Moderate	Mid-Flood	B	11.3	9:30	8.66	8.17	30.21	24.8	5.51	12	114	0.48	W
S3	20181212	Cloudy	Moderate	Mid-Flood	B	11.3	9:31	8.63	8.07	30.09	24.8	5.54	12	113	0.52	W

Location	Date (YYYYMMDD)	Weather	Sea Condition	Tidal	Water Level note 1	Depth (m)	Time (HH:MM)	DO (mg/L)	pH	Sal (ppt)	Temp (°C)	Turbidity (NTU) note 4	SS (mg/L)	Total Alkalinity (mg/L) note 3	Current Velocity note 3	Direction in NESW note 3
S3	20181212	Cloudy	Moderate	Mid-Flood	M	6.2	9:31	8.65	8.01	30.29	24.9	3.79	13	114	0.47	W
S3	20181212	Cloudy	Moderate	Mid-Flood	M	6.2	9:32	8.6	8.09	30.74	24.8	3.74	13	114	0.56	W
S3	20181212	Cloudy	Moderate	Mid-Flood	S	1	9:32	8.57	8.19	30.14	24.8	1.32	16	114	0.53	W
S3	20181212	Cloudy	Moderate	Mid-Flood	S	1	9:33	8.62	8.07	30	24.8	1.27	16	114	0.62	W
CR2	20181212	Cloudy	Moderate	Mid-Flood	B	7.8	9:38	8.76	8.16	30.49	24.8	5.87	16	112	0.42	NW
CR2	20181212	Cloudy	Moderate	Mid-Flood	B	7.8	9:38	8.79	8.12	30.41	24.9	5.85	17	114	0.54	NW
CR2	20181212	Cloudy	Moderate	Mid-Flood	M	4.4	9:39	8.74	8.01	30.62	24.8	4	15	113	0.63	NW
CR2	20181212	Cloudy	Moderate	Mid-Flood	M	4.4	9:39	8.69	8.09	30.66	24.9	3.98	15	113	0.69	NW
CR2	20181212	Cloudy	Moderate	Mid-Flood	S	1	9:40	8.67	8.05	30.06	24.9	1.11	14	114	0.65	NW
CR2	20181212	Cloudy	Moderate	Mid-Flood	S	1	9:41	8.72	8.18	30.33	24.8	1.13	14	113	0.72	NW
M1	20181212	Cloudy	Moderate	Mid-Flood	B	7.9	9:36	8.38	8.1	30.25	24.8	5.23	13	113	0.25	NW
M1	20181212	Cloudy	Moderate	Mid-Flood	B	7.9	9:37	8.42	8.03	30.53	24.8	5.13	14	113	0.36	NW
M1	20181212	Cloudy	Moderate	Mid-Flood	M	4.5	9:38	8.46	8.19	30.48	24.9	3.08	16	112	0.42	NW
M1	20181212	Cloudy	Moderate	Mid-Flood	M	4.5	9:38	8.5	8	30.05	24.8	3.15	16	113	0.39	NW
M1	20181212	Cloudy	Moderate	Mid-Flood	S	1	9:39	8.52	8.01	30.4	24.9	1.23	16	112	0.34	NW
M1	20181212	Cloudy	Moderate	Mid-Flood	S	1	9:39	8.56	8.08	30.18	24.8	1.31	15	114	0.3	W
C1	20181212	Cloudy	Moderate	Mid-Flood	B	11.2	10:05	8.68	8.07	30.11	24.8	5.63	10	112	0.26	NW
C1	20181212	Cloudy	Moderate	Mid-Flood	B	11.2	10:06	8.67	8.04	30.43	24.9	5.56	10	113	0.33	NW
C1	20181212	Cloudy	Moderate	Mid-Flood	M	6.1	10:06	8.71	8.04	30.62	24.9	3.11	9	113	0.47	NW
C1	20181212	Cloudy	Moderate	Mid-Flood	M	6.1	10:07	8.69	8.11	30.84	24.9	3.12	10	114	0.45	NW
C1	20181212	Cloudy	Moderate	Mid-Flood	S	1	10:07	8.67	8.01	30	24.9	1.78	9	113	0.48	NW
C1	20181212	Cloudy	Moderate	Mid-Flood	S	1	10:08	8.64	8.15	30.66	24.8	1.83	9	114	0.58	NW
F1	20181212	Cloudy	Moderate	Mid-Flood	B	7.9	10:09	8.36	8.04	30.15	24.8	5.84	10	113	0.36	NW
F1	20181212	Cloudy	Moderate	Mid-Flood	B	7.9	10:09	8.41	8.03	30.46	24.8	5.93	11	114	0.38	NW
F1	20181212	Cloudy	Moderate	Mid-Flood	M	4.5	10:10	8.43	8.04	30.09	24.8	3.61	10	113	0.4	NW
F1	20181212	Cloudy	Moderate	Mid-Flood	M	4.5	10:11	8.43	8.06	30.59	24.9	3.61	11	114	0.37	NW
F1	20181212	Cloudy	Moderate	Mid-Flood	S	1	10:11	8.39	8.14	30.14	24.8	1.84	11	114	0.52	NW
F1	20181212	Cloudy	Moderate	Mid-Flood	S	1	10:12	8.36	8.02	30.98	24.9	1.83	11	112	0.59	NW
B1	20181212	Cloudy	Moderate	Mid-Flood	B	4.8	10:31	8.36	8.03	30.35	24.8	5.38	13	113	0.2	NW
B1	20181212	Cloudy	Moderate	Mid-Flood	B	4.8	10:32	8.33	8	30.33	24.9	5.29	12	112	0.26	NW

Location	Date (YYYYMMDD)	Weather	Sea Condition	Tidal	Water Level note 1	Depth (m)	Time (HH:MM)	DO (mg/L)	pH	Sal (ppt)	Temp (°C)	Turbidity (NTU) note 4	SS (mg/L)	Total Alkalinity (mg/L) note 3	Current Velocity note 3	Direction in NESW note 3
B1	20181212	Cloudy	Moderate	Mid-Flood	S	1	10:33	8.35	8.01	30.78	24.8	1.82	12	114	0.41	W
B1	20181212	Cloudy	Moderate	Mid-Flood	S	1	10:33	8.35	8.12	30.53	24.8	1.89	12	113	0.4	W
S1	20181212	Cloudy	Moderate	Mid-Flood	B	4.7	10:42	8.67	8.11	30.02	24.9	5.57	15	112	0.3	N
S1	20181212	Cloudy	Moderate	Mid-Flood	B	4.7	10:42	8.63	8.07	30.57	24.9	5.66	14	112	0.39	N
S1	20181212	Cloudy	Moderate	Mid-Flood	S	1	10:43	8.59	8.11	30	24.8	1.85	12	113	0.53	N
S1	20181212	Cloudy	Moderate	Mid-Flood	S	1	10:44	8.59	8.1	30.99	24.9	1.76	13	113	0.48	NW
B2	20181212	Cloudy	Moderate	Mid-Flood	B	4.8	10:54	8.82	8.17	30.37	24.9	5.05	11	113	0.49	N
B2	20181212	Cloudy	Moderate	Mid-Flood	B	4.8	10:55	8.87	8.15	30.98	24.8	5.15	11	114	0.51	N
B2	20181212	Cloudy	Moderate	Mid-Flood	S	1	10:56	8.85	8.06	30.31	24.8	1.99	10	113	0.5	N
B2	20181212	Cloudy	Moderate	Mid-Flood	S	1	10:56	8.8	8	30.95	24.9	2	12	113	0.47	N
H1	20181212	Cloudy	Moderate	Mid-Flood	B	7.7	10:49	8.9	8.06	30.66	24.8	5.79	11	113	0.22	W
H1	20181212	Cloudy	Moderate	Mid-Flood	B	7.7	10:49	8.87	8.08	30.42	24.9	5.82	11	115	0.19	W
H1	20181212	Cloudy	Moderate	Mid-Flood	M	4.4	10:50	8.91	8.14	30	24.8	3.52	8	114	0.23	W
H1	20181212	Cloudy	Moderate	Mid-Flood	M	4.4	10:51	8.87	8.19	30.71	24.8	3.48	8	114	0.27	W
H1	20181212	Cloudy	Moderate	Mid-Flood	S	1	10:51	8.91	8.1	30.16	24.8	1.72	9	114	0.25	W
H1	20181212	Cloudy	Moderate	Mid-Flood	S	1	10:52	8.9	8.12	30.28	24.8	1.65	9	114	0.38	W
S2	20181212	Cloudy	Moderate	Mid-Flood	B	8	11:13	8.38	8	30.84	24.8	5.31	11	114	0.32	NW
S2	20181212	Cloudy	Moderate	Mid-Flood	B	8	11:13	8.4	8.2	30.91	24.8	5.37	11	114	0.38	NW
S2	20181212	Cloudy	Moderate	Mid-Flood	M	4.5	11:14	8.41	8.11	30.37	24.8	3.45	10	115	0.4	NW
S2	20181212	Cloudy	Moderate	Mid-Flood	M	4.5	11:14	8.44	8.13	30.26	24.9	3.39	11	113	0.55	NW
S2	20181212	Cloudy	Moderate	Mid-Flood	S	1	11:15	8.4	8.01	30.23	24.9	1.51	11	114	0.64	NW
S2	20181212	Cloudy	Moderate	Mid-Flood	S	1	11:16	8.39	8.05	30.16	24.8	1.53	10	114	0.74	NW
B3	20181212	Cloudy	Moderate	Mid-Flood	B	4.7	11:06	8.84	8.07	30.18	24.9	5.62	14	113	0.42	N
B3	20181212	Cloudy	Moderate	Mid-Flood	B	4.7	11:07	8.82	8.1	30.11	24.8	5.62	14	111	0.55	N
B3	20181212	Cloudy	Moderate	Mid-Flood	S	1	11:07	8.77	8.04	30.58	24.9	1.46	10	114	0.7	N
B3	20181212	Cloudy	Moderate	Mid-Flood	S	1	11:08	8.77	8.06	30.13	24.8	1.54	11	113	0.74	N
B4	20181212	Cloudy	Moderate	Mid-Flood	B	4.8	11:19	8.41	8.18	30.38	24.9	5.38	16	113	0.22	N
B4	20181212	Cloudy	Moderate	Mid-Flood	B	4.8	11:19	8.41	8.07	30.18	24.9	5.45	16	114	0.23	N
B4	20181212	Cloudy	Moderate	Mid-Flood	S	1	11:20	8.36	8.04	30.62	24.8	1.84	14	112	0.35	N
B4	20181212	Cloudy	Moderate	Mid-Flood	S	1	11:21	8.39	8.07	30.81	24.8	1.83	13	114	0.46	N

Contract No. EP/SP/66/12
Integrated Waste Management Facilities, Phase 1
Baseline Water Quality Monitoring Data

Location	Date (YYYYMMDD)	Weather	Sea Condition	Tidal	Water Level note 1	Depth (m)	Time (HH:MM)	DO (mg/L)	pH	Sal (ppt)	Temp (°C)	Turbidity (NTU) note 4	SS (mg/L)	Total Alkalinity (mg/L) note 3	Current Velocity note 3	Direction in NESW note 3
C1	20181212	Fine	Moderate	Mid-Ebb	B	10.3	14:12	8.87	8.18	30.96	24.9	5.67	15	113	0.33	SE
C1	20181212	Fine	Moderate	Mid-Ebb	B	10.3	14:13	8.85	8.07	30.35	24.9	5.68	14	114	0.39	SE
C1	20181212	Fine	Moderate	Mid-Ebb	M	5.7	14:13	8.87	8.07	30.76	24.9	3.44	13	113	0.37	SE
C1	20181212	Fine	Moderate	Mid-Ebb	M	5.7	14:14	8.88	8.05	30.96	24.8	3.53	12	113	0.51	SE
C1	20181212	Fine	Moderate	Mid-Ebb	S	1	14:15	8.9	8.1	30.36	24.9	1.83	11	113	0.48	SE
C1	20181212	Fine	Moderate	Mid-Ebb	S	1	14:15	8.95	8.02	30.46	24.9	1.79	10	113	0.51	SE
M1	20181212	Fine	Moderate	Mid-Ebb	B	7.3	14:13	8.78	8.17	30.83	24.9	5.07	17	114	0.4	NW
M1	20181212	Fine	Moderate	Mid-Ebb	B	7.3	14:13	8.76	8.09	30.89	24.8	5.03	18	112	0.37	NW
M1	20181212	Fine	Moderate	Mid-Ebb	M	4.2	14:14	8.76	8.01	30.43	24.8	3.52	18	114	0.49	NW
M1	20181212	Fine	Moderate	Mid-Ebb	M	4.2	14:15	8.8	8	30.66	24.8	3.5	18	114	0.63	NW
M1	20181212	Fine	Moderate	Mid-Ebb	S	1	14:15	8.81	8	30.14	24.9	1.74	15	112	0.72	NW
M1	20181212	Fine	Moderate	Mid-Ebb	S	1	14:16	8.85	8.2	30.21	24.8	1.79	16	114	0.81	NW
B1	20181212	Fine	Moderate	Mid-Ebb	B	4.3	14:37	8.97	8.09	30.76	24.9	5.59	19	113	0.48	NE
B1	20181212	Fine	Moderate	Mid-Ebb	B	4.3	14:37	9	8.1	30.04	24.8	5.5	18	112	0.51	NE
B1	20181212	Fine	Moderate	Mid-Ebb	S	1	14:38	8.98	8.12	30.99	24.8	1.72	18	112	0.55	NE
B1	20181212	Fine	Moderate	Mid-Ebb	S	1	14:38	8.94	8.1	30.67	24.8	1.76	19	114	0.57	NE
S1	20181212	Fine	Moderate	Mid-Ebb	B	4.2	14:47	8.58	8.03	30.07	24.9	5.5	17	112	0.27	E
S1	20181212	Fine	Moderate	Mid-Ebb	B	4.2	14:48	8.57	8.08	30.39	24.8	5.56	18	113	0.23	E
S1	20181212	Fine	Moderate	Mid-Ebb	S	1	14:48	8.57	8.11	30.17	24.8	1.38	16	114	0.21	E
S1	20181212	Fine	Moderate	Mid-Ebb	S	1	14:49	8.58	8.19	30.48	24.8	1.41	16	113	0.2	E
B2	20181212	Fine	Moderate	Mid-Ebb	B	4.4	14:58	8.43	8.18	30.33	24.9	5.65	12	113	0.2	SE
B2	20181212	Fine	Moderate	Mid-Ebb	B	4.4	14:59	8.47	8.08	30.48	24.8	5.67	12	112	0.27	SE
B2	20181212	Fine	Moderate	Mid-Ebb	S	1	15:00	8.49	8.05	30.28	24.9	1.62	11	113	0.27	SE
B2	20181212	Fine	Moderate	Mid-Ebb	S	1	15:00	8.46	8.17	30.09	24.9	1.61	11	113	0.36	SE
F1	20181212	Fine	Moderate	Mid-Ebb	B	7.3	14:51	8.33	8.1	30.63	24.9	5.71	11	113	0.31	SE
F1	20181212	Fine	Moderate	Mid-Ebb	B	7.3	14:52	8.35	8.1	30.38	24.9	5.72	12	114	0.3	SE
F1	20181212	Fine	Moderate	Mid-Ebb	M	4.2	14:52	8.32	8.2	30.15	24.8	3.18	11	113	0.37	SE
F1	20181212	Fine	Moderate	Mid-Ebb	M	4.2	14:53	8.32	8.12	30.66	24.9	3.22	11	113	0.5	SE
F1	20181212	Fine	Moderate	Mid-Ebb	S	1	14:53	8.32	8.05	30.06	24.9	1.69	13	113	0.54	SE
F1	20181212	Fine	Moderate	Mid-Ebb	S	1	14:54	8.27	8.07	30.7	24.8	1.64	12	113	0.57	SE

Location	Date (YYYYMMDD)	Weather	Sea Condition	Tidal	Water Level note 1	Depth (m)	Time (HH:MM)	DO (mg/L)	pH	Sal (ppt)	Temp (°C)	Turbidity (NTU) note 4	SS (mg/L)	Total Alkalinity (mg/L) note 3	Current Velocity note 3	Direction in NESW note 3
S2	20181212	Fine	Moderate	Mid-Ebb	B	8.4	15:14	8.32	8.1	30.77	24.9	5.76	10	114	0.56	SE
S2	20181212	Fine	Moderate	Mid-Ebb	B	8.4	15:14	8.28	8.02	31	24.9	5.76	10	113	0.54	SE
S2	20181212	Fine	Moderate	Mid-Ebb	M	4.7	15:15	8.23	8.19	30.65	24.8	3.02	11	114	0.51	SE
S2	20181212	Fine	Moderate	Mid-Ebb	M	4.7	15:15	8.21	8.1	30.33	24.9	2.98	11	113	0.59	SE
S2	20181212	Fine	Moderate	Mid-Ebb	S	1	15:16	8.2	8.14	30.12	24.9	1.92	12	114	0.66	SE
S2	20181212	Fine	Moderate	Mid-Ebb	S	1	15:17	8.2	8.16	30.97	24.9	1.97	13	114	0.67	SE
C2	20181212	Fine	Moderate	Mid-Ebb	B	8.5	15:16	8.8	8.13	30.64	24.9	5.31	13	114	0.49	SE
C2	20181212	Fine	Moderate	Mid-Ebb	B	8.5	15:17	8.82	8.04	30.21	24.8	5.31	14	114	0.47	SE
C2	20181212	Fine	Moderate	Mid-Ebb	M	4.8	15:18	8.84	8.13	30.81	24.9	3.26	13	113	0.61	SE
C2	20181212	Fine	Moderate	Mid-Ebb	M	4.8	15:18	8.87	8.17	30.31	24.8	3.22	13	112	0.65	SE
C2	20181212	Fine	Moderate	Mid-Ebb	S	1	15:19	8.92	8.06	30.37	24.9	1.43	13	113	0.71	S
C2	20181212	Fine	Moderate	Mid-Ebb	S	1	15:19	8.96	8.16	30.23	24.8	1.4	13	113	0.83	S
S3	20181212	Fine	Moderate	Mid-Ebb	B	10.5	15:29	8.38	8.12	30.27	24.9	5.98	15	114	0.32	SE
S3	20181212	Fine	Moderate	Mid-Ebb	B	10.5	15:30	8.43	8.2	30.83	24.9	6.04	14	114	0.33	SE
S3	20181212	Fine	Moderate	Mid-Ebb	M	5.8	15:30	8.48	8.07	30.49	24.9	3.73	13	113	0.32	SE
S3	20181212	Fine	Moderate	Mid-Ebb	M	5.8	15:31	8.53	8.12	30.41	24.9	3.78	13	113	0.42	SE
S3	20181212	Fine	Moderate	Mid-Ebb	S	1	15:32	8.5	8.05	30.03	24.8	1.74	12	114	0.5	SE
S3	20181212	Fine	Moderate	Mid-Ebb	S	1	15:32	8.49	8.15	30.42	24.9	1.77	11	114	0.53	SE
CR2	20181212	Fine	Moderate	Mid-Ebb	B	7.3	15:38	8.4	8.08	30.5	24.9	5.97	11	113	0.41	E
CR2	20181212	Fine	Moderate	Mid-Ebb	B	7.3	15:38	8.36	8.08	30.78	24.9	5.88	10	114	0.54	E
CR2	20181212	Fine	Moderate	Mid-Ebb	M	4.2	15:39	8.36	8.15	30.67	24.9	3.93	14	114	0.66	E
CR2	20181212	Fine	Moderate	Mid-Ebb	M	4.2	15:40	8.38	8.09	30.18	24.9	3.93	14	114	0.78	E
CR2	20181212	Fine	Moderate	Mid-Ebb	S	1	15:40	8.38	8.16	30.6	24.8	1	13	114	0.87	E
CR2	20181212	Fine	Moderate	Mid-Ebb	S	1	15:41	8.34	8.08	30.36	24.9	0.96	13	114	0.88	E
H1	20181212	Fine	Moderate	Mid-Ebb	B	7.2	15:36	8.78	8.04	30.43	24.8	5.05	11	114	0.48	SE
H1	20181212	Fine	Moderate	Mid-Ebb	B	7.2	15:37	8.83	8.12	30.08	24.9	5.14	11	114	0.59	SE
H1	20181212	Fine	Moderate	Mid-Ebb	M	4.1	15:38	8.78	8.15	30.45	24.8	3.91	11	114	0.56	SE
H1	20181212	Fine	Moderate	Mid-Ebb	M	4.1	15:38	8.78	8.12	30.85	24.9	3.82	11	114	0.62	E
H1	20181212	Fine	Moderate	Mid-Ebb	S	1	15:39	8.75	8.02	30.9	24.8	1.42	14	113	0.6	E
H1	20181212	Fine	Moderate	Mid-Ebb	S	1	15:40	8.79	8.15	31	24.8	1.49	14	115	0.69	E

Location	Date (YYYYMMDD)	Weather	Sea Condition	Tidal	Water Level note 1	Depth (m)	Time (HH:MM)	DO (mg/L)	pH	Sal (ppt)	Temp (°C)	Turbidity (NTU) note 4	SS (mg/L)	Total Alkalinity (mg/L) note 3	Current Velocity note 3	Direction in NESW note 3
CR1	20181212	Fine	Moderate	Mid-Ebb	B	7.4	15:49	8.83	8.17	30.49	24.9	5.42	10	114	0.28	SE
CR1	20181212	Fine	Moderate	Mid-Ebb	B	7.4	15:50	8.88	8.07	30.58	24.8	5.41	11	114	0.25	SE
CR1	20181212	Fine	Moderate	Mid-Ebb	M	4.2	15:50	8.91	8.09	30.3	24.8	3.94	9	114	0.26	SE
CR1	20181212	Fine	Moderate	Mid-Ebb	M	4.2	15:51	8.95	8.08	30.21	24.9	3.94	10	114	0.3	SE
CR1	20181212	Fine	Moderate	Mid-Ebb	S	1	15:52	9	8.18	30.02	24.9	1.48	12	113	0.4	SE
CR1	20181212	Fine	Moderate	Mid-Ebb	S	1	15:52	8.99	8.09	30.4	24.8	1.48	12	113	0.41	SE
B3	20181212	Fine	Moderate	Mid-Ebb	B	4.3	15:50	8.52	8.05	30.29	24.9	5.61	15	113	0.33	SE
B3	20181212	Fine	Moderate	Mid-Ebb	B	4.3	15:50	8.5	8.05	30.84	24.8	5.54	16	114	0.31	SE
B3	20181212	Fine	Moderate	Mid-Ebb	S	1	15:51	8.53	8.12	30.59	24.9	1.97	13	112	0.43	SE
B3	20181212	Fine	Moderate	Mid-Ebb	S	1	15:52	8.54	8.1	30.73	24.9	2.06	13	113	0.58	SE
B4	20181212	Fine	Moderate	Mid-Ebb	B	4.5	16:01	8.37	8.18	30.83	24.8	5.83	12	112	0.21	S
B4	20181212	Fine	Moderate	Mid-Ebb	B	4.5	16:02	8.32	8.03	30.96	24.8	5.89	12	113	0.31	S
B4	20181212	Fine	Moderate	Mid-Ebb	S	1	16:03	8.36	8.17	30.09	24.9	1.54	12	113	0.4	S
B4	20181212	Fine	Moderate	Mid-Ebb	S	1	16:03	8.38	8.04	30.56	24.8	1.51	11	113	0.43	S
C2	20181215	Sunny	Calm	Mid-Flood	B	9.1	11:46	8.86	8.18	30.38	23.7	6.97	9	113	0.42	NE
C2	20181215	Sunny	Calm	Mid-Flood	B	9.1	11:46	8.87	8.17	30.02	23.6	7.02	10	114	0.38	NE
C2	20181215	Sunny	Calm	Mid-Flood	M	5.1	11:47	8.86	8.16	30.29	23.7	4.71	6	115	0.45	NE
C2	20181215	Sunny	Calm	Mid-Flood	M	5.1	11:47	8.81	8.01	29.69	23.7	4.67	7	115	0.48	NE
C2	20181215	Sunny	Calm	Mid-Flood	S	1	11:48	8.76	8.11	29.62	23.6	2.82	8	114	0.48	NE
C2	20181215	Sunny	Calm	Mid-Flood	S	1	11:49	8.74	8.04	29.68	23.7	2.87	8	114	0.49	NE
CR1	20181215	Sunny	Calm	Mid-Flood	B	7.9	11:55	8.8	8.02	30.09	23.7	6.79	13	114	0.35	NW
CR1	20181215	Sunny	Calm	Mid-Flood	B	7.9	11:56	8.79	8.07	29.71	23.7	6.77	13	115	0.45	NW
CR1	20181215	Sunny	Calm	Mid-Flood	M	4.5	11:56	8.78	8.02	30	23.6	4.08	11	114	0.52	NW
CR1	20181215	Sunny	Calm	Mid-Flood	M	4.5	11:57	8.79	8.15	30.26	23.7	4.11	11	114	0.5	NW
CR1	20181215	Sunny	Calm	Mid-Flood	S	1	11:58	8.84	8.16	30.33	23.7	2.93	12	114	0.52	NW
CR1	20181215	Sunny	Calm	Mid-Flood	S	1	11:58	8.82	8.1	30.22	23.7	2.89	12	114	0.48	W
S3	20181215	Sunny	Calm	Mid-Flood	B	11.4	12:04	9.35	8.17	29.66	23.7	6.66	10	113	0.5	NW
S3	20181215	Sunny	Calm	Mid-Flood	B	11.4	12:05	9.38	8.2	29.56	23.7	6.7	11	114	0.52	NW
S3	20181215	Sunny	Calm	Mid-Flood	M	6.2	12:05	9.34	8.04	29.89	23.7	4.55	12	114	0.61	W
S3	20181215	Sunny	Calm	Mid-Flood	M	6.2	12:06	9.36	8.02	30.1	23.6	4.6	11	114	0.56	W

Location	Date (YYYYMMDD)	Weather	Sea Condition	Tidal	Water Level note 1	Depth (m)	Time (HH:MM)	DO (mg/L)	pH	Sal (ppt)	Temp (°C)	Turbidity (NTU) note 4	SS (mg/L)	Total Alkalinity (mg/L) note 3	Current Velocity note 3	Direction in NESW note 3
S3	20181215	Sunny	Calm	Mid-Flood	S	1	12:06	9.37	8.11	30.42	23.7	2.94	15	114	0.61	W
S3	20181215	Sunny	Calm	Mid-Flood	S	1	12:07	9.33	8.08	30.42	23.6	2.89	15	114	0.66	W
CR2	20181215	Sunny	Calm	Mid-Flood	B	8.1	12:12	8.81	8.02	29.99	23.7	6.42	17	114	0.61	NW
CR2	20181215	Sunny	Calm	Mid-Flood	B	8.1	12:12	8.86	8.03	30.04	23.6	6.45	17	114	0.66	NW
CR2	20181215	Sunny	Calm	Mid-Flood	M	4.6	12:13	8.83	8.12	30.13	23.7	4.14	15	115	0.68	NW
CR2	20181215	Sunny	Calm	Mid-Flood	M	4.6	12:13	8.78	8.1	30.12	23.6	4.15	15	114	0.71	NW
CR2	20181215	Sunny	Calm	Mid-Flood	S	1	12:14	8.82	8.01	30.39	23.7	2.24	14	114	0.75	NW
CR2	20181215	Sunny	Calm	Mid-Flood	S	1	12:15	8.81	8.19	30.24	23.6	2.22	15	115	0.84	NW
M1	20181215	Sunny	Calm	Mid-Flood	B	7.7	12:13	8.94	8.09	30.17	23.7	6.51	15	114	0.34	NW
M1	20181215	Sunny	Calm	Mid-Flood	B	7.7	12:14	8.93	8.05	30.04	23.6	6.55	14	113	0.37	NW
M1	20181215	Sunny	Calm	Mid-Flood	M	4.4	12:15	8.89	8.06	30.37	23.6	4.45	15	114	0.39	NW
M1	20181215	Sunny	Calm	Mid-Flood	M	4.4	12:15	8.87	8.15	30.1	23.7	4.46	14	114	0.34	NW
M1	20181215	Sunny	Calm	Mid-Flood	S	1	12:16	8.85	8.11	30.39	23.7	2.33	13	115	0.44	W
M1	20181215	Sunny	Calm	Mid-Flood	S	1	12:16	8.8	8.13	30.3	23.6	2.32	14	114	0.52	W
C1	20181215	Sunny	Calm	Mid-Flood	B	11.3	12:44	8.88	8.13	30.29	23.7	6.79	10	114	0.46	NW
C1	20181215	Sunny	Calm	Mid-Flood	B	11.3	12:45	8.93	8.19	30.37	23.7	6.8	10	113	0.45	NW
C1	20181215	Sunny	Calm	Mid-Flood	M	6.2	12:45	8.91	8.09	29.63	23.7	4.79	11	113	0.48	NW
C1	20181215	Sunny	Calm	Mid-Flood	M	6.2	12:46	8.93	8.04	30.48	23.7	4.8	11	114	0.56	NW
C1	20181215	Sunny	Calm	Mid-Flood	S	1	12:46	8.93	8.03	30.02	23.7	2.02	12	113	0.59	NW
C1	20181215	Sunny	Calm	Mid-Flood	S	1	12:47	8.95	8.04	30.37	23.7	2.02	12	114	0.54	NW
F1	20181215	Sunny	Calm	Mid-Flood	B	7.7	12:44	8.97	8.11	29.57	23.6	6.19	11	114	0.38	NW
F1	20181215	Sunny	Calm	Mid-Flood	B	7.7	12:44	9.02	8.14	30.28	23.7	6.17	10	114	0.44	NW
F1	20181215	Sunny	Calm	Mid-Flood	M	4.4	12:45	8.97	8.07	29.99	23.6	4.48	10	115	0.54	NW
F1	20181215	Sunny	Calm	Mid-Flood	M	4.4	12:46	8.93	8	30.4	23.7	4.45	11	114	0.54	NW
F1	20181215	Sunny	Calm	Mid-Flood	S	1	12:46	8.98	8.09	29.58	23.7	2.33	9	115	0.6	NW
F1	20181215	Sunny	Calm	Mid-Flood	S	1	12:47	8.93	8.11	30.5	23.6	2.37	9	115	0.67	NW
B1	20181215	Sunny	Calm	Mid-Flood	B	4.6	13:07	9.22	8.1	30.31	23.6	6.07	11	115	0.47	NW
B1	20181215	Sunny	Calm	Mid-Flood	B	4.6	13:08	9.22	8.11	29.87	23.6	6.07	11	114	0.55	NW
B1	20181215	Sunny	Calm	Mid-Flood	S	1	13:09	9.22	8.12	29.97	23.7	2.93	12	115	0.53	NW
B1	20181215	Sunny	Calm	Mid-Flood	S	1	13:09	9.26	8.12	29.64	23.7	2.96	11	115	0.48	NW

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S1	20181215	Sunny	Calm	Mid-Flood	B	4.7	13:18	9.25	8.04	29.73	23.6	6.89	14	114	0.69	N
S1	20181215	Sunny	Calm	Mid-Flood	B	4.7	13:18	9.23	8.05	29.61	23.7	6.91	14	115	0.77	N
S1	20181215	Sunny	Calm	Mid-Flood	S	1	13:19	9.2	8.03	30.36	23.6	2.25	13	114	0.84	N
S1	20181215	Sunny	Calm	Mid-Flood	S	1	13:20	9.19	8.16	29.89	23.6	2.28	13	114	0.87	N
B2	20181215	Sunny	Calm	Mid-Flood	B	4.8	13:30	8.95	8.02	29.89	23.6	6.64	13	114	0.7	NW
B2	20181215	Sunny	Calm	Mid-Flood	B	4.8	13:31	9	8.13	30.13	23.6	6.59	13	114	0.66	N
B2	20181215	Sunny	Calm	Mid-Flood	S	1	13:32	8.99	8.08	30.48	23.7	2.77	17	114	0.73	NW
B2	20181215	Sunny	Calm	Mid-Flood	S	1	13:32	8.98	8.16	29.76	23.7	2.81	17	114	0.69	NW
H1	20181215	Sunny	Calm	Mid-Flood	B	7.8	13:26	9.27	8.2	29.98	23.7	6.88	9	115	0.48	W
H1	20181215	Sunny	Calm	Mid-Flood	B	7.8	13:26	9.3	8.06	30.17	23.7	6.92	9	113	0.45	W
H1	20181215	Sunny	Calm	Mid-Flood	M	4.4	13:27	9.32	8.13	29.89	23.7	4.45	9	115	0.45	W
H1	20181215	Sunny	Calm	Mid-Flood	M	4.4	13:28	9.37	8.12	29.59	23.6	4.47	8	114	0.53	W
H1	20181215	Sunny	Calm	Mid-Flood	S	1	13:28	9.42	8.2	30.11	23.7	2.36	8	114	0.6	W
H1	20181215	Sunny	Calm	Mid-Flood	S	1	13:29	9.4	8.13	30.22	23.7	2.31	8	115	0.63	W
B3	20181215	Sunny	Calm	Mid-Flood	B	4.7	13:43	9	8.13	29.91	23.6	6.65	12	114	0.48	NW
B3	20181215	Sunny	Calm	Mid-Flood	B	4.7	13:43	8.95	8.06	29.78	23.6	6.7	12	115	0.56	NW
B3	20181215	Sunny	Calm	Mid-Flood	S	1	13:44	8.99	8.03	29.97	23.7	2.58	15	114	0.51	NW
B3	20181215	Sunny	Calm	Mid-Flood	S	1	13:44	9.04	8.14	30.22	23.7	2.57	15	114	0.61	NW
B4	20181215	Sunny	Calm	Mid-Flood	B	4.8	13:56	9.3	8.01	30.09	23.6	6.67	14	114	0.6	N
B4	20181215	Sunny	Calm	Mid-Flood	B	4.8	13:57	9.26	8.05	30.41	23.6	6.71	14	114	0.68	N
B4	20181215	Sunny	Calm	Mid-Flood	S	1	13:57	9.22	8.08	29.63	23.6	2.02	16	114	0.67	N
B4	20181215	Sunny	Calm	Mid-Flood	S	1	13:58	9.17	8.15	30.11	23.7	1.97	14	114	0.69	N
S2	20181215	Sunny	Calm	Mid-Flood	B	8.1	13:46	8.95	8.05	30.39	23.7	6.47	15	114	0.57	NW
S2	20181215	Sunny	Calm	Mid-Flood	B	8.1	13:47	8.97	8.11	30.5	23.6	6.52	14	113	0.54	NW
S2	20181215	Sunny	Calm	Mid-Flood	M	4.6	13:48	8.94	8.09	30.43	23.7	4.51	12	115	0.56	NW
S2	20181215	Sunny	Calm	Mid-Flood	M	4.6	13:48	8.96	8.16	29.89	23.6	4.49	14	115	0.6	W
S2	20181215	Sunny	Calm	Mid-Flood	S	1	13:49	8.91	8.04	30.31	23.7	2.43	12	114	0.55	W
S2	20181215	Sunny	Calm	Mid-Flood	S	1	13:50	8.9	8.2	29.72	23.7	2.4	12	114	0.65	W
C1	20181215	Cloudy	Light	Mid-Ebb	B	10.2	18:07	9.3	8	30.03	23.7	6.4	13	114	0.37	SE
C1	20181215	Cloudy	Light	Mid-Ebb	B	10.2	18:08	9.32	8.01	29.86	23.7	6.35	13	113	0.44	SE

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C1	20181215	Cloudy	Light	Mid-Ebb	M	5.6	18:08	9.28	8.02	29.51	23.6	4.45	14	112	0.53	SE
C1	20181215	Cloudy	Light	Mid-Ebb	M	5.6	18:09	9.29	8.14	30.29	23.7	4.43	14	113	0.57	SE
C1	20181215	Cloudy	Light	Mid-Ebb	S	1	18:10	9.28	8.13	30.11	23.6	2.12	14	113	0.59	SE
C1	20181215	Cloudy	Light	Mid-Ebb	S	1	18:10	9.23	8.05	29.93	23.6	2.07	13	114	0.54	SE
M1	20181215	Cloudy	Light	Mid-Ebb	B	7.3	18:14	9.08	8.11	29.57	23.6	6.18	14	113	0.4	N
M1	20181215	Cloudy	Light	Mid-Ebb	B	7.3	18:14	9.13	8.08	29.89	23.6	6.19	14	113	0.41	N
M1	20181215	Cloudy	Light	Mid-Ebb	M	4.2	18:15	9.08	8.2	30.29	23.7	4.88	10	113	0.5	N
M1	20181215	Cloudy	Light	Mid-Ebb	M	4.2	18:16	9.04	8.12	30.02	23.6	4.87	11	114	0.54	N
M1	20181215	Cloudy	Light	Mid-Ebb	S	1	18:16	9.07	8.04	30.28	23.6	2.34	10	113	0.49	N
M1	20181215	Cloudy	Light	Mid-Ebb	S	1	18:17	9.12	8.17	30.11	23.6	2.29	9	113	0.48	N
F1	20181215	Cloudy	Light	Mid-Ebb	B	7.2	18:45	8.81	8.1	30.45	23.7	6	12	114	0.63	SE
F1	20181215	Cloudy	Light	Mid-Ebb	B	7.2	18:45	8.79	8.15	29.99	23.7	5.99	12	114	0.64	SE
F1	20181215	Cloudy	Light	Mid-Ebb	M	4.1	18:46	8.75	8.16	29.66	23.6	4.61	15	114	0.59	SE
F1	20181215	Cloudy	Light	Mid-Ebb	M	4.1	18:46	8.75	8.01	30.11	23.6	4.56	14	113	0.58	SE
F1	20181215	Cloudy	Light	Mid-Ebb	S	1	18:47	8.73	8.1	30.11	23.6	2.86	14	113	0.65	SE
F1	20181215	Cloudy	Light	Mid-Ebb	S	1	18:48	8.69	8.07	29.93	23.6	2.91	14	113	0.69	SE
C2	20181215	Cloudy	Light	Mid-Ebb	B	8.5	19:10	9.3	8.19	30.48	23.6	6.68	11	113	0.41	S
C2	20181215	Cloudy	Light	Mid-Ebb	B	8.5	19:11	9.28	8.1	29.56	23.6	6.63	12	114	0.38	S
C2	20181215	Cloudy	Light	Mid-Ebb	M	4.8	19:11	9.31	8.09	29.82	23.6	4.09	9	113	0.41	S
C2	20181215	Cloudy	Light	Mid-Ebb	M	4.8	19:12	9.28	8.19	29.64	23.7	4.12	9	114	0.46	S
C2	20181215	Cloudy	Light	Mid-Ebb	S	1	19:13	9.28	8.11	29.77	23.7	2.19	9	114	0.52	S
C2	20181215	Cloudy	Light	Mid-Ebb	S	1	19:13	9.3	8	29.77	23.7	2.16	9	113	0.55	S
H1	20181215	Cloudy	Light	Mid-Ebb	B	7.2	19:30	9.19	8.05	29.98	23.6	6.93	9	114	0.45	SE
H1	20181215	Cloudy	Light	Mid-Ebb	B	7.2	19:31	9.15	8.07	29.53	23.7	6.94	10	114	0.51	SE
H1	20181215	Cloudy	Light	Mid-Ebb	M	4.1	19:31	9.17	8.18	29.54	23.6	4.79	9	114	0.53	SE
H1	20181215	Cloudy	Light	Mid-Ebb	M	4.1	19:32	9.21	8.15	30.17	23.7	4.79	10	113	0.49	SE
H1	20181215	Cloudy	Light	Mid-Ebb	S	1	19:32	9.17	8.14	29.73	23.7	2.14	10	113	0.48	SE
H1	20181215	Cloudy	Light	Mid-Ebb	S	1	19:33	9.18	8.04	29.51	23.7	2.12	10	113	0.56	SE
B3	20181215	Cloudy	Light	Mid-Ebb	B	4.3	19:50	8.99	8.17	29.99	23.7	6.29	8	115	0.51	SE
B3	20181215	Cloudy	Light	Mid-Ebb	B	4.3	19:50	8.95	8.08	29.74	23.7	6.31	8	114	0.61	SE

Location	Date (YYYYMMDD)	Weather	Sea Condition	Tidal	Water Level note 1	Depth (m)	Time (HH:MM)	DO (mg/L)	pH	Sal (ppt)	Temp (°C)	Turbidity (NTU) note 4	SS (mg/L)	Total Alkalinity (mg/L) note 3	Current Velocity note 3	Direction in NESW note 3
B3	20181215	Cloudy	Light	Mid-Ebb	S	1	19:51	8.9	8.1	29.68	23.6	2.39	8	114	0.57	SE
B3	20181215	Cloudy	Light	Mid-Ebb	S	1	19:51	8.93	8.11	30.1	23.7	2.43	8	115	0.57	SE
B4	20181215	Cloudy	Light	Mid-Ebb	B	4.5	20:05	9.17	8.05	29.78	23.6	6.63	7	114	0.6	S
B4	20181215	Cloudy	Light	Mid-Ebb	B	4.5	20:06	9.2	8.19	30.22	23.7	6.68	7	113	0.55	S
B4	20181215	Cloudy	Light	Mid-Ebb	S	1	20:06	9.16	8.01	29.7	23.7	2.31	7	113	0.56	S
B4	20181215	Cloudy	Light	Mid-Ebb	S	1	20:07	9.17	8.2	29.53	23.6	2.34	7	113	0.58	S
B1	20181215	Cloudy	Light	Mid-Ebb	B	4.4	18:26	9.16	8.19	29.97	23.6	6.78	15	114	0.37	NE
B1	20181215	Cloudy	Light	Mid-Ebb	B	4.4	18:26	9.2	8.05	30.15	23.7	6.73	14	114	0.37	NE
B1	20181215	Cloudy	Light	Mid-Ebb	S	1	18:27	9.23	8.07	30.12	23.7	2.92	14	114	0.41	NE
B1	20181215	Cloudy	Light	Mid-Ebb	S	1	18:27	9.28	8.1	30.48	23.7	2.95	13	114	0.49	NE
S1	20181215	Cloudy	Light	Mid-Ebb	B	4.2	18:33	9.22	8.19	29.56	23.7	6.31	16	114	0.58	E
S1	20181215	Cloudy	Light	Mid-Ebb	B	4.2	18:34	9.26	8.18	29.88	23.6	6.28	16	113	0.64	E
S1	20181215	Cloudy	Light	Mid-Ebb	S	1	18:34	9.31	8.16	29.85	23.6	2.13	13	114	0.69	E
S1	20181215	Cloudy	Light	Mid-Ebb	S	1	18:35	9.3	8.19	30.15	23.7	2.1	13	114	0.73	E
B2	20181215	Cloudy	Light	Mid-Ebb	B	4.1	18:37	8.94	8.19	30.47	23.7	6.19	15	114	0.34	SE
B2	20181215	Cloudy	Light	Mid-Ebb	B	4.1	18:37	8.97	8.15	30.15	23.7	6.2	15	114	0.34	SE
B2	20181215	Cloudy	Light	Mid-Ebb	S	1	18:38	8.92	8.08	29.74	23.7	2.97	16	114	0.37	SE
B2	20181215	Cloudy	Light	Mid-Ebb	S	1	18:38	8.88	8.15	29.65	23.7	2.98	14	114	0.4	SE
S2	20181215	Cloudy	Light	Mid-Ebb	B	7.5	18:41	9.37	8.1	29.84	23.7	6.78	13	114	0.46	SE
S2	20181215	Cloudy	Light	Mid-Ebb	B	7.5	18:42	9.42	8.04	30.19	23.6	6.77	13	114	0.43	SE
S2	20181215	Cloudy	Light	Mid-Ebb	M	4.3	18:42	9.47	8.19	30.19	23.6	4.18	14	113	0.53	SE
S2	20181215	Cloudy	Light	Mid-Ebb	M	4.3	18:43	9.46	8.02	30.45	23.7	4.14	15	115	0.49	SE
S2	20181215	Cloudy	Light	Mid-Ebb	S	1	18:43	9.48	8.18	30.05	23.7	2.45	14	114	0.56	SE
S2	20181215	Cloudy	Light	Mid-Ebb	S	1	18:44	9.53	8.09	29.97	23.6	2.5	14	114	0.62	SE
S3	20181215	Cloudy	Light	Mid-Ebb	B	10.6	18:55	9.08	8.1	29.52	23.7	6.41	11	114	0.44	SE
S3	20181215	Cloudy	Light	Mid-Ebb	B	10.6	18:55	9.09	8.11	29.59	23.7	6.46	12	114	0.51	SE
S3	20181215	Cloudy	Light	Mid-Ebb	M	5.8	18:56	9.1	8.01	29.86	23.6	4.81	12	114	0.47	SE
S3	20181215	Cloudy	Light	Mid-Ebb	M	5.8	18:57	9.08	8.18	30.39	23.6	4.81	12	114	0.47	SE
S3	20181215	Cloudy	Light	Mid-Ebb	S	1	18:57	9.05	8.12	30.37	23.7	2.83	12	114	0.44	SE
S3	20181215	Cloudy	Light	Mid-Ebb	S	1	18:58	9.02	8.2	30.14	23.6	2.82	14	113	0.49	SE

Location	Date (YYYYMMDD)	Weather	Sea Condition	Tidal	Water Level note 1	Depth (m)	Time (HH:MM)	DO (mg/L)	pH	Sal (ppt)	Temp (°C)	Turbidity (NTU) note 4	SS (mg/L)	Total Alkalinity (mg/L) note 3	Current Velocity note 3	Direction in NESW note 3
CR2	20181215	Cloudy	Light	Mid-Ebb	B	8	19:01	9.2	8.04	29.6	23.7	6.73	18	114	0.69	E
CR2	20181215	Cloudy	Light	Mid-Ebb	B	8	19:02	9.24	8.1	30.35	23.7	6.68	17	114	0.64	E
CR2	20181215	Cloudy	Light	Mid-Ebb	M	4.5	19:03	9.19	8.04	29.95	23.6	4.92	14	115	0.62	E
CR2	20181215	Cloudy	Light	Mid-Ebb	M	4.5	19:03	9.21	8.12	30.3	23.6	4.89	15	114	0.64	E
CR2	20181215	Cloudy	Light	Mid-Ebb	S	1	19:04	9.2	8.04	30.34	23.7	2.37	14	114	0.65	E
CR2	20181215	Cloudy	Light	Mid-Ebb	S	1	19:04	9.24	8.13	29.58	23.7	2.39	14	114	0.69	E
CR1	20181215	Cloudy	Light	Mid-Ebb	B	7.8	19:18	8.91	8.11	30.19	23.7	6.17	16	114	0.34	SE
CR1	20181215	Cloudy	Light	Mid-Ebb	B	7.8	19:19	8.93	8.16	30.5	23.6	6.12	15	114	0.31	SE
CR1	20181215	Cloudy	Light	Mid-Ebb	M	4.4	19:19	8.97	8.14	30.43	23.6	4.99	14	114	0.36	SE
CR1	20181215	Cloudy	Light	Mid-Ebb	M	4.4	19:20	9.01	8.09	29.75	23.7	4.98	15	113	0.32	SE
CR1	20181215	Cloudy	Light	Mid-Ebb	S	1	19:21	9.01	8	29.78	23.6	2.7	14	114	0.35	SE
CR1	20181215	Cloudy	Light	Mid-Ebb	S	1	19:21	8.96	8	29.81	23.6	2.69	15	114	0.43	SE
C1	20181217	Cloudy	Moderate	Mid-Ebb	B	10.3	8:16	9.05	8.09	30.03	24.5	7.92	7	113	0.29	SE
C1	20181217	Cloudy	Moderate	Mid-Ebb	B	10.3	8:16	8.97	8.18	29.23	24.6	8.24	8	113	0.28	SE
C1	20181217	Cloudy	Moderate	Mid-Ebb	M	5.7	8:17	8.9	8.1	28.53	24.6	5.94	6	113	0.32	SE
C1	20181217	Cloudy	Moderate	Mid-Ebb	M	5.7	8:17	9	8.02	27.53	24.6	5.26	7	114	0.28	SE
C1	20181217	Cloudy	Moderate	Mid-Ebb	S	1	8:18	8.91	8.05	27.73	24.6	3.83	6	114	0.59	SE
C1	20181217	Cloudy	Moderate	Mid-Ebb	S	1	8:19	8.86	8.09	28.13	24.5	3.05	7	116	0.54	SE
S3	20181217	Cloudy	Moderate	Mid-Ebb	B	10.5	8:16	8.9	8.07	30.21	24.5	7.94	9	114	0.27	SE
S3	20181217	Cloudy	Moderate	Mid-Ebb	B	10.5	8:17	8.91	8.1	30.61	24.5	6.99	9	115	0.26	SE
S3	20181217	Cloudy	Moderate	Mid-Ebb	M	5.8	8:17	8.91	8.12	29.91	24.6	5.1	9	114	0.34	E
S3	20181217	Cloudy	Moderate	Mid-Ebb	M	5.8	8:18	8.81	8.12	30.41	24.6	4.32	8	115	0.29	E
S3	20181217	Cloudy	Moderate	Mid-Ebb	S	1	8:19	8.81	8.07	30.91	24.5	3.61	9	115	0.55	E
S3	20181217	Cloudy	Moderate	Mid-Ebb	S	1	8:19	8.88	8.19	31.61	24.5	4.35	9	115	0.58	E
CR1	20181217	Cloudy	Moderate	Mid-Ebb	B	7.7	8:23	9.1	8.07	29.51	24.5	7.81	15	113	0.26	SE
CR1	20181217	Cloudy	Moderate	Mid-Ebb	B	7.7	8:24	9.11	8.01	30.21	24.6	8.4	14	113	0.27	SE
CR1	20181217	Cloudy	Moderate	Mid-Ebb	M	4.4	8:24	9.15	8.15	30.01	24.6	5.92	13	114	0.3	SE
CR1	20181217	Cloudy	Moderate	Mid-Ebb	M	4.4	8:25	9.13	8.19	29.91	24.6	5.45	14	114	0.29	SE
CR1	20181217	Cloudy	Moderate	Mid-Ebb	S	1	8:25	9.09	8.15	30.21	24.6	3.93	10	115	0.54	SE
CR1	20181217	Cloudy	Moderate	Mid-Ebb	S	1	8:26	9.1	8.03	30.41	24.6	3.45	10	112	0.57	SE

Location	Date (YYYYMMDD)	Weather	Sea Condition	Tidal	Water Level note 1	Depth (m)	Time (HH:MM)	DO (mg/L)	pH	Sal (ppt)	Temp (°C)	Turbidity (NTU) note 4	SS (mg/L)	Total Alkalinity (mg/L) note 3	Current Velocity note 3	Direction in NESW note 3
CR2	20181217	Cloudy	Moderate	Mid-Ebb	B	7.9	8:34	9.07	8.04	29.92	24.5	7.83	8	115	0.22	SE
CR2	20181217	Cloudy	Moderate	Mid-Ebb	B	7.9	8:34	9.08	8.07	29.22	24.5	8.6	8	114	0.18	SE
CR2	20181217	Cloudy	Moderate	Mid-Ebb	M	4.5	8:35	9	8.15	29.72	24.6	5.92	10	114	0.37	SE
CR2	20181217	Cloudy	Moderate	Mid-Ebb	M	4.5	8:35	9.05	8.05	30.32	24.6	5.44	10	115	0.41	SE
CR2	20181217	Cloudy	Moderate	Mid-Ebb	S	1	8:36	9.09	8.15	29.42	24.5	3.5	11	114	0.57	SE
CR2	20181217	Cloudy	Moderate	Mid-Ebb	S	1	8:37	9.13	8.18	29.12	24.6	4.35	10	115	0.59	SE
B1	20181217	Cloudy	Moderate	Mid-Ebb	B	4.3	8:40	8.63	8.08	29.68	24.5	7.69	6	114	0.21	NE
B1	20181217	Cloudy	Moderate	Mid-Ebb	B	4.3	8:41	8.62	8.05	30.58	24.6	8.6	6	114	0.26	NE
B1	20181217	Cloudy	Moderate	Mid-Ebb	S	1	8:42	8.71	8.1	29.78	24.5	3.32	5	115	0.58	NE
B1	20181217	Cloudy	Moderate	Mid-Ebb	S	1	8:42	8.81	8.13	30.48	24.6	4.21	6	113	0.57	NE
H1	20181217	Cloudy	Moderate	Mid-Ebb	B	7.1	8:43	9.01	8.07	29.39	24.6	7.39	9	114	0.25	NE
H1	20181217	Cloudy	Moderate	Mid-Ebb	B	7.1	8:43	9.02	8.19	29.39	24.6	7.42	9	114	0.26	E
H1	20181217	Cloudy	Moderate	Mid-Ebb	M	4.1	8:44	9.01	8.11	28.89	24.5	5.17	8	115	0.38	E
H1	20181217	Cloudy	Moderate	Mid-Ebb	M	4.1	8:45	8.95	8.08	28.49	24.6	6	8	114	0.43	E
H1	20181217	Cloudy	Moderate	Mid-Ebb	S	1	8:45	8.94	8.05	27.49	24.6	3.04	9	114	0.6	E
H1	20181217	Cloudy	Moderate	Mid-Ebb	S	1	8:46	9.02	8.04	28.09	24.6	2.41	8	113	0.65	E
S1	20181217	Cloudy	Moderate	Mid-Ebb	B	4.2	8:50	8.65	8.1	29.9	24.6	7.86	8	114	0.23	E
S1	20181217	Cloudy	Moderate	Mid-Ebb	B	4.2	8:51	8.68	8.06	29.1	24.6	8.76	8	112	0.21	E
S1	20181217	Cloudy	Moderate	Mid-Ebb	S	1	8:52	8.74	8.15	28.6	24.5	3.39	7	114	0.6	E
S1	20181217	Cloudy	Moderate	Mid-Ebb	S	1	8:52	8.84	8.08	29.3	24.6	2.89	7	114	0.57	E
B2	20181217	Cloudy	Moderate	Mid-Ebb	B	4.2	9:00	9.07	8.18	30.08	24.6	7.78	9	113	0.22	E
B2	20181217	Cloudy	Moderate	Mid-Ebb	B	4.2	9:01	9.15	8.19	29.88	24.6	8.76	9	113	0.18	SE
B2	20181217	Cloudy	Moderate	Mid-Ebb	S	1	9:01	9.12	8.08	30.08	24.6	3.32	8	114	0.54	SE
B2	20181217	Cloudy	Moderate	Mid-Ebb	S	1	9:02	9.08	8.07	29.88	24.6	3.96	8	113	0.53	SE
S2	20181217	Cloudy	Moderate	Mid-Ebb	B	7.3	9:17	8.6	8.17	29.54	24.5	7.25	8	115	0.26	SE
S2	20181217	Cloudy	Moderate	Mid-Ebb	B	7.3	9:18	8.57	8.07	29.24	24.6	6.27	9	114	0.21	SE
S2	20181217	Cloudy	Moderate	Mid-Ebb	M	4.2	9:19	8.59	8.05	30.04	24.6	5.7	6	114	0.33	SE
S2	20181217	Cloudy	Moderate	Mid-Ebb	M	4.2	9:19	8.64	8.06	29.24	24.6	5.1	7	116	0.31	SE
S2	20181217	Cloudy	Moderate	Mid-Ebb	S	1	9:20	8.71	8.06	28.24	24.6	3.01	5	113	0.6	SE
S2	20181217	Cloudy	Moderate	Mid-Ebb	S	1	9:20	8.69	8.09	28.24	24.6	3.35	5	114	0.64	SE

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F1	20181217	Cloudy	Moderate	Mid-Ebb	B	7.4	9:22	9.13	8.06	29.75	24.5	7.56	5	114	0.28	SE
F1	20181217	Cloudy	Moderate	Mid-Ebb	B	7.4	9:23	9.1	8.11	30.55	24.6	8.02	6	114	0.27	SE
F1	20181217	Cloudy	Moderate	Mid-Ebb	M	4.2	9:23	9.12	8.19	30.05	24.6	5.59	6	114	0.3	SE
F1	20181217	Cloudy	Moderate	Mid-Ebb	M	4.2	9:24	9.09	8	30.25	24.6	5.32	6	114	0.32	SE
F1	20181217	Cloudy	Moderate	Mid-Ebb	S	1	9:25	9.11	8.17	31.05	24.6	3.84	7	114	0.51	SE
F1	20181217	Cloudy	Moderate	Mid-Ebb	S	1	9:25	9.07	8.06	30.65	24.6	4.51	8	114	0.5	SE
B3	20181217	Cloudy	Moderate	Mid-Ebb	B	4.4	9:30	8.53	8	29.52	24.5	7.41	7	113	0.27	E
B3	20181217	Cloudy	Moderate	Mid-Ebb	B	4.4	9:30	8.6	8.09	29.02	24.5	7.65	8	113	0.32	E
B3	20181217	Cloudy	Moderate	Mid-Ebb	S	1	9:31	8.5	8.08	28.62	24.5	3.7	6	114	0.54	E
B3	20181217	Cloudy	Moderate	Mid-Ebb	S	1	9:32	8.51	8.07	28.92	24.6	4.13	7	113	0.49	E
B4	20181217	Cloudy	Moderate	Mid-Ebb	B	4.3	9:43	9.04	8.07	29.88	24.6	7.27	10	114	0.27	SE
B4	20181217	Cloudy	Moderate	Mid-Ebb	B	4.3	9:44	9.14	8.04	30.38	24.5	6.43	10	114	0.28	SE
B4	20181217	Cloudy	Moderate	Mid-Ebb	S	1	9:45	9.06	8.06	31.18	24.6	3.09	8	115	0.6	SE
B4	20181217	Cloudy	Moderate	Mid-Ebb	S	1	9:45	9.05	8.14	31.88	24.6	3.89	7	114	0.6	SE
C2	20181217	Cloudy	Moderate	Mid-Ebb	B	8.3	9:53	8.83	8.06	30.14	24.5	7.72	4	114	0.21	SE
C2	20181217	Cloudy	Moderate	Mid-Ebb	B	8.3	9:53	8.87	8.2	30.64	24.6	8.62	5	113	0.22	SE
C2	20181217	Cloudy	Moderate	Mid-Ebb	M	4.7	9:54	8.79	8.01	30.04	24.6	5.34	8	114	0.4	SE
C2	20181217	Cloudy	Moderate	Mid-Ebb	M	4.7	9:55	8.86	8.06	29.44	24.5	6.19	8	114	0.38	SE
C2	20181217	Cloudy	Moderate	Mid-Ebb	S	1	9:55	8.92	8.16	29.64	24.6	3.28	8	114	0.58	S
C2	20181217	Cloudy	Moderate	Mid-Ebb	S	1	9:56	9.01	8.09	30.64	24.5	3.96	7	114	0.57	S
M1	20181217	Cloudy	Moderate	Mid-Ebb	B	7.5	9:53	9.02	8.11	29.88	24.5	7	15	113	0.27	S
M1	20181217	Cloudy	Moderate	Mid-Ebb	B	7.5	9:54	9.03	8.04	30.28	24.6	6.76	16	114	0.23	S
M1	20181217	Cloudy	Moderate	Mid-Ebb	M	4.3	9:55	9.08	8.14	30.68	24.6	5.16	13	114	0.37	S
M1	20181217	Cloudy	Moderate	Mid-Ebb	M	4.3	9:55	9.02	8.17	29.88	24.6	4.68	14	115	0.34	S
M1	20181217	Cloudy	Moderate	Mid-Ebb	S	1	9:56	9.09	8.04	30.48	24.6	3.61	11	114	0.54	SW
M1	20181217	Cloudy	Moderate	Mid-Ebb	S	1	9:57	9.14	8.04	31.18	24.5	4.15	10	114	0.56	SW
C2	20181217	Fine	Moderate	Mid-Flood	B	9.3	12:53	8.72	8.15	30.3	24.6	7.81	5	113	0.28	NE
C2	20181217	Fine	Moderate	Mid-Flood	B	9.3	12:54	8.74	8.15	30.8	24.5	6.9	6	115	0.26	NE
C2	20181217	Fine	Moderate	Mid-Flood	M	5.2	12:54	8.66	8.16	31.2	24.5	5.12	8	113	0.39	NE
C2	20181217	Fine	Moderate	Mid-Flood	M	5.2	12:55	8.7	8.19	31.5	24.5	5.07	8	114	0.37	N

Location	Date (YYYYMMDD)	Weather	Sea Condition	Tidal	Water Level note 1	Depth (m)	Time (HH:MM)	DO (mg/L)	pH	Sal (ppt)	Temp (°C)	Turbidity (NTU) note 4	SS (mg/L)	Total Alkalinity (mg/L) note 3	Current Velocity note 3	Direction in NESW note 3
C2	20181217	Fine	Moderate	Mid-Flood	S	1	12:56	8.64	8.18	30.7	24.5	3.4	7	113	0.56	N
C2	20181217	Fine	Moderate	Mid-Flood	S	1	12:56	8.74	8.2	31.1	24.6	4.05	7	114	0.56	N
CR1	20181217	Fine	Moderate	Mid-Flood	B	8.1	13:05	8.78	8.05	29.6	24.6	7.67	7	114	0.28	W
CR1	20181217	Fine	Moderate	Mid-Flood	B	8.1	13:05	8.8	8.11	29.5	24.6	6.72	7	114	0.33	W
CR1	20181217	Fine	Moderate	Mid-Flood	M	4.6	13:06	8.76	8.19	30	24.6	5.27	7	114	0.38	W
CR1	20181217	Fine	Moderate	Mid-Flood	M	4.6	13:07	8.73	8.07	30.9	24.5	5.54	7	114	0.38	W
CR1	20181217	Fine	Moderate	Mid-Flood	S	1	13:07	8.79	8.04	30.6	24.5	3.44	6	114	0.5	W
CR1	20181217	Fine	Moderate	Mid-Flood	S	1	13:08	8.78	8	30.8	24.6	3	6	114	0.52	W
S3	20181217	Fine	Moderate	Mid-Flood	B	11.5	13:14	8.51	8.02	30.13	24.5	7.51	7	114	0.24	W
S3	20181217	Fine	Moderate	Mid-Flood	B	11.5	13:14	8.53	8.2	29.43	24.5	8.02	8	114	0.28	W
S3	20181217	Fine	Moderate	Mid-Flood	M	6.3	13:15	8.44	8.05	30.13	24.6	5.33	8	114	0.36	W
S3	20181217	Fine	Moderate	Mid-Flood	M	6.3	13:15	8.51	8.18	30.23	24.6	5.7	7	113	0.41	W
S3	20181217	Fine	Moderate	Mid-Flood	S	1	13:16	8.54	8.08	29.73	24.6	3.63	8	114	0.53	W
S3	20181217	Fine	Moderate	Mid-Flood	S	1	13:17	8.51	8	30.13	24.6	3.08	8	114	0.52	W
CR2	20181217	Fine	Moderate	Mid-Flood	B	8.3	13:21	8.51	8.05	29.7	24.6	7.77	6	114	0.3	W
CR2	20181217	Fine	Moderate	Mid-Flood	B	8.3	13:22	8.6	8.08	29.9	24.5	7.09	6	114	0.33	W
CR2	20181217	Fine	Moderate	Mid-Flood	M	4.7	13:22	8.66	8.05	30.4	24.5	5.1	6	115	0.31	NW
CR2	20181217	Fine	Moderate	Mid-Flood	M	4.7	13:23	8.64	8.14	30.7	24.6	5.86	6	115	0.36	NW
CR2	20181217	Fine	Moderate	Mid-Flood	S	1	13:24	8.67	8.06	30.2	24.5	3.66	8	114	0.54	NW
CR2	20181217	Fine	Moderate	Mid-Flood	S	1	13:24	8.6	8.04	30	24.6	3.66	6	113	0.58	NW
M1	20181217	Fine	Moderate	Mid-Flood	B	7.6	13:23	8.89	8.06	29.61	24.5	7.6	9	114	0.29	NW
M1	20181217	Fine	Moderate	Mid-Flood	B	7.6	13:24	8.86	8.11	30.31	24.5	7.2	10	112	0.33	NW
M1	20181217	Fine	Moderate	Mid-Flood	M	4.3	13:24	8.76	8.13	30.31	24.5	5.43	7	113	0.36	NW
M1	20181217	Fine	Moderate	Mid-Flood	M	4.3	13:25	8.75	8.02	29.31	24.5	5.63	6	113	0.41	N
M1	20181217	Fine	Moderate	Mid-Flood	S	1	13:25	8.65	8.2	30.31	24.6	3.19	4	114	0.54	NW
M1	20181217	Fine	Moderate	Mid-Flood	S	1	13:26	8.71	8.15	30.81	24.6	2.52	5	113	0.59	NW
C1	20181217	Fine	Moderate	Mid-Flood	B	11.1	13:48	8.87	8.06	29.37	24.6	7.72	6	114	0.24	NW
C1	20181217	Fine	Moderate	Mid-Flood	B	11.1	13:48	8.82	8.13	28.57	24.6	8.38	7	114	0.29	NW
C1	20181217	Fine	Moderate	Mid-Flood	M	6.1	13:49	8.87	8.11	28.37	24.6	5.02	5	113	0.3	NW
C1	20181217	Fine	Moderate	Mid-Flood	M	6.1	13:49	8.96	8.06	28.17	24.5	5.8	5	112	0.25	NW

Location	Date (YYYYMMDD)	Weather	Sea Condition	Tidal	Water Level note 1	Depth (m)	Time (HH:MM)	DO (mg/L)	pH	Sal (ppt)	Temp (°C)	Turbidity (NTU) note 4	SS (mg/L)	Total Alkalinity (mg/L) note 3	Current Velocity note 3	Direction in NESW note 3
C1	20181217	Fine	Moderate	Mid-Flood	S	1	13:50	9	8.16	28.17	24.5	3.79	5	112	0.59	NW
C1	20181217	Fine	Moderate	Mid-Flood	S	1	13:51	9.1	8.03	28.47	24.5	4.34	6	113	0.56	NW
F1	20181217	Fine	Moderate	Mid-Flood	B	7.5	13:54	9.16	8.14	29.5	24.6	7.29	10	114	0.28	NW
F1	20181217	Fine	Moderate	Mid-Flood	B	7.5	13:55	9.11	8.07	29.6	24.5	8.12	9	114	0.29	NW
F1	20181217	Fine	Moderate	Mid-Flood	M	4.3	13:56	9.05	8.05	29.7	24.6	5.74	10	113	0.34	NW
F1	20181217	Fine	Moderate	Mid-Flood	M	4.3	13:56	9.08	8.14	30	24.6	6.06	9	113	0.36	NW
F1	20181217	Fine	Moderate	Mid-Flood	S	1	13:57	9.16	8.1	30.4	24.6	3.04	7	114	0.51	NW
F1	20181217	Fine	Moderate	Mid-Flood	S	1	13:57	9.18	8.13	30	24.6	3.57	7	114	0.5	NW
B1	20181217	Fine	Moderate	Mid-Flood	B	4.7	14:11	9.06	8.18	29.3	24.6	7.96	8	114	0.3	NW
B1	20181217	Fine	Moderate	Mid-Flood	B	4.7	14:12	9.02	8.06	29.7	24.5	7	7	113	0.31	W
B1	20181217	Fine	Moderate	Mid-Flood	S	1	14:12	9.01	8.05	30.6	24.6	3.23	9	113	0.57	W
B1	20181217	Fine	Moderate	Mid-Flood	S	1	14:13	8.95	8.2	30.1	24.5	2.29	10	114	0.52	NW
S1	20181217	Fine	Moderate	Mid-Flood	B	4.9	14:11	8.92	8.15	30.17	24.5	7.79	8	113	0.27	N
S1	20181217	Fine	Moderate	Mid-Flood	B	4.9	14:11	8.89	8.04	30.97	24.5	8.6	9	115	0.26	N
S1	20181217	Fine	Moderate	Mid-Flood	S	1	14:12	8.84	8.07	30.47	24.5	3.48	7	114	0.56	N
S1	20181217	Fine	Moderate	Mid-Flood	S	1	14:12	8.75	8.03	31.17	24.5	3.88	7	115	0.57	N
B2	20181217	Fine	Moderate	Mid-Flood	B	4.8	14:33	9	8.12	29.85	24.6	7.65	6	114	0.27	N
B2	20181217	Fine	Moderate	Mid-Flood	B	4.8	14:34	9.1	8.04	29.95	24.6	7.6	8	114	0.32	N
B2	20181217	Fine	Moderate	Mid-Flood	S	1	14:34	9.18	8.19	29.85	24.5	3.77	6	112	0.5	N
B2	20181217	Fine	Moderate	Mid-Flood	S	1	14:35	9.17	8	30.15	24.6	4.74	7	113	0.48	N
H1	20181217	Fine	Moderate	Mid-Flood	B	7.9	14:35	8.54	8.01	29.99	24.5	7.59	11	116	0.23	W
H1	20181217	Fine	Moderate	Mid-Flood	B	7.9	14:36	8.47	8.06	30.09	24.5	7.08	12	114	0.22	W
H1	20181217	Fine	Moderate	Mid-Flood	M	4.5	14:37	8.42	8.11	30.09	24.5	5.98	10	114	0.33	W
H1	20181217	Fine	Moderate	Mid-Flood	M	4.5	14:37	8.37	8.13	30.89	24.5	6.31	10	115	0.34	W
H1	20181217	Fine	Moderate	Mid-Flood	S	1	14:38	8.36	8.06	31.49	24.5	3.89	11	114	0.56	W
H1	20181217	Fine	Moderate	Mid-Flood	S	1	14:39	8.38	8.08	30.79	24.6	3.73	11	114	0.57	W
S2	20181217	Fine	Moderate	Mid-Flood	B	8	14:49	8.93	8.15	29.61	24.5	7.66	11	113	0.22	NW
S2	20181217	Fine	Moderate	Mid-Flood	B	8	14:50	8.86	8.2	28.91	24.6	8.26	10	113	0.26	NW
S2	20181217	Fine	Moderate	Mid-Flood	M	4.5	14:50	8.87	8.08	29.21	24.5	5.18	10	113	0.36	NW
S2	20181217	Fine	Moderate	Mid-Flood	M	4.5	14:51	8.77	8.19	29.61	24.5	4.79	10	113	0.34	NW

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S2	20181217	Fine	Moderate	Mid-Flood	S	1	14:52	8.8	8.08	29.11	24.5	3.62	9	113	0.59	NW
S2	20181217	Fine	Moderate	Mid-Flood	S	1	14:52	8.88	8.01	29.01	24.6	4.28	10	114	0.61	NW
B3	20181217	Fine	Moderate	Mid-Flood	B	4.6	14:54	9.06	8.04	29.41	24.6	7.17	8	115	0.2	W
B3	20181217	Fine	Moderate	Mid-Flood	B	4.6	14:54	8.96	8.19	29.81	24.5	7.77	8	114	0.16	W
B3	20181217	Fine	Moderate	Mid-Flood	S	1	14:55	8.98	8.03	29.41	24.5	3.72	8	113	0.57	W
B3	20181217	Fine	Moderate	Mid-Flood	S	1	14:56	8.89	8.1	30.41	24.6	3.51	9	115	0.61	NW
B4	20181217	Fine	Moderate	Mid-Flood	B	4.7	15:06	8.84	8.04	29.39	24.5	7.46	10	113	0.21	N
B4	20181217	Fine	Moderate	Mid-Flood	B	4.7	15:07	8.89	8.04	29.99	24.6	6.7	11	114	0.22	N
B4	20181217	Fine	Moderate	Mid-Flood	S	1	15:08	8.98	8.03	30.09	24.6	3.84	8	114	0.51	NW
B4	20181217	Fine	Moderate	Mid-Flood	S	1	15:08	9	8.12	29.39	24.6	2.88	8	114	0.51	N
C1	20181219	Cloudy	Moderate	Mid-Ebb	B	10.1	8:10	9.33	8.2	29.82	21.2	7.35	10	113	0.23	SE
C1	20181219	Cloudy	Moderate	Mid-Ebb	B	10.1	8:10	9.24	8.16	29.95	21.2	7.32	11	114	0.28	SE
C1	20181219	Cloudy	Moderate	Mid-Ebb	M	5.6	8:11	9.25	8.11	30.02	21.2	5.66	8	113	0.46	SE
C1	20181219	Cloudy	Moderate	Mid-Ebb	M	5.6	8:11	9.24	8.06	29.91	21.2	5.7	9	114	0.49	SE
C1	20181219	Cloudy	Moderate	Mid-Ebb	S	1	8:12	9.27	8.11	30.04	21.2	3.74	8	112	0.62	SE
C1	20181219	Cloudy	Moderate	Mid-Ebb	S	1	8:13	9.36	8.13	29.81	21.2	3.82	6	114	0.63	SE
M1	20181219	Cloudy	Moderate	Mid-Ebb	B	7.4	8:17	9.24	8.12	29.7	21.2	7.18	12	113	0.24	SE
M1	20181219	Cloudy	Moderate	Mid-Ebb	B	7.4	8:18	9.21	8.01	29.87	21.2	7.1	12	114	0.19	SE
M1	20181219	Cloudy	Moderate	Mid-Ebb	M	4.2	8:18	9.31	8.07	30.16	21.2	5.24	13	114	0.48	SE
M1	20181219	Cloudy	Moderate	Mid-Ebb	M	4.2	8:19	9.27	8.05	29.75	21.2	5.23	12	113	0.48	SE
M1	20181219	Cloudy	Moderate	Mid-Ebb	S	1	8:20	9.29	8.02	29.89	21.1	3.7	17	113	0.69	S
M1	20181219	Cloudy	Moderate	Mid-Ebb	S	1	8:20	9.35	8.15	29.95	21.1	3.64	17	114	0.64	S
B1	20181219	Cloudy	Moderate	Mid-Ebb	B	4.4	8:33	8.96	8.01	29.94	21.1	7.33	9	113	0.28	NE
B1	20181219	Cloudy	Moderate	Mid-Ebb	B	4.4	8:34	9	8.03	29.95	21.1	7.32	6	114	0.24	NE
B1	20181219	Cloudy	Moderate	Mid-Ebb	S	1	8:34	8.98	8.04	29.91	21.1	3.49	7	114	0.66	NE
B1	20181219	Cloudy	Moderate	Mid-Ebb	S	1	8:35	8.95	8.04	30.02	21.1	3.58	9	113	0.66	NE
S1	20181219	Cloudy	Moderate	Mid-Ebb	B	4.3	8:44	9.33	8.05	29.96	21.2	7.36	8	113	0.24	NE
S1	20181219	Cloudy	Moderate	Mid-Ebb	B	4.3	8:45	9.34	8.1	29.78	21.1	7.3	10	113	0.26	NE
S1	20181219	Cloudy	Moderate	Mid-Ebb	S	1	8:46	9.31	8.06	30.1	21.2	3.51	5	112	0.69	NE
S1	20181219	Cloudy	Moderate	Mid-Ebb	S	1	8:46	9.29	8.11	30.09	21.1	3.44	7	113	0.71	NE

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F1	20181219	Cloudy	Moderate	Mid-Ebb	B	7.3	8:47	9.3	8.02	29.7	21.1	7.65	12	114	0.27	NE
F1	20181219	Cloudy	Moderate	Mid-Ebb	B	7.3	8:47	9.31	8.18	30.01	21.1	7.7	10	112	0.27	SE
F1	20181219	Cloudy	Moderate	Mid-Ebb	M	4.2	8:48	9.3	8.16	30.11	21.1	5.96	12	113	0.48	SE
F1	20181219	Cloudy	Moderate	Mid-Ebb	M	4.2	8:49	9.34	8.01	30.05	21.2	5.9	12	114	0.48	SE
F1	20181219	Cloudy	Moderate	Mid-Ebb	S	1	8:49	9.38	8.18	29.73	21.2	3.62	9	113	0.65	SE
F1	20181219	Cloudy	Moderate	Mid-Ebb	S	1	8:50	9.34	8.05	30.11	21.2	3.55	8	113	0.61	SE
B2	20181219	Cloudy	Moderate	Mid-Ebb	B	4.4	8:55	9.09	8.2	29.83	21.2	7.99	7	114	0.3	SE
B2	20181219	Cloudy	Moderate	Mid-Ebb	B	4.4	8:55	9.14	8.2	29.91	21.2	7.92	6	114	0.3	SE
B2	20181219	Cloudy	Moderate	Mid-Ebb	S	1	8:56	9.09	8.17	29.84	21.2	3.49	9	113	0.66	SE
B2	20181219	Cloudy	Moderate	Mid-Ebb	S	1	8:56	9.04	8.15	30.06	21.1	3.57	8	114	0.67	SE
S2	20181219	Cloudy	Moderate	Mid-Ebb	B	7.4	9:11	9.22	8.1	30.12	21.2	7.86	10	114	0.23	SE
S2	20181219	Cloudy	Moderate	Mid-Ebb	B	7.4	9:12	9.27	8.19	30.2	21.1	7.82	8	113	0.25	SE
S2	20181219	Cloudy	Moderate	Mid-Ebb	M	4.2	9:12	9.36	8.15	30.1	21.1	5.63	12	113	0.46	SE
S2	20181219	Cloudy	Moderate	Mid-Ebb	M	4.2	9:13	9.33	8.11	29.94	21.2	5.73	11	113	0.5	SE
S2	20181219	Cloudy	Moderate	Mid-Ebb	S	1	9:13	9.25	8.05	29.87	21.2	3.3	13	114	0.66	SE
S2	20181219	Cloudy	Moderate	Mid-Ebb	S	1	9:14	9.15	8.07	29.89	21.1	3.37	12	113	0.61	SE
C2	20181219	Cloudy	Moderate	Mid-Ebb	B	8.3	9:12	9.01	8.08	29.86	21.1	7.74	9	113	0.25	S
C2	20181219	Cloudy	Moderate	Mid-Ebb	B	8.3	9:12	9.03	8.08	29.96	21.2	7.67	9	113	0.25	S
C2	20181219	Cloudy	Moderate	Mid-Ebb	M	4.7	9:13	9.05	8.19	29.97	21.1	5	9	113	0.43	S
C2	20181219	Cloudy	Moderate	Mid-Ebb	M	4.7	9:14	9.1	8.13	30.12	21.2	5.06	10	114	0.46	S
C2	20181219	Cloudy	Moderate	Mid-Ebb	S	1	9:14	9.09	8.18	30.16	21.1	3.03	10	111	0.63	S
C2	20181219	Cloudy	Moderate	Mid-Ebb	S	1	9:15	8.99	8.15	29.89	21.1	3.04	10	113	0.67	S
CR2	20181219	Cloudy	Moderate	Mid-Ebb	B	8.2	9:23	8.99	8.15	29.98	21.1	7.56	17	113	0.23	SE
CR2	20181219	Cloudy	Moderate	Mid-Ebb	B	8.2	9:24	8.92	8.07	29.8	21.2	7.61	18	113	0.25	SE
CR2	20181219	Cloudy	Moderate	Mid-Ebb	M	4.6	9:25	8.97	8.11	30.08	21.1	5.43	16	114	0.5	SE
CR2	20181219	Cloudy	Moderate	Mid-Ebb	M	4.6	9:25	9.07	8.14	29.75	21.2	5.42	17	113	0.55	SE
CR2	20181219	Cloudy	Moderate	Mid-Ebb	S	1	9:26	8.99	8.18	30.13	21.2	3.79	12	113	0.6	SE
CR2	20181219	Cloudy	Moderate	Mid-Ebb	S	1	9:26	8.93	8.08	29.77	21.1	3.75	12	113	0.57	SE
S3	20181219	Cloudy	Moderate	Mid-Ebb	B	10.7	9:33	9.16	8.07	29.71	21.2	7.68	18	113	0.27	SE
S3	20181219	Cloudy	Moderate	Mid-Ebb	B	10.7	9:34	9.24	8.14	29.92	21.2	7.59	16	113	0.29	SE

Location	Date (YYYYMMDD)	Weather	Sea Condition	Tidal	Water Level note 1	Depth (m)	Time (HH:MM)	DO (mg/L)	pH	Sal (ppt)	Temp (°C)	Turbidity (NTU) note 4	SS (mg/L)	Total Alkalinity (mg/L) note 3	Current Velocity note 3	Direction in NESW note 3
S3	20181219	Cloudy	Moderate	Mid-Ebb	M	5.9	9:34	9.32	8.2	30.18	21.2	5.07	9	113	0.46	SE
S3	20181219	Cloudy	Moderate	Mid-Ebb	M	5.9	9:35	9.23	8.05	30.17	21.1	5.14	10	114	0.5	S
S3	20181219	Cloudy	Moderate	Mid-Ebb	S	1	9:36	9.29	8.12	29.74	21.1	3.36	10	113	0.66	S
S3	20181219	Cloudy	Moderate	Mid-Ebb	S	1	9:36	9.32	8.11	29.72	21.2	3.26	8	113	0.67	SE
H1	20181219	Cloudy	Moderate	Mid-Ebb	B	7.3	9:34	8.91	8.06	30.07	21.1	7.9	4	114	0.26	E
H1	20181219	Cloudy	Moderate	Mid-Ebb	B	7.3	9:34	8.85	8.09	30.13	21.2	7.92	5	114	0.22	E
H1	20181219	Cloudy	Moderate	Mid-Ebb	M	4.2	9:35	8.75	8.11	29.94	21.2	5.72	7	113	0.47	E
H1	20181219	Cloudy	Moderate	Mid-Ebb	M	4.2	9:36	8.78	8.12	29.77	21.2	5.78	6	112	0.5	E
H1	20181219	Cloudy	Moderate	Mid-Ebb	S	1	9:36	8.72	8.18	29.74	21.2	3.75	8	114	0.63	SE
H1	20181219	Cloudy	Moderate	Mid-Ebb	S	1	9:37	8.63	8.2	29.98	21.1	3.76	7	114	0.67	SE
CR1	20181219	Cloudy	Moderate	Mid-Ebb	B	7.9	9:44	9.21	8.09	30.15	21.2	7.67	15	113	0.2	SE
CR1	20181219	Cloudy	Moderate	Mid-Ebb	B	7.9	9:44	9.21	8.1	29.83	21.1	7.7	14	112	0.2	SE
CR1	20181219	Cloudy	Moderate	Mid-Ebb	M	4.5	9:45	9.24	8.13	30.06	21.2	5.03	15	114	0.4	SE
CR1	20181219	Cloudy	Moderate	Mid-Ebb	M	4.5	9:45	9.2	8.14	30.16	21.2	4.97	14	113	0.41	SE
CR1	20181219	Cloudy	Moderate	Mid-Ebb	S	1	9:46	9.24	8.17	29.73	21.2	3.17	14	113	0.66	SE
CR1	20181219	Cloudy	Moderate	Mid-Ebb	S	1	9:47	9.33	8.07	29.9	21.2	3.11	12	113	0.61	SE
B3	20181219	Cloudy	Moderate	Mid-Ebb	B	4.4	9:52	9.03	8.12	29.82	21.2	7.41	6	115	0.21	SE
B3	20181219	Cloudy	Moderate	Mid-Ebb	B	4.4	9:53	9.11	8	29.72	21.1	7.41	7	114	0.17	S
B3	20181219	Cloudy	Moderate	Mid-Ebb	S	1	9:53	9.17	8.11	29.75	21.1	3.54	5	114	0.68	SE
B3	20181219	Cloudy	Moderate	Mid-Ebb	S	1	9:54	9.14	8.02	30.2	21.2	3.64	4	113	0.64	SE
B4	20181219	Cloudy	Moderate	Mid-Ebb	B	4.3	10:05	9.33	8.17	29.82	21.1	7.83	8	112	0.29	SE
B4	20181219	Cloudy	Moderate	Mid-Ebb	B	4.3	10:05	9.29	8.08	29.71	21.1	7.82	7	114	0.27	SE
B4	20181219	Cloudy	Moderate	Mid-Ebb	S	1	10:06	9.32	8.14	29.89	21.1	3.12	8	114	0.64	SE
B4	20181219	Cloudy	Moderate	Mid-Ebb	S	1	10:07	9.32	8.12	29.97	21.1	3.14	7	114	0.68	SE
C2	20181219	Sunny	Light	Mid-Flood	B	9.3	13:18	9.33	8.17	30.13	21.2	7.29	11	114	0.2	NE
C2	20181219	Sunny	Light	Mid-Flood	B	9.3	13:19	9.27	8.14	30.12	21.2	7.34	10	114	0.21	NE
C2	20181219	Sunny	Light	Mid-Flood	M	5.2	13:19	9.17	8.14	29.91	21.1	5.1	11	114	0.48	NE
C2	20181219	Sunny	Light	Mid-Flood	M	5.2	13:20	9.18	8.03	30.16	21.1	5.18	10	115	0.45	NE
C2	20181219	Sunny	Light	Mid-Flood	S	1	13:21	9.11	8.17	29.72	21.2	3.68	12	114	0.65	NE
C2	20181219	Sunny	Light	Mid-Flood	S	1	13:21	9.16	8.09	30.1	21.2	3.63	14	114	0.64	NE

Location	Date (YYYYMMDD)	Weather	Sea Condition	Tidal	Water Level note 1	Depth (m)	Time (HH:MM)	DO (mg/L)	pH	Sal (ppt)	Temp (°C)	Turbidity (NTU) note 4	SS (mg/L)	Total Alkalinity (mg/L) note 3	Current Velocity note 3	Direction in NESW note 3
CR1	20181219	Sunny	Light	Mid-Flood	B	7.8	13:34	9.03	8.14	29.88	21.1	7.44	8	113	0.24	NW
CR1	20181219	Sunny	Light	Mid-Flood	B	7.8	13:34	9.04	8.09	30.05	21.1	7.37	9	115	0.28	NW
CR1	20181219	Sunny	Light	Mid-Flood	M	4.4	13:35	9.03	8.13	30.06	21.2	5.9	14	114	0.48	NW
CR1	20181219	Sunny	Light	Mid-Flood	M	4.4	13:36	9.09	8.01	30.14	21.1	5.91	13	115	0.51	NW
CR1	20181219	Sunny	Light	Mid-Flood	S	1	13:36	9.03	8.06	29.95	21.2	3.91	18	114	0.61	NW
CR1	20181219	Sunny	Light	Mid-Flood	S	1	13:37	9.07	8.2	30.05	21.1	3.98	16	113	0.6	NW
S3	20181219	Sunny	Light	Mid-Flood	B	11.3	13:46	8.8	8.12	30.04	21.1	7.3	9	115	0.21	W
S3	20181219	Sunny	Light	Mid-Flood	B	11.3	13:46	8.78	8.11	30.19	21.2	7.27	10	113	0.18	W
S3	20181219	Sunny	Light	Mid-Flood	M	6.2	13:47	8.88	8.17	30.15	21.2	5.91	12	114	0.44	W
S3	20181219	Sunny	Light	Mid-Flood	M	6.2	13:47	8.78	8.17	30.15	21.2	5.87	11	113	0.45	W
S3	20181219	Sunny	Light	Mid-Flood	S	1	13:48	8.7	8.2	30.04	21.1	3.67	14	114	0.69	W
S3	20181219	Sunny	Light	Mid-Flood	S	1	13:49	8.64	8.12	29.85	21.1	3.63	15	114	0.72	W
CR2	20181219	Sunny	Light	Mid-Flood	B	8	13:54	8.98	8.02	30.08	21.2	7.94	9	114	0.25	NW
CR2	20181219	Sunny	Light	Mid-Flood	B	8	13:55	8.89	8.17	29.98	21.2	7.96	8	114	0.24	NW
CR2	20181219	Sunny	Light	Mid-Flood	M	4.5	13:55	8.83	8.09	29.7	21.2	5.17	13	114	0.42	W
CR2	20181219	Sunny	Light	Mid-Flood	M	4.5	13:56	8.92	8.02	29.8	21.1	5.26	13	114	0.39	W
CR2	20181219	Sunny	Light	Mid-Flood	S	1	13:57	8.85	8.14	30.01	21.2	3.53	14	114	0.69	W
CR2	20181219	Sunny	Light	Mid-Flood	S	1	13:57	8.9	8.19	30.06	21.1	3.63	14	114	0.66	W
M1	20181219	Sunny	Light	Mid-Flood	B	7.9	13:46	9.12	8.08	30.15	21.2	7.17	10	113	0.22	N
M1	20181219	Sunny	Light	Mid-Flood	B	7.9	13:47	9.21	8.19	29.85	21.1	7.21	8	113	0.23	NW
M1	20181219	Sunny	Light	Mid-Flood	M	4.5	13:47	9.17	8.11	29.72	21.2	5.15	8	113	0.4	NW
M1	20181219	Sunny	Light	Mid-Flood	M	4.5	13:48	9.24	8.15	29.87	21.1	5.09	10	114	0.39	NW
M1	20181219	Sunny	Light	Mid-Flood	S	1	13:48	9.23	8.17	29.92	21.1	3.98	8	115	0.69	NW
M1	20181219	Sunny	Light	Mid-Flood	S	1	13:49	9.25	8.02	29.9	21.1	3.89	8	116	0.74	NW
C1	20181219	Sunny	Light	Mid-Flood	B	11.4	14:19	8.86	8.13	29.94	21.1	7.75	6	114	0.3	NW
C1	20181219	Sunny	Light	Mid-Flood	B	11.4	14:19	8.76	8.1	29.99	21.1	7.85	8	112	0.26	NW
C1	20181219	Sunny	Light	Mid-Flood	M	6.2	14:20	8.8	8.12	30.16	21.1	5.47	6	114	0.4	NW
C1	20181219	Sunny	Light	Mid-Flood	M	6.2	14:20	8.86	8.12	30.05	21.1	5.49	8	113	0.45	NW
C1	20181219	Sunny	Light	Mid-Flood	S	1	14:21	8.79	8.06	29.84	21.1	3.24	9	114	0.6	NW
C1	20181219	Sunny	Light	Mid-Flood	S	1	14:22	8.69	8.13	29.7	21.1	3.28	7	113	0.63	NW

Location	Date (YYYYMMDD)	Weather	Sea Condition	Tidal	Water Level note 1	Depth (m)	Time (HH:MM)	DO (mg/L)	pH	Sal (ppt)	Temp (°C)	Turbidity (NTU) note 4	SS (mg/L)	Total Alkalinity (mg/L) note 3	Current Velocity note 3	Direction in NESW note 3
F1	20181219	Sunny	Light	Mid-Flood	B	7.8	14:15	9.46	8.15	30.05	21.1	7.83	12	115	0.2	NW
F1	20181219	Sunny	Light	Mid-Flood	B	7.8	14:16	9.5	8.17	29.94	21.2	7.87	13	115	0.25	NW
F1	20181219	Sunny	Light	Mid-Flood	M	4.4	14:17	9.41	8.12	30.18	21.2	5.29	9	114	0.41	NW
F1	20181219	Sunny	Light	Mid-Flood	M	4.4	14:17	9.43	8.02	29.81	21.1	5.33	10	114	0.43	NW
F1	20181219	Sunny	Light	Mid-Flood	S	1	14:18	9.45	8.09	30.09	21.2	3.82	8	115	0.69	NW
F1	20181219	Sunny	Light	Mid-Flood	S	1	14:18	9.43	8.09	29.71	21.1	3.85	9	114	0.65	NW
B1	20181219	Sunny	Light	Mid-Flood	B	4.8	14:43	8.8	8.14	29.96	21.2	7.25	7	113	0.23	NW
B1	20181219	Sunny	Light	Mid-Flood	B	4.8	14:44	8.79	8.11	29.71	21.1	7.23	9	114	0.28	NW
B1	20181219	Sunny	Light	Mid-Flood	S	1	14:44	8.73	8.05	29.73	21.2	3.92	8	116	0.69	NW
B1	20181219	Sunny	Light	Mid-Flood	S	1	14:45	8.75	8.19	30.2	21.1	3.88	7	114	0.69	NW
S1	20181219	Sunny	Light	Mid-Flood	B	4.7	14:56	8.83	8.09	29.77	21.2	7.39	9	114	0.21	N
S1	20181219	Sunny	Light	Mid-Flood	B	4.7	14:56	8.74	8.08	30.13	21.1	7.4	8	114	0.18	N
S1	20181219	Sunny	Light	Mid-Flood	S	1	14:57	8.66	8.07	29.86	21.1	3.16	12	113	0.7	N
S1	20181219	Sunny	Light	Mid-Flood	S	1	14:57	8.6	8.09	29.92	21.2	3.2	13	114	0.68	N
B2	20181219	Sunny	Light	Mid-Flood	B	4.7	15:06	9.28	8.12	30.04	21.2	7.3	7	113	0.29	NW
B2	20181219	Sunny	Light	Mid-Flood	B	4.7	15:07	9.28	8.15	30.19	21.2	7.31	7	115	0.3	NW
B2	20181219	Sunny	Light	Mid-Flood	S	1	15:07	9.25	8.18	29.97	21.2	3.8	6	114	0.64	NW
B2	20181219	Sunny	Light	Mid-Flood	S	1	15:08	9.3	8.08	29.93	21.1	3.81	8	114	0.68	NW
H1	20181219	Sunny	Light	Mid-Flood	B	7.6	14:57	9.18	8	29.86	21.1	7.55	10	113	0.21	NW
H1	20181219	Sunny	Light	Mid-Flood	B	7.6	14:58	9.2	8.07	29.85	21.1	7.5	8	113	0.24	NW
H1	20181219	Sunny	Light	Mid-Flood	M	4.3	14:59	9.24	8.13	30.05	21.1	5.57	8	112	0.42	NW
H1	20181219	Sunny	Light	Mid-Flood	M	4.3	14:59	9.34	8.16	29.79	21.2	5.57	8	113	0.41	NW
H1	20181219	Sunny	Light	Mid-Flood	S	1	15:00	9.42	8.06	30.16	21.2	3.66	8	113	0.68	NW
H1	20181219	Sunny	Light	Mid-Flood	S	1	15:01	9.42	8.05	30.05	21.2	3.76	8	114	0.65	NW
S2	20181219	Sunny	Light	Mid-Flood	B	8	15:23	9.24	8.01	30.06	21.1	7.36	8	113	0.26	NW
S2	20181219	Sunny	Light	Mid-Flood	B	8	15:24	9.3	8.07	29.87	21.1	7.38	10	114	0.31	NW
S2	20181219	Sunny	Light	Mid-Flood	M	4.5	15:24	9.34	8	29.86	21.1	5.58	8	115	0.49	NW
S2	20181219	Sunny	Light	Mid-Flood	M	4.5	15:25	9.36	8.15	29.83	21.1	5.6	9	114	0.45	NW
S2	20181219	Sunny	Light	Mid-Flood	S	1	15:26	9.39	8.08	29.93	21.2	3.74	5	114	0.6	NW
S2	20181219	Sunny	Light	Mid-Flood	S	1	15:26	8.91	8.02	30.17	21.2	3.78	6	114	0.6	NW

Location	Date (YYYYMMDD)	Weather	Sea Condition	Tidal	Water Level note 1	Depth (m)	Time (HH:MM)	DO (mg/L)	pH	Sal (ppt)	Temp (°C)	Turbidity (NTU) note 4	SS (mg/L)	Total Alkalinity (mg/L) note 3	Current Velocity note 3	Direction in NESW note 3
B3	20181219	Sunny	Light	Mid-Flood	B	4.6	15:21	8.89	8.12	29.81	21.2	7.58	10	114	0.22	NW
B3	20181219	Sunny	Light	Mid-Flood	B	4.6	15:21	8.89	8.09	29.75	21.1	7.61	11	112	0.23	NW
B3	20181219	Sunny	Light	Mid-Flood	S	1	15:22	8.8	8.12	30	21.2	3.53	9	112	0.7	NW
B3	20181219	Sunny	Light	Mid-Flood	S	1	15:23	8.75	8.06	29.86	21.2	3.49	10	113	0.65	NW
B4	20181219	Sunny	Light	Mid-Flood	B	4.8	15:38	9.07	8.07	29.95	21.2	7.88	6	113	0.26	N
B4	20181219	Sunny	Light	Mid-Flood	B	4.8	15:39	9.06	8.15	29.88	21.1	7.85	7	113	0.3	N
B4	20181219	Sunny	Light	Mid-Flood	S	1	15:40	9.16	8.19	29.84	21.1	3.76	7	114	0.64	N
B4	20181219	Sunny	Light	Mid-Flood	S	1	15:40	9.11	8.01	30.17	21.2	3.85	8	114	0.68	N
C1	20181221	Fine	Light	Mid-Ebb	B	10.2	9:38	9.41	8.11	30.47	19.8	5.77	3	114	0.27	SE
C1	20181221	Fine	Light	Mid-Ebb	B	10.2	9:38	9.49	8.06	29.62	19.9	5.77	2	114	0.26	SE
C1	20181221	Fine	Light	Mid-Ebb	M	5.6	9:39	9.57	8.14	30.46	19.9	3.43	3	114	0.44	SE
C1	20181221	Fine	Light	Mid-Ebb	M	5.6	9:39	9.54	8.06	30.26	19.8	3.4	- note 2	113	0.44	SE
C1	20181221	Fine	Light	Mid-Ebb	S	1	9:40	9.54	8.07	30.43	19.9	1.45	3	114	0.7	SE
C1	20181221	Fine	Light	Mid-Ebb	S	1	9:41	9.6	8.03	30.08	19.9	1.48	4	112	0.69	SE
F1	20181221	Fine	Light	Mid-Ebb	B	7.2	9:40	9.23	8.05	29.97	19.8	5.63	4	112	0.28	SE
F1	20181221	Fine	Light	Mid-Ebb	B	7.2	9:41	9.29	8.06	30.21	19.9	5.67	4	113	0.26	SE
F1	20181221	Fine	Light	Mid-Ebb	M	4.1	9:41	9.23	8.02	30.29	19.8	3.95	2	114	0.48	SE
F1	20181221	Fine	Light	Mid-Ebb	M	4.1	9:42	9.17	8.13	29.53	19.9	3.97	2	113	0.47	SE
F1	20181221	Fine	Light	Mid-Ebb	S	1	9:43	9.08	8.08	29.7	19.8	1.96	2	114	0.64	SE
F1	20181221	Fine	Light	Mid-Ebb	S	1	9:43	9.09	8.04	29.7	19.8	1.99	3	113	0.65	SE
M1	20181221	Fine	Light	Mid-Ebb	B	7.4	10:11	9.24	8.15	29.7	19.9	5.69	5	115	0.21	N
M1	20181221	Fine	Light	Mid-Ebb	B	7.4	10:12	9.29	8.2	30.3	19.9	5.73	4	114	0.19	N
M1	20181221	Fine	Light	Mid-Ebb	M	4.2	10:12	9.31	8.13	29.82	19.8	3.79	3	114	0.46	N
M1	20181221	Fine	Light	Mid-Ebb	M	4.2	10:13	9.34	8.1	30.49	19.9	3.81	2	117	0.45	N
M1	20181221	Fine	Light	Mid-Ebb	S	1	10:13	9.42	8.04	30.3	19.8	1.3	4	115	0.65	N
M1	20181221	Fine	Light	Mid-Ebb	S	1	10:14	9.33	8.03	29.75	19.8	1.34	3	112	0.67	N
B1	20181221	Fine	Light	Mid-Ebb	B	4.3	10:02	8.92	8.09	30.44	19.8	5.22	3	114	0.2	NE
B1	20181221	Fine	Light	Mid-Ebb	B	4.3	10:02	8.85	8.08	30	19.9	5.22	4	114	0.2	NE
B1	20181221	Fine	Light	Mid-Ebb	S	1	10:03	8.79	8	30.28	19.8	1.9	4	114	0.63	NE
B1	20181221	Fine	Light	Mid-Ebb	S	1	10:03	8.75	8.12	29.88	19.9	1.89	4	114	0.63	NE

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S1	20181221	Fine	Light	Mid-Ebb	B	4.4	10:16	9.26	8.08	30.17	19.8	5.51	2	112	0.25	E
S1	20181221	Fine	Light	Mid-Ebb	B	4.4	10:17	9.35	8.2	29.96	19.8	5.46	2	113	0.26	E
S1	20181221	Fine	Light	Mid-Ebb	S	1	10:17	9.42	8.17	29.99	19.8	1.66	4	112	0.62	E
S1	20181221	Fine	Light	Mid-Ebb	S	1	10:18	9.41	8.17	30.01	19.9	1.61	4	112	0.64	E
B2	20181221	Fine	Light	Mid-Ebb	B	4.5	10:26	9.64	8.02	30.03	19.8	5.85	2	114	0.22	SE
B2	20181221	Fine	Light	Mid-Ebb	B	4.5	10:26	9.71	8.18	30.14	19.9	5.88	2	114	0.24	SE
B2	20181221	Fine	Light	Mid-Ebb	S	1	10:27	9.66	8.01	30.38	19.9	1.56	3	114	0.67	SE
B2	20181221	Fine	Light	Mid-Ebb	S	1	10:27	9.56	8.09	30.39	19.9	1.56	4	114	0.69	SE
C2	20181221	Fine	Light	Mid-Ebb	B	8.1	10:44	9.22	8.03	29.77	19.8	5.71	<2	113	0.25	S
C2	20181221	Fine	Light	Mid-Ebb	B	8.1	10:45	9.22	8.03	29.73	19.9	5.69	3	112	0.24	S
C2	20181221	Fine	Light	Mid-Ebb	M	4.6	10:45	9.18	8.12	29.5	19.9	3.74	4	114	0.43	S
C2	20181221	Fine	Light	Mid-Ebb	M	4.6	10:46	9.1	8.11	29.73	19.9	3.73	3	114	0.45	S
C2	20181221	Fine	Light	Mid-Ebb	S	1	10:46	9.09	8.13	30.4	19.9	1.91	3	114	0.68	S
C2	20181221	Fine	Light	Mid-Ebb	S	1	10:47	9.18	8.19	29.52	19.8	1.89	3	113	0.66	S
S2	20181221	Fine	Light	Mid-Ebb	B	7.5	10:43	9.05	8.2	30.1	19.8	5.8	<2	114	0.27	SE
S2	20181221	Fine	Light	Mid-Ebb	B	7.5	10:43	8.99	8.07	29.54	19.8	5.76	<2	112	0.26	SE
S2	20181221	Fine	Light	Mid-Ebb	M	4.3	10:44	8.9	8.17	30.14	19.8	3.58	3	114	0.45	SE
S2	20181221	Fine	Light	Mid-Ebb	M	4.3	10:45	8.87	8.03	29.99	19.8	3.6	<2	113	0.44	SE
S2	20181221	Fine	Light	Mid-Ebb	S	1	10:45	8.82	8.15	29.63	19.9	1.43	2	114	0.62	SE
S2	20181221	Fine	Light	Mid-Ebb	S	1	10:46	8.92	8.08	29.7	19.8	1.42	2	114	0.64	SE
H1	20181221	Fine	Light	Mid-Ebb	B	7.4	11:03	9.34	8.01	29.65	19.8	5.14	5	114	0.3	E
H1	20181221	Fine	Light	Mid-Ebb	B	7.4	11:04	9.35	8.02	30.27	19.9	5.14	4	113	0.31	E
H1	20181221	Fine	Light	Mid-Ebb	M	4.2	11:05	9.38	8.13	30.41	19.8	3.57	4	114	0.41	E
H1	20181221	Fine	Light	Mid-Ebb	M	4.2	11:05	9.44	8.06	30.18	19.9	3.6	6	114	0.42	E
H1	20181221	Fine	Light	Mid-Ebb	S	1	11:06	9.45	8.06	29.69	19.9	1.11	4	112	0.69	E
H1	20181221	Fine	Light	Mid-Ebb	S	1	11:06	9.48	8.06	30.35	19.9	1.08	4	113	0.67	E
CR2	20181221	Fine	Light	Mid-Ebb	B	8	10:59	9.32	8.13	30.01	19.9	5.2	3	114	0.26	SE
CR2	20181221	Fine	Light	Mid-Ebb	B	8	11:00	9.37	8.18	29.79	19.9	5.22	<2	112	0.27	SE
CR2	20181221	Fine	Light	Mid-Ebb	M	4.5	11:00	9.35	8.03	29.84	19.9	3.27	<2	115	0.44	SE
CR2	20181221	Fine	Light	Mid-Ebb	M	4.5	11:01	9.25	8.05	30.13	19.8	3.28	3	114	0.45	SE

Location	Date (YYYYMMDD)	Weather	Sea Condition	Tidal	Water Level note 1	Depth (m)	Time (HH:MM)	DO (mg/L)	pH	Sal (ppt)	Temp (°C)	Turbidity (NTU) note 4	SS (mg/L)	Total Alkalinity (mg/L) note 3	Current Velocity note 3	Direction in NESW note 3
CR2	20181221	Fine	Light	Mid-Ebb	S	1	11:02	9.18	8.12	29.96	19.8	1.88	<2	114	0.69	SE
CR2	20181221	Fine	Light	Mid-Ebb	S	1	11:02	9.27	8.11	30.21	19.9	1.87	<2	113	0.7	SE
S3	20181221	Fine	Light	Mid-Ebb	B	10.6	11:07	9.31	8.17	30.29	19.9	5.49	3	114	0.27	SE
S3	20181221	Fine	Light	Mid-Ebb	B	10.6	11:07	9.22	8.06	29.66	19.8	5.54	2	114	0.26	SE
S3	20181221	Fine	Light	Mid-Ebb	M	5.8	11:08	9.28	8.19	29.68	19.8	3.61	2	114	0.4	SE
S3	20181221	Fine	Light	Mid-Ebb	M	5.8	11:09	9.36	8.14	30.4	19.8	3.61	<2	114	0.4	SE
S3	20181221	Fine	Light	Mid-Ebb	S	1	11:09	9.34	8.19	29.93	19.8	1.92	<2	113	0.6	SE
S3	20181221	Fine	Light	Mid-Ebb	S	1	11:10	9.39	8.16	30.36	19.9	1.87	2	114	0.59	SE
B3	20181221	Fine	Light	Mid-Ebb	B	4.3	11:20	9.32	8	29.72	19.8	5.57	6	114	0.21	E
B3	20181221	Fine	Light	Mid-Ebb	B	4.3	11:20	9.33	8.17	30.12	19.9	5.57	5	114	0.23	E
B3	20181221	Fine	Light	Mid-Ebb	S	1	11:21	9.33	8.12	29.55	19.9	1.35	5	113	0.7	E
B3	20181221	Fine	Light	Mid-Ebb	S	1	11:21	9.35	8.14	29.64	19.8	1.4	5	113	0.7	E
CR1	20181221	Fine	Light	Mid-Ebb	B	7.8	11:18	9.5	8.1	30.2	19.9	5.38	3	112	0.3	SE
CR1	20181221	Fine	Light	Mid-Ebb	B	7.8	11:19	9.5	8.12	29.89	19.9	5.33	2	113	0.29	SE
CR1	20181221	Fine	Light	Mid-Ebb	M	4.4	11:19	9.52	8.11	30.5	19.8	3.3	<2	114	0.4	SE
CR1	20181221	Fine	Light	Mid-Ebb	M	4.4	11:20	9.58	8.2	30.3	19.9	3.35	3	113	0.39	SE
CR1	20181221	Fine	Light	Mid-Ebb	S	1	11:20	9.65	8.16	29.94	19.9	1.28	2	112	0.62	SE
CR1	20181221	Fine	Light	Mid-Ebb	S	1	11:21	9.55	8.19	29.95	19.9	1.32	2	113	0.61	SE
B4	20181221	Fine	Light	Mid-Ebb	B	4.4	11:34	9.41	8.01	30.37	19.8	5.05	4	112	0.27	SE
B4	20181221	Fine	Light	Mid-Ebb	B	4.4	11:34	9.35	8.18	30.38	19.9	5.08	4	113	0.26	SE
B4	20181221	Fine	Light	Mid-Ebb	S	1	11:35	9.35	8.16	29.73	19.9	1.07	<2	113	0.65	SE
B4	20181221	Fine	Light	Mid-Ebb	S	1	11:36	9.31	8.06	29.77	19.8	1.12	2	114	0.67	SE
C2	20181221	Sunny	Moderate	Mid-Flood	B	9.5	14:55	9.09	8.09	29.79	19.9	5.53	2	113	0.3	N
C2	20181221	Sunny	Moderate	Mid-Flood	B	9.5	14:56	9.12	8.07	29.82	19.9	5.52	2	112	0.28	N
C2	20181221	Sunny	Moderate	Mid-Flood	M	5.3	14:56	9.13	8.1	30.3	19.9	3.09	2	112	0.47	N
C2	20181221	Sunny	Moderate	Mid-Flood	M	5.3	14:57	9.16	8.07	30.43	19.8	3.1	2	113	0.47	N
C2	20181221	Sunny	Moderate	Mid-Flood	S	1	14:58	9.24	8.1	30.26	19.8	1.12	<2	112	0.7	N
C2	20181221	Sunny	Moderate	Mid-Flood	S	1	14:58	9.21	8.1	30.48	19.8	1.15	2	113	0.71	N
CR1	20181221	Sunny	Moderate	Mid-Flood	B	7.9	15:11	9.4	8.14	30.34	19.9	5.23	2	114	0.24	NW
CR1	20181221	Sunny	Moderate	Mid-Flood	B	7.9	15:11	9.35	8.03	29.86	19.9	5.27	<2	113	0.26	NW

Location	Date (YYYYMMDD)	Weather	Sea Condition	Tidal	Water Level note 1	Depth (m)	Time (HH:MM)	DO (mg/L)	pH	Sal (ppt)	Temp (°C)	Turbidity (NTU) note 4	SS (mg/L)	Total Alkalinity (mg/L) note 3	Current Velocity note 3	Direction in NESW note 3
CR1	20181221	Sunny	Moderate	Mid-Flood	M	4.5	15:12	9.28	8.18	30.37	19.9	3.44	<2	113	0.46	NW
CR1	20181221	Sunny	Moderate	Mid-Flood	M	4.5	15:13	9.28	8.13	29.94	19.9	3.43	3	113	0.47	NW
CR1	20181221	Sunny	Moderate	Mid-Flood	S	1	15:13	9.21	8.08	30.28	19.8	1.08	2	113	0.67	NW
CR1	20181221	Sunny	Moderate	Mid-Flood	S	1	15:14	9.12	8.18	29.54	19.9	1.07	<2	114	0.69	NW
F1	20181221	Sunny	Moderate	Mid-Flood	B	7.7	15:18	9.17	8.04	30.18	19.8	5.47	2	113	0.22	NW
F1	20181221	Sunny	Moderate	Mid-Flood	B	7.7	15:18	9.16	8.11	29.92	19.8	5.49	<2	114	0.23	NW
F1	20181221	Sunny	Moderate	Mid-Flood	M	4.4	15:19	9.06	8.2	29.98	19.8	3.47	<2	113	0.42	NW
F1	20181221	Sunny	Moderate	Mid-Flood	M	4.4	15:19	9.1	8.1	30.05	19.9	3.52	2	113	0.42	NW
F1	20181221	Sunny	Moderate	Mid-Flood	S	1	15:20	9.2	8.11	30.04	19.8	1.1	2	113	0.66	NW
F1	20181221	Sunny	Moderate	Mid-Flood	S	1	15:21	9.25	8.19	29.7	19.8	1.08	2	114	0.66	NW
S3	20181221	Sunny	Moderate	Mid-Flood	B	11.1	15:18	9.2	8.04	29.84	19.8	5.18	<2	114	0.2	W
S3	20181221	Sunny	Moderate	Mid-Flood	B	11.1	15:19	9.27	8.14	30.03	19.9	5.15	2	113	0.22	W
S3	20181221	Sunny	Moderate	Mid-Flood	M	6.1	15:19	9.28	8.15	29.61	19.8	3.1	2	113	0.49	W
S3	20181221	Sunny	Moderate	Mid-Flood	M	6.1	15:20	9.32	8.1	30.02	19.8	3.07	<2	112	0.47	WW
S3	20181221	Sunny	Moderate	Mid-Flood	S	1	15:21	9.41	8.17	29.95	19.8	1.32	3	114	0.67	W
S3	20181221	Sunny	Moderate	Mid-Flood	S	1	15:21	9.45	8.09	29.91	19.8	1.34	3	113	0.65	W
CR2	20181221	Sunny	Moderate	Mid-Flood	B	7.9	15:27	9.05	8.19	29.97	19.8	5.03	3	112	0.2	NW
CR2	20181221	Sunny	Moderate	Mid-Flood	B	7.9	15:28	9.09	8.15	29.75	19.8	5.06	2	114	0.19	NW
CR2	20181221	Sunny	Moderate	Mid-Flood	M	4.5	15:28	9.02	8.09	30.47	19.9	3.73	3	113	0.45	NW
CR2	20181221	Sunny	Moderate	Mid-Flood	M	4.5	15:29	8.96	8.17	30.25	19.9	3.75	<2	114	0.43	NW
CR2	20181221	Sunny	Moderate	Mid-Flood	S	1	15:29	8.98	8.18	30.45	19.9	1.47	3	113	0.66	NW
CR2	20181221	Sunny	Moderate	Mid-Flood	S	1	15:30	8.89	8.16	29.91	19.8	1.48	<2	113	0.68	NW
M1	20181221	Sunny	Moderate	Mid-Flood	B	7.8	15:48	9.55	8.11	30.02	19.9	5.58	2	114	0.29	NW
M1	20181221	Sunny	Moderate	Mid-Flood	B	7.8	15:48	9.6	8.1	30.04	19.8	5.55	3	114	0.27	NW
M1	20181221	Sunny	Moderate	Mid-Flood	M	4.4	15:49	9.54	8.15	30.4	19.8	3.57	2	114	0.44	NW
M1	20181221	Sunny	Moderate	Mid-Flood	M	4.4	15:49	9.6	8.15	30.06	19.9	3.54	2	113	0.43	NW
M1	20181221	Sunny	Moderate	Mid-Flood	S	1	15:50	9.64	8.17	30.46	19.9	1.54	3	114	0.6	NW
M1	20181221	Sunny	Moderate	Mid-Flood	S	1	15:51	9.67	8.17	29.59	19.9	1.54	2	113	0.61	NW
C1	20181221	Sunny	Moderate	Mid-Flood	B	11.2	15:58	9.05	8.11	29.79	19.9	5.85	2	114	0.29	NW
C1	20181221	Sunny	Moderate	Mid-Flood	B	11.2	15:59	9.09	8.11	29.89	19.9	5.87	2	114	0.28	NW

Contract No. EP/SP/66/12
Integrated Waste Management Facilities, Phase 1
Baseline Water Quality Monitoring Data

Location	Date (YYYYMMDD)	Weather	Sea Condition	Tidal	Water Level note 1	Depth (m)	Time (HH:MM)	DO (mg/L)	pH	Sal (ppt)	Temp (°C)	Turbidity (NTU) note 4	SS (mg/L)	Total Alkalinity (mg/L) note 3	Current Velocity note 3	Direction in NESW note 3
C1	20181221	Sunny	Moderate	Mid-Flood	M	6.1	16:00	9.16	8	30.43	19.9	3.57	3	112	0.5	NW
C1	20181221	Sunny	Moderate	Mid-Flood	M	6.1	16:00	9.24	8.06	29.53	19.9	3.62	2	113	0.48	NW
C1	20181221	Sunny	Moderate	Mid-Flood	S	1	16:01	9.22	8	29.54	19.9	1.96	2	113	0.65	NW
C1	20181221	Sunny	Moderate	Mid-Flood	S	1	16:01	9.27	8.07	30.18	19.8	1.98	2	113	0.65	NW
B1	20181221	Sunny	Moderate	Mid-Flood	B	4.7	16:22	9.21	8.02	29.9	19.9	5.43	4	114	0.21	NW
B1	20181221	Sunny	Moderate	Mid-Flood	B	4.7	16:23	9.19	8.03	30.38	19.8	5.42	4	114	0.23	NW
B1	20181221	Sunny	Moderate	Mid-Flood	S	1	16:23	9.27	8.05	29.59	19.8	1.09	5	114	0.61	NW
B1	20181221	Sunny	Moderate	Mid-Flood	S	1	16:24	9.34	8.08	30.37	19.8	1.07	5	115	0.61	NW
H1	20181221	Sunny	Moderate	Mid-Flood	B	7.7	16:30	9.5	8	29.87	19.9	5.04	2	112	0.24	NW
H1	20181221	Sunny	Moderate	Mid-Flood	B	7.7	16:30	9.55	8.17	30.23	19.9	5.09	<2	113	0.24	NW
H1	20181221	Sunny	Moderate	Mid-Flood	M	4.4	16:31	9.48	8	30.22	19.8	3.4	<2	112	0.43	NW
H1	20181221	Sunny	Moderate	Mid-Flood	M	4.4	16:31	9.5	8.16	29.59	19.8	3.36	2	112	0.41	NW
H1	20181221	Sunny	Moderate	Mid-Flood	S	1	16:32	9.56	8.05	29.85	19.8	1.02	<2	113	0.61	NW
H1	20181221	Sunny	Moderate	Mid-Flood	S	1	16:33	9.62	8.05	30.27	19.9	1.05	<2	114	0.61	NW
S1	20181221	Sunny	Moderate	Mid-Flood	B	4.6	16:36	9.33	8.14	30.03	19.8	5.26	3	113	0.24	W
S1	20181221	Sunny	Moderate	Mid-Flood	B	4.6	16:37	9.23	8.16	30.28	19.9	5.26	2	113	0.22	W
S1	20181221	Sunny	Moderate	Mid-Flood	S	1	16:37	9.32	8.08	29.83	19.8	1.55	<2	112	0.62	W
S1	20181221	Sunny	Moderate	Mid-Flood	S	1	16:38	9.25	8.19	29.5	19.9	1.51	<2	114	0.61	W
B2	20181221	Sunny	Moderate	Mid-Flood	B	4.8	16:47	9.7	8.01	30.2	19.9	5.25	2	113	0.2	N
B2	20181221	Sunny	Moderate	Mid-Flood	B	4.8	16:47	9.76	8.12	29.83	19.9	5.25	2	113	0.19	N
B2	20181221	Sunny	Moderate	Mid-Flood	S	1	16:48	9.74	8.1	29.65	19.8	1.1	3	113	0.68	N
B2	20181221	Sunny	Moderate	Mid-Flood	S	1	16:49	9.81	8.08	30.06	19.8	1.08	2	113	0.68	N
B3	20181221	Sunny	Moderate	Mid-Flood	B	4.7	16:54	8.96	8.01	30.35	19.8	5.76	2	113	0.25	NW
B3	20181221	Sunny	Moderate	Mid-Flood	B	4.7	16:55	8.93	8.1	29.77	19.8	5.73	3	112	0.24	NW
B3	20181221	Sunny	Moderate	Mid-Flood	S	1	16:55	9.01	8.03	30.34	19.9	1.39	3	114	0.7	NW
B3	20181221	Sunny	Moderate	Mid-Flood	S	1	16:56	9.11	8.04	29.7	19.9	1.41	3	112	0.72	NW
B4	20181221	Sunny	Moderate	Mid-Flood	B	4.7	17:14	9.29	8.18	30	19.9	5.25	<2	113	0.2	N
B4	20181221	Sunny	Moderate	Mid-Flood	B	4.7	17:14	9.21	8.08	29.62	19.9	5.21	3	113	0.21	N
B4	20181221	Sunny	Moderate	Mid-Flood	S	1	17:15	9.16	8.14	29.74	19.9	1.06	2	112	0.64	N
B4	20181221	Sunny	Moderate	Mid-Flood	S	1	17:15	9.11	8.13	29.59	19.9	1.01	<2	112	0.63	N

Location	Date (YYYYMMDD)	Weather	Sea Condition	Tidal	Water Level note 1	Depth (m)	Time (HH:MM)	DO (mg/L)	pH	Sal (ppt)	Temp (°C)	Turbidity (NTU) note 4	SS (mg/L)	Total Alkalinity (mg/L) note 3	Current Velocity note 3	Direction in NESW note 3
S2	20181221	Sunny	Moderate	Mid-Flood	B	7.9	17:05	9.67	8.05	30	19.9	5.43	2	112	0.26	NW
S2	20181221	Sunny	Moderate	Mid-Flood	B	7.9	17:06	9.63	8.04	30.11	19.8	5.45	<2	114	0.26	W
S2	20181221	Sunny	Moderate	Mid-Flood	M	4.5	17:06	9.64	8.03	30.05	19.9	3.87	2	113	0.47	W
S2	20181221	Sunny	Moderate	Mid-Flood	M	4.5	17:07	9.62	8.13	30.11	19.8	3.82	<2	112	0.46	NW
S2	20181221	Sunny	Moderate	Mid-Flood	S	1	17:08	9.57	8.1	29.74	19.8	1.54	2	112	0.7	NW
S2	20181221	Sunny	Moderate	Mid-Flood	S	1	17:08	9.65	8.08	30.04	19.8	1.5	<2	113	0.71	NW
C2	20181224	Cloudy	Light	Mid-Flood	B	9.4	8:15	8.87	8.06	30.53	17.4	5.06	4	112	0.27	N
C2	20181224	Cloudy	Light	Mid-Flood	B	9.4	8:15	8.82	8.12	30.45	17.3	5.03	5	113	0.27	N
C2	20181224	Cloudy	Light	Mid-Flood	M	5.2	8:16	8.81	8.18	29.96	17.3	3.82	4	113	0.42	N
C2	20181224	Cloudy	Light	Mid-Flood	M	5.2	8:16	8.71	8.01	29.81	17.3	3.9	4	111	0.45	N
C2	20181224	Cloudy	Light	Mid-Flood	S	1	8:17	8.75	8.09	29.8	17.3	1.23	4	113	0.61	N
C2	20181224	Cloudy	Light	Mid-Flood	S	1	8:18	8.77	8.2	30.26	17.4	1.14	4	112	0.65	N
CR1	20181224	Cloudy	Light	Mid-Flood	B	7.7	8:18	8.94	8.18	30.51	17.3	6	4	114	0.25	NW
CR1	20181224	Cloudy	Light	Mid-Flood	B	7.7	8:19	8.92	8.02	29.96	17.4	5.92	4	114	0.25	NW
CR1	20181224	Cloudy	Light	Mid-Flood	M	4.4	8:19	9.02	8.05	30.24	17.3	3.07	5	110	0.48	NW
CR1	20181224	Cloudy	Light	Mid-Flood	M	4.4	8:20	9.1	8.08	29.95	17.4	3.16	4	114	0.5	NW
CR1	20181224	Cloudy	Light	Mid-Flood	S	1	8:21	9.1	8.12	30.41	17.4	1.23	3	113	0.65	NW
CR1	20181224	Cloudy	Light	Mid-Flood	S	1	8:21	9.18	8.2	30.44	17.3	1.26	4	112	0.63	NW
F1	20181224	Cloudy	Light	Mid-Flood	B	7.9	8:43	9.39	8.08	30.12	17.4	5.03	7	114	0.27	NW
F1	20181224	Cloudy	Light	Mid-Flood	B	7.9	8:44	9.4	8.14	30.31	17.3	5.12	6	112	0.27	NW
F1	20181224	Cloudy	Light	Mid-Flood	M	4.5	8:44	9.39	8.02	30.09	17.4	3	4	114	0.5	NW
F1	20181224	Cloudy	Light	Mid-Flood	M	4.5	8:45	9.35	8.19	30.11	17.3	2.98	5	112	0.54	NW
F1	20181224	Cloudy	Light	Mid-Flood	S	1	8:45	9.36	8.05	30.1	17.4	1.6	5	114	0.7	NW
F1	20181224	Cloudy	Light	Mid-Flood	S	1	8:46	9.31	8.06	29.9	17.4	1.57	4	111	0.65	NW
S3	20181224	Cloudy	Light	Mid-Flood	B	11.2	8:39	9.3	8.07	30.08	17.4	5.65	4	112	0.3	W
S3	20181224	Cloudy	Light	Mid-Flood	B	11.2	8:39	9.4	8.18	29.97	17.3	5.68	4	114	0.32	W
S3	20181224	Cloudy	Light	Mid-Flood	M	6.1	8:40	9.39	8.15	29.75	17.3	3.02	4	112	0.42	W
S3	20181224	Cloudy	Light	Mid-Flood	M	6.1	8:40	9.3	8.14	30.41	17.4	2.97	4	115	0.39	W
S3	20181224	Cloudy	Light	Mid-Flood	S	1	8:41	9.38	8.01	30.1	17.4	1.18	4	113	0.66	W
S3	20181224	Cloudy	Light	Mid-Flood	S	1	8:42	9.42	8.13	30.29	17.3	1.23	5	114	0.69	W

Location	Date (YYYYMMDD)	Weather	Sea Condition	Tidal	Water Level note 1	Depth (m)	Time (HH:MM)	DO (mg/L)	pH	Sal (ppt)	Temp (°C)	Turbidity (NTU) note 4	SS (mg/L)	Total Alkalinity (mg/L) note 3	Current Velocity note 3	Direction in NESW note 3
CR2	20181224	Cloudy	Light	Mid-Flood	B	8.1	8:48	8.96	8.16	30.49	17.3	5.69	4	113	0.25	W
CR2	20181224	Cloudy	Light	Mid-Flood	B	8.1	8:49	8.88	8.14	30.11	17.4	5.68	3	112	0.26	W
CR2	20181224	Cloudy	Light	Mid-Flood	M	4.6	8:50	8.8	8.19	29.7	17.4	3.33	3	112	0.43	NW
CR2	20181224	Cloudy	Light	Mid-Flood	M	4.6	8:50	8.71	8.1	30.22	17.3	3.4	4	113	0.39	NW
CR2	20181224	Cloudy	Light	Mid-Flood	S	1	8:51	8.7	8	30.51	17.3	1.18	3	114	0.7	NW
CR2	20181224	Cloudy	Light	Mid-Flood	S	1	8:51	8.74	8.08	30.19	17.3	1.21	3	112	0.65	NW
M1	20181224	Cloudy	Light	Mid-Flood	B	7.8	9:18	9.37	8.09	30.5	17.3	5.9	3	113	0.25	NW
M1	20181224	Cloudy	Light	Mid-Flood	B	7.8	9:19	9.3	8.18	29.96	17.4	5.89	4	113	0.28	NW
M1	20181224	Cloudy	Light	Mid-Flood	M	4.4	9:19	9.24	8.02	30.22	17.3	3.88	3	112	0.4	NW
M1	20181224	Cloudy	Light	Mid-Flood	M	4.4	9:20	9.22	8.07	30.38	17.4	3.8	3	112	0.4	NW
M1	20181224	Cloudy	Light	Mid-Flood	S	1	9:20	9.12	8.14	30.06	17.4	1.39	2	113	0.62	NW
M1	20181224	Cloudy	Light	Mid-Flood	S	1	9:21	9.03	8.17	30.13	17.3	1.36	2	114	0.64	NW
C1	20181224	Cloudy	Light	Mid-Flood	B	11.4	9:18	8.8	8.05	30.55	17.3	5.28	5	112	0.26	NW
C1	20181224	Cloudy	Light	Mid-Flood	B	11.4	9:18	8.71	8.08	30.11	17.3	5.26	5	112	0.23	NW
C1	20181224	Cloudy	Light	Mid-Flood	M	6.2	9:19	8.61	8.02	29.92	17.3	3.12	5	110	0.45	NW
C1	20181224	Cloudy	Light	Mid-Flood	M	6.2	9:20	8.59	8.13	29.92	17.3	3.15	5	111	0.5	NW
C1	20181224	Cloudy	Light	Mid-Flood	S	1	9:20	8.49	8.19	30.14	17.3	1.28	5	114	0.69	NW
C1	20181224	Cloudy	Light	Mid-Flood	S	1	9:21	8.56	8.08	29.74	17.4	1.36	4	112	0.71	NW
B1	20181224	Cloudy	Light	Mid-Flood	B	4.7	9:44	9.39	8.07	29.89	17.4	5.96	4	114	0.2	NW
B1	20181224	Cloudy	Light	Mid-Flood	B	4.7	9:45	9.36	8.03	30.59	17.3	5.9	5	112	0.24	NW
B1	20181224	Cloudy	Light	Mid-Flood	S	1	9:46	9.35	8.18	30.48	17.3	1.79	4	112	0.6	NW
B1	20181224	Cloudy	Light	Mid-Flood	S	1	9:46	9.27	8.03	30.48	17.3	1.74	4	112	0.62	NW
S1	20181224	Cloudy	Light	Mid-Flood	B	4.6	9:56	9.34	8.05	30.4	17.3	5.7	5	113	0.22	N
S1	20181224	Cloudy	Light	Mid-Flood	B	4.6	9:56	9.43	8.07	29.9	17.3	5.66	6	112	0.23	N
S1	20181224	Cloudy	Light	Mid-Flood	S	1	9:57	9.44	8.11	30.2	17.3	1.26	5	112	0.64	N
S1	20181224	Cloudy	Light	Mid-Flood	S	1	9:58	9.5	8.2	30.08	17.4	1.25	4	113	0.68	N
H1	20181224	Cloudy	Light	Mid-Flood	B	7.9	10:02	9.13	8	30.58	17.3	5.21	7	113	0.23	NW
H1	20181224	Cloudy	Light	Mid-Flood	B	7.9	10:03	9.15	8.19	30.02	17.4	5.26	6	112	0.27	NW
H1	20181224	Cloudy	Light	Mid-Flood	M	4.5	10:04	9.07	8.1	30.31	17.3	3.22	4	111	0.43	NW
H1	20181224	Cloudy	Light	Mid-Flood	M	4.5	10:04	9.03	8.09	30.6	17.4	3.19	4	114	0.46	NW

Location	Date (YYYYMMDD)	Weather	Sea Condition	Tidal	Water Level note 1	Depth (m)	Time (HH:MM)	DO (mg/L)	pH	Sal (ppt)	Temp (°C)	Turbidity (NTU) note 4	SS (mg/L)	Total Alkalinity (mg/L) note 3	Current Velocity note 3	Direction in NESW note 3
H1	20181224	Cloudy	Light	Mid-Flood	S	1	10:05	9.09	8.16	30.56	17.3	1.9	4	112	0.7	NW
H1	20181224	Cloudy	Light	Mid-Flood	S	1	10:05	9.04	8.03	30.6	17.3	1.88	5	112	0.7	NW
B3	20181224	Cloudy	Light	Mid-Flood	B	4.8	10:17	9.46	8.05	29.82	17.3	5.54	5	113	0.26	NW
B3	20181224	Cloudy	Light	Mid-Flood	B	4.8	10:18	9.48	8.05	30.51	17.4	5.47	5	112	0.21	NW
B3	20181224	Cloudy	Light	Mid-Flood	S	1	10:18	9.46	8.11	30.5	17.4	1.14	4	113	0.64	N
B3	20181224	Cloudy	Light	Mid-Flood	S	1	10:19	9.55	8.13	29.79	17.3	1.1	5	113	0.63	N
B2	20181224	Cloudy	Light	Mid-Flood	B	4.6	10:08	8.82	8.16	30.59	17.3	5.04	5	111	0.29	N
B2	20181224	Cloudy	Light	Mid-Flood	B	4.6	10:08	8.75	8.16	30.24	17.4	5.13	6	112	0.34	N
B2	20181224	Cloudy	Light	Mid-Flood	S	1	10:09	8.81	8.13	30.41	17.4	1.11	5	112	0.68	N
B2	20181224	Cloudy	Light	Mid-Flood	S	1	10:09	8.87	8.12	30.54	17.3	1.14	6	114	0.63	N
S2	20181224	Cloudy	Light	Mid-Flood	B	11.5	10:24	9.39	8.06	29.8	17.4	5.27	3	113	0.3	N
S2	20181224	Cloudy	Light	Mid-Flood	B	11.5	10:25	9.48	8.07	29.75	17.4	5.23	3	112	0.32	NW
S2	20181224	Cloudy	Light	Mid-Flood	M	6.3	10:25	9.46	8.17	30.28	17.3	3.46	3	112	0.43	NW
S2	20181224	Cloudy	Light	Mid-Flood	M	6.3	10:26	9.55	8.03	29.94	17.4	3.4	4	111	0.46	NW
S2	20181224	Cloudy	Light	Mid-Flood	S	1	10:26	9.58	8.18	30.34	17.4	1.22	4	114	0.62	NW
S2	20181224	Cloudy	Light	Mid-Flood	S	1	10:27	9.64	8.17	30.32	17.4	1.29	4	113	0.62	NW
B4	20181224	Cloudy	Light	Mid-Flood	B	4.7	10:31	8.84	8.12	30.07	17.3	5.9	5	112	0.21	N
B4	20181224	Cloudy	Light	Mid-Flood	B	4.7	10:31	8.78	8.11	30.6	17.4	5.89	4	113	0.25	N
B4	20181224	Cloudy	Light	Mid-Flood	S	1	10:32	8.87	8.1	30.54	17.3	1.74	5	113	0.67	N
B4	20181224	Cloudy	Light	Mid-Flood	S	1	10:33	8.94	8.13	29.86	17.3	1.77	4	113	0.64	N
C1	20181224	Fine	Light	Mid-Ebb	B	10	11:49	9.32	8.2	30.18	17.4	5.16	5	112	0.27	SE
C1	20181224	Fine	Light	Mid-Ebb	B	10	11:50	9.23	8.19	30.04	17.3	5.13	4	113	0.24	SE
C1	20181224	Fine	Light	Mid-Ebb	M	5.5	11:50	9.25	8	30.17	17.3	3.98	4	114	0.47	SE
C1	20181224	Fine	Light	Mid-Ebb	M	5.5	11:51	9.18	8.08	29.82	17.3	3.95	5	114	0.51	SE
C1	20181224	Fine	Light	Mid-Ebb	S	1	11:52	9.21	8.09	30.11	17.4	1.56	5	113	0.61	SE
C1	20181224	Fine	Light	Mid-Ebb	S	1	11:52	9.26	8.15	30.5	17.4	1.51	4	113	0.64	SE
M1	20181224	Fine	Light	Mid-Ebb	B	7.5	12:04	8.76	8.08	30.49	17.4	5.98	4	113	0.27	SE
M1	20181224	Fine	Light	Mid-Ebb	B	7.5	12:04	8.8	8.11	30.36	17.3	6	4	113	0.31	SE
M1	20181224	Fine	Light	Mid-Ebb	M	4.3	12:05	8.78	8.16	30.23	17.4	3.9	6	113	0.45	SE
M1	20181224	Fine	Light	Mid-Ebb	M	4.3	12:06	8.69	8.01	30.24	17.4	3.81	6	114	0.47	SE

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M1	20181224	Fine	Light	Mid-Ebb	S	1	12:06	8.67	8.09	30.25	17.3	1.22	5	113	0.66	SS
M1	20181224	Fine	Light	Mid-Ebb	S	1	12:07	8.7	8.08	30.59	17.4	1.32	4	113	0.68	S
F1	20181224	Fine	Light	Mid-Ebb	B	7.4	12:34	8.73	8.08	29.83	17.3	5.25	5	113	0.24	SE
F1	20181224	Fine	Light	Mid-Ebb	B	7.4	12:34	8.81	8.03	29.88	17.4	5.35	5	114	0.25	SE
F1	20181224	Fine	Light	Mid-Ebb	M	4.2	12:35	8.74	8.02	29.81	17.3	3.98	5	114	0.5	SE
F1	20181224	Fine	Light	Mid-Ebb	M	4.2	12:35	8.66	8.12	30.11	17.3	4.07	4	113	0.47	SE
F1	20181224	Fine	Light	Mid-Ebb	S	1	12:36	8.73	8.04	30.44	17.3	1.27	4	114	0.69	SE
F1	20181224	Fine	Light	Mid-Ebb	S	1	12:37	8.75	8.04	30.28	17.4	1.36	5	114	0.64	SE
B1	20181224	Fine	Light	Mid-Ebb	B	4.3	12:14	9.1	8.07	30.08	17.4	5.81	6	112	0.26	E
B1	20181224	Fine	Light	Mid-Ebb	B	4.3	12:15	9.12	8.08	30.26	17.4	5.8	6	112	0.21	E
B1	20181224	Fine	Light	Mid-Ebb	S	1	12:15	9.11	8.01	29.77	17.3	1.41	3	112	0.69	E
B1	20181224	Fine	Light	Mid-Ebb	S	1	12:16	9.19	8.01	30.5	17.4	1.44	3	113	0.68	E
S1	20181224	Fine	Light	Mid-Ebb	B	4.4	12:25	9.26	8.06	30.33	17.4	5.14	3	114	0.27	E
S1	20181224	Fine	Light	Mid-Ebb	B	4.4	12:25	9.27	8.2	29.92	17.4	5.05	4	113	0.22	E
S1	20181224	Fine	Light	Mid-Ebb	S	1	12:26	9.19	8.01	30.55	17.3	1.76	5	112	0.6	E
S1	20181224	Fine	Light	Mid-Ebb	S	1	12:27	9.25	8.01	30.16	17.4	1.83	4	113	0.58	E
B2	20181224	Fine	Light	Mid-Ebb	B	4.3	12:35	9.28	8.01	29.89	17.4	5.24	4	112	0.21	SE
B2	20181224	Fine	Light	Mid-Ebb	B	4.3	12:36	9.18	8.2	30.34	17.4	5.16	3	113	0.26	E
B2	20181224	Fine	Light	Mid-Ebb	S	1	12:36	9.08	8.19	29.97	17.4	1.66	3	114	0.69	E
B2	20181224	Fine	Light	Mid-Ebb	S	1	12:37	9.11	8.17	30.4	17.3	1.62	4	111	0.7	SE
C2	20181224	Fine	Light	Mid-Ebb	B	7.3	12:58	9.46	8.05	30.25	17.3	5.62	4	114	0.22	S
C2	20181224	Fine	Light	Mid-Ebb	B	7.3	12:58	9.4	8.03	30.17	17.3	5.6	4	114	0.17	S
C2	20181224	Fine	Light	Mid-Ebb	M	4.2	12:59	9.32	8.2	29.91	17.4	3.27	5	114	0.47	S
C2	20181224	Fine	Light	Mid-Ebb	M	4.2	12:59	9.24	8.06	30.33	17.4	3.22	5	112	0.47	S
C2	20181224	Fine	Light	Mid-Ebb	S	1	13:00	9.32	8.02	30.29	17.3	1.8	5	113	0.66	S
C2	20181224	Fine	Light	Mid-Ebb	S	1	13:01	9.25	8.03	30.3	17.4	1.74	4	114	0.65	S
B4	20181224	Fine	Light	Mid-Ebb	B	4.4	13:14	9.36	8.12	30.18	17.4	5.94	3	114	0.26	SE
B4	20181224	Fine	Light	Mid-Ebb	B	4.4	13:15	9.45	8.12	30.02	17.3	5.87	4	112	0.25	SE
B4	20181224	Fine	Light	Mid-Ebb	S	1	13:16	9.41	8.08	30.3	17.3	1.96	4	114	0.65	SE
B4	20181224	Fine	Light	Mid-Ebb	S	1	13:16	9.37	8.18	30.19	17.3	1.91	3	112	0.68	SE

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CR2	20181224	Fine	Light	Mid-Ebb	B	8.3	13:06	9.39	8.02	29.7	17.3	5.73	2	114	0.21	SE
CR2	20181224	Fine	Light	Mid-Ebb	B	8.3	13:06	9.38	8.07	30.42	17.4	5.82	3	113	0.25	SE
CR2	20181224	Fine	Light	Mid-Ebb	M	4.7	13:07	9.41	8.04	30.25	17.3	3.93	4	112	0.41	SE
CR2	20181224	Fine	Light	Mid-Ebb	M	4.7	13:08	9.34	8.08	30.38	17.4	3.83	5	113	0.41	SE
CR2	20181224	Fine	Light	Mid-Ebb	S	1	13:08	9.25	8.12	29.96	17.3	1.63	4	113	0.61	SE
CR2	20181224	Fine	Light	Mid-Ebb	S	1	13:09	9.25	8.08	30.36	17.3	1.73	3	114	0.56	SE
S3	20181224	Fine	Light	Mid-Ebb	B	10.5	13:13	9.41	8.09	29.89	17.3	5.91	8	113	0.23	SE
S3	20181224	Fine	Light	Mid-Ebb	B	10.5	13:13	9.44	8.03	30	17.3	5.83	9	113	0.24	SE
S3	20181224	Fine	Light	Mid-Ebb	M	5.8	13:14	9.35	8	29.95	17.4	3.65	5	112	0.44	SE
S3	20181224	Fine	Light	Mid-Ebb	M	5.8	13:14	9.41	8.08	30.06	17.4	3.56	4	113	0.39	SE
S3	20181224	Fine	Light	Mid-Ebb	S	1	13:15	9.41	8.16	30.55	17.4	1.69	4	113	0.6	SE
S3	20181224	Fine	Light	Mid-Ebb	S	1	13:16	9.39	8.14	30.55	17.3	1.78	4	112	0.64	SE
CR1	20181224	Fine	Light	Mid-Ebb	B	7.8	13:27	9.13	8.05	30.43	17.3	5.35	4	113	0.22	S
CR1	20181224	Fine	Light	Mid-Ebb	B	7.8	13:28	9.13	8.14	29.95	17.4	5.33	4	113	0.18	S
CR1	20181224	Fine	Light	Mid-Ebb	M	4.4	13:28	9.1	8.18	30.43	17.4	3.36	5	113	0.42	SE
CR1	20181224	Fine	Light	Mid-Ebb	M	4.4	13:29	9.2	8.04	29.73	17.3	3.34	4	112	0.42	SE
CR1	20181224	Fine	Light	Mid-Ebb	S	1	13:30	9.2	8.17	30.15	17.4	1.47	5	114	0.67	SE
CR1	20181224	Fine	Light	Mid-Ebb	S	1	13:30	9.2	8.11	29.91	17.4	1.49	4	114	0.68	SE
B3	20181224	Fine	Light	Mid-Ebb	B	4.5	13:29	9.14	8	29.83	17.4	5.47	6	114	0.28	E
B3	20181224	Fine	Light	Mid-Ebb	B	4.5	13:30	9.07	8.19	29.81	17.4	5.5	5	112	0.23	E
B3	20181224	Fine	Light	Mid-Ebb	S	1	13:30	9.13	8.07	30.46	17.4	1.05	4	112	0.61	E
B3	20181224	Fine	Light	Mid-Ebb	S	1	13:31	9.11	8.02	30.55	17.4	1.13	3	112	0.58	E
H1	20181224	Fine	Light	Mid-Ebb	B	7.2	13:44	8.78	8.19	30.46	17.3	5.49	5	112	0.27	SE
H1	20181224	Fine	Light	Mid-Ebb	B	7.2	13:45	8.85	8.15	30.38	17.3	5.46	6	113	0.25	SE
H1	20181224	Fine	Light	Mid-Ebb	M	4.1	13:46	8.77	8.1	29.89	17.3	3.4	4	112	0.5	E
H1	20181224	Fine	Light	Mid-Ebb	M	4.1	13:46	8.85	8.15	30.04	17.4	3.5	5	112	0.49	E
H1	20181224	Fine	Light	Mid-Ebb	S	1	13:47	8.86	8.09	30.3	17.3	1.01	4	112	0.7	E
H1	20181224	Fine	Light	Mid-Ebb	S	1	13:47	8.96	8.19	30.58	17.4	0.98	4	112	0.68	E
S2	20181224	Fine	Light	Mid-Ebb	B	7.5	14:01	8.93	8.02	30.49	17.4	5.9	6	113	0.27	SE
S2	20181224	Fine	Light	Mid-Ebb	B	7.5	14:02	9.02	8.01	30.3	17.3	5.99	6	113	0.26	SE

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S2	20181224	Fine	Light	Mid-Ebb	M	4.3	14:02	9.06	8	30.41	17.3	3.99	7	113	0.46	SE
S2	20181224	Fine	Light	Mid-Ebb	M	4.3	14:03	9.15	8.18	30.14	17.3	4.09	7	114	0.48	SE
S2	20181224	Fine	Light	Mid-Ebb	S	1	14:04	9.14	8.02	30.54	17.3	1.37	9	112	0.68	SE
S2	20181224	Fine	Light	Mid-Ebb	S	1	14:04	9.08	8.2	30.33	17.3	1.42	9	112	0.65	SE
C2	20181227	Sunny	Moderate	Mid-Flood	B	9.3	9:00	8.37	8.05	29.84	18.7	6.73	4	112	0.22	NE
C2	20181227	Sunny	Moderate	Mid-Flood	B	9.3	9:00	8.36	8	30.01	18.8	6.73	5	112	0.23	NE
C2	20181227	Sunny	Moderate	Mid-Flood	M	5.2	9:01	8.4	8.06	30.62	18.7	4.89	8	113	0.43	NE
C2	20181227	Sunny	Moderate	Mid-Flood	M	5.2	9:01	8.46	8.03	30.4	18.8	4.86	7	111	0.45	NE
C2	20181227	Sunny	Moderate	Mid-Flood	S	1	9:02	8.4	8.09	30.25	18.7	2.72	6	113	0.67	NE
C2	20181227	Sunny	Moderate	Mid-Flood	S	1	9:03	8.47	8.13	30.18	18.7	2.75	8	113	0.65	NE
S3	20181227	Sunny	Moderate	Mid-Flood	B	11.1	9:18	8.55	8.09	29.93	18.8	6.85	7	111	0.3	W
S3	20181227	Sunny	Moderate	Mid-Flood	B	11.1	9:19	8.59	8.19	30.48	18.7	6.87	6	111	0.28	W
S3	20181227	Sunny	Moderate	Mid-Flood	M	6.1	9:19	8.61	8.19	30.31	18.7	4.89	6	111	0.4	W
S3	20181227	Sunny	Moderate	Mid-Flood	M	6.1	9:20	8.55	8.17	30.37	18.8	4.87	6	114	0.42	W
S3	20181227	Sunny	Moderate	Mid-Flood	S	1	9:21	8.65	8.07	30.28	18.7	2	7	111	0.68	W
S3	20181227	Sunny	Moderate	Mid-Flood	S	1	9:21	8.67	8.17	30.51	18.7	2.05	6	111	0.69	W
M1	20181227	Sunny	Moderate	Mid-Flood	B	7.9	9:30	9.15	8.2	29.97	18.8	6.3	8	111	0.24	NW
M1	20181227	Sunny	Moderate	Mid-Flood	B	7.9	9:31	9.17	8.04	30.2	18.8	6.34	8	113	0.26	NW
M1	20181227	Sunny	Moderate	Mid-Flood	M	4.5	9:31	9.23	8.18	29.93	18.7	4.72	8	114	0.48	NW
M1	20181227	Sunny	Moderate	Mid-Flood	M	4.5	9:32	9.2	8.09	30.59	18.8	4.67	9	112	0.49	NW
M1	20181227	Sunny	Moderate	Mid-Flood	S	1	9:32	9.26	8.03	30.43	18.8	2.52	4	112	0.7	NW
M1	20181227	Sunny	Moderate	Mid-Flood	S	1	9:33	9.21	8.02	30.4	18.8	2.5	6	111	0.72	NW
CR2	20181227	Sunny	Moderate	Mid-Flood	B	8	9:28	8.64	8.14	30.03	18.7	6.47	11	112	0.24	NW
CR2	20181227	Sunny	Moderate	Mid-Flood	B	8	9:28	8.74	8.02	29.73	18.7	6.44	13	111	0.23	NW
CR2	20181227	Sunny	Moderate	Mid-Flood	M	4.5	9:29	8.78	8.18	30.68	18.7	4.73	11	112	0.49	NW
CR2	20181227	Sunny	Moderate	Mid-Flood	M	4.5	9:29	8.72	8.2	30	18.8	4.74	13	112	0.51	NW
CR2	20181227	Sunny	Moderate	Mid-Flood	S	1	9:30	8.63	8.2	30.63	18.8	2.18	7	112	0.68	NW
CR2	20181227	Sunny	Moderate	Mid-Flood	S	1	9:31	8.7	8.01	29.76	18.7	2.23	7	113	0.69	NW
CR1	20181227	Sunny	Moderate	Mid-Flood	B	7.8	9:10	8.58	8.08	29.72	18.7	6.92	13	112	0.2	NW
CR1	20181227	Sunny	Moderate	Mid-Flood	B	7.8	9:11	8.55	8.07	30.56	18.7	6.92	11	112	0.19	NW

Location	Date (YYYYMMDD)	Weather	Sea Condition	Tidal	Water Level note 1	Depth (m)	Time (HH:MM)	DO (mg/L)	pH	Sal (ppt)	Temp (°C)	Turbidity (NTU) note 4	SS (mg/L)	Total Alkalinity (mg/L) note 3	Current Velocity note 3	Direction in NESW note 3
CR1	20181227	Sunny	Moderate	Mid-Flood	M	4.4	9:12	8.45	8.12	29.72	18.8	4.9	7	113	0.48	NW
CR1	20181227	Sunny	Moderate	Mid-Flood	M	4.4	9:12	8.37	8.08	30.66	18.8	4.87	9	111	0.49	NW
CR1	20181227	Sunny	Moderate	Mid-Flood	S	1	9:13	8.37	8.15	29.89	18.7	2.3	8	112	0.7	N
CR1	20181227	Sunny	Moderate	Mid-Flood	S	1	9:13	8.34	8.09	30.04	18.8	2.32	7	111	0.71	W
C1	20181227	Sunny	Moderate	Mid-Flood	B	11.3	9:59	8.3	8.19	30.42	18.8	6.1	10	112	0.29	NW
C1	20181227	Sunny	Moderate	Mid-Flood	B	11.3	10:00	8.23	8.04	29.81	18.7	6.1	9	112	0.29	NW
C1	20181227	Sunny	Moderate	Mid-Flood	M	6.2	10:00	8.18	8.03	30.3	18.7	4.46	8	112	0.47	NW
C1	20181227	Sunny	Moderate	Mid-Flood	M	6.2	10:01	8.11	8.16	30.64	18.7	4.51	7	111	0.46	NW
C1	20181227	Sunny	Moderate	Mid-Flood	S	1	10:01	8.21	8.03	29.86	18.7	2.33	6	110	0.63	NW
C1	20181227	Sunny	Moderate	Mid-Flood	S	1	10:02	8.17	8.12	29.97	18.7	2.37	7	112	0.63	NW
F1	20181227	Sunny	Moderate	Mid-Flood	B	7.8	10:11	8.58	8.01	29.82	18.8	6.83	8	111	0.27	NW
F1	20181227	Sunny	Moderate	Mid-Flood	B	7.8	10:11	8.56	8.12	30.66	18.8	6.87	6	113	0.28	NW
F1	20181227	Sunny	Moderate	Mid-Flood	M	4.4	10:12	8.56	8	30.53	18.7	4.39	8	112	0.42	NW
F1	20181227	Sunny	Moderate	Mid-Flood	M	4.4	10:13	8.59	8.16	30.03	18.8	4.4	6	111	0.42	NW
F1	20181227	Sunny	Moderate	Mid-Flood	S	1	10:13	8.67	8.08	29.75	18.7	2.69	6	112	0.61	NW
F1	20181227	Sunny	Moderate	Mid-Flood	S	1	10:14	8.6	8.1	30.12	18.8	2.69	7	112	0.6	NW
B1	20181227	Sunny	Moderate	Mid-Flood	B	4.7	10:23	8.85	8.11	30.18	18.8	6.76	8	114	0.22	NW
B1	20181227	Sunny	Moderate	Mid-Flood	B	4.7	10:24	8.93	8.19	30.61	18.8	6.8	8	113	0.21	NW
B1	20181227	Sunny	Moderate	Mid-Flood	S	1	10:25	8.9	8.02	30.43	18.7	2.26	11	113	0.63	NW
B1	20181227	Sunny	Moderate	Mid-Flood	S	1	10:25	8.89	8.11	29.89	18.8	2.26	10	113	0.61	NW
S1	20181227	Sunny	Moderate	Mid-Flood	B	4.6	10:33	8.57	8.17	29.75	18.7	6.6	8	111	0.3	NW
S1	20181227	Sunny	Moderate	Mid-Flood	B	4.6	10:33	8.49	8.07	30.25	18.8	6.63	9	112	0.3	NW
S1	20181227	Sunny	Moderate	Mid-Flood	S	1	10:34	8.58	8	30.55	18.8	2.65	6	112	0.63	NW
S1	20181227	Sunny	Moderate	Mid-Flood	S	1	10:35	8.63	8.11	30.15	18.7	2.68	7	111	0.65	N
H1	20181227	Sunny	Moderate	Mid-Flood	B	7.8	10:54	8.82	8.14	30.62	18.7	6.05	4	114	0.28	W
H1	20181227	Sunny	Moderate	Mid-Flood	B	7.8	10:55	8.76	8.18	30.6	18.7	6.04	3	112	0.28	W
H1	20181227	Sunny	Moderate	Mid-Flood	M	4.4	10:56	8.79	8.02	30.64	18.8	4.28	4	113	0.45	W
H1	20181227	Sunny	Moderate	Mid-Flood	M	4.4	10:56	8.8	8.13	29.81	18.8	4.28	6	113	0.44	W
H1	20181227	Sunny	Moderate	Mid-Flood	S	1	10:57	8.71	8.02	29.83	18.7	2.32	9	113	0.64	W
H1	20181227	Sunny	Moderate	Mid-Flood	S	1	10:57	8.78	8.03	30.1	18.8	2.33	9	114	0.62	W

Location	Date (YYYYMMDD)	Weather	Sea Condition	Tidal	Water Level note 1	Depth (m)	Time (HH:MM)	DO (mg/L)	pH	Sal (ppt)	Temp (°C)	Turbidity (NTU) note 4	SS (mg/L)	Total Alkalinity (mg/L) note 3	Current Velocity note 3	Direction in NESW note 3
B3	20181227	Sunny	Moderate	Mid-Flood	B	4.7	11:10	8.93	8.05	30.58	18.8	6.55	4	112	0.21	NW
B3	20181227	Sunny	Moderate	Mid-Flood	B	4.7	11:11	8.88	8.01	29.86	18.8	6.59	3	114	0.19	NW
B3	20181227	Sunny	Moderate	Mid-Flood	S	1	11:11	8.96	8.12	30	18.7	2.5	5	113	0.64	NW
B3	20181227	Sunny	Moderate	Mid-Flood	S	1	11:12	9.06	8.2	30.68	18.8	2.55	4	113	0.62	NW
B2	20181227	Sunny	Moderate	Mid-Flood	B	4.8	10:41	8.35	8.1	30.04	18.7	6.98	9	113	0.27	N
B2	20181227	Sunny	Moderate	Mid-Flood	B	4.8	10:41	8.29	8.16	29.83	18.7	6.99	9	112	0.26	N
B2	20181227	Sunny	Moderate	Mid-Flood	S	1	10:42	8.21	8.07	29.91	18.8	2.25	8	113	0.63	N
B2	20181227	Sunny	Moderate	Mid-Flood	S	1	10:42	8.21	8.12	29.99	18.7	2.26	8	111	0.64	N
S2	20181227	Sunny	Moderate	Mid-Flood	B	10.7	10:58	9.1	8.11	30.47	18.7	6.62	7	111	0.23	NW
S2	20181227	Sunny	Moderate	Mid-Flood	B	10.7	10:59	9.16	8.19	30.03	18.7	6.62	9	113	0.22	NW
S2	20181227	Sunny	Moderate	Mid-Flood	M	5.9	10:59	9.11	8.07	30.33	18.8	4.63	8	111	0.49	NW
S2	20181227	Sunny	Moderate	Mid-Flood	M	5.9	11:00	9.12	8.2	30.27	18.8	4.68	7	112	0.47	NW
S2	20181227	Sunny	Moderate	Mid-Flood	S	1	11:00	9.1	8.05	30.61	18.7	2.89	5	112	0.64	NW
S2	20181227	Sunny	Moderate	Mid-Flood	S	1	11:01	9.1	8.01	30.64	18.8	2.9	7	112	0.64	NW
B4	20181227	Sunny	Moderate	Mid-Flood	B	4.6	11:27	8.99	8.06	29.99	18.7	6.89	5	112	0.29	N
B4	20181227	Sunny	Moderate	Mid-Flood	B	4.6	11:27	9.07	8.03	30.6	18.8	6.89	6	113	0.31	N
B4	20181227	Sunny	Moderate	Mid-Flood	S	1	11:28	9.1	8.04	30.44	18.8	2.98	7	114	0.65	N
B4	20181227	Sunny	Moderate	Mid-Flood	S	1	11:29	9.2	8.17	29.92	18.7	2.98	6	112	0.66	N
C1	20181227	Cloudy	Light	Mid-Ebb	B	10.1	14:34	9.2	8.02	30.33	18.7	6.63	6	112	0.27	SE
C1	20181227	Cloudy	Light	Mid-Ebb	B	10.1	14:35	9.23	8.07	30.02	18.7	6.64	5	114	0.27	SE
C1	20181227	Cloudy	Light	Mid-Ebb	M	5.6	14:35	9.18	8.19	30.64	18.8	4.53	5	114	0.42	SE
C1	20181227	Cloudy	Light	Mid-Ebb	M	5.6	14:36	9.25	8.17	30	18.8	4.49	5	113	0.41	SE
C1	20181227	Cloudy	Light	Mid-Ebb	S	1	14:37	9.31	8.2	29.91	18.8	2.84	5	113	0.61	SE
C1	20181227	Cloudy	Light	Mid-Ebb	S	1	14:37	9.35	8.04	30.4	18.7	2.79	7	114	0.63	SE
M1	20181227	Cloudy	Light	Mid-Ebb	B	7.4	14:43	8.3	8.12	29.86	18.8	6.34	7	113	0.25	N
M1	20181227	Cloudy	Light	Mid-Ebb	B	7.4	14:43	8.36	8.12	29.91	18.8	6.39	5	112	0.24	N
M1	20181227	Cloudy	Light	Mid-Ebb	M	4.2	14:44	8.36	8.11	30.02	18.8	5	5	113	0.44	N
M1	20181227	Cloudy	Light	Mid-Ebb	M	4.2	14:45	8.4	8.12	30.37	18.8	5.02	6	113	0.46	N
M1	20181227	Cloudy	Light	Mid-Ebb	S	1	14:45	8.41	8.18	30.29	18.8	2.04	4	113	0.6	N
M1	20181227	Cloudy	Light	Mid-Ebb	S	1	14:46	8.43	8.06	29.88	18.7	1.99	5	113	0.6	N

Location	Date (YYYYMMDD)	Weather	Sea Condition	Tidal	Water Level note 1	Depth (m)	Time (HH:MM)	DO (mg/L)	pH	Sal (ppt)	Temp (°C)	Turbidity (NTU) note 4	SS (mg/L)	Total Alkalinity (mg/L) note 3	Current Velocity note 3	Direction in NESW note 3
B1	20181227	Cloudy	Light	Mid-Ebb	B	4.3	15:00	8.81	8.02	30.13	18.8	6.18	7	113	0.27	NE
B1	20181227	Cloudy	Light	Mid-Ebb	B	4.3	15:00	8.76	8.1	29.78	18.7	6.14	9	112	0.26	NE
B1	20181227	Cloudy	Light	Mid-Ebb	S	1	15:01	8.79	8.09	30.58	18.8	2.33	6	112	0.7	NE
B1	20181227	Cloudy	Light	Mid-Ebb	S	1	15:01	8.78	8.16	29.96	18.7	2.36	7	112	0.72	NE
F1	20181227	Cloudy	Light	Mid-Ebb	B	7.9	15:11	9.19	8.02	30.3	18.8	6.84	5	112	0.28	SE
F1	20181227	Cloudy	Light	Mid-Ebb	B	7.9	15:12	9.09	8	30.53	18.8	6.79	4	112	0.28	SE
F1	20181227	Cloudy	Light	Mid-Ebb	M	4.5	15:12	9.09	8.03	30.38	18.8	4.18	6	112	0.42	SE
F1	20181227	Cloudy	Light	Mid-Ebb	M	4.5	15:13	9.14	8.18	30.23	18.7	4.14	6	112	0.44	SE
F1	20181227	Cloudy	Light	Mid-Ebb	S	1	15:13	9.04	8.03	30.19	18.7	2.12	7	111	0.67	SE
F1	20181227	Cloudy	Light	Mid-Ebb	S	1	15:14	9.09	8.12	30.66	18.7	2.09	7	112	0.67	SE
S1	20181227	Cloudy	Light	Mid-Ebb	B	4.3	15:15	8.31	8.18	30.15	18.8	6.61	8	113	0.26	E
S1	20181227	Cloudy	Light	Mid-Ebb	B	4.3	15:15	8.32	8.03	29.96	18.7	6.56	8	112	0.25	E
S1	20181227	Cloudy	Light	Mid-Ebb	S	1	15:16	8.36	8.05	30.54	18.7	2.94	11	113	0.6	E
S1	20181227	Cloudy	Light	Mid-Ebb	S	1	15:17	8.41	8.01	30.38	18.7	2.92	12	112	0.6	E
C2	20181227	Cloudy	Light	Mid-Ebb	B	7.2	15:34	8.88	8.13	29.92	18.7	6.65	7	112	0.2	SE
C2	20181227	Cloudy	Light	Mid-Ebb	B	7.2	15:35	8.87	8.03	30.64	18.8	6.62	7	111	0.19	SE
C2	20181227	Cloudy	Light	Mid-Ebb	M	4.1	15:35	8.9	8.18	30.7	18.7	4.78	6	112	0.48	SE
C2	20181227	Cloudy	Light	Mid-Ebb	M	4.1	15:36	8.98	8.09	29.87	18.7	4.73	8	113	0.47	SE
C2	20181227	Cloudy	Light	Mid-Ebb	S	1	15:37	8.93	8.1	30.14	18.7	2.18	7	113	0.62	S
C2	20181227	Cloudy	Light	Mid-Ebb	S	1	15:37	8.87	8.07	29.99	18.8	2.2	5	112	0.62	S
B2	20181227	Cloudy	Light	Mid-Ebb	B	4.4	15:25	9.1	8.01	29.87	18.8	6.29	7	112	0.22	SE
B2	20181227	Cloudy	Light	Mid-Ebb	B	4.4	15:25	9.19	8.09	30.66	18.8	6.29	6	113	0.24	SE
B2	20181227	Cloudy	Light	Mid-Ebb	S	1	15:26	9.25	8.05	30.32	18.7	2.47	8	111	0.67	SE
B2	20181227	Cloudy	Light	Mid-Ebb	S	1	15:27	9.21	8	29.8	18.7	2.42	10	113	0.68	SE
S2	20181227	Cloudy	Light	Mid-Ebb	B	8	15:42	8.38	8.11	29.71	18.8	6.9	8	111	0.29	SE
S2	20181227	Cloudy	Light	Mid-Ebb	B	8	15:43	8.43	8.15	29.8	18.8	6.88	10	111	0.29	SE
S2	20181227	Cloudy	Light	Mid-Ebb	M	4.5	15:44	8.48	8.03	29.71	18.7	4.92	6	112	0.49	SE
S2	20181227	Cloudy	Light	Mid-Ebb	M	4.5	15:44	8.51	8.2	29.79	18.7	4.95	7	111	0.48	SE
S2	20181227	Cloudy	Light	Mid-Ebb	S	1	15:45	8.43	8.1	30.08	18.7	2.48	6	111	0.6	SE
S2	20181227	Cloudy	Light	Mid-Ebb	S	1	15:45	8.35	8.03	30.15	18.7	2.45	8	113	0.62	SE

Contract No. EP/SP/66/12
Integrated Waste Management Facilities, Phase 1
Baseline Water Quality Monitoring Data

Location	Date (YYYYMMDD)	Weather	Sea Condition	Tidal	Water Level note 1	Depth (m)	Time (HH:MM)	DO (mg/L)	pH	Sal (ppt)	Temp (°C)	Turbidity (NTU) note 4	SS (mg/L)	Total Alkalinity (mg/L) note 3	Current Velocity note 3	Direction in NESW note 3
H1	20181227	Cloudy	Light	Mid-Ebb	B	7.3	15:55	8.32	8.19	29.9	18.8	6.93	6	113	0.23	E
H1	20181227	Cloudy	Light	Mid-Ebb	B	7.3	15:56	8.25	8.03	30.08	18.7	6.98	6	113	0.23	E
H1	20181227	Cloudy	Light	Mid-Ebb	M	4.2	15:56	8.27	8.1	30.34	18.8	4.99	6	112	0.48	E
H1	20181227	Cloudy	Light	Mid-Ebb	M	4.2	15:57	8.28	8.19	29.72	18.7	5.03	4	111	0.48	E
H1	20181227	Cloudy	Light	Mid-Ebb	S	1	15:58	8.19	8.1	30.15	18.7	2.02	8	112	0.67	E
H1	20181227	Cloudy	Light	Mid-Ebb	S	1	15:58	8.14	8.15	30	18.7	2.06	8	112	0.67	E
CR2	20181227	Cloudy	Light	Mid-Ebb	B	8.4	15:55	8.81	8.07	30.54	18.7	6.94	6	114	0.26	SE
CR2	20181227	Cloudy	Light	Mid-Ebb	B	8.4	15:55	8.86	8.11	30.24	18.7	6.91	8	114	0.24	SE
CR2	20181227	Cloudy	Light	Mid-Ebb	M	4.7	15:56	8.88	8.03	30.66	18.8	4.81	8	114	0.48	SE
CR2	20181227	Cloudy	Light	Mid-Ebb	M	4.7	15:57	8.98	8	30.7	18.8	4.77	7	112	0.48	SE
CR2	20181227	Cloudy	Light	Mid-Ebb	S	1	15:57	8.89	8.12	30.47	18.8	2.59	9	114	0.69	SE
CR2	20181227	Cloudy	Light	Mid-Ebb	S	1	15:58	8.92	8.1	29.98	18.7	2.61	9	113	0.7	SE
CR1	20181227	Cloudy	Light	Mid-Ebb	B	8.1	16:15	8.32	8.17	29.9	18.7	6.12	10	114	0.29	SE
CR1	20181227	Cloudy	Light	Mid-Ebb	B	8.1	16:16	8.42	8.01	30.23	18.7	6.08	8	114	0.28	SE
CR1	20181227	Cloudy	Light	Mid-Ebb	M	4.6	16:17	8.47	8.13	30.21	18.7	4.8	7	114	0.48	SE
CR1	20181227	Cloudy	Light	Mid-Ebb	M	4.6	16:17	8.42	8.15	30.18	18.8	4.76	9	113	0.48	SE
CR1	20181227	Cloudy	Light	Mid-Ebb	S	1	16:18	8.37	8.11	30.3	18.7	2.62	9	112	0.67	SE
CR1	20181227	Cloudy	Light	Mid-Ebb	S	1	16:19	8.31	8.07	30.65	18.8	2.62	8	112	0.68	SE
B3	20181227	Cloudy	Light	Mid-Ebb	B	4.4	16:15	8.96	8.13	30.14	18.7	6.07	9	113	0.27	E
B3	20181227	Cloudy	Light	Mid-Ebb	B	4.4	16:16	8.98	8.15	29.82	18.8	6.03	10	112	0.29	E
B3	20181227	Cloudy	Light	Mid-Ebb	S	1	16:16	9.07	8.02	30.51	18.7	2.4	7	111	0.63	E
B3	20181227	Cloudy	Light	Mid-Ebb	S	1	16:17	9.05	8.03	30	18.7	2.35	5	113	0.61	E
B4	20181227	Cloudy	Light	Mid-Ebb	B	4.2	16:31	8.31	8.01	30.61	18.7	6.2	6	114	0.23	E
B4	20181227	Cloudy	Light	Mid-Ebb	B	4.2	16:31	8.33	8.19	30.24	18.7	6.22	6	112	0.22	S
B4	20181227	Cloudy	Light	Mid-Ebb	S	1	16:32	8.29	8.05	29.98	18.7	2.25	6	113	0.65	SE
B4	20181227	Cloudy	Light	Mid-Ebb	S	1	16:32	8.23	8.15	29.78	18.8	2.2	5	112	0.67	SE
S3	20181227	Cloudy	Light	Mid-Ebb	B	10.3	16:05	9.01	8.1	30.29	18.7	6.02	9	112	0.23	SE
S3	20181227	Cloudy	Light	Mid-Ebb	B	10.3	16:06	9.03	8.06	30.59	18.8	6.03	7	111	0.25	S
S3	20181227	Cloudy	Light	Mid-Ebb	M	5.7	16:06	9.07	8.04	29.93	18.7	4.27	8	113	0.48	SE
S3	20181227	Cloudy	Light	Mid-Ebb	M	5.7	16:07	9.02	8.18	30.03	18.7	4.22	8	112	0.47	SE

Contract No. EP/SP/66/12
Integrated Waste Management Facilities, Phase 1
Baseline Water Quality Monitoring Data

Location	Date (YYYYMMDD)	Weather	Sea Condition	Tidal	Water Level note 1	Depth (m)	Time (HH:MM)	DO (mg/L)	pH	Sal (ppt)	Temp (°C)	Turbidity (NTU) note 4	SS (mg/L)	Total Alkalinity (mg/L) note 3	Current Velocity note 3	Direction in NESW note 3
S3	20181227	Cloudy	Light	Mid-Ebb	S	1	16:08	8.93	8.08	29.96	18.7	2.84	7	112	0.7	SE
S3	20181227	Cloudy	Light	Mid-Ebb	S	1	16:08	8.92	8.07	29.76	18.7	2.83	7	113	0.68	SE
C2	20181229	Cloudy	Moderate	Mid-Flood	B	9.3	10:47	8.1	8.15	29.58	17.1	6.99	7	114	0.29	NE
C2	20181229	Cloudy	Moderate	Mid-Flood	B	9.3	10:47	8	8.2	29.58	17.2	6.98	8	113	0.27	N
C2	20181229	Cloudy	Moderate	Mid-Flood	M	5.2	10:48	7.95	8.08	30.32	17.2	4.97	7	114	0.4	N
C2	20181229	Cloudy	Moderate	Mid-Flood	M	5.2	10:48	7.89	8.13	30.08	17.1	4.94	8	113	0.4	N
C2	20181229	Cloudy	Moderate	Mid-Flood	S	1	10:49	7.95	8.06	30.33	17.2	2.02	7	112	0.61	NE
C2	20181229	Cloudy	Moderate	Mid-Flood	S	1	10:50	7.92	8.11	30.17	17.2	1.97	6	114	0.6	NE
CR1	20181229	Cloudy	Moderate	Mid-Flood	B	7.8	10:52	9.1	8.05	30.47	17.2	6.17	23	114	0.23	NW
CR1	20181229	Cloudy	Moderate	Mid-Flood	B	7.8	10:53	9.03	8.15	29.5	17.2	6.08	24	114	0.22	NW
CR1	20181229	Cloudy	Moderate	Mid-Flood	M	4.4	10:53	9.09	8.11	29.67	17.1	4.56	22	114	0.48	NW
CR1	20181229	Cloudy	Moderate	Mid-Flood	M	4.4	10:54	9.11	8.14	29.6	17.1	4.47	23	113	0.48	NW
CR1	20181229	Cloudy	Moderate	Mid-Flood	S	1	10:55	9.02	8.19	30.35	17.2	2.95	22	113	0.68	NW
CR1	20181229	Cloudy	Moderate	Mid-Flood	S	1	10:55	9.04	8.11	30.39	17.1	2.9	23	114	0.69	NW
F1	20181229	Cloudy	Moderate	Mid-Flood	B	7.9	11:14	8.53	8.03	29.89	17.1	6.48	9	115	0.27	W
F1	20181229	Cloudy	Moderate	Mid-Flood	B	7.9	11:15	8.46	8.01	29.75	17.2	6.56	8	112	0.29	W
F1	20181229	Cloudy	Moderate	Mid-Flood	M	4.5	11:15	8.48	8.18	29.7	17.2	4.42	7	111	0.49	W
F1	20181229	Cloudy	Moderate	Mid-Flood	M	4.5	11:16	8.57	8.13	30.39	17.1	4.47	8	115	0.51	W
F1	20181229	Cloudy	Moderate	Mid-Flood	S	1	11:16	8.62	8.03	30.42	17.2	2.9	7	112	0.64	W
F1	20181229	Cloudy	Moderate	Mid-Flood	S	1	11:17	8.65	8.06	29.98	17.1	3	7	112	0.64	W
S3	20181229	Cloudy	Moderate	Mid-Flood	B	11	11:05	9.16	8.03	30.44	17.1	6.44	26	114	0.21	W
S3	20181229	Cloudy	Moderate	Mid-Flood	B	11	11:05	9.09	8	30.43	17.1	6.37	25	114	0.21	NW
S3	20181229	Cloudy	Moderate	Mid-Flood	M	6	11:06	9	8.17	29.79	17.2	4.16	22	114	0.48	NW
S3	20181229	Cloudy	Moderate	Mid-Flood	M	6	11:06	9.04	8.11	30.35	17.1	4.12	24	113	0.5	NW
S3	20181229	Cloudy	Moderate	Mid-Flood	S	1	11:07	8.97	8.12	30.06	17.2	2.24	22	113	0.67	W
S3	20181229	Cloudy	Moderate	Mid-Flood	S	1	11:08	8.89	8.18	29.84	17.1	2.32	22	113	0.69	W
CR2	20181229	Cloudy	Moderate	Mid-Flood	B	8.1	11:16	8.7	8.11	30.06	17.1	6.62	25	113	0.3	NW
CR2	20181229	Cloudy	Moderate	Mid-Flood	B	8.1	11:17	8.77	8.05	29.6	17.2	6.58	25	113	0.28	NW
CR2	20181229	Cloudy	Moderate	Mid-Flood	M	4.6	11:18	8.77	8.17	29.94	17.1	4.5	23	113	0.4	NW
CR2	20181229	Cloudy	Moderate	Mid-Flood	M	4.6	11:18	8.77	8.12	30.33	17.2	4.46	22	114	0.4	NW

Location	Date (YYYYMMDD)	Weather	Sea Condition	Tidal	Water Level note 1	Depth (m)	Time (HH:MM)	DO (mg/L)	pH	Sal (ppt)	Temp (°C)	Turbidity (NTU) note 4	SS (mg/L)	Total Alkalinity (mg/L) note 3	Current Velocity note 3	Direction in NESW note 3
CR2	20181229	Cloudy	Moderate	Mid-Flood	S	1	11:19	8.86	8.05	30.05	17.2	2.39	23	114	0.62	NW
CR2	20181229	Cloudy	Moderate	Mid-Flood	S	1	11:19	8.88	8.12	30.49	17.1	2.4	22	114	0.62	NW
M1	20181229	Cloudy	Moderate	Mid-Flood	B	7.9	11:45	8.69	8.01	30.19	17.1	6.93	8	114	0.24	NW
M1	20181229	Cloudy	Moderate	Mid-Flood	B	7.9	11:46	8.66	8.01	30.09	17.1	6.84	8	114	0.26	NW
M1	20181229	Cloudy	Moderate	Mid-Flood	M	4.5	11:46	8.57	8.14	30.04	17.1	4.81	7	115	0.4	NW
M1	20181229	Cloudy	Moderate	Mid-Flood	M	4.5	11:47	8.65	8.01	29.62	17.1	4.8	8	114	0.42	W
M1	20181229	Cloudy	Moderate	Mid-Flood	S	1	11:47	8.56	8.14	30.09	17.1	2.8	7	113	0.61	W
M1	20181229	Cloudy	Moderate	Mid-Flood	S	1	11:48	8.6	8.01	29.53	17.2	2.73	8	114	0.61	W
C1	20181229	Cloudy	Moderate	Mid-Flood	B	11.3	11:48	8.5	8.11	29.93	17.1	6.17	21	113	0.24	NW
C1	20181229	Cloudy	Moderate	Mid-Flood	B	11.3	11:48	8.47	8.09	29.62	17.2	6.14	22	113	0.24	NW
C1	20181229	Cloudy	Moderate	Mid-Flood	M	6.2	11:49	8.51	8.07	30.11	17.1	4.24	20	112	0.45	NW
C1	20181229	Cloudy	Moderate	Mid-Flood	M	6.2	11:50	8.57	8.01	29.73	17.1	4.22	21	114	0.45	NW
C1	20181229	Cloudy	Moderate	Mid-Flood	S	1	11:50	8.64	8.16	29.82	17.2	2.24	20	113	0.65	NW
C1	20181229	Cloudy	Moderate	Mid-Flood	S	1	11:51	8.64	8.04	29.5	17.2	2.32	20	113	0.67	NW
B1	20181229	Cloudy	Moderate	Mid-Flood	B	4.6	12:13	8	8.2	30.5	17.2	6.7	24	112	0.2	NW
B1	20181229	Cloudy	Moderate	Mid-Flood	B	4.6	12:14	8.08	8.06	29.63	17.2	6.73	24	114	0.18	NW
B1	20181229	Cloudy	Moderate	Mid-Flood	S	1	12:15	8.13	8.18	29.8	17.1	2.25	19	113	0.68	NW
B1	20181229	Cloudy	Moderate	Mid-Flood	S	1	12:15	8.06	8.01	29.6	17.2	2.34	20	113	0.69	NW
S1	20181229	Cloudy	Moderate	Mid-Flood	B	4.7	12:24	8.22	8.19	29.73	17.1	6.17	24	113	0.2	N
S1	20181229	Cloudy	Moderate	Mid-Flood	B	4.7	12:24	8.26	8.06	30.41	17.1	6.07	24	113	0.22	N
S1	20181229	Cloudy	Moderate	Mid-Flood	S	1	12:25	8.28	8.02	29.94	17.2	2.57	22	112	0.69	N
S1	20181229	Cloudy	Moderate	Mid-Flood	S	1	12:26	8.34	8.03	29.68	17.1	2.54	21	114	0.7	N
H1	20181229	Cloudy	Moderate	Mid-Flood	B	7.9	12:26	9.05	8.19	30.28	17.2	6.86	11	113	0.26	W
H1	20181229	Cloudy	Moderate	Mid-Flood	B	7.9	12:27	9.03	8.02	30.39	17.2	6.94	10	113	0.26	W
H1	20181229	Cloudy	Moderate	Mid-Flood	M	4.5	12:28	9.06	8.15	29.66	17.1	4.73	11	112	0.5	W
H1	20181229	Cloudy	Moderate	Mid-Flood	M	4.5	12:28	9.05	8.05	29.51	17.1	4.69	10	112	0.5	W
H1	20181229	Cloudy	Moderate	Mid-Flood	S	1	12:29	8.97	8.11	29.56	17.2	2.07	11	113	0.68	W
H1	20181229	Cloudy	Moderate	Mid-Flood	S	1	12:29	8.91	8.13	30.01	17.2	2.11	10	113	0.67	W
B2	20181229	Cloudy	Moderate	Mid-Flood	B	4.7	12:34	8.18	8.01	29.86	17.1	6.05	17	113	0.25	N
B2	20181229	Cloudy	Moderate	Mid-Flood	B	4.7	12:35	8.22	8.18	29.99	17.2	5.96	16	114	0.24	N

Location	Date (YYYYMMDD)	Weather	Sea Condition	Tidal	Water Level note 1	Depth (m)	Time (HH:MM)	DO (mg/L)	pH	Sal (ppt)	Temp (°C)	Turbidity (NTU) note 4	SS (mg/L)	Total Alkalinity (mg/L) note 3	Current Velocity note 3	Direction in NESW note 3
B2	20181229	Cloudy	Moderate	Mid-Flood	S	1	12:35	8.27	8.1	30.15	17.1	2.55	16	113	0.66	N
B2	20181229	Cloudy	Moderate	Mid-Flood	S	1	12:36	8.31	8.08	30.09	17.1	2.55	15	112	0.66	N
B3	20181229	Cloudy	Moderate	Mid-Flood	B	4.6	12:43	8.65	8.11	29.91	17.2	6.83	10	113	0.2	NW
B3	20181229	Cloudy	Moderate	Mid-Flood	B	4.6	12:43	8.55	8.01	30.16	17.2	6.79	11	114	0.2	NW
B3	20181229	Cloudy	Moderate	Mid-Flood	S	1	12:44	8.5	8.18	30.1	17.1	2.77	10	113	0.64	NW
B3	20181229	Cloudy	Moderate	Mid-Flood	S	1	12:44	8.56	8.09	30.25	17.2	2.68	10	113	0.62	NW
B4	20181229	Cloudy	Moderate	Mid-Flood	B	4.7	13:00	9.16	8.02	30.32	17.2	6.1	9	114	0.21	NW
B4	20181229	Cloudy	Moderate	Mid-Flood	B	4.7	13:01	9.08	8.08	30.3	17.1	6.18	9	112	0.23	N
B4	20181229	Cloudy	Moderate	Mid-Flood	S	1	13:01	9.12	8.15	29.5	17.1	2.66	9	113	0.6	N
B4	20181229	Cloudy	Moderate	Mid-Flood	S	1	13:02	9.13	8.06	30.14	17.2	2.65	8	112	0.6	N
S2	20181229	Cloudy	Moderate	Mid-Flood	B	10.6	12:50	9.15	8.12	29.68	17.1	6.27	23	113	0.25	NW
S2	20181229	Cloudy	Moderate	Mid-Flood	B	10.6	12:51	9.16	8.05	29.99	17.1	6.17	24	114	0.24	NW
S2	20181229	Cloudy	Moderate	Mid-Flood	M	5.8	12:52	9.15	8.01	30.28	17.2	4.43	22	113	0.41	NW
S2	20181229	Cloudy	Moderate	Mid-Flood	M	5.8	12:52	9.09	8.03	29.51	17.1	4.33	23	113	0.39	NW
S2	20181229	Cloudy	Moderate	Mid-Flood	S	1	12:53	9.16	8.02	30.12	17.2	2.46	- note 2	114	0.62	NW
S2	20181229	Cloudy	Moderate	Mid-Flood	S	1	12:54	9.1	8.1	30.38	17.1	2.41	- note 2	114	0.62	NW
C1	20181229	Cloudy	Moderate	Mid-Ebb	B	10.2	16:30	8.45	8.1	29.81	17.2	6.35	22	113	0.21	SE
C1	20181229	Cloudy	Moderate	Mid-Ebb	B	10.2	16:31	8.5	8.1	30.38	17.2	6.38	21	114	0.22	SE
C1	20181229	Cloudy	Moderate	Mid-Ebb	M	5.6	16:31	8.46	8.14	30.05	17.1	4.39	21	114	0.49	SE
C1	20181229	Cloudy	Moderate	Mid-Ebb	M	5.6	16:32	8.44	8.08	29.61	17.1	4.48	22	114	0.5	SE
C1	20181229	Cloudy	Moderate	Mid-Ebb	S	1	16:33	8.48	8.18	29.81	17.1	2.14	20	114	0.7	SE
C1	20181229	Cloudy	Moderate	Mid-Ebb	S	1	16:33	8.46	8.1	29.8	17.1	2.17	20	114	0.7	SE
F1	20181229	Cloudy	Moderate	Mid-Ebb	B	7.3	16:44	8	8	29.84	17.2	6.44	6	115	0.24	SE
F1	20181229	Cloudy	Moderate	Mid-Ebb	B	7.3	16:44	8.01	8.19	29.71	17.1	6.45	7	114	0.26	SE
F1	20181229	Cloudy	Moderate	Mid-Ebb	M	4.2	16:45	8.02	8.01	29.86	17.1	4.33	6	111	0.42	SE
F1	20181229	Cloudy	Moderate	Mid-Ebb	M	4.2	16:46	8.12	8.07	29.85	17.1	4.41	5	114	0.44	E
F1	20181229	Cloudy	Moderate	Mid-Ebb	S	1	16:46	8.2	8.18	30.39	17.2	2.1	5	114	0.65	E
F1	20181229	Cloudy	Moderate	Mid-Ebb	S	1	16:47	8.28	8.05	30.23	17.1	2.06	5	115	0.64	E
B1	20181229	Cloudy	Moderate	Mid-Ebb	B	4.4	16:55	8.65	8.01	30.32	17.1	6.07	7	114	0.27	NE
B1	20181229	Cloudy	Moderate	Mid-Ebb	B	4.4	16:55	8.68	8.03	29.57	17.2	6.13	7	114	0.28	NE

Location	Date (YYYYMMDD)	Weather	Sea Condition	Tidal	Water Level note 1	Depth (m)	Time (HH:MM)	DO (mg/L)	pH	Sal (ppt)	Temp (°C)	Turbidity (NTU) note 4	SS (mg/L)	Total Alkalinity (mg/L) note 3	Current Velocity note 3	Direction in NESW note 3
B1	20181229	Cloudy	Moderate	Mid-Ebb	S	1	16:56	8.73	8.1	29.88	17.1	2.05	5	114	0.68	NE
B1	20181229	Cloudy	Moderate	Mid-Ebb	S	1	16:56	8.74	8.16	29.57	17.2	2.02	6	114	0.66	NE
S1	20181229	Cloudy	Moderate	Mid-Ebb	B	4.3	17:10	8.75	8.04	30.02	17.1	6.36	20	114	0.23	E
S1	20181229	Cloudy	Moderate	Mid-Ebb	B	4.3	17:11	8.74	8.2	29.91	17.1	6.34	21	114	0.22	E
S1	20181229	Cloudy	Moderate	Mid-Ebb	S	1	17:11	8.81	8	29.9	17.2	2.81	19	116	0.61	E
S1	20181229	Cloudy	Moderate	Mid-Ebb	S	1	17:12	8.86	8.08	29.83	17.1	2.9	19	115	0.59	E
B2	20181229	Cloudy	Moderate	Mid-Ebb	B	4.4	17:20	8.23	8.19	29.59	17.2	6.59	23	114	0.29	SE
B2	20181229	Cloudy	Moderate	Mid-Ebb	B	4.4	17:21	8.32	8.12	30.4	17.2	6.64	23	114	0.29	SE
B2	20181229	Cloudy	Moderate	Mid-Ebb	S	1	17:22	8.4	8.19	30.26	17.1	2.51	22	114	0.7	SE
B2	20181229	Cloudy	Moderate	Mid-Ebb	S	1	17:22	8.42	8.2	30.16	17.2	2.44	21	114	0.7	SE
M1	20181229	Cloudy	Moderate	Mid-Ebb	B	7.3	17:13	9.05	8.11	30.35	17.1	6.24	9	115	0.23	SW
M1	20181229	Cloudy	Moderate	Mid-Ebb	B	7.3	17:14	9.08	8.19	29.99	17.2	6.28	10	116	0.21	SW
M1	20181229	Cloudy	Moderate	Mid-Ebb	M	4.2	17:14	9.01	8.14	29.5	17.2	4.27	8	114	0.47	SW
M1	20181229	Cloudy	Moderate	Mid-Ebb	M	4.2	17:15	9.04	8.11	30.36	17.1	4.36	9	113	0.47	SW
M1	20181229	Cloudy	Moderate	Mid-Ebb	S	1	17:15	9.06	8.06	30.31	17.1	2.12	7	113	0.61	SW
M1	20181229	Cloudy	Moderate	Mid-Ebb	S	1	17:16	9.12	8.09	29.88	17.2	2.1	6	113	0.59	S
S2	20181229	Cloudy	Moderate	Mid-Ebb	B	7.3	17:35	8.58	8	30.03	17.1	6.64	22	114	0.29	SE
S2	20181229	Cloudy	Moderate	Mid-Ebb	B	7.3	17:35	8.55	8	29.97	17.2	6.71	21	114	0.28	SE
S2	20181229	Cloudy	Moderate	Mid-Ebb	M	4.2	17:36	8.5	8.02	30.02	17.2	4.45	19	114	0.43	SE
S2	20181229	Cloudy	Moderate	Mid-Ebb	M	4.2	17:36	8.42	8.2	30.18	17.1	4.47	20	114	0.43	SE
S2	20181229	Cloudy	Moderate	Mid-Ebb	S	1	17:37	8.51	8.17	30.4	17.1	2.82	17	114	0.65	SE
S2	20181229	Cloudy	Moderate	Mid-Ebb	S	1	17:38	8.49	8.2	29.53	17.2	2.8	17	114	0.64	SE
C2	20181229	Cloudy	Moderate	Mid-Ebb	B	7.3	17:39	9.01	8.05	30.23	17.1	6.74	6	113	0.2	S
C2	20181229	Cloudy	Moderate	Mid-Ebb	B	7.3	17:40	8.93	8.05	30.36	17.2	6.74	6	115	0.19	S
C2	20181229	Cloudy	Moderate	Mid-Ebb	M	4.2	17:41	8.85	8.16	29.88	17.2	4.43	5	114	0.42	S
C2	20181229	Cloudy	Moderate	Mid-Ebb	M	4.2	17:41	8.88	8.2	29.66	17.2	4.44	5	114	0.4	S
C2	20181229	Cloudy	Moderate	Mid-Ebb	S	1	17:42	8.83	8.12	30.02	17.2	2.55	4	113	0.66	S
C2	20181229	Cloudy	Moderate	Mid-Ebb	S	1	17:42	8.83	8.1	30.43	17.1	2.64	5	114	0.67	S
CR2	20181229	Cloudy	Moderate	Mid-Ebb	B	8.2	17:47	8.85	8.15	29.98	17.2	6.99	21	113	0.22	SE
CR2	20181229	Cloudy	Moderate	Mid-Ebb	B	8.2	17:48	8.78	8.13	29.78	17.2	6.97	20	113	0.2	SE

Location	Date (YYYYMMDD)	Weather	Sea Condition	Tidal	Water Level note 1	Depth (m)	Time (HH:MM)	DO (mg/L)	pH	Sal (ppt)	Temp (°C)	Turbidity (NTU) note 4	SS (mg/L)	Total Alkalinity (mg/L) note 3	Current Velocity note 3	Direction in NESW note 3
CR2	20181229	Cloudy	Moderate	Mid-Ebb	M	4.6	17:48	8.73	8.17	29.89	17.1	4.37	19	114	0.5	SE
CR2	20181229	Cloudy	Moderate	Mid-Ebb	M	4.6	17:49	8.75	8.02	29.85	17.1	4.34	20	113	0.48	SE
CR2	20181229	Cloudy	Moderate	Mid-Ebb	S	1	17:50	8.77	8.08	30.07	17.1	2.81	18	113	0.69	SE
CR2	20181229	Cloudy	Moderate	Mid-Ebb	S	1	17:50	8.67	8.05	30	17.2	2.86	19	113	0.71	SE
S3	20181229	Cloudy	Moderate	Mid-Ebb	B	10.4	17:54	8.46	8.14	30.25	17.1	6.06	22	114	0.27	SE
S3	20181229	Cloudy	Moderate	Mid-Ebb	B	10.4	17:54	8.46	8.11	29.94	17.2	6.09	22	113	0.26	SE
S3	20181229	Cloudy	Moderate	Mid-Ebb	M	5.7	17:55	8.49	8.04	30.21	17.1	4.5	21	114	0.42	SE
S3	20181229	Cloudy	Moderate	Mid-Ebb	M	5.7	17:56	8.57	8.11	29.93	17.1	4.4	21	114	0.42	SE
S3	20181229	Cloudy	Moderate	Mid-Ebb	S	1	17:56	8.64	8.12	29.79	17.2	2.11	20	115	0.63	SE
S3	20181229	Cloudy	Moderate	Mid-Ebb	S	1	17:57	8.72	8.09	30.13	17.2	2.06	20	114	0.61	SE
H1	20181229	Cloudy	Moderate	Mid-Ebb	B	7.1	17:59	8.93	8.17	30.04	17.2	6.27	19	114	0.29	E
H1	20181229	Cloudy	Moderate	Mid-Ebb	B	7.1	18:00	9.02	8.13	30	17.1	6.33	19	114	0.28	E
H1	20181229	Cloudy	Moderate	Mid-Ebb	M	4.1	18:01	8.97	8.15	30.29	17.1	4.29	17	114	0.42	E
H1	20181229	Cloudy	Moderate	Mid-Ebb	M	4.1	18:01	8.87	8.09	30.45	17.2	4.21	18	113	0.44	E
H1	20181229	Cloudy	Moderate	Mid-Ebb	S	1	18:02	8.9	8.2	30.28	17.2	2.5	17	115	0.62	E
H1	20181229	Cloudy	Moderate	Mid-Ebb	S	1	18:03	8.9	8.08	29.8	17.2	2.43	18	113	0.61	E
B3	20181229	Cloudy	Moderate	Mid-Ebb	B	4.2	18:12	8.4	8.06	29.64	17.2	6.07	11	114	0.22	E
B3	20181229	Cloudy	Moderate	Mid-Ebb	B	4.2	18:13	8.38	8.13	30.03	17.2	6.02	11	114	0.23	E
B3	20181229	Cloudy	Moderate	Mid-Ebb	S	1	18:13	8.47	8.11	30.13	17.2	2.53	6	114	0.68	E
B3	20181229	Cloudy	Moderate	Mid-Ebb	S	1	18:14	8.45	8.02	30.31	17.1	2.63	6	114	0.69	E
CR1	20181229	Cloudy	Moderate	Mid-Ebb	B	7.7	18:02	8.14	8.1	29.94	17.2	6.47	22	113	0.27	SE
CR1	20181229	Cloudy	Moderate	Mid-Ebb	B	7.7	18:02	8.14	8.05	29.73	17.2	6.41	21	113	0.28	SE
CR1	20181229	Cloudy	Moderate	Mid-Ebb	M	4.4	18:03	8.07	8.05	30.46	17.2	4.6	20	114	0.42	SE
CR1	20181229	Cloudy	Moderate	Mid-Ebb	M	4.4	18:03	8.07	8.12	29.56	17.2	4.56	21	114	0.44	SE
CR1	20181229	Cloudy	Moderate	Mid-Ebb	S	1	18:04	8.04	8.19	29.61	17.1	2.32	20	114	0.61	SE
CR1	20181229	Cloudy	Moderate	Mid-Ebb	S	1	18:05	7.94	8	29.63	17.1	2.31	20	114	0.61	SE
B4	20181229	Cloudy	Moderate	Mid-Ebb	B	4.5	18:21	9.13	8	30.04	17.1	6.51	9	115	0.28	SE
B4	20181229	Cloudy	Moderate	Mid-Ebb	B	4.5	18:22	9.08	8.09	30.44	17.1	6.56	10	114	0.26	SE
B4	20181229	Cloudy	Moderate	Mid-Ebb	S	1	18:23	9.01	8.14	29.56	17.2	2.62	8	114	0.66	SE
B4	20181229	Cloudy	Moderate	Mid-Ebb	S	1	18:23	8.98	8	29.66	17.1	2.71	9	115	0.66	SE

Location	Date (YYYYMMDD)	Weather	Sea Condition	Tidal	Water Level note 1	Depth (m)	Time (HH:MM)	DO (mg/L)	pH	Sal (ppt)	Temp (°C)	Turbidity (NTU) note 4	SS (mg/L)	Total Alkalinity (mg/L) note 3	Current Velocity note 3	Direction in NESW note 3
C1	20181231	Sunny	Moderate	Mid-Ebb	B	10.4	8:14	8.94	8.06	29.57	18.6	6.98	12	112	0.3	SE
C1	20181231	Sunny	Moderate	Mid-Ebb	B	10.4	8:14	9.04	8.11	29.66	18.6	6.99	12	113	0.3	SE
C1	20181231	Sunny	Moderate	Mid-Ebb	M	5.7	8:15	9.02	8.03	30.36	18.6	4.9	12	115	0.44	SE
C1	20181231	Sunny	Moderate	Mid-Ebb	M	5.7	8:15	9.12	8.09	29.91	18.6	4.87	12	113	0.46	SE
C1	20181231	Sunny	Moderate	Mid-Ebb	S	1	8:16	9.11	8.14	30.29	18.7	2.61	9	113	0.66	SE
C1	20181231	Sunny	Moderate	Mid-Ebb	S	1	8:17	9.1	8.09	30.32	18.6	2.66	9	114	0.64	SE
CR1	20181231	Sunny	Moderate	Mid-Ebb	B	7.8	8:20	8.88	8.06	30.31	18.6	6.44	11	112	0.21	SE
CR1	20181231	Sunny	Moderate	Mid-Ebb	B	7.8	8:21	8.89	8.17	29.84	18.6	6.35	12	112	0.23	E
CR1	20181231	Sunny	Moderate	Mid-Ebb	M	4.4	8:21	8.99	8	29.56	18.6	4.6	12	112	0.4	E
CR1	20181231	Sunny	Moderate	Mid-Ebb	M	4.4	8:22	9	8.15	30.43	18.7	4.6	11	113	0.39	SE
CR1	20181231	Sunny	Moderate	Mid-Ebb	S	1	8:23	9.03	8.02	30.21	18.6	2.76	10	111	0.61	SE
CR1	20181231	Sunny	Moderate	Mid-Ebb	S	1	8:23	9.13	8.2	30.44	18.6	2.86	11	113	0.61	SE
CR2	20181231	Sunny	Moderate	Mid-Ebb	B	8	8:32	9.14	8.03	30.1	18.6	6.92	10	113	0.21	SE
CR2	20181231	Sunny	Moderate	Mid-Ebb	B	8	8:33	9.15	8	29.72	18.6	6.88	11	112	0.21	SE
CR2	20181231	Sunny	Moderate	Mid-Ebb	M	4.5	8:33	9.1	8.08	29.76	18.6	4.02	10	111	0.4	SE
CR2	20181231	Sunny	Moderate	Mid-Ebb	M	4.5	8:34	9.06	8.18	29.73	18.7	4.06	9	113	0.39	SE
CR2	20181231	Sunny	Moderate	Mid-Ebb	S	1	8:34	9.14	8.09	29.79	18.6	2.83	9	114	0.62	SE
CR2	20181231	Sunny	Moderate	Mid-Ebb	S	1	8:35	9.22	8.11	30.06	18.6	2.73	8	113	0.64	SE
B1	20181231	Sunny	Moderate	Mid-Ebb	B	4.4	8:39	9.39	8.04	30.08	18.7	6.47	10	114	0.21	NE
B1	20181231	Sunny	Moderate	Mid-Ebb	B	4.4	8:39	9.47	8	30.44	18.7	6.46	10	113	0.21	NE
B1	20181231	Sunny	Moderate	Mid-Ebb	S	1	8:40	9.39	8.08	30.43	18.6	2.21	9	114	0.6	NE
B1	20181231	Sunny	Moderate	Mid-Ebb	S	1	8:40	9.36	8.16	29.69	18.7	2.25	8	114	0.61	NE
S3	20181231	Sunny	Moderate	Mid-Ebb	B	10.5	8:46	9.02	8.08	30.38	18.7	6.95	12	113	0.25	SE
S3	20181231	Sunny	Moderate	Mid-Ebb	B	10.5	8:47	8.92	8.03	29.71	18.7	6.95	12	112	0.24	SE
S3	20181231	Sunny	Moderate	Mid-Ebb	M	5.8	8:47	9.02	8.05	29.65	18.6	4.74	11	113	0.42	SE
S3	20181231	Sunny	Moderate	Mid-Ebb	M	5.8	8:48	8.97	8.19	30.45	18.7	4.78	12	112	0.42	SE
S3	20181231	Sunny	Moderate	Mid-Ebb	S	1	8:49	8.9	8.17	30.27	18.6	2.65	11	112	0.66	SE
S3	20181231	Sunny	Moderate	Mid-Ebb	S	1	8:49	9	8.09	29.79	18.6	2.73	11	114	0.65	SE
S1	20181231	Sunny	Moderate	Mid-Ebb	B	4.4	8:50	9.65	8.11	30.37	18.6	6.67	17	111	0.29	E
S1	20181231	Sunny	Moderate	Mid-Ebb	B	4.4	8:50	9.6	8.2	30.3	18.6	6.62	18	113	0.27	E

Location	Date (YYYYMMDD)	Weather	Sea Condition	Tidal	Water Level note 1	Depth (m)	Time (HH:MM)	DO (mg/L)	pH	Sal (ppt)	Temp (°C)	Turbidity (NTU) note 4	SS (mg/L)	Total Alkalinity (mg/L) note 3	Current Velocity note 3	Direction in NESW note 3
S1	20181231	Sunny	Moderate	Mid-Ebb	S	1	8:51	9.63	8.06	30.07	18.6	2.14	14	114	0.67	E
S1	20181231	Sunny	Moderate	Mid-Ebb	S	1	8:52	9.54	8.09	29.85	18.7	2.05	15	112	0.66	E
H1	20181231	Sunny	Moderate	Mid-Ebb	B	7	9:05	9.56	8.1	30.34	18.7	6.44	10	114	0.29	E
H1	20181231	Sunny	Moderate	Mid-Ebb	B	7	9:06	9.63	8	29.88	18.6	6.53	11	114	0.29	E
H1	20181231	Sunny	Moderate	Mid-Ebb	M	4	9:06	9.57	8.06	29.72	18.6	4.22	10	114	0.44	SE
H1	20181231	Sunny	Moderate	Mid-Ebb	M	4	9:07	9.53	8.07	30.13	18.6	4.18	9	114	0.42	SE
H1	20181231	Sunny	Moderate	Mid-Ebb	S	1	9:08	9.47	8.06	29.96	18.6	2.47	8	113	0.63	SE
H1	20181231	Sunny	Moderate	Mid-Ebb	S	1	9:08	9.53	8.12	29.58	18.7	2.45	9	114	0.63	SE
B2	20181231	Sunny	Moderate	Mid-Ebb	B	4.4	9:00	9.63	8.2	30.5	18.6	6.87	10	114	0.26	SE
B2	20181231	Sunny	Moderate	Mid-Ebb	B	4.4	9:01	9.57	8.13	29.61	18.7	6.94	10	114	0.28	SE
B2	20181231	Sunny	Moderate	Mid-Ebb	S	1	9:01	9.62	8	30.1	18.6	2.17	8	115	0.66	SE
B2	20181231	Sunny	Moderate	Mid-Ebb	S	1	9:02	9.71	8.12	30.25	18.6	2.16	8	114	0.67	SE
S2	20181231	Sunny	Moderate	Mid-Ebb	B	7.6	9:16	8.83	8.16	30.11	18.7	6.85	16	113	0.21	SE
S2	20181231	Sunny	Moderate	Mid-Ebb	B	7.6	9:17	8.82	8.13	29.54	18.7	6.79	16	114	0.19	SE
S2	20181231	Sunny	Moderate	Mid-Ebb	M	4.3	9:18	8.77	8.05	30.28	18.7	4.94	15	112	0.46	SE
S2	20181231	Sunny	Moderate	Mid-Ebb	M	4.3	9:18	8.68	8.15	30.14	18.6	4.98	15	112	0.46	SE
S2	20181231	Sunny	Moderate	Mid-Ebb	S	1	9:19	8.74	8	29.68	18.7	2.66	16	112	0.6	SE
S2	20181231	Sunny	Moderate	Mid-Ebb	S	1	9:19	8.72	8.07	29.96	18.6	2.69	15	113	0.6	SE
B3	20181231	Sunny	Moderate	Mid-Ebb	B	4.3	9:26	9.02	8.12	29.65	18.7	6.28	11	114	0.24	E
B3	20181231	Sunny	Moderate	Mid-Ebb	B	4.3	9:27	9	8.05	29.51	18.6	6.24	10	114	0.25	E
B3	20181231	Sunny	Moderate	Mid-Ebb	S	1	9:27	9.02	8.08	29.89	18.7	2.22	9	114	0.67	E
B3	20181231	Sunny	Moderate	Mid-Ebb	S	1	9:28	9.03	8.18	30.05	18.7	2.13	8	114	0.65	E
B4	20181231	Sunny	Moderate	Mid-Ebb	B	4.4	9:38	9.08	8.01	29.72	18.7	6.33	11	114	0.27	SE
B4	20181231	Sunny	Moderate	Mid-Ebb	B	4.4	9:38	9.02	8.16	29.78	18.6	6.4	11	114	0.25	SE
B4	20181231	Sunny	Moderate	Mid-Ebb	S	1	9:39	9.12	8.1	30.05	18.6	2.49	11	114	0.66	SE
B4	20181231	Sunny	Moderate	Mid-Ebb	S	1	9:39	9.03	8.13	30.24	18.7	2.49	10	114	0.64	SE
F1	20181231	Sunny	Moderate	Mid-Ebb	B	7.4	9:44	9.54	8.03	29.55	18.6	6.03	11	112	0.21	SE
F1	20181231	Sunny	Moderate	Mid-Ebb	B	7.4	9:45	9.56	8.01	29.56	18.7	6.1	12	111	0.22	SE
F1	20181231	Sunny	Moderate	Mid-Ebb	M	4.2	9:45	9.66	8.12	29.81	18.6	4.4	11	113	0.43	SE
F1	20181231	Sunny	Moderate	Mid-Ebb	M	4.2	9:46	9.61	8.03	29.73	18.7	4.33	11	111	0.44	SE

Location	Date (YYYYMMDD)	Weather	Sea Condition	Tidal	Water Level note 1	Depth (m)	Time (HH:MM)	DO (mg/L)	pH	Sal (ppt)	Temp (°C)	Turbidity (NTU) note 4	SS (mg/L)	Total Alkalinity (mg/L) note 3	Current Velocity note 3	Direction in NESW note 3
F1	20181231	Sunny	Moderate	Mid-Ebb	S	1	9:47	9.51	8.06	29.91	18.6	2.6	11	113	0.65	SE
F1	20181231	Sunny	Moderate	Mid-Ebb	S	1	9:47	9.59	8.03	30.37	18.7	2.6	12	112	0.66	SE
C2	20181231	Sunny	Moderate	Mid-Ebb	B	7.3	9:48	8.95	8.19	30.02	18.6	6.31	10	111	0.3	SE
C2	20181231	Sunny	Moderate	Mid-Ebb	B	7.3	9:48	8.87	8.1	30.2	18.7	6.28	10	113	0.32	SE
C2	20181231	Sunny	Moderate	Mid-Ebb	M	4.2	9:49	8.94	8.07	30.36	18.7	4.15	8	112	0.41	SE
C2	20181231	Sunny	Moderate	Mid-Ebb	M	4.2	9:50	8.9	8.05	30.14	18.7	4.17	9	112	0.4	SE
C2	20181231	Sunny	Moderate	Mid-Ebb	S	1	9:50	8.94	8.17	30.39	18.7	2.59	8	112	0.65	SE
C2	20181231	Sunny	Moderate	Mid-Ebb	S	1	9:51	8.86	8.13	29.82	18.6	2.56	8	112	0.65	SE
M1	20181231	Sunny	Moderate	Mid-Ebb	B	7.2	10:16	9.5	8.1	29.79	18.7	6.7	12	113	0.26	SW
M1	20181231	Sunny	Moderate	Mid-Ebb	B	7.2	10:17	9.56	8.07	30.45	18.7	6.65	11	113	0.25	SW
M1	20181231	Sunny	Moderate	Mid-Ebb	M	4.1	10:18	9.58	8.05	30.37	18.6	4.18	11	112	0.4	SW
M1	20181231	Sunny	Moderate	Mid-Ebb	M	4.1	10:18	9.58	8.03	30.16	18.7	4.2	11	112	0.42	SW
M1	20181231	Sunny	Moderate	Mid-Ebb	S	1	10:19	9.49	8.02	30.4	18.6	2.7	8	112	0.64	S
M1	20181231	Sunny	Moderate	Mid-Ebb	S	1	10:20	9.45	8.17	30.29	18.6	2.8	9	112	0.62	S
C2	20181231	Cloudy	Moderate	Mid-Flood	B	9.4	12:32	8.83	8.09	29.85	18.6	6.62	15	115	0.26	NE
C2	20181231	Cloudy	Moderate	Mid-Flood	B	9.4	12:33	8.9	8.05	29.91	18.7	6.57	14	114	0.27	NE
C2	20181231	Cloudy	Moderate	Mid-Flood	M	5.2	12:33	8.95	8.2	29.62	18.6	4.89	11	115	0.48	NE
C2	20181231	Cloudy	Moderate	Mid-Flood	M	5.2	12:34	8.96	8.18	30.36	18.7	4.94	11	114	0.48	NE
C2	20181231	Cloudy	Moderate	Mid-Flood	S	1	12:35	8.99	8.02	30.41	18.7	2.91	9	114	0.7	NE
C2	20181231	Cloudy	Moderate	Mid-Flood	S	1	12:35	8.95	8.02	29.56	18.7	2.88	9	114	0.7	NE
CR1	20181231	Cloudy	Moderate	Mid-Flood	B	7.9	12:48	9.31	8.05	29.6	18.7	6.37	8	114	0.28	NW
CR1	20181231	Cloudy	Moderate	Mid-Flood	B	7.9	12:48	9.36	8.16	30.37	18.6	6.27	9	114	0.26	NW
CR1	20181231	Cloudy	Moderate	Mid-Flood	M	4.5	12:49	9.32	8.15	30.04	18.6	4.5	7	113	0.43	N
CR1	20181231	Cloudy	Moderate	Mid-Flood	M	4.5	12:50	9.39	8.18	29.94	18.6	4.59	8	114	0.41	NW
CR1	20181231	Cloudy	Moderate	Mid-Flood	S	1	12:50	9.3	8.09	29.53	18.7	2.44	8	114	0.68	NW
CR1	20181231	Cloudy	Moderate	Mid-Flood	S	1	12:51	9.25	8.1	29.74	18.6	2.49	7	114	0.66	NW
S3	20181231	Cloudy	Moderate	Mid-Flood	B	11	13:00	8.84	8.16	29.51	18.6	6.07	15	114	0.21	W
S3	20181231	Cloudy	Moderate	Mid-Flood	B	11	13:00	8.78	8.09	30.45	18.6	6.03	14	115	0.21	W
S3	20181231	Cloudy	Moderate	Mid-Flood	M	6	13:01	8.86	8.16	29.88	18.6	4.9	11	114	0.4	W
S3	20181231	Cloudy	Moderate	Mid-Flood	M	6	13:01	8.79	8.01	30.02	18.6	4.8	12	117	0.38	W

Location	Date (YYYYMMDD)	Weather	Sea Condition	Tidal	Water Level note 1	Depth (m)	Time (HH:MM)	DO (mg/L)	pH	Sal (ppt)	Temp (°C)	Turbidity (NTU) note 4	SS (mg/L)	Total Alkalinity (mg/L) note 3	Current Velocity note 3	Direction in NESW note 3
S3	20181231	Cloudy	Moderate	Mid-Flood	S	1	13:02	8.75	8.13	29.63	18.7	2.31	10	114	0.6	W
S3	20181231	Cloudy	Moderate	Mid-Flood	S	1	13:03	8.75	8.11	29.8	18.6	2.24	10	114	0.62	W
CR2	20181231	Cloudy	Moderate	Mid-Flood	B	8.3	13:07	8.88	8.16	29.57	18.6	6.42	14	114	0.23	W
CR2	20181231	Cloudy	Moderate	Mid-Flood	B	8.3	13:08	8.79	8.01	30.15	18.7	6.48	13	114	0.24	N
CR2	20181231	Cloudy	Moderate	Mid-Flood	M	4.7	13:08	8.86	8.06	30.44	18.7	4.53	11	114	0.44	W
CR2	20181231	Cloudy	Moderate	Mid-Flood	M	4.7	13:09	8.88	8.02	30.19	18.6	4.46	12	114	0.45	NW
CR2	20181231	Cloudy	Moderate	Mid-Flood	S	1	13:10	8.96	8.17	30.25	18.6	2.02	11	114	0.63	W
CR2	20181231	Cloudy	Moderate	Mid-Flood	S	1	13:10	8.95	8.16	30.47	18.6	2.1	10	114	0.64	W
F1	20181231	Cloudy	Moderate	Mid-Flood	B	7.8	12:56	9.48	8.13	30.14	18.6	6.22	12	114	0.27	NW
F1	20181231	Cloudy	Moderate	Mid-Flood	B	7.8	12:57	9.55	8.19	30.22	18.6	6.15	13	113	0.25	NW
F1	20181231	Cloudy	Moderate	Mid-Flood	M	4.4	12:57	9.52	8.03	29.52	18.6	4.72	13	114	0.43	NW
F1	20181231	Cloudy	Moderate	Mid-Flood	M	4.4	12:58	9.62	8.02	30.46	18.6	4.62	12	114	0.42	NW
F1	20181231	Cloudy	Moderate	Mid-Flood	S	1	12:58	9.62	8.17	30.36	18.6	2.53	12	114	0.68	NW
F1	20181231	Cloudy	Moderate	Mid-Flood	S	1	12:59	9.65	8.17	29.52	18.7	2.53	11	114	0.67	W
M1	20181231	Cloudy	Moderate	Mid-Flood	B	7.9	13:26	9.31	8.05	29.98	18.6	6.47	12	114	0.28	W
M1	20181231	Cloudy	Moderate	Mid-Flood	B	7.9	13:26	9.38	8.09	29.65	18.6	6.47	12	114	0.26	W
M1	20181231	Cloudy	Moderate	Mid-Flood	M	4.5	13:27	9.42	8.17	30.39	18.7	4.79	11	115	0.4	W
M1	20181231	Cloudy	Moderate	Mid-Flood	M	4.5	13:27	9.49	8.06	30.22	18.7	4.84	11	114	0.4	W
M1	20181231	Cloudy	Moderate	Mid-Flood	S	1	13:28	9.48	8.01	29.87	18.7	2.76	9	115	0.69	W
M1	20181231	Cloudy	Moderate	Mid-Flood	S	1	13:29	9.47	8.2	29.75	18.6	2.78	10	117	0.68	W
C1	20181231	Cloudy	Moderate	Mid-Flood	B	11.2	13:38	9.16	8.03	29.64	18.7	6.15	12	114	0.22	NW
C1	20181231	Cloudy	Moderate	Mid-Flood	B	11.2	13:39	9.22	8.2	30.42	18.6	6.14	12	115	0.2	NW
C1	20181231	Cloudy	Moderate	Mid-Flood	M	6.1	13:40	9.25	8.12	29.93	18.7	4.82	11	114	0.45	NW
C1	20181231	Cloudy	Moderate	Mid-Flood	M	6.1	13:40	9.15	8.14	29.54	18.7	4.91	11	115	0.45	NW
C1	20181231	Cloudy	Moderate	Mid-Flood	S	1	13:41	9.24	8.04	30.12	18.7	2.05	10	114	0.66	NW
C1	20181231	Cloudy	Moderate	Mid-Flood	S	1	13:41	9.33	8.05	29.95	18.6	2.12	11	114	0.65	NW
B1	20181231	Cloudy	Moderate	Mid-Flood	B	4.7	14:04	8.97	8.17	29.94	18.6	6.18	20	113	0.21	NW
B1	20181231	Cloudy	Moderate	Mid-Flood	B	4.7	14:05	8.97	8.09	30.26	18.6	6.14	20	114	0.19	NW
B1	20181231	Cloudy	Moderate	Mid-Flood	S	1	14:05	9.02	8.14	30.05	18.7	2.74	12	115	0.68	NW
B1	20181231	Cloudy	Moderate	Mid-Flood	S	1	14:06	9	8.17	29.82	18.6	2.81	12	114	0.7	NW

Location	Date (YYYYMMDD)	Weather	Sea Condition	Tidal	Water Level note 1	Depth (m)	Time (HH:MM)	DO (mg/L)	pH	Sal (ppt)	Temp (°C)	Turbidity (NTU) note 4	SS (mg/L)	Total Alkalinity (mg/L) note 3	Current Velocity note 3	Direction in NESW note 3
H1	20181231	Cloudy	Moderate	Mid-Flood	B	7.8	14:09	9.4	8.03	29.63	18.7	6.65	14	114	0.26	W
H1	20181231	Cloudy	Moderate	Mid-Flood	B	7.8	14:09	9.46	8.14	30.23	18.6	6.6	14	114	0.25	W
H1	20181231	Cloudy	Moderate	Mid-Flood	M	4.4	14:10	9.45	8	29.84	18.7	4.97	14	114	0.41	W
H1	20181231	Cloudy	Moderate	Mid-Flood	M	4.4	14:10	9.41	8.09	30.42	18.6	4.95	13	114	0.4	W
H1	20181231	Cloudy	Moderate	Mid-Flood	S	1	14:11	9.42	8.1	29.66	18.7	2.1	13	115	0.63	W
H1	20181231	Cloudy	Moderate	Mid-Flood	S	1	14:12	9.51	8.01	30.4	18.7	2.08	12	115	0.62	W
S1	20181231	Cloudy	Moderate	Mid-Flood	B	4.8	14:16	9.51	8.1	30.45	18.7	6	13	114	0.27	NW
S1	20181231	Cloudy	Moderate	Mid-Flood	B	4.8	14:17	9.46	8.2	30.16	18.6	5.9	13	114	0.28	NW
S1	20181231	Cloudy	Moderate	Mid-Flood	S	1	14:17	9.43	8.18	30.01	18.7	2.46	12	114	0.67	NW
S1	20181231	Cloudy	Moderate	Mid-Flood	S	1	14:18	9.5	8.01	30.01	18.6	2.44	12	114	0.69	NW
B2	20181231	Cloudy	Moderate	Mid-Flood	B	4.7	14:25	8.85	8.03	30.24	18.7	6.11	18	115	0.27	N
B2	20181231	Cloudy	Moderate	Mid-Flood	B	4.7	14:25	8.82	8.12	30.26	18.7	6.19	18	114	0.27	N
B2	20181231	Cloudy	Moderate	Mid-Flood	S	1	14:26	8.92	8.08	29.93	18.7	2.15	14	114	0.62	N
B2	20181231	Cloudy	Moderate	Mid-Flood	S	1	14:27	8.98	8.08	29.77	18.7	2.24	13	115	0.64	N
B3	20181231	Cloudy	Moderate	Mid-Flood	B	4.8	14:31	8.88	8.2	30.04	18.6	6.25	13	113	0.29	NW
B3	20181231	Cloudy	Moderate	Mid-Flood	B	4.8	14:32	8.87	8.03	30.31	18.6	6.25	13	114	0.28	NW
B3	20181231	Cloudy	Moderate	Mid-Flood	S	1	14:32	8.88	8.17	29.54	18.6	2.36	10	115	0.65	NW
B3	20181231	Cloudy	Moderate	Mid-Flood	S	1	14:33	8.89	8.19	30.14	18.6	2.27	11	114	0.64	NW
B4	20181231	Cloudy	Moderate	Mid-Flood	B	4.6	14:46	8.97	8.05	29.7	18.6	6.69	16	115	0.26	N
B4	20181231	Cloudy	Moderate	Mid-Flood	B	4.6	14:46	9.02	8.01	29.74	18.6	6.62	17	115	0.24	N
B4	20181231	Cloudy	Moderate	Mid-Flood	S	1	14:47	9	8.1	29.68	18.6	2.11	16	114	0.6	N
B4	20181231	Cloudy	Moderate	Mid-Flood	S	1	14:47	9.04	8.02	29.81	18.6	2.19	16	115	0.62	N
S2	20181231	Cloudy	Moderate	Mid-Flood	B	9.6	14:42	9.3	8.11	29.58	18.6	6.55	14	114	0.21	NW
S2	20181231	Cloudy	Moderate	Mid-Flood	B	9.6	14:43	9.29	8.03	30.18	18.6	6.55	15	114	0.23	NW
S2	20181231	Cloudy	Moderate	Mid-Flood	M	5.3	14:43	9.36	8.02	30.13	18.7	4.62	14	113	0.42	NW
S2	20181231	Cloudy	Moderate	Mid-Flood	M	5.3	14:44	9.29	8.18	30.04	18.6	4.62	13	114	0.4	NW
S2	20181231	Cloudy	Moderate	Mid-Flood	S	1	14:45	9.34	8.11	30.44	18.6	2.02	11	115	0.68	NW
S2	20181231	Cloudy	Moderate	Mid-Flood	S	1	14:45	9.3	8.18	29.51	18.6	2.06	11	114	0.66	NW

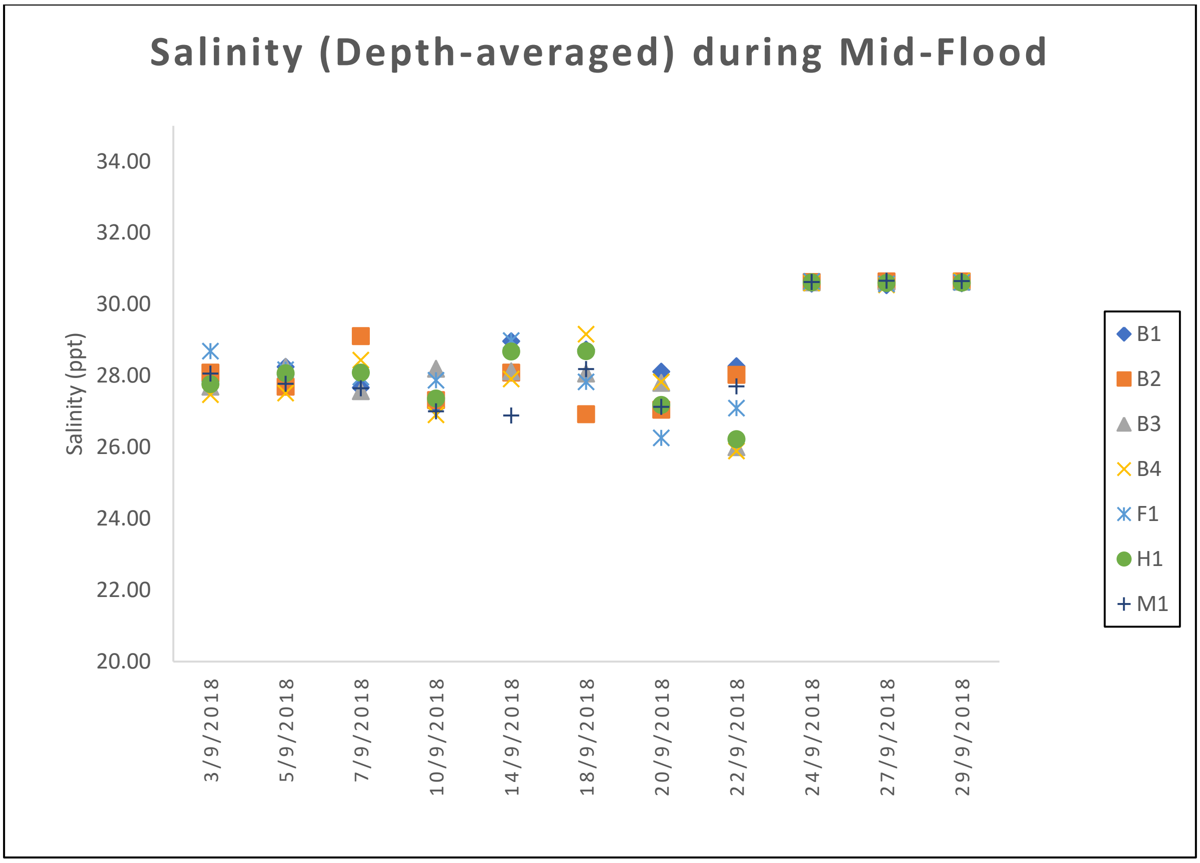
Remarks:

note 1: S – Surface M – Middle B – Bottom

note 2: Cancelled due to container leakage.

note 3: Measurements of current velocity, total alkalinity tests and detections of current direction were only conducted during DCM work period on 10, 12, 15, 17, 19, 21, 24, 27, 29 & 31 December 2018.

note 4: Measurements of turbidity would be rounding to 0.1 NTU for proven accuracy as per the equipment specs during utilization of data.


Salinity (Depth-averaged) during Mid-Flood
Salinity (ppt)
34.00
32.00
30.00
28.00
26.00
24.00
22.00
20.00
3/9/2018
5/9/2018
7/9/2018
10/9/2018
14/9/2018
18/9/2018
20/9/2018
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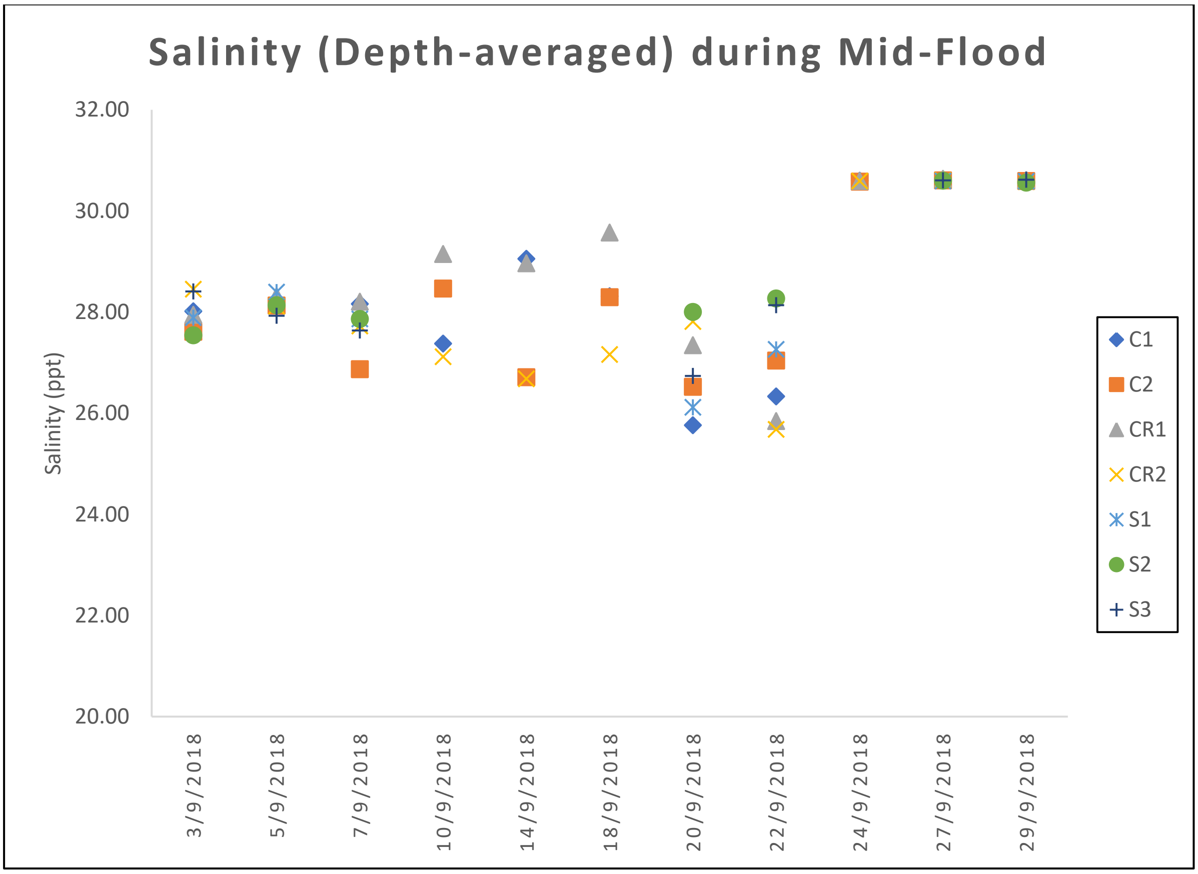
27/9/2018
29/9/2018
B1
B2
B3
B4
F1
H1
M1


Salinity (Depth-averaged) during Mid-Flood
Salinity (ppt)
32.00
30.00
28.00
26.00
24.00
22.00
20.00
3/9/2018
5/9/2018
7/9/2018
10/9/2018
14/9/2018
18/9/2018
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C2
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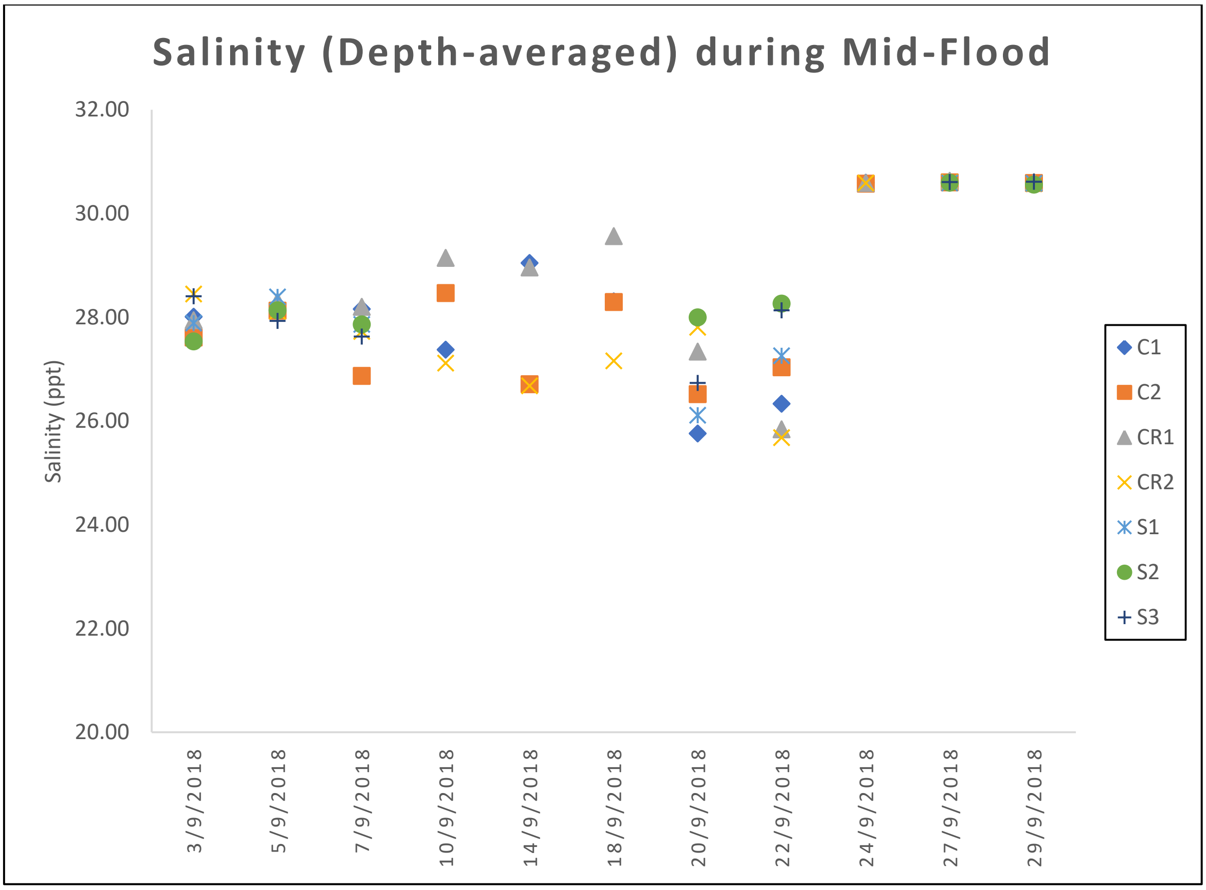
CR2
S1
S2
S3


Salinity (Depth-averaged) during Mid-Flood
Salinity (ppt)
32.00
30.00
28.00
26.00
24.00
22.00
20.00
3/9/2018
5/9/2018
7/9/2018
10/9/2018
14/9/2018
18/9/2018
20/9/2018
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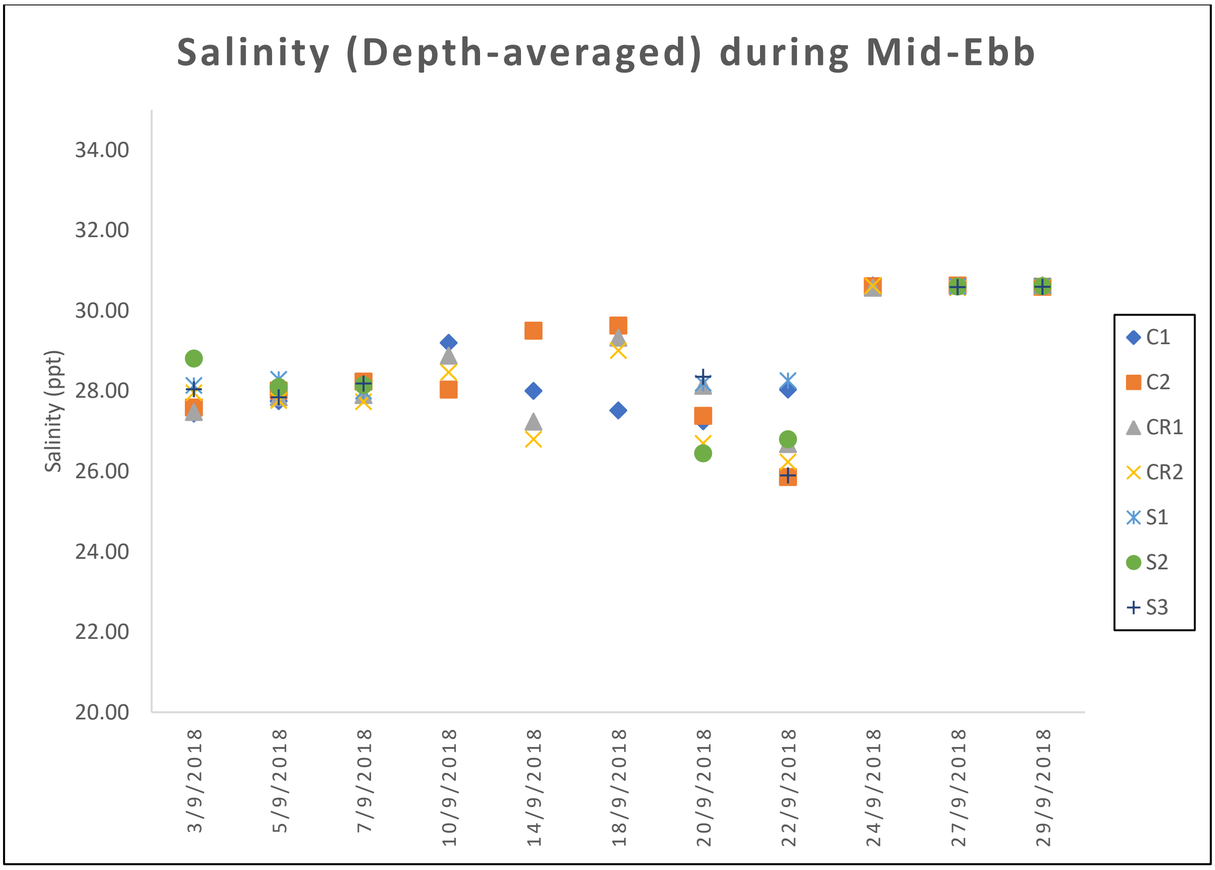
CR1
CR2
S1
S2
S3


Salinity (Depth-averaged) during Mid-Ebb
Salinity (ppt)
34.00
32.00
30.00
28.00
26.00
24.00
22.00
20.00
3/9/2018
5/9/2018
7/9/2018
10/9/2018
14/9/2018
18/9/2018
20/9/2018
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C2
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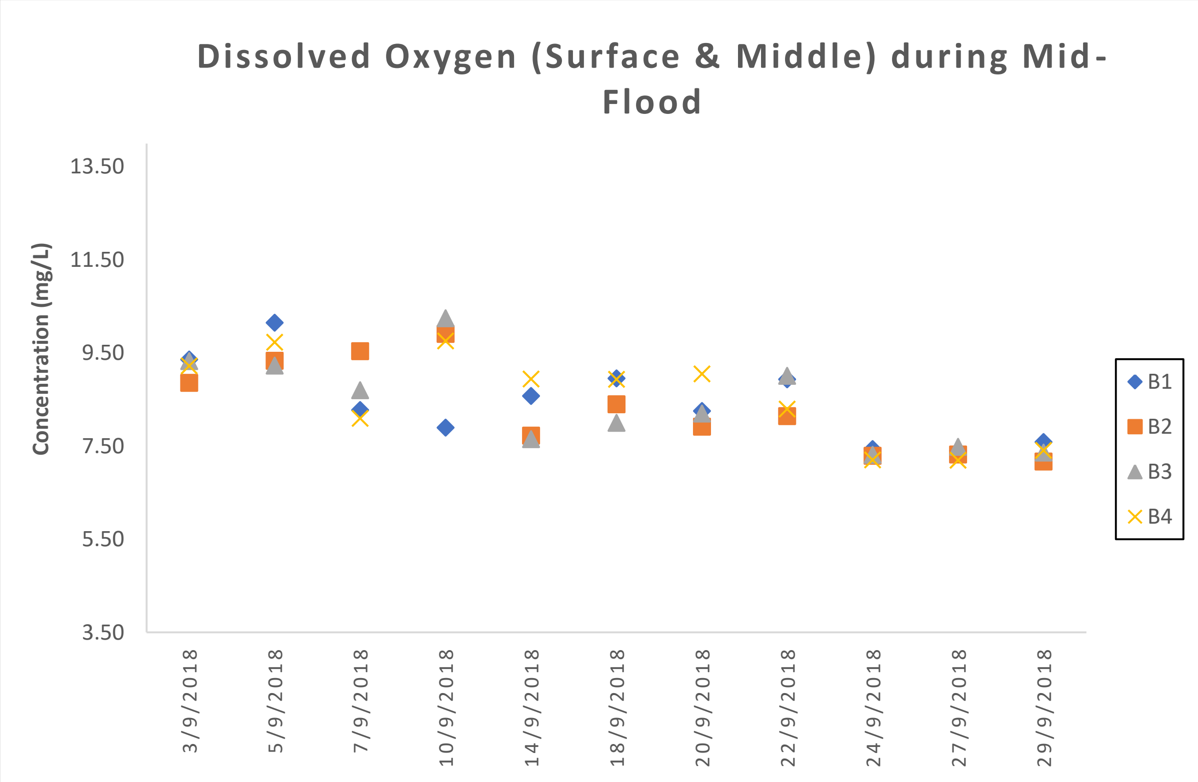
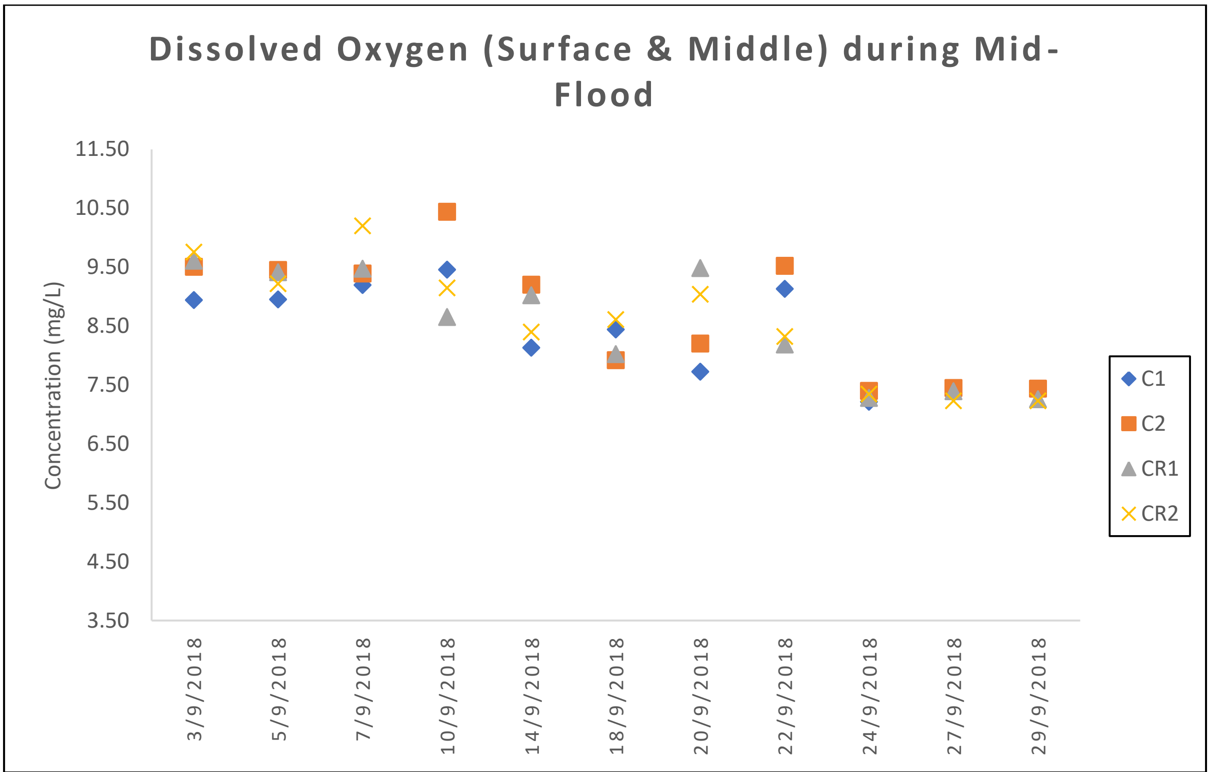
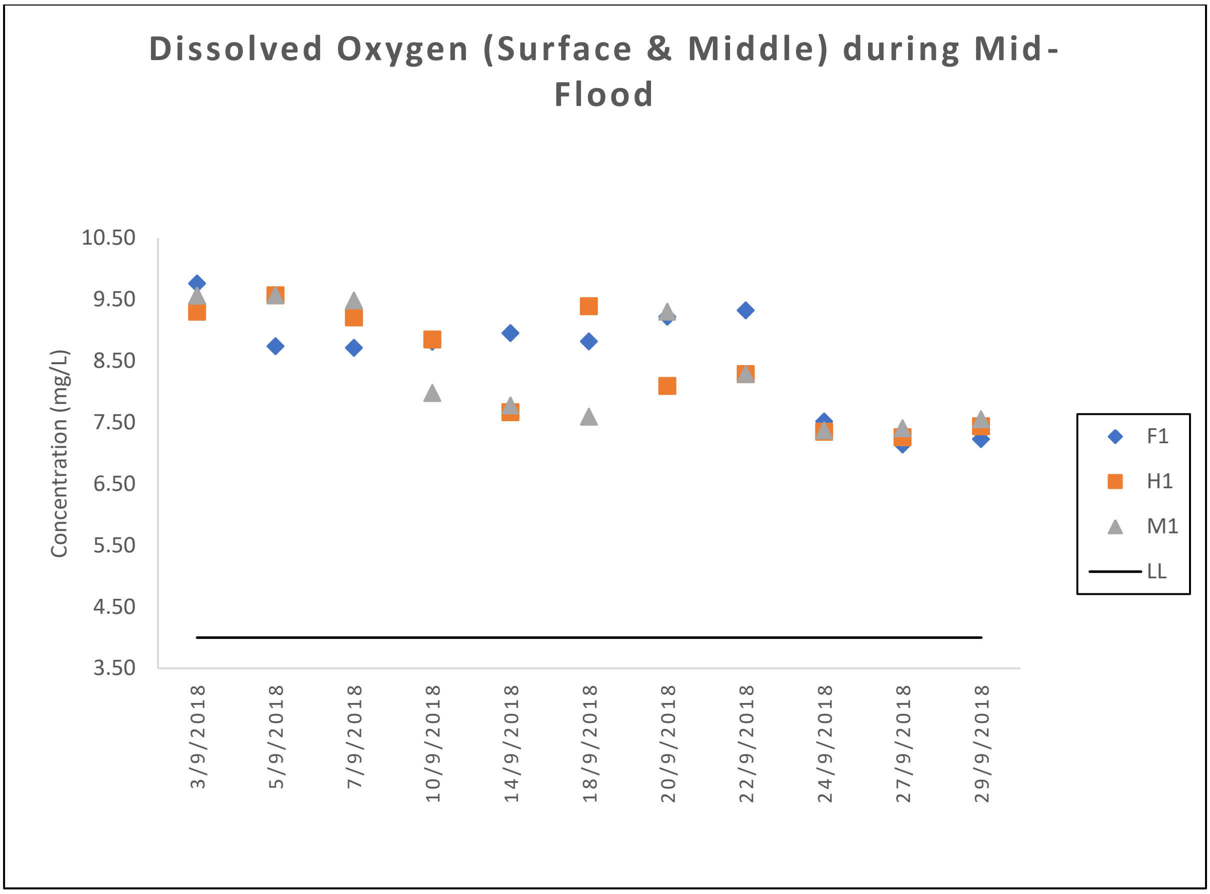
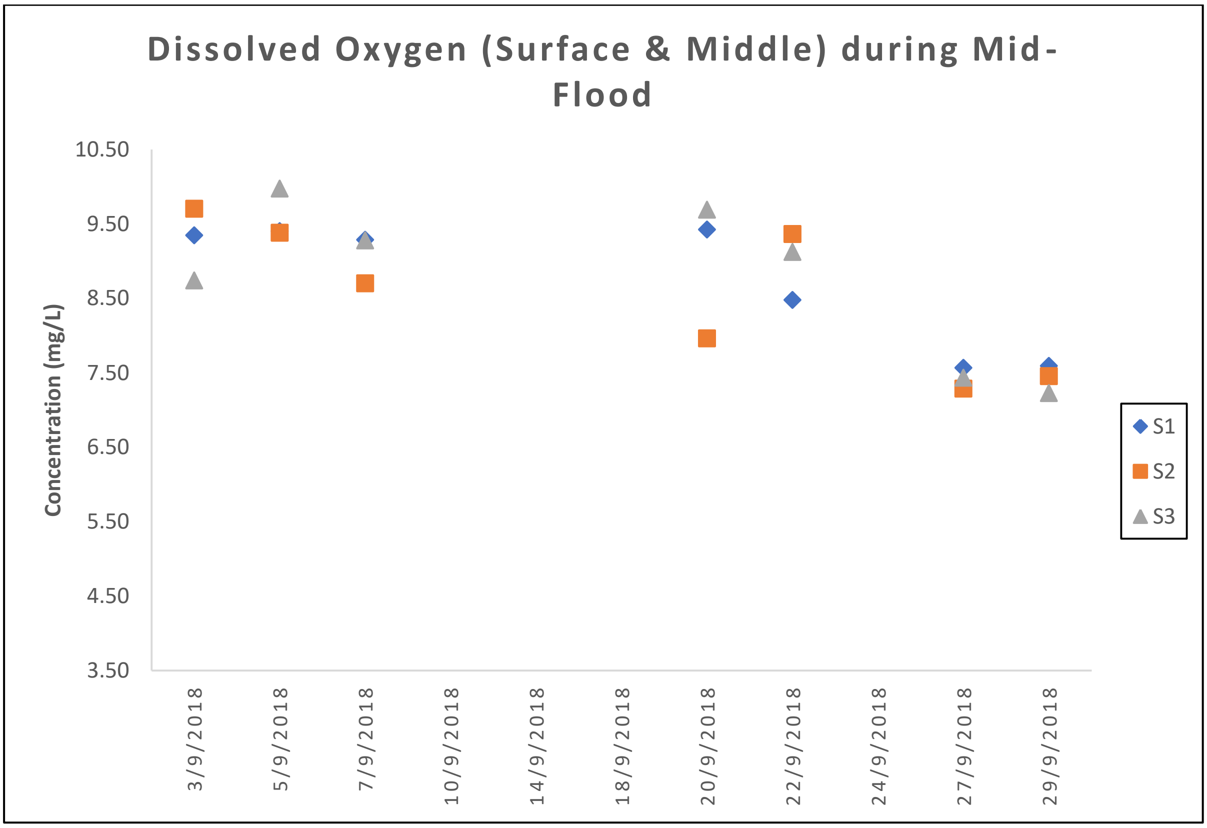
CR2
S1
S2
S3



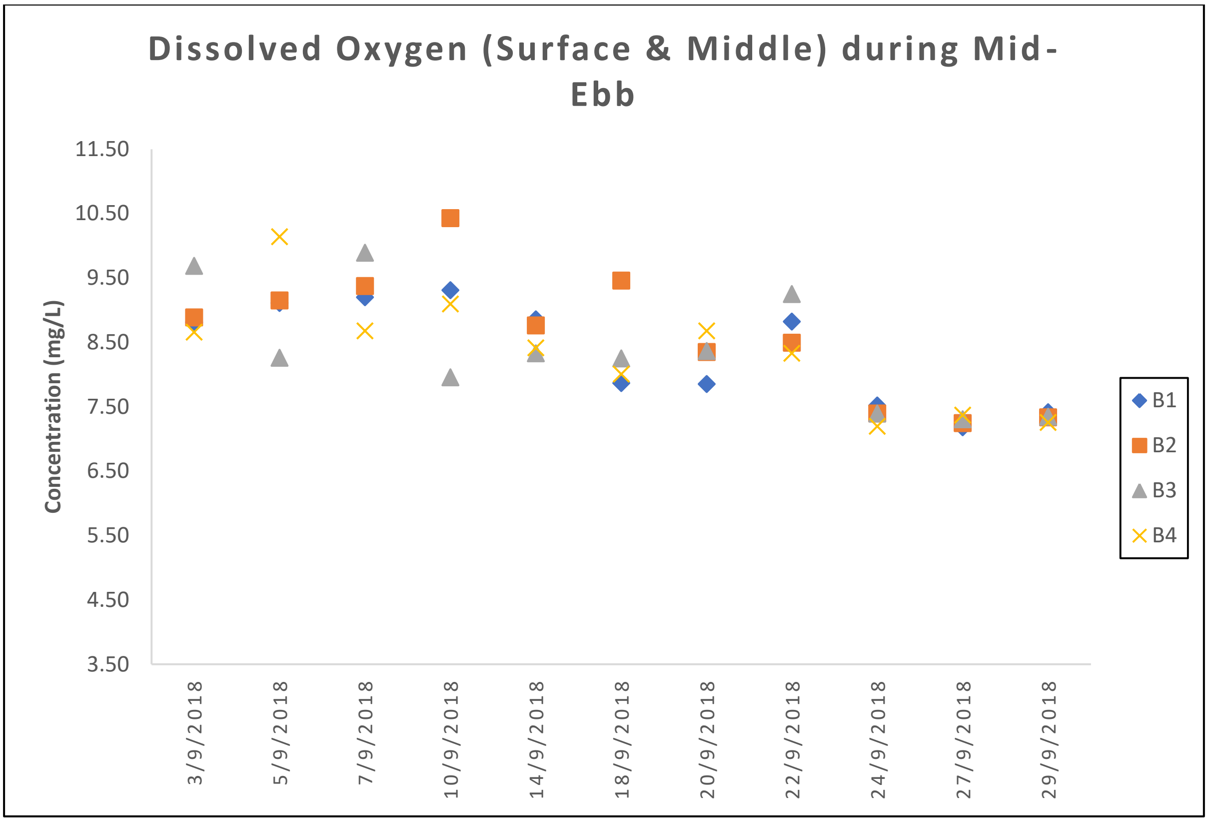


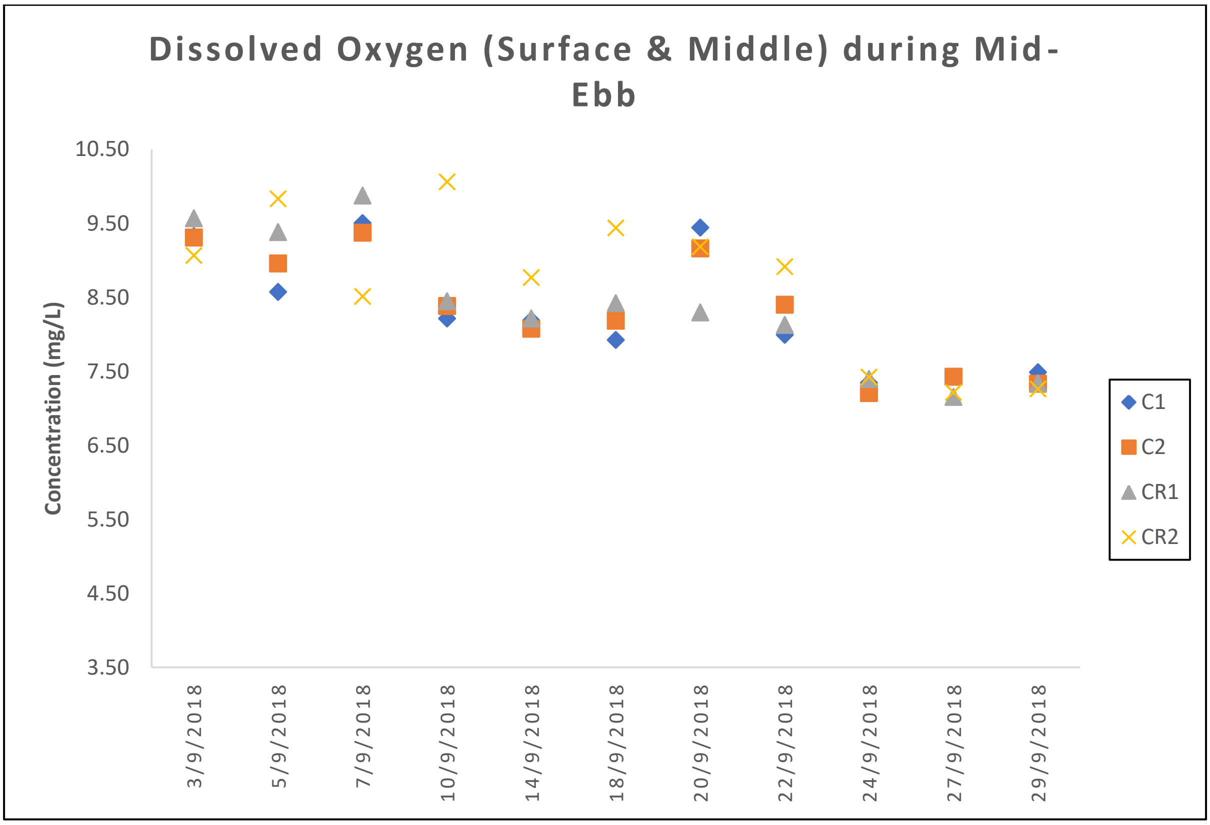
Note: The Action and Limit Level of dissolved oxygen can be referred to **Table 2.7** of the monthly EM & A report.



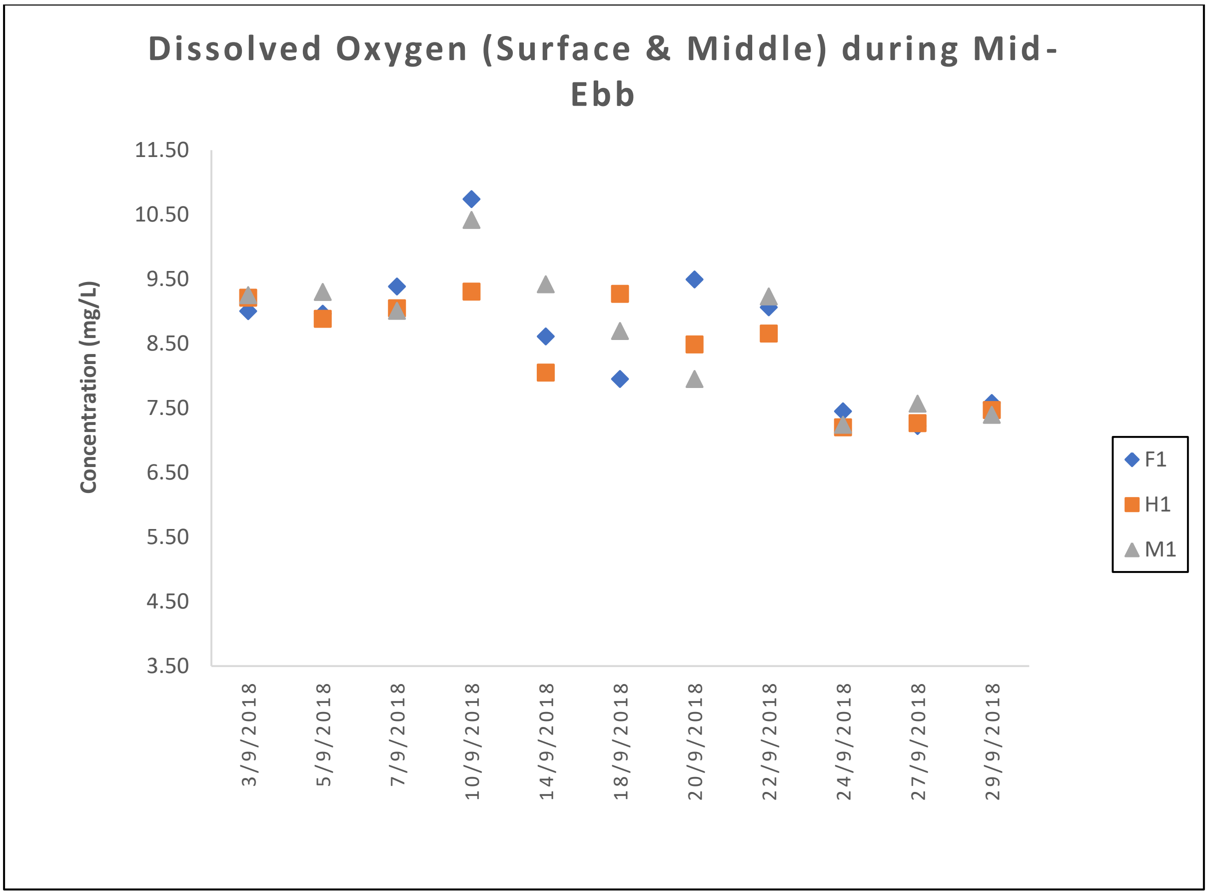


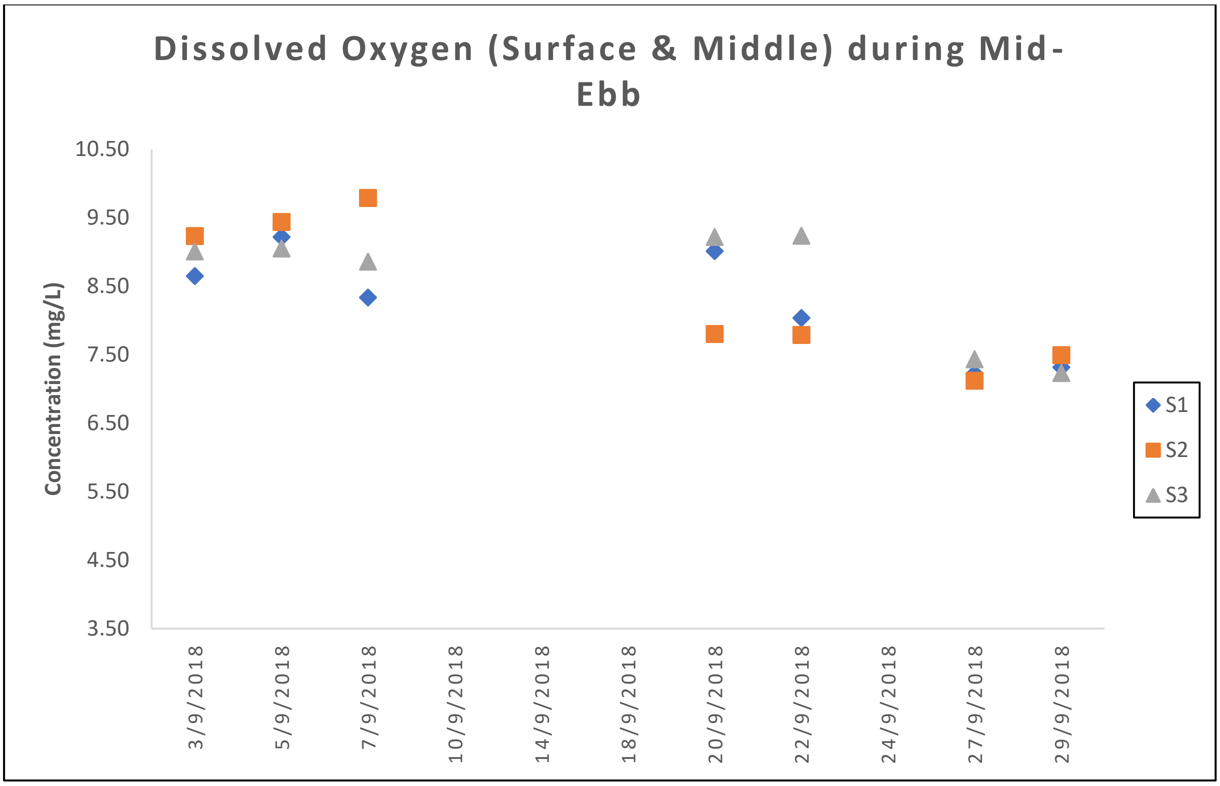
Note: The Action and Limit Level of dissolved oxygen can be referred to **Table 2.7** of the monthly EM & A report.



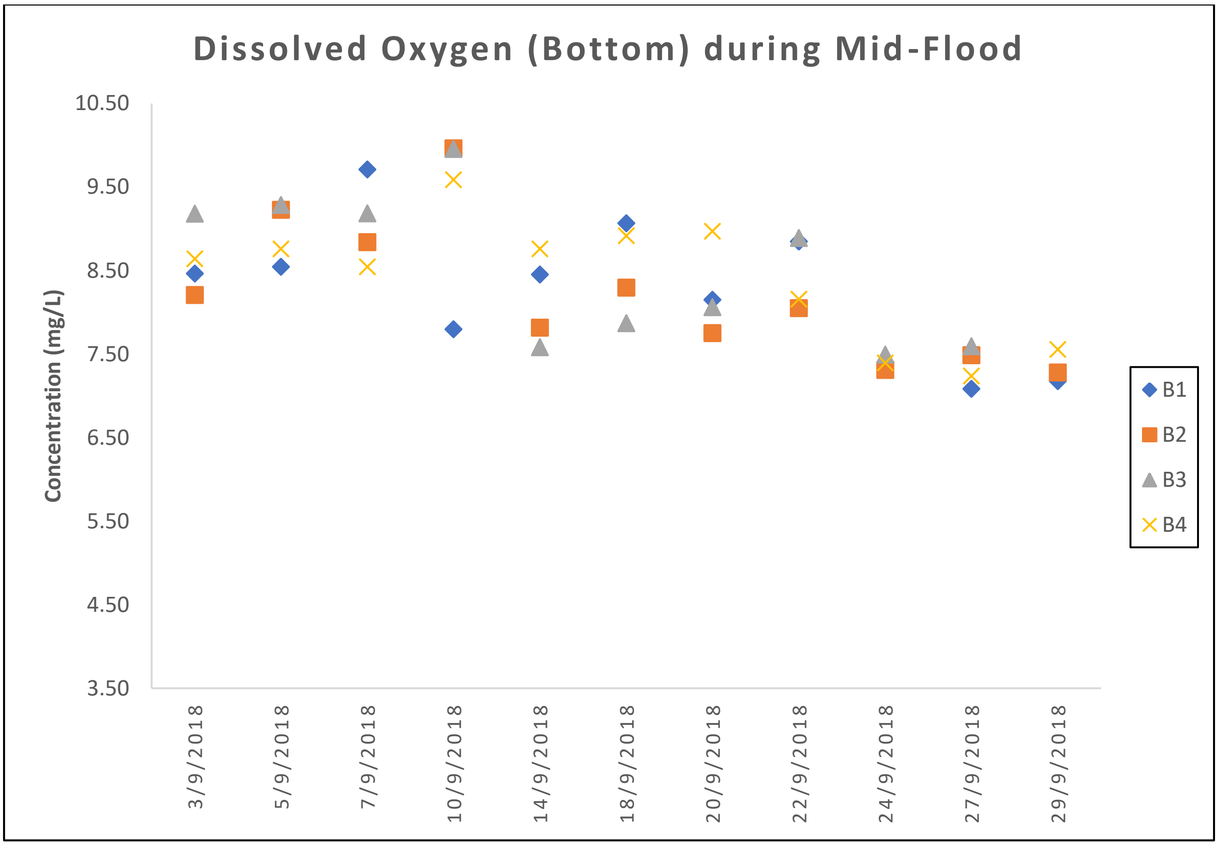


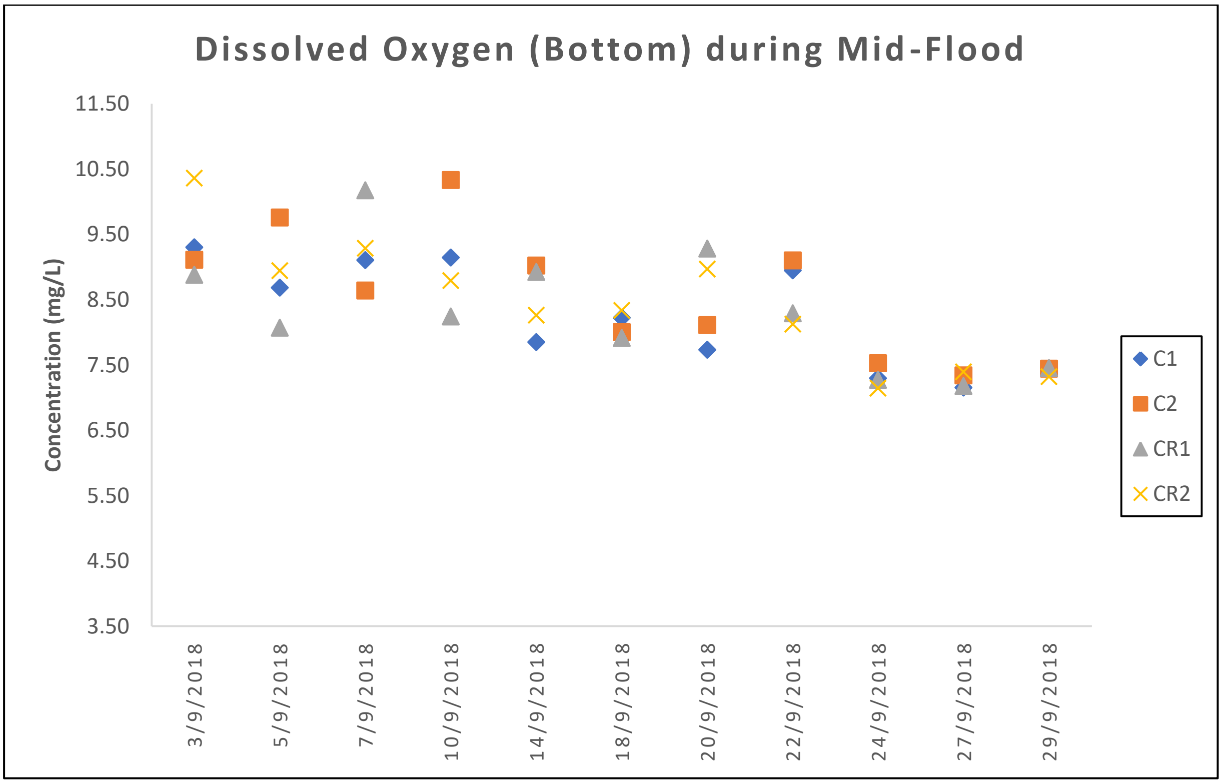
Note: The Action and Limit Level of dissolved oxygen can be referred to **Table 2.7** of the monthly EM & A report.



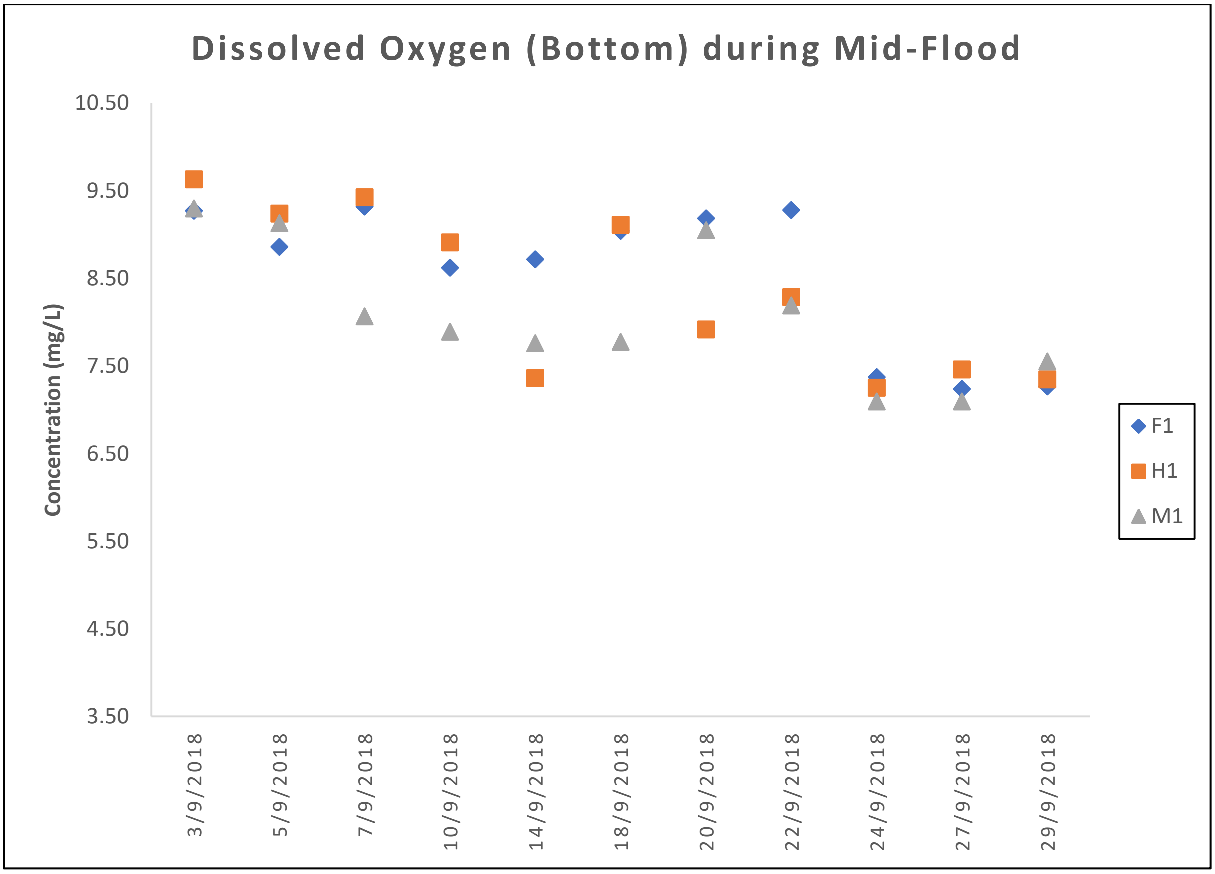


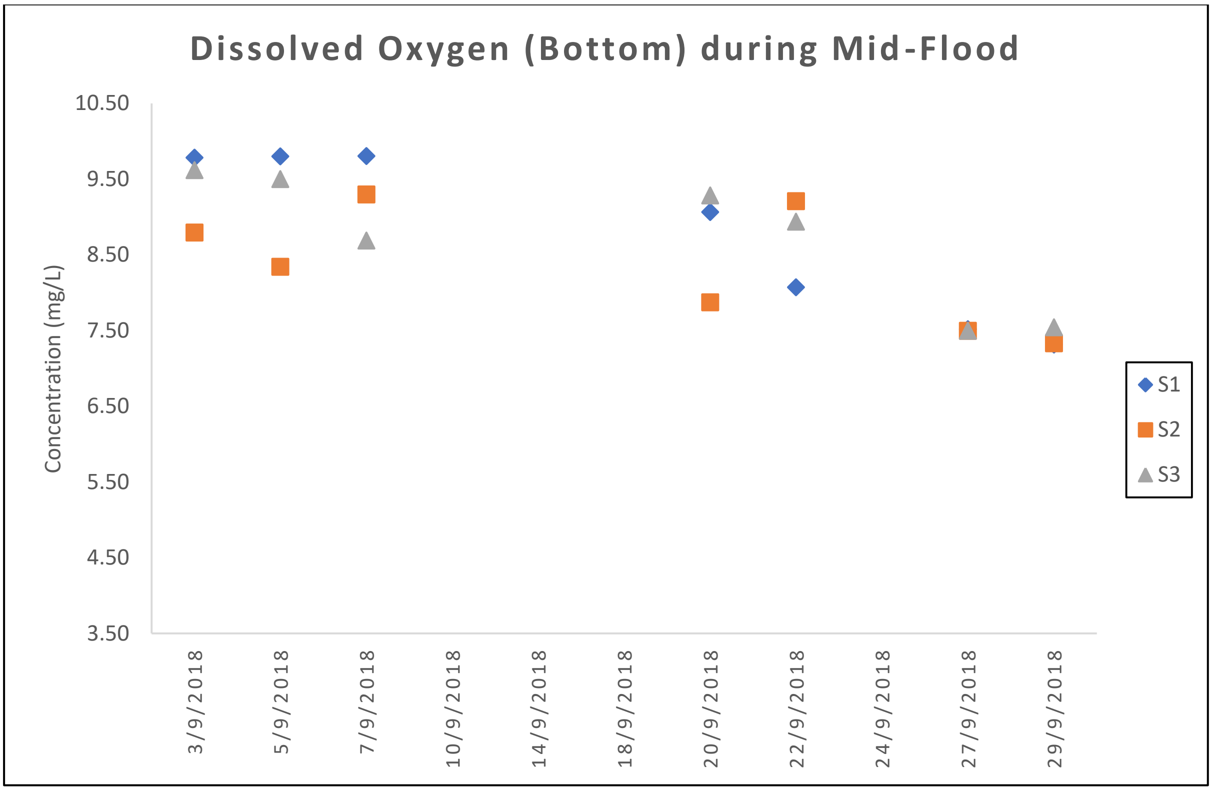
Note: The Action and Limit Level of dissolved oxygen can be referred to **Table 2.7** of the monthly EM & A report.



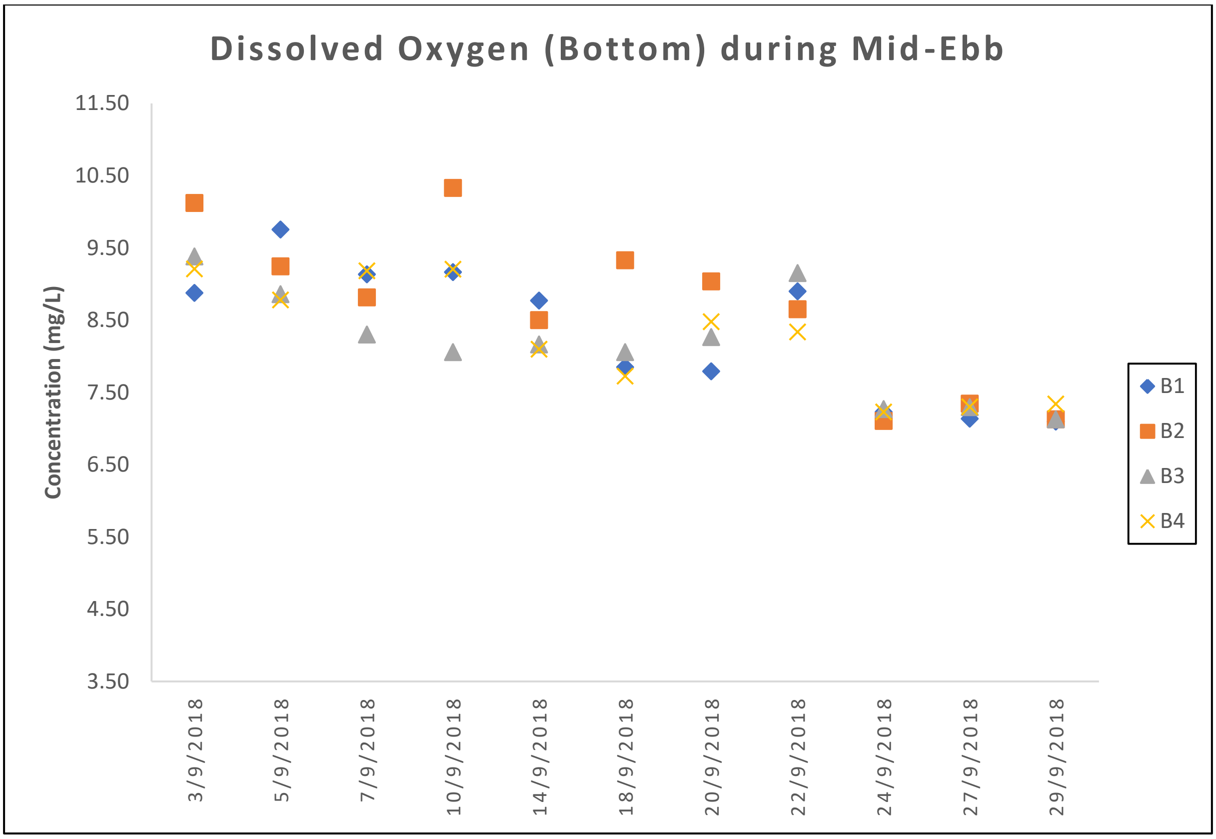


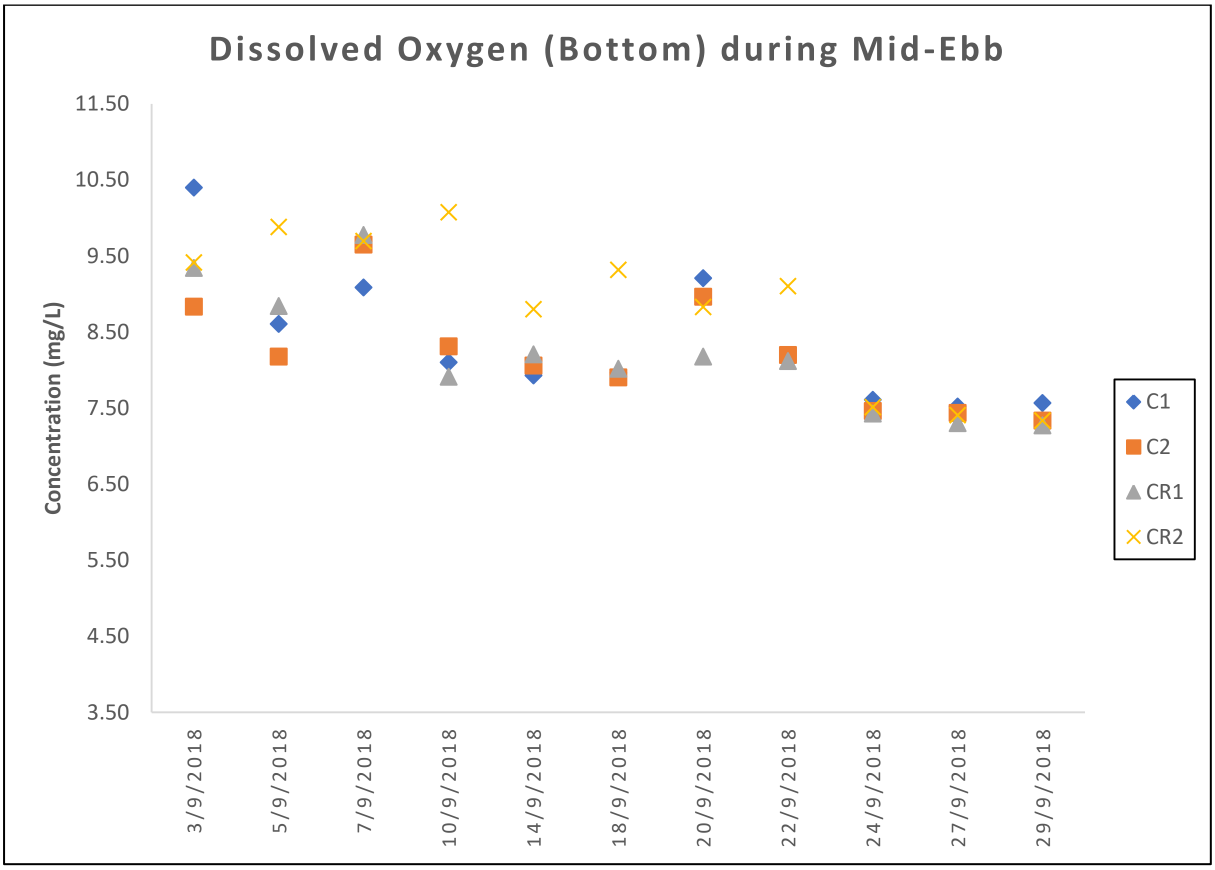
Note: The Action and Limit Level of dissolved oxygen can be referred to **Table 2.7** of the monthly EM & A report.



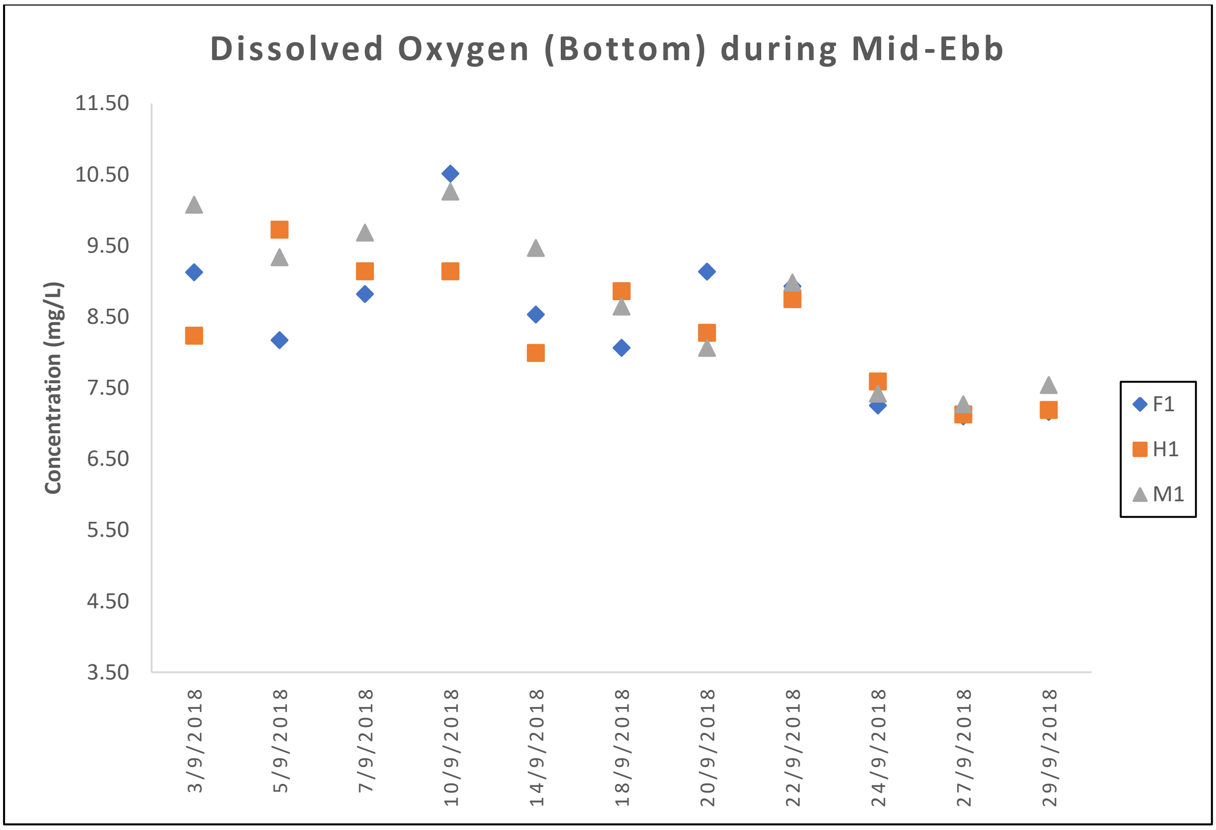


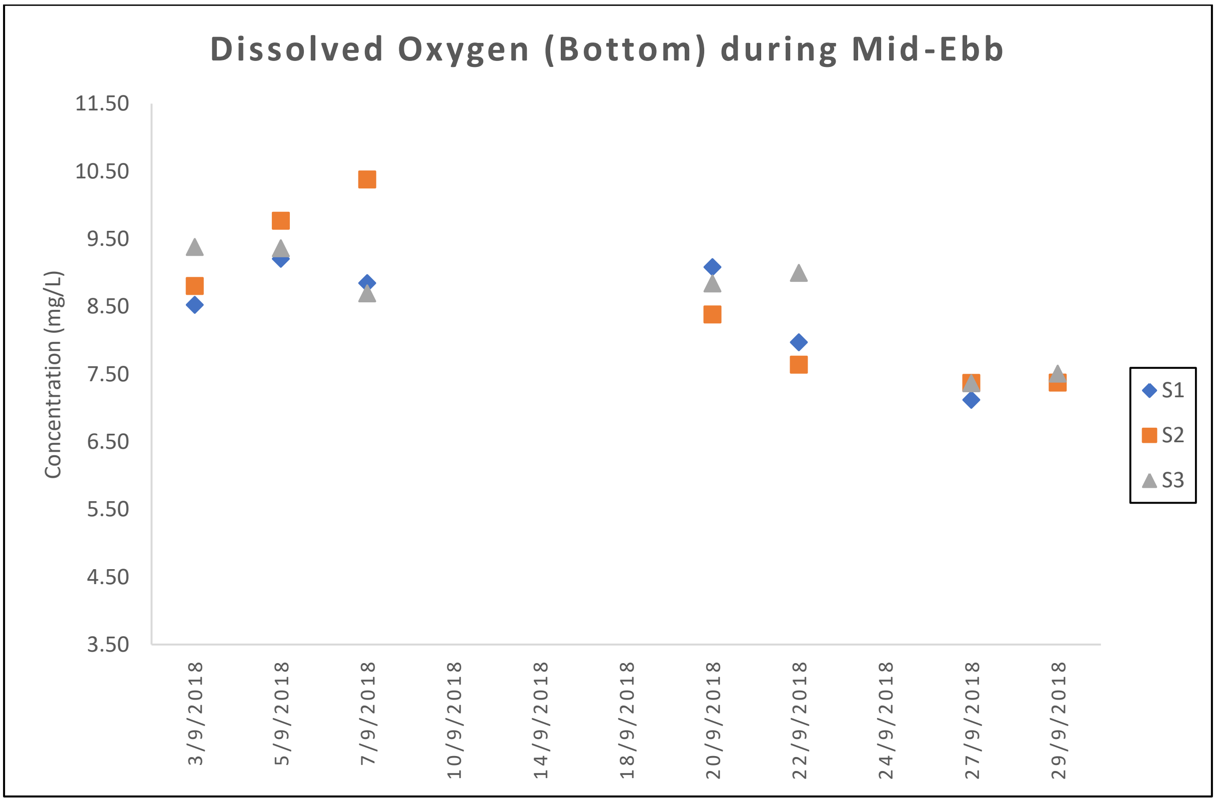
Note: The Action and Limit Level of dissolved oxygen can be referred to **Table 2.7** of the monthly EM & A report.



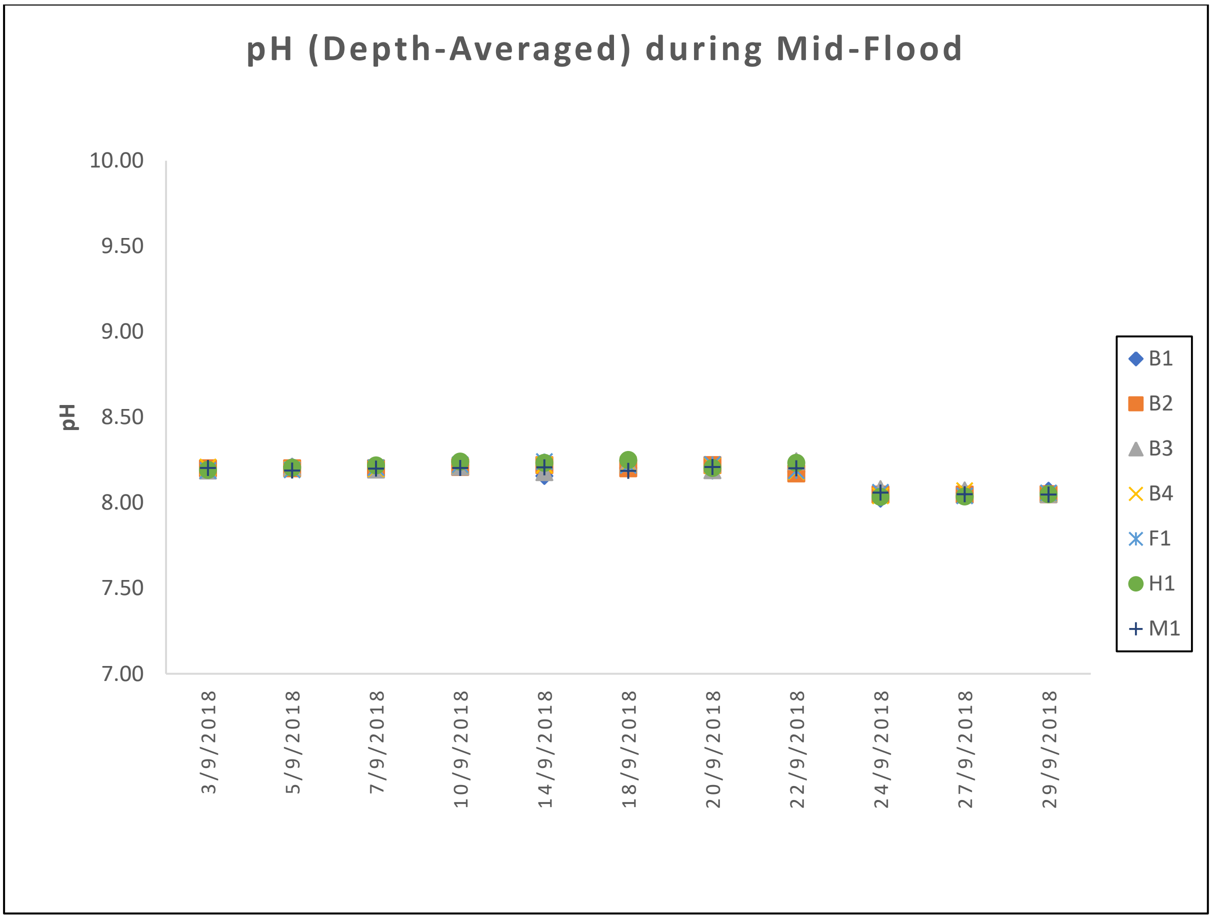


Note: The Action and Limit Level of dissolved oxygen can be referred to **Table 2.7** of the monthly EM & A report.





Note: The Action and Limit Level of dissolved oxygen can be referred to **Table 2.7** of the monthly EM & A report.


pH (Depth-Averaged) during Mid-Flood
10.00
9.50
9.00
8.50
8.00
7.50
7.00
pH
3/9/2018
5/9/2018
7/9/2018
10/9/2018
14/9/2018
18/9/2018
20/9/2018
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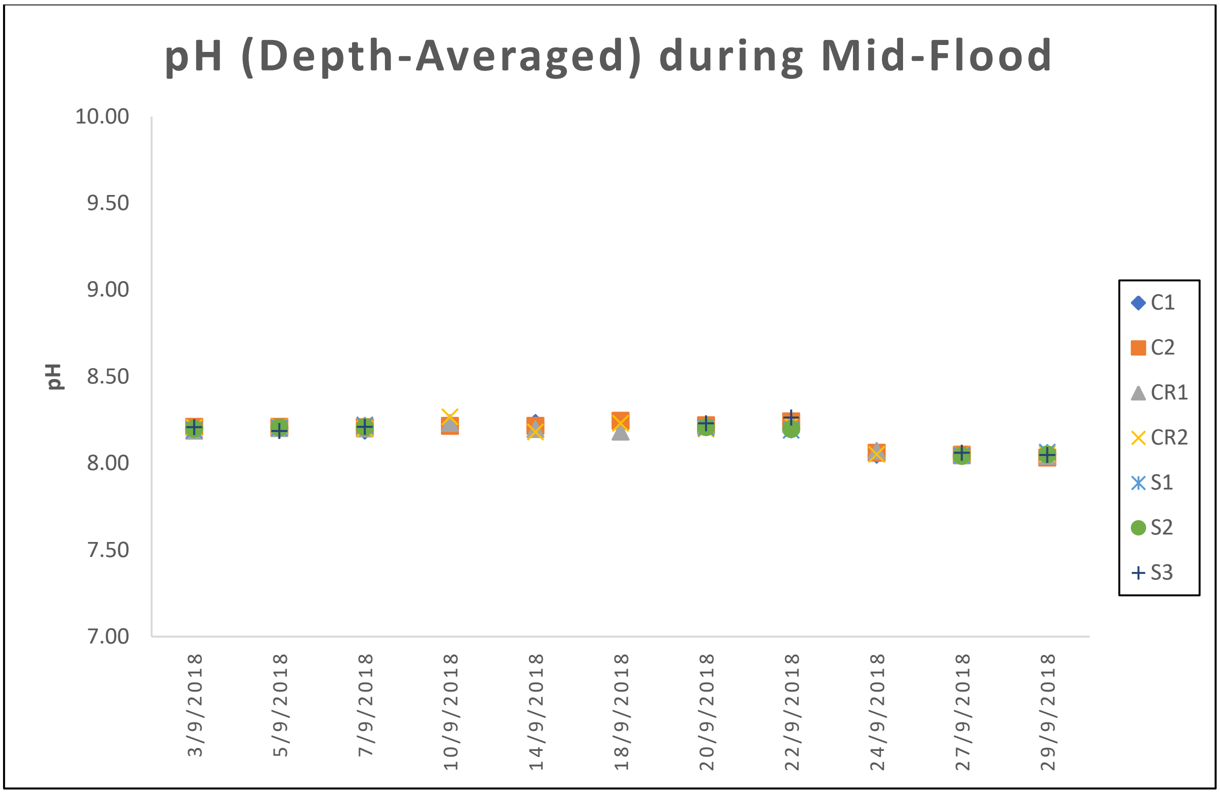
B2
B3
B4
F1
H1
M1


pH (Depth-Averaged) during Mid-Flood
10.00
9.50
9.00
8.50
8.00
7.50
7.00
pH
3/9/2018
5/9/2018
7/9/2018
10/9/2018
14/9/2018
18/9/2018
20/9/2018
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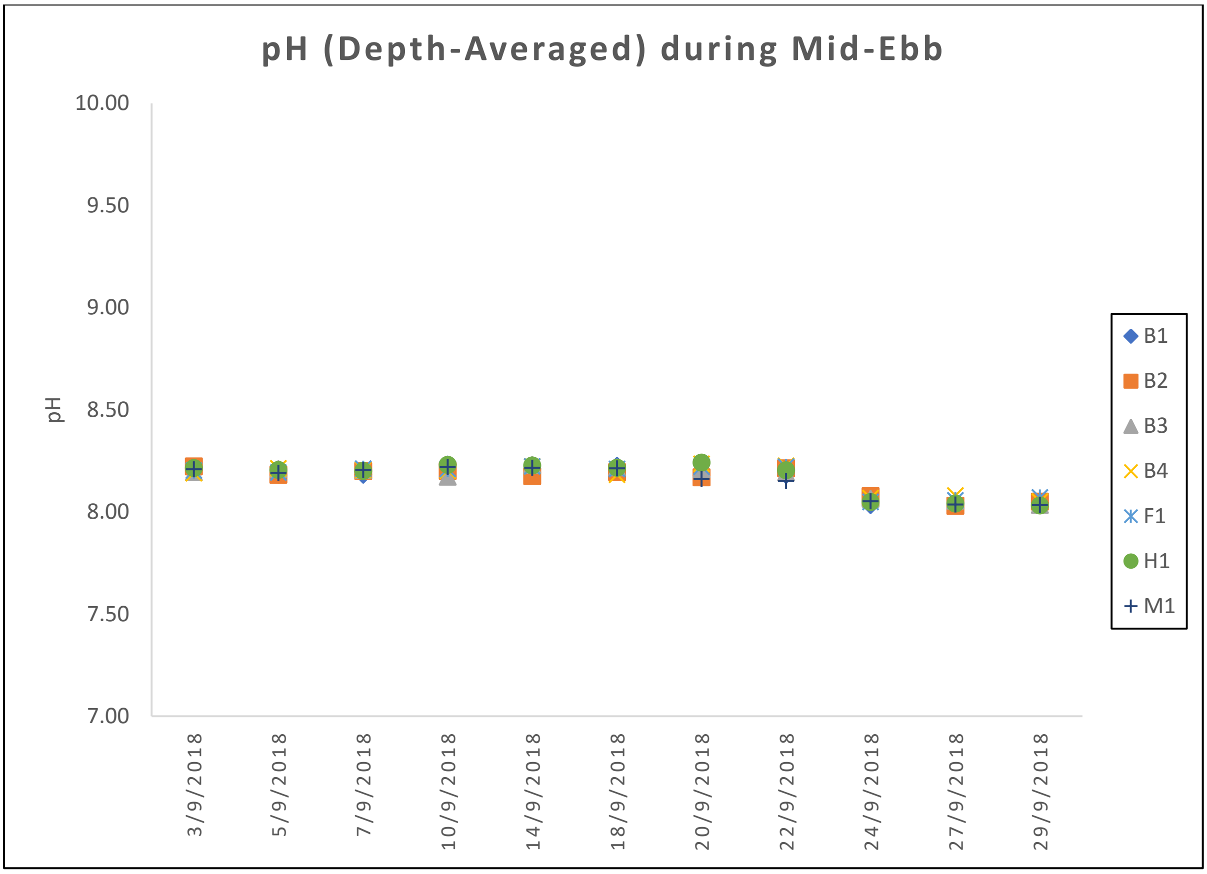
C2
CR1
CR2
S1
S2
S3


pH (Depth-Averaged) during Mid-Ebb
10.00
9.50
9.00
8.50
8.00
7.50
7.00
pH
3/9/2018
5/9/2018
7/9/2018
10/9/2018
14/9/2018
18/9/2018
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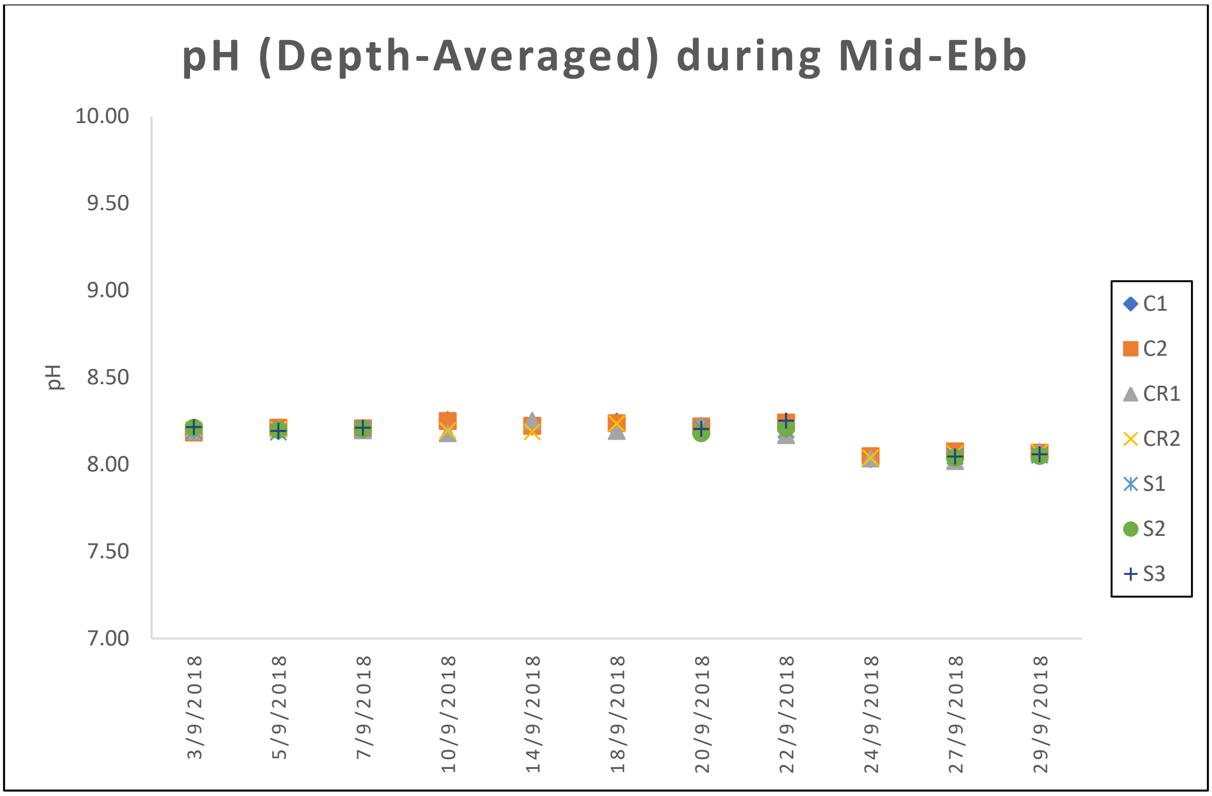
B2
B3
B4
F1
H1
M1


pH (Depth-Averaged) during Mid-Ebb
10.00
9.50
9.00
8.50
8.00
7.50
7.00
pH
3/9/2018
5/9/2018
7/9/2018
10/9/2018
14/9/2018
18/9/2018
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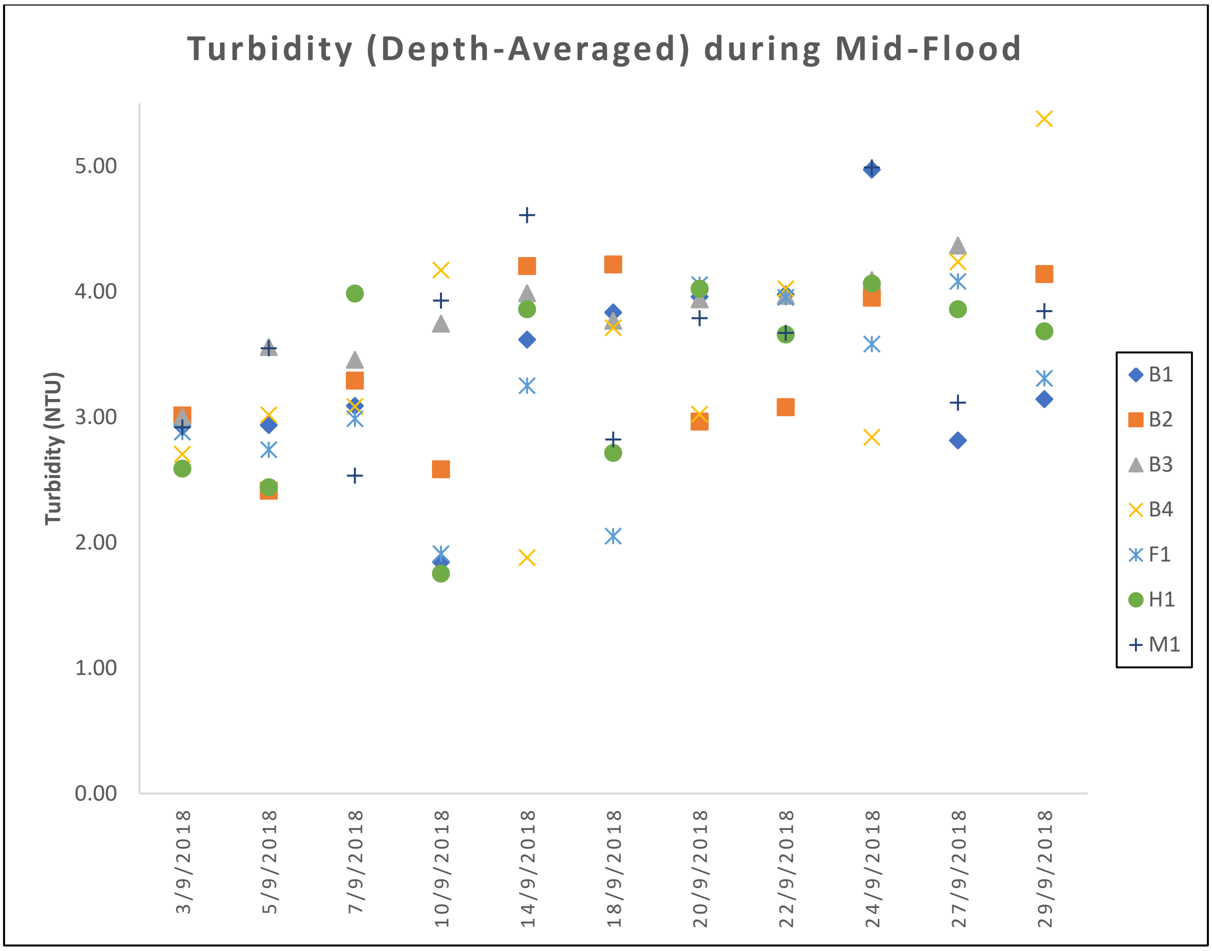
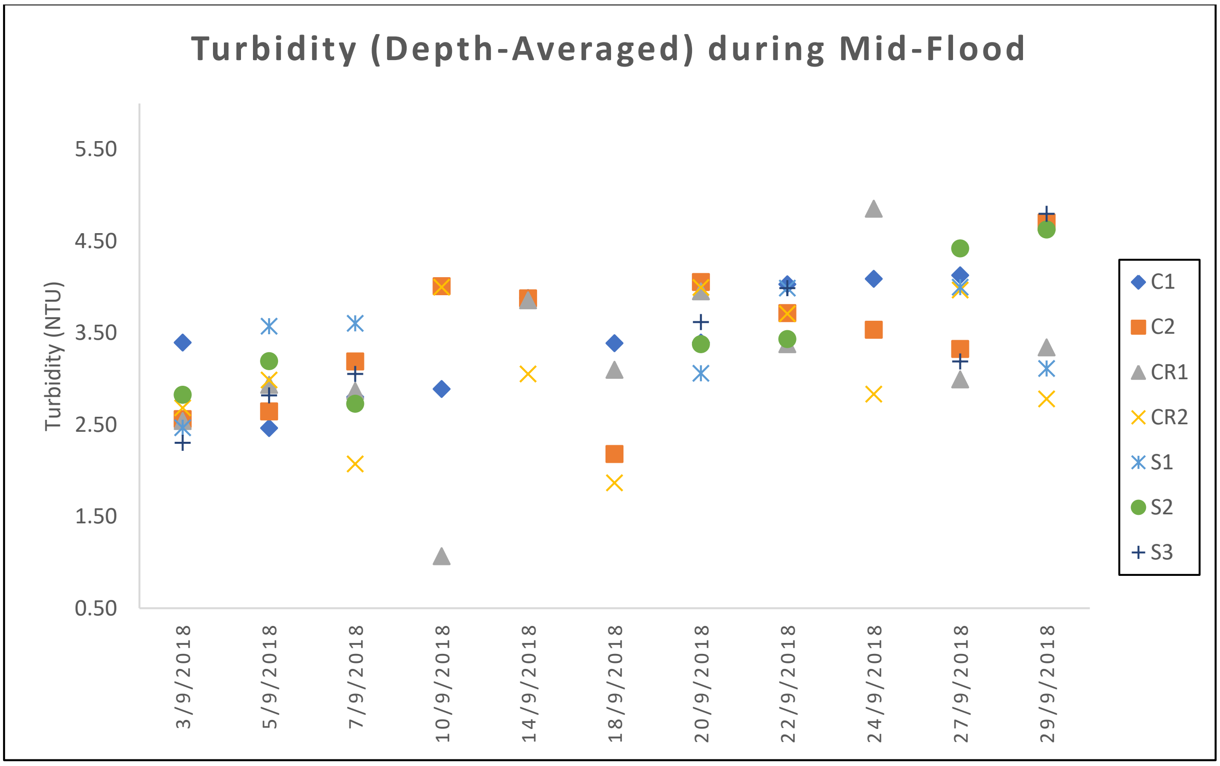
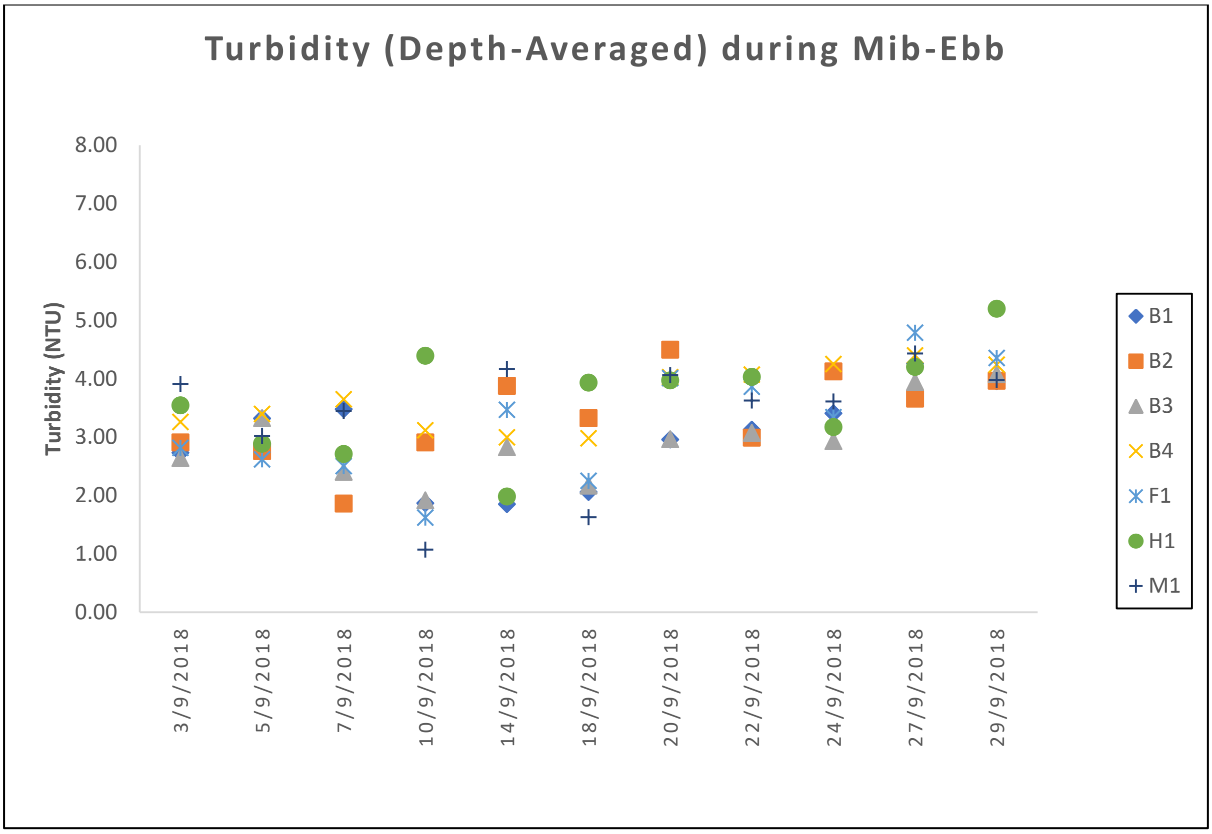
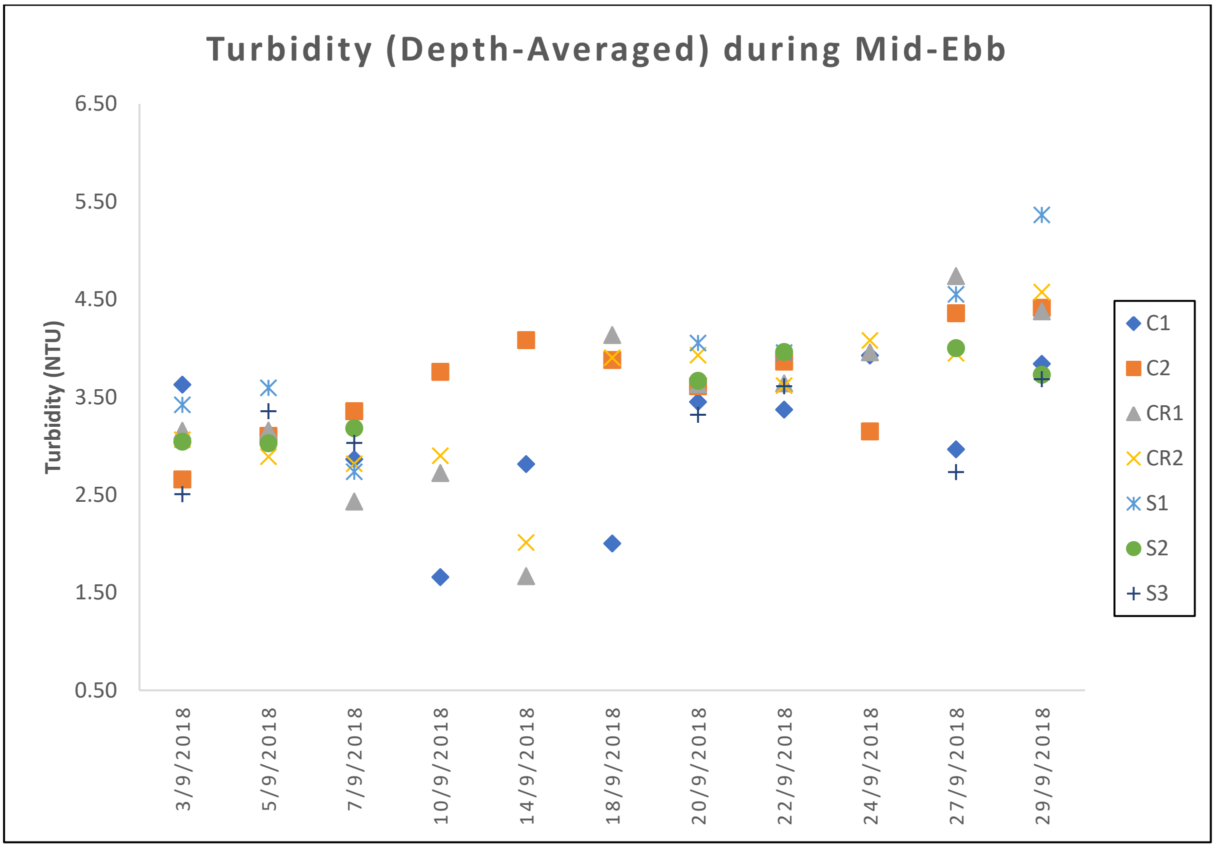
CR2
S1
S2
S3



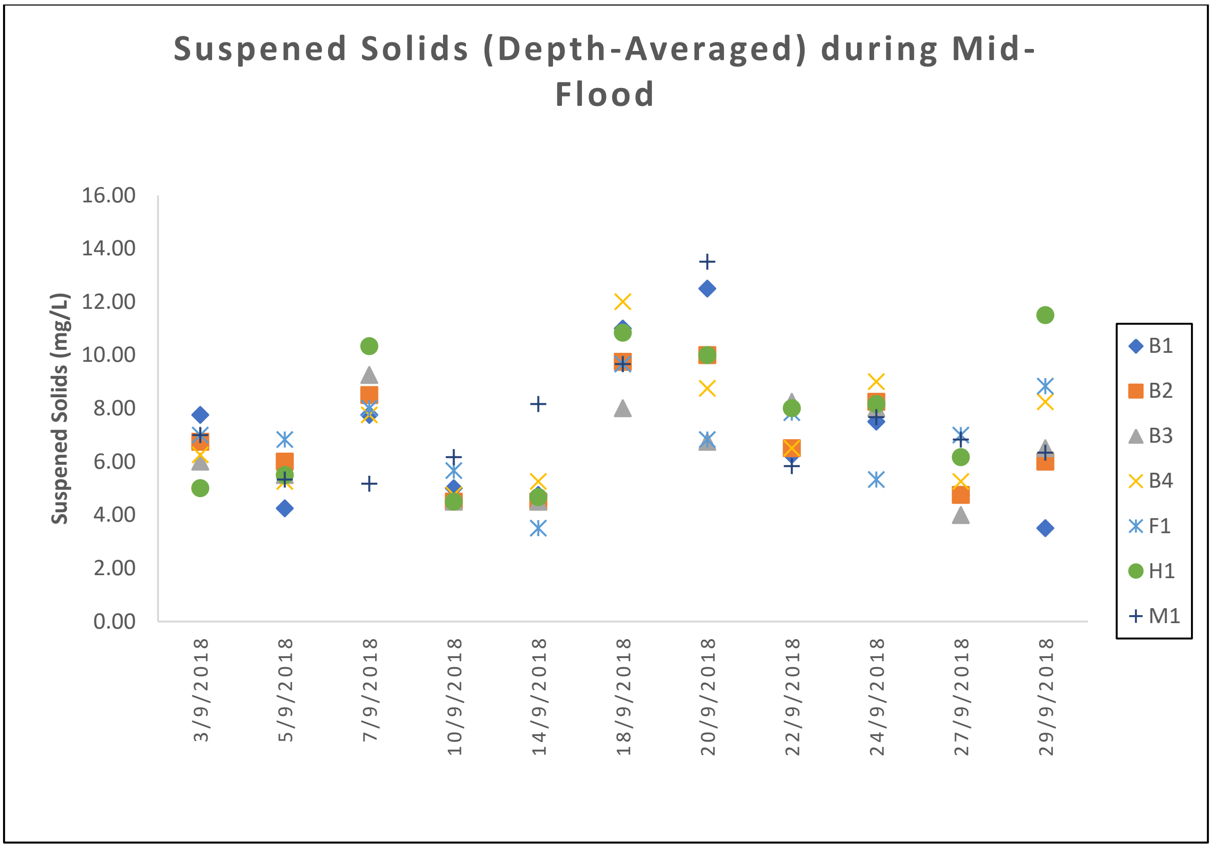


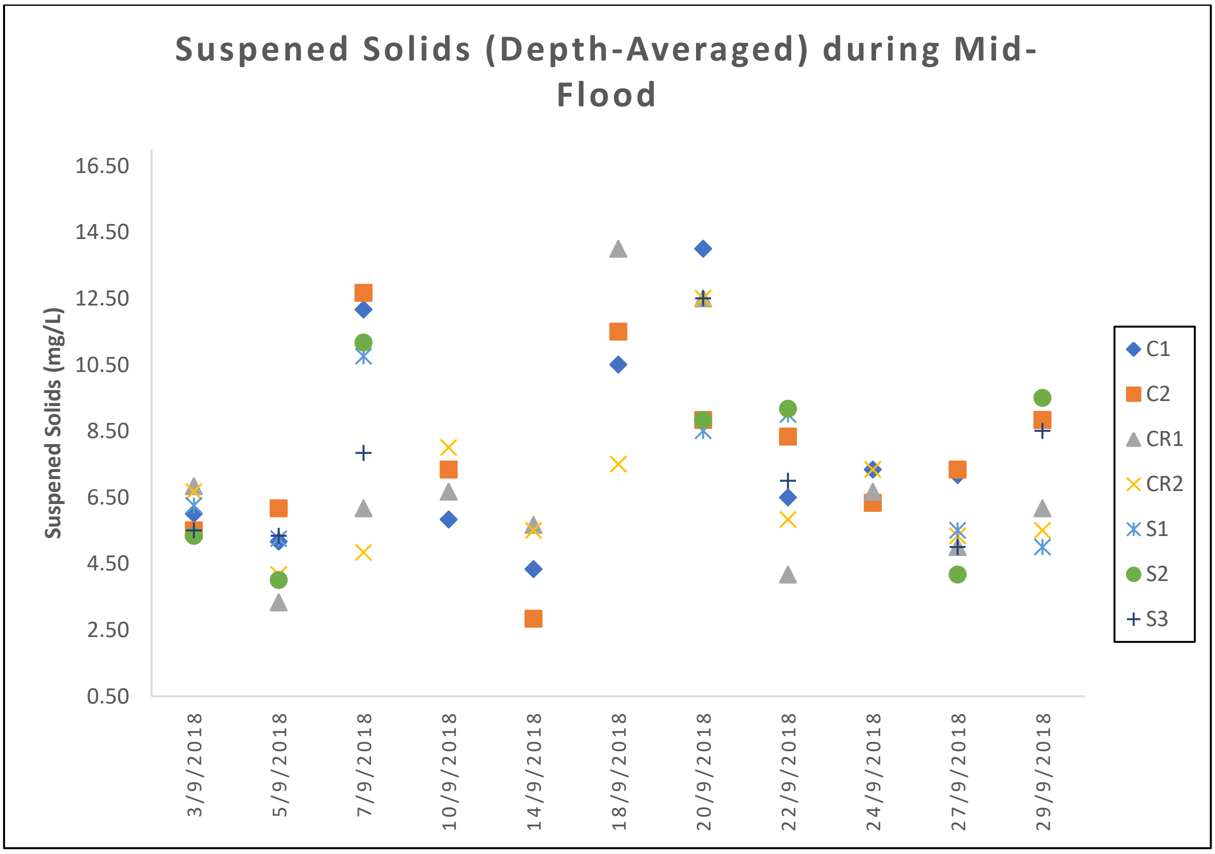
Note: The Action and Limit Level of turbidity can be referred to **Table 2.7** of the monthly EM & A report.



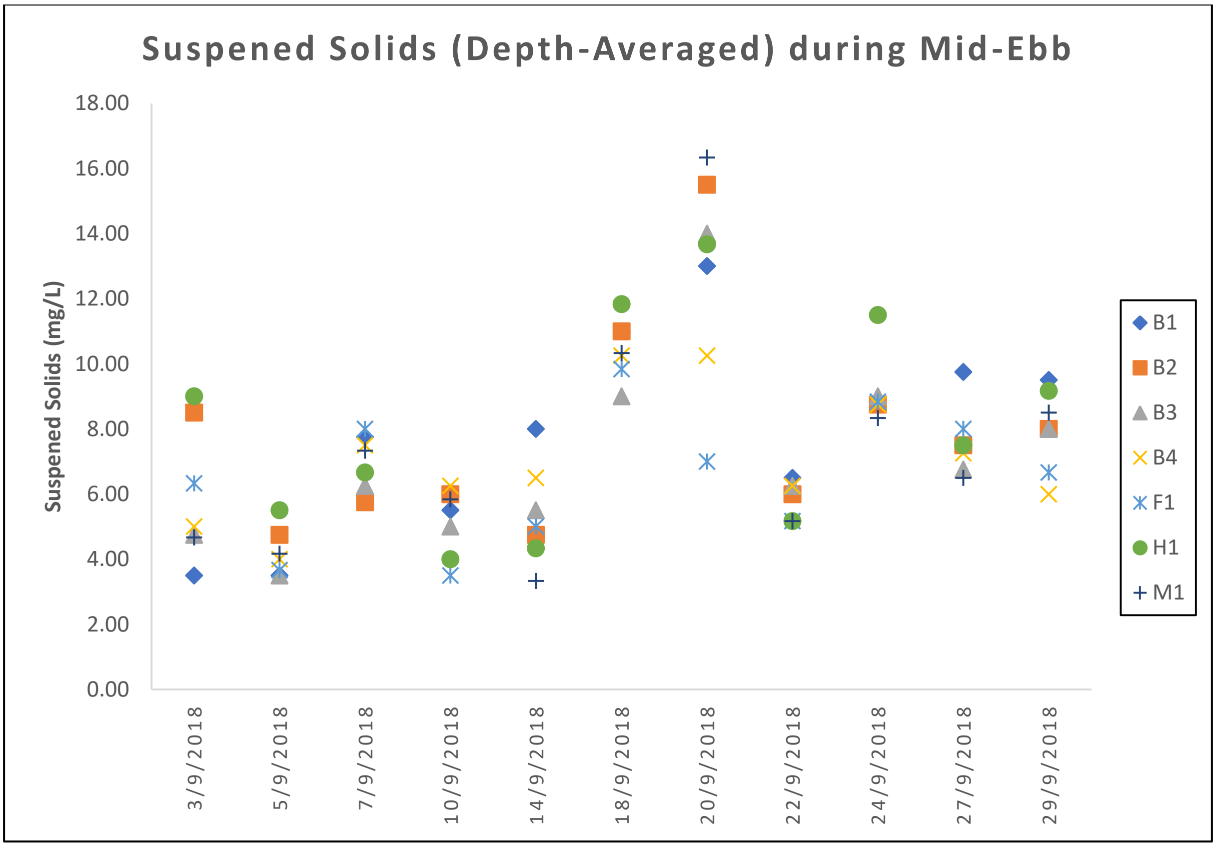


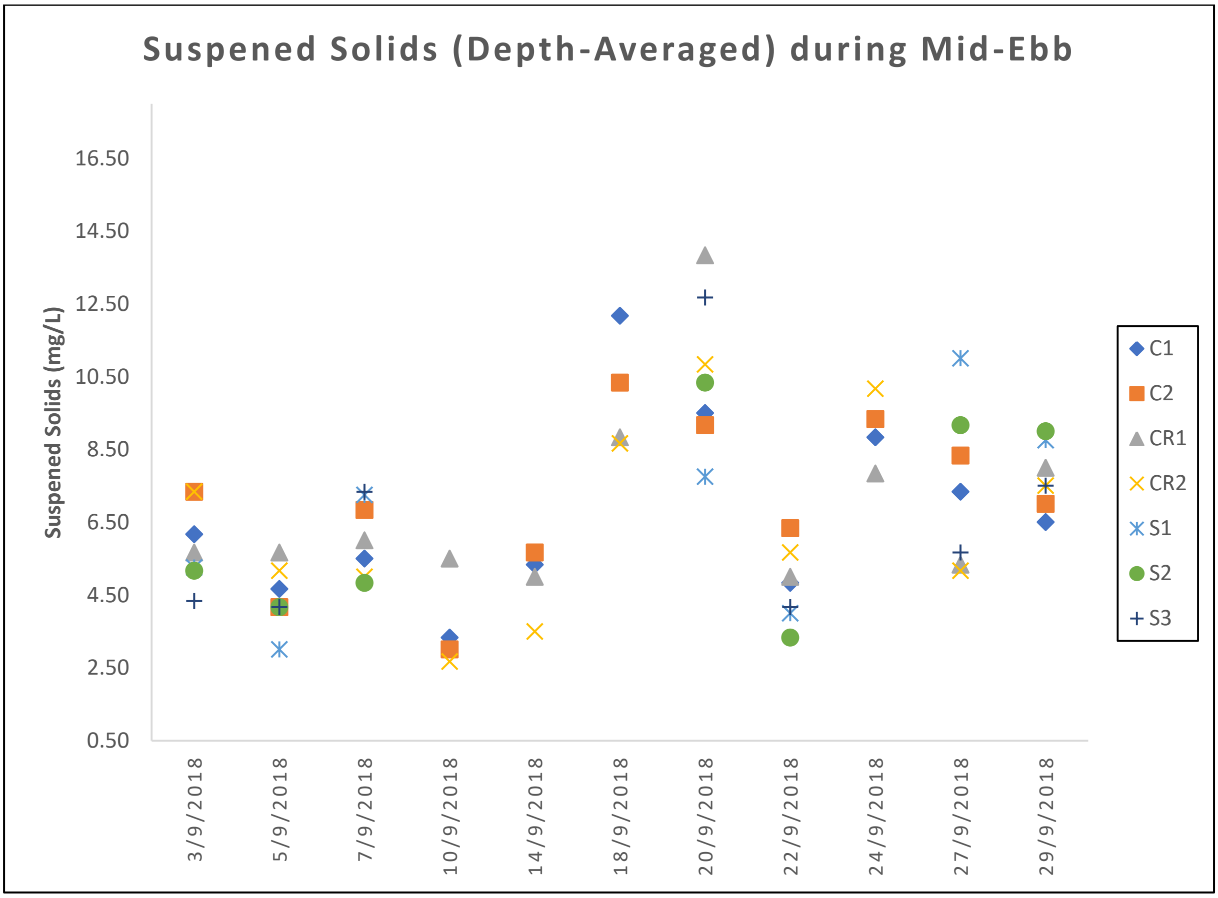
Note: The Action and Limit Level of turbidity can be referred to **Table 2.7** of the monthly EM & A report.



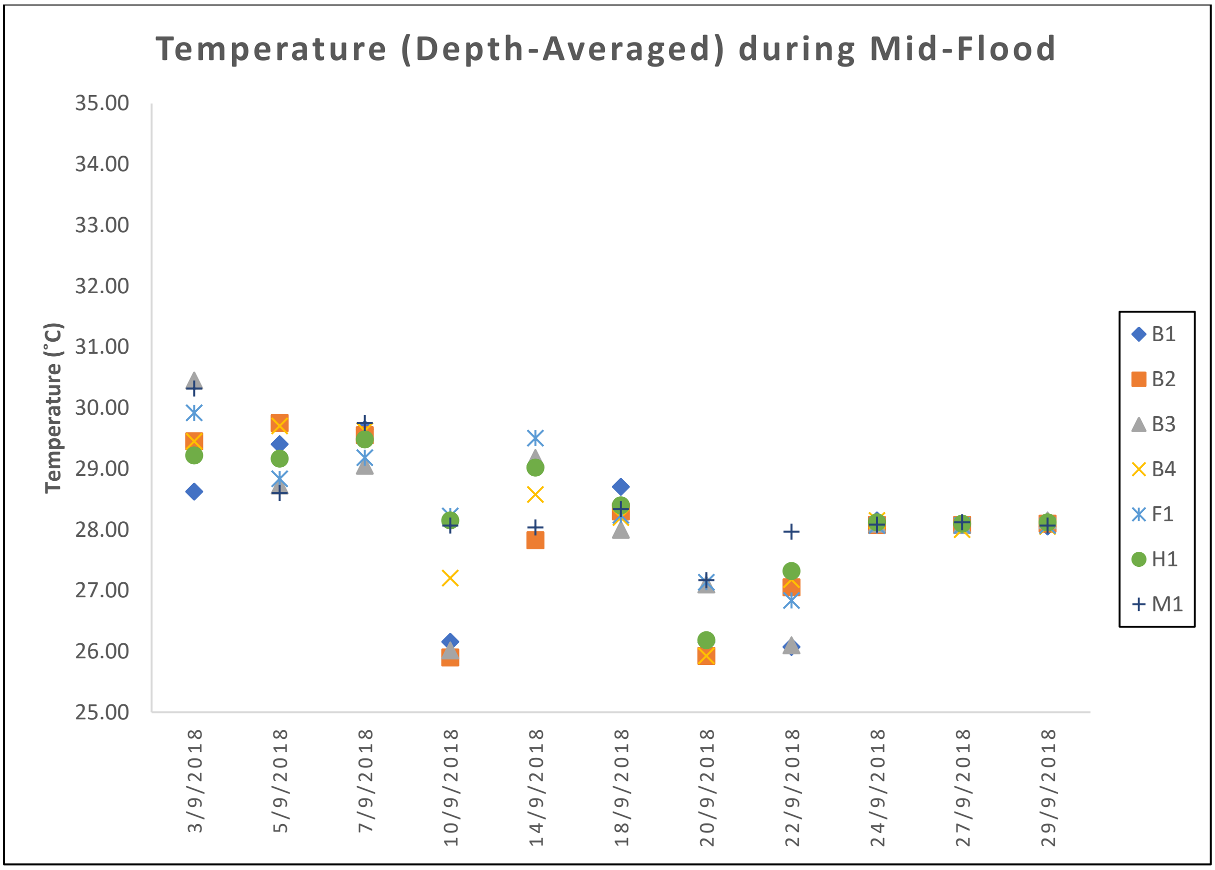


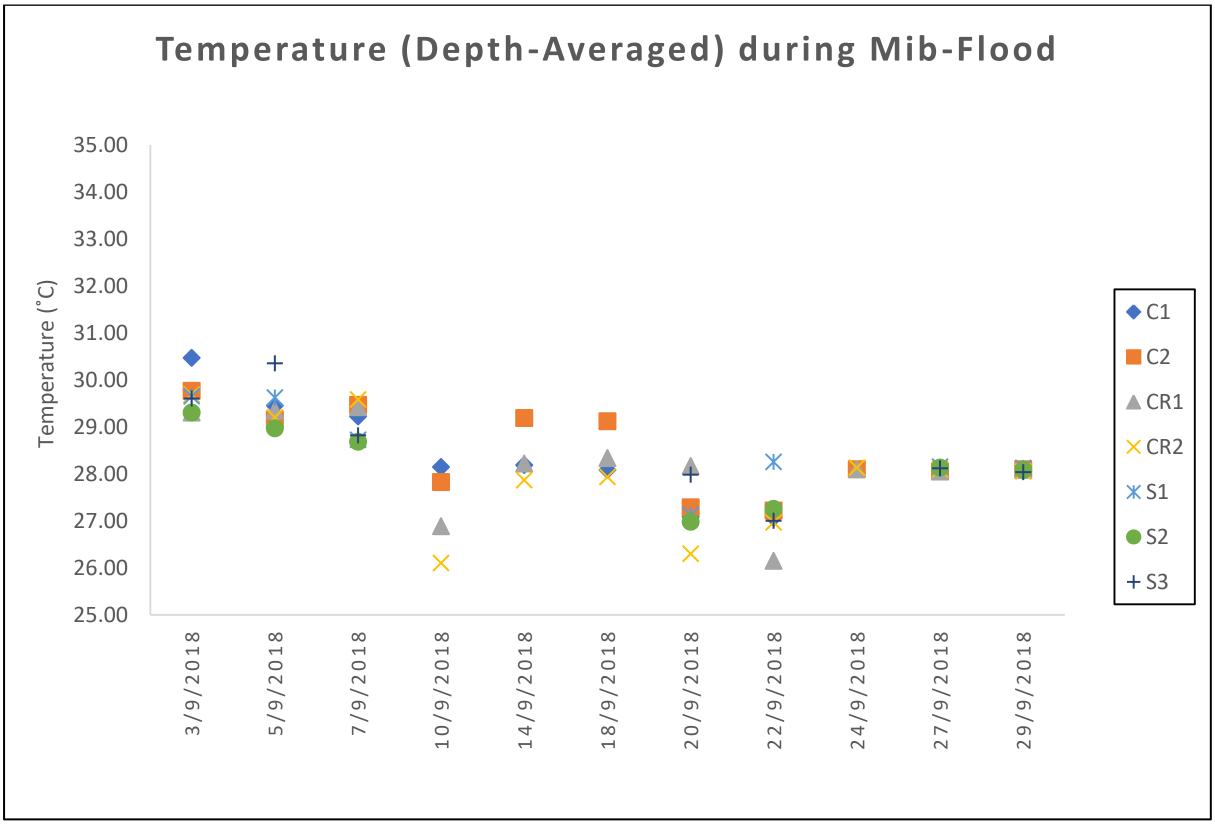
Note: The Action and Limit Level of suspened solids can be referred to **Table 2.7** of the monthly EM & A report.



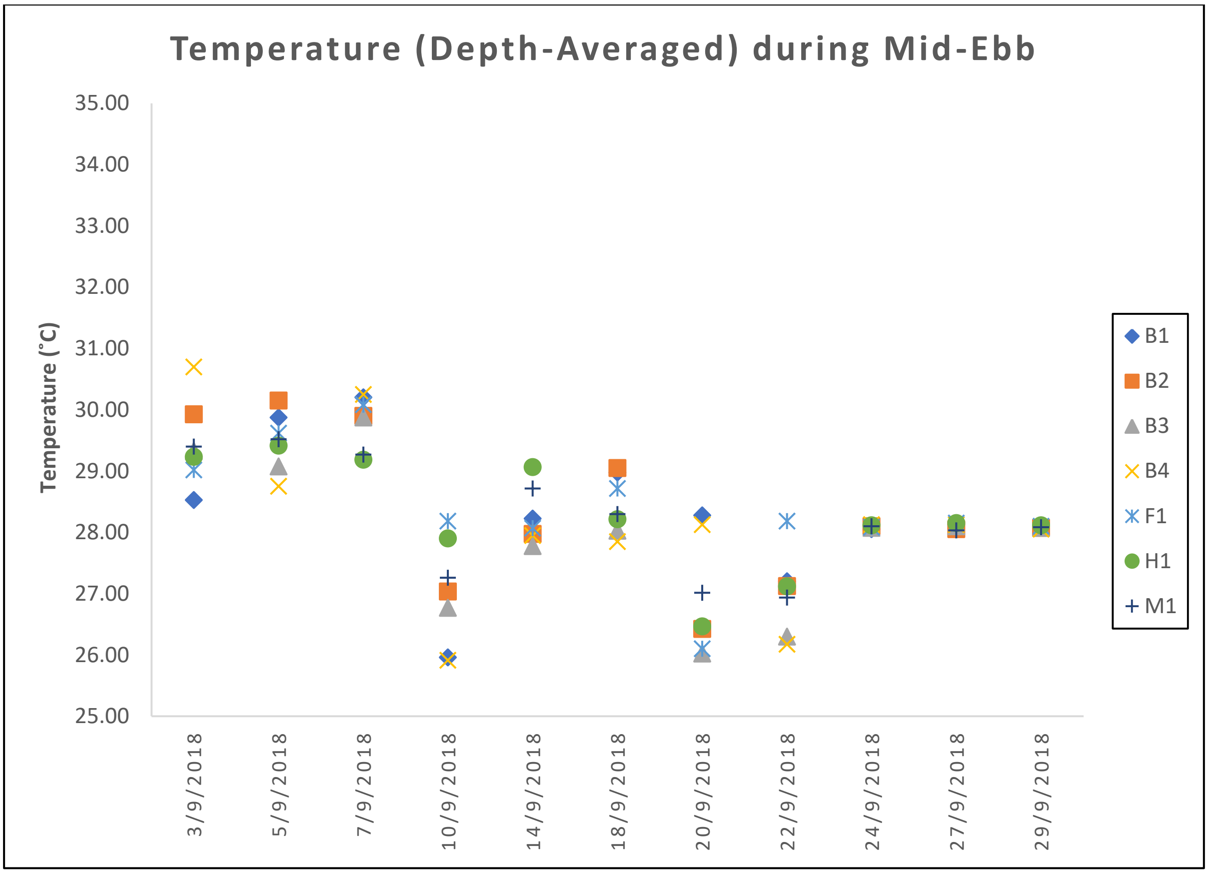


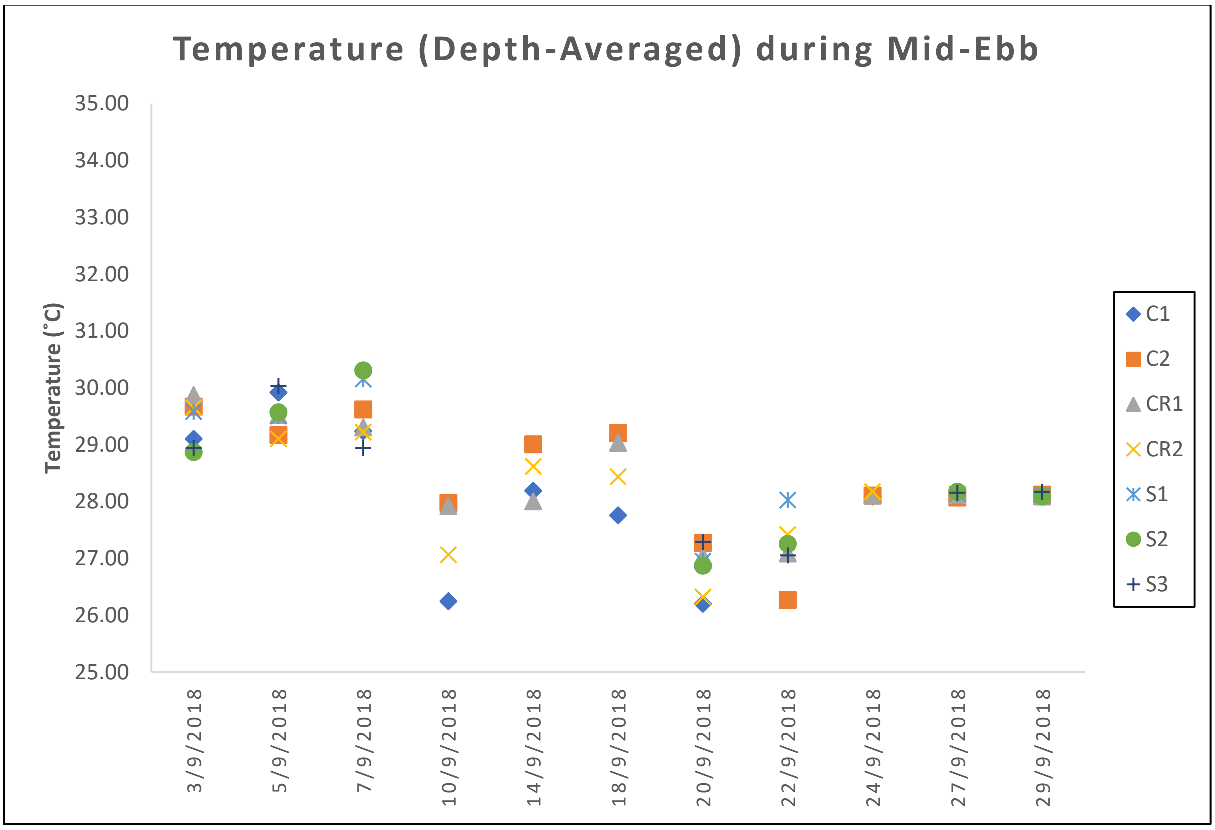
Note: The Action and Limit Level of suspened soilds can be referred to **Table 2.7** of the monthly EM & A report.



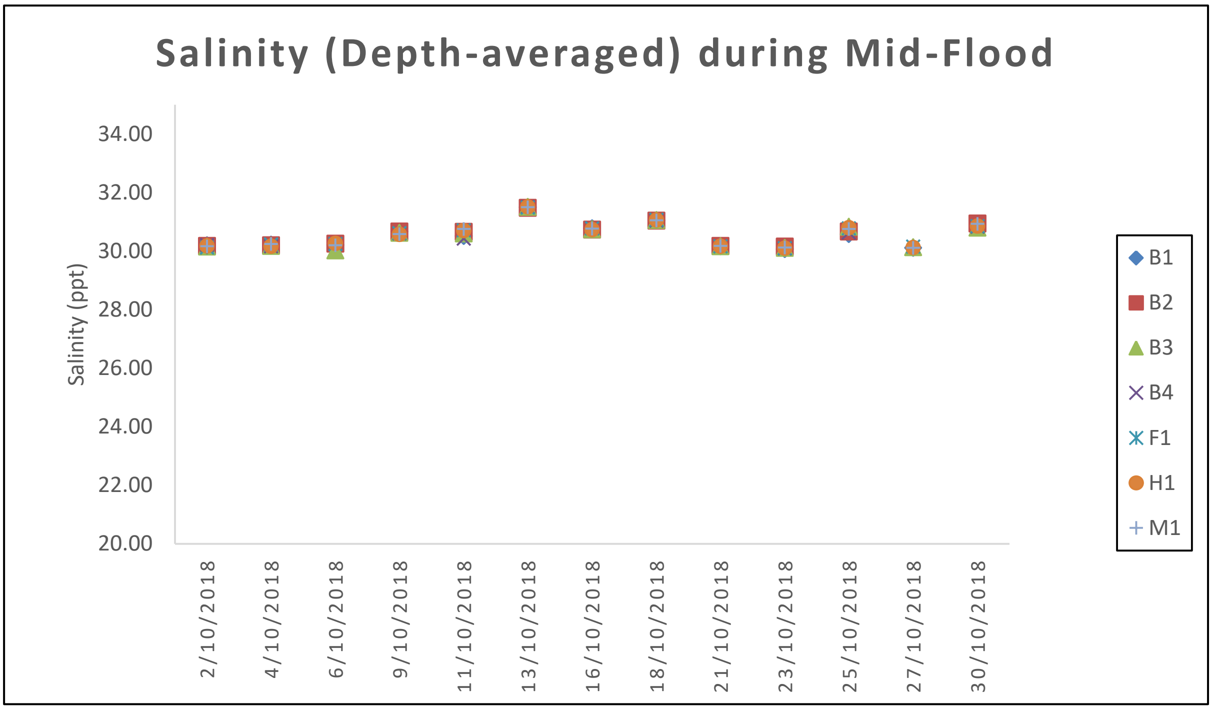


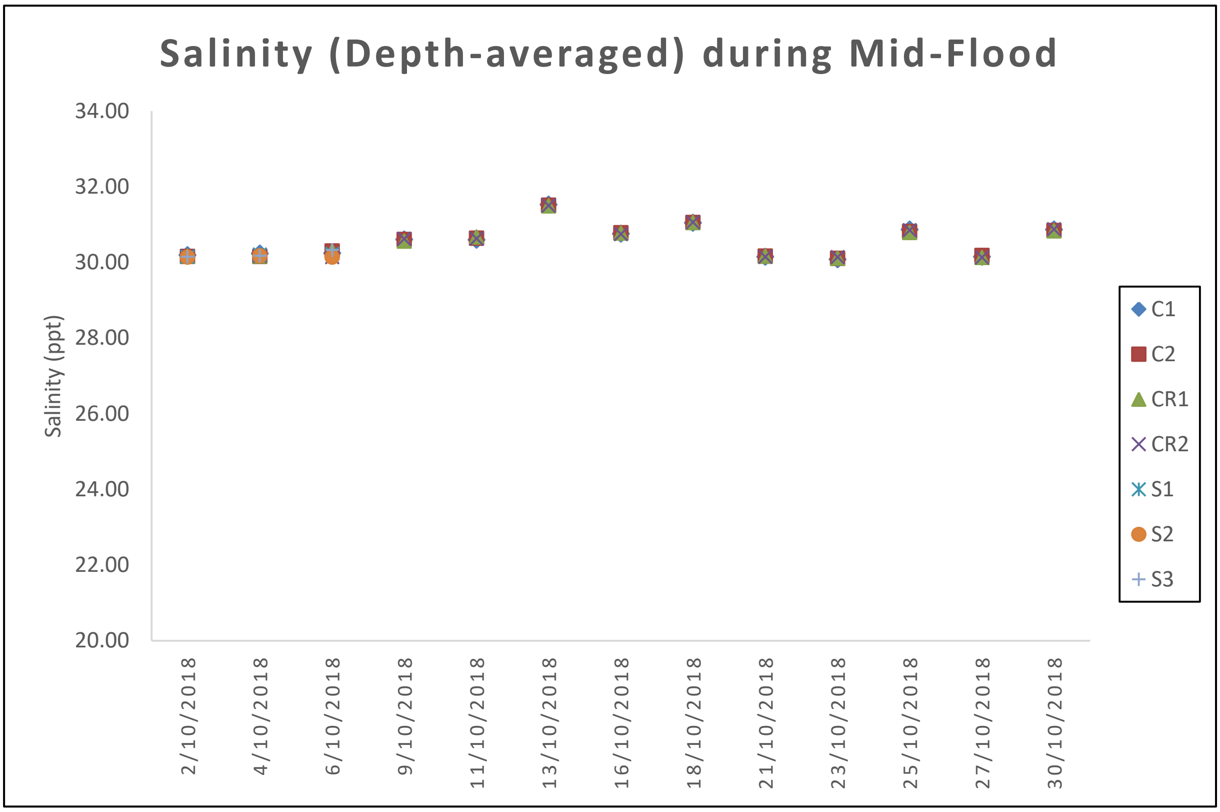
Note: The Action and Limit Level of temperature can be referred to **Table 2.7** of the monthly EM & A report.





Note: The Action and Limit Level of temperature can be referred to **Table 2.7** of the monthly EM & A report.


Salinity (Depth-averaged) during Mid-Flood
Salinity (ppt)
34.00
32.00
30.00
28.00
26.00
24.00
22.00
20.00
2/10/2018
4/10/2018
6/10/2018
9/10/2018
11/10/2018
13/10/2018
16/10/2018
18/10/2018
21/10/2018
23/10/2018
25/10/2018
27/10/2018
30/10/2018
B1
B2
B3
B4
F1
H1
M1


Salinity (Depth-averaged) during Mid-Flood
Salinity (ppt)
34.00
32.00
30.00
28.00
26.00
24.00
22.00
20.00
2/10/2018
4/10/2018
6/10/2018
9/10/2018
11/10/2018
13/10/2018
16/10/2018
18/10/2018
21/10/2018
23/10/2018
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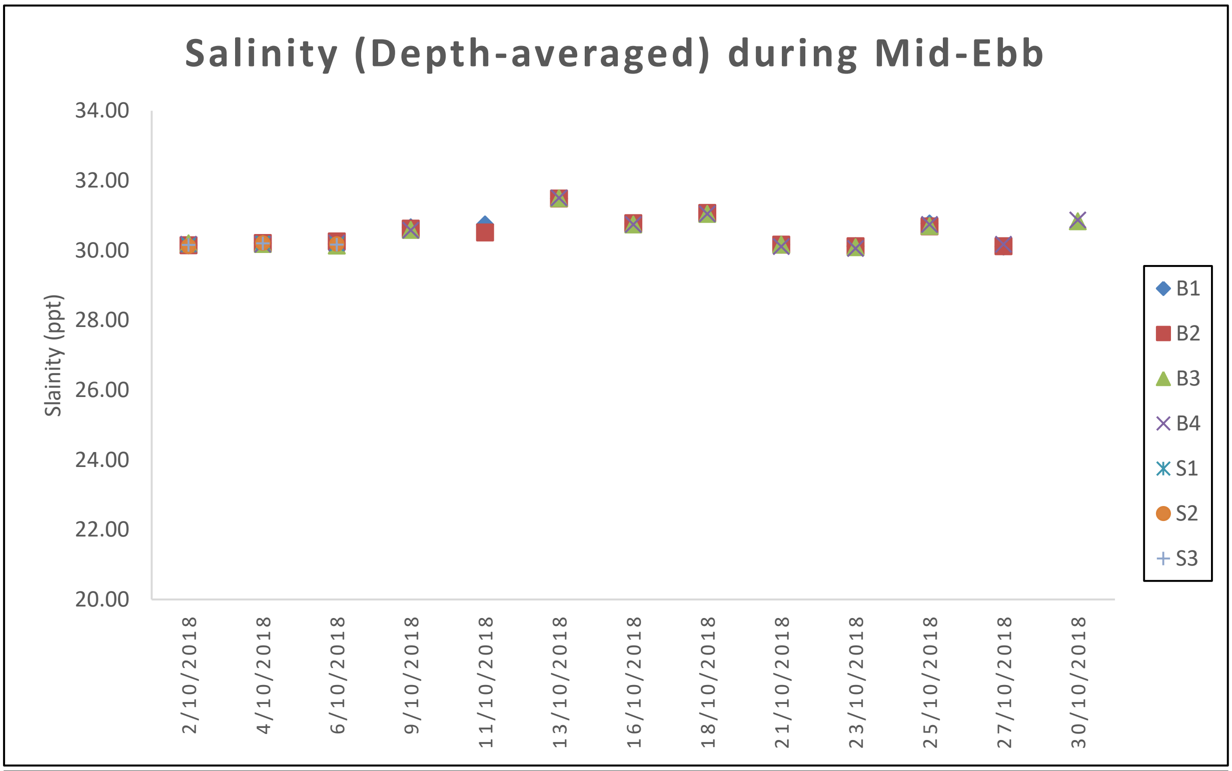
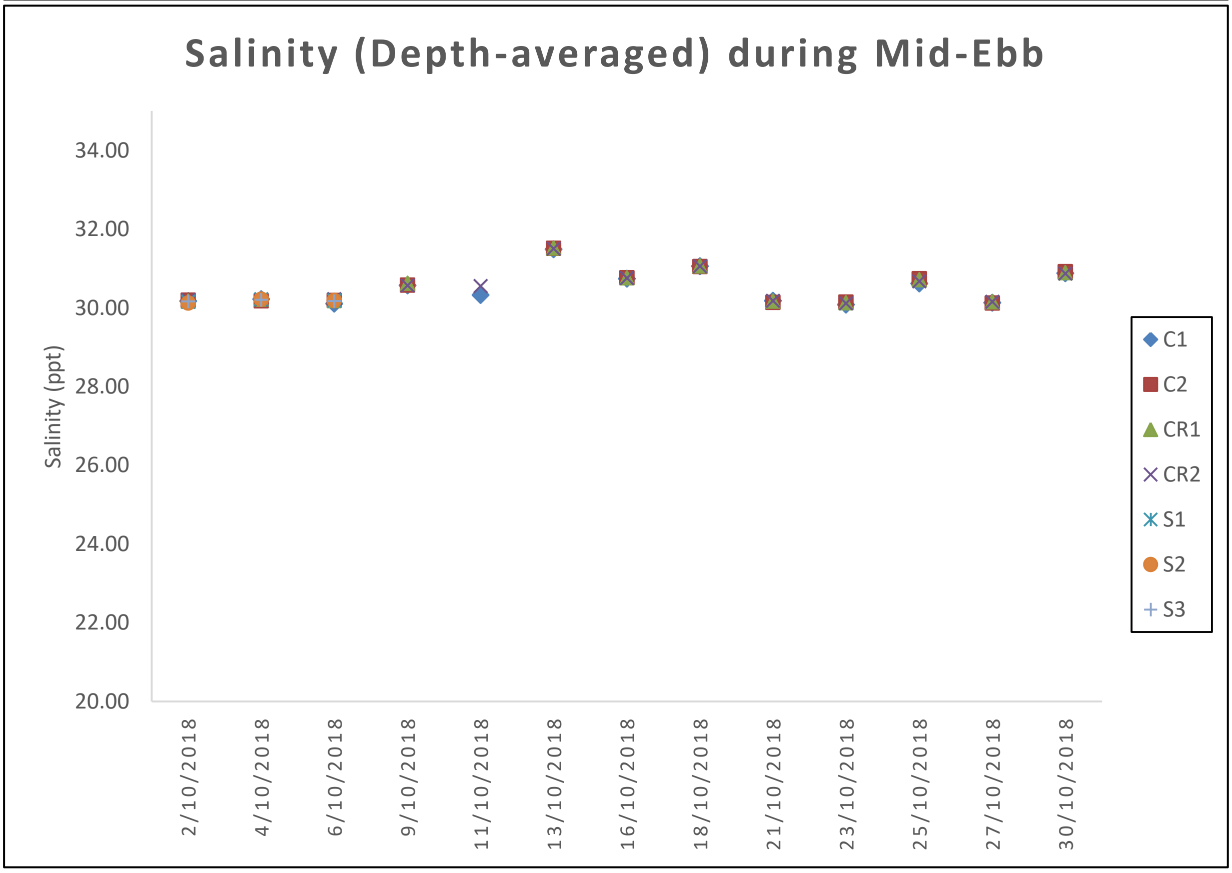
30/10/2018
C1
C2
CR1
CR2
S1
S2
S3


Salinity (Depth-averaged) during Mid-Ebb
Slainity (ppt)
34.00
32.00
30.00
28.00
26.00
24.00
22.00
20.00
2/10/2018
4/10/2018
6/10/2018
9/10/2018
11/10/2018
13/10/2018
16/10/2018
18/10/2018
21/10/2018
23/10/2018
25/10/2018
27/10/2018
30/10/2018
B1
B2
B3
B4
S1
S2
S3


Salinity (Depth-averaged) during Mid-Ebb
Salinity (ppt)
34.00
32.00
30.00
28.00
26.00
24.00
22.00
20.00
2/10/2018
4/10/2018
6/10/2018
9/10/2018
11/10/2018
13/10/2018
16/10/2018
18/10/2018
21/10/2018
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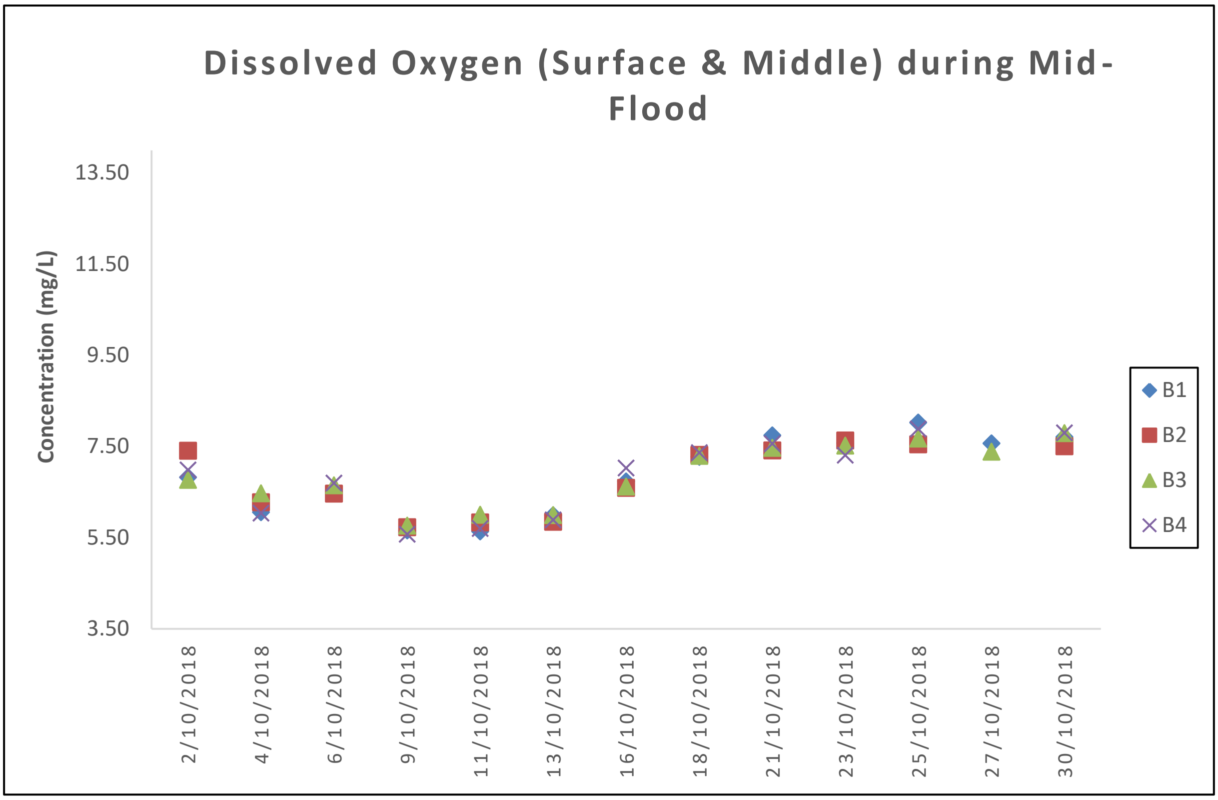
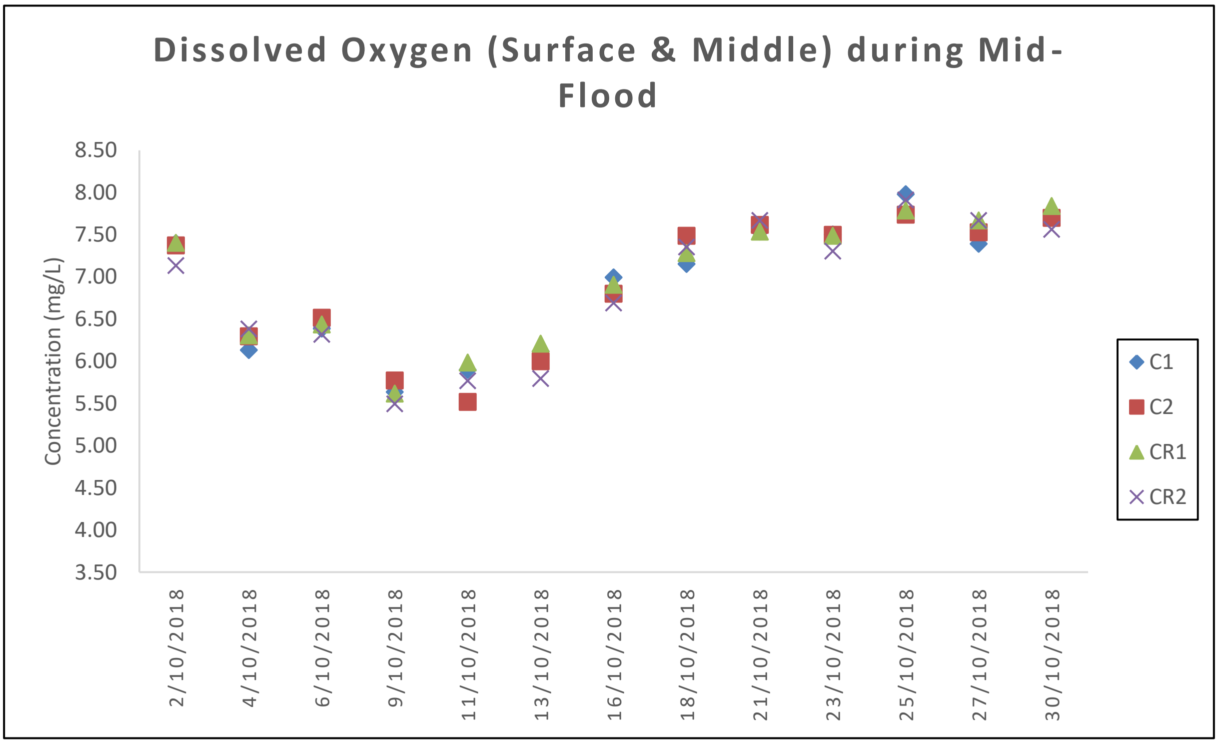
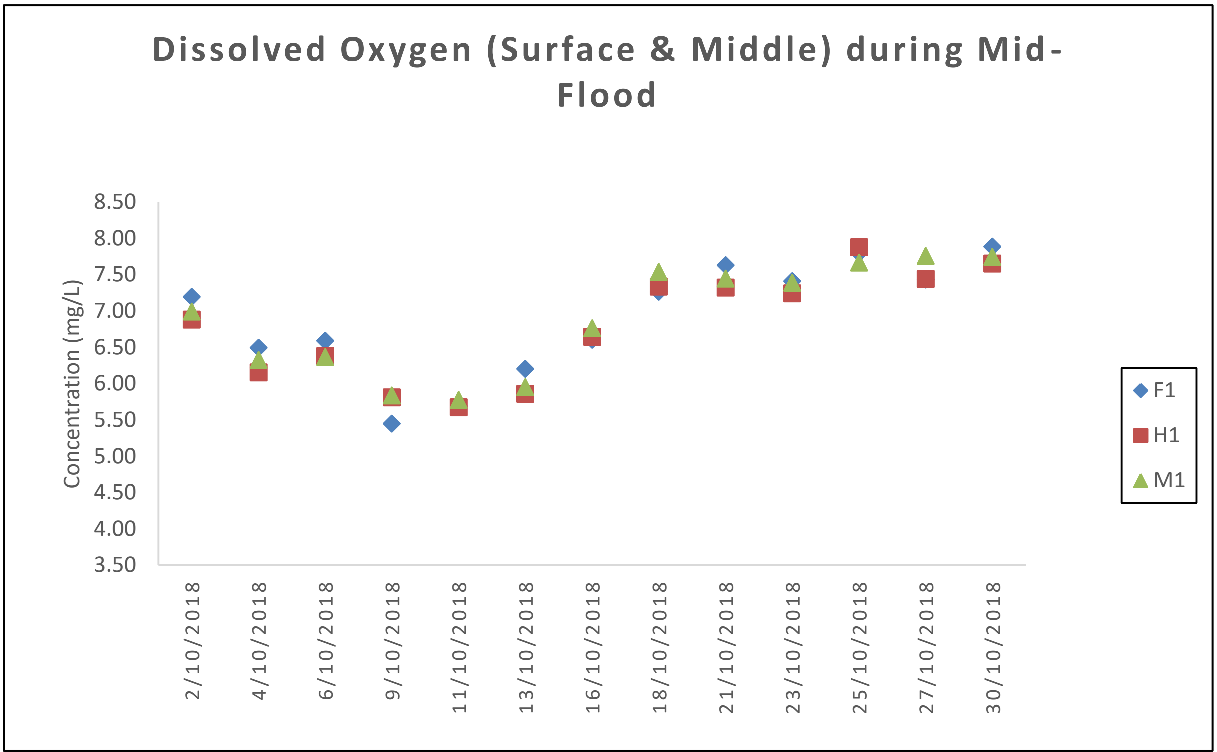
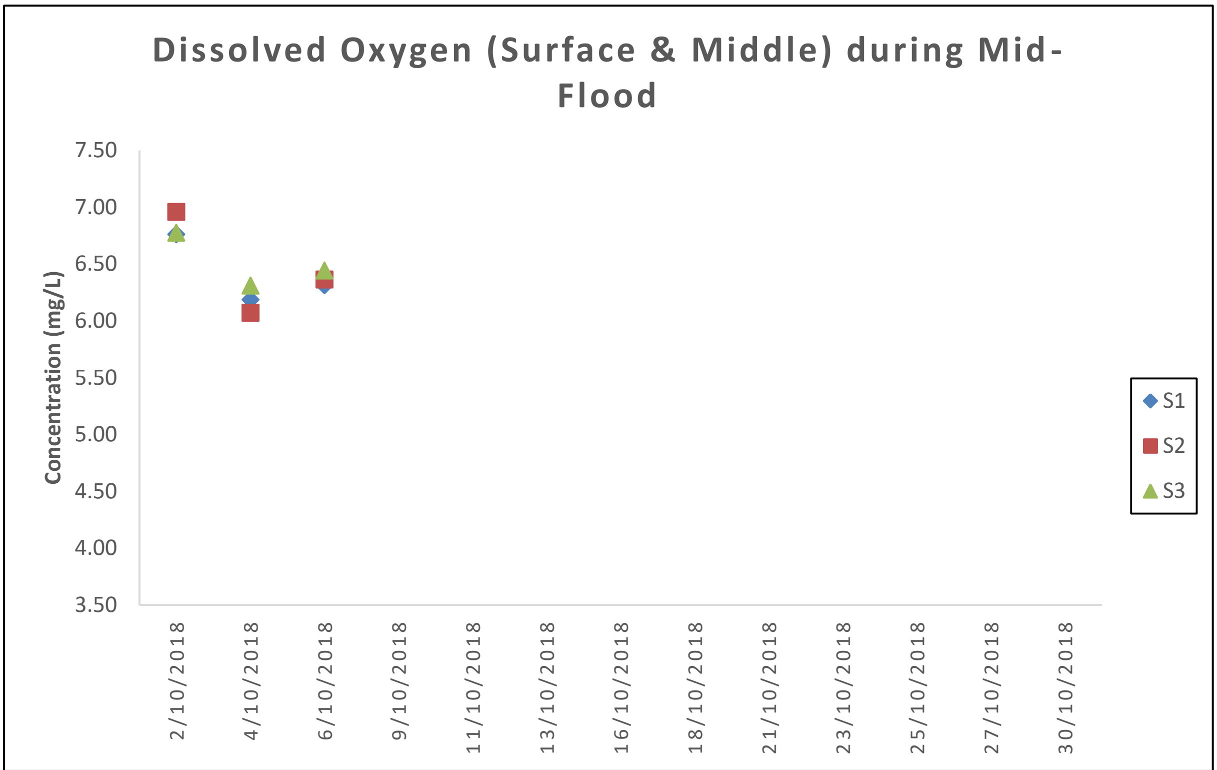
C1
C2
CR1
CR2
S1
S2
S3



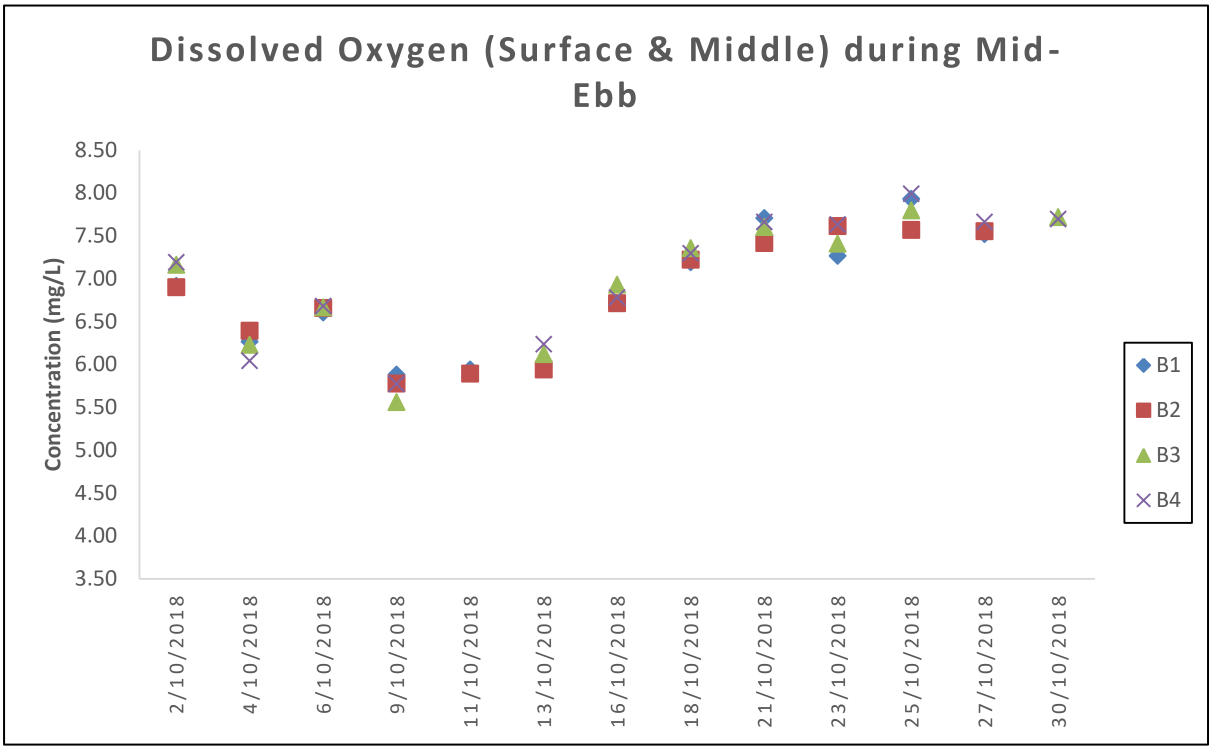


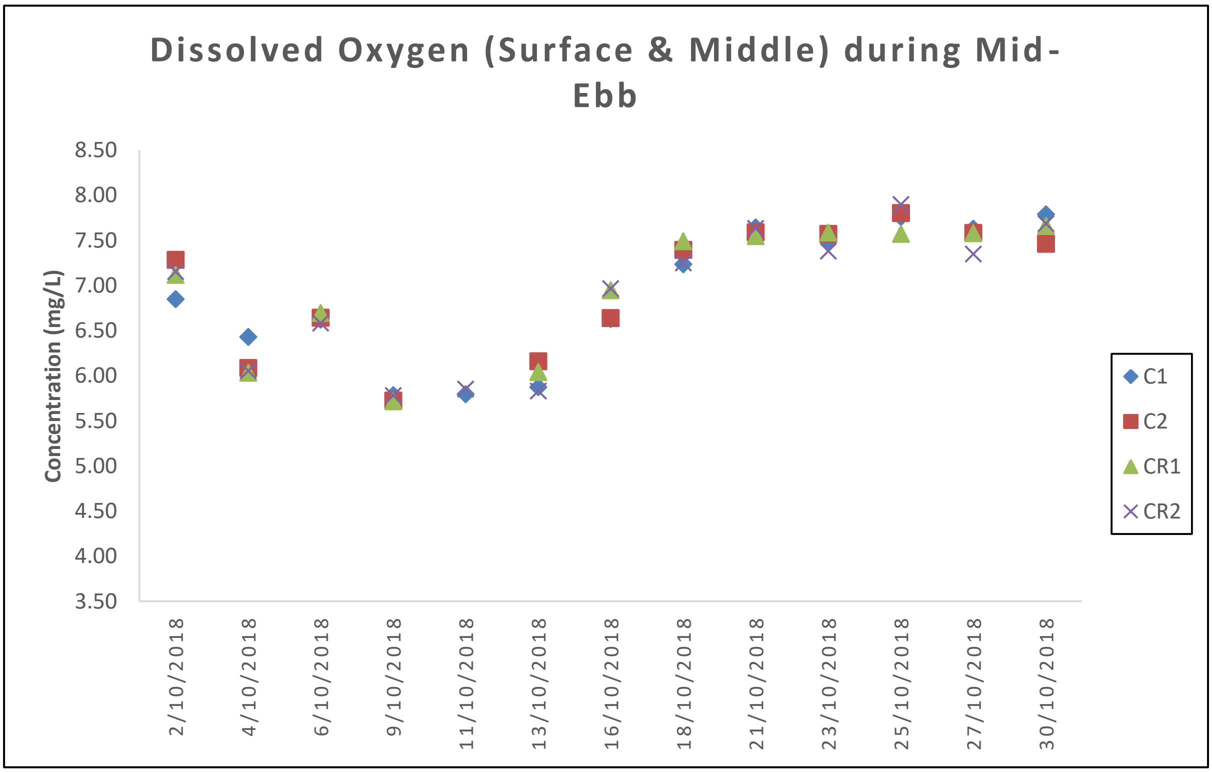
Note: The Action and Limit Level of Dissolved oxygen can be referred to **Table 2.7** of the monthly EM &A report.



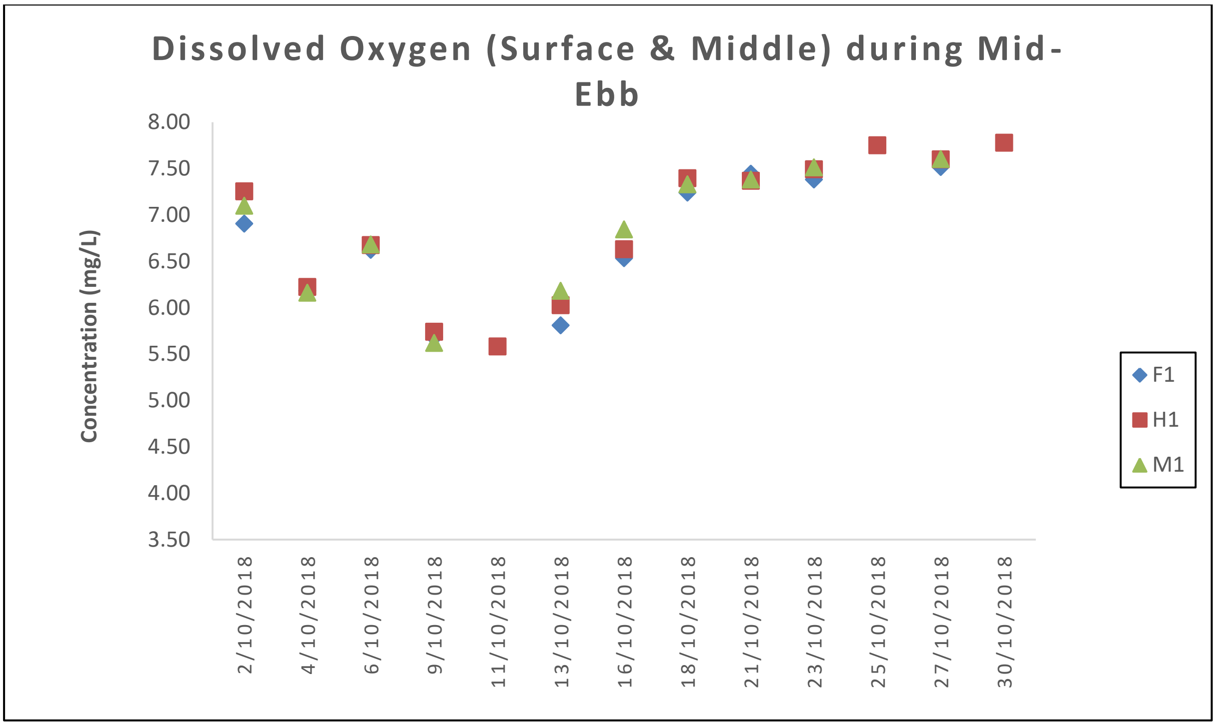


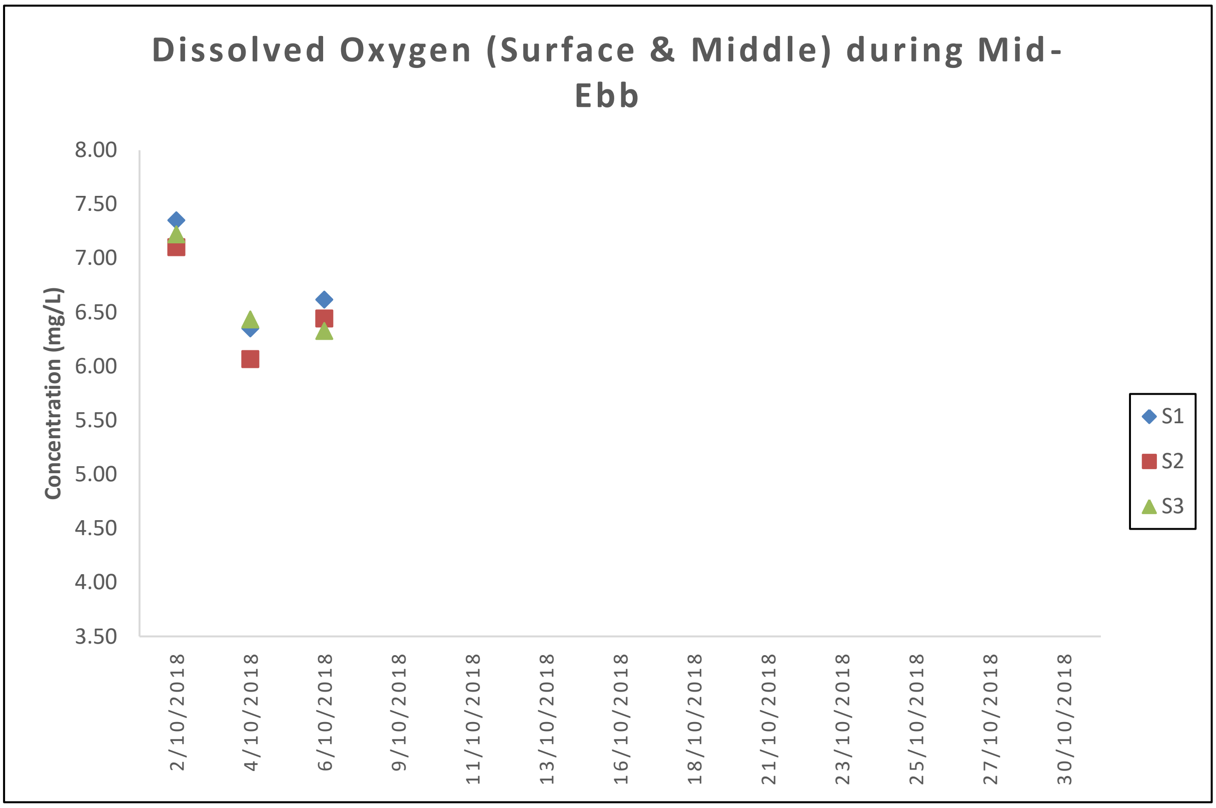
Note: The Action and Limit Level of Dissolved oxygen can be referred to **Table 2.7** of the monthly EM &A report.



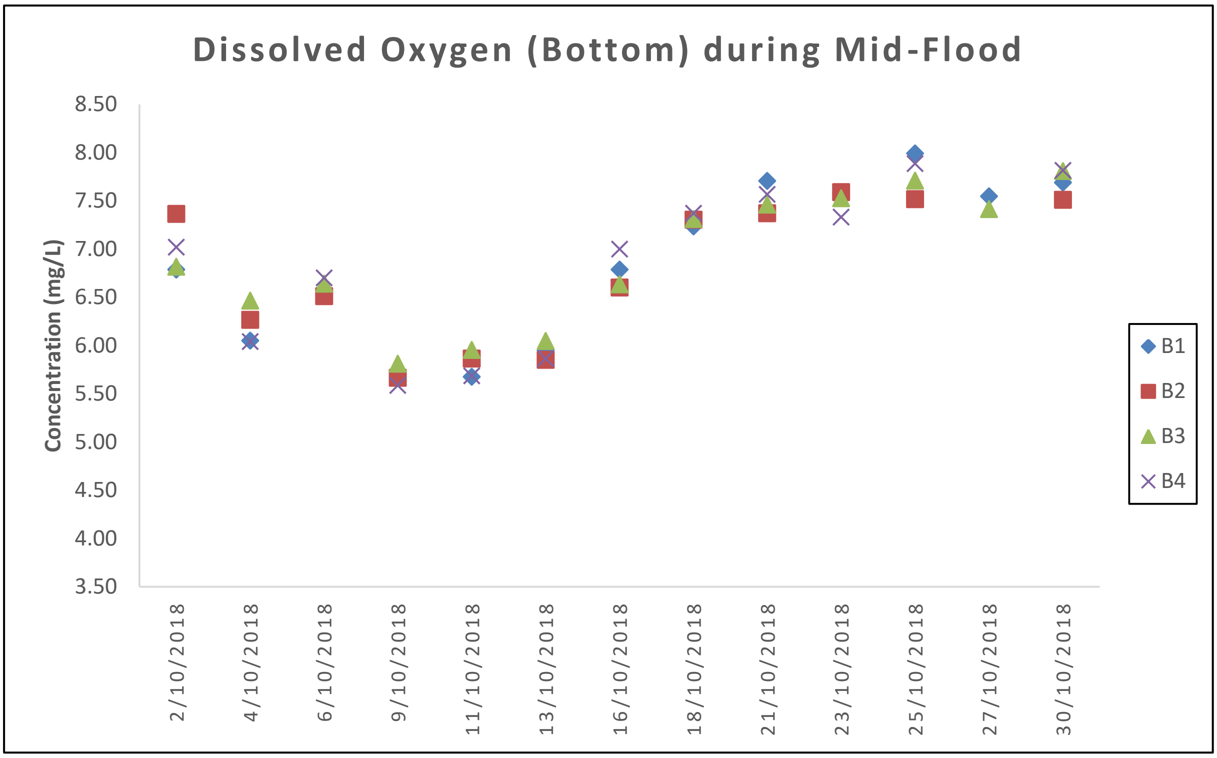


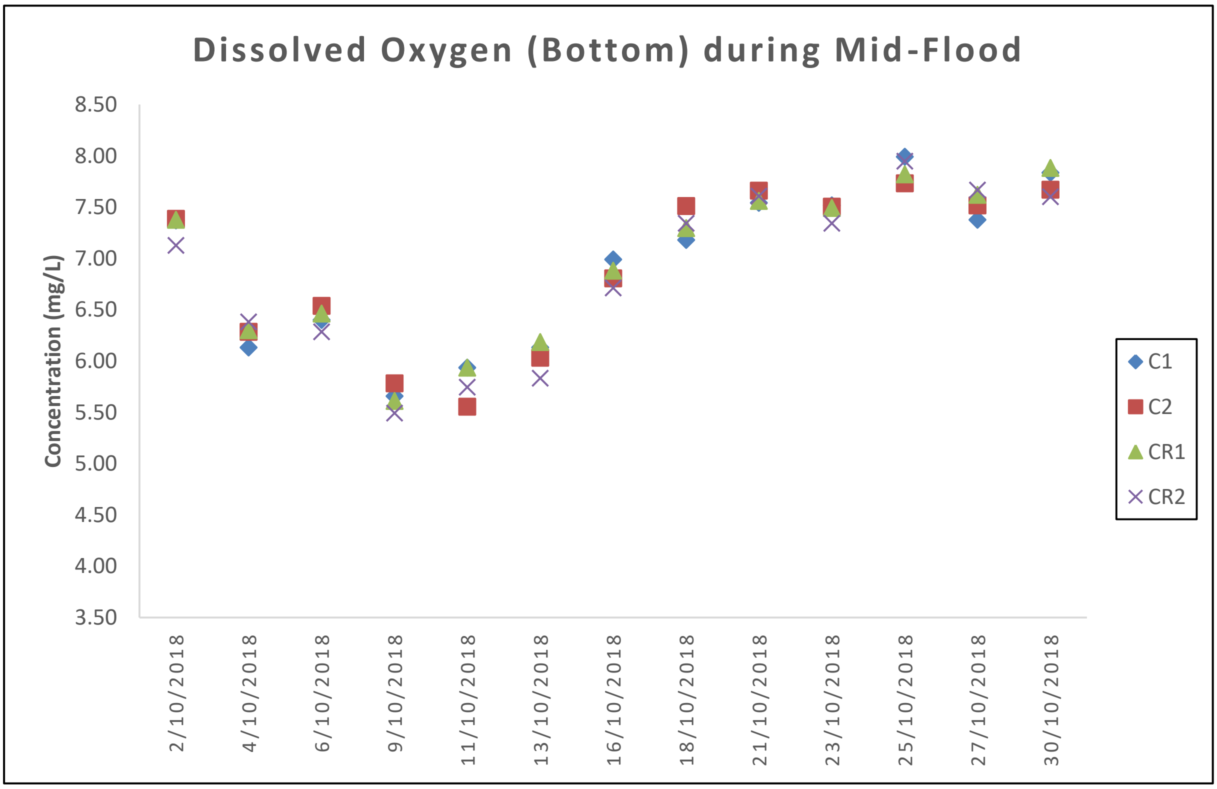
Note: The Action and Limit Level of Dissolved oxygen can be referred to **Table 2.7** of the monthly EM &A report.



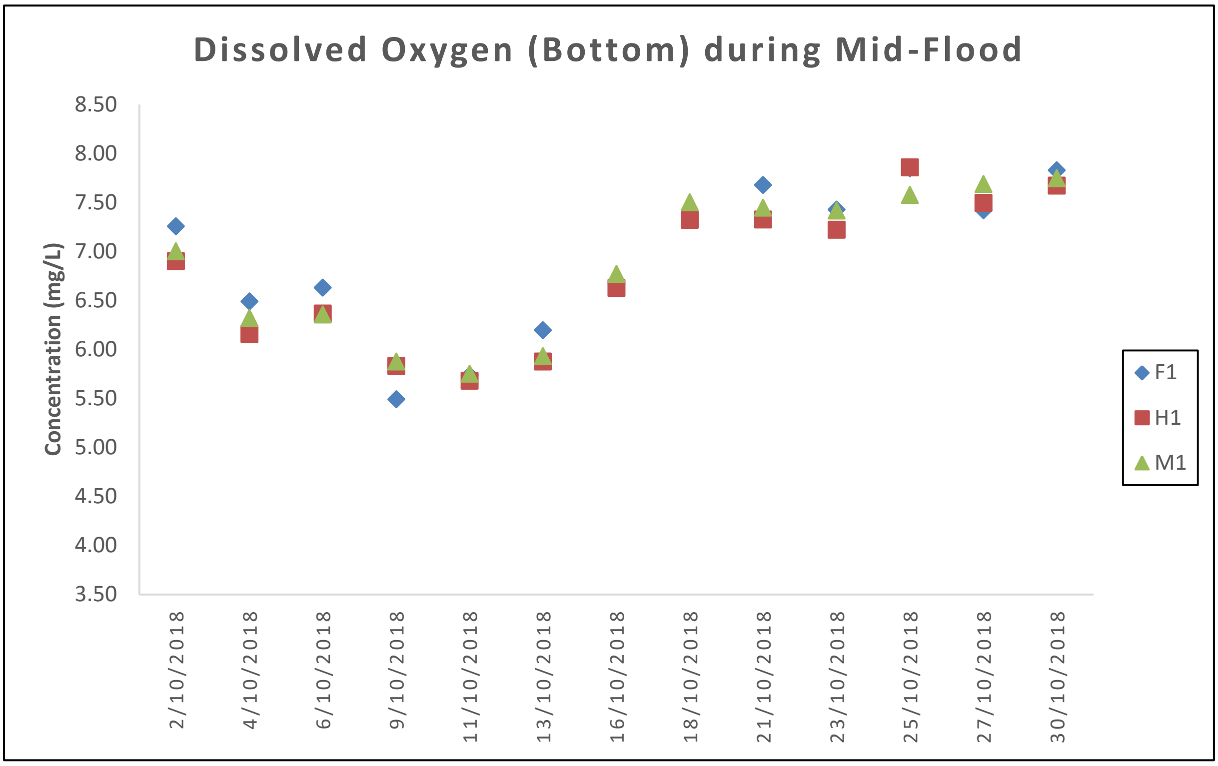


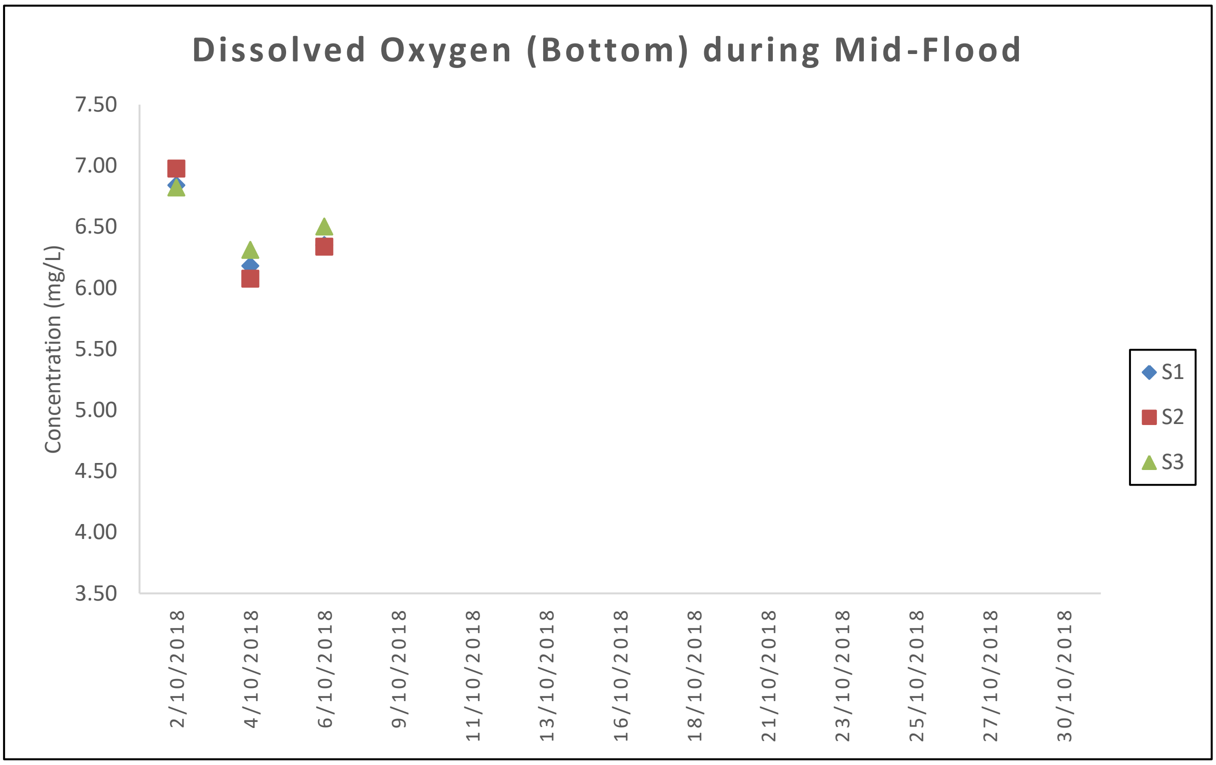
Note: The Action and Limit Level of Dissolved oxygen can be referred to **Table 2.7** of the monthly EM &A report.



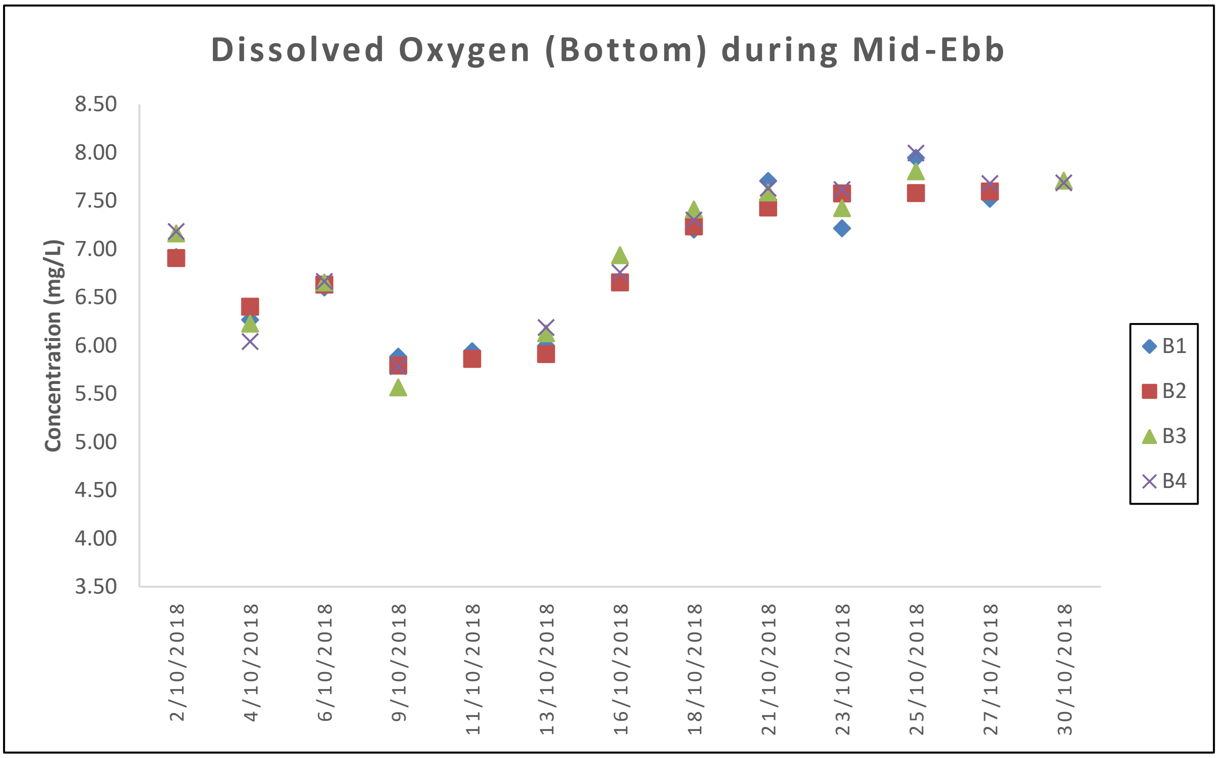


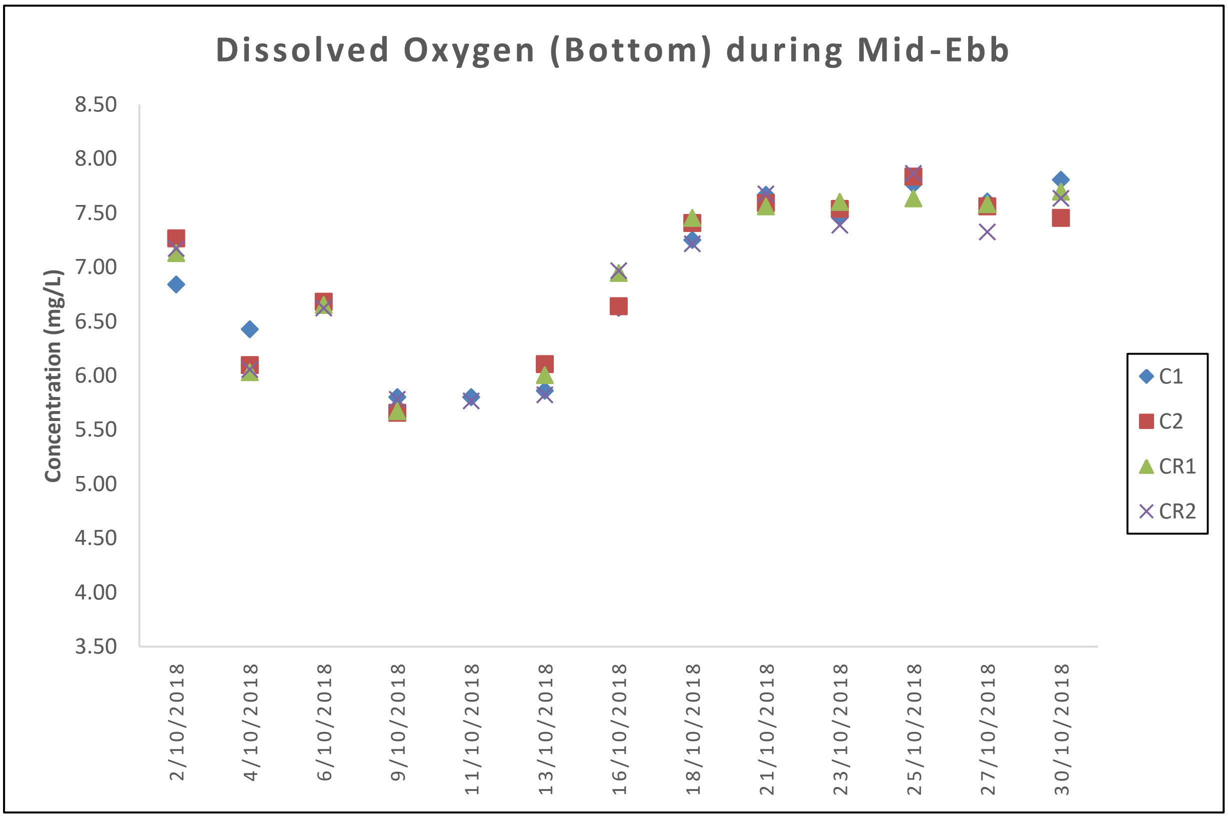
Note: The Action and Limit Level of Dissolved oxygen can be referred to **Table 2.7** of the monthly EM &A report.



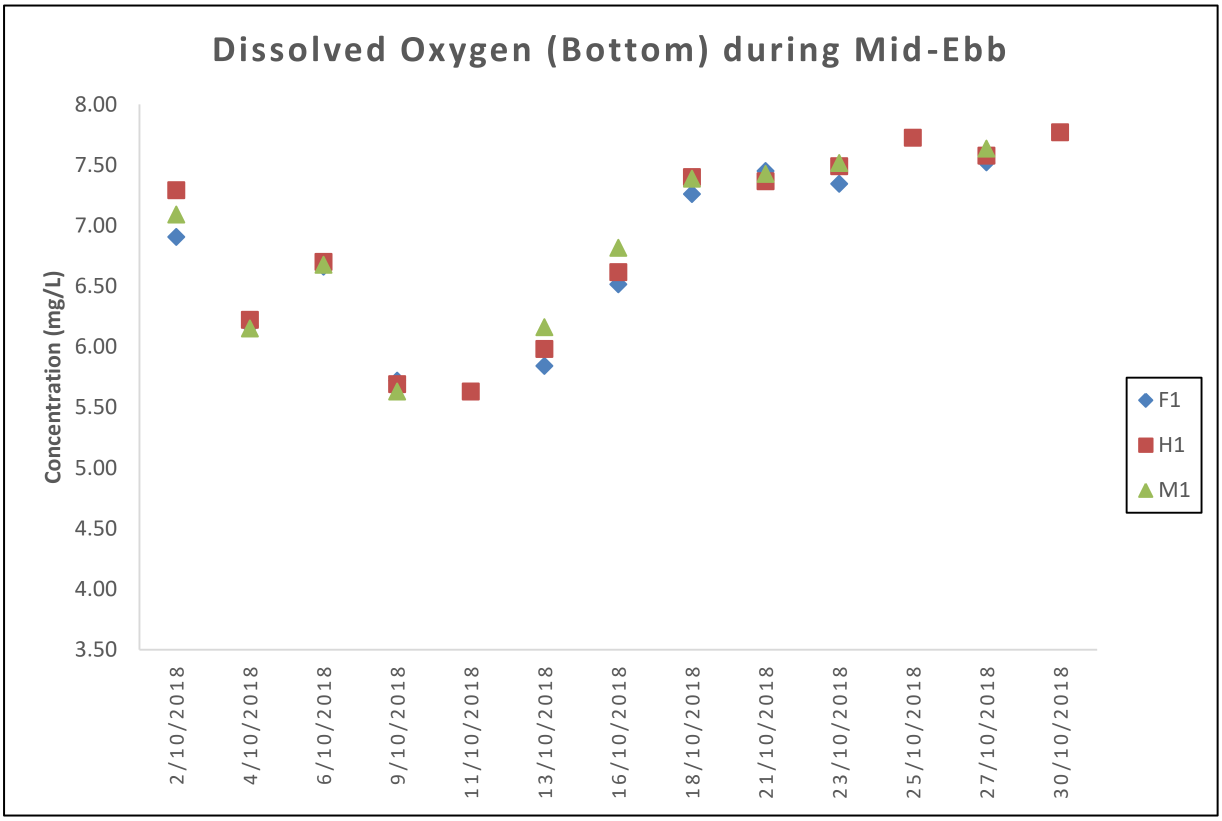


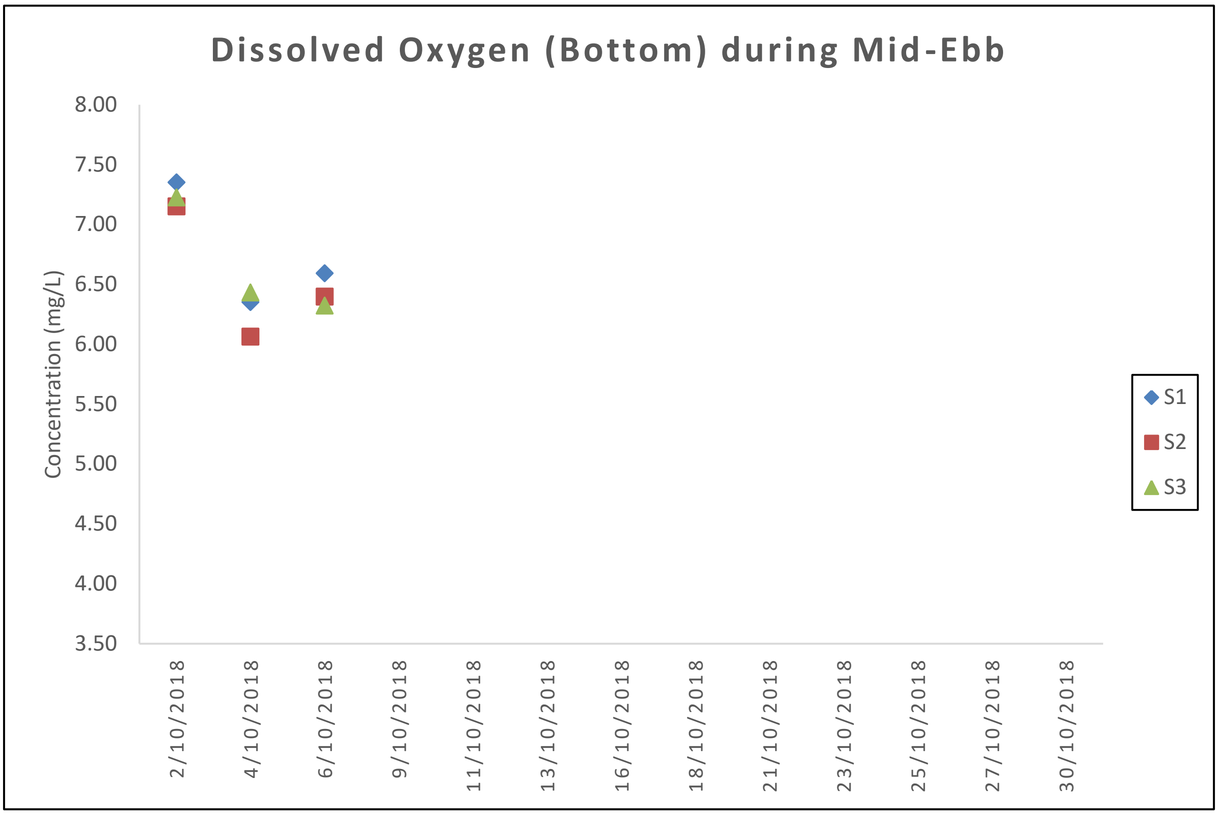
Note: The Action and Limit Level of Dissolved oxygen can be referred to **Table 2.7** of the monthly EM &A report



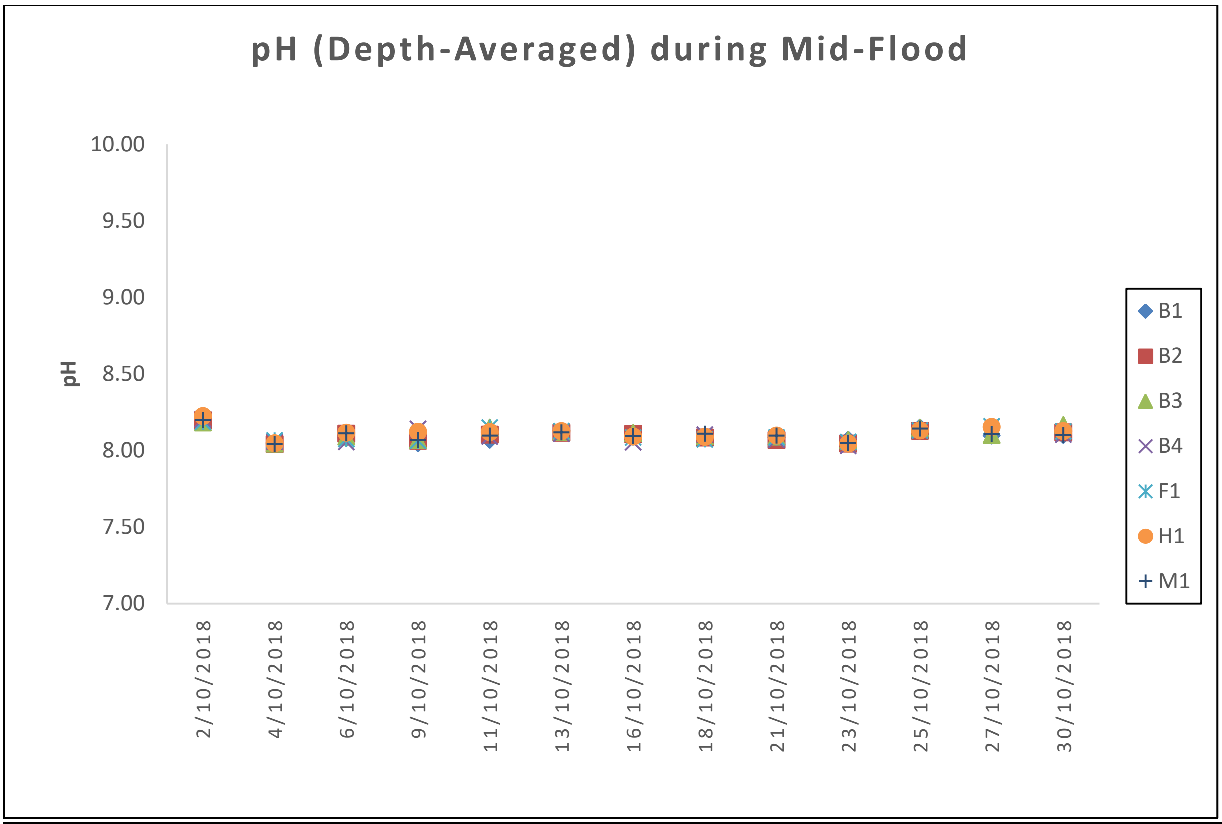


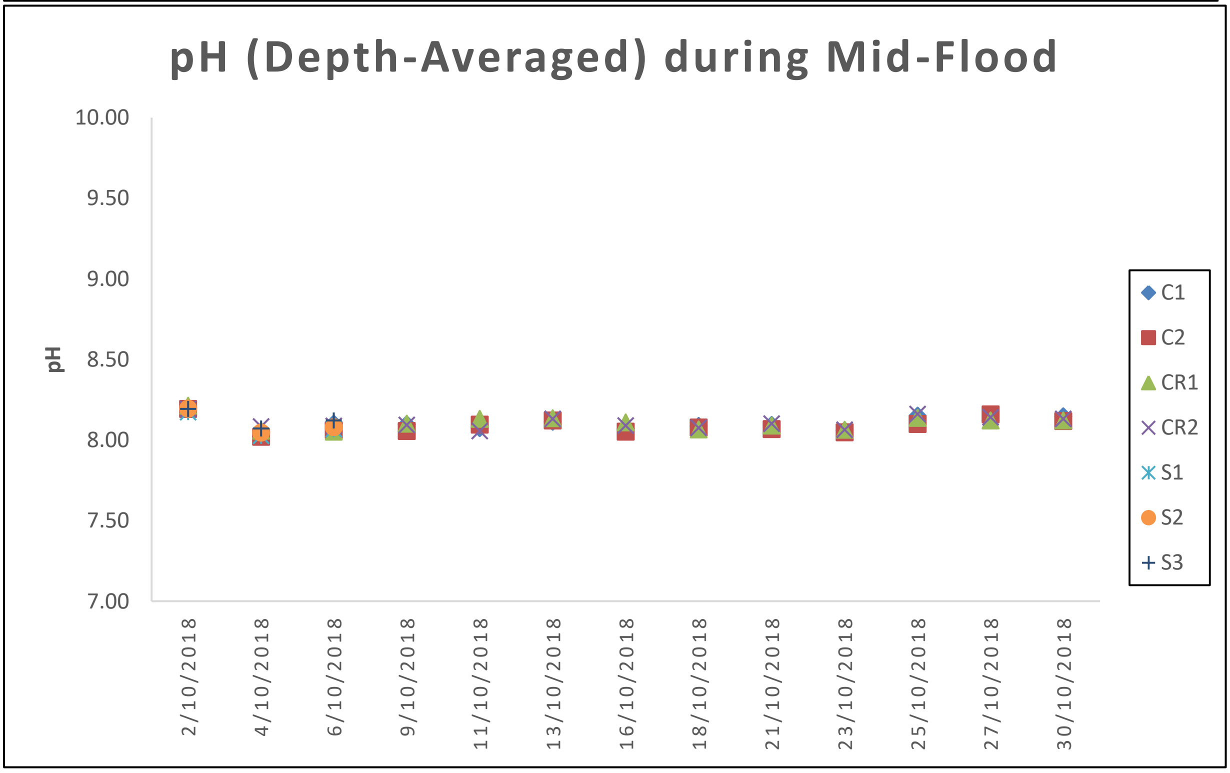
Note: The Action and Limit Level of Dissolved oxygen can be referred to **Table 2.7** of the monthly EM &A report.

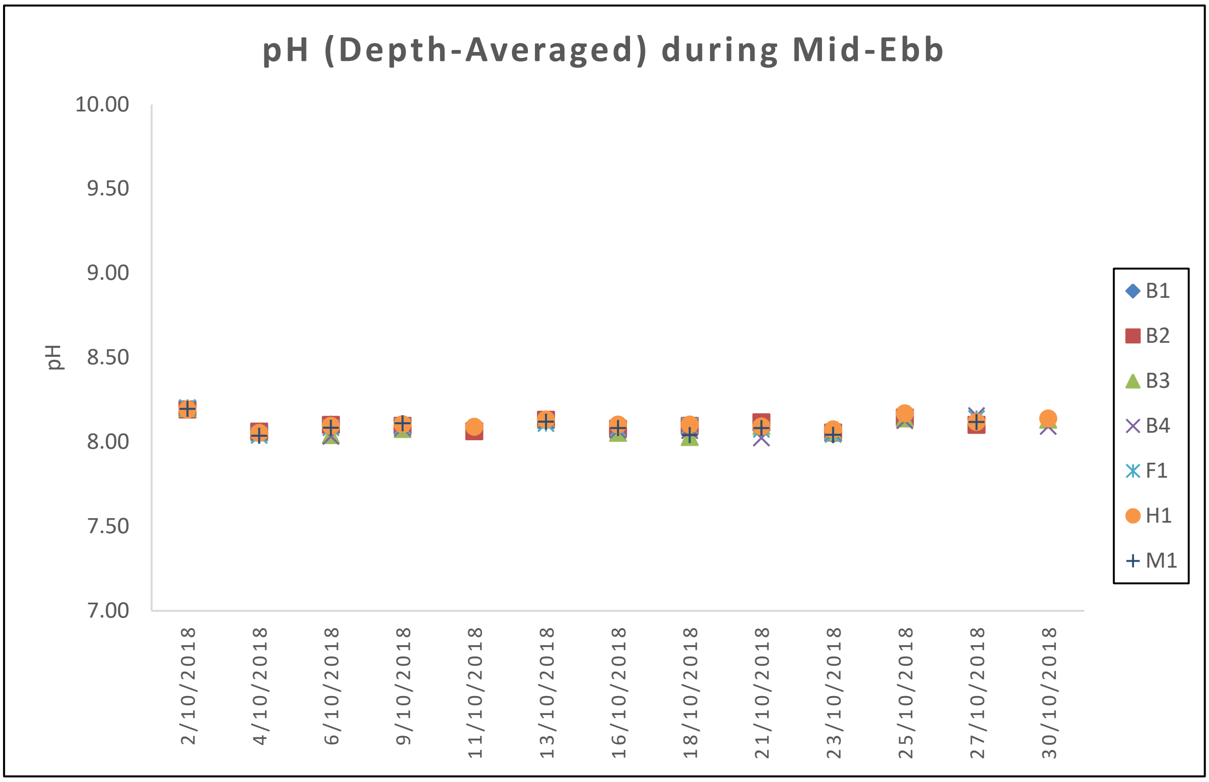




Note: The Action and Limit Level of Dissolved oxygen can be referred to **Table 2.7** of the monthly EM &A report.


pH (Depth-Averaged) during Mid-Flood
10.00
9.50
9.00
8.50
8.00
7.50
7.00
pH
2/10/2018
4/10/2018
6/10/2018
9/10/2018
11/10/2018
13/10/2018
16/10/2018
18/10/2018
21/10/2018
23/10/2018
25/10/2018
27/10/2018
30/10/2018
B1
B2
B3
B4
F1
H1
M1


pH (Depth-Averaged) during Mid-Flood
10.00
9.50
9.00
8.50
8.00
7.50
7.00
pH
2/10/2018
4/10/2018
6/10/2018
9/10/2018
11/10/2018
13/10/2018
16/10/2018
18/10/2018
21/10/2018
23/10/2018
25/10/2018
27/10/2018
30/10/2018
C1
C2
CR1
CR2
S1
S2
S3


pH (Depth-Averaged) during Mid-Ebb
pH
10.00
9.50
9.00
8.50
8.00
7.50
7.00
2/10/2018
4/10/2018
6/10/2018
9/10/2018
11/10/2018
13/10/2018
16/10/2018
18/10/2018
21/10/2018
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B1
B2
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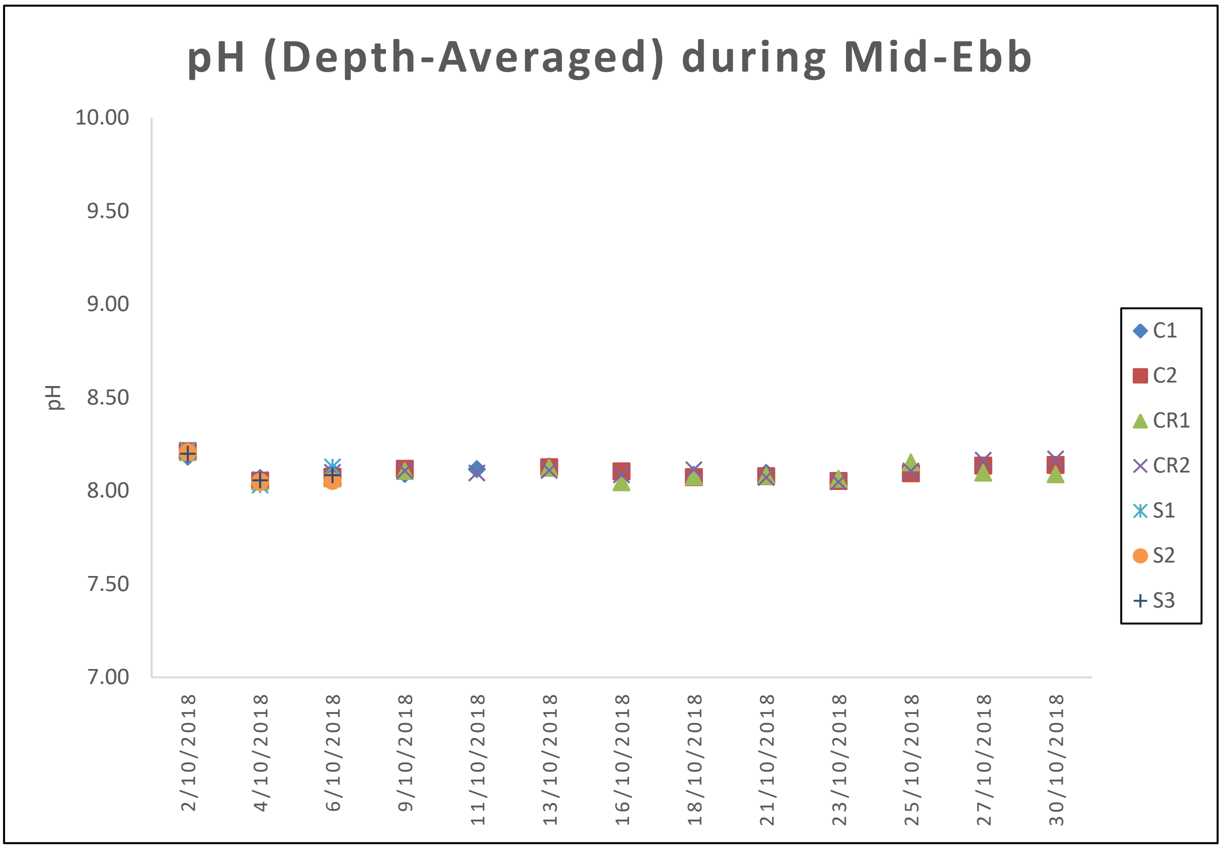
B4
F1
H1
M1


pH (Depth-Averaged) during Mid-Ebb
pH
10.00
9.50
9.00
8.50
8.00
7.50
7.00
2/10/2018
4/10/2018
6/10/2018
9/10/2018
11/10/2018
13/10/2018
16/10/2018
18/10/2018
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23/10/2018
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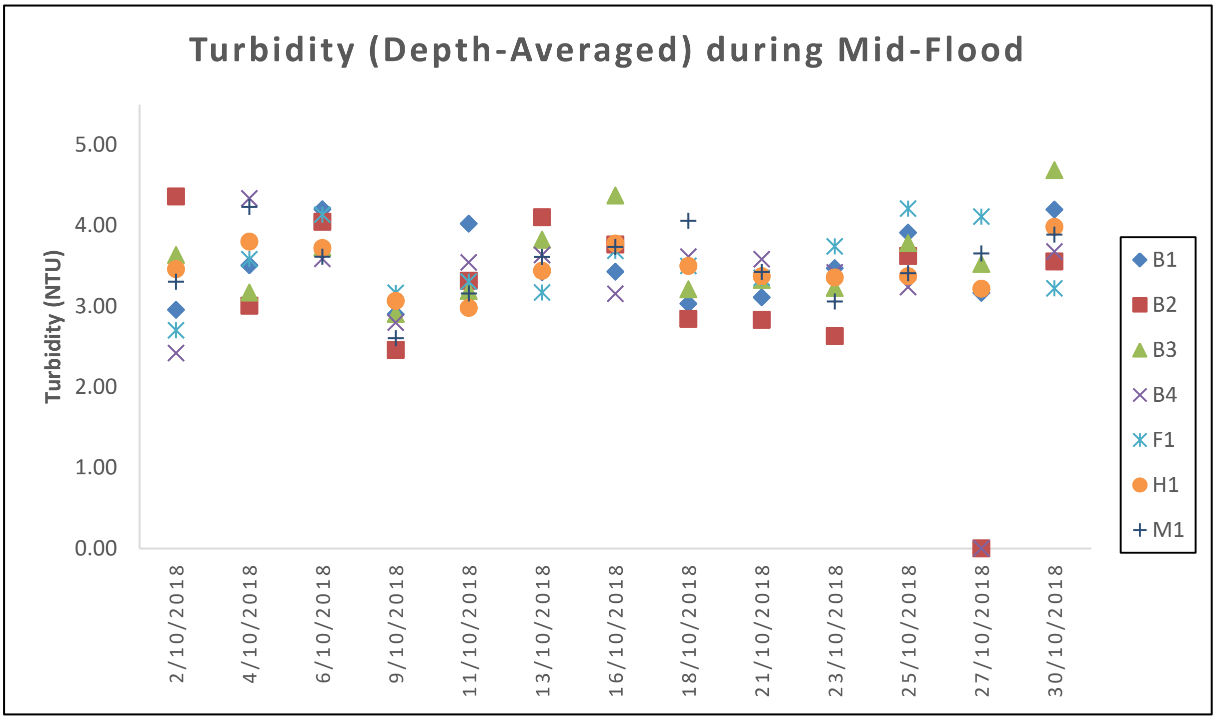
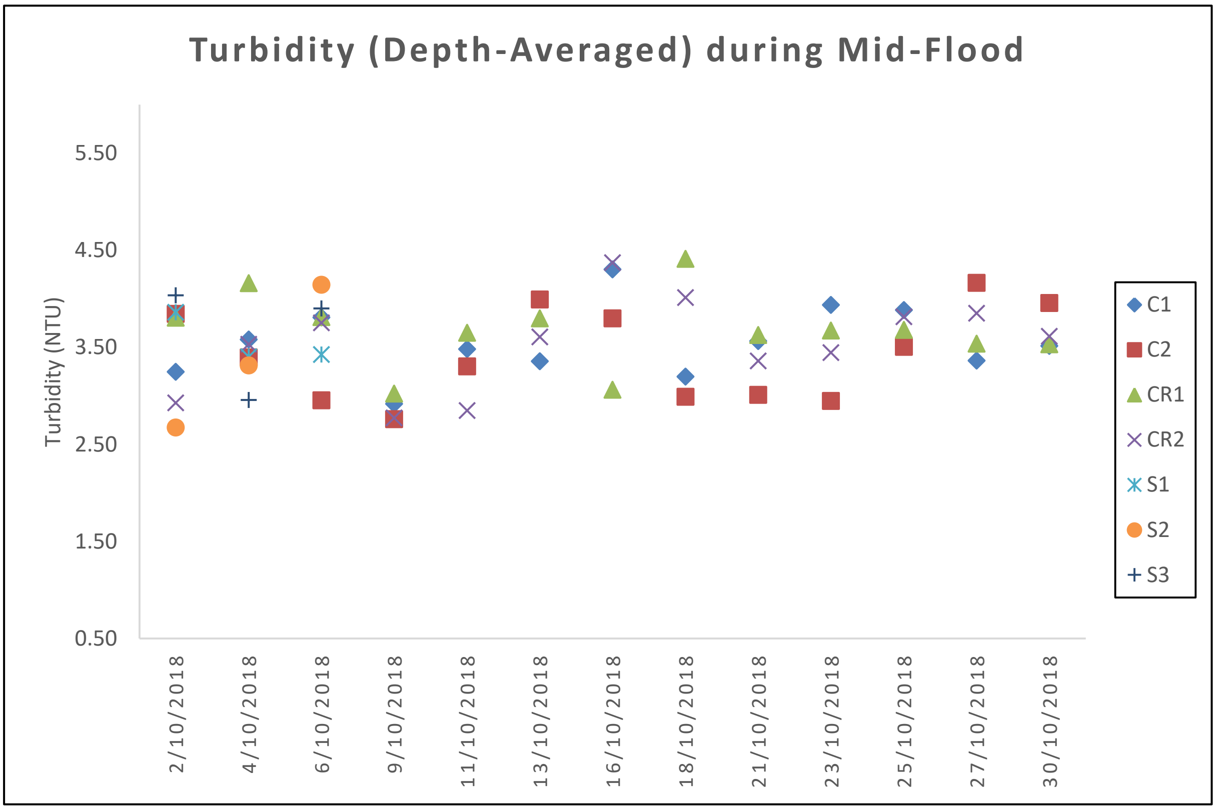
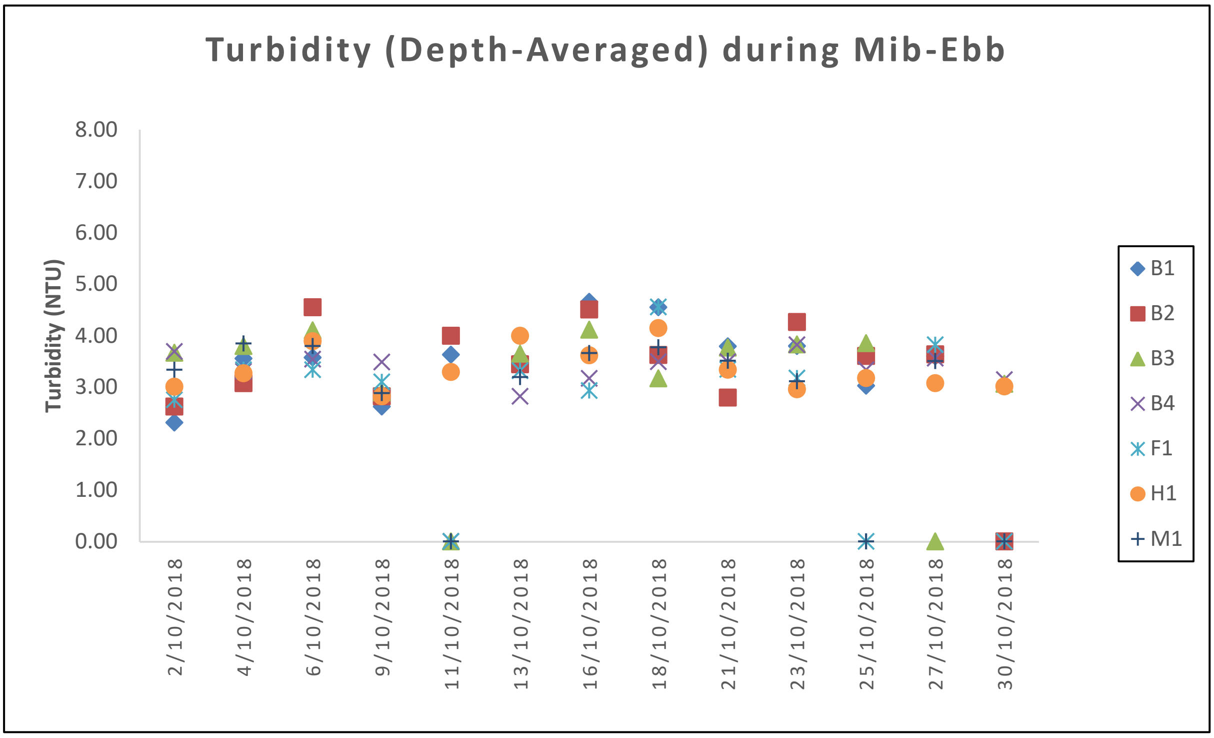
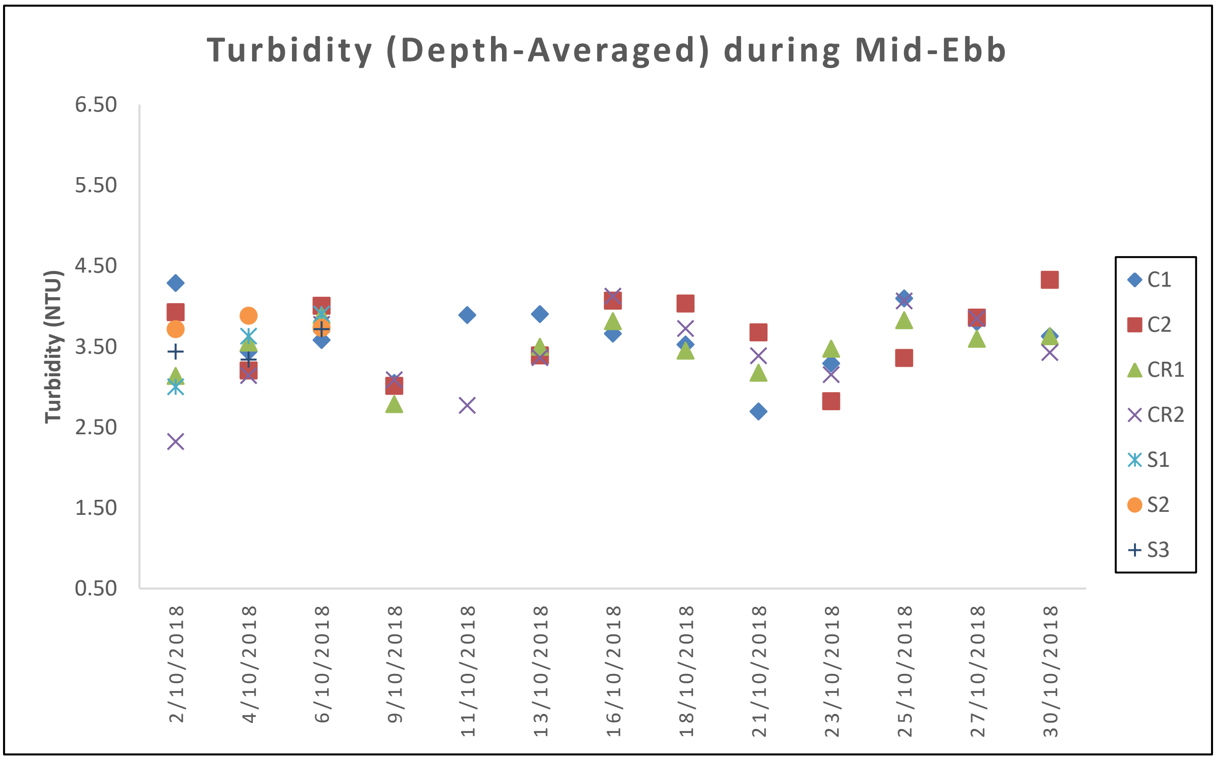
C1
C2
CR1
CR2
S1
S2
S3



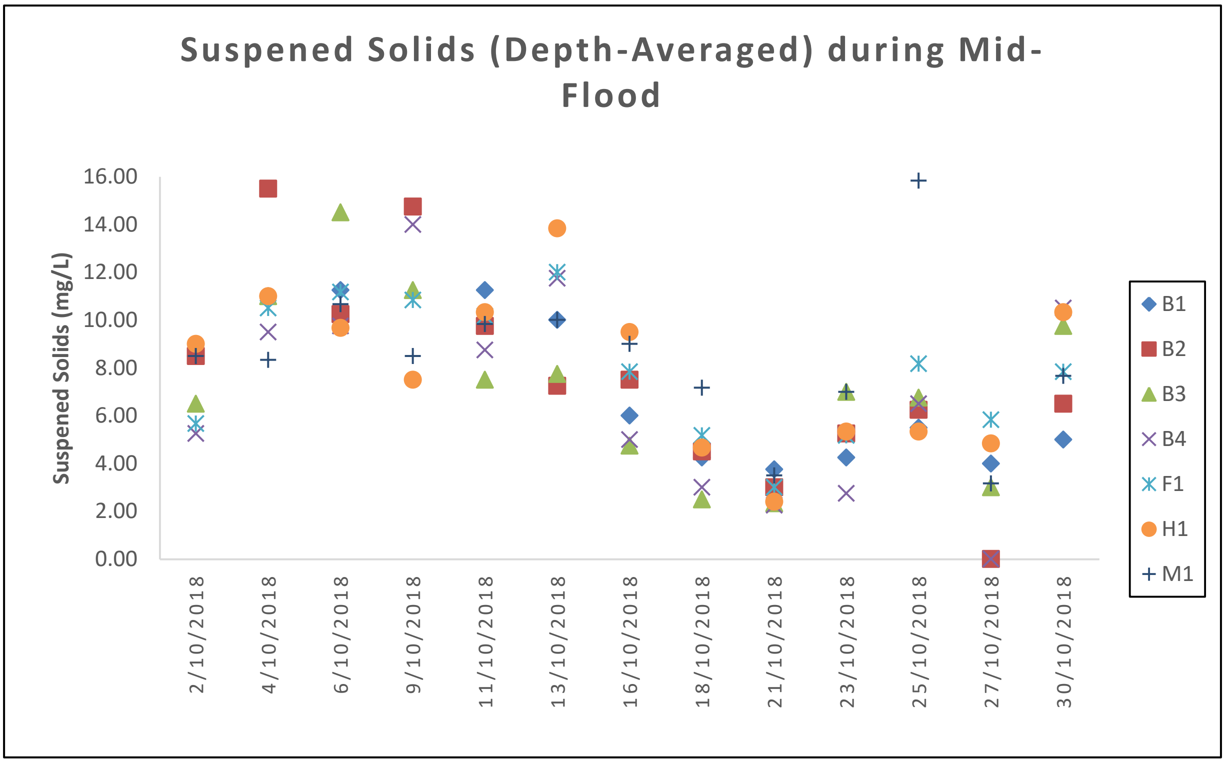


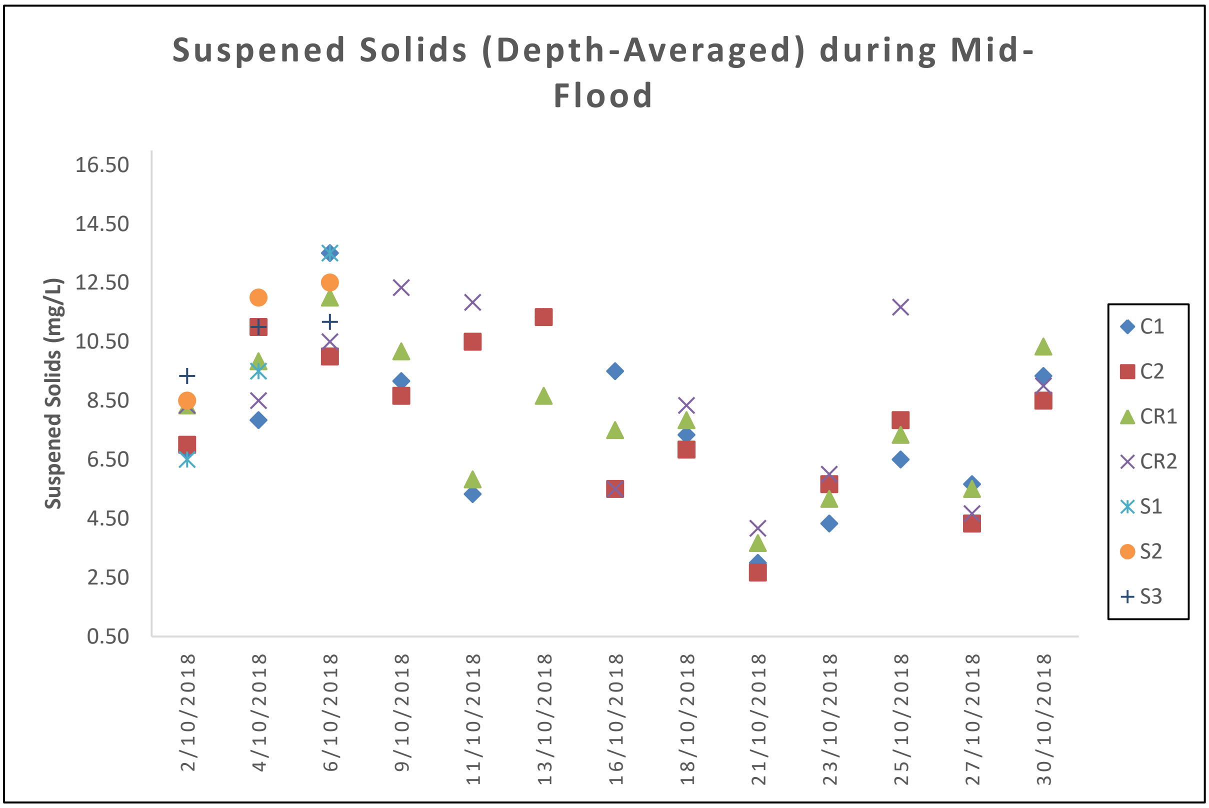
Note: The Action and Limit Level of Turbidity can be referred to **Table 2.7** of the monthly EM &A report



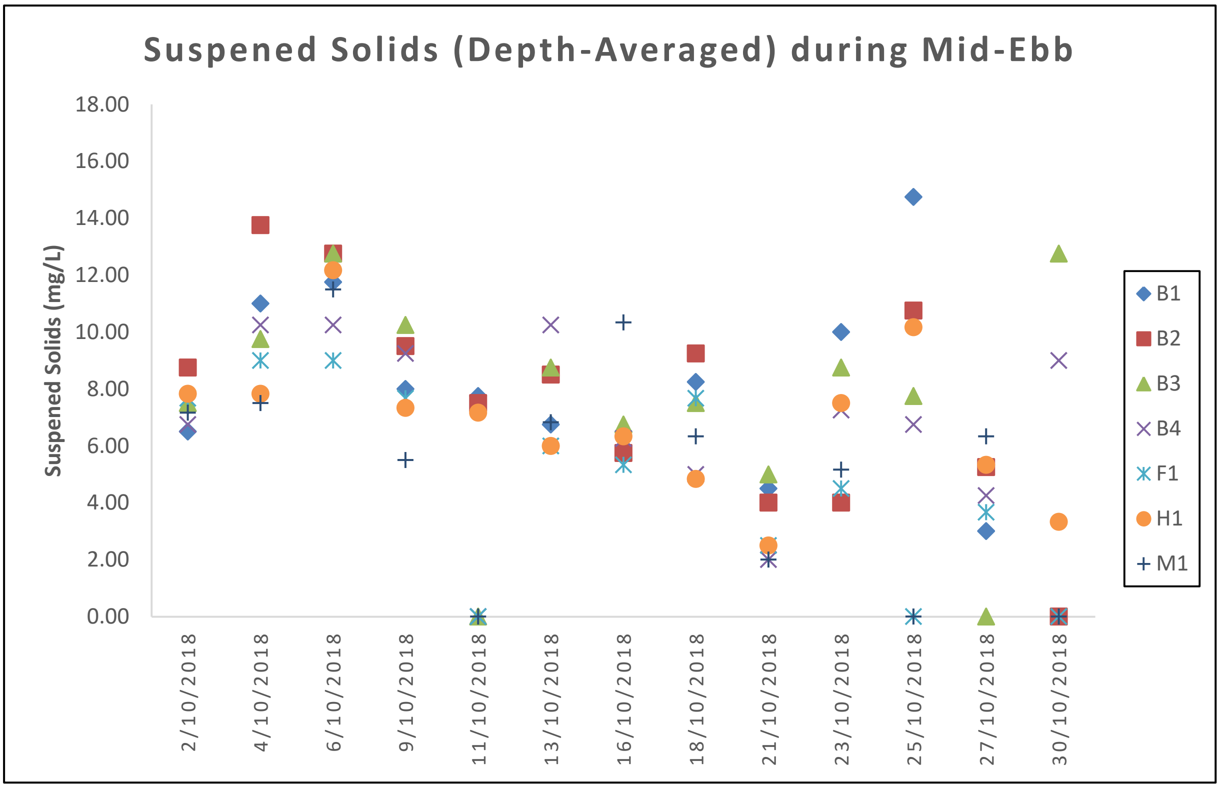


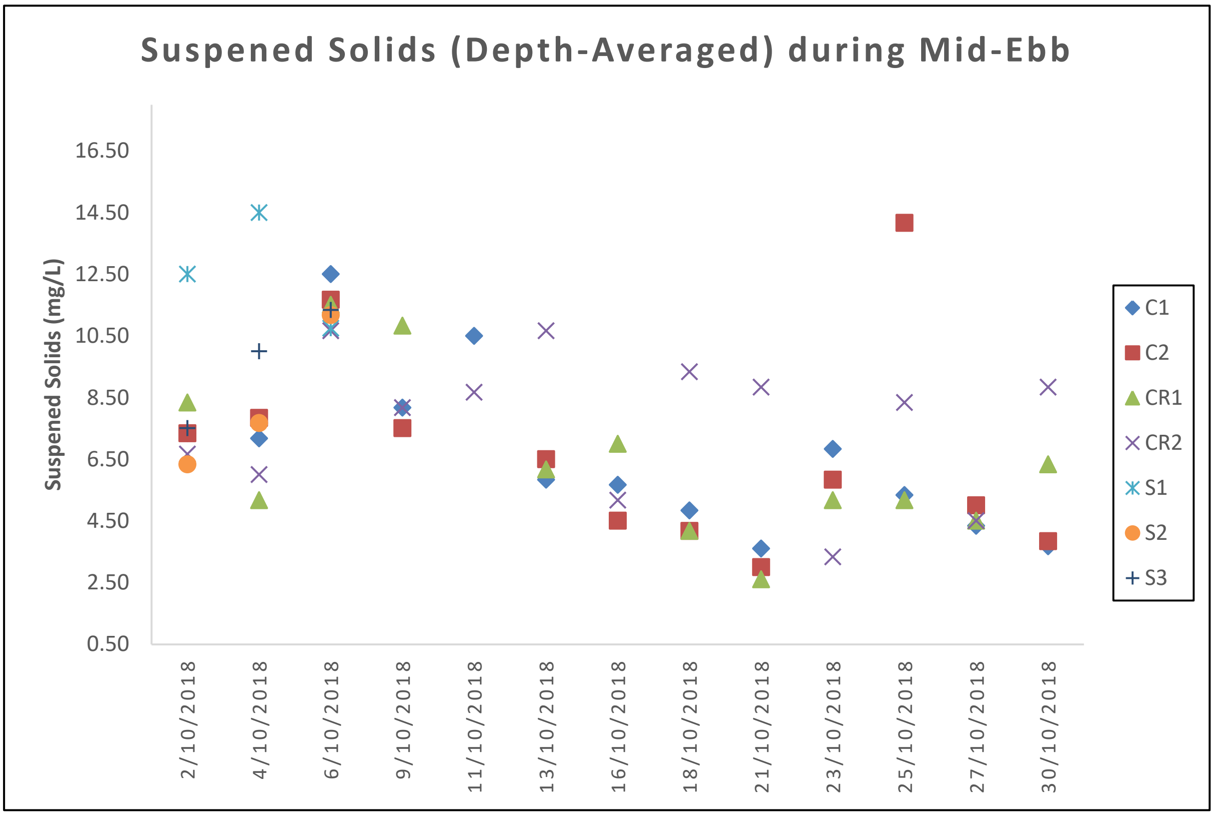
Note: The Action and Limit Level of Turbidity can be referred to **Table 2.7** of the monthly EM &A report



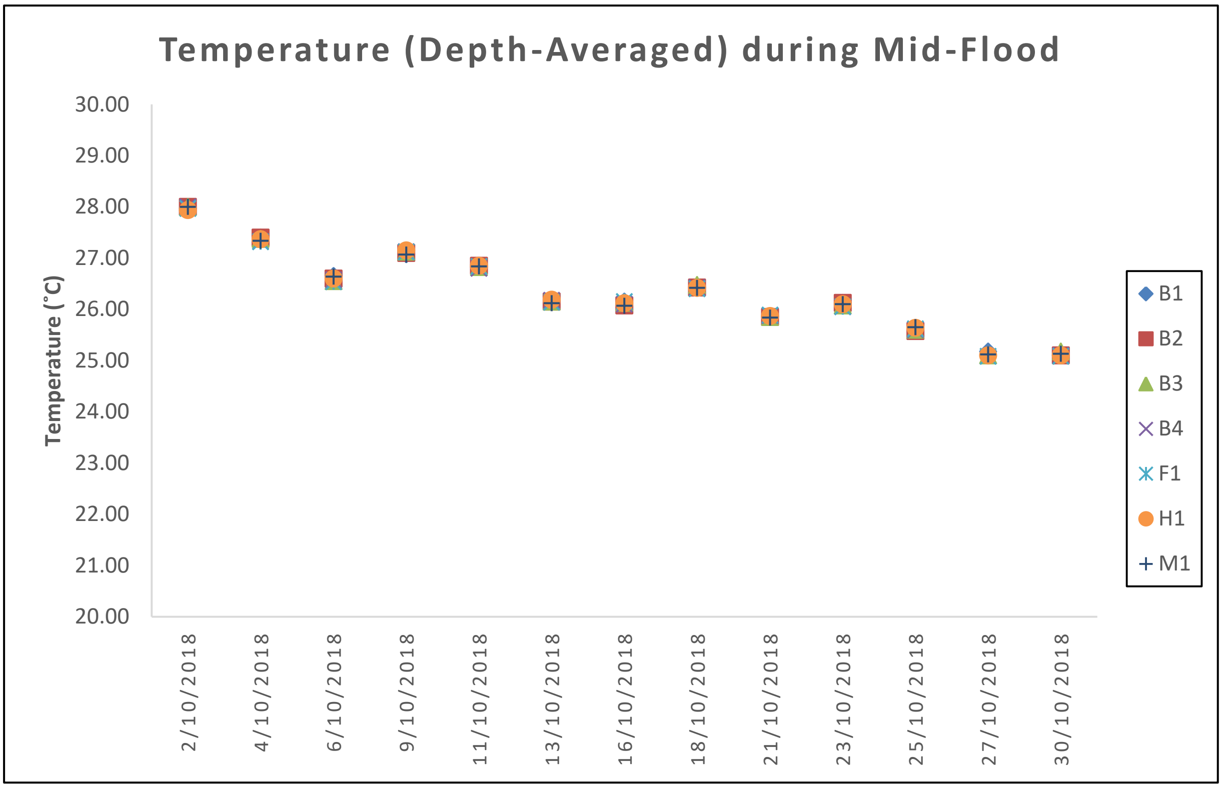


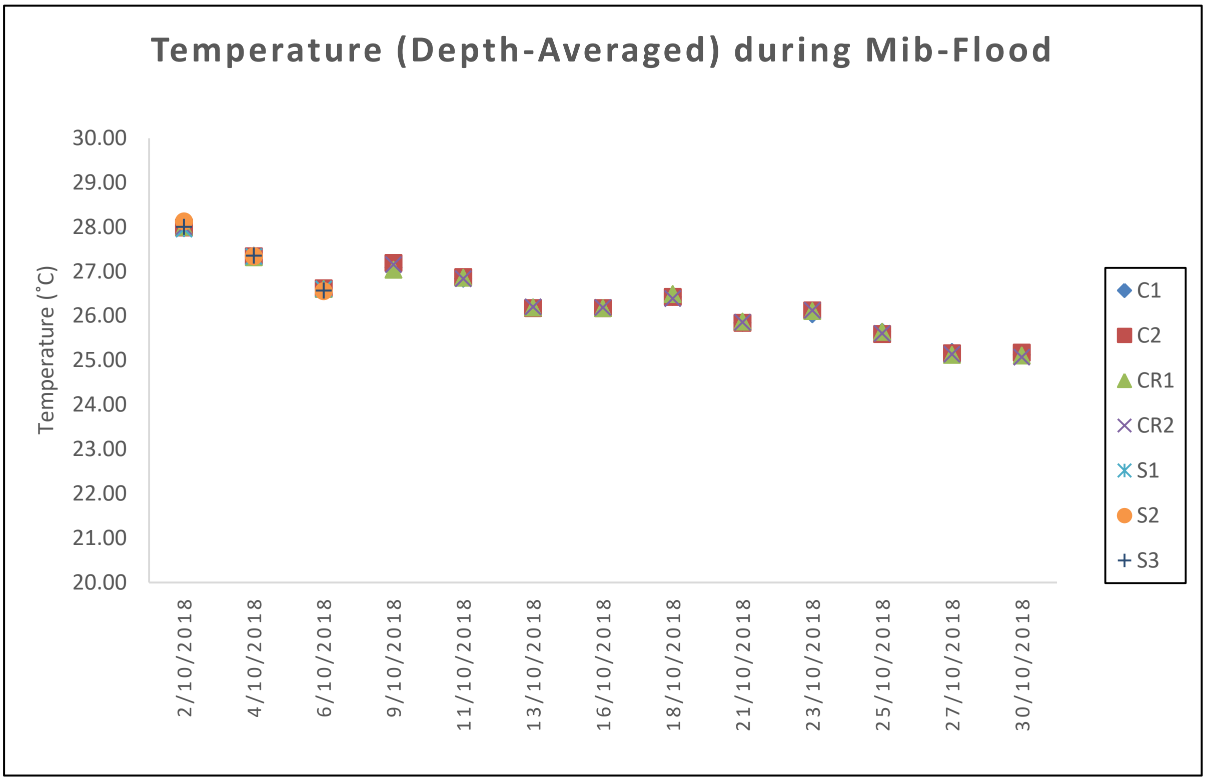
Note: The Action and Limit Level of Suspended Solids can be referred to **Table 2.7** of the monthly EM &A report



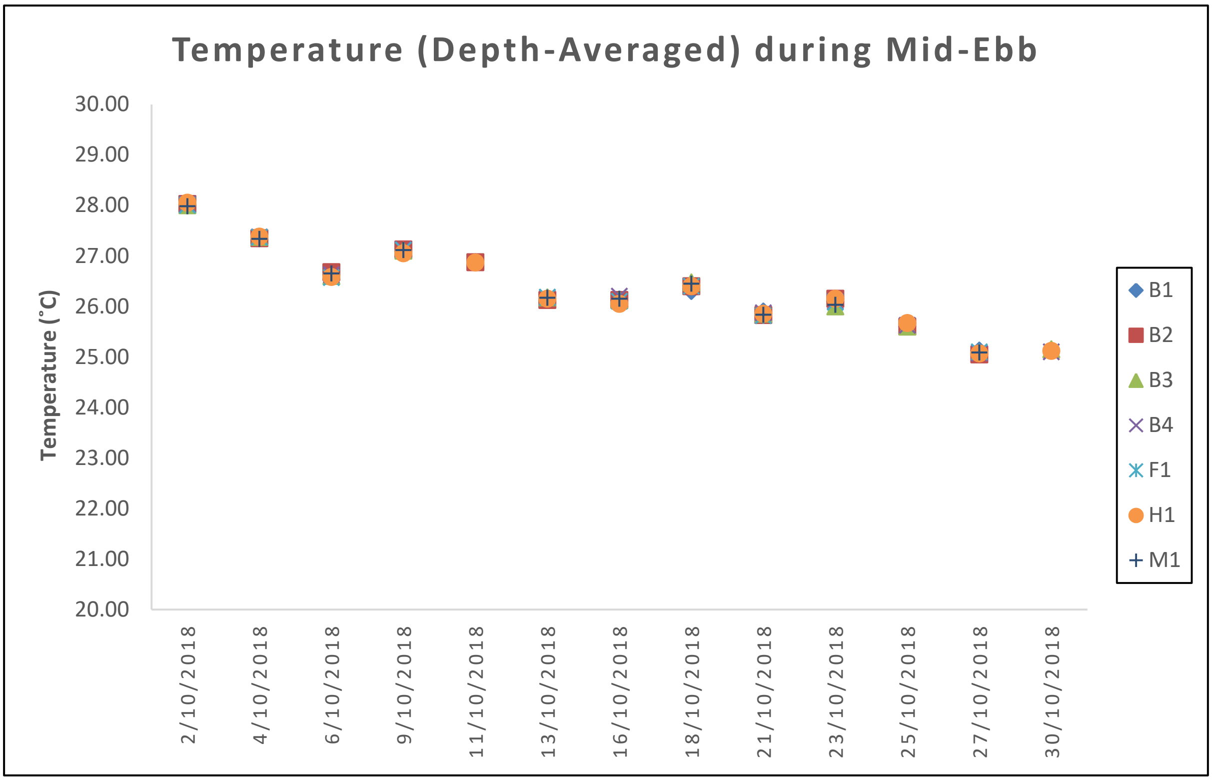


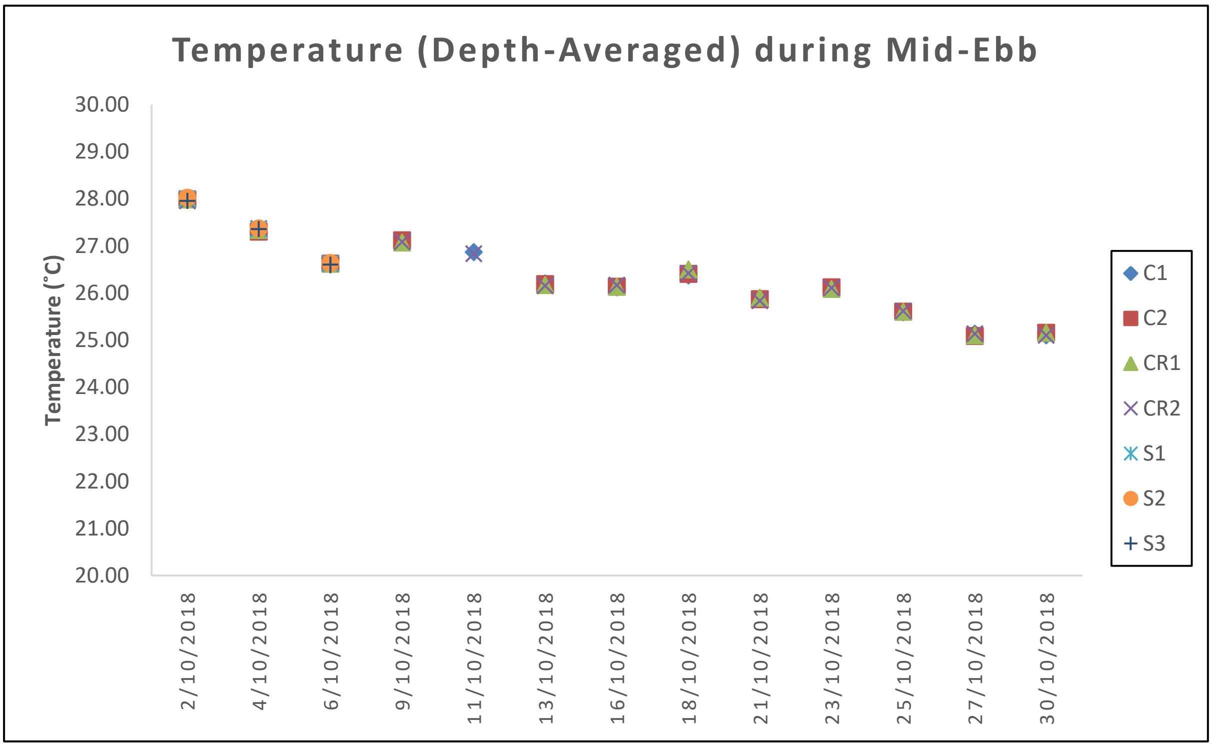
Note: The Action and Limit Level of Suspended Solids can be referred to **Table 2.7** of the monthly EM &A report.



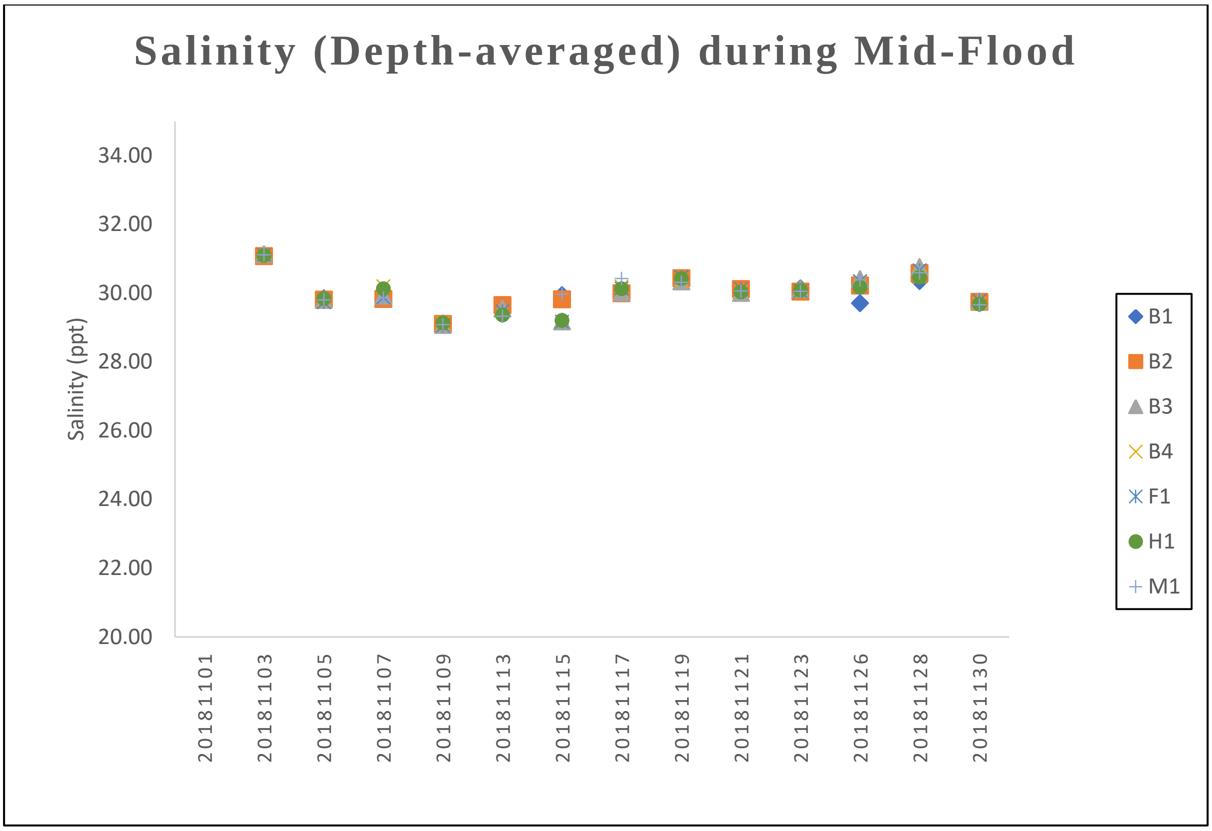


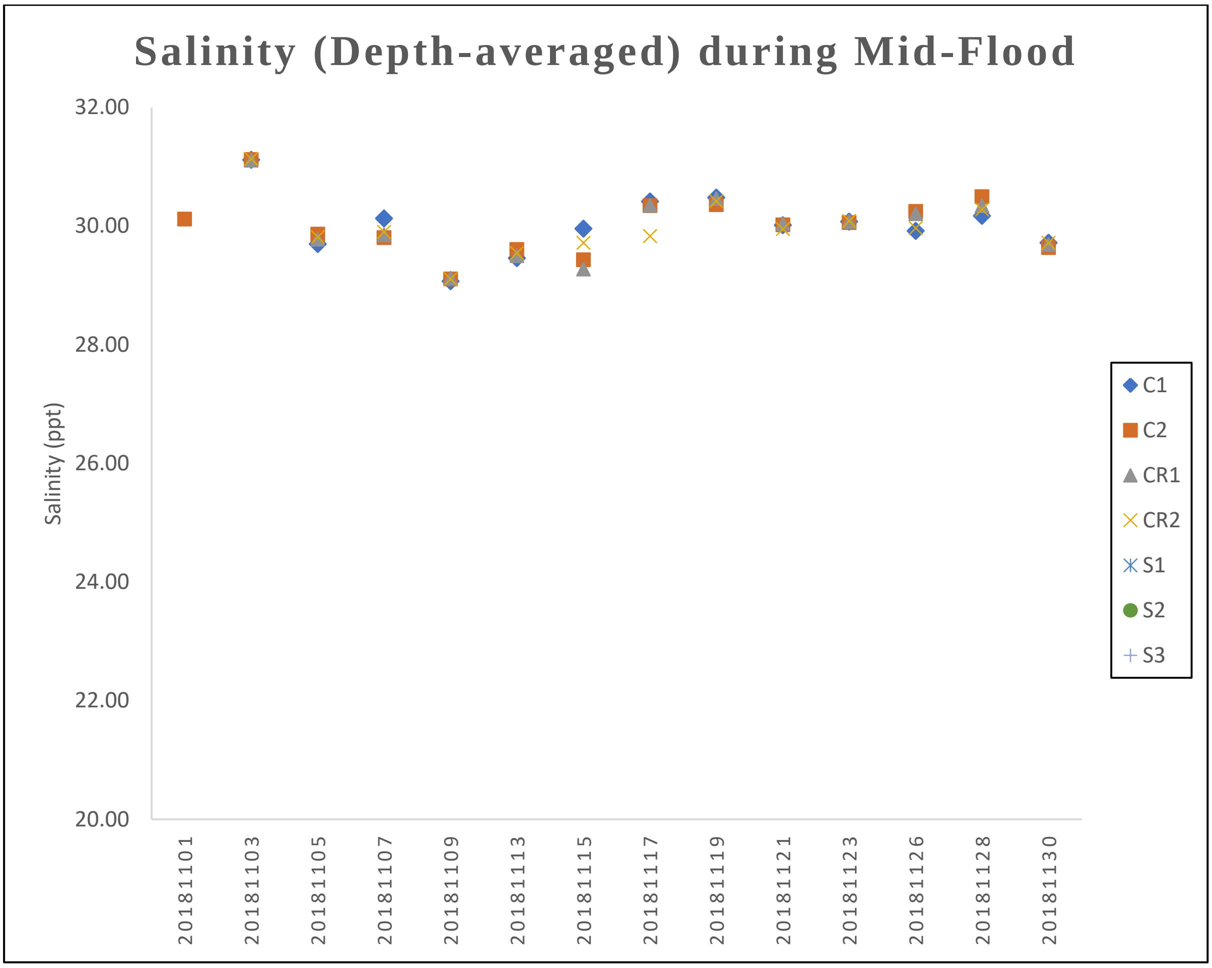
Note: The Action and Limit Level of Temperature can be referred to **Table 2.7** of the monthly EM &A report.





Note: The Action and Limit Level of Temperature can be referred to **Table 2.7** of the monthly EM &A report


Salinity (Depth-averaged) during Mid-Flood
Salinity (ppt)
34.00
32.00
30.00
28.00
26.00
24.00
22.00
20.00
20181101
20181103
20181105
20181107
20181109
20181113
20181115
20181117
20181119
20181121
20181123
20181126
20181128
20181130
B1
B2
B3
B4
F1
H1
M1


Salinity (Depth-averaged) during Mid-Flood
Salinity (ppt)
32.00
30.00
28.00
26.00
24.00
22.00
20.00
20181101
20181103
20181105
20181107
20181109
20181113
20181115
20181117
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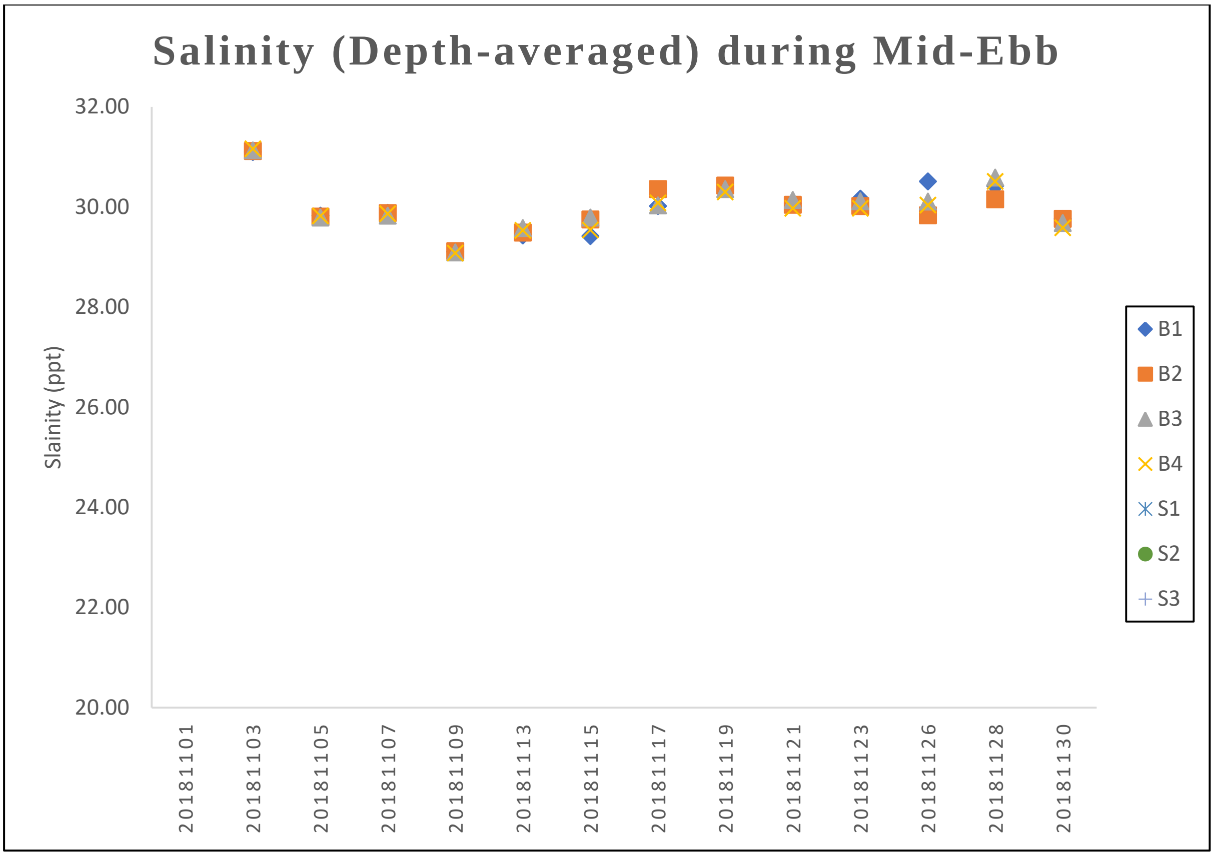
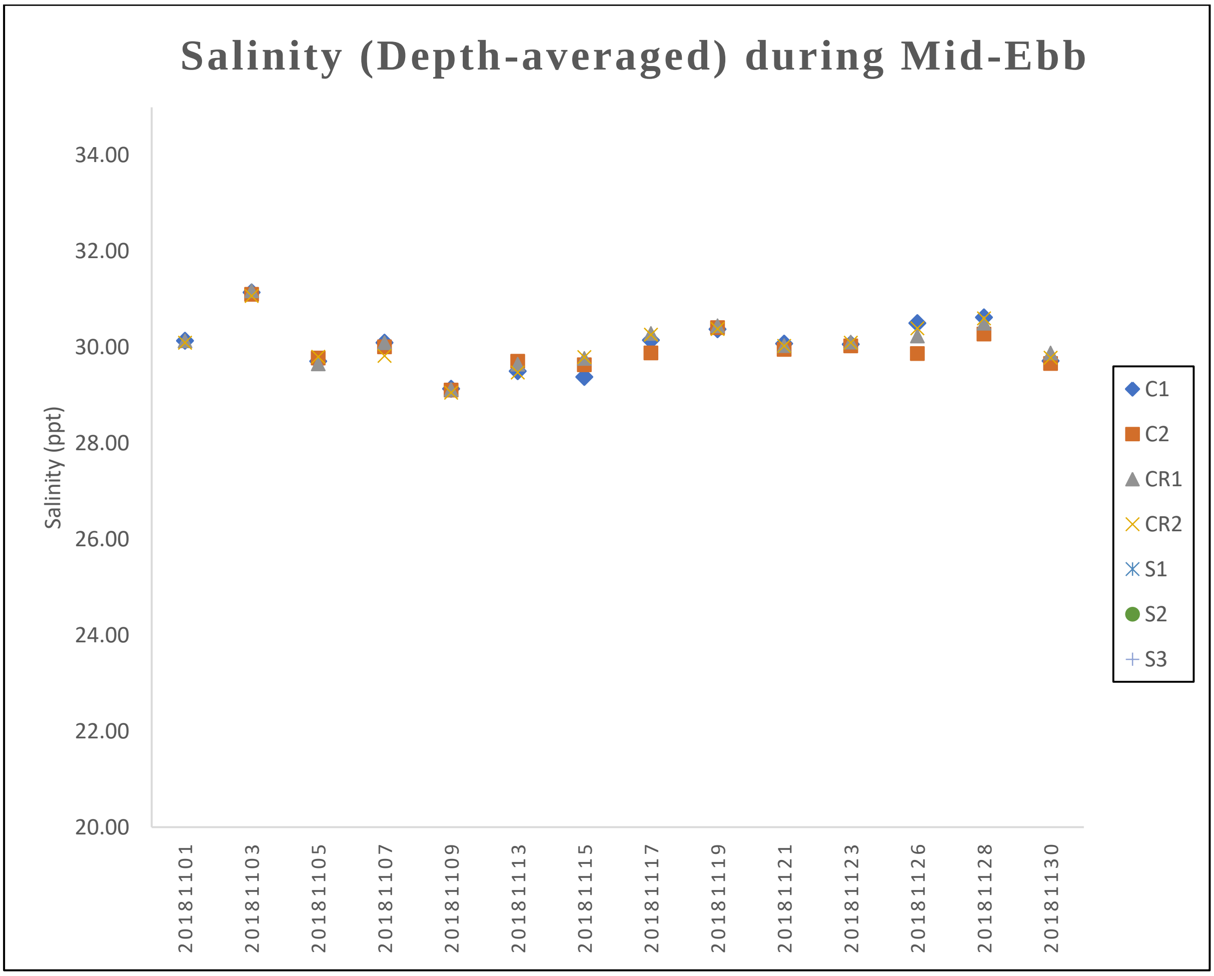
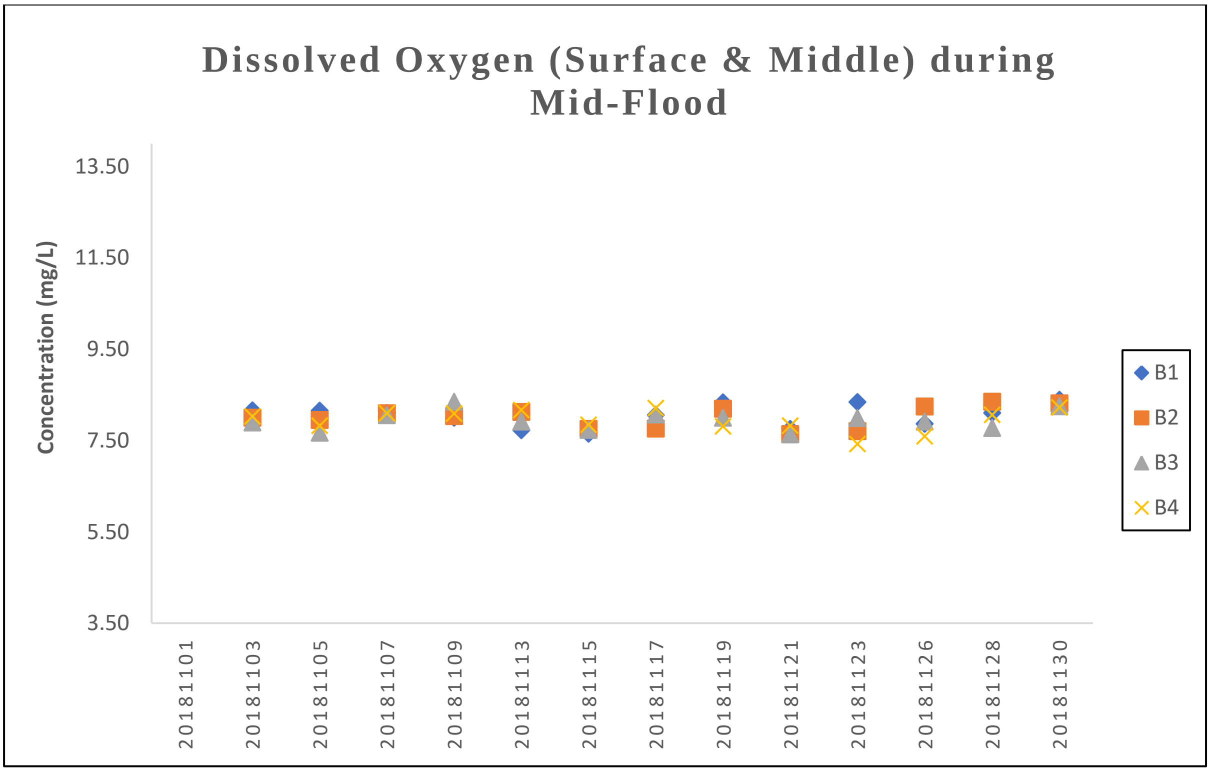
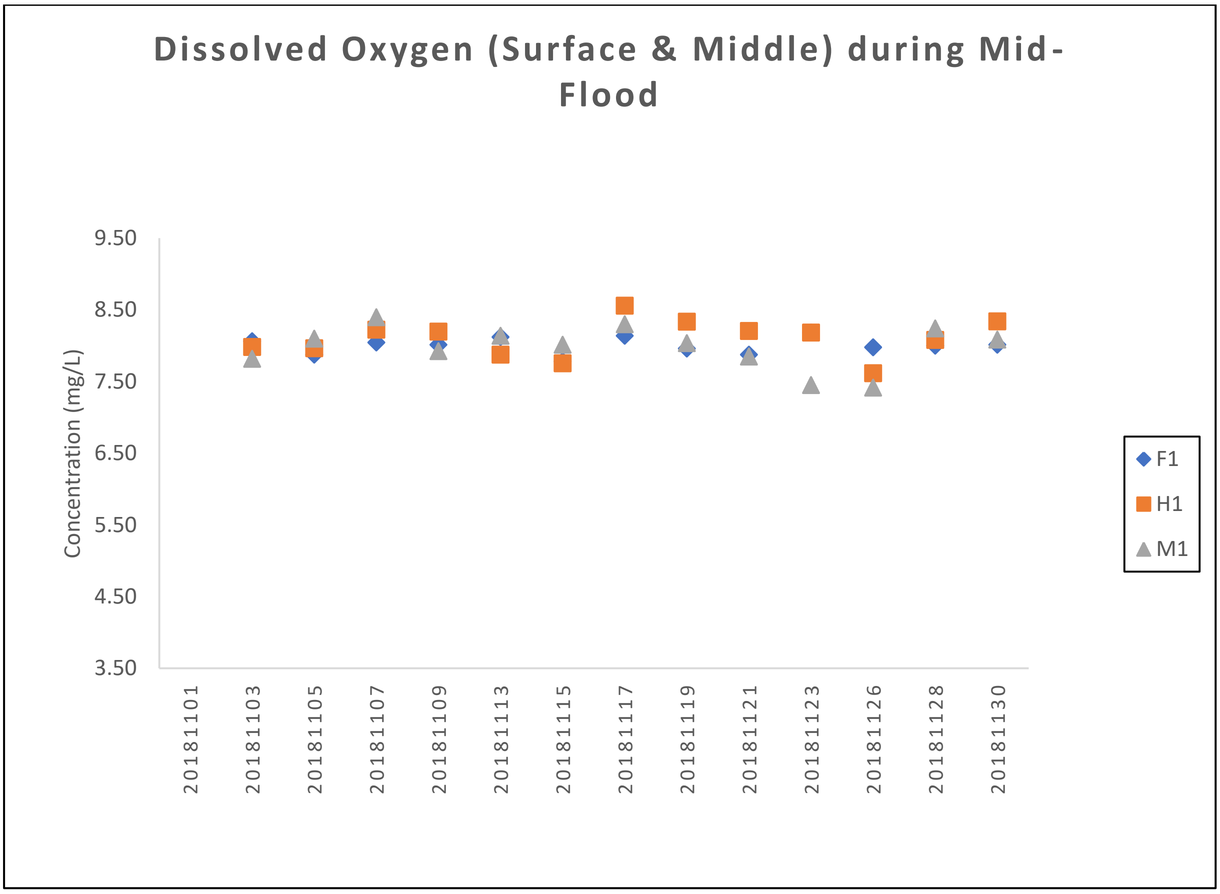
20181126
20181128
20181130
C1
C2
CR1
CR2
S1
S2
S3

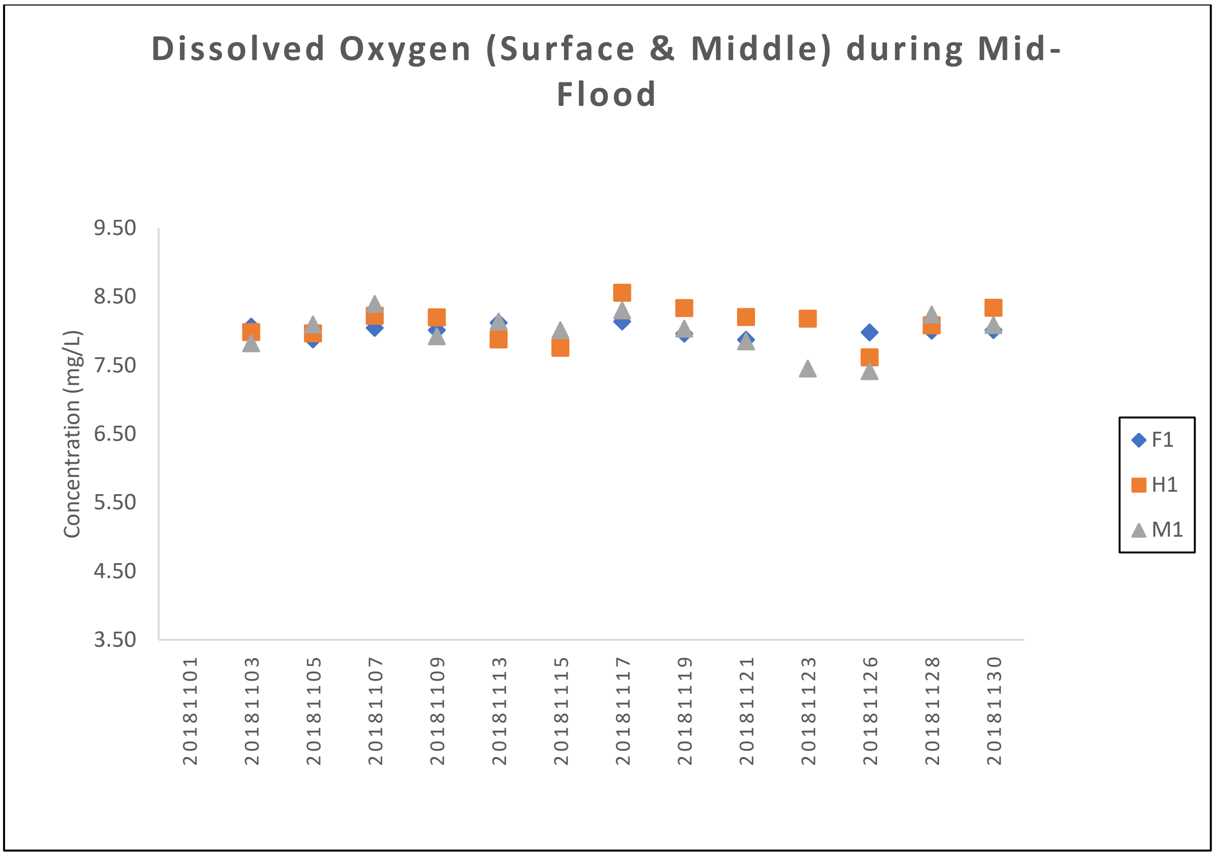

Salinity (Depth-averaged) during Mid-Ebb
Slainity (ppt)
32.00
30.00
28.00
26.00
24.00
22.00
20.00
20181101
20181103
20181105
20181107
20181109
20181113
20181115
20181117
20181119
20181121
20181123
20181126
20181128
20181130
B1
B2
B3
B4
S1
S2
S3

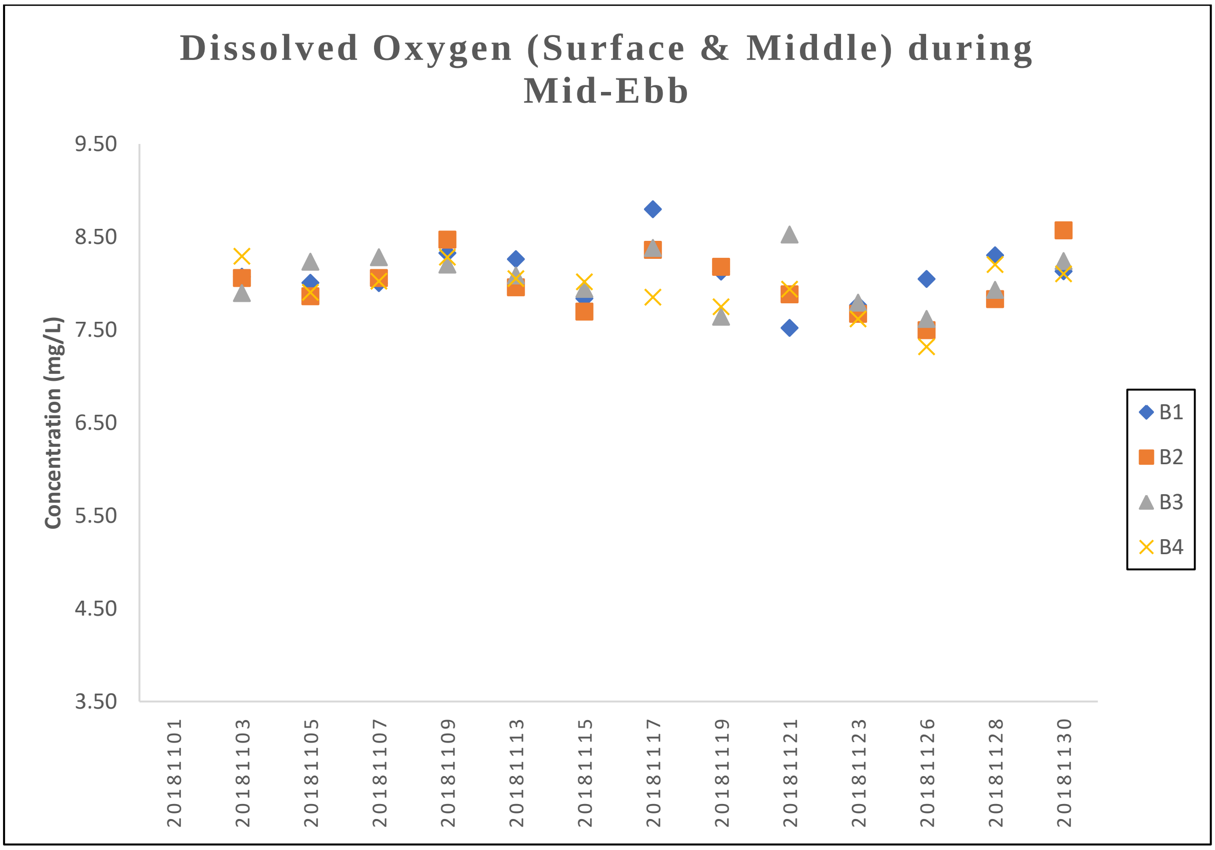

Salinity (Depth-averaged) during Mid-Ebb
Salinity (ppt)
34.00
32.00
30.00
28.00
26.00
24.00
22.00
20.00
20181101
20181103
20181105
20181107
20181109
20181113
20181115
20181117
20181119
20181121
20181123
20181126
20181128
20181130
C1
C2
CR1
CR2
S1
S2
S3



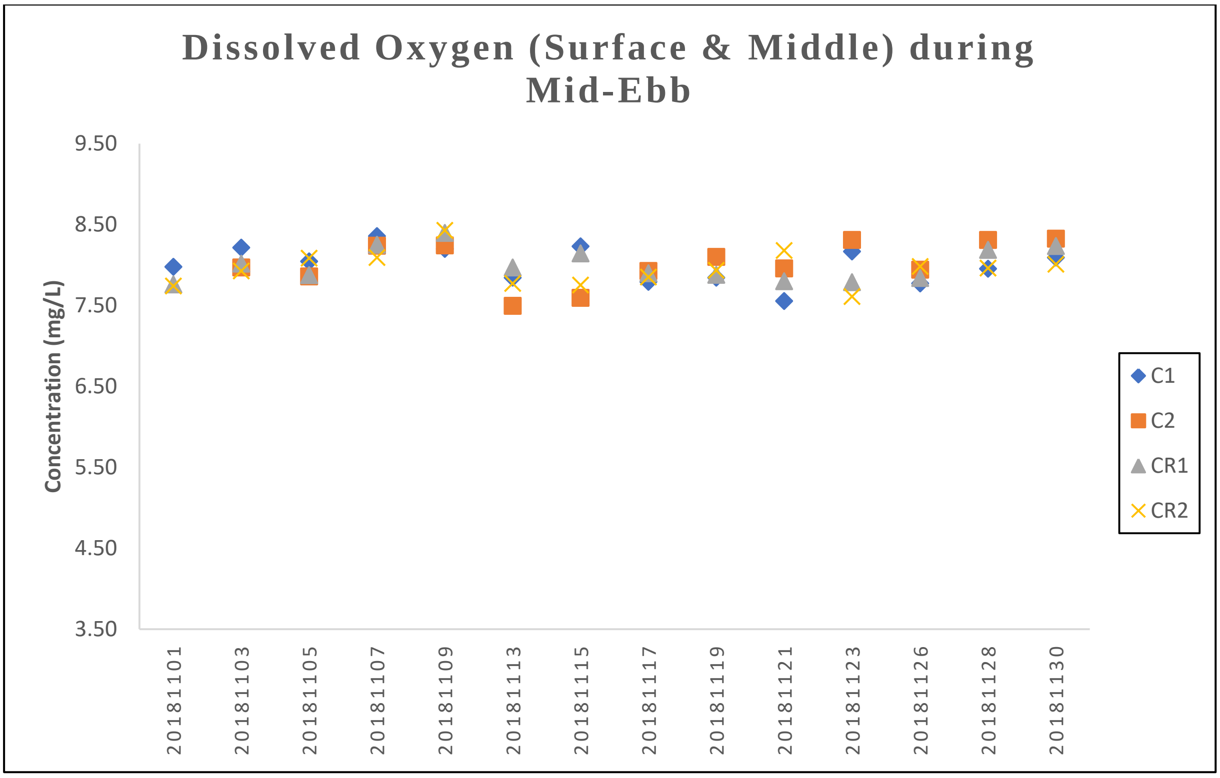


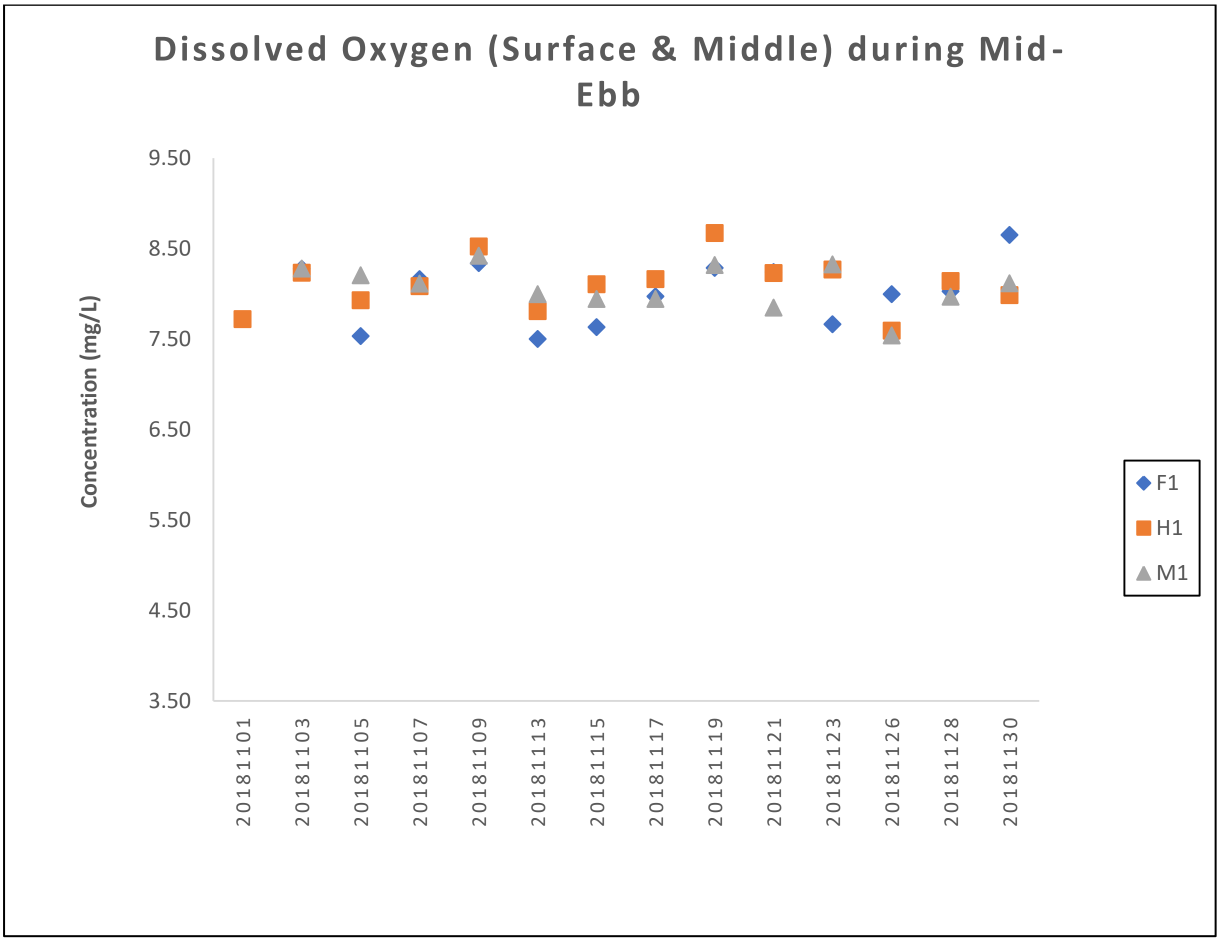
Note: The Action and Limit Level of dissolved oxygen can be referred to **Table 2.7** of the monthly EM & A report.



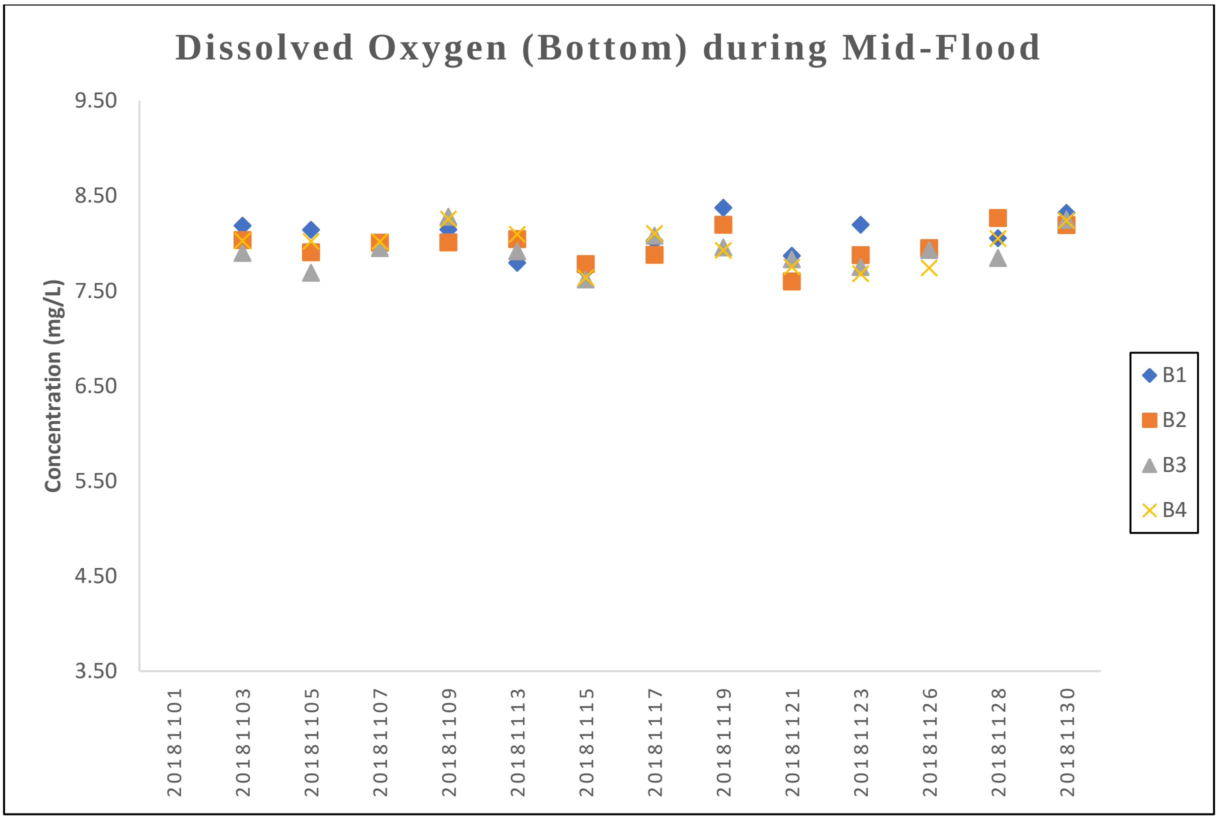


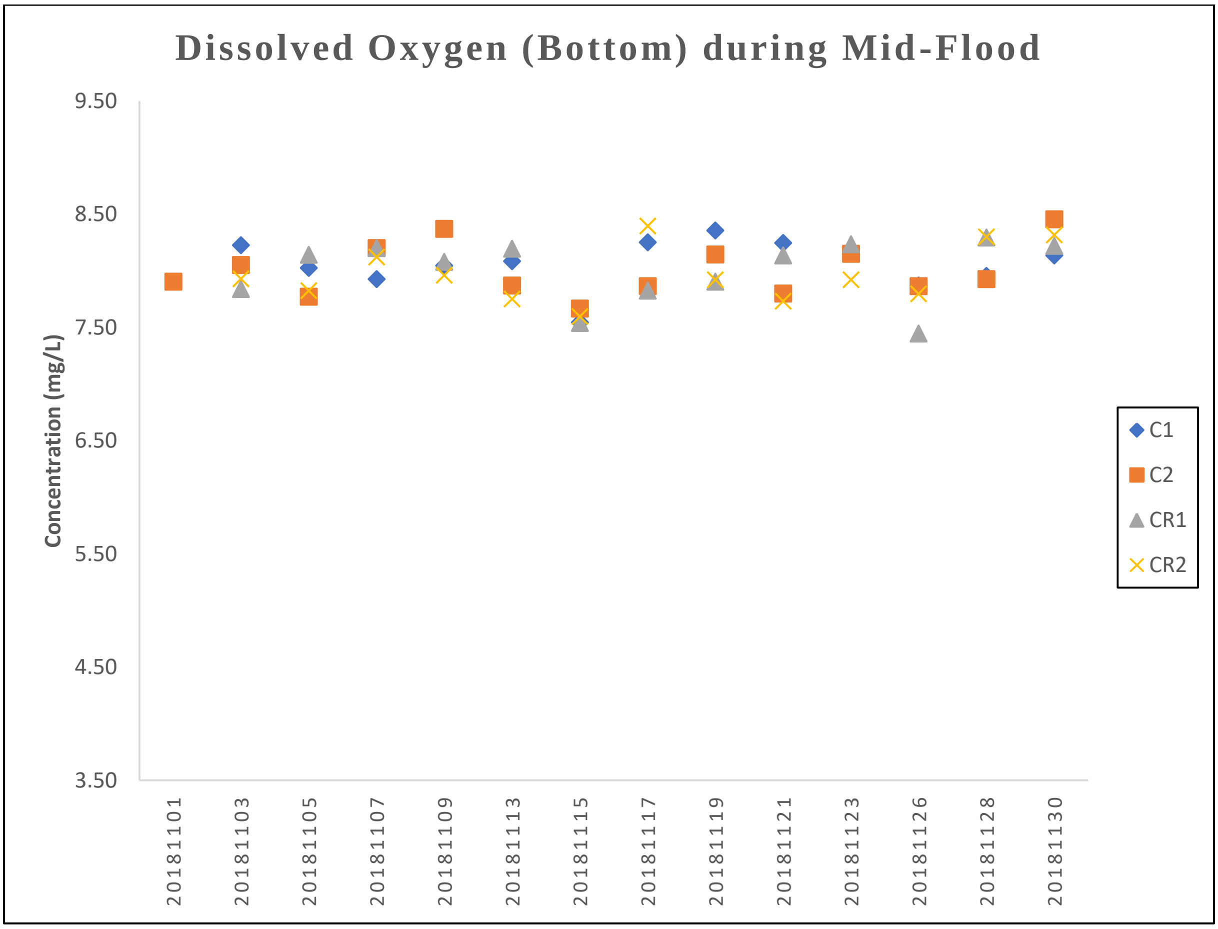
Note: The Action and Limit Level of dissolved oxygen can be referred to **Table 2.7** of the monthly EM & A report.



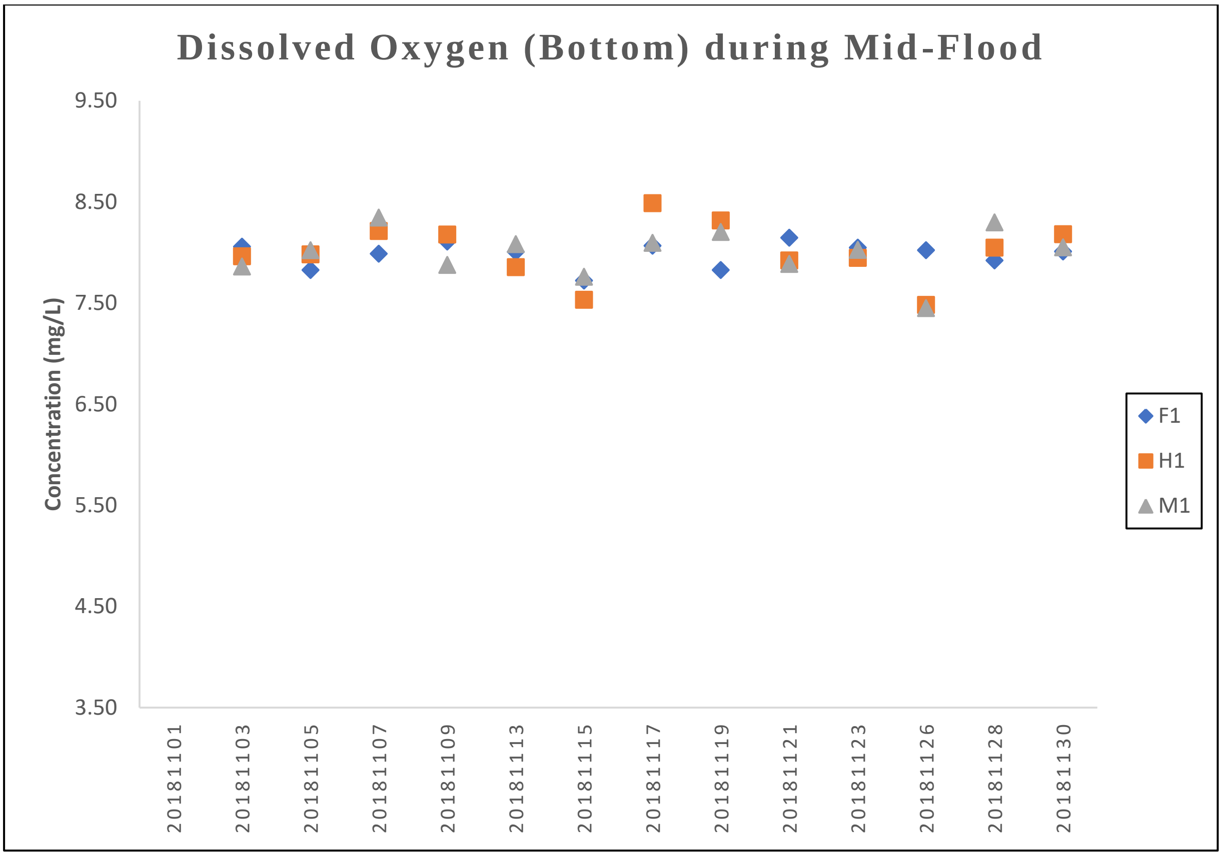


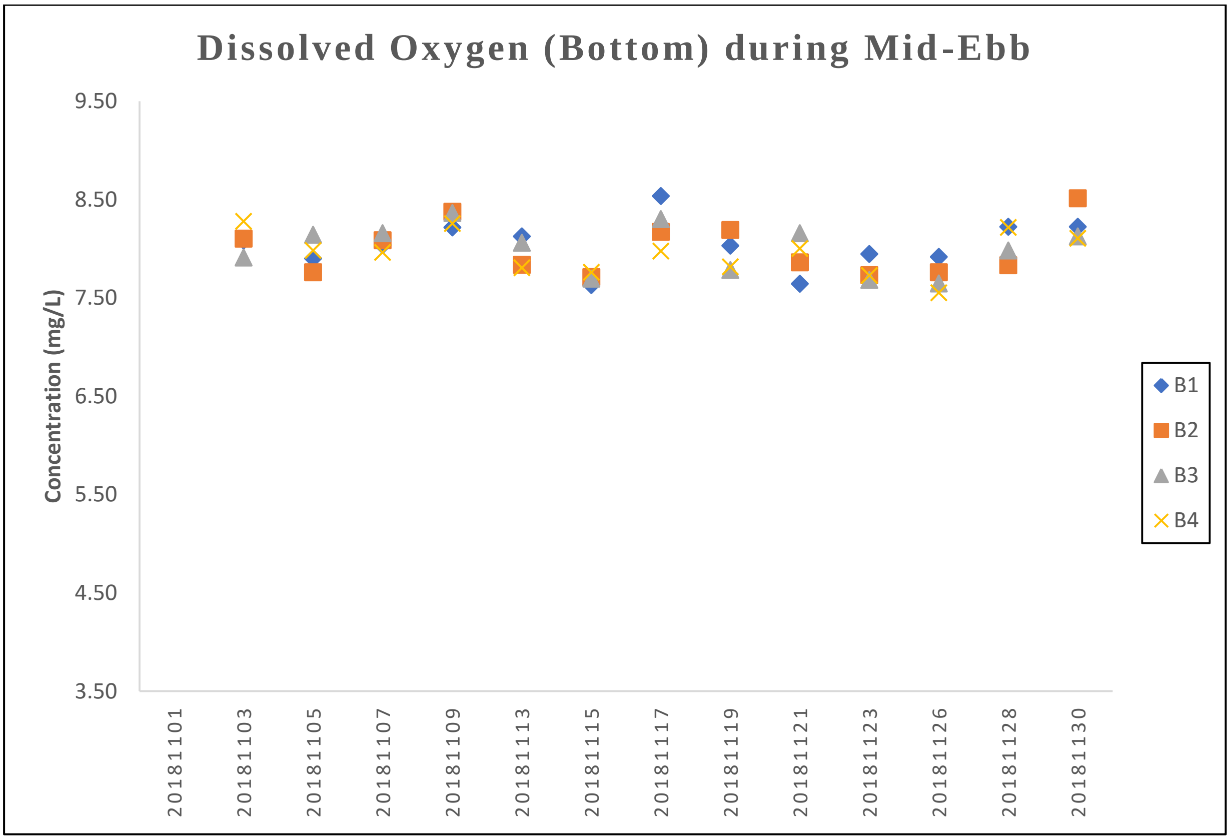
Note: The Action and Limit Level of dissolved oxygen can be referred to **Table 2.7** of the monthly EM & A report.



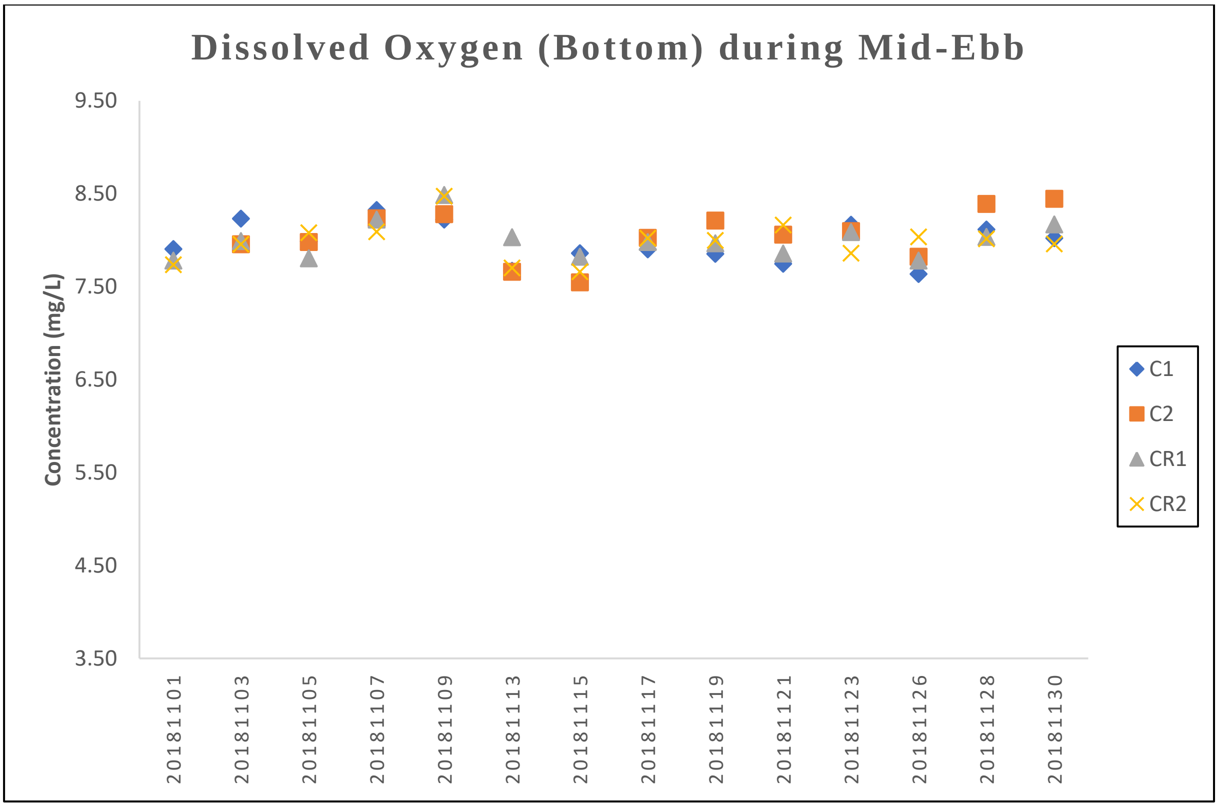


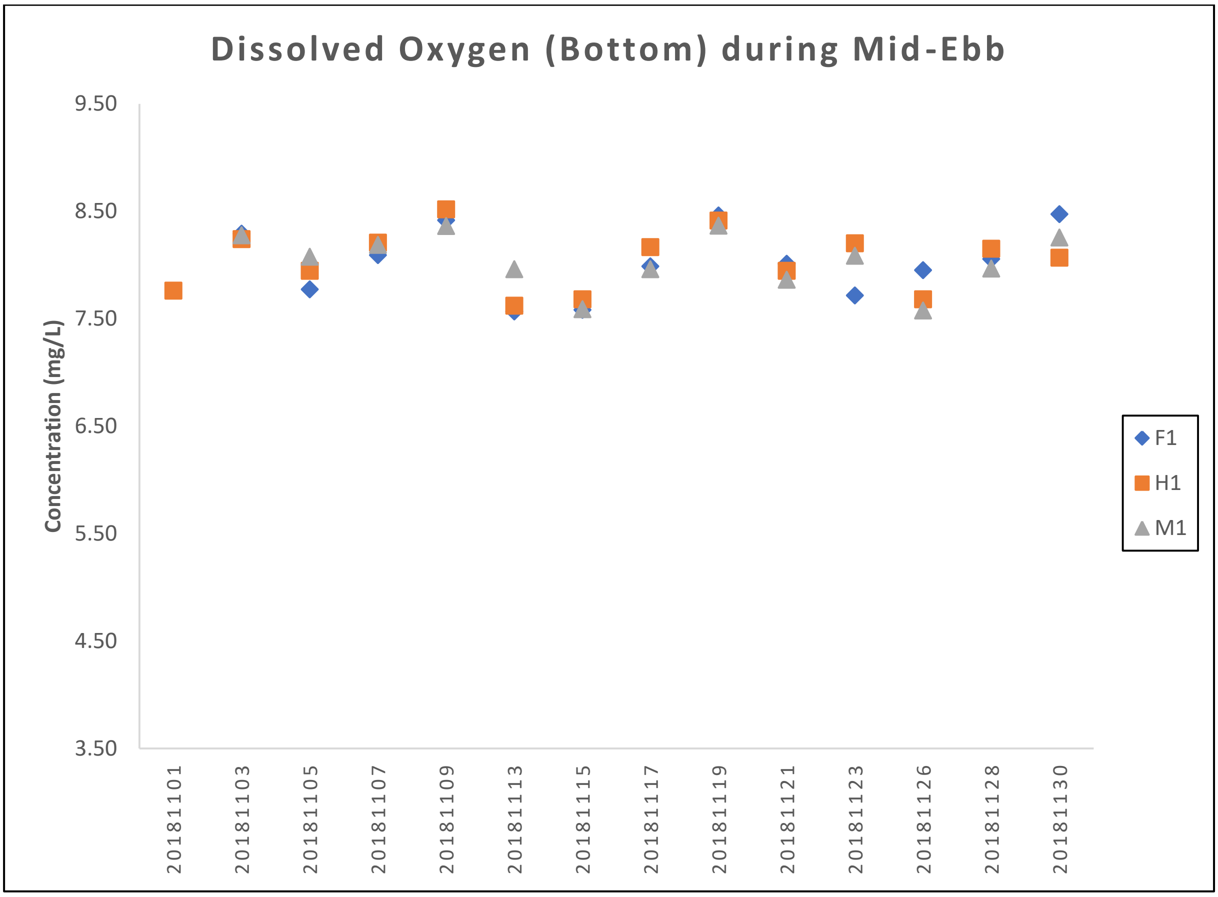
Note: The Action and Limit Level of dissolved oxygen can be referred to **Table 2.7** of the monthly EM & A report.



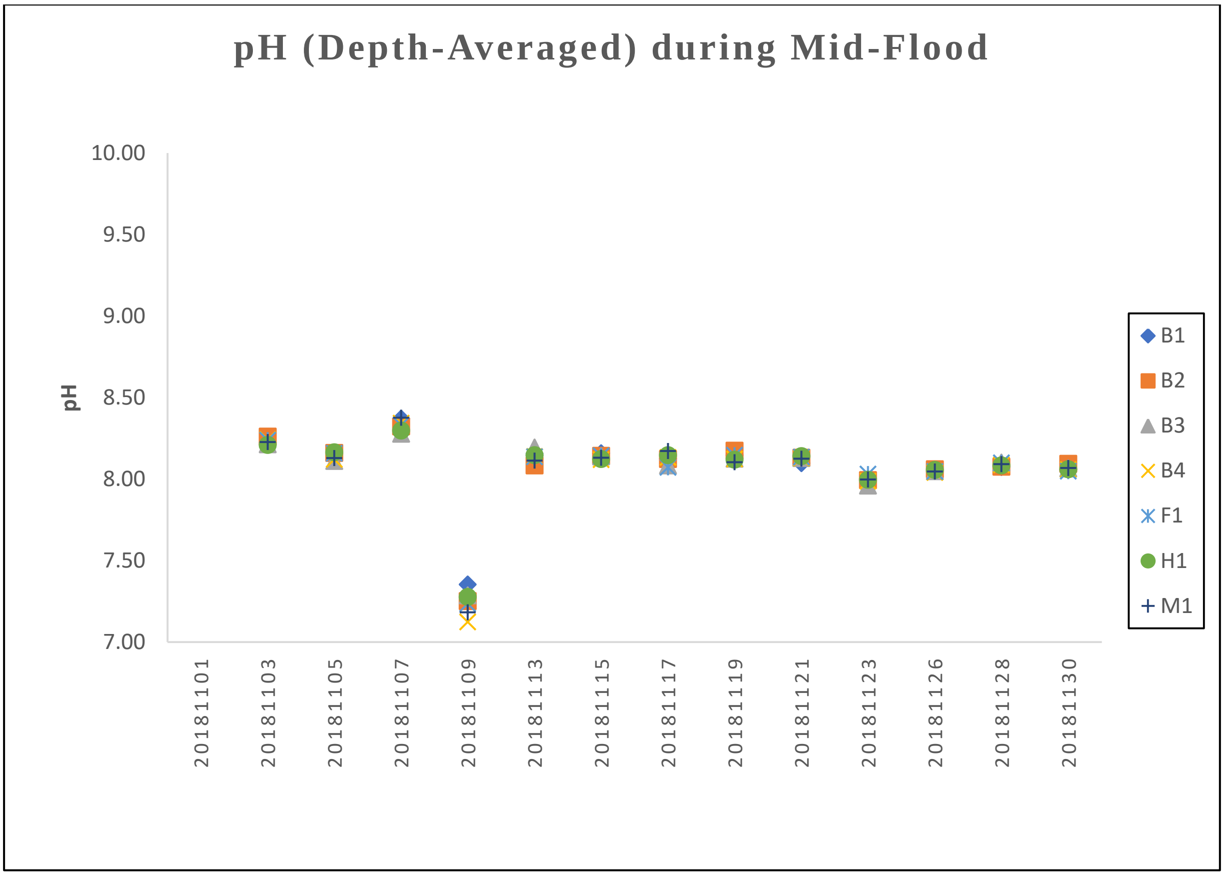


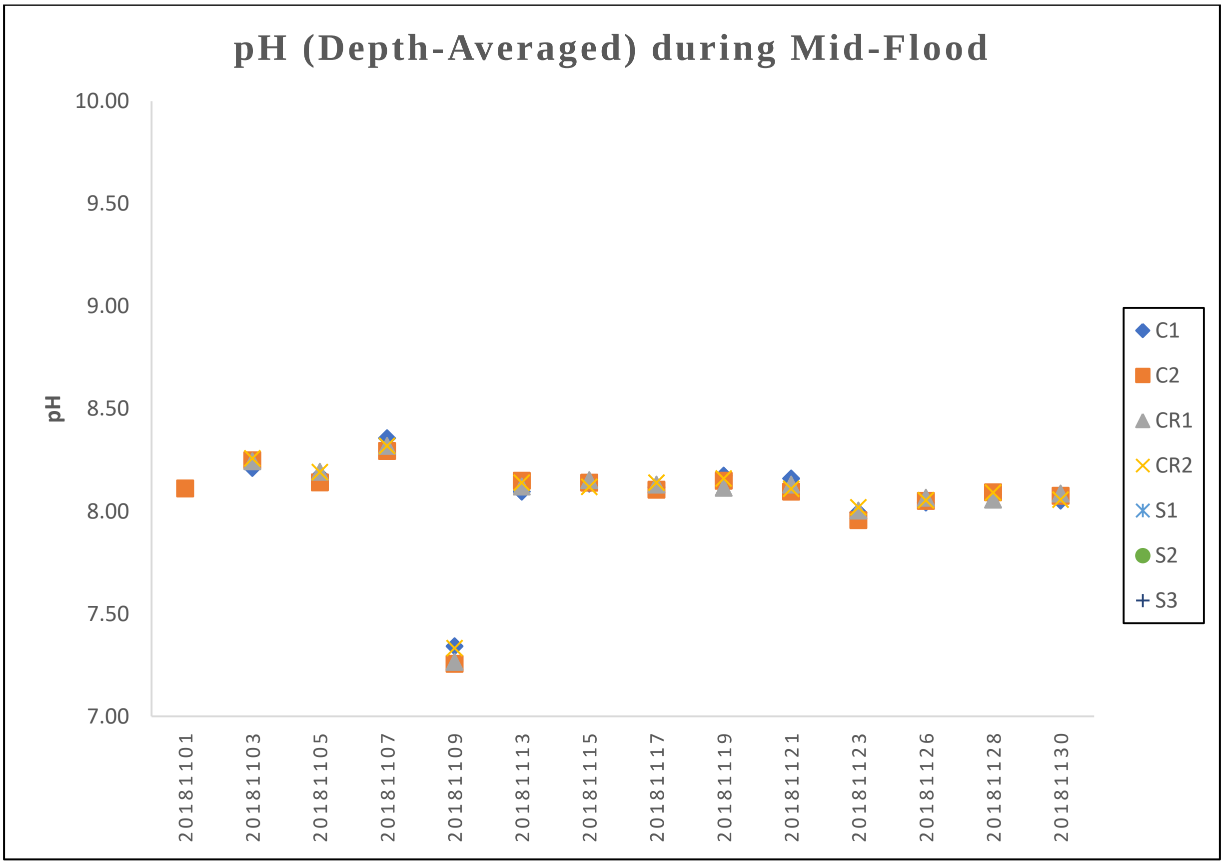
Note: The Action and Limit Level of dissolved oxygen can be referred to **Table 2.7** of the monthly EM & A report.

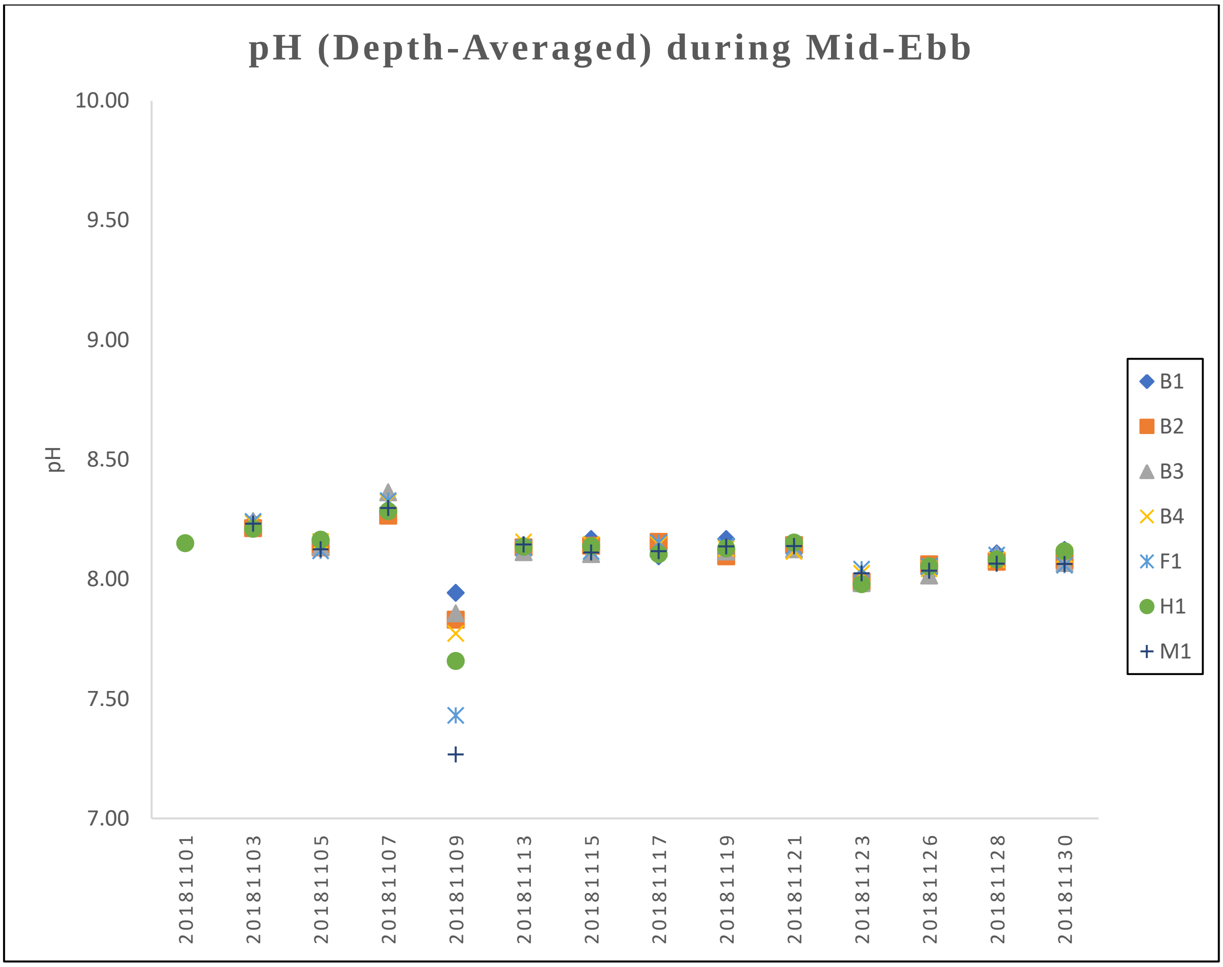


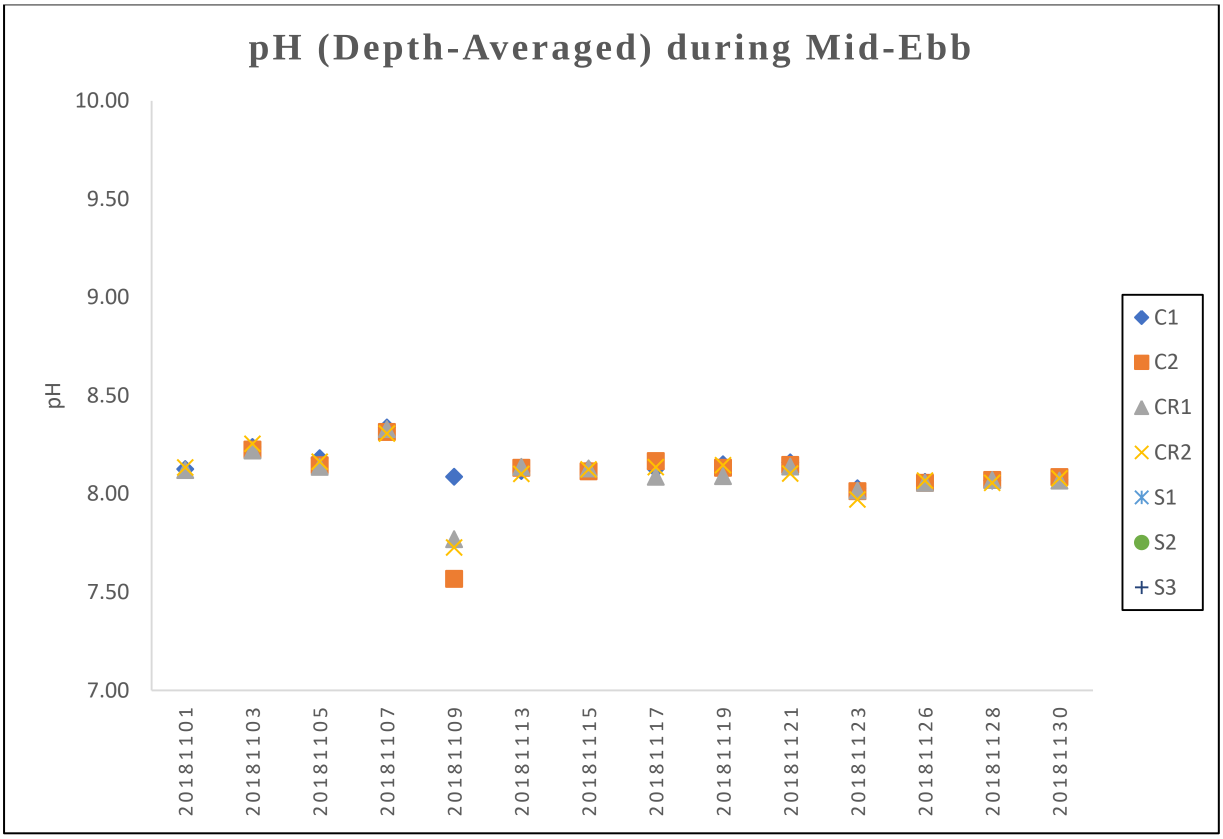


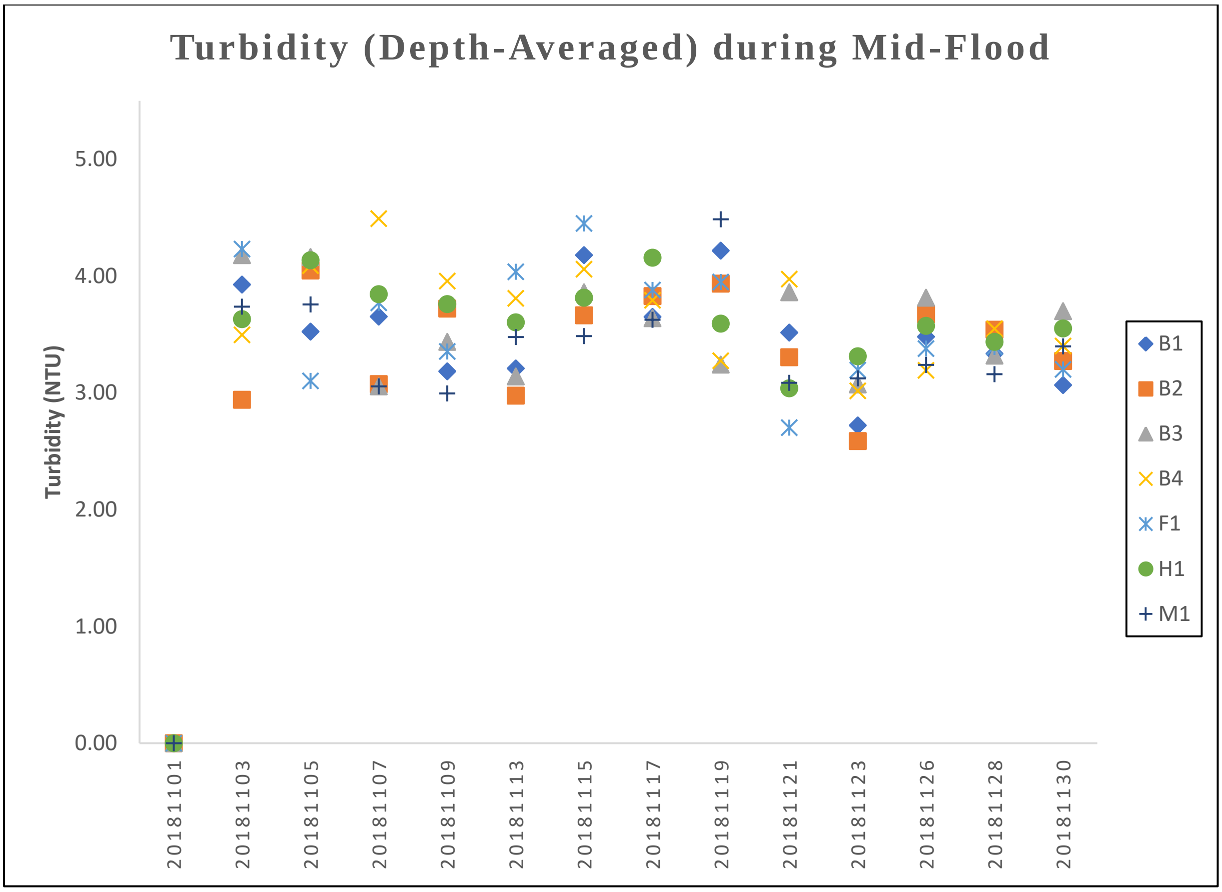
Note: The Action and Limit Level of dissolved oxygen can be referred to **Table 2.7** of the monthly EM & A report.

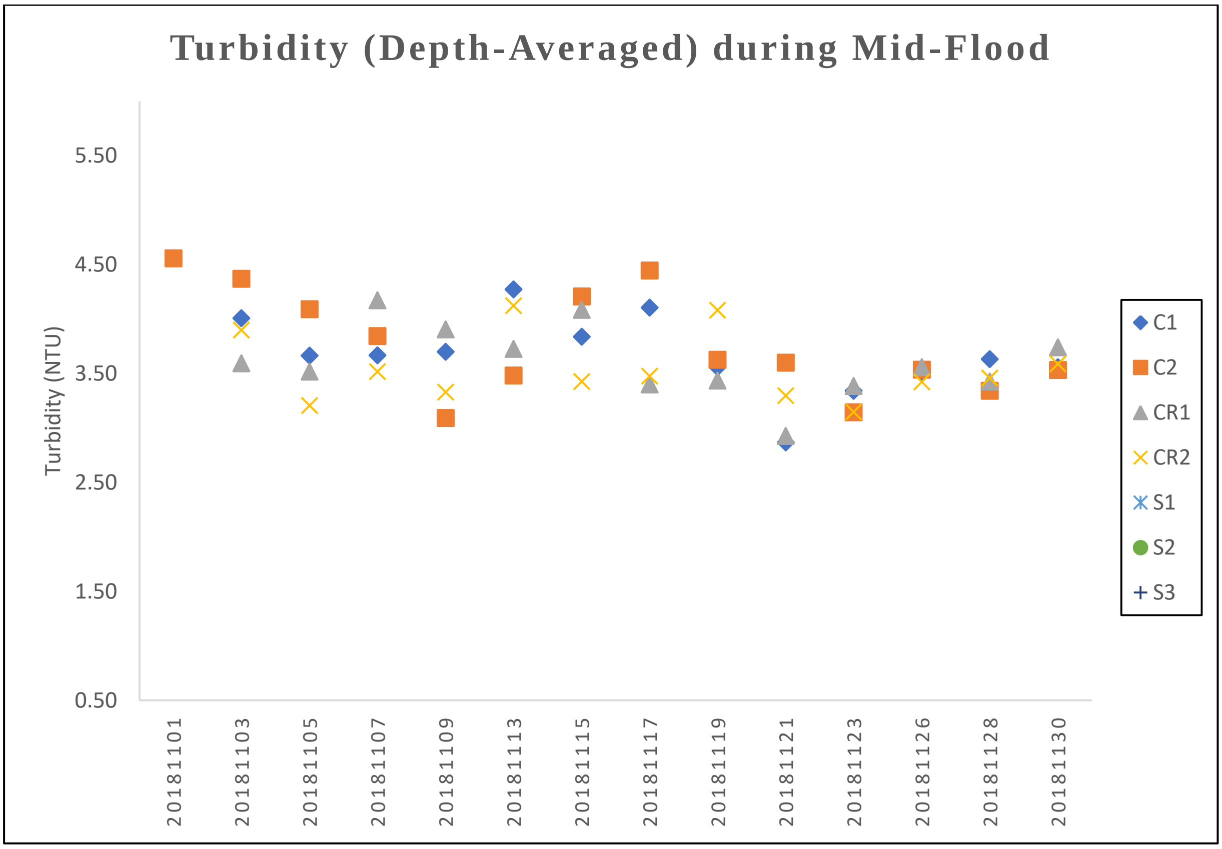

pH (Depth-Averaged) during Mid-Flood
pH
10.00
9.50
9.00
8.50
8.00
7.50
7.00
20181101
20181103
20181105
20181107
20181109
20181113
20181115
20181117
20181119
20181121
20181123
20181126
20181128
20181130
B1
B2
B3
B4
F1
H1
M1


pH (Depth-Averaged) during Mid-Flood
pH
10.00
9.50
9.00
8.50
8.00
7.50
7.00
20181101
20181103
20181105
20181107
20181109
20181113
20181115
20181117
20181119
20181121
20181123
20181126
20181128
20181130
C1
C2
CR1
CR2
S1
S2
S3

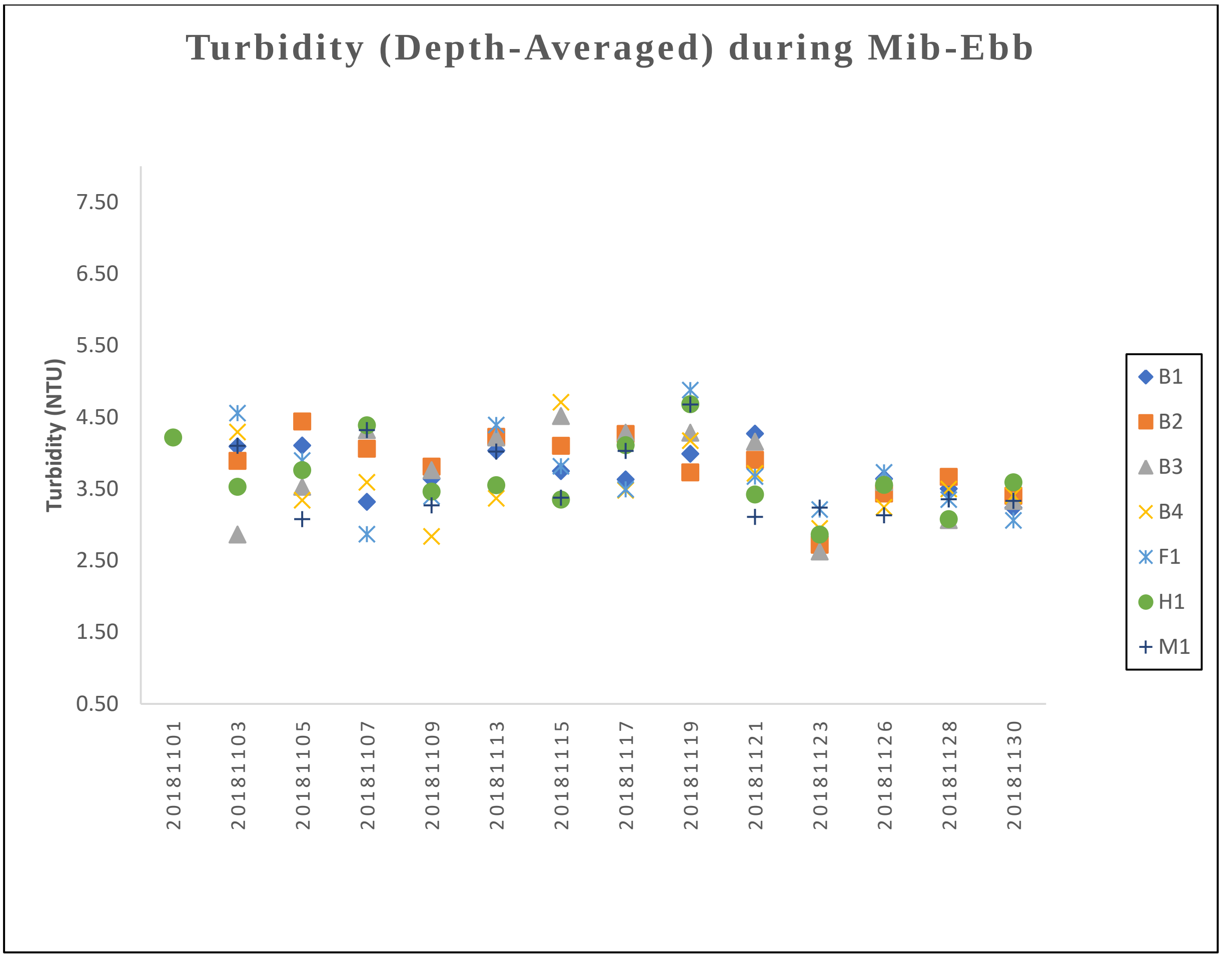

pH (Depth-Averaged) during Mid-Ebb
pH
10.00
9.50
9.00
8.50
8.00
7.50
7.00
20181101
20181103
20181105
20181107
20181109
20181113
20181115
20181117
20181119
20181121
20181123
20181126
20181128
20181130
B1
B2
B3
B4
F1
H1
M1

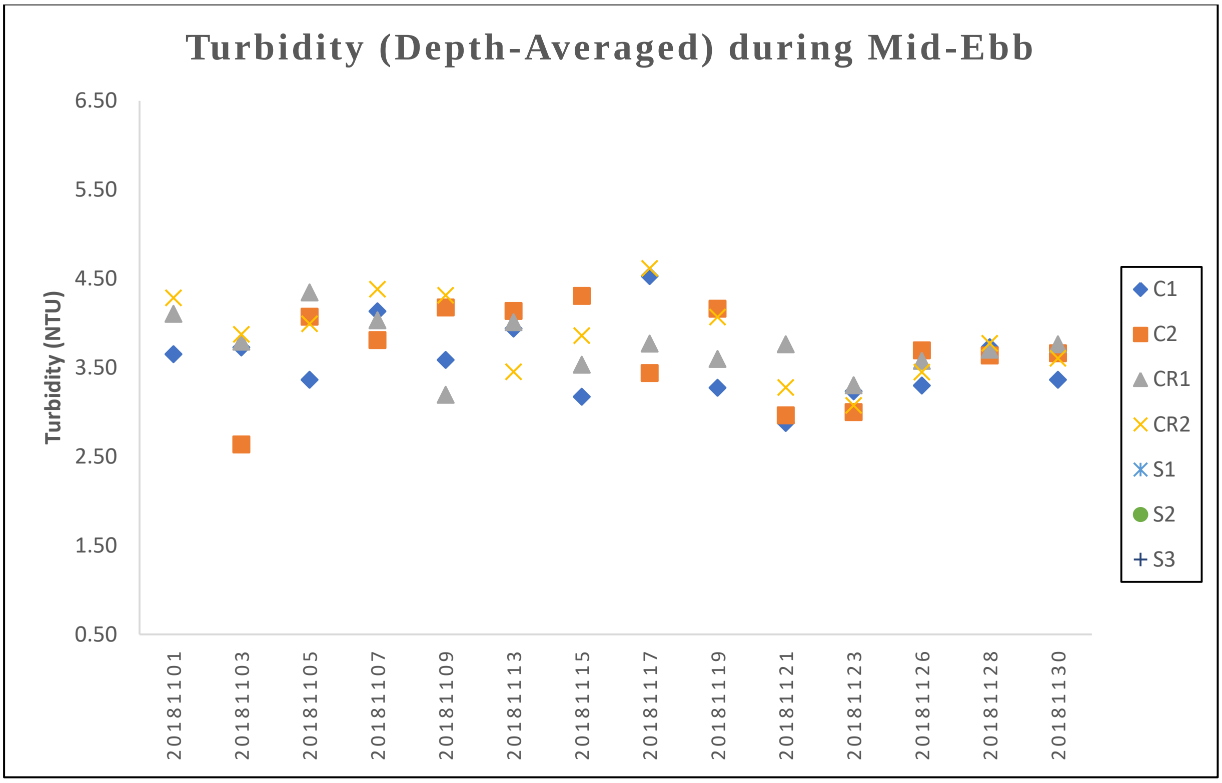

pH (Depth-Averaged) during Mid-Ebb
pH
10.00
9.50
9.00
8.50
8.00
7.50
7.00
20181101
20181103
20181105
20181107
20181109
20181113
20181115
20181117
20181119
20181121
20181123
20181126
20181128
20181130
C1
C2
CR1
CR2
S1
S2
S3



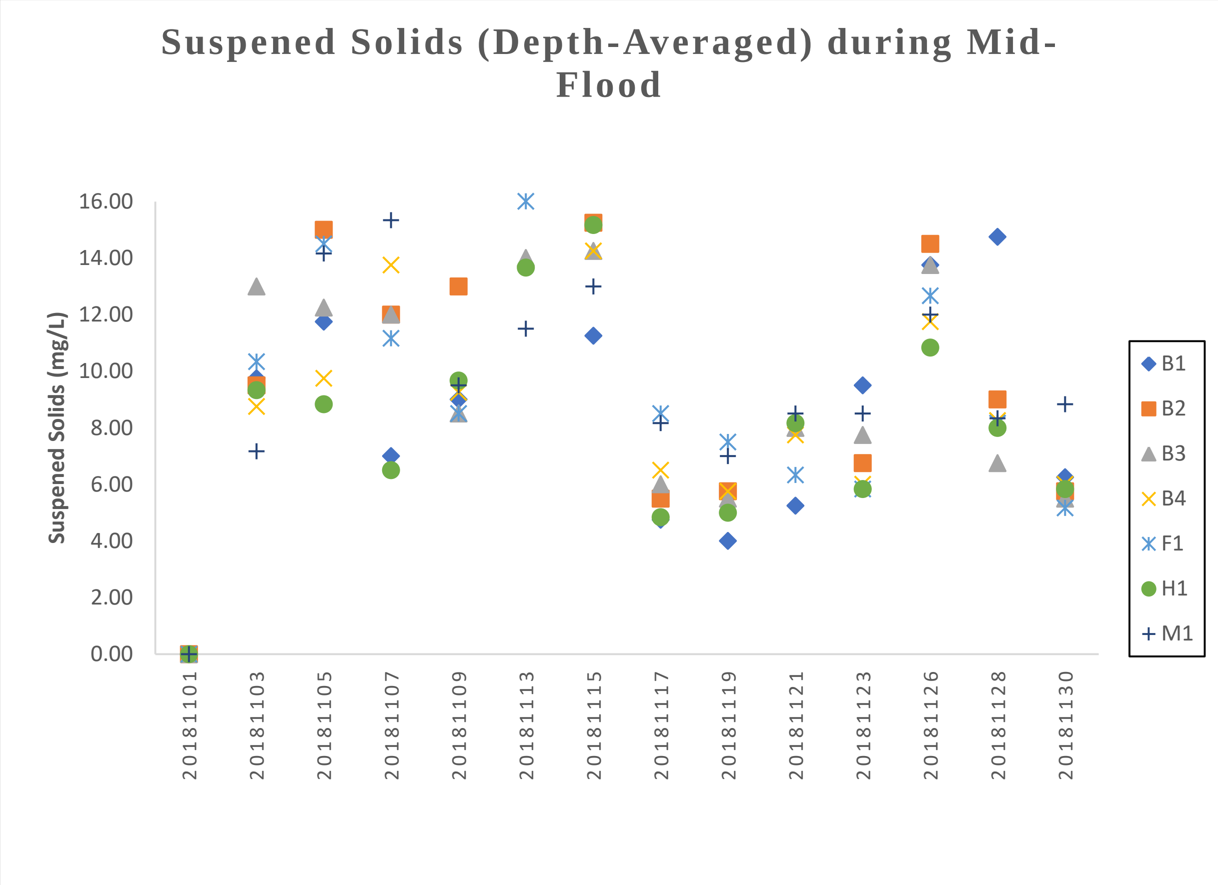


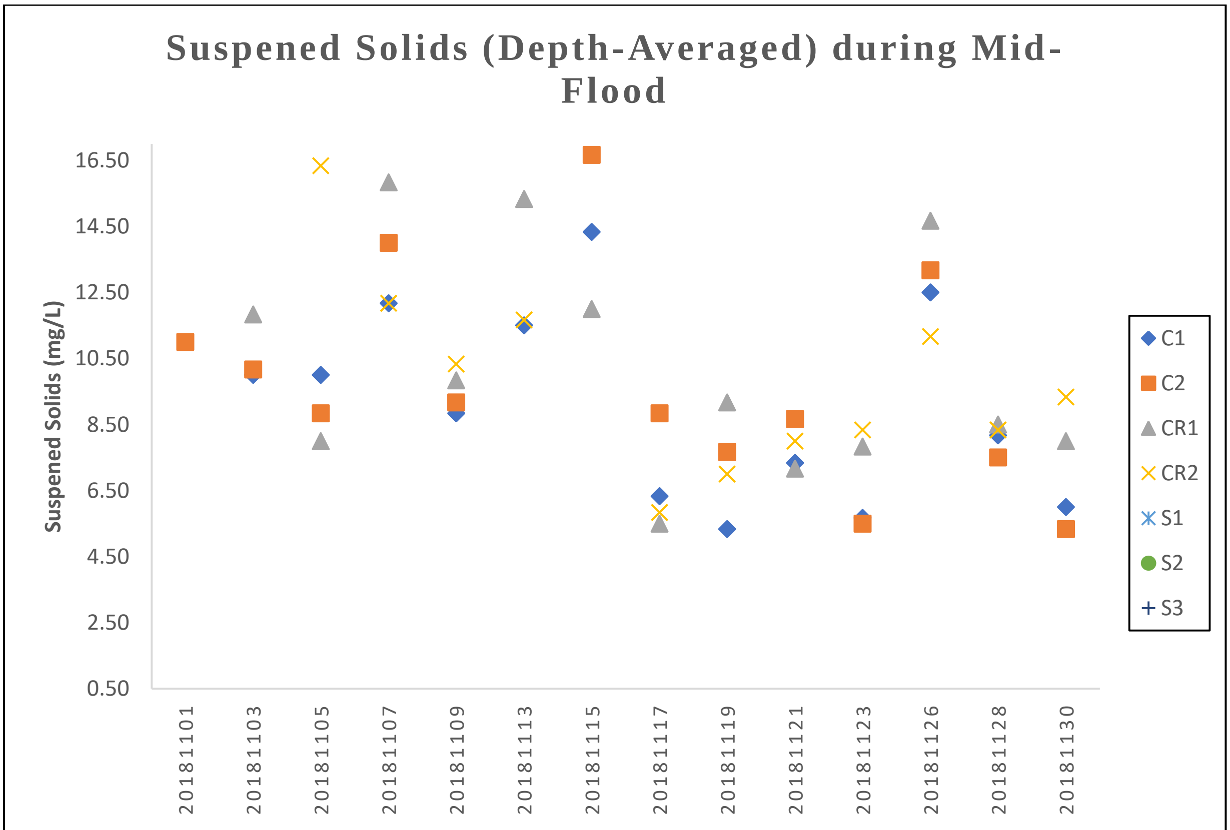
Note: The Action and Limit Level of turbidity can be referred to **Table 2.7** of the monthly EM & A report.



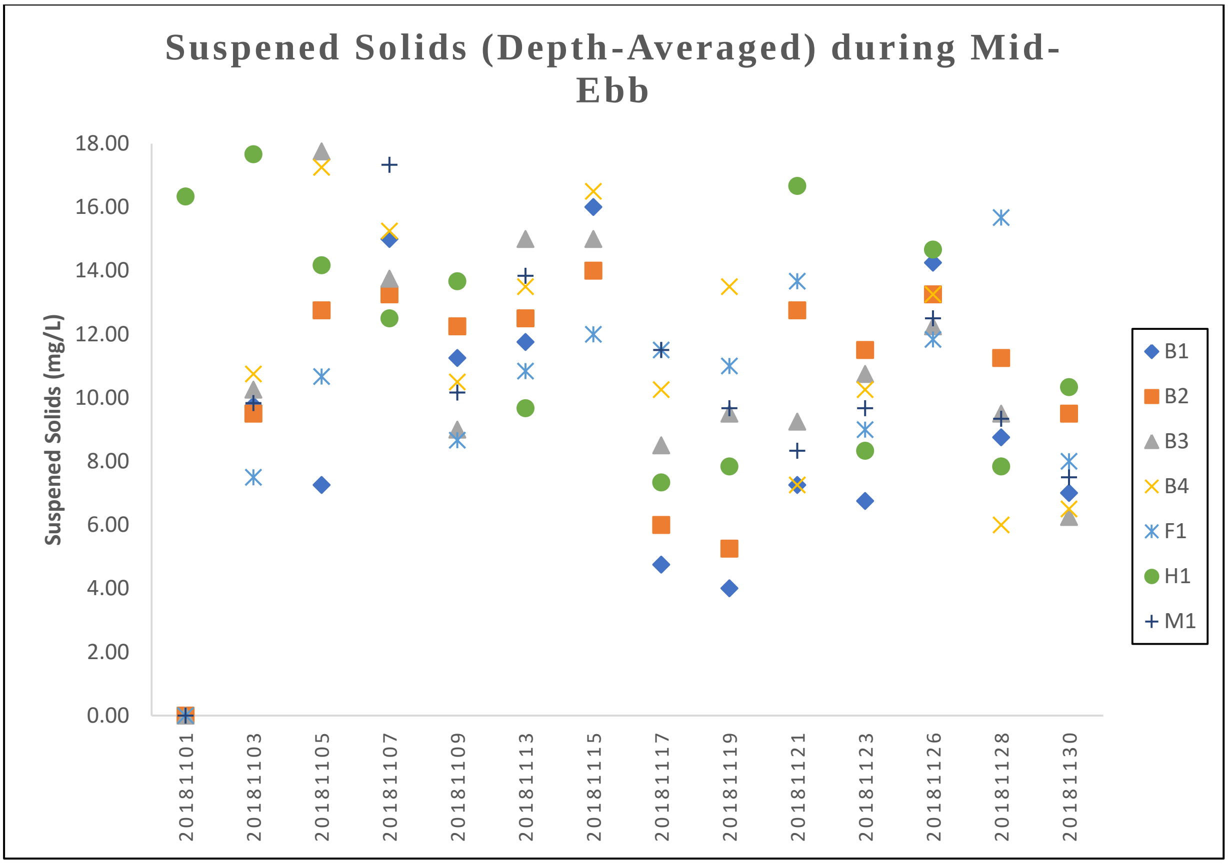


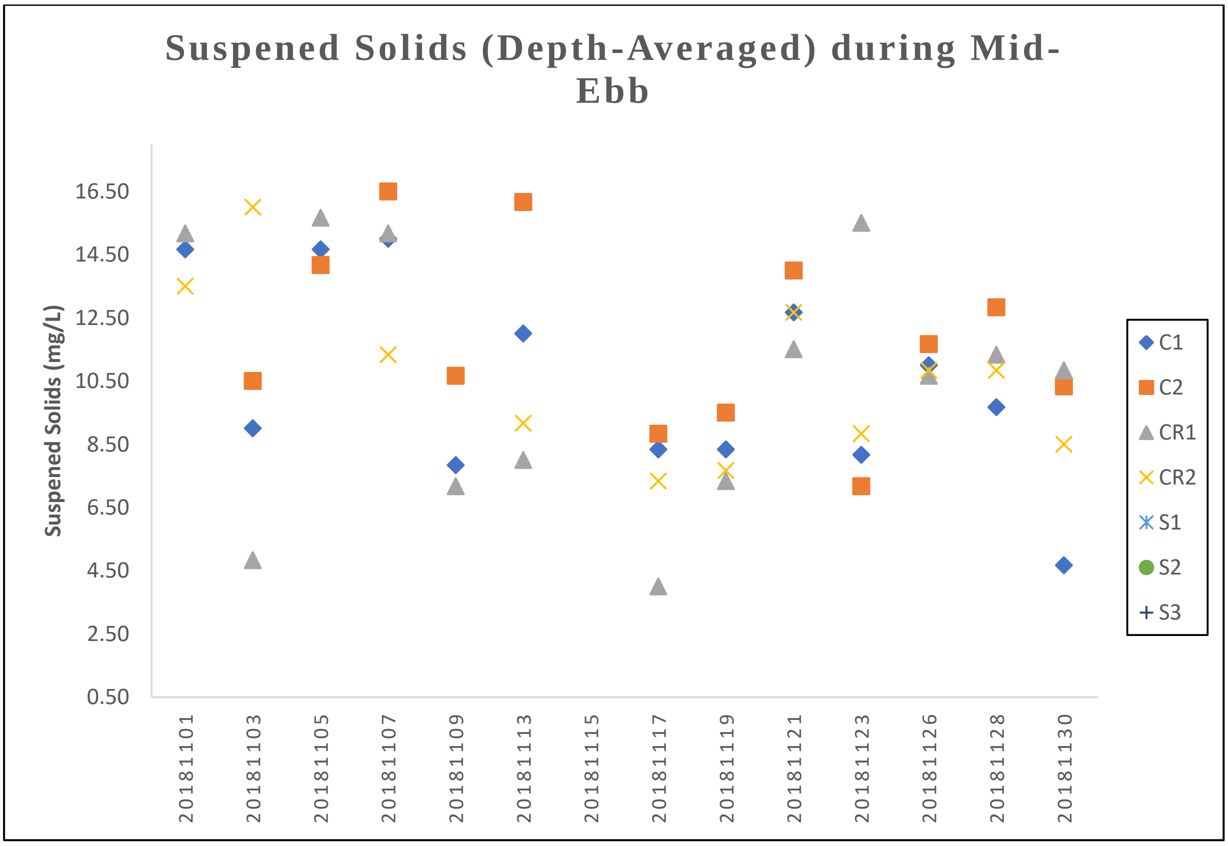
Note: The Action and Limit Level of turbidity can be referred to **Table 2.7** of the monthly EM & A report.



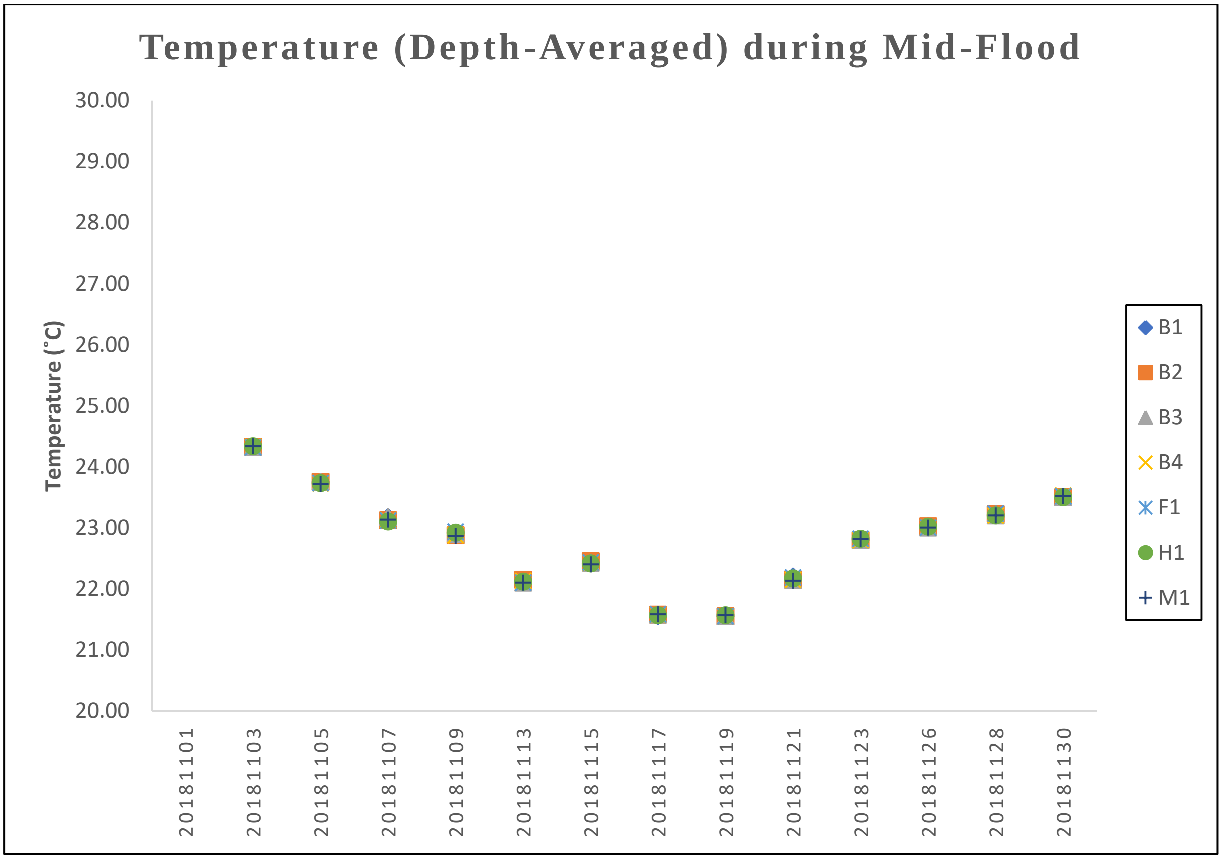


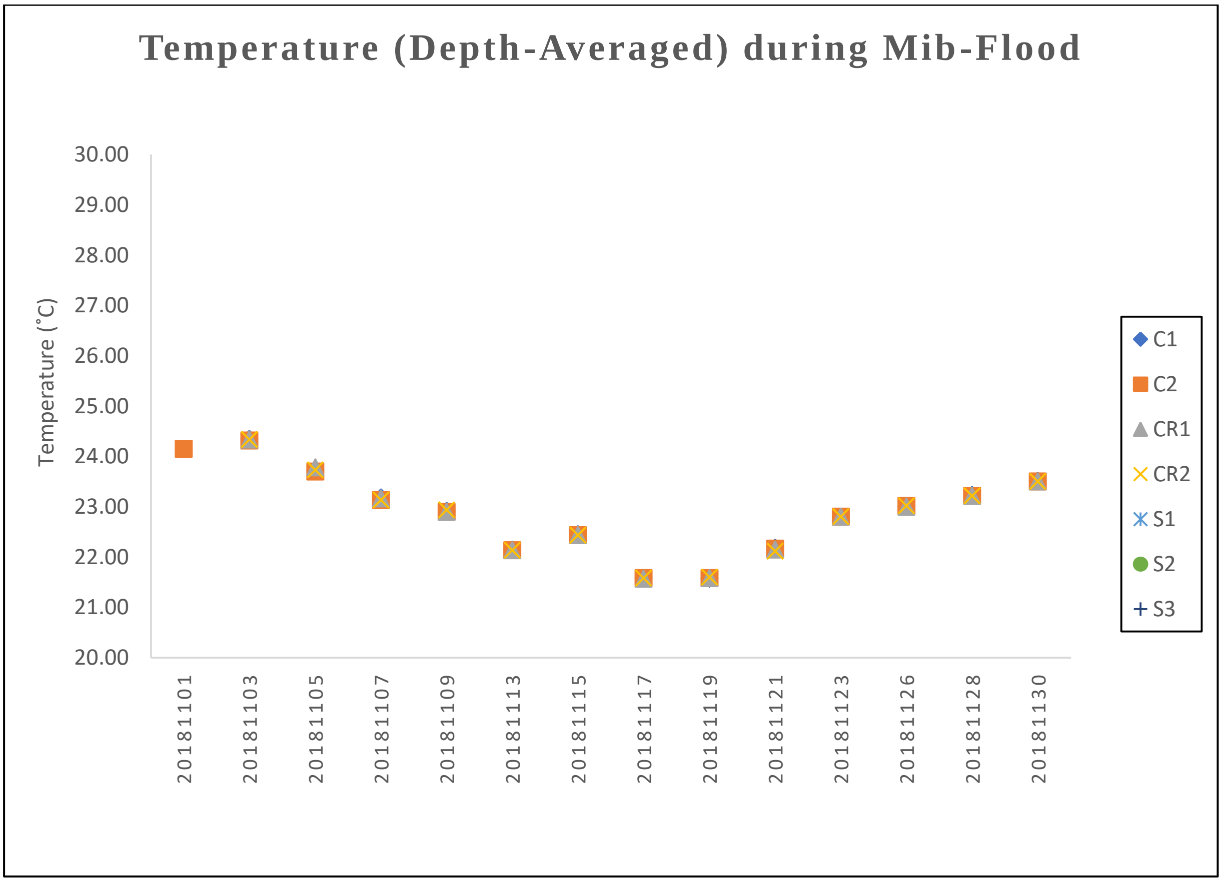
Note: The Action and Limit Level of suspened solids can be referred to **Table 2.7** of the monthly EM & A report.



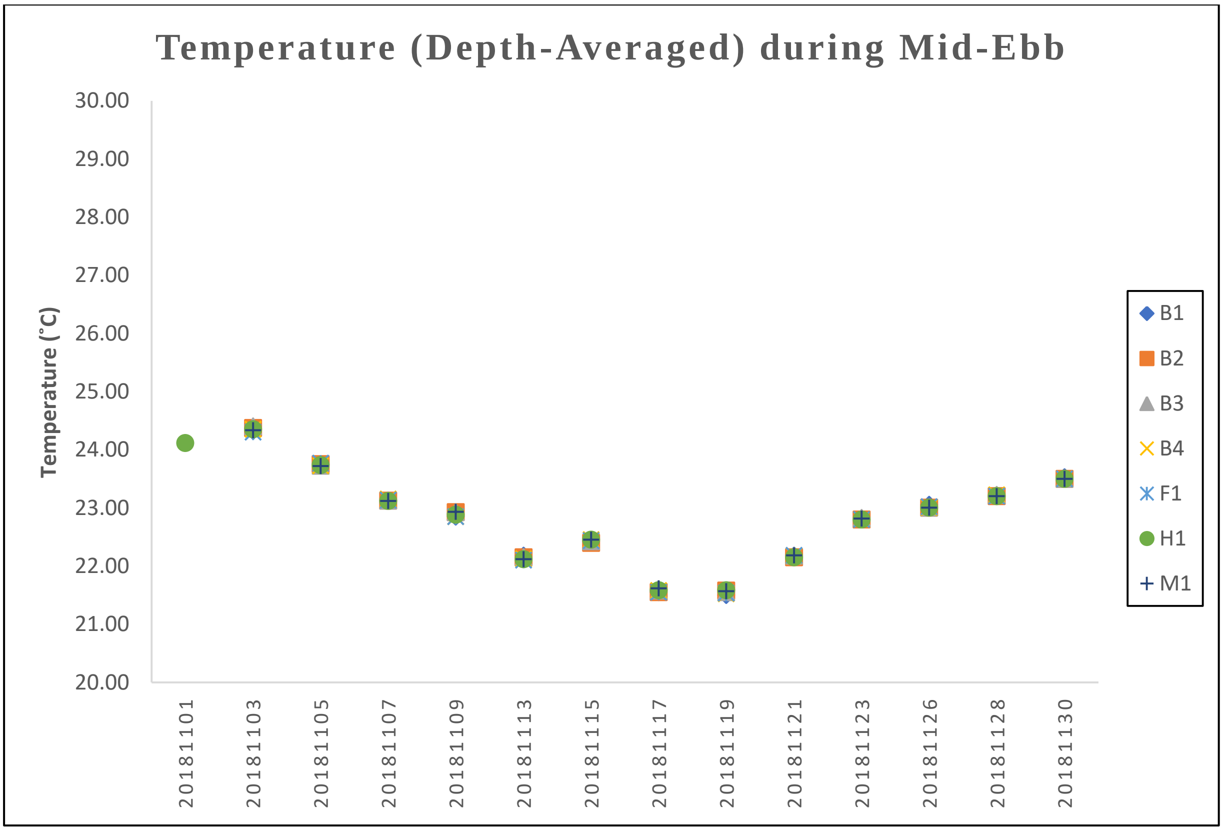


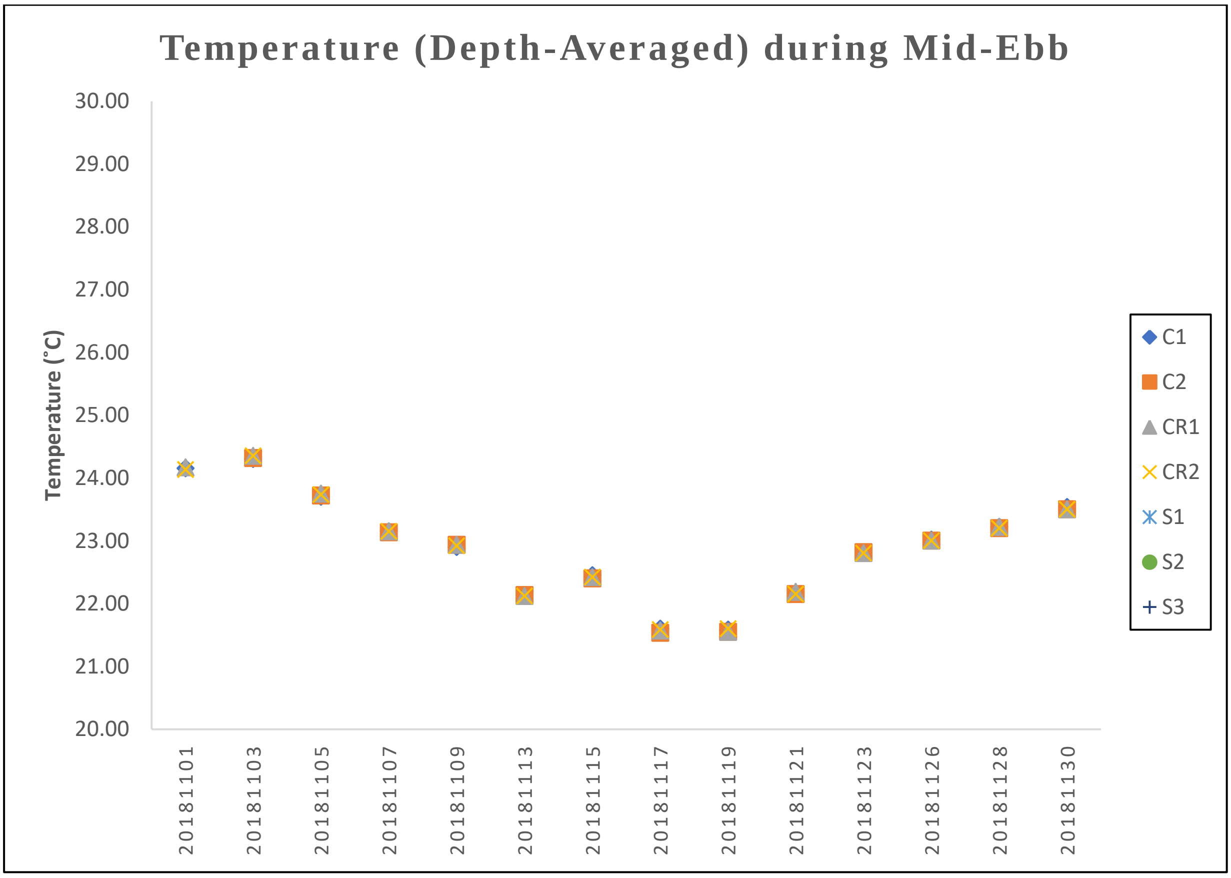
Note: The Action and Limit Level of suspened solids can be referred to **Table 2.7** of the monthly EM & A report.



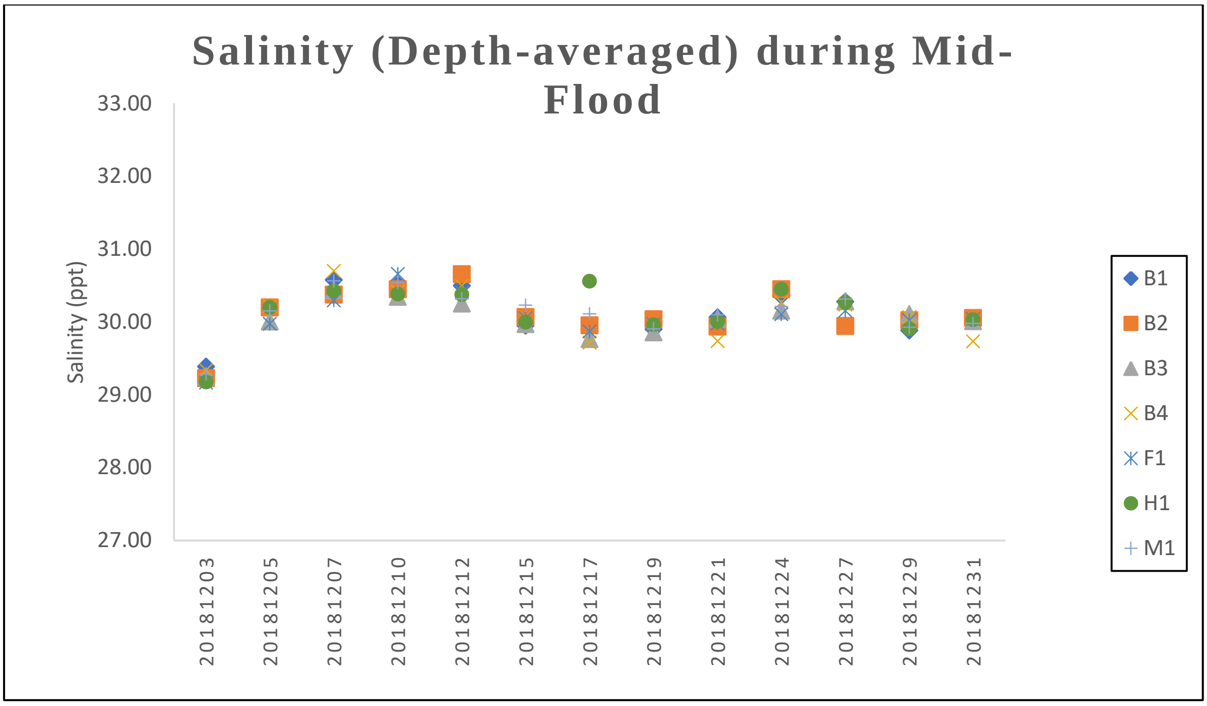


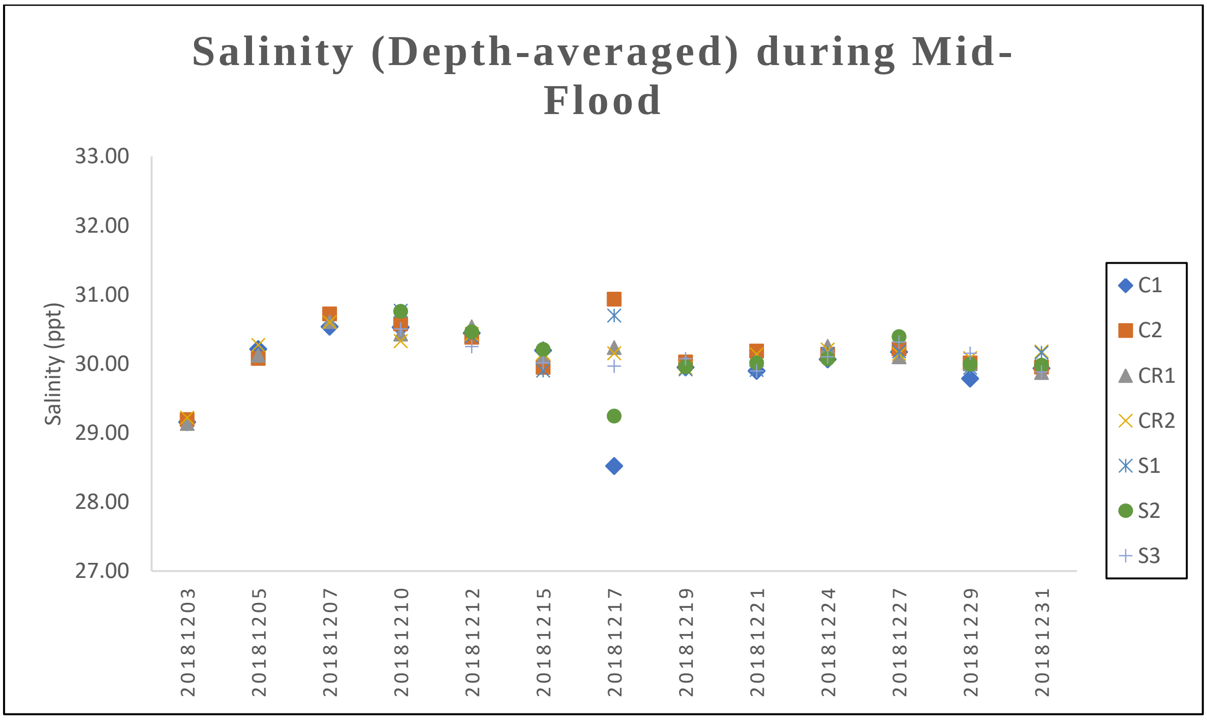
Note: The Action and Limit Level of temperature can be referred to **Table 2.7** of the monthly EM & A report.

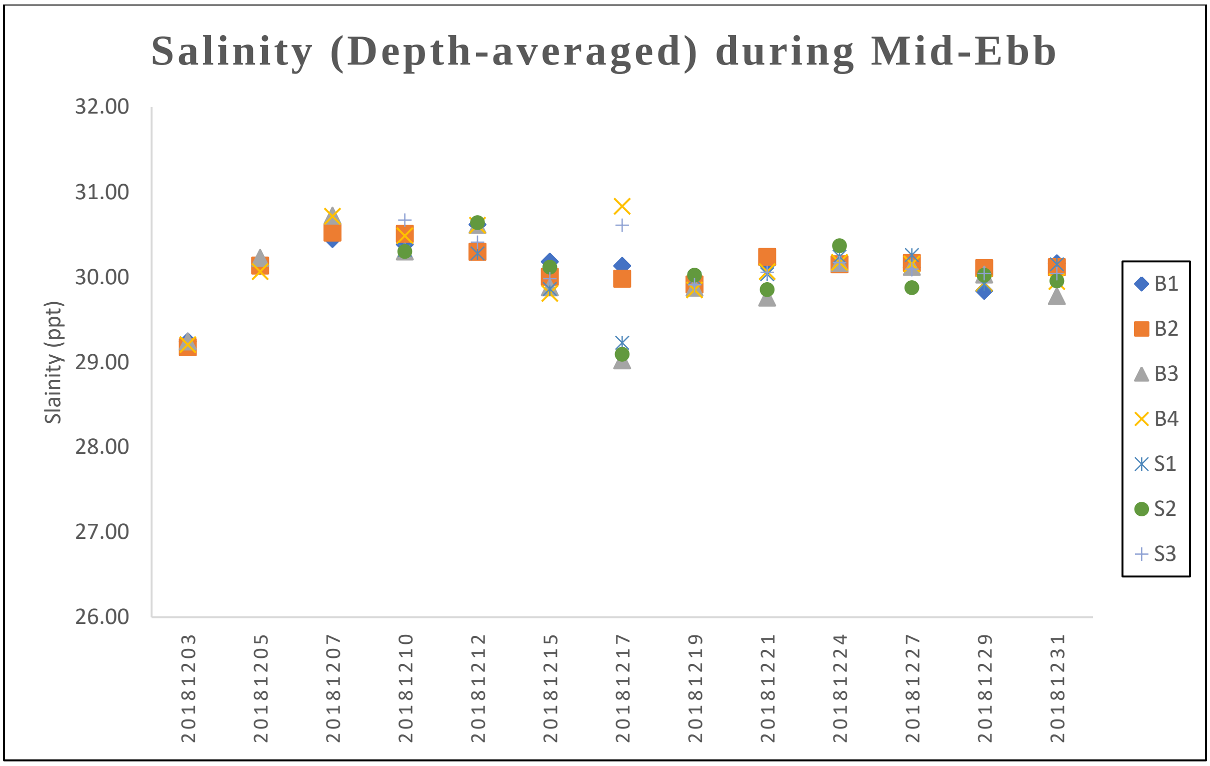




Note: The Action and Limit Level of temperature can be referred to **Table 2.7** of the monthly EM & A report.


Salinity (Depth-averaged) during Mid-Flood
Salinity (ppt)
33.00
32.00
31.00
30.00
29.00
28.00
27.00
20181203
20181205
20181207
20181210
20181212
20181215
20181217
20181219
20181221
20181224
20181227
20181229
20181231
B1
B2
B3
B4
F1
H1
M1


Salinity (Depth-averaged) during Mid-Flood
Salinity (ppt)
33.00
32.00
31.00
30.00
29.00
28.00
27.00
20181203
20181205
20181207
20181210
20181212
20181215
20181217
20181219
20181221
20181224
20181227
20181229
20181231
C1
C2
CR1
CR2
S1
S2
S3



Salinity (Depth-averaged) during Mid-Ebb
Slainity (ppt)
32.00
31.00
30.00
29.00
28.00
27.00
26.00
20181203
20181205
20181207
20181210
20181212
20181215
20181217
20181219
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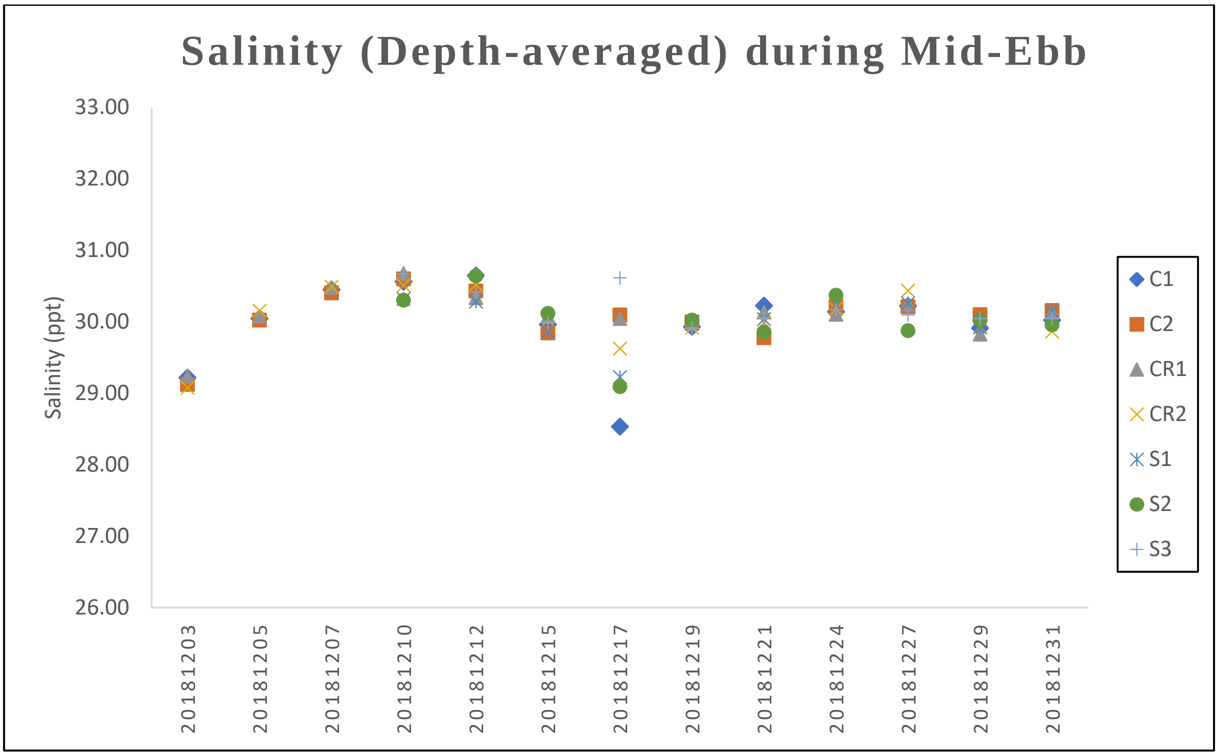
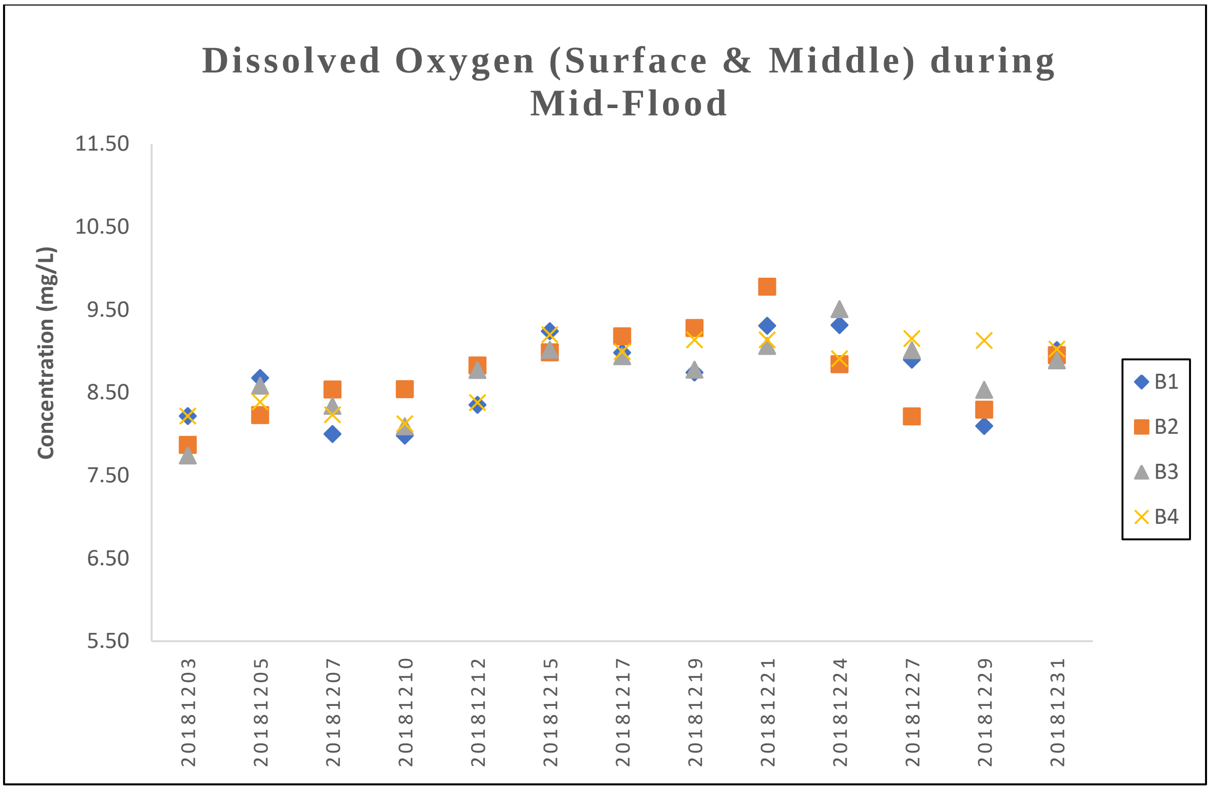
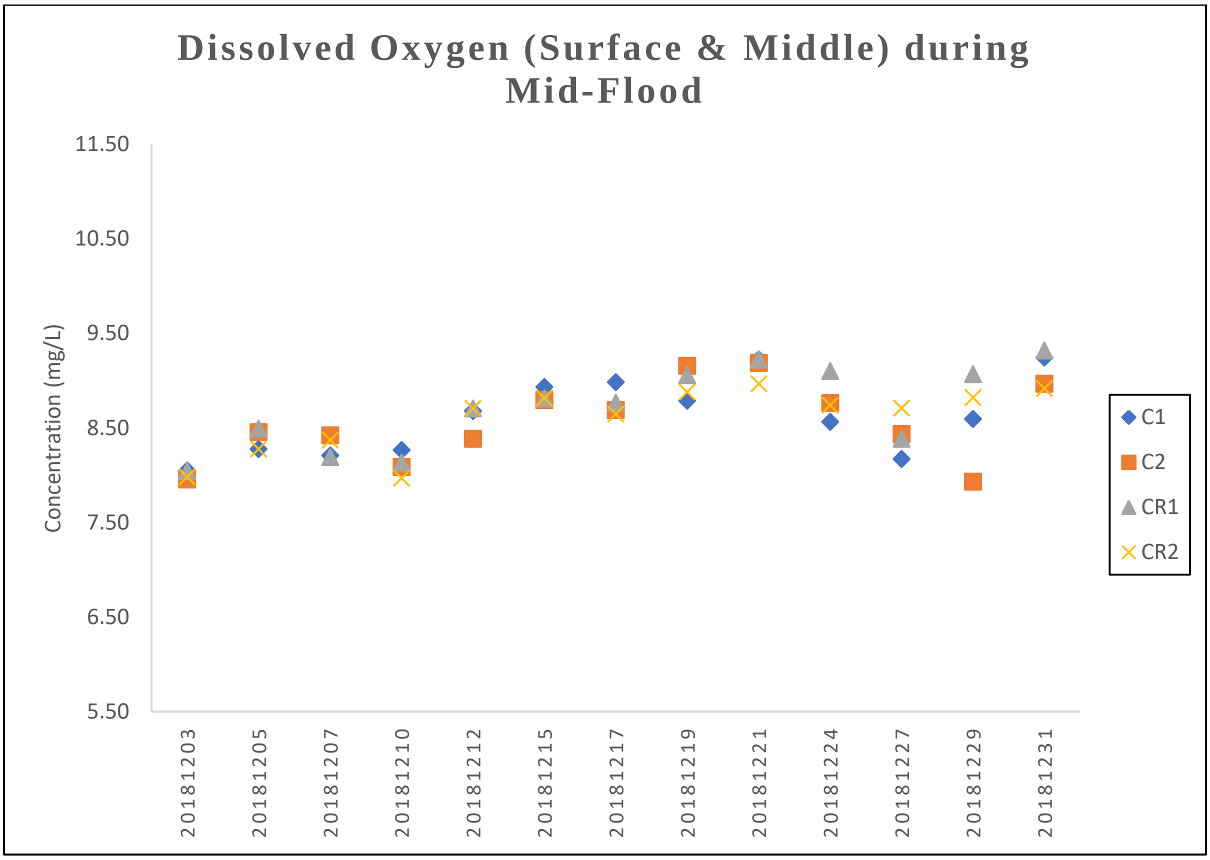
20181227
20181229
20181231
B1
B2
B3
B4
S1
S2
S3

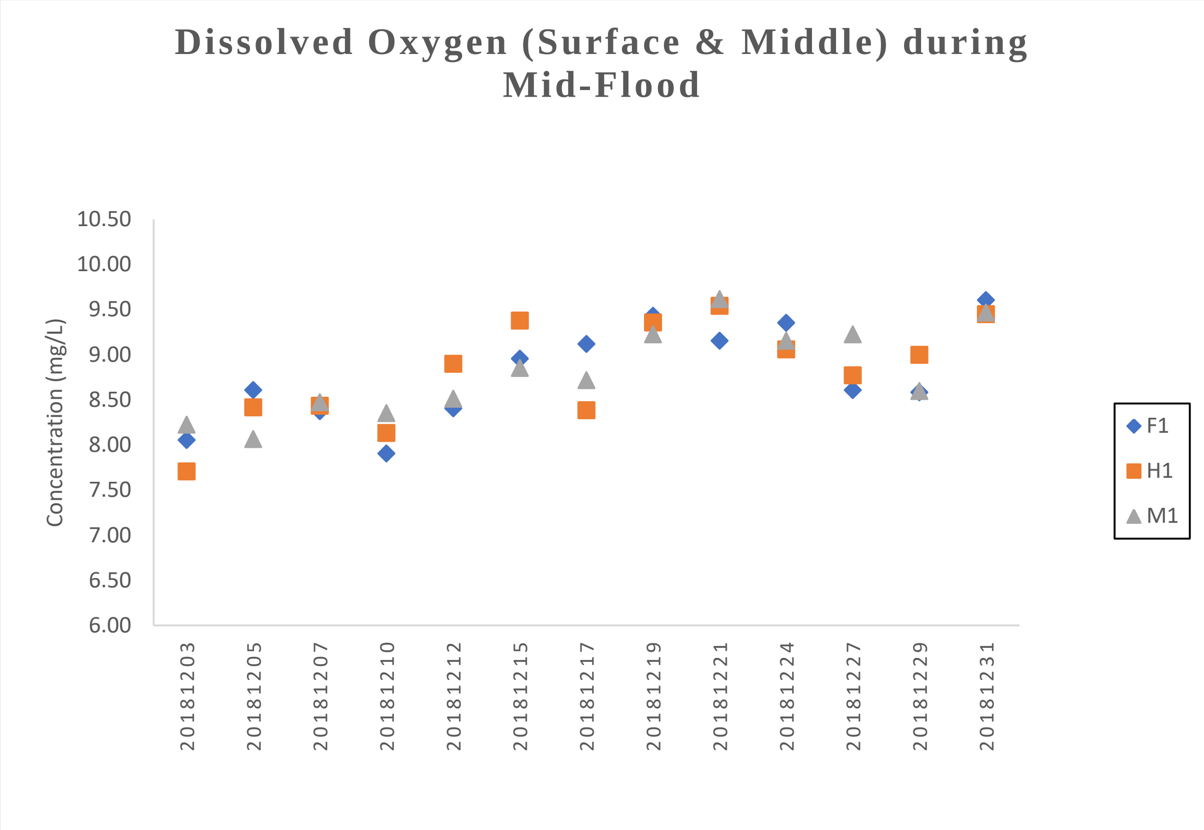


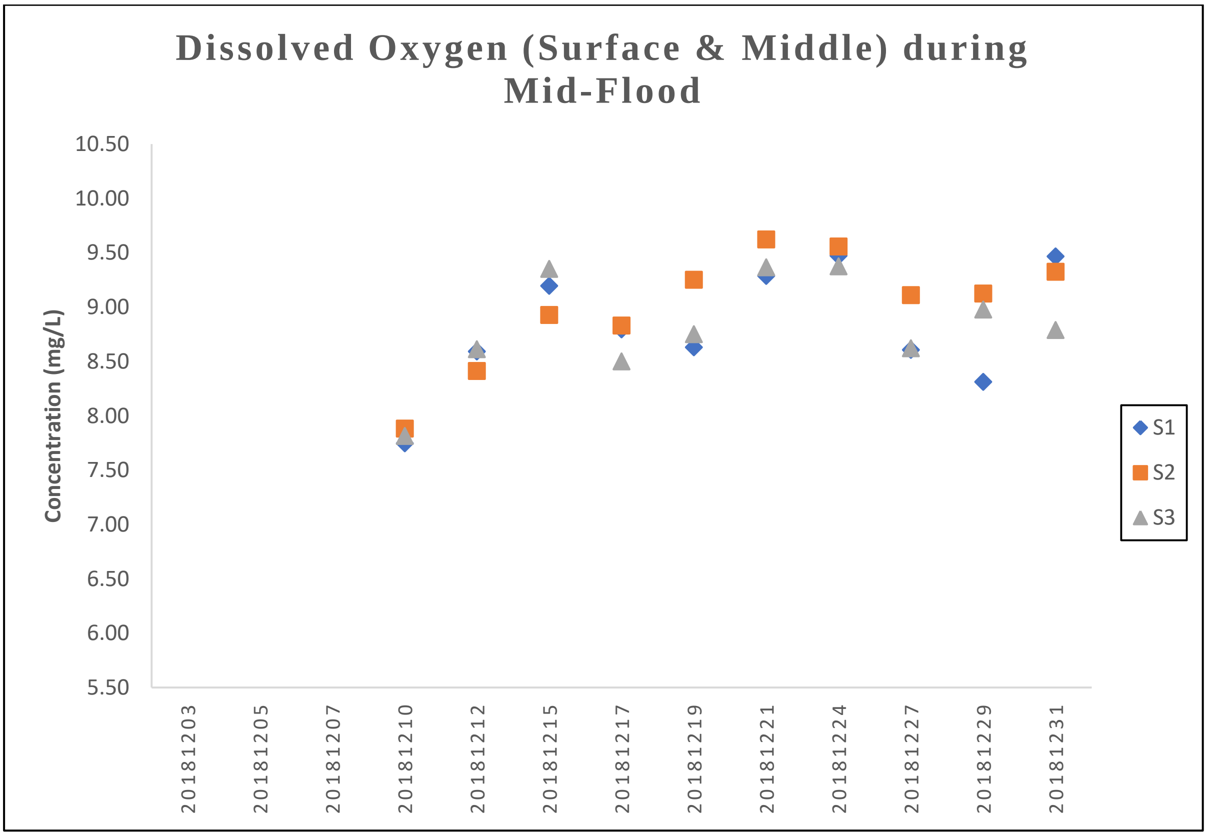
Salinity (Depth-averaged) during Mid-Ebb
Salinity (ppt)
33.00
32.00
31.00
30.00
29.00
28.00
27.00
26.00
20181203
20181205
20181207
20181210
20181212
20181215
20181217
20181219
20181221
20181224
20181227
20181229
20181231
C1
C2
CR1
CR2
S1
S2
S3



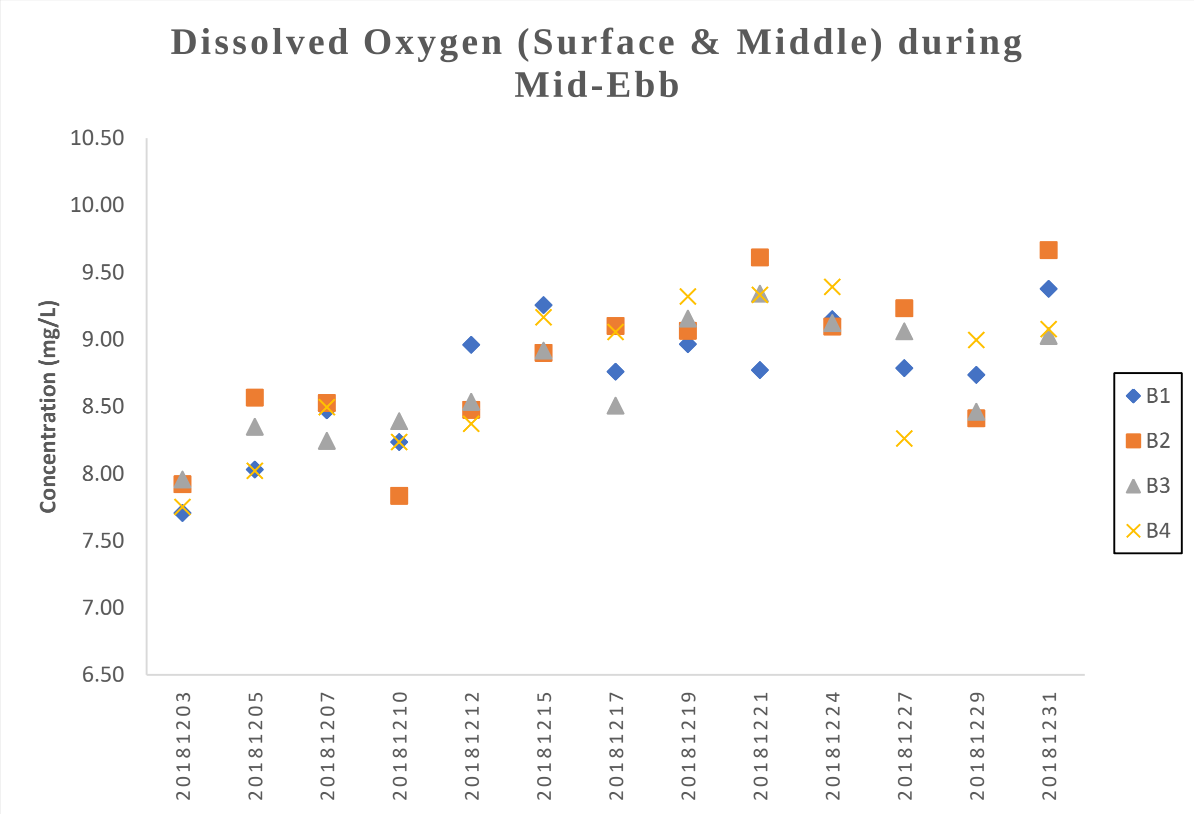


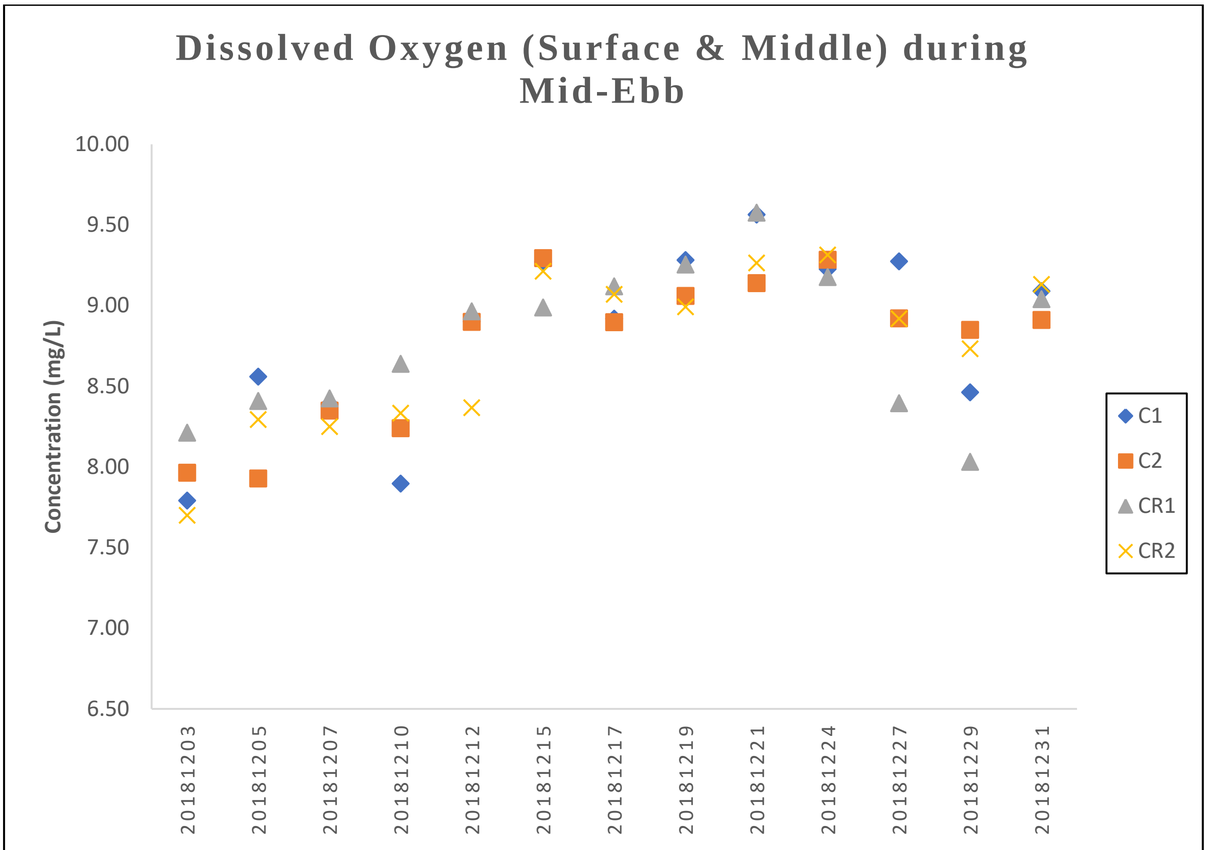
Note: The Action and Limit Level of dissolved oxygen can be referred to **Table 2.7** of the monthly EM & A report.



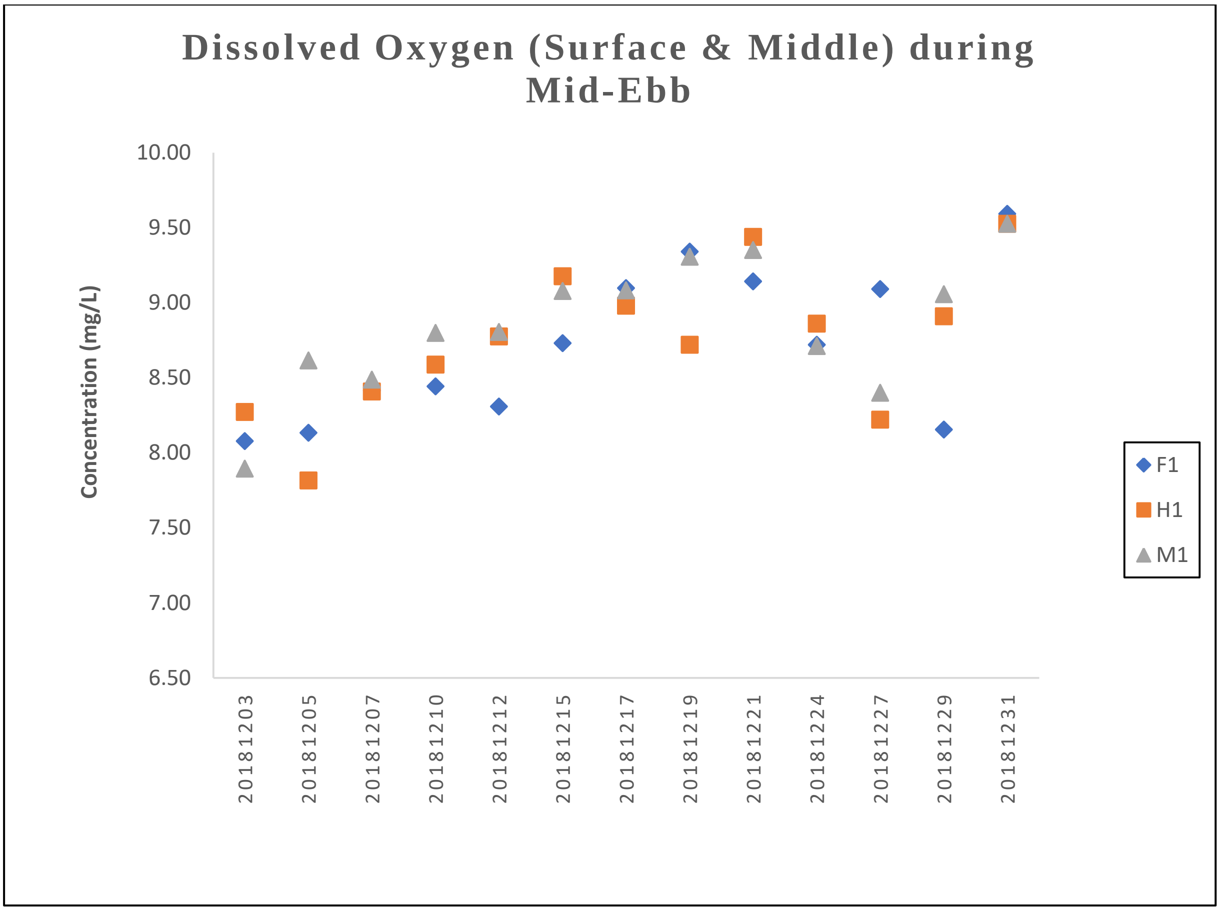


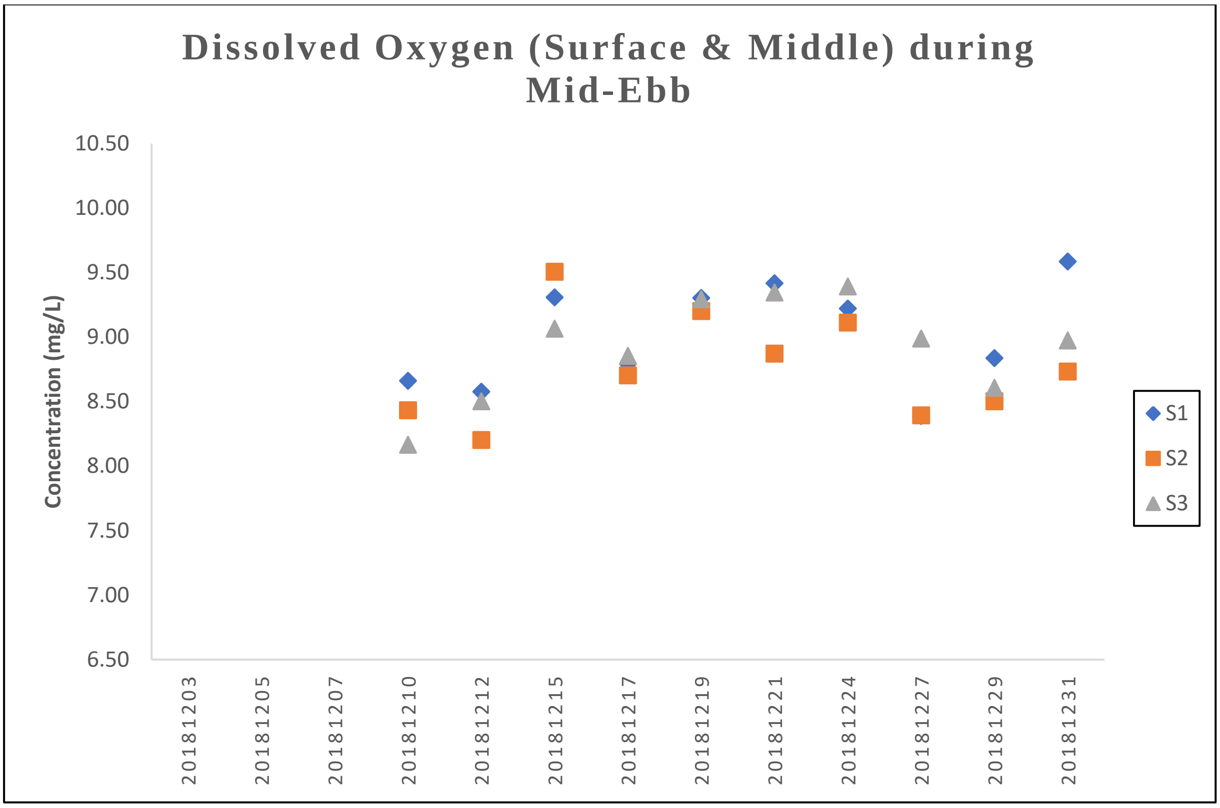
Note: The Action and Limit Level of dissolved oxygen can be referred to **Table 2.7** of the monthly EM & A report.



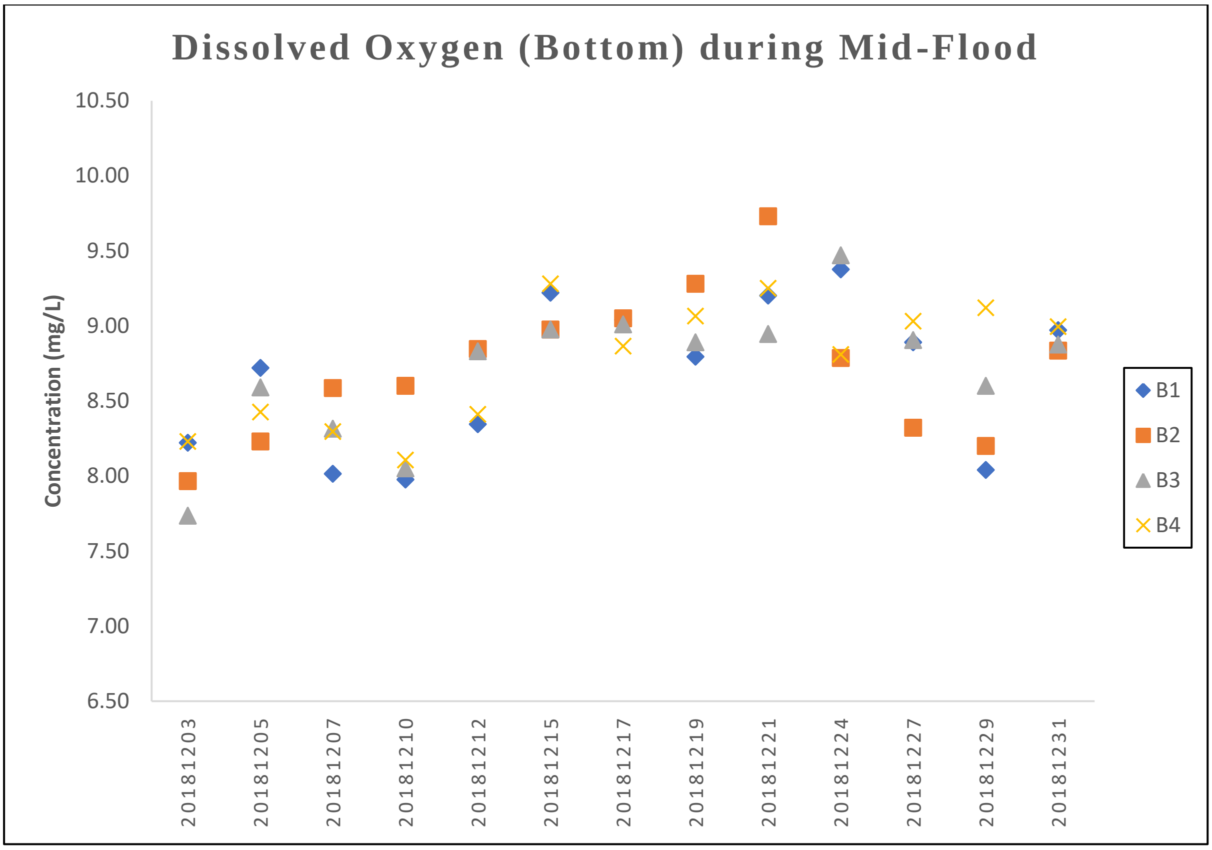


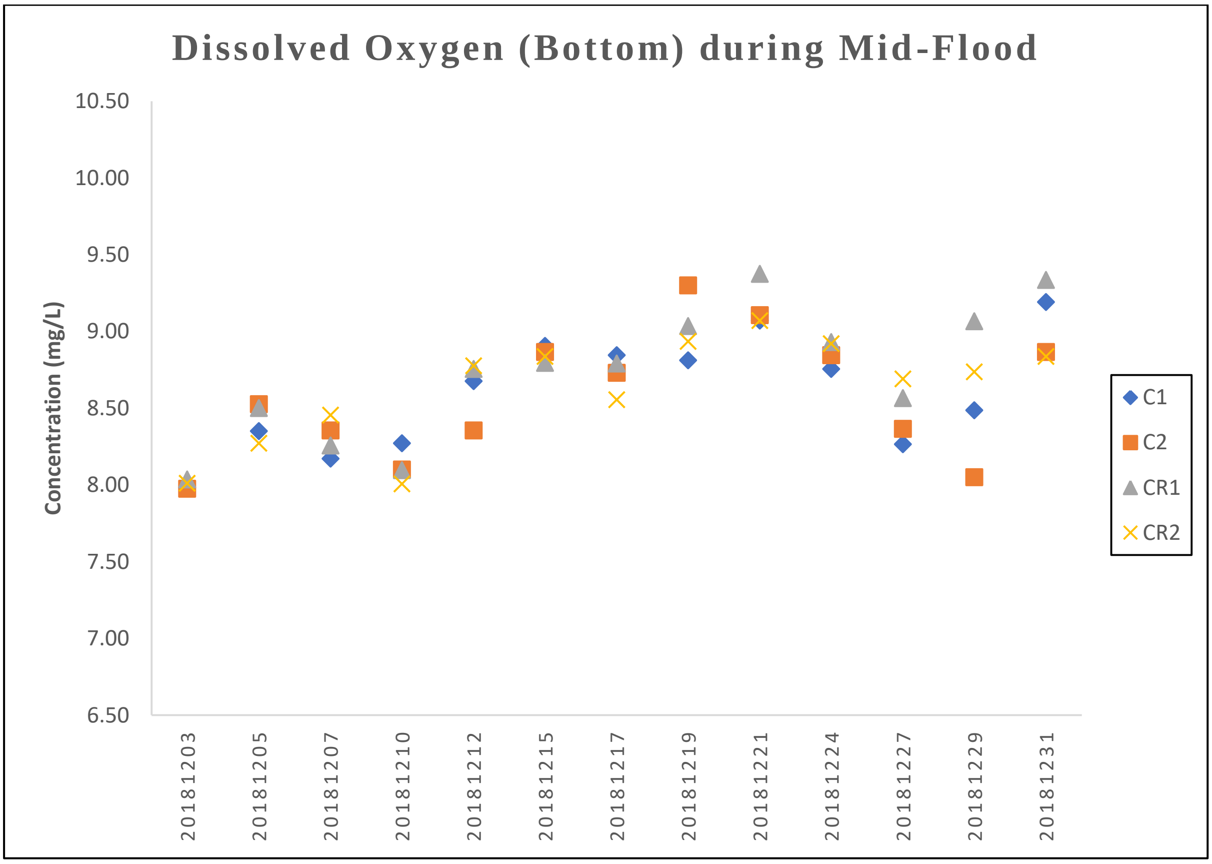
Note: The Action and Limit Level of dissolved oxygen can be referred to **Table 2.7** of the monthly EM & A report.



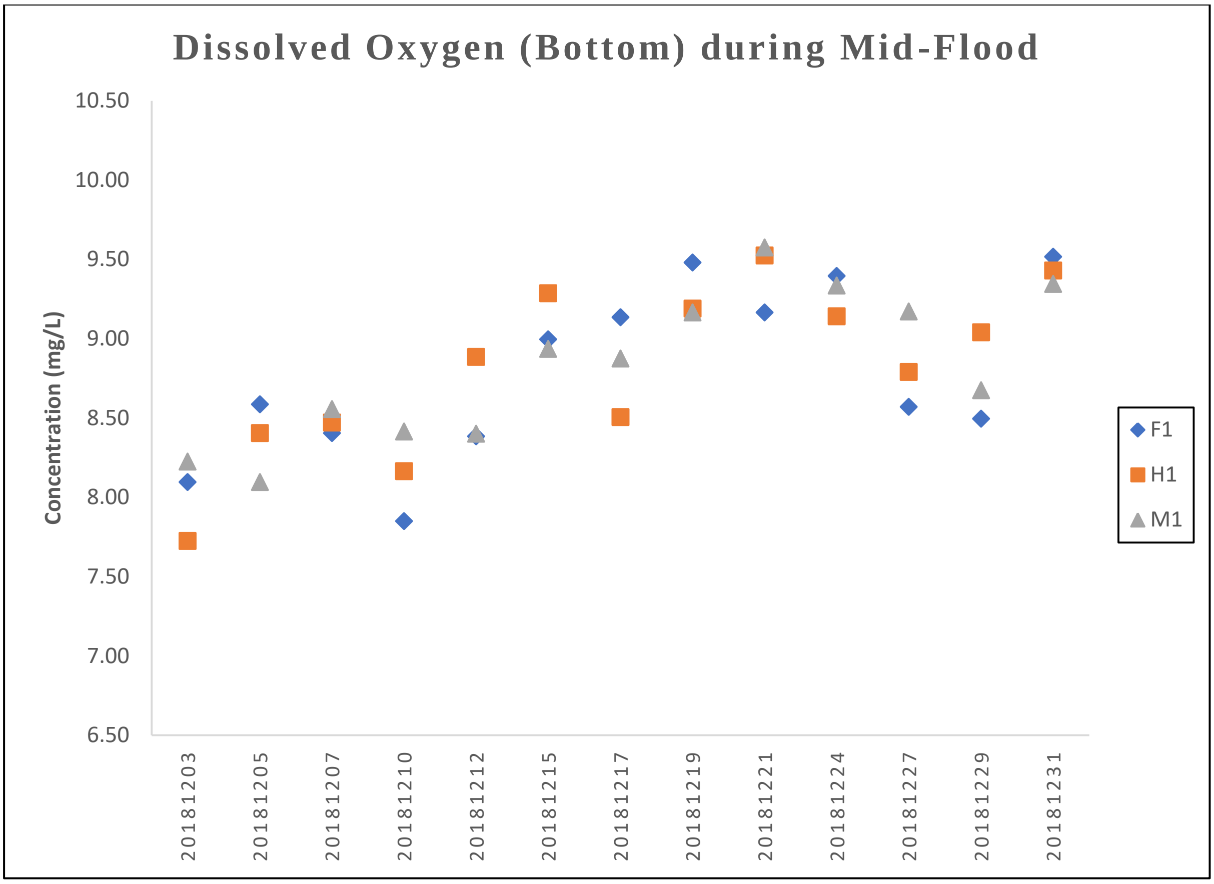


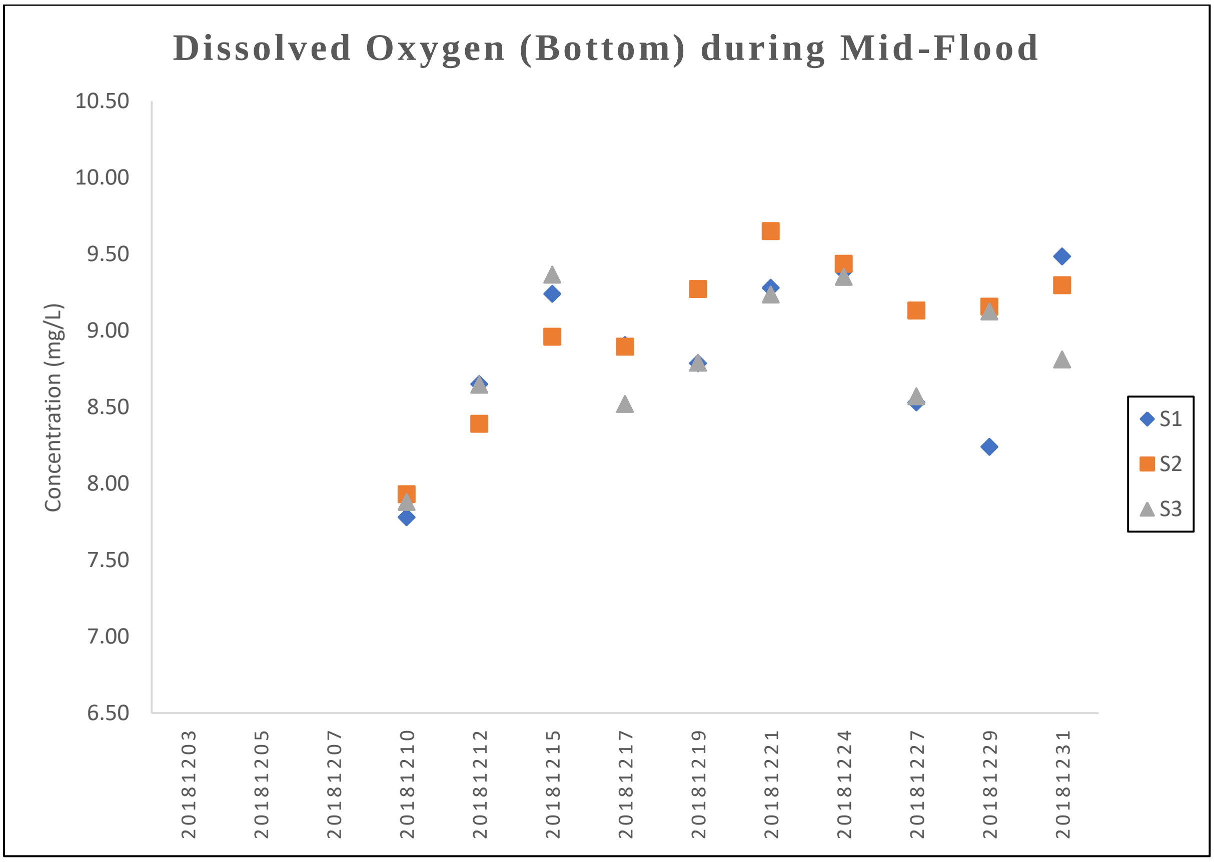
Note: The Action and Limit Level of dissolved oxygen can be referred to **Table 2.7** of the monthly EM & A report.



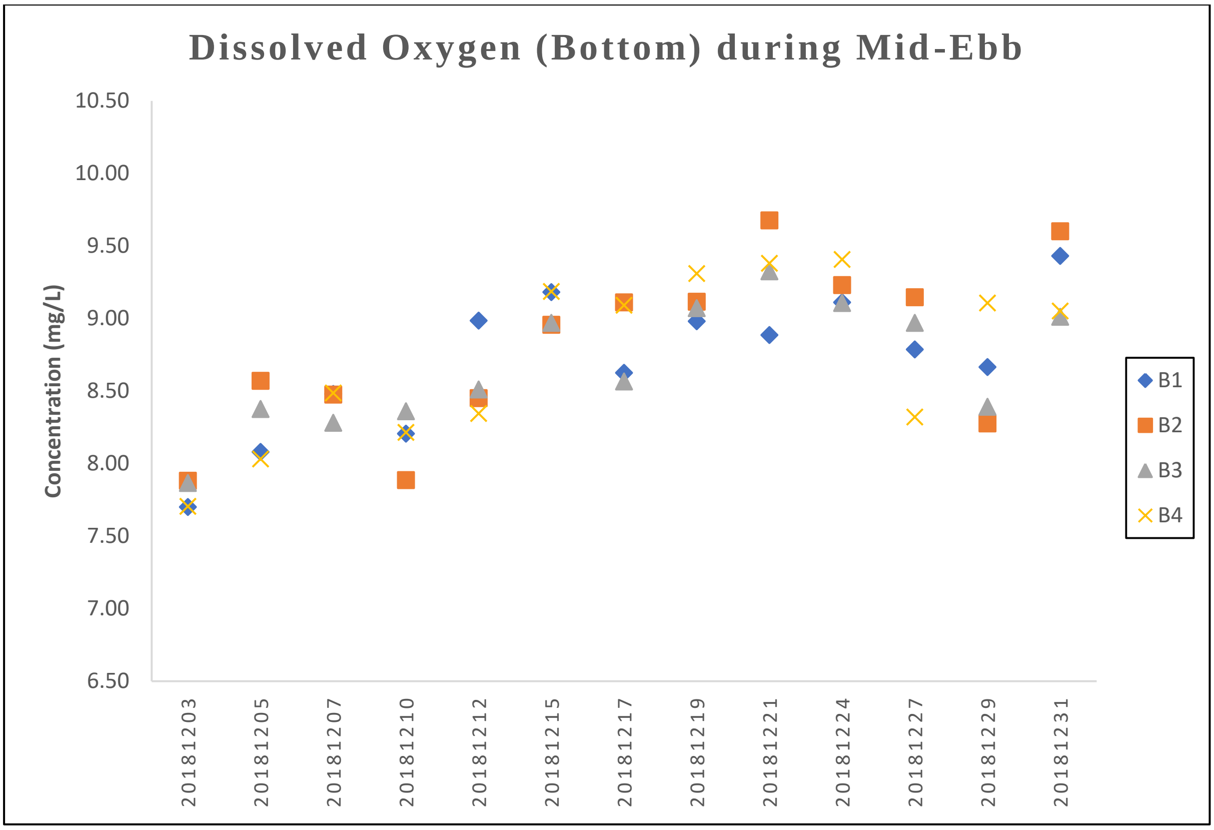


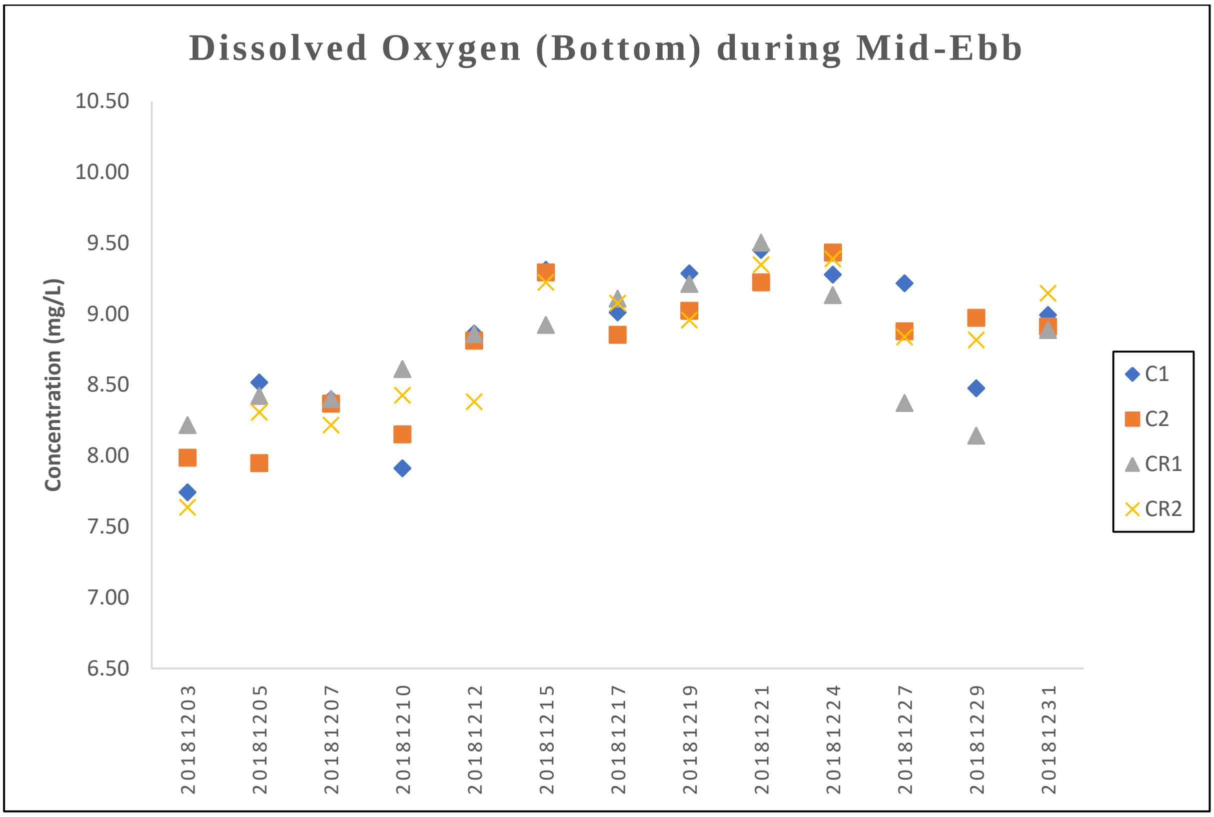
Note: The Action and Limit Level of dissolved oxygen can be referred to **Table 2.7** of the monthly EM & A report.



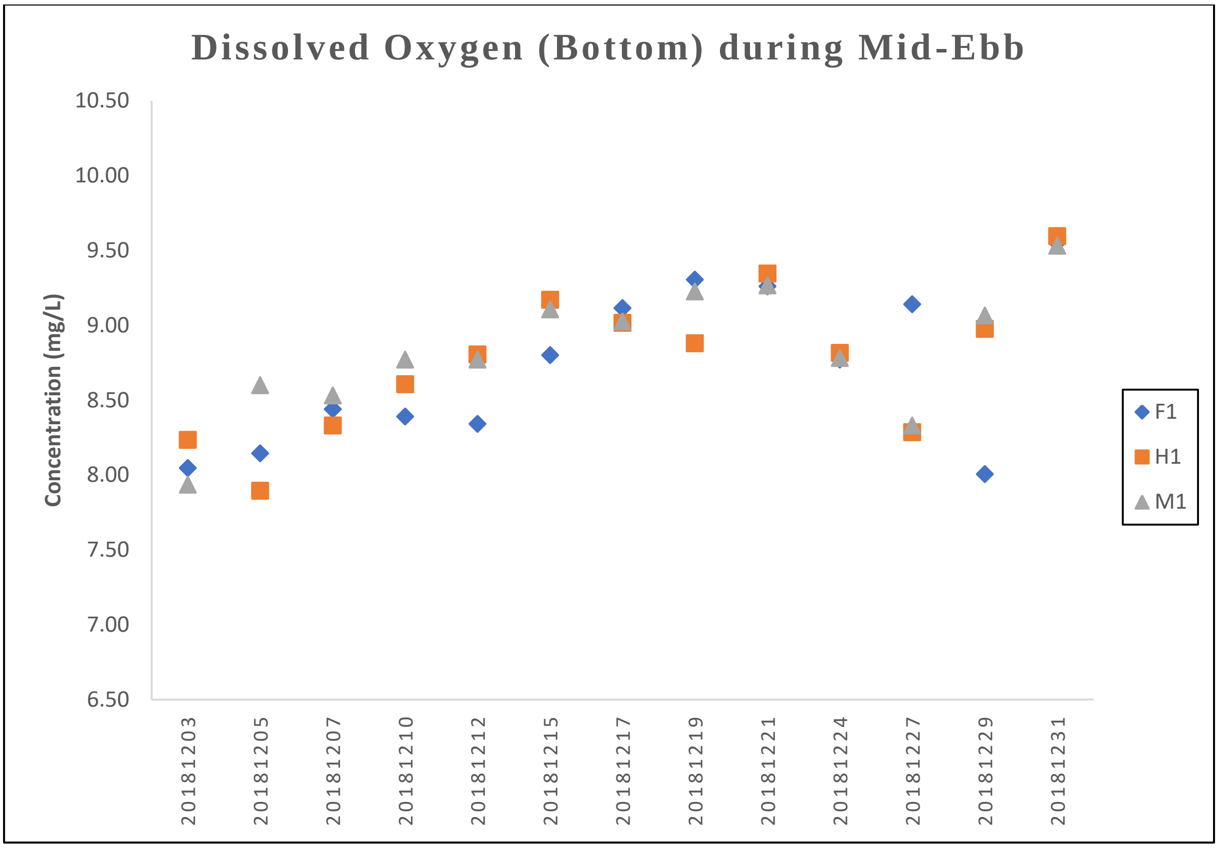


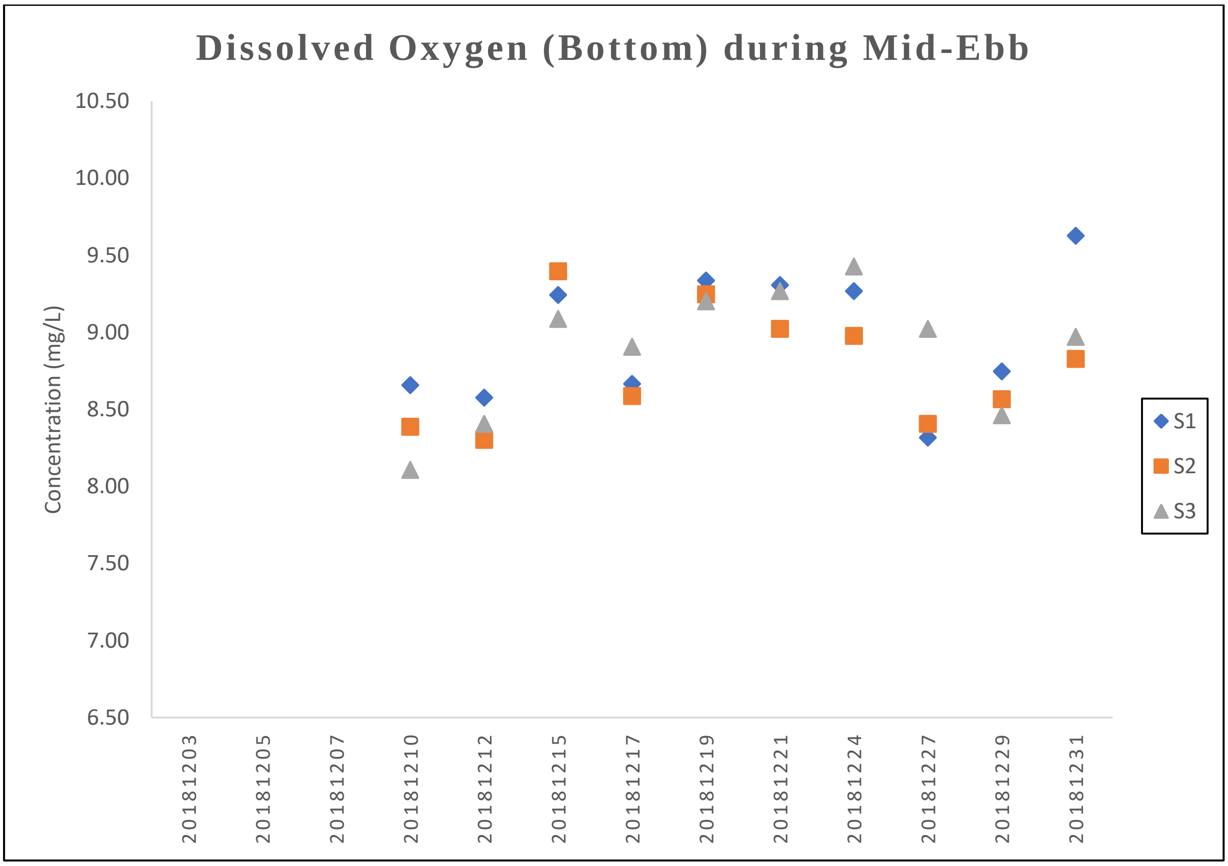
Note: The Action and Limit Level of dissolved oxygen can be referred to **Table 2.7** of the monthly EM & A report.



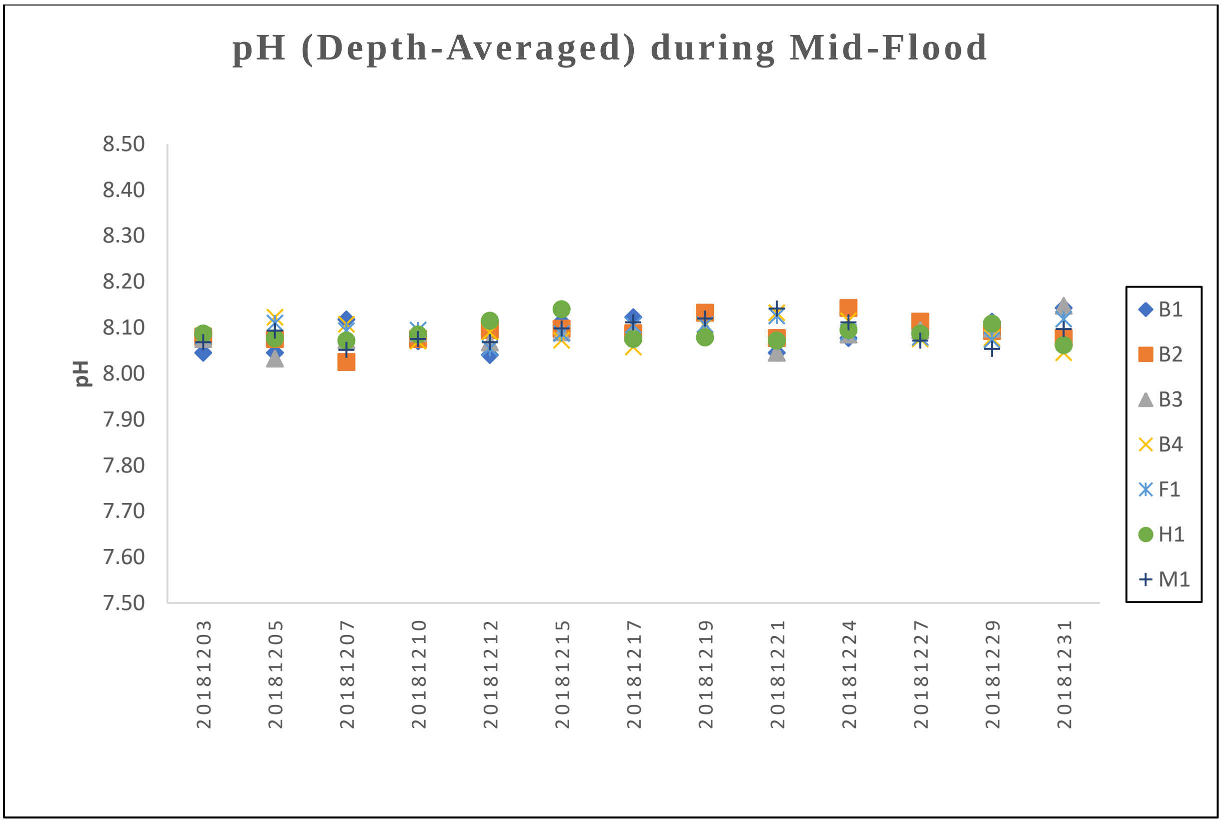


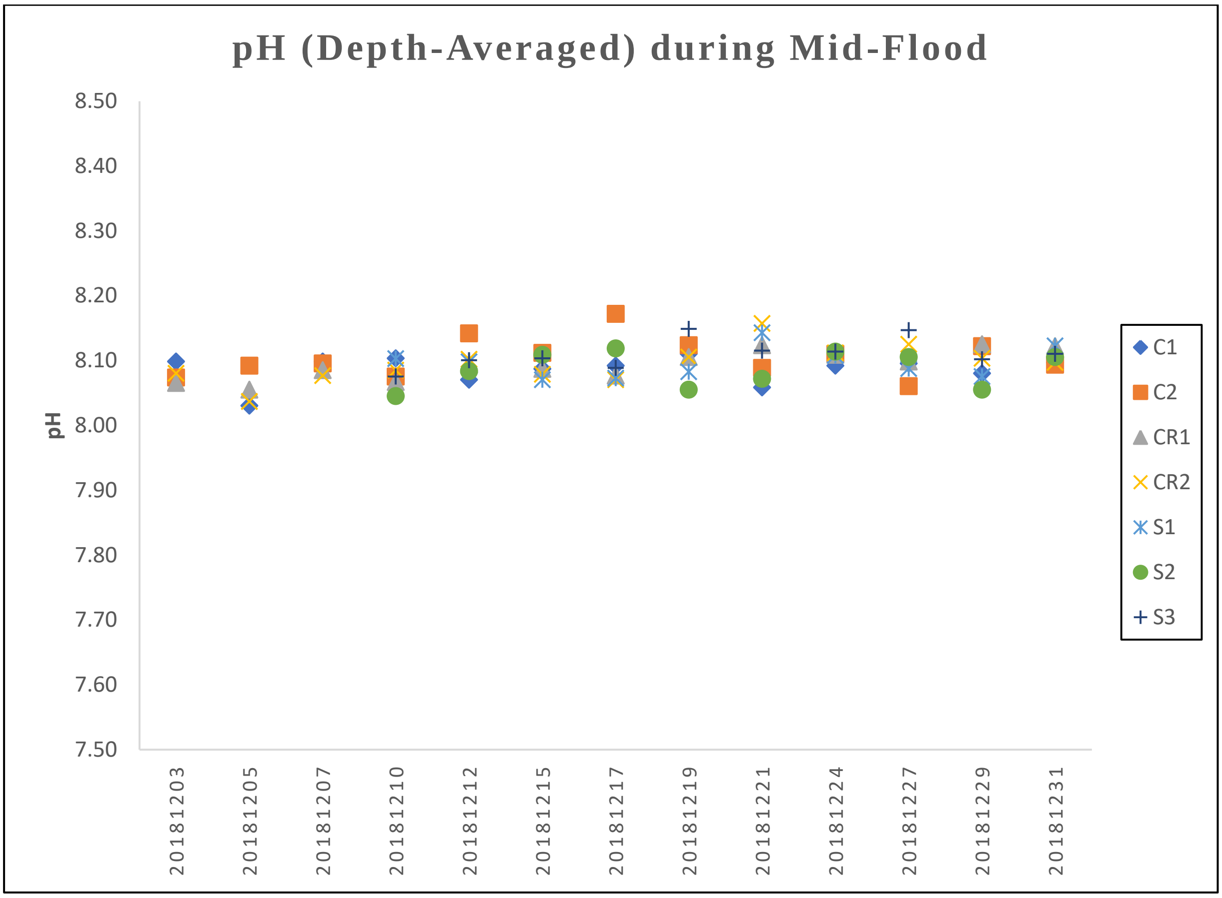
Note: The Action and Limit Level of dissolved oxygen can be referred to **Table 2.7** of the monthly EM & A report.





Note: The Action and Limit Level of dissolved oxygen can be referred to **Table 2.7** of the monthly EM & A report.


pH (Depth-Averaged) during Mid-Flood
pH
8.50
8.40
8.30
8.20
8.10
8.00
7.90
7.80
7.70
7.60
7.50
20181203
20181205
20181207
20181210
20181212
20181215
20181217
20181219
20181221
20181224
20181227
20181229
20181231
B1
B2
B3
B4
F1
H1
M1


pH (Depth-Averaged) during Mid-Flood
pH
8.50
8.40
8.30
8.20
8.10
8.00
7.90
7.80
7.70
7.60
7.50
20181203
20181205
20181207
20181210
20181212
20181215
20181217
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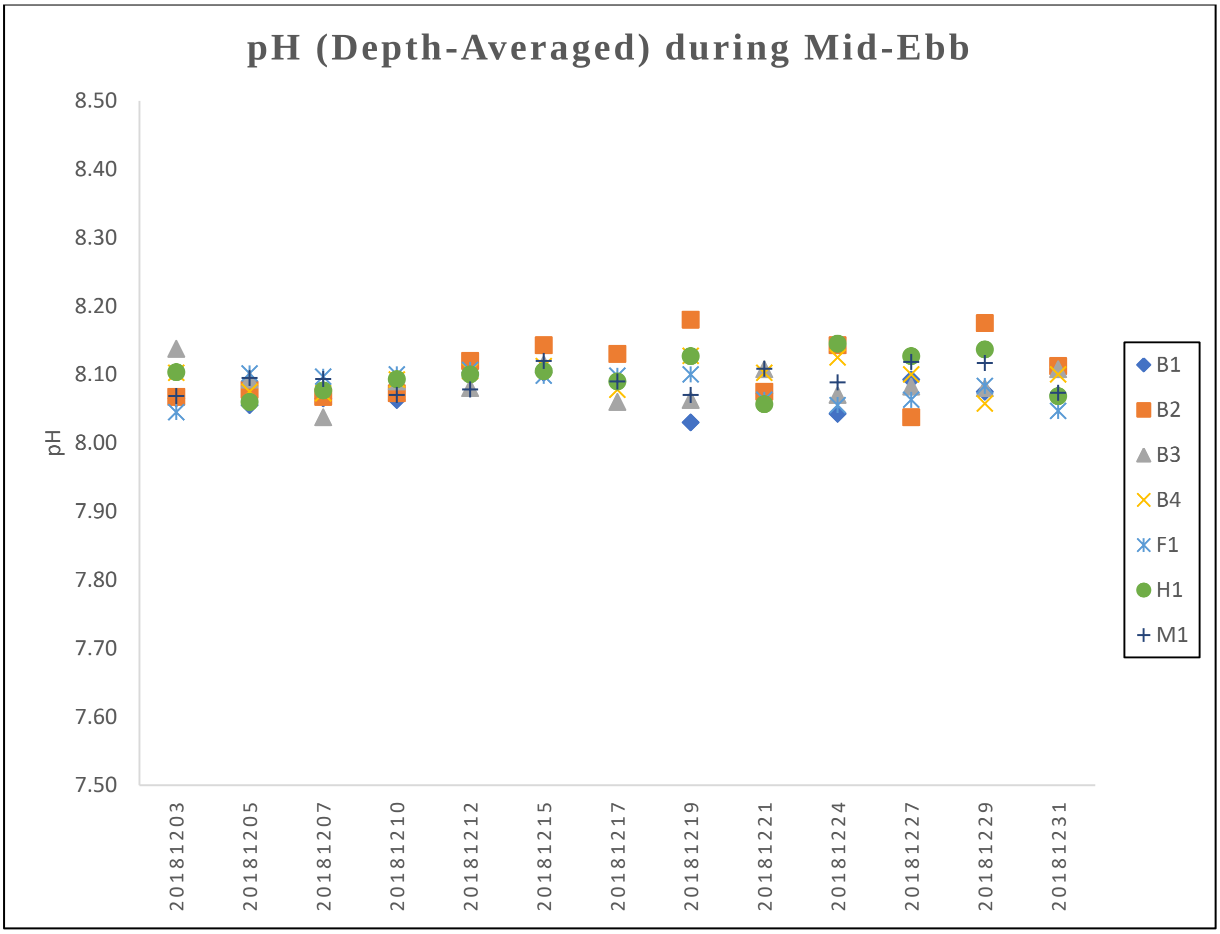
20181231
C1
C2
CR1
CR2
S1
S2
S3


pH (Depth-Averaged) during Mid-Ebb
8.50
8.40
8.30
8.20
8.10
8.00
7.90
7.80
7.70
7.60
7.50
pH
20181203
20181205
20181207
20181210
20181212
20181215
20181217
20181219
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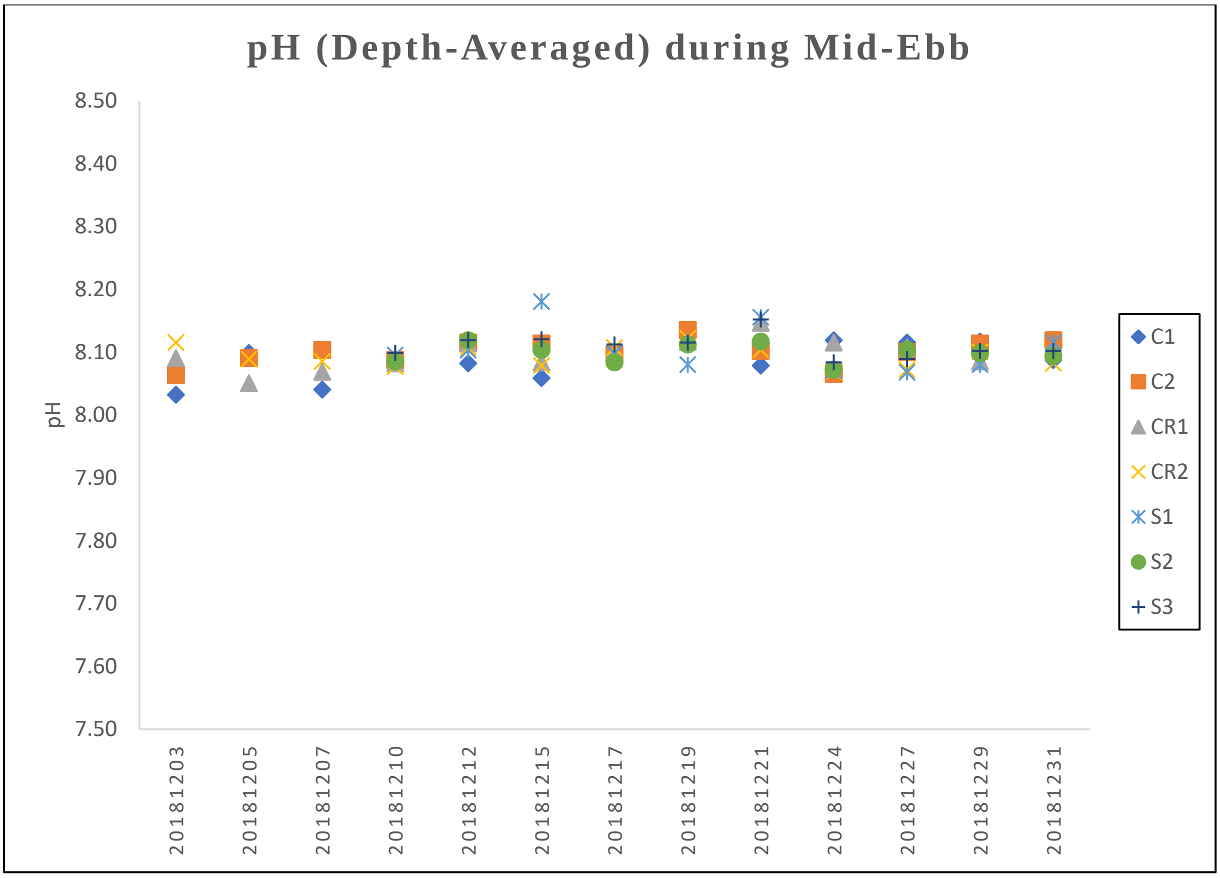
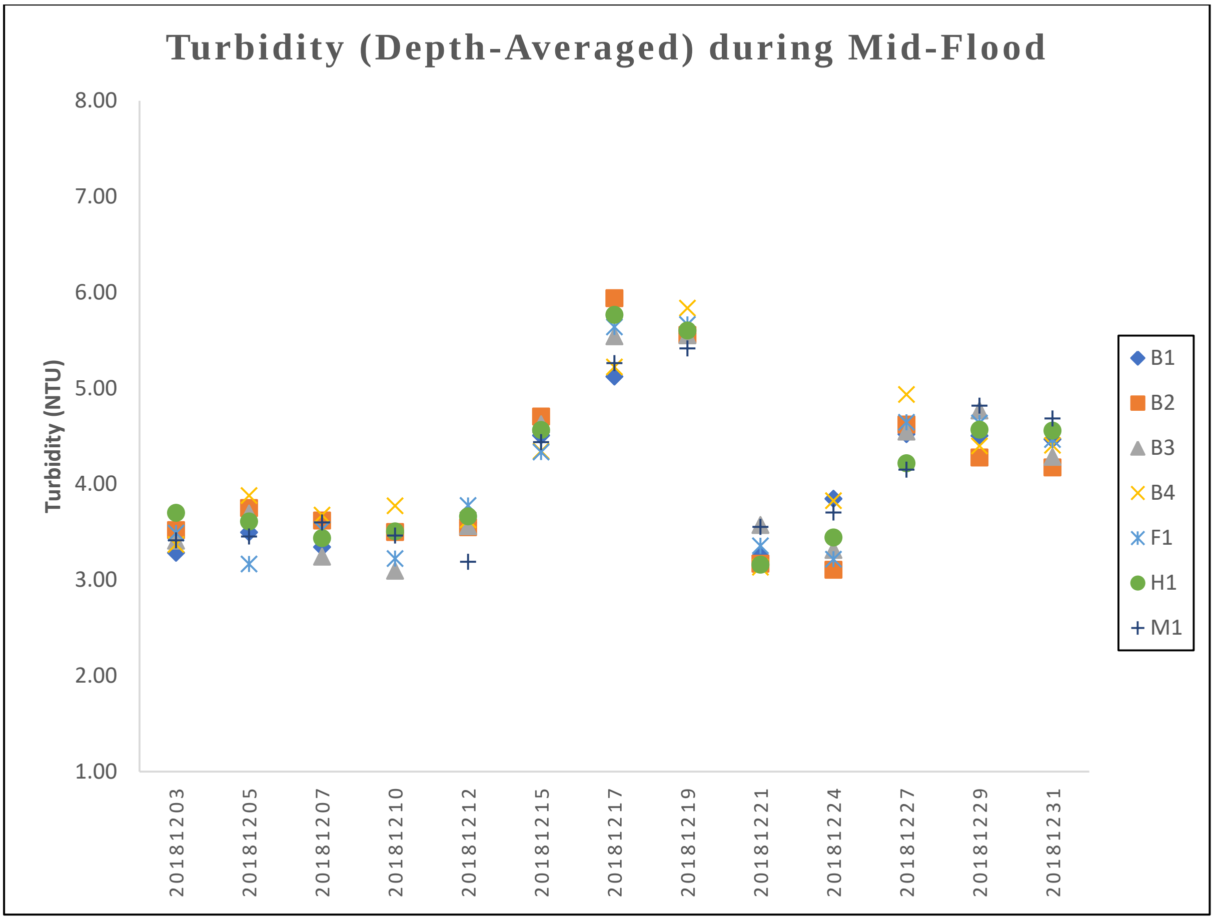
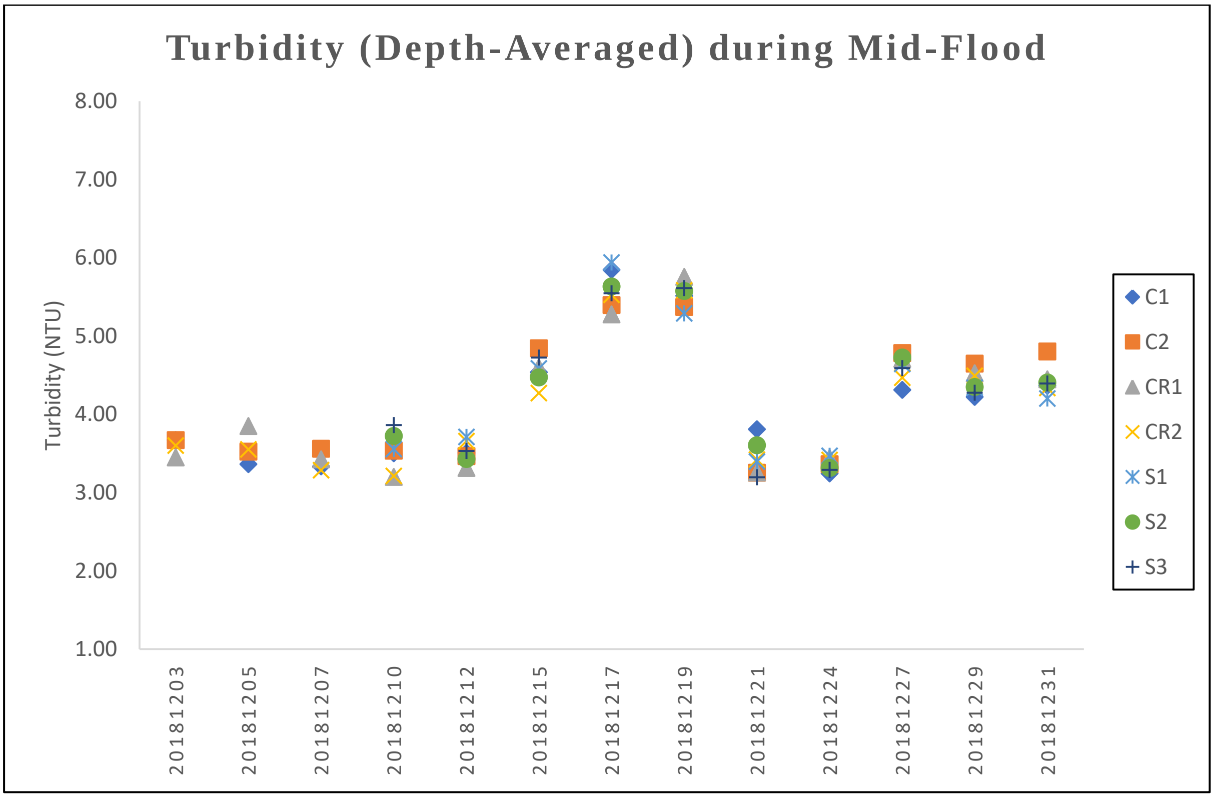
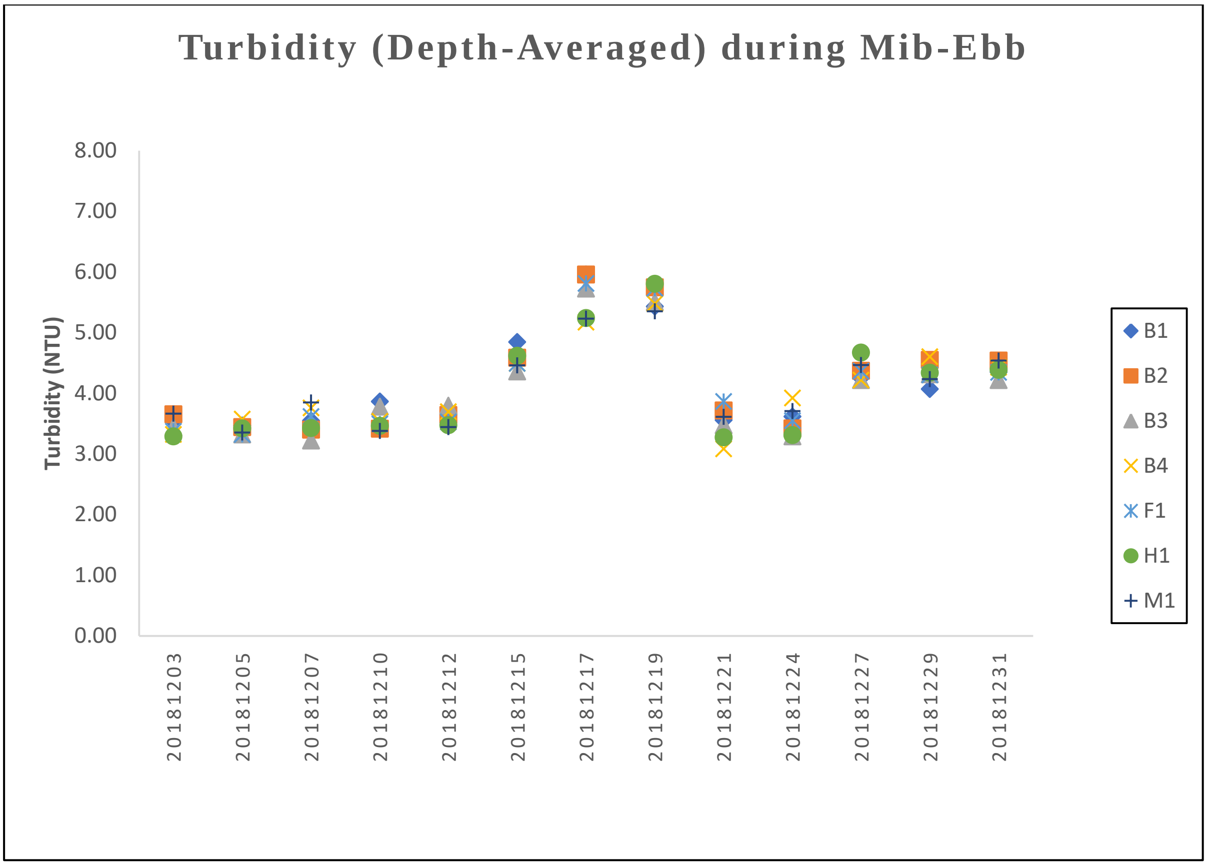
20181227
20181229
20181231
B1
B2
B3
B4
F1
H1
M1

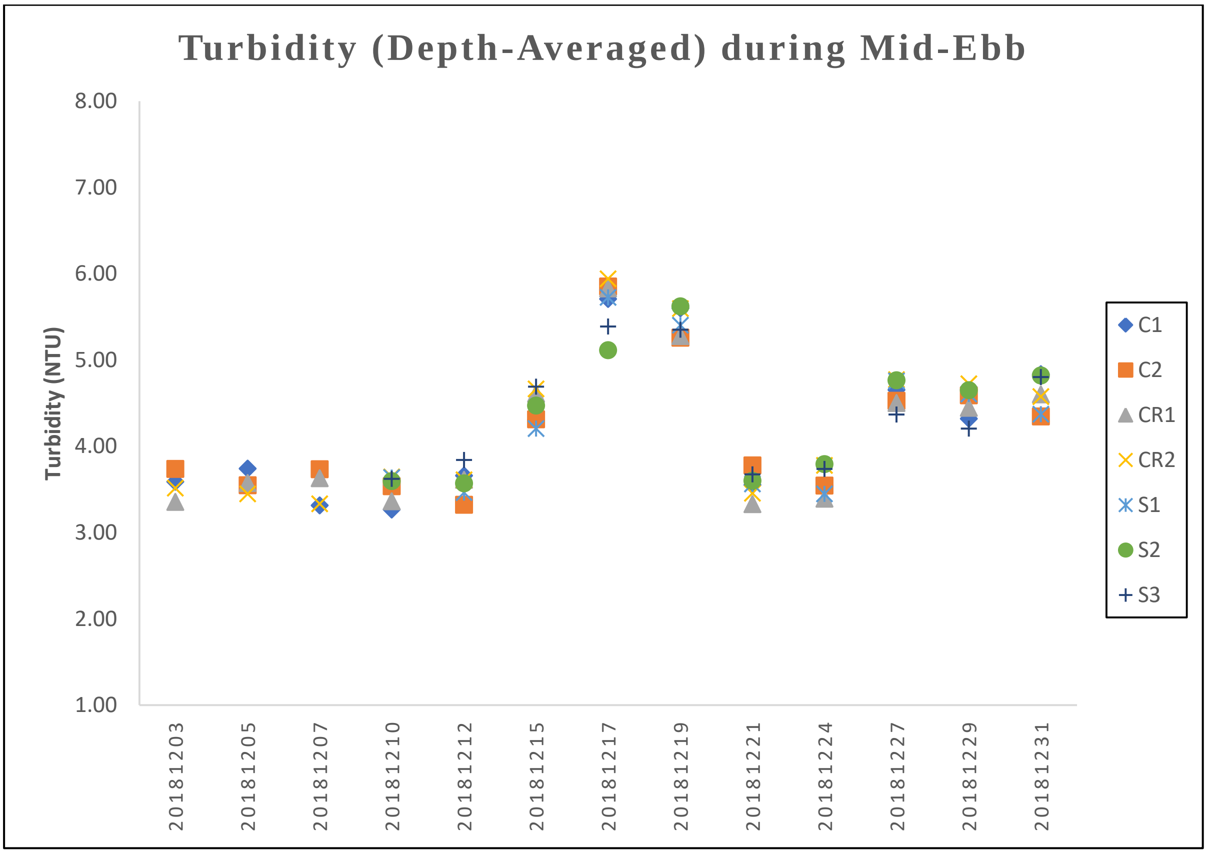

pH (Depth-Averaged) during Mid-Ebb
8.50
8.40
8.30
8.20
8.10
8.00
7.90
7.80
7.70
7.60
7.50
pH
20181203
20181205
20181207
20181210
20181212
20181215
20181217
20181219
20181221
20181224
20181227
20181229
20181231
C1
C2
CR1
CR2
S1
S2
S3



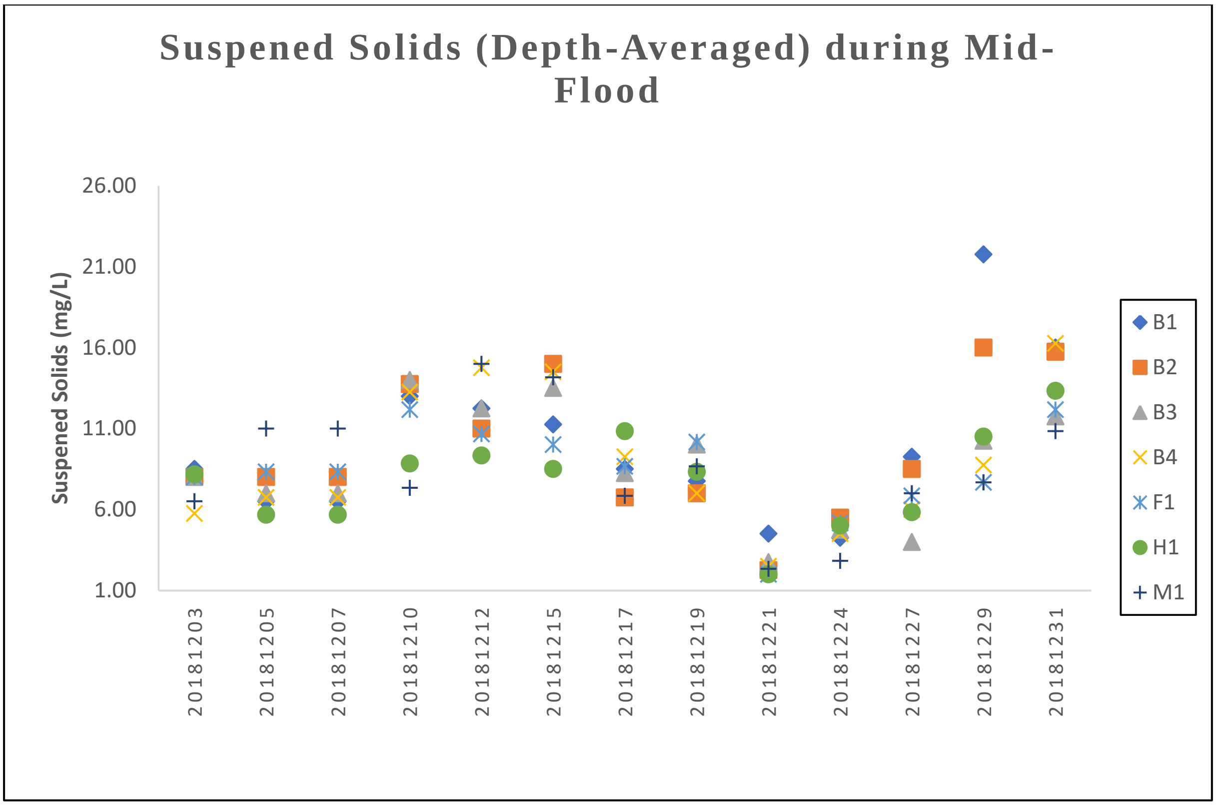


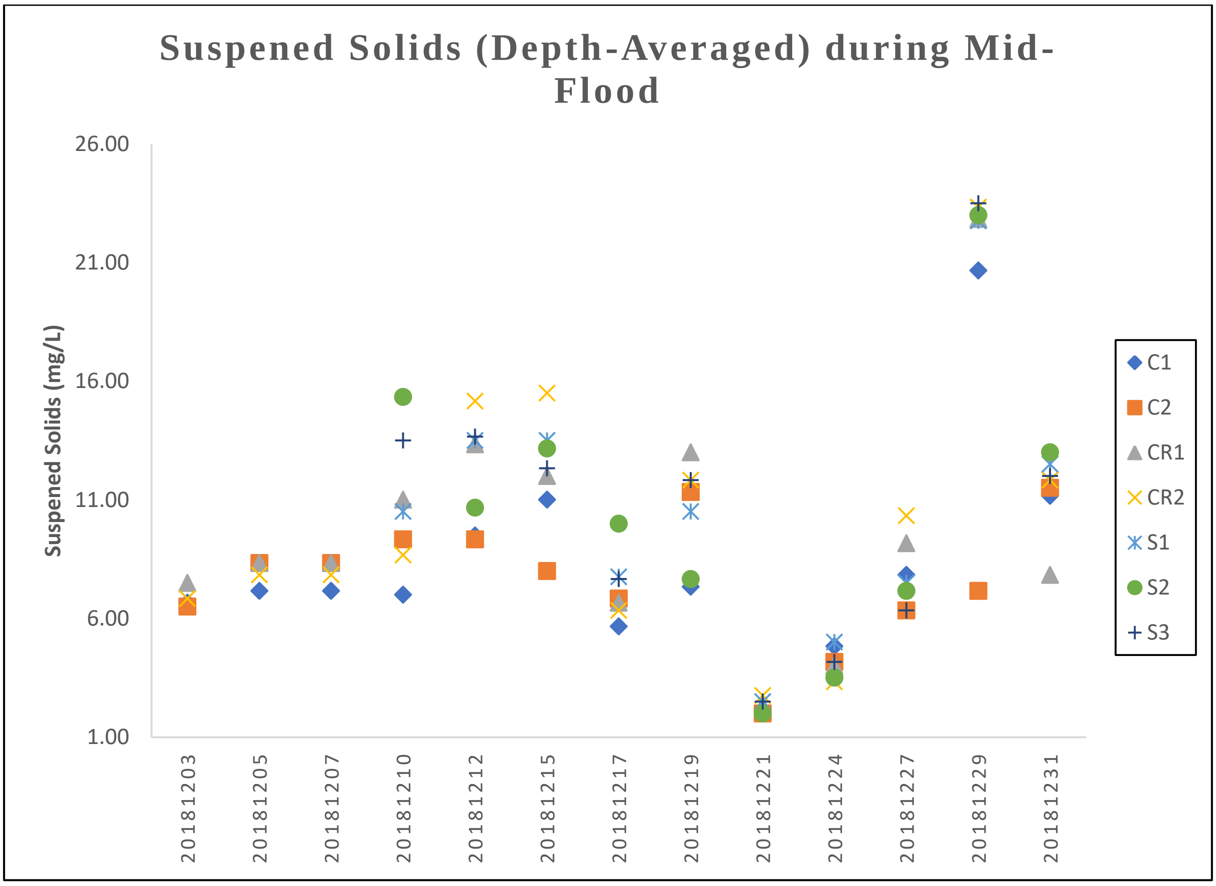
Note: The Action and Limit Level of turbidity can be referred to **Table 2.7** of the monthly EM & A report.



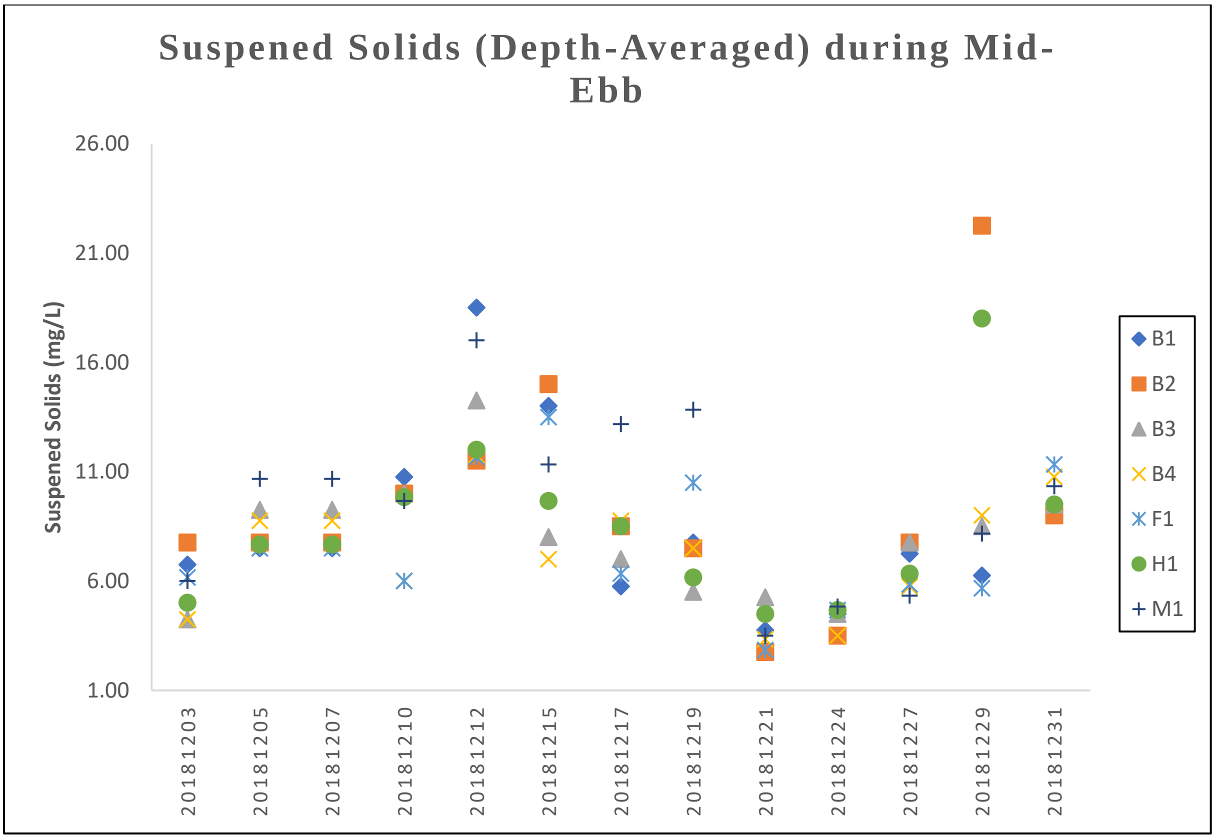


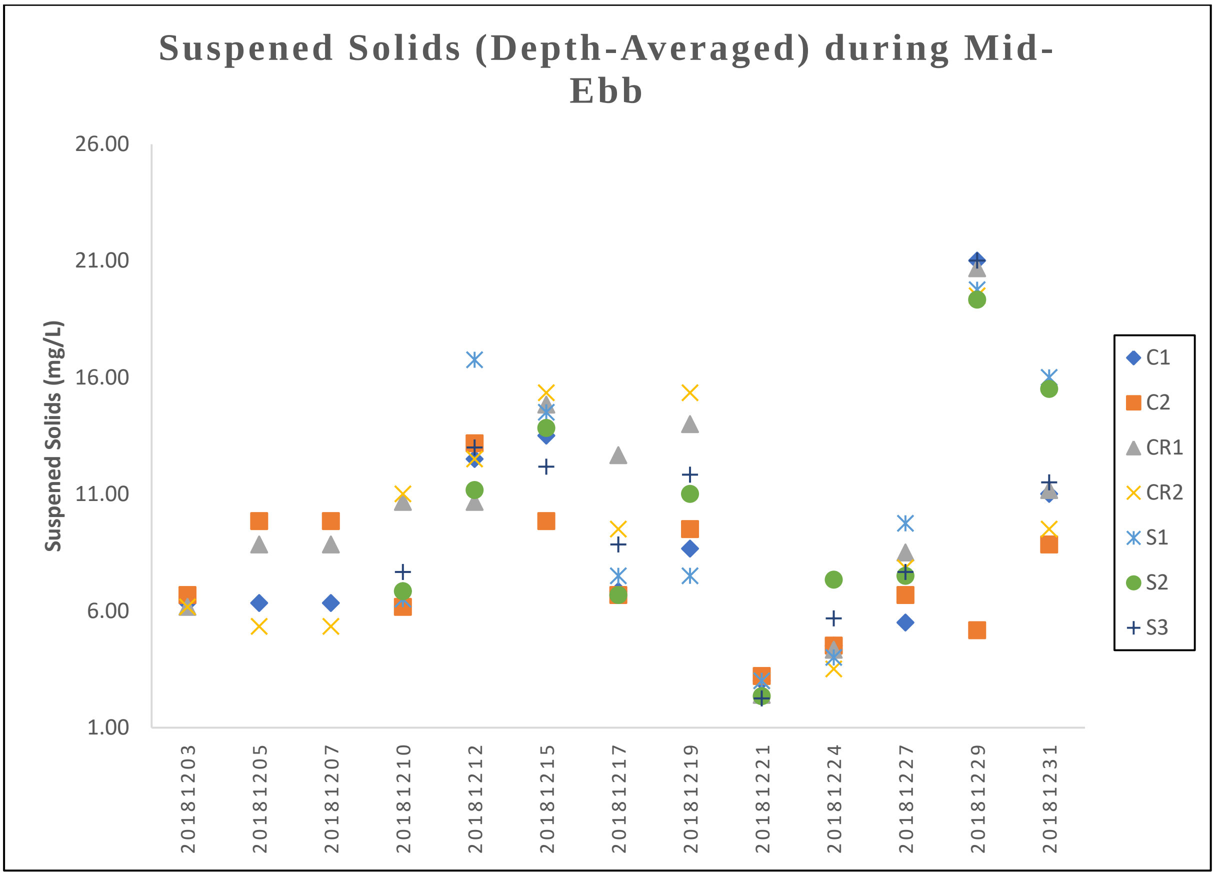
Note: The Action and Limit Level of turbidity can be referred to **Table 2.7** of the monthly EM & A report.



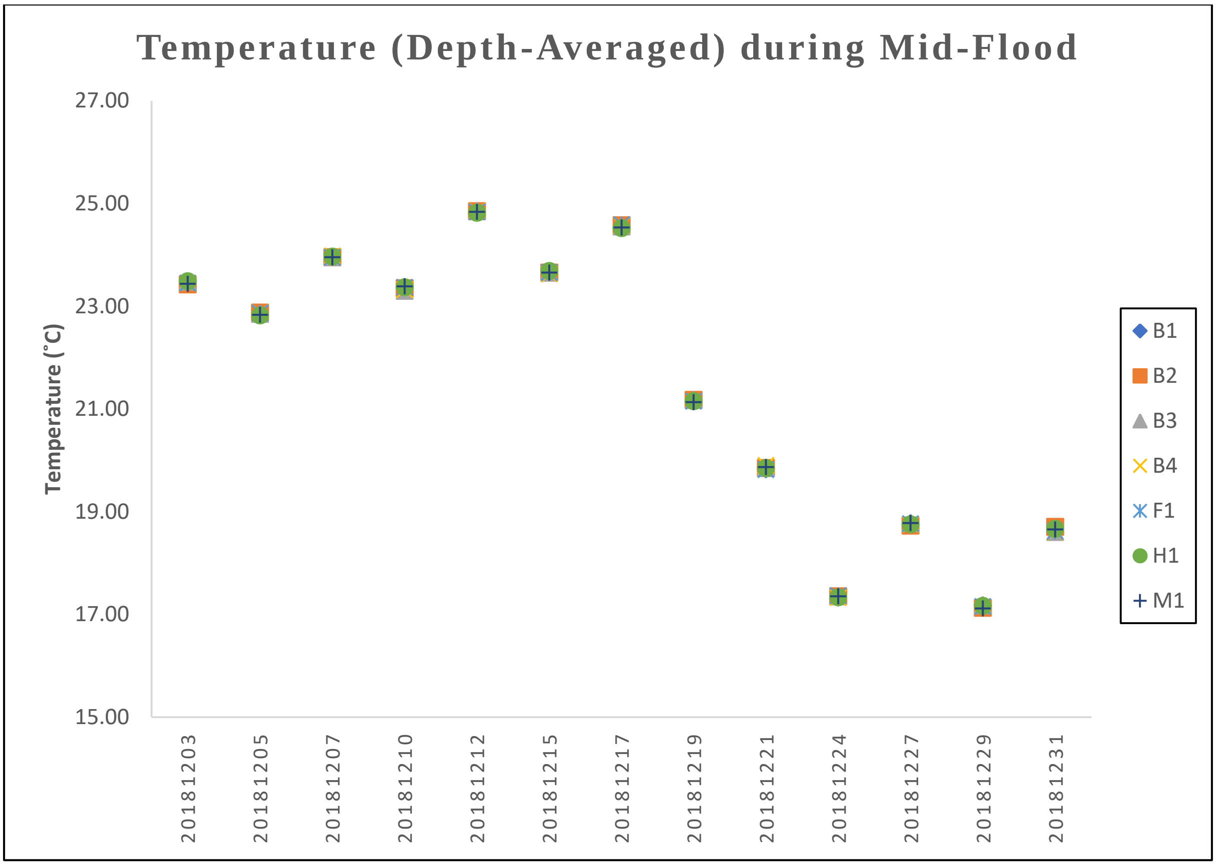


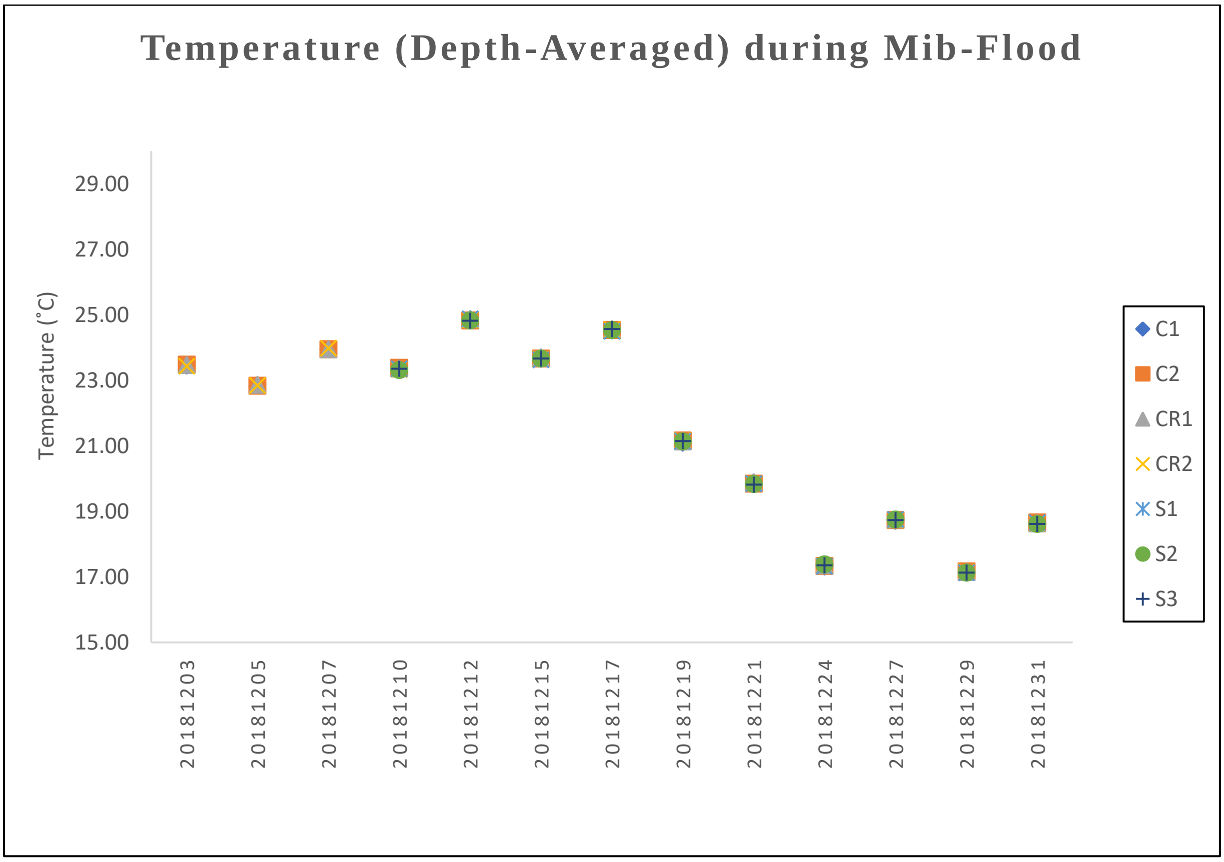
Note: The Action and Limit Level of suspened solids can be referred to **Table 2.7** of the monthly EM & A report.



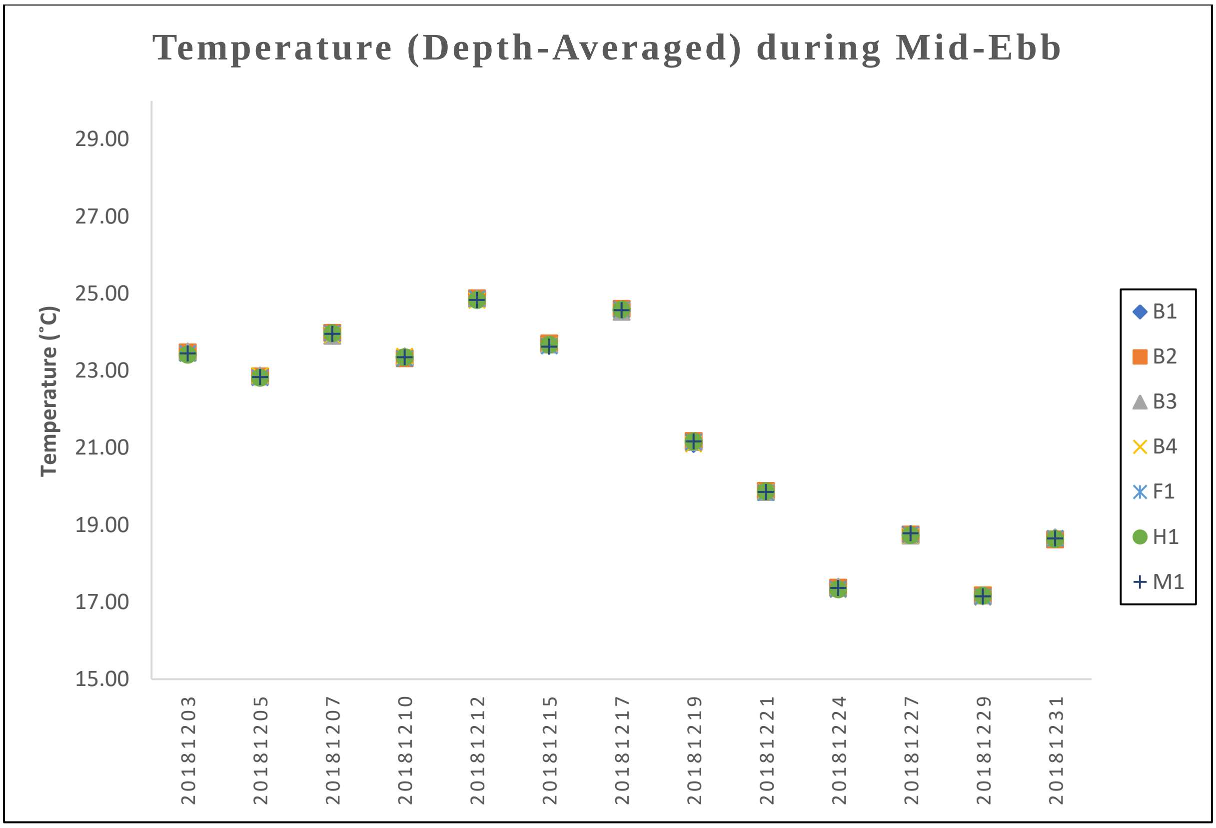


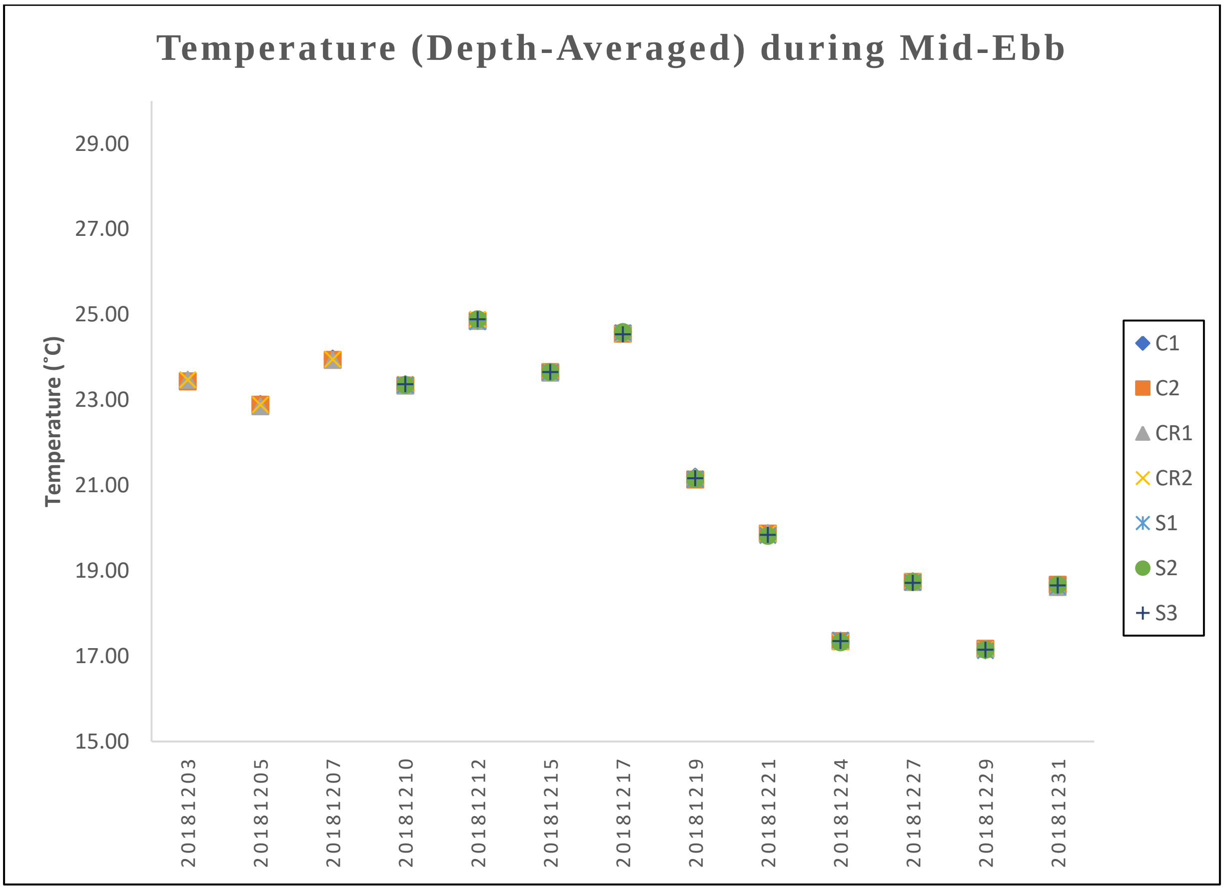
Note: The Action and Limit Level of suspened solids can be referred to **Table 2.7** of the monthly EM & A report.



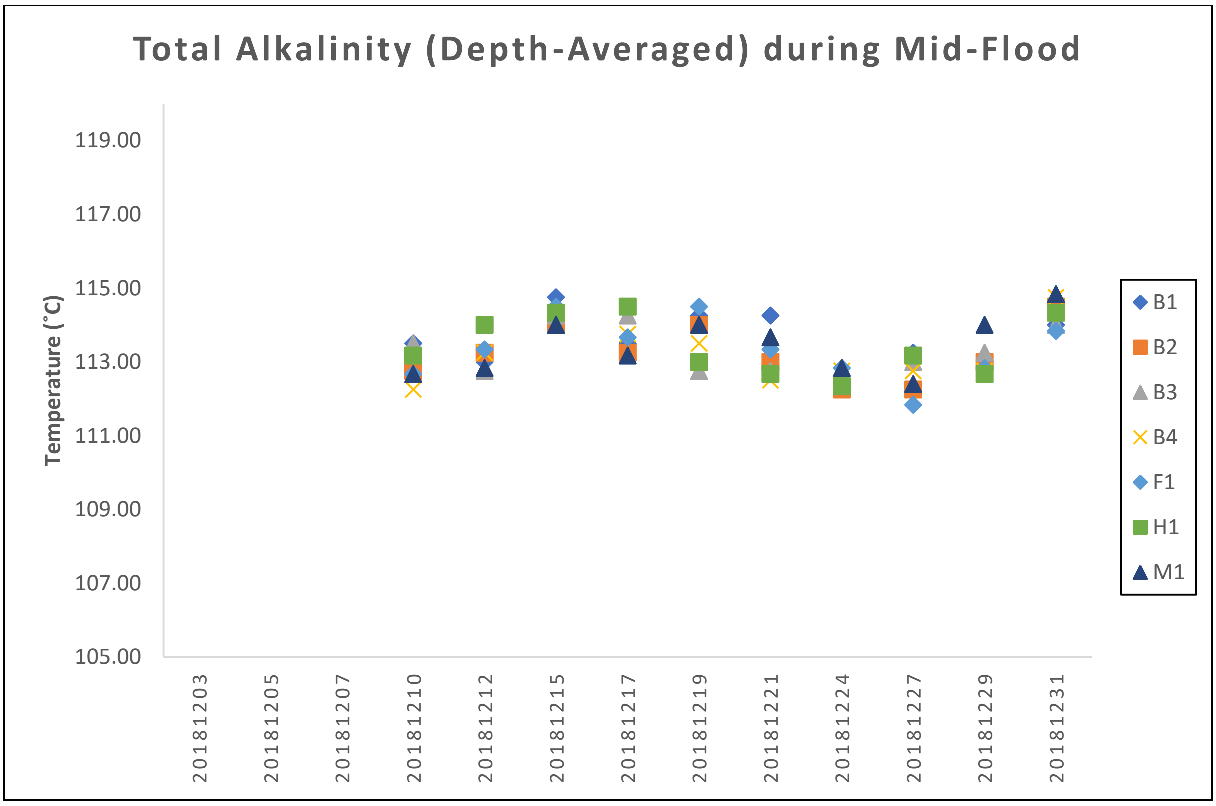


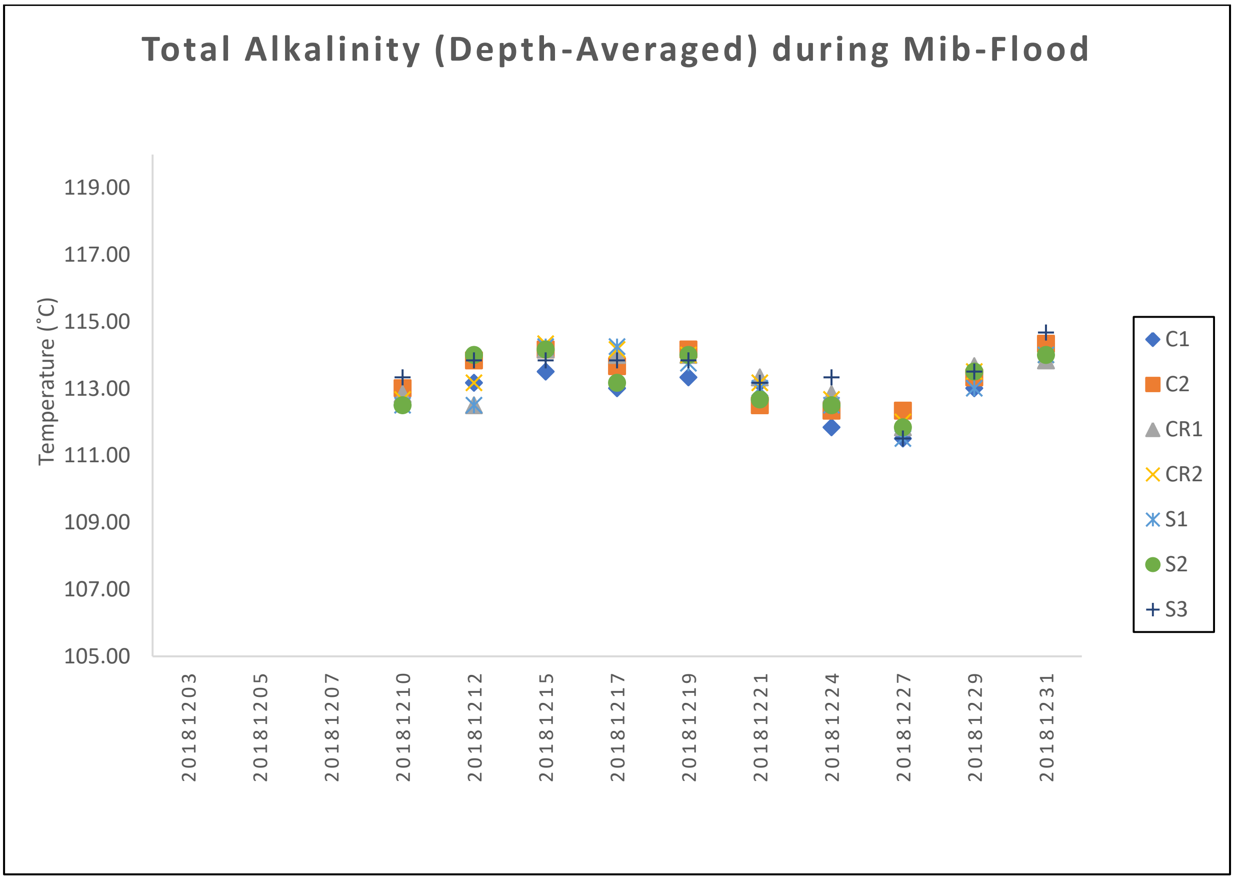
Note: The Action and Limit Level of temperature can be referred to **Table 2.7** of the monthly EM & A report.



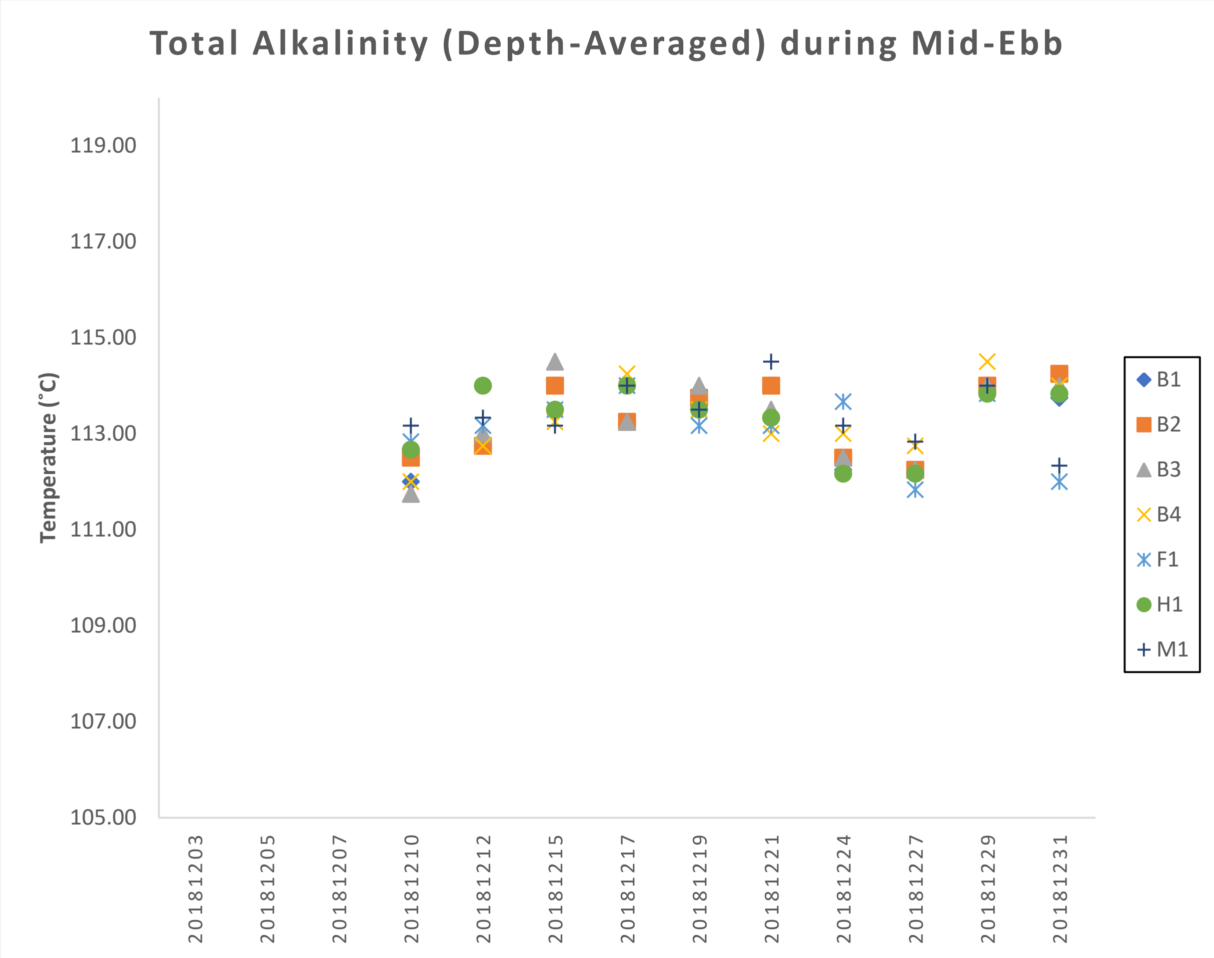


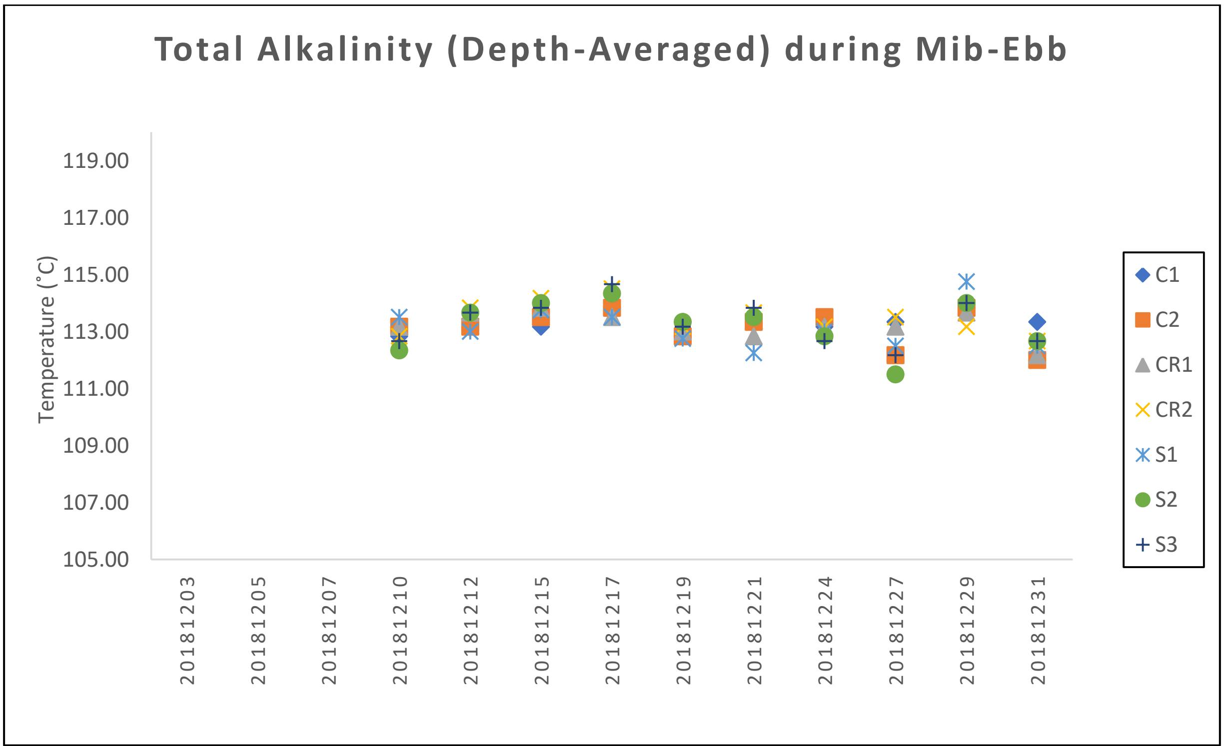
Note: The Action and Limit Level of temperature can be referred to **Table 2.7** of the monthly EM & A report.





Note: The Action and Limit Level of total alkalinity can be referred to **Table 2.7** of the monthly EM & A report.





Note: The Action and Limit Level of total alkalinity can be referred to **Table 2.7** of the monthly EM & A report.

Appendix E HOKLAS Laboratory Certificate

Hong Kong Accreditation Service
香港認可處

Certificate of Accreditation
認可證書

This is to certify that
特此證明

ALS TECHNICHEM (HK) PTY LIMITED

11/F., Chung Shun Knitting Centre, 1-3 Wing Yip Street, Kwai Chung, New Territories, Hong Kong
香港新界葵涌永業街1-3號忠信針織中心11樓

has been accepted by the HKAS Executive, on the recommendation of the Accreditation Advisory Board, as a
為香港認可處執行機關根據認可諮詢委員會建議而接受的

HOKLAS Accredited Laboratory
「香港實驗所認可計劃」認可實驗所

This laboratory meets the requirements of ISO / IEC 17025 : 2005 – General requirements for the competence
此實驗所符合ISO / IEC 17025 : 2005 –《測試及校正實驗所能力的通用規定》所訂的要求，
of testing and calibration laboratories and it has been accredited for performing specific tests or calibrations as
獲認可進行載於香港實驗所認可計劃《認可實驗所名冊》內下述測試類別中的指定
listed in the HOKLAS Directory of Accredited Laboratories within the test category of
測試或校正工作

Environmental Testing
環境測試

This laboratory is accredited in accordance with the recognised International Standard ISO / IEC 17025 : 2005.
本實驗所乃根據公認的國際標準 ISO / IEC 17025 : 2005 獲得認可。
This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory
這項認可資格演示在指定範疇所需的技術能力及實驗所質量管理體系的運作
quality management system (see joint IAF-ILAC-ISO Communiqué).
(見國際認可論壇、國際實驗所認可合作組織及國際標準化組織的聯合公報)。

The common seal of the Hong Kong Accreditation Service is affixed hereto by the authority of the HKAS Executive
香港認可處根據認可處執行機關的權限在此蓋上通用印章

CHAN Sing Sing, Terence, Executive Administrator
執行幹事 陳成城
Issue Date : 5 May 2009
簽發日期：二零零九年五月五日

Registration Number : HOKLAS 066
註冊號碼：

Date of First Registration : 15 September 1995
首次註冊日期：一九九五年九月十五日

L 000552

Hong Kong Accreditation Service
香港認可處

Certificate of Accreditation
認可證書

This is to certify that
特此證明

ACUMEN LABORATORY AND TESTING LIMITED
浩科檢測中心有限公司

Lot 12, Tam Kon Shan Road, North Tsing Yi, New Territories, Hong Kong
香港新界青衣北担杆山路12路段

has been accepted by the HKAS Executive, on the recommendation of the Accreditation Advisory Board, as a
在認可諮詢委員會的建議下獲香港認可處執行機關接受為

HOKLAS Accredited Laboratory
「香港實驗所認可計劃」認可實驗所

This laboratory meets the requirements of ISO/IEC 17025:2005 and it has been accredited for performing specific tests or calibrations as listed in the scope of accreditation within the test category of

Environmental Testing

此實驗所符合ISO/IEC 17025:2005所訂的要求
並獲認可進行載於認可範圍內下述測試類別中的指定測試或校正工作

環境測試

This accreditation to ISO/IEC 17025:2005 demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (see joint IAF-ILAC-ISO Communiqué).
此項 ISO/IEC 17025:2005 的認可資格證明此實驗所具備指定範疇內所須的技術能力並實施一套實驗所質量管理體系(見國際認可論壇、國際實驗所認可合作組織及國際標準化組織的聯合公報)。

The common seal of the Hong Kong Accreditation Service is affixed hereto by the authority of the HKAS Executive
現經香港認可處執行機關授權在此蓋上香港認可處的印章

WONG Wang-wah, Executive Administrator
執行幹事 黃宏華
Issue Date : 16 July 2014
簽發日期：二零一四年七月十六日

Registration Number : HOKLAS 241
註冊號碼：

Date of First Registration : 16 July 2014
首次註冊日期：二零一四年七月十六日

This certificate is issued subject to the terms and conditions laid down by HKAS
本證書按照香港認可處訂立的條款及條件發出

L 001195

Appendix F Water Quality Equipment Calibration Certificate

ALS Technichem (HK) Pty Ltd
11/F, Chung Shun Knitting Centre
1-3 Wing Yip Street, Kwai Chung
N.T., Hong Kong
T: +852 2610 1044 | F: +852 2610 2021

REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

CONTACT:	MR. NELSON TSUI	WORK ORDER:	HK1849814
CLIENT:	ACUITY SUSTAINABILITY CONSULTING LIMITED		
ADDRESS:	11 TAM KONG SUN ROAD, TSING YI (N), N.T. HONG KONG	SUB-BATCH: LABORATORY: DATE RECEIVED: DATE OF ISSUE:	0 HONG KONG 13-Sep-2018 28-Sep-2018

COMMENTS

The performance of the equipment stated in this report is checked with independent reference material and results compared against a calibrated secondary source.
The “Tolerance Limit” quoted is the acceptance criteria applicable for similar equipment used by the ALS Hong Kong laboratory or quoted from relevant international standards.
The “Next Calibration Date” is recommended according to best practice principle as practised by the ALS Hong Kong laboratory or quoted from relevant international standards.

Scope of Test:	Dissolved Oxygen, pH Value, Turbidity, Salinity and Temperature
Equipment Type:	Multifunctional Meter
Brand Name:	YSI
Model No.:	Professional DSS
Serial No.:	--
Equipment No.:	15M101091
Date of Calibration:	27 September, 2018

NOTES

This is the Final Report and supersedes any preliminary report with this batch number.

Results apply to sample(s) as submitted. All pages of this report have been checked and approved for release.

Mr Chan Siu Ming, Vico
Manager - Inorganic

REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

WORK ORDER: HK1849814

SUB-BATCH: 0
DATE OF ISSUE: 28-Sep-2018
CLIENT: ACUITY SUSTAINABILITY CONSULTING LIMITED

Equipment Type: Multifunctional Meter
Brand Name: YSI
Model No.: Professional DSS
Serial No.: --
Equipment No.: 15M101091
Date of Calibration: 27 September, 2018 Date of Next Calibration: 27 December, 2018

PARAMETERS:

Dissolved Oxygen Method Ref: APHA (21st edition), 4500-O: G

Expected Reading (mg/L)	Displayed Reading (mg/L)	Tolerance (mg/L)
2.66	2.48	-0.18
5.53	5.50	-0.03
7.75	7.70	-0.05
	Tolerance Limit (mg/L)	±0.20

pH Value Method Ref: APHA (21st edition), 4500H:B

Expected Reading (pH unit)	Displayed Reading (pH unit)	Tolerance (pH unit)
4.0	3.99	-0.01
7.0	6.97	-0.03
10.0	9.95	-0.05
	Tolerance Limit (pH unit)	±0.20

Remark: "Displayed Reading" presents the figures shown on item under calibration / checking regardless of equipment precision or significant figures.

Mr Chan Siu Ming, Vico
Manager - Inorganic

REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

WORK ORDER: HK1849814

SUB-BATCH: 0
DATE OF ISSUE: 28-Sep-2018
CLIENT: ACUITY SUSTAINABILITY CONSULTING LIMITED

Equipment Type: Multifunctional Meter
Brand Name: YSI
Model No.: Professional DSS
Serial No.: --
Equipment No.: 15M101091
Date of Calibration: 27 September, 2018 Date of Next Calibration: 27 December, 2018

PARAMETERS:

Turbidity

Method Ref: APHA (21st edition), 2130B

Expected Reading (NTU)	Displayed Reading (NTU)	Tolerance (%)
0	0.60	--
4	3.81	-4.8
40	38.58	-3.6
80	76.48	-4.4
400	418.12	+4.5
800	797.52	-0.3
	Tolerance Limit (%)	±10.0

Salinity

Method Ref: APHA (21st edition), 2520B

Expected Reading (ppt)	Displayed Reading (ppt)	Tolerance (%)
0	0.00	--
10	9.70	-3.0
20	18.58	-7.1
30	28.21	-6.0
	Tolerance Limit (%)	±10.0

Remark: "Displayed Reading" presents the figures shown on item under calibration / checking regardless of equipment precision or significant figures.

Mr Chan Siu Ming, Vico
Manager - Inorganic

REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

WORK ORDER:	HK1849814
SUB-BATCH:	0
DATE OF ISSUE:	28-Sep-2018
CLIENT:	ACUITY SUSTAINABILITY CONSULTING LIMITED

Equipment Type:	Multifunctional Meter		
Brand Name:	YSI		
Model No.:	Professional DSS		
Serial No.:	--		
Equipment No.:	15M101091		
Date of Calibration:	27 September, 2018	Date of Next Calibration:	27 December, 2018

PARAMETERS:

Temperature

Method Ref: Section 6 of International Accreditation New Zealand Technical Guide No. 3 Second edition March 2008: Working Thermometer Calibration Procedure.

Expected Reading (^{o}C)	Displayed Reading (^{o}C)	Tolerance (^{o}C)
11.0	11.5	+0.5
21.5	21.1	-0.4
40.5	39.3	-1.2
	Tolerance Limit (^{o}C)	±2.0

Remark: "Displayed Reading" presents the figures shown on item under calibration / checking regardless of equipment precision or significant figures.

Mr Chan Siu Ming, Vico
Manager - Inorganic

ALS Technichem (HK) Pty Ltd
11/F, Chung Shun Knitting Centre
1-3 Wing Yip Street, Kwai Chung
N.T., Hong Kong
T: +852 2610 1044 | F: +852 2610 2021

REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

CONTACT:	MR BEN TAM	WORK ORDER:	HK1860886
CLIENT:	ACTION UNITED ENVIRONMENT SERVICES AND CONSULTING		
ADDRESS:	RM A 20/F., GOLD KING IND BLDG, NO. 35-41 TAI LIN PAI ROAD, KWAI CHUNG, N.T., HONG KONG.	SUB-BATCH:	0
		LABORATORY:	HONG KONG
		DATE RECEIVED:	21-Nov-2018
		DATE OF ISSUE:	27-Dec-2018

COMMENTS

The performance of the equipment stated in this report is checked with independent reference material and results compared against a calibrated secondary source.
The “Tolerance Limit” quoted is the acceptance criteria applicable for similar equipment used by the ALS Hong Kong laboratory or quoted from relevant international standards.
The “Next Calibration Date” is recommended according to best practice principle as practised by the ALS Hong Kong laboratory or quoted from relevant international standards.

Scope of Test: Conductivity, Dissolved Oxygen, pH Value, Turbidity, Salinity and Temperature

Equipment Type: Multifunctional Meter
Brand Name: YSI
Model No.: Professional DSS
Serial No.: 15H102620/ 15H103928
Equipment No.: EQW018
Date of Calibration: 28 November, 2018

NOTES

This is the Final Report and supersedes any preliminary report with this batch number.

Results apply to sample(s) as submitted. All pages of this report have been checked and approved for release.

Mr Chan Siu Ming, Vico
Manager - Inorganic

REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

WORK ORDER: HK1860886

SUB-BATCH: 0
DATE OF ISSUE: 27-Dec-2018
CLIENT: ACTION UNITED ENVIRONMENT SERVICES AND CONSULTING

Equipment Type: Multifunctional Meter
Brand Name: YSI
Model No.: Professional DSS
Serial No.: 15H102620/ 15H103928
Equipment No.: EQW018
Date of Calibration: 28 November, 2018 Date of Next Calibration: 28 February, 2019

PARAMETERS:

Conductivity

Method Ref: APHA (21st edition), 2510B

Expected Reading (μS/cm)	Displayed Reading (μS/cm)	Tolerance (%)
146.9	159.8	+8.8
6667	6492	-2.6
12890	12526	-2.8
58670	55801	-4.9
	Tolerance Limit (%)	±10.0

Dissolved Oxygen

Method Ref: APHA (21st edition), 4500-O: G

Expected Reading (mg/L)	Displayed Reading (mg/L)	Tolerance (mg/L)
3.17	3.05	-0.12
5.95	5.92	-0.03
8.19	8.29	+0.10
	Tolerance Limit (mg/L)	±0.20

pH Value

Method Ref: APHA (21st edition), 4500H:B

Expected Reading (pH unit)	Displayed Reading (pH unit)	Tolerance (pH unit)
4.0	4.10	+0.10
7.0	7.13	+0.13
10.0	9.99	-0.01
	Tolerance Limit (pH unit)	±0.20

Remark: "Displayed Reading" presents the figures shown on item under calibration / checking regardless of equipment precision or significant figures.

Mr Chan Siu Ming, Vico
Manager - Inorganic

REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

WORK ORDER: HK1860886

SUB-BATCH: 0
DATE OF ISSUE: 27-Dec-2018
CLIENT: ACTION UNITED ENVIRONMENT SERVICES AND CONSULTING

Equipment Type: Multifunctional Meter
Brand Name: YSI
Model No.: Professional DSS
Serial No.: 15H102620/ 15H103928
Equipment No.: EQW018
Date of Calibration: 28 November, 2018 Date of Next Calibration: 28 February, 2019

PARAMETERS:

Salinity

Method Ref: APHA (21st edition), 2520B

Expected Reading (ppt)	Displayed Reading (ppt)	Tolerance (%)
0	0.01	--
10	10.23	+2.3
20	21.02	+5.1
30	29.83	-0.6
	Tolerance Limit (%)	±10.0

Temperature

Method Ref: Section 6 of International Accreditation New Zealand Technical Guide No. 3 Second edition March 2008: Working Thermometer Calibration Procedure.

Expected Reading (°C)	Displayed Reading (°C)	Tolerance (°C)
10.0	11.2	+1.2
22.0	21.7	-0.3
41.0	40.8	-0.2
	Tolerance Limit (°C)	±2.0

Remark: "Displayed Reading" presents the figures shown on item under calibration / checking regardless of equipment precision or significant figures.

Mr Chan Siu Ming, Vico
Manager - Inorganic

REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

WORK ORDER: HK1860886

SUB-BATCH: 0
DATE OF ISSUE: 27-Dec-2018
CLIENT: ACTION UNITED ENVIRONMENT SERVICES AND CONSULTING

Equipment Type: Multifunctional Meter
Brand Name: YSI
Model No.: Professional DSS
Serial No.: 15H102620/ 15H103928
Equipment No.: EQW018
Date of Calibration: 05 December, 2018 Date of Next Calibration: 05 March, 2019

PARAMETERS:
Turbidity Method Ref: APHA (21st edition), 2130B

Expected Reading (NTU)	Displayed Reading (NTU)	Tolerance (%)
0	0.14	--
4	3.60	-10.0
40	41.49	+3.7
80	74.42	-7.0
400	426.8	+6.7
800	803.89	+0.5
	Tolerance Limit (%)	±10.0

Remark: "Displayed Reading" presents the figures shown on item under calibration / checking regardless of equipment precision or significant figures.

Mr Chan Siu Ming, Vico
Manager - Inorganic

Appendix G Event / Action Plan for Water Quality Exceedance

Event	Action			
	ET	IEC	SO	Contractor
Action level being exceeded by one sampling day	Repeat in-situ measurement to confirm findings; Identify source(s) of impact; Inform IEC and Contractor; Check monitoring data, all plant, equipment and Contractor's working methods; Discuss mitigation measures with IEC and Contractor; Repeat measurement on next day of exceedance. (The above actions should be taken within 1 working day after the exceedance is identified)	Discuss with ET and Contractor on the mitigation measures; Review proposals on mitigation measures submitted by Contractor and advise the SO accordingly; Assess the effectiveness of the implemented mitigation measures. (The above actions should be taken within 1 working day after the exceedance is identified)	Discuss with IEC on the proposed mitigation measures; Make agreement on the mitigation measures to be implemented. (The above actions should be taken within 1 working day after the exceedance is identified)	Inform the SO and confirm notification of the non-compliance in writing; Rectify unacceptable practice; Check all plant and equipment; Consider changes of working methods; Discuss with ET and IEC and propose mitigation measures to IEC and SO within 3 working days; Implement the agreed mitigation measures. (The above actions should be taken within 1 working day after the exceedance is identified)
Action level being exceeded by more than one consecutive sampling days	Identify source(s) of impact; Inform IEC and Contractor; Check monitoring data, all plant, equipment and Contractor's working methods; Discuss mitigation measures with IEC and Contractor; Ensure mitigation measures are implemented; Prepare to increase the monitoring frequency to daily; Repeat measurement on next working day of exceedance. (The above actions should be taken within 1 working day after Action Level being exceeded by two consecutive sampling days)	Discuss with ET and Contractor on the mitigation measures; Review proposals on mitigation measures submitted by Contractor and advise the SO accordingly; Assess the effectiveness of the implemented mitigation measures. (The above actions should be taken within 1 working day after Action Level being exceeded by two consecutive sampling days)	Discuss with IEC on the proposed mitigation measures; Make agreement on the mitigation measures to be implemented. Assess the effectiveness of the implemented mitigation measures. (The above actions should be taken within 1 working day after Action Level being exceeded by two consecutive sampling days)	Inform the SO and confirm notification of the non-compliance in writing; Rectify unacceptable practice; Check all plant and equipment; Consider changes of working methods; Discuss with ET and IEC and propose mitigation measures to IEC and SO within 3 working days; Implement the agreed mitigation measures. (The above actions should be taken within 1 working day after Action Level being exceeded by two consecutive sampling days)

Event	Action			
	ET	IEC	SO	Contractor
Limit level being exceeded by one sampling day	Inform the SO and confirm notification of the non-compliance in writing; Rectify unacceptable practice; Check all plant and equipment; Consider changes of working methods; Discuss with Contractor, IEC and SO and propose mitigation measures to IEC and SO within 3 working days; Implement the agreed mitigation measures. (The above actions should be taken within 1 working day after the exceedance is identified)	Discuss with ET and Contractor on the mitigation measures; Review proposals on mitigation measures submitted by Contractor and advise the SO accordingly; Assess the effectiveness of the implemented mitigation measures. (The above actions should be taken within 1 working day after the exceedance is identified)	Discuss with IEC, ET and Contractor on the proposed mitigation measures; Request Contractor to critically review the working methods; Make agreement on the mitigation measures to be implemented. Assess the effectiveness of the implemented measures. (The above actions should be taken within 1 working day after the exceedance is identified)	Inform the SO and confirm notification of the non-compliance in writing; Rectify unacceptable practice; Check all plant and equipment; Consider changes of working methods; Discuss with ET, IEC and SO and propose mitigation measures to IEC and SO within 3 working days; Implement the agreed mitigation measures. (The above actions should be taken within 1 working day after the exceedance is identified)

Event	Action			
	ET	IEC	SO	Contractor
Limit level being exceeded by more than one consecutive sampling days	Identify source(s) of impact; Inform IEC, Contractor and EPD; Check monitoring data, all plant, equipment and Contractor's working methods. Discuss mitigation measures with IEC, SO and Contractor. Ensure mitigation measures are implemented; Increase the monitoring frequency to daily until no exceedance of Limit level for two consecutive days. (The above actions should be taken within 1 working day after Limit Level being exceeded by two consecutive sampling days)	Discuss with ET and Contractor on the mitigation measures; Review proposals on mitigation measures submitted by Contractor and advise the SO accordingly; Assess the effectiveness of the implemented mitigation measures. (The above actions should be taken within 1 working day after Limit Level being exceeded by two consecutive sampling days)	Discuss with IEC, ET and Contractor on the proposed mitigation measures; Request Contractor to critically review the working methods; Make agreement on the mitigation measures to be implemented. Assess the effectiveness of the implemented measures. Consider and instruct, if necessary, the Contractor to slow down or to stop all or part of the marine work until no exceedance of Limit level. (The above actions should be taken within 1 working day after Limit Level being exceeded by two consecutive sampling days)	Inform the SO and confirm notification of the non-compliance in writing; Rectify unacceptable practice; Check all plant and equipment; Consider changes of working methods; Discuss with ET, IEC and SO and propose mitigation measures to IEC and SO within 3 working days; Implement the agreed mitigation measures; As directed by the SOR, to slow down or to stop all or part of the marine work or construction activities. (The above actions should be taken within 1 working day after Limit Level being exceeded by two consecutive sampling days)

Appendix H Noise Monitoring Equipment Calibration Certificate

Certificate of Calibration

for

Description:	***Sound Level Meter***
Manufacturer:	***NTi Audio***
Type No.:	***XL2 (Serial No.: A2A-13548-E0)***
Microphone:	***NTi Audio M2211 (Serial No.:64962)***
Preamplifier:	***NTi Audio MA220 (Serial No.:6089)***

Submitted by:

Customer: *Acuity Sustainability Consulting Limited*

Address: *Unit 1908, iPlace, Nos. 301-305 Castle Peak Road, Kwai Chung, New Territories*

Upon receipt for calibration, the instrument was found to be:

☑ **Within**
☐ **Outside**

the allowable tolerance.

The test equipment used for calibration are traceable to National Standards via:
- The Government of The Hong Kong Special Administrative Region Standard & Calibration Laboratory

Date of receipt: 22 January 2018

Date of calibration: 23 January 2018

Calibrated by: ______________________
Calibration Technician

Certified by: ______________________
Mr. Ng Yan Wa
Laboratory Manager

***Date of issue:* 23 January 2018**

A A TESTING LAB CO. LTD.

Room 422,Leader Industrial Centre,57-59 Au Pui Wan Street ,Fo Tan, Shatin,N.T.,Hong Kong
Tel: (852) 2668 3423 Fax:(852) 2668 6946
Homepage: http://www.aa-lab.com E-mail : inquiry@aa-lab.com

1. Calibration Precaution:

- The unit-under-test (UUT) was allowed to stabilize in the laboratory for over 24 hours, and switched on to warm up for over 10 minutes before the commencement of the test.

- The results presented are the mean of 3 measurements at each calibration point.

2. Calibration Conditions:

Air Temperature: 20.5 **°C**
Air Pressure: 1008 **hPa**
Relative Humidity: 67.2 **%**

3. Calibration Equipment:

	Type	Serial No.	Calibration Report Number	Traceable to
Multifunction Calibrator	B&K 4226	2288467	PA160056	HOKLAS

4. Calibration Results

Sound Pressure Level

Reference Sound Pressure Level

Setting of Unit-under-test (UUT)			Applied value		UUT Reading,	IEC 61672 Class 1
Range, dB	Freq. Weighting	Time Weighting	Level, dB	Frequency, Hz	dB	Specification, dB
30-130	dBA SPL	Fast	94	1000	94.1	±0.4

Linearity

Setting of Unit-under-test (UUT)			Applied value		UUT Reading,	IEC 61672 Class 1
Range, dB	Freq. Weighting	Time Weighting	Level, dB	Frequency, Hz	dB	Specification, dB
30-130	dBA SPL	Fast	94	1000	94.1	Ref
			104		104.0	±0.3
			114		114.0	±0.3

Time Weighting

Setting of Unit-under-test (UUT)			Applied value		UUT Reading,	IEC 61672 Class 1
Range, dB	Freq. Weighting	Time Weighting	Level, dB	Frequency, Hz	dB	Specification, dB
30-130	dBA SPL	Fast	94	1000	94.1	Ref
		Slow			94.1	±0.3

A & A TESTING LAB CO. LTD.

Certificate No.: APJ17-179-CC002

Room 422,Leader Industrial Centre,57-59 Au Pui Wan Street ,Fo Tan, Shatin,N.T.,Hong Kong
Tel: (852) 2668 3423 Fax:(852) 2668 6946
Homepage: http://www.aa-lab.com E-mail : inquiry@aa-lab.com

Frequency Response

Linear Response

Setting of Unit-under-test (UUT)			Applied value		UUT Reading,	IEC 61672 Class 1
Range, dB	Freq. Weighting	Time Weighting	Level, dB	Frequency, Hz	dB	Specification, dB
30-130	dB SPL	Fast	94	31.5	94.2	±2.0
				63	94.2	±1.5
				125	94.3	±1.5
				250	94.1	±1.4
				500	94.1	±1.4
				1000	94.1	Ref
				2000	94.3	±1.6
				4000	95.1	±1.6
				8000	93.0	+2.1; -3.1

A-weighting

Setting of Unit-under-test (UUT)			Applied value		UUT Reading,	IEC 61672 Class 1
Range, dB	Freq. Weighting	Time Weighting	Level, dB	Frequency, Hz	dB	Specification, dB
30-130	dBA SPL	Fast	94	31.5	54.8	-39.4 ±2.0
				63	68.0	-26.2 ±1.5
				125	78.2	-16.1 ±1.5
				250	85.5	-8.6 ±1.4
				500	91.0	-3.2 ±1.4
				1000	94.1	Ref
				2000	95.5	+1.2 ±1.6
				4000	96.1	+1.0 ±1.6
				8000	92.0	-1.1 +2.1; -3.1

C-weighting

Setting of Unit-under-test (UUT)			Applied value		UUT Reading,	IEC 61672 Class 1
Range, dB	Freq. Weighting	Time Weighting	Level, dB	Frequency, Hz	dB	Specification, dB
30-130	dBC SPL	Fast	94	31.5	91.2	-3.0 ±2.0
				63	93.4	-0.8 ±1.5
				125	94.1	-0.2 ±1.5
				250	94.2	-0.0 ±1.4
				500	94.1	-0.0 ±1.4
				1000	94.1	Ref
				2000	93.6	-0.2 ±1.6
				4000	92.6	-0.8 ±1.6
				8000	85.9	-3.0 +2.1; -3.1

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Homepage: http://www.aa-lab.com E-mail : inquiry@aa-lab.com

5. *Calibration Results Applied*

The results apply to the particular unit-under-test only. All calibration points are within manufacture's specification as IEC 61672 Class 1.

Uncertainties of Applied Value:

94 dB	31.5 Hz	± 0.05
	63 Hz	± 0.05
	125 Hz	± 0.05
	250 Hz	± 0.10
	500 Hz	± 0.10
	1000 Hz	± 0.05
	2000 Hz	± 0.05
	4000 Hz	± 0.05
	8000 Hz	± 0.05
104 dB	1000 Hz	± 0.15
114 dB	1000 Hz	± 0.05

The uncertainties are evaluated for a 95% confidence level.

Note:
The values given in this certification only related to the values measured at the time of the calibration and any uncertainties quoted will not allow for the equipment long-term drift, variations with environmental changes, vibration and shock during transportation, overloading, mis-handling, or the capability of any other laboratory to repeat the calibration. (A+A)*L shall not be liable for any loss or damage resulting from the use of the equipment.

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輝創工程有限公司
Sun Creation Engineering Limited
Calibration & Testing Laboratory

Certificate of Calibration
校正證書

Certificate No. : C183253
證書編號

ITEM TESTED / 送檢項目 (Job No. / 序引編號 : IC18-1199)   Date of Receipt / 收件日期 : 11 June 2018

Description / 儀器名稱 : Acoustic Calibrator
Manufacturer / 製造商 : Pulsar
Model No. / 型號 : 105
Serial No. / 編號 : 70396
Supplied By / 委託者 : Acumen Environmental Engineering and Technologies Co., Ltd.
Lot 11, Tam Kon Shan Road, North Tsing Yi, N.T.

TEST CONDITIONS / 測試條件

Temperature / 溫度 : (23 ± 2)°C   Relative Humidity / 相對濕度 : (50 ± 25)%
Line Voltage / 電壓 : ---

TEST SPECIFICATIONS / 測試規範

Calibration check

DATE OF TEST / 測試日期 : 18 June 2018

TEST RESULTS / 測試結果

The results apply to the particular unit-under-test only.
The results do not exceed manufacturer's specification.
The results are detailed in the subsequent page(s).

The test equipment used for calibration are traceable to National Standards via :
- The Government of The Hong Kong Special Administrative Region Standard & Calibration Laboratory
- Agilent Technologies / Keysight Technologies
- Rohde & Schwarz Laboratory, Germany
- Fluke Everett Service Center, USA

Tested By
測試 :
H T Wong
Technical Officer

Certified By
核證 :
K C Lee
Engineer

Date of Issue
簽發日期 : 20 June 2018

Sun Creation Engineering Limited – Calibration & Testing Laboratory
c/o 4/F, 1 Hing On Lane, Tuen Mun, New Territories, Hong Kong
輝創工程有限公司 — 校正及檢測實驗所
c/o 香港新界屯門興安里一號四樓
Tel/電話: (852) 2927 2606 Fax/傳真: (852) 2744 8986 E-mail/電郵: callab@suncreation.com Website/網址: www.suncreation.com

Certificate of Calibration
校正證書

Certificate No. : C183253
證書編號

1. The unit-under-test (UUT) was allowed to stabilize in the laboratory for over 12 hours before the commencement of the test.

2. The results presented are the mean of 3 measurements at each calibration point.

3. Test equipment :

Equipment ID	Description	Certificate No.
TST150A	Measuring Amplifier	C181288
CL130	Universal Counter	C173864
CL281	Multifunction Acoustic Calibrator	PA160023

4. Test procedure : MA100N.

5. Results :

5.1 Sound Level Accuracy

UUT Nominal Value	Measured Value (dB)	IEC60942:2003 Class 1 Spec.	Uncertainty of Measured Value (dB)
94 dB, 1 kHz	93.8	± 0.4 dB	± 0.2

Mfr's Spec. : IEC60942:2003 Class 1

5.2 Frequency Accuracy

UUT Nominal Value (kHz)	Measured Value (kHz)	Mfr's Spec.	Uncertainty of Measured Value (Hz)
1	1.000	1 kHz ± 1 %	± 1

Remark : - The uncertainties are for a confidence probability of not less than 95 %.

Note :
Only the original copy or the laboratory's certified true copy is valid.

The values given in this Certificate only relate to the values measured at the time of the test and any uncertainties quoted will not include allowance for the equipment long term drift, variations with environment changes, vibration and shock during transportation, overloading, mis-handling, or the capability of any other laboratory to repeat the measurement. Sun Creation Engineering Limited shall not be liable for any loss or damage resulting from the use of the equipment.

Sun Creation Engineering Limited – Calibration & Testing Laboratory
c/o 4/F, 1 Hing On Lane, Tuen Mun, New Territories, Hong Kong
輝創工程有限公司 — 校正及檢測實驗所
c/o 香港新界屯門興安里一號四樓
Tel/電話: (852) 2927 2606 Fax/傳真: (852) 2744 8986 E-mail/電郵: callab@suncreation.com Website/網址: www.suncreation.com

Certificate of Calibration

for

Description:	*Sound Level Meter*
Manufacturer:	*NTi Audio*
Type No.:	*XL2 (Serial No.: A2A-13663-E0)*
Microphone:	*NTi Audio M2211 (Serial No.:60989)*
Preamplifier:	*NTi Audio MA220 (Serial No.:5735)*

Submitted by:

Customer: *Acuity Sustainability Consulting Limited*

Address: *Unit 1908, iPlace, Nos. 301-305 Castle Peak Road, Kwai Chung, New Territories*

Upon receipt for calibration, the instrument was found to be:

☑ **Within**

☐ **Outside**

the allowable tolerance.

The test equipment used for calibration are traceable to National Standards via:

- The Government of The Hong Kong Special Administrative Region Standard & Calibration Laboratory

Date of receipt: 22 January 2018

Date of calibration: 23 January 2018

*Calibrated by:*________________
Calibration Technician

*Certified by:*________________
Mr. Ng Yan Wa
Laboratory Manager

A & A TESTING LAB CO. LTD.

***Date of issue:* 23 January 2018**

Certificate No.: APJ17-179-CC001

Room 422,Leader Industrial Centre,57-59 Au Pui Wan Street ,Fo Tan, Shatin,N.T.,Hong Kong
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Homepage: http://www.aa-lab.com E-mail : inquiry@aa-lab.com

1. *Calibration Precaution:*

- The unit-under-test (UUT) was allowed to stabilize in the laboratory for over 24 hours, and switched on to warm up for over 10 minutes before the commencement of the test.

- The results presented are the mean of 3 measurements at each calibration point.

2. *Calibration Conditions:*

Air Temperature: 20.5 **°C**
Air Pressure: 1008 **hPa**
Relative Humidity: 67.2 **%**

3. *Calibration Equipment:*

	Type	Serial No.	Calibration Report Number	Traceable to
Multifunction Calibrator	B&K 4226	2288467	PA160056	HOKLAS

4. *Calibration Results*

Sound Pressure Level

Reference Sound Pressure Level

Setting of Unit-under-test (UUT)				Applied value		UUT Reading, dB	IEC 61672 Class 1 Specification, dB
Range, dB	Freq. Weighting		Time Weighting	Level, dB	Frequency, Hz		
30-130	dBA	SPL	Fast	94	1000	94.1	±0.4

Linearity

Setting of Unit-under-test (UUT)				Applied value		UUT Reading, dB	IEC 61672 Class 1 Specification, dB
Range, dB	Freq. Weighting		Time Weighting	Level, dB	Frequency, Hz		
30-130	dBA	SPL	Fast	94	1000	94.1	Ref
				104		104.0	±0.3
				114		114.0	±0.3

Time Weighting

Setting of Unit-under-test (UUT)				Applied value		UUT Reading, dB	IEC 61672 Class 1 Specification, dB
Range, dB	Freq. Weighting		Time Weighting	Level, dB	Frequency, Hz		
30-130	dBA	SPL	Fast	94	1000	94.1	Ref
			Slow			94.0	±0.3

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Frequency Response

Linear Response

Setting of Unit-under-test (UUT)			Applied value		UUT Reading,	IEC 61672 Class 1
Range, dB	Freq. Weighting	Time Weighting	Level, dB	Frequency, Hz	dB	Specification, dB
30-130	dB SPL	Fast	94	31.5	94.0	±2.0
				63	94.1	±1.5
				125	94.0	±1.5
				250	94.0	±1.4
				500	94.1	±1.4
				1000	94.1	Ref
				2000	94.5	±1.6
				4000	95.6	±1.6
				8000	94.6	+2.1; -3.1

A-weighting

Setting of Unit-under-test (UUT)			Applied value		UUT Reading,	IEC 61672 Class 1
Range, dB	Freq. Weighting	Time Weighting	Level, dB	Frequency, Hz	dB	Specification, dB
30-130	dBA SPL	Fast	94	31.5	54.5	-39.4 ±2.0
				63	67.8	-26.2 ±1.5
				125	78.0	-16.1 ±1.5
				250	85.4	-8.6 ±1.4
				500	90.9	-3.2 ±1.4
				1000	94.1	Ref
				2000	95.7	+1.2 ±1.6
				4000	96.6	+1.0 ±1.6
				8000	93.5	-1.1 +2.1; -3.1

C-weighting

Setting of Unit-under-test (UUT)			Applied value		UUT Reading,	IEC 61672 Class 1
Range, dB	Freq. Weighting	Time Weighting	Level, dB	Frequency, Hz	dB	Specification, dB
30-130	dBC SPL	Fast	94	31.5	91.0	-3.0 ±2.0
				63	93.2	-0.8 ±1.5
				125	94.0	-0.2 ±1.5
				250	94.1	-0.0 ±1.4
				500	94.1	-0.0 ±1.4
				1000	94.1	Ref
				2000	93.8	-0.2 ±1.6
				4000	93.3	-0.8 ±1.6
				8000	87.4	-3.0 +2.1; -3.1

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5. *Calibration Results Applied*

The results apply to the particular unit-under-test only. All calibration points are within manufacture's specification as IEC 61672 Class 1.

Uncertainties of Applied Value:

94 dB	31.5 Hz	± 0.05
	63 Hz	± 0.10
	125 Hz	± 0.10
	250 Hz	± 0.05
	500 Hz	± 0.05
	1000 Hz	± 0.05
	2000 Hz	± 0.05
	4000 Hz	± 0.05
	8000 Hz	± 0.15
104 dB	1000 Hz	± 0.05
114 dB	1000 Hz	± 0.05

The uncertainties are evaluated for a 95% confidence level.

Note:
The values given in this certification only related to the values measured at the time of the calibration and any uncertainties quoted will not allow for the equipment long-term drift, variations with environmental changes, vibration and shock during transportation, overloading, mis-handling, or the capability of any other laboratory to repeat the calibration. (A+A)*L shall not be liable for any loss or damage resulting from the use of the equipment.

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Appendix I Event / Action Plan for Noise Exceedance

Event	Actions to be taken by Environmental Team as immediate as practicable	Actions to be taken by Independent Environmental Checker as immediate as practicable	Actions to be taken by Supervising Officer's Representative as immediate as practicable	Actions to be taken by Contractor as immediate as practicable
Action Level being exceeded	1. Notify IEC and Contractor; 2. Carry out investigation; 3. Report the results of investigation to the IEC, SO and Contractor; 4. Discuss with the IEC and Contractor on remedial measures required; 5. Increase monitoring frequency to check mitigation effectiveness. (The above actions should be taken within 2 working .days after the exceedance is identified)	1. Review the investigation results submitted by the ET; 2. Review the proposed remedial measures by the Contractor and advise the SO accordingly; 3. Advise the SO on the effectiveness of the proposed remedial measures. (The above actions should be taken within 2 working days after the exceedance is identified).	1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. In consolidation with the IEC, agree with the Contractor on the remedial measures to be implemented; 4. Supervise the implementation of remedial measures. (The above actions should be taken within 2 working days after the exceedance is identified).	1. Submit noise mitigation proposals to IEC and SO; 2. Implement noise mitigation proposals. (The above actions should be taken within 2 working days after the exceedance is identified)
Limit Level being exceeded	1. Inform IEC, SO, Contractor and EPD; 2. Repeat measurements to confirm findings; 3. Increase monitoring frequency; 4. Identify source and investigate the cause of exceedance; 5. Carry out analysis of Contractor's working procedures; 6. Discuss with the IEC, Contractor and SO on remedial measures required; 7. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and SO informed of the results; 8. If exceedance stops, cease additional monitoring. (The above actions should be taken within 2 working days after the exceedance is identified)	1. Discuss amongst SO, ET, and Contractor on the potential remedial actions; 2. Review Contractors remedial actions whenever necessary to assure their effectiveness and advise the SO accordingly; (The above actions should be taken within 2 working days after the exceedance is identified)	1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. In consolidation with the IEC, agree with the Contractor on the remedial measures to be implemented; 4. Supervise the implementation of remedial measures; 5. If exceedance continues, consider stopping the Contractor to continue working on that portion of work which causes the exceedance until the exceedance is abated. (The above actions should be taken within 2 working days after the exceedance is identified)	1. Take immediate action to avoid further exceedance; 2. Submit proposals for remedial actions to IEC and SO within 3 working days of notification; 3. Implement the agreed proposals; 4. Submit further proposal if problem still not under control; 5. Stop the relevant portion of works as instructed by the SO until the exceedance is abated. (The above actions should be taken within 2 working days after the exceedance is identified)

Appendix J Noise Monitoring Data

Location: Shek Kwu Chau Treatment & Rehabilitation Centre Hostel 1 (M1 / N_S1)

Monitoring date: 3, 10, 17, 24 & 31 December 2018

Parameter: $L_{eq\ 30min}$

Noise source other than construction activities from the Project: Nil

Noise Monitoring data:

Date	Start time		End time	Weather	$L_{eq\ 30min}$ dB(A)
03-12-2018	11:24	-	11:54	Sunny	51.1
10-12-2018	11:23	-	11:53	Sunny	51.3
17-12-2018	11:18	-	11:48	Sunny	52.4
24-12-2018	11:16	-	11:46	Sunny	52.3
31-12-2018	11:25	-	11:55	Sunny	50.2

Location:	Shek Kwu Chau Treatment & Rehabilitation Centre Hostel 2 (M2 / N_S2)
Monitoring date:	3, 10, 17, 24 & 31 December 2018
Parameter :	$L_{eq\ 30min}$
Noise source other than construction activities from the Project:	Nil

Noise Monitoring data:

Date	Start time		End time	Weather	$L_{eq\ 30min}$ dB(A)
03-12-2018	10:51	-	11:21	Sunny	54.9
10-12-2018	10:49	-	11:19	Sunny	55.8
17-12-2018	10:45	-	11:15	Sunny	53.9
24-12-2018	10:43	-	11:13	Sunny	54.4
31-12-2018	10:52	-	11:22	Sunny	55.2

Location: Shek Kwu Chau Treatment & Rehabilitation Centre Hostel 3 (M3 / N_S3)

Monitoring date: 3, 10, 17, 24 & 31 December 2018

Parameter : $L_{eq\ 30min}$

Noise source other than construction activities from the Project: Air-conditioning units nearby

Noise Monitoring data:

Date	Start time		End time	Weather	$L_{eq\ 30min}$ dB(A)
03-12-2018	10:03	-	10:33	Sunny	51.9
10-12-2018	10:06	-	10:36	Sunny	51.3
17-12-2018	9:57	-	10:27	Sunny	51.4
24-12-2018	10:01	-	10:31	Sunny	52.9
31-12-2018	10:11	-	10:41	Sunny	49.7

Appendix K Waste Flow Table

Monthly Summary Waste Flow Table for 2018

Project : Integrated Waste Management Facilities, Phase I

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
	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)			(in '000 kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000L)	(in '000kg)
Jan	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Feb	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Mar	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Apr	-	-	-	-	-	-	-	-	-	-	-	-	-	-
May	-	-	-	-	-	-	-	-	-	-	-	-	-	-
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	3.2
Sep	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Oct	0	0	0	0	0	0	0	0	0	0	0	0	0	4.2
Nov	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Dec	0	0	0	0	0	0	0	0	0	0	0	0.2	0.87	0
Total	0	0	0	0	0	0	0	0	0	0	0	0.2	0.87	7.4

Notes:
(1) Broken concrete for recycling into aggregates.
(2) Plastics refer to plastic bottles/ containers, plastic sheets/ foam from packaging materials.

Appendix L Event / Action Plan for Coral Monitoring

Event	Action			
	ET Leader	**IEC**	**SO**	**Contractor**
Action Level Exceedance	1. Check monitoring data 2. Inform the IEC, SO ,and Contractor of the findings; 3. Increase the monitoring to at least once a month to confirm findings; 4. Propose mitigation measures for consideration	1. Discuss monitoring with the ET and the Contractor; 2. Review proposals for additional monitoring and any other measures submitted by the Contractor and advise the SO accordingly.	1. Discuss with the IEC additional monitoring requirements and any other measures proposed by the ET; 2. Make the agreement on the measures to be implemented.	1. Inform the SO and confirm notification of the non-compliance in writing; 2. Discuss with the ET and the IEC and propose measures to the IEC and the SO; 3. Implement the agreed measures.
Limit Level Exceedance	1. Undertake Steps 1-4 as in the Action Level Exceedance. If further exceedance of Limit Level, propose enhancement measures for consideration.	1. Discuss monitoring with the ET and the Contractor; 2. Review proposals for additional monitoring and any other measures submitted by the Contractor and advise the SO accordingly.	1. Discuss with the IEC additional monitoring requirements and any other measures proposed by the ET; 2. Make the agreement on the measures to be implemented.	1. Inform the SO and confirm notification of the non-compliance in writing; 2. Discuss with the ET and the IEC and propose measures to the IEC and the SO; 3. Implement the agreed measures.

Appendix M Event / Action Plan for White-Bellied Sea Eagle

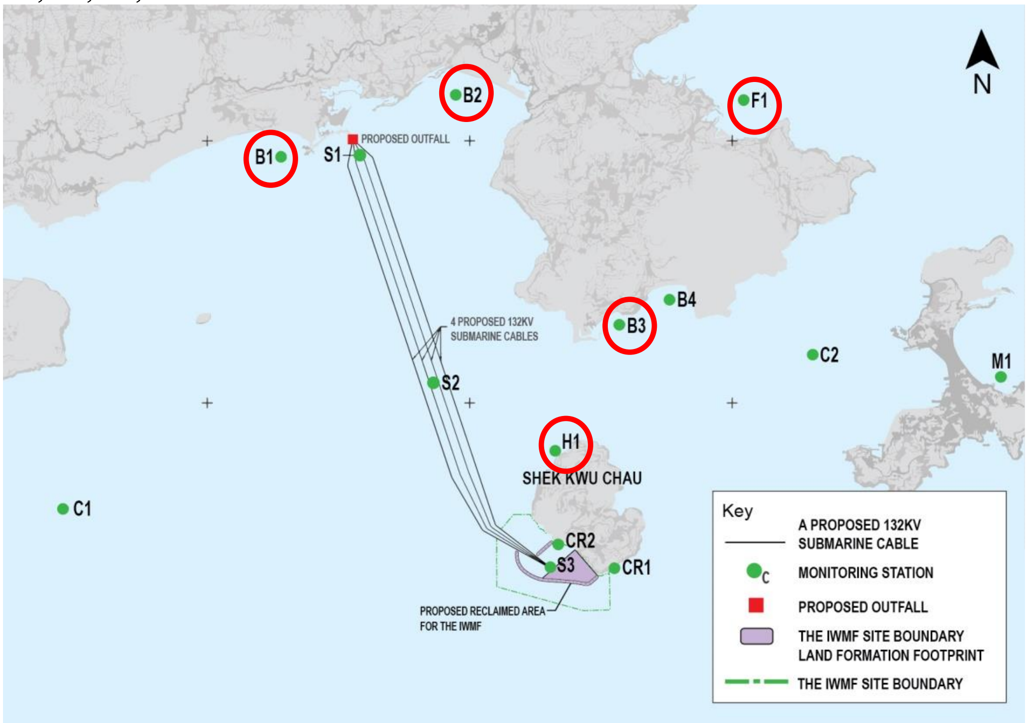
Event	Action		
	Environmental Team	Audit Team	Contractor
Absence of White-bellied Sea Eagle during a whole day of monitoring.	Inform audit team. Increase monitoring frequency to daily.	Inform site engineer and contractor. If the absence remains: • Review construction activities and noise monitoring records of the associated period; • Identify potential causes of the absence; • Propose remedial measures, such as change of construction method and sequence; • Confirm the feasibility of the proposed remedial measures with site engineer and contractor; • Discuss with environmental team about the effectiveness of the proposed remedial measures.	Implement the agreed remedial measures.

Appendix N Exceedance Report

Statistical Summary of Exceedances in the Reporting Period

Water Quality			
Location	**Action Level**	**Limit Level**	**Total**
B1	3	7	10
B2	4	5	9
B3	3	5	8
B4	5	4	9
CR1	3	5	8
CR2	1	6	7
F1	4	1	5
H1	3	2	5
S1	1	6	7
S2	1	4	5
S3	1	5	6
M1	2	7	9
Noise			
Location	**Action Level**	**Limit Level**	**Total**
M1 / N_S1	0	0	0
M2 / N_S2	0	0	0
M3 / N_S3	0	0	0

Incident Report on Action Level or Limit Level Non-compliance

<table>
<tr><td>Project</td><td colspan="3">Integrated Waste Management Facilities, Phase 1</td></tr>
<tr><td>Date</td><td colspan="3">03 December 2018 (Lab result received on 06 December 2018)</td></tr>
<tr><td>Time</td><td colspan="3">13:57 – 17:27 (Mid-Flood)</td></tr>
<tr><td colspan="4">Mid-Flood</td></tr>
<tr><td>Monitoring Location</td><td colspan="3">B1, B2, B3, F1 & H1

</td></tr>
<tr><td>Parameter</td><td colspan="3">Suspended Solid (SS)</td></tr>
<tr><td rowspan="2">Action & Limit Levels</td><td colspan="2">Action Level</td><td>Limit Level</td></tr>
<tr><td colspan="2">≥ 8.0 mg/L</td><td>≥ 10.0 mg/L</td></tr>
<tr><td rowspan="2">Measurement Level</td><td>Impact Station(s) of Exceedance</td><td>Control Stations</td><td>Impact Station(s) without Exceedance</td></tr>
<tr><td>8.5 mg/L (B1)
8.0 mg/L (B2)
8.0 mg/L (B3)
8.0 mg/L (F1)
8.2 mg/L (H1)</td><td>6.7 mg/L (C1)
6.5 mg/L (C2)</td><td>5.8 mg/L (B4)
6.5 mg/L (M1)
7.5 mg/L (CR1)
6.8 mg/L (CR2)</td></tr>
<tr><td>Possible reason for Action or Limit Level Non-compliance</td><td colspan="3">Works scheduled on site on 03/12 include ground investigation (GI) work of 2 borehole drilling, DCM sample coring for pre-construction site trial and laying of geotextile with sand placing for ballasting at caisson seawall area.

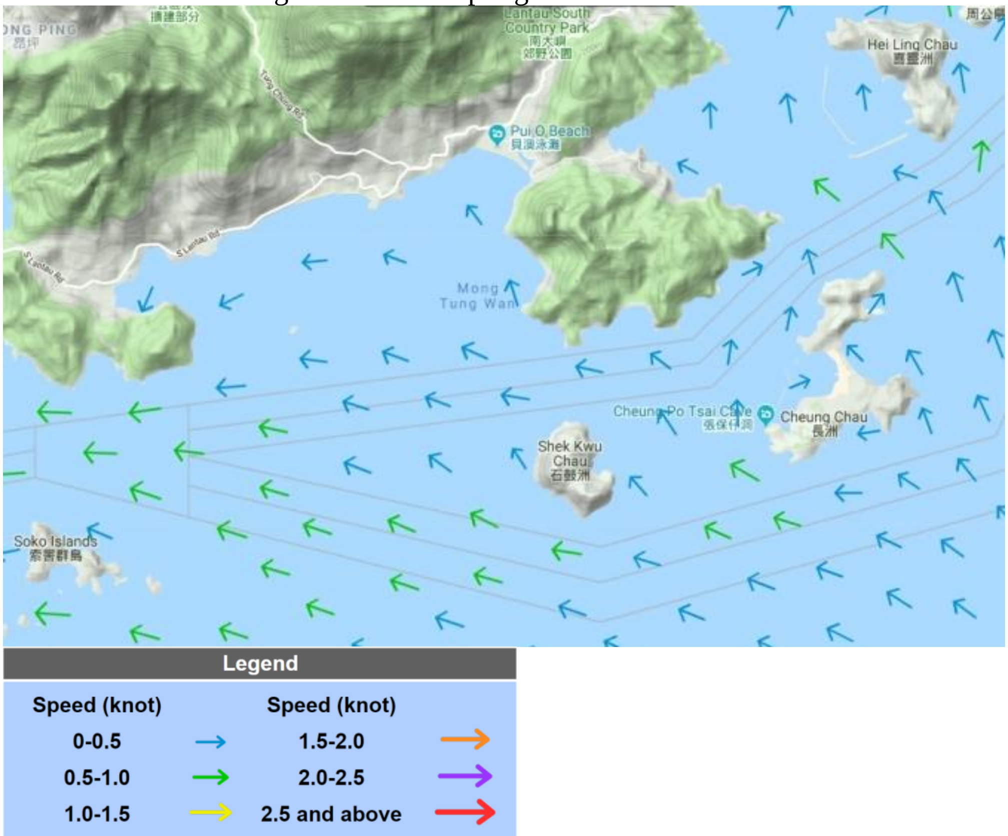
Dominating sea current direction was found to be from Southeast to Northwest at waters around Shek Kwu Chau.

B1, B2, B3 and F1 are located at unrelated stream direction (neither upstream nor downstream, far away) to the works location, exceedance of these monitoring locations are deemed to be unrelated to the Project.

CR1 and CR2, the closest monitoring stations to the site location when comparing to H1 (upstream monitoring station), exhibited a much smaller SS level. No observation of silt plume was made during the sampling event. Silt curtain checking was implemented by the contractor and checking result showed that no deficiency of silt curtain was found on that day. It might suggest that the high SS level exceedance at</td></tr>
</table>

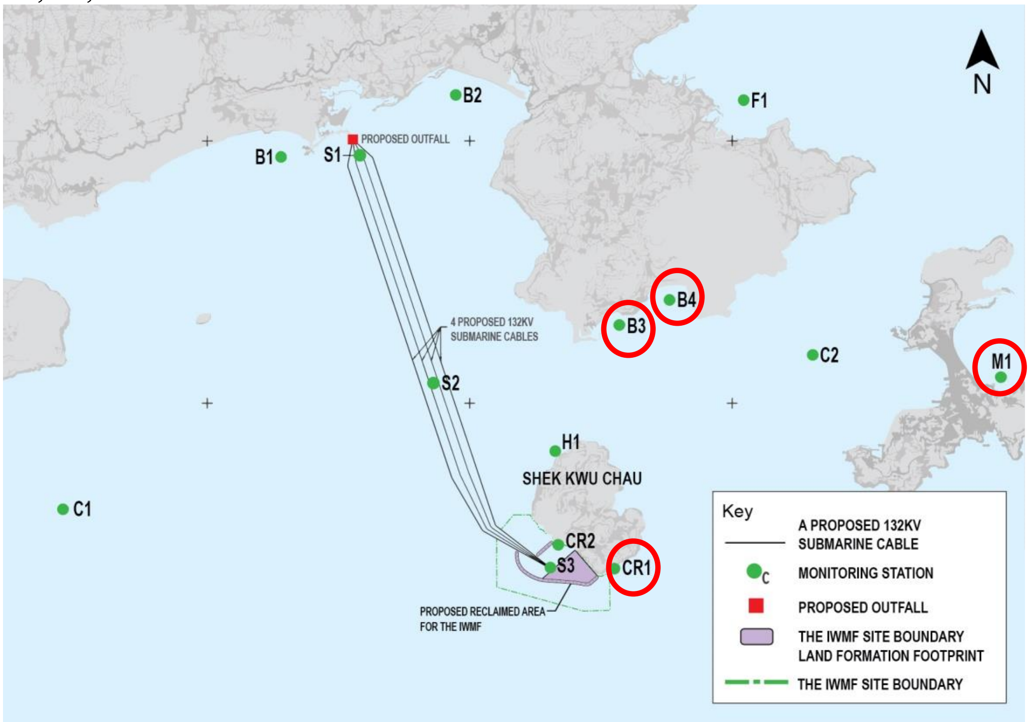
<table>
<tr><td></td><td>H1 is deemed to be unrelated to the project.

Site tidiness in the present barges in the Project site were checked during weekly site inspection on 04/12, there was two observations might contribute the SS level increase where sand on the pontoon surface was nearly overflowed to the sea on FTB 19 and a big lump of sand was observed at the edge of the barge surface on 祥記 7. However, according to the rationale in the previous paragraph, these two observations were not considered as the source of SS exceedance at H1.</td></tr>
<tr><td>Actions taken / to be taken</td><td>The Contractor was reminded to clean up the sand more frequently and hence to avoid the sand was leaked outside the silt curtain. The Contractor was reminded to use an elongated soft hose to avoid the sand accumulation on the pontoon surface during sand blanket laying process.

Examination of environmental performance of the Project will be continued during the weekly inspection, and the Contractor is reminded to implement all applicable mitigation measures as per the Updated EM&A Manual.</td></tr>
<tr><td>Remarks</td><td>Current direction during mid-flood sampling on 03/12:


(Sourced from http://current.hydro.gov.hk/en/map.html)</td></tr>
<tr><td>Prepared by</td><td>Polar Chan</td></tr>
<tr><td>Date</td><td>7 December 2018</td></tr>
</table>

Incident Report on Action Level or Limit Level Non-compliance

<table>
<tr><td>Project</td><td colspan="6">Integrated Waste Management Facilities, Phase 1</td></tr>
<tr><td>Date</td><td colspan="6">5 December 2018 (Lab result received on 10 December 2018)</td></tr>
<tr><td>Time</td><td colspan="6">09:19 – 12:49 (Mid-Ebb)
15:02 – 18:32 (Mid-Flood)</td></tr>
<tr><td colspan="7">Mid-Ebb</td></tr>
<tr><td>Monitoring Location</td><td colspan="6">B3, B4, M1 & CR1

</td></tr>
<tr><td>Parameter</td><td colspan="6">Suspended Solid (SS)</td></tr>
<tr><td rowspan="2">Action & Limit Levels</td><td colspan="3">Action Level</td><td colspan="3">Limit Level</td></tr>
<tr><td colspan="3">≥ 8.0 mg/L</td><td colspan="3">≥ 10.0 mg/L</td></tr>
<tr><td rowspan="2">Measurement Level</td><td colspan="2">Impact Station(s) of Exceedance</td><td colspan="2">Control Stations</td><td colspan="2">Impact Station(s) without Exceedance</td></tr>
<tr><td colspan="2">9.3 mg/L (B3)
8.8 mg/L (B4)
10.7 mg/L (M1)
8.8 mg/L (CR1)</td><td colspan="2">6.3 mg/L (C1)
9.8 mg/L (C2)</td><td colspan="2">7.5 mg/L (B1)
7.8 mg/L (B2)
7.5 mg/L (F1)
7.7 mg/L (H1)
5.3 mg/L (CR2)</td></tr>
<tr><td>Possible reason for Action or Limit Level Non-compliance</td><td colspan="6">Works scheduled on site on 05/12 include ground investigation (GI) work of 2 borehole drilling, DCM sample coring for pre-construction site trial and laying of sand blanket at caisson seawall area.

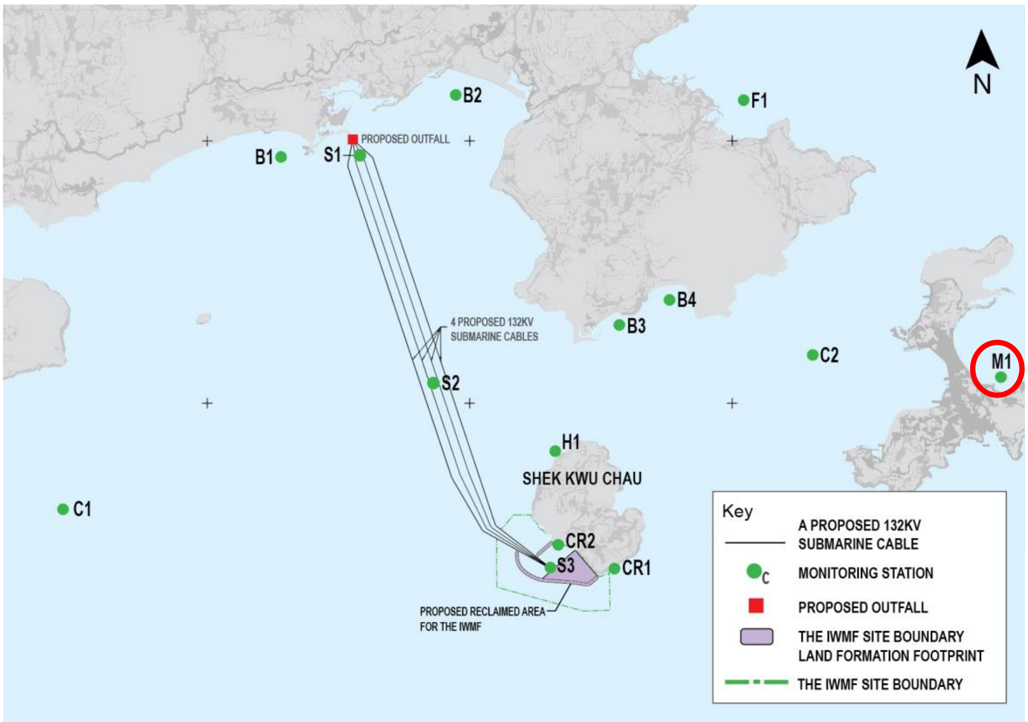
Dominating sea current direction was found to be from Northwest to Southeast at waters around Shek Kwu Chau.

B3, B4 and M1 are located at unrelated stream direction (neither upstream nor downstream, far away) to the works location, exceedance of these monitoring locations are deemed to be unrelated to the Project.

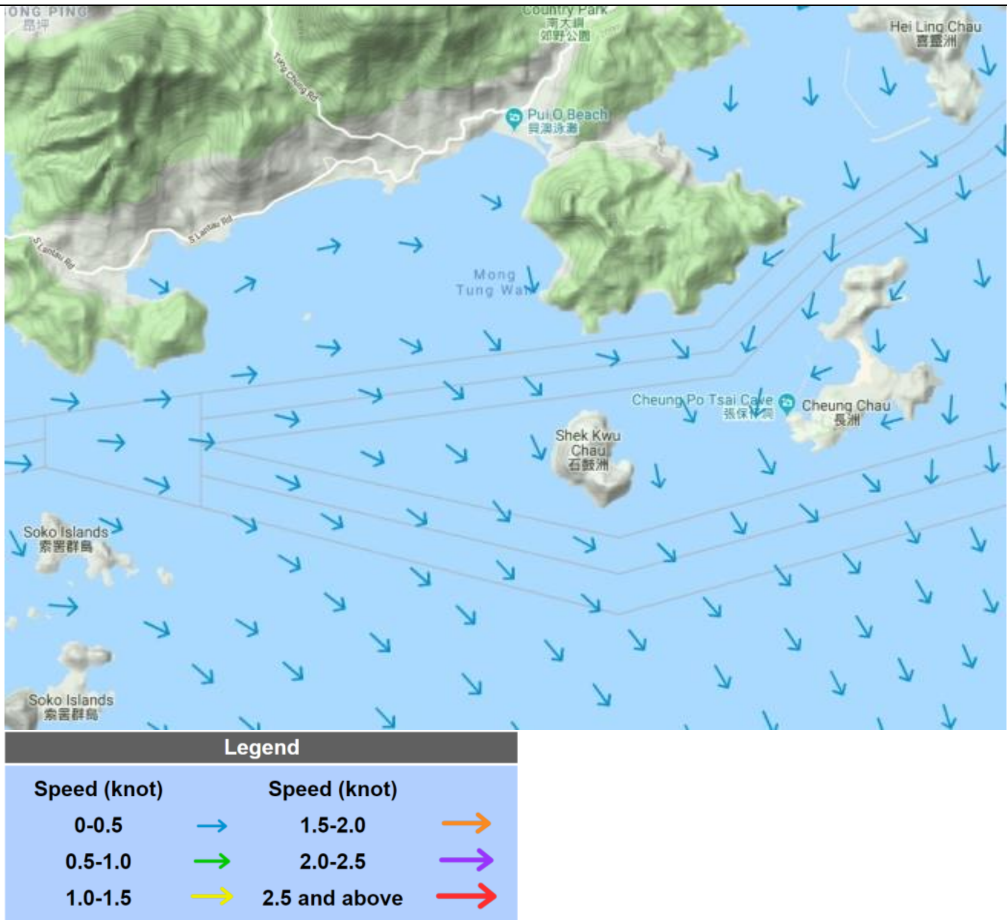
CR1 is located at downstream direction to the works location, while no observation of silt plume was made during the sampling event. Silt curtain checking was implemented by the contractor and checking result showed that no deficiency of silt curtain was found on that day. It might suggest that the high SS level exceedance at</td></tr>
</table>

<table>
<tr><td></td><td colspan="4">CR1 is deemed to be unrelated to the project.

Site tidiness in the present barges in the Project site were checked during weekly site inspection on 4/12, where sand on the pontoon surface was nearly overflowed to the sea on FTB 19 and a big lump of sand was observed at the edge of the barge surface on 祥記 7. However, according to the rationale in the previous paragraph, these two observations were not considered as the source of SS exceedance.</td></tr>
<tr><td>Actions taken / to be taken</td><td colspan="4">The Contractor was reminded to clean up the sand more frequently and hence to avoid the sand was leaked outside the silt curtain. The Contractor was reminded to use an elongated soft hose to avoid the sand accumulation on the pontoon surface during sand blanket laying process.

Examination of environmental performance of the Project will be continued during the weekly inspection, and the Contractor is reminded to implement all applicable mitigation measures as per the Updated EM&A Manual.</td></tr>
<tr><td colspan="5">Mid-Flood</td></tr>
<tr><td>Monitoring Location</td><td colspan="4">M1

</td></tr>
<tr><td>Parameter</td><td colspan="4">Suspended Solid (SS)</td></tr>
<tr><td rowspan="2">Action & Limit Levels</td><td colspan="2">Action Level</td><td colspan="2">Limit Level</td></tr>
<tr><td colspan="2">≥ 10.0 mg/L (120% of C2)</td><td colspan="2">≥ 10.8 mg/L (130% of C2)</td></tr>
<tr><td rowspan="2">Measurement Level</td><td>Impact Station(s) of Exceedance</td><td colspan="2">Control Stations</td><td>Impact Station(s) without Exceedance</td></tr>
<tr><td>11.0 mg/L (M1)</td><td colspan="2">7.2 mg/L (C1)
8.3 mg/L (C2)</td><td>6.5 mg/L (B1)
8.0 mg/L (B2)
7.0 mg/L (B3)
6.8 mg/L (B4)
8.3 mg/L (F1)
5.7 mg/L (H1)
8.3 mg/L (CR1)
7.8 mg/L (CR2)</td></tr>
<tr><td>Possible reason for Action or Limit Level Non-compliance</td><td colspan="4">Works scheduled on site on 05/12 include ground investigation (GI) work of 2 borehole drilling, DCM sample coring for pre-construction site trial and laying of sand blanket at caisson seawall area.</td></tr>
</table>

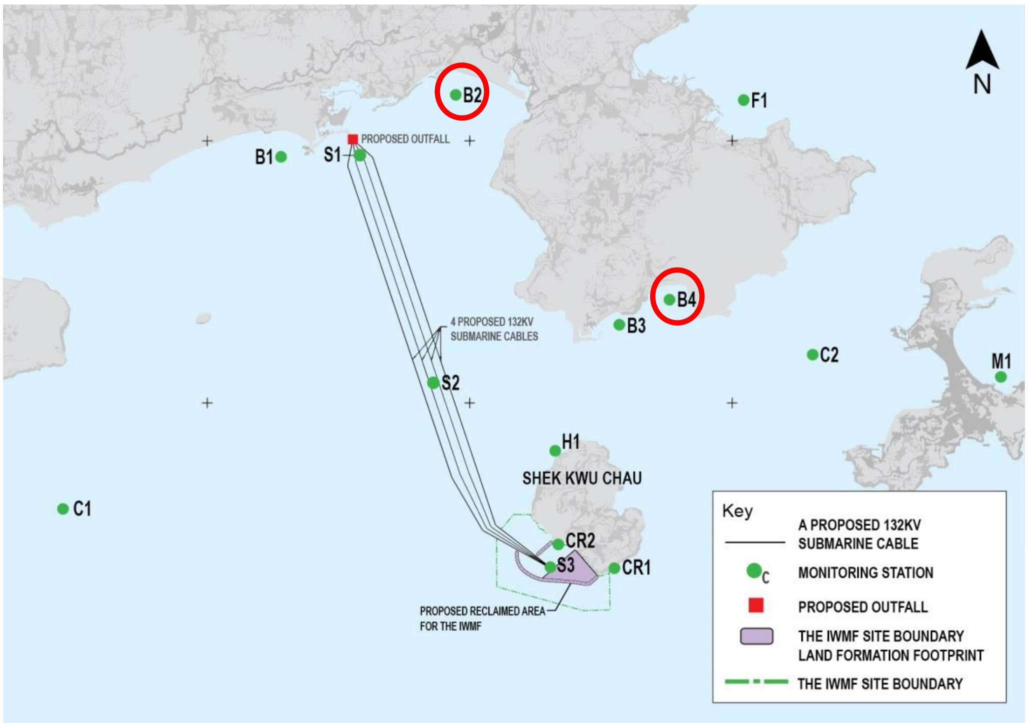
	Dominating sea current direction was found to be from Southeast to Northwest at waters around Shek Kwu Chau. M1 is located at unrelated stream direction (neither upstream nor downstream, far away) to the works location, exceedance of this monitoring location is deemed to be unrelated to the Project. Silt curtain checking was implemented by contractor and checking result showed no deficiency of silt curtain was found. Site tidiness in the present barges in the Project site were checked during weekly site inspection on 4/12, where sand on the pontoon surface was nearly overflowed to the sea on FTB 19 and a big lump of sand was observed at the edge of the barge surface on 祥記 7. However, according to the rationale in the previous paragraph, these two observations were not considered as the source of SS exceedance.
Actions taken / to be taken	The Contractor was reminded to clean up the sand more frequently and hence to avoid the sand was leaked outside the silt curtain. The Contractor was reminded to use an elongated soft hose to avoid the sand accumulation on the pontoon surface during sand blanket laying process. Examination of environmental performance of the Project will be continued during the weekly inspection, and the Contractor is reminded to implement all applicable mitigation measures as per the Updated EM&A Manual.
Remarks	Current direction during mid-flood sampling on 5/12:  Current direction during mid-flood sampling on 5/12:



(Sourced from http://current.hydro.gov.hk/en/map.html)

Prepared by	Polar Chan
Date	11 December 2018

\Incident Report on Action Level or Limit Level Non-compliance

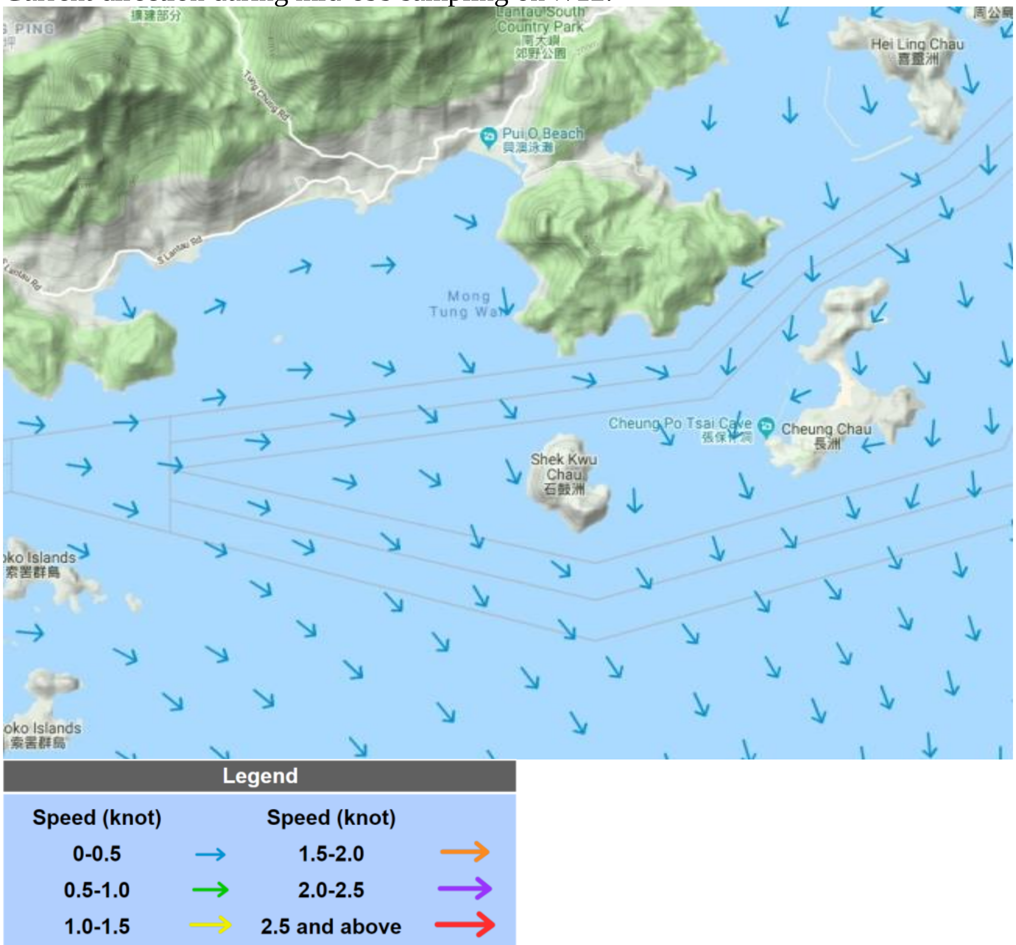
<table>
<tr><td>Project</td><td colspan="3">Integrated Waste Management Facilities, Phase 1</td></tr>
<tr><td>Date</td><td colspan="3">7 December 2018 (Lab result received on 12 December 2018)</td></tr>
<tr><td>Time</td><td colspan="3">10:51 – 14:21 (Mid-Ebb)</td></tr>
<tr><td colspan="4">Mid-Ebb</td></tr>
<tr><td>Monitoring Location</td><td colspan="3">B2 & B4

</td></tr>
<tr><td>Parameter</td><td colspan="3">Suspended Solid (SS)</td></tr>
<tr><td rowspan="2">Action & Limit Levels</td><td colspan="2">Action Level</td><td>Limit Level</td></tr>
<tr><td colspan="2">≥ 9.4 mg/L (120% of C1)</td><td>≥ 10.1 mg/L (120% of C1)</td></tr>
<tr><td rowspan="2">Measurement Level</td><td>Impact Station(s) of Exceedance</td><td>Control Stations</td><td>Impact Station(s) without Exceedance</td></tr>
<tr><td>10.0 mg/L (B2)
9.8 mg/L (B4)</td><td>7.8 mg/L (C1)
8.0 mg/L (C2)</td><td>8.3 mg/L (B1)
7.8 mg/L (B3)
7.8 mg/L (F1)
8.2 mg/L (H1)
8.2 mg/L (M1)
8.5 mg/L (CR1)
9.2 mg/L (CR2)</td></tr>
<tr><td>Possible reason for Action or Limit Level Non-compliance</td><td colspan="3">Works scheduled on site on 07/12 include ground investigation (GI) work of 2 borehole drilling, DCM sample coring for pre-construction site trial and laying of sand blanket at both caisson seawall area and DCM Plant Trial Area.

Dominating sea current direction was found to be from Northwest to Southeast at waters around Shek Kwu Chau.

B2 and B4 are located at unrelated stream direction (neither upstream nor downstream, far away) to the works location, exceedance of these monitoring locations are deemed to be unrelated to the Project.

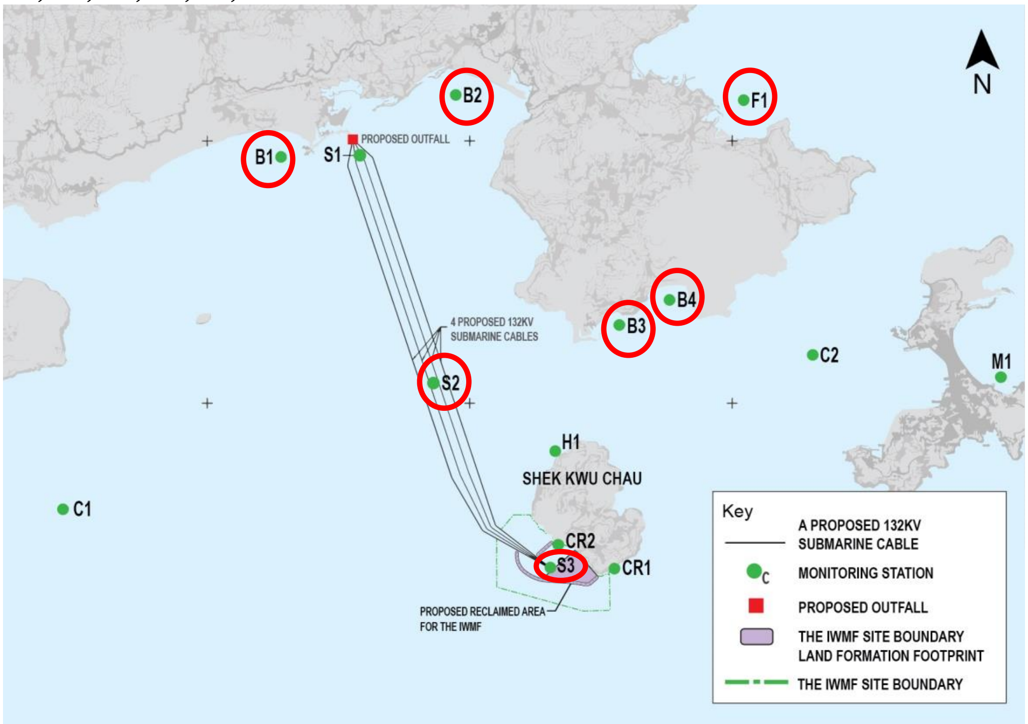
Silt curtain checking was implemented by the contractor and checking result showed that no deficiency of silt curtain was found on that day.

Site tidiness in the present barges in the Project site were checked during weekly site</td></tr>
</table>

	inspection on 04/12, there was two observations might contribute the SS level increase where sand on the pontoon surface was nearly overflowed to the sea on FTB 19 and a big lump of sand was observed at the edge of the barge surface on 祥記 7. However, according to the rationale in previous paragraph, these two observations were not considered as the source of SS exceedance.
Actions taken / to be taken	Sand on the pontoon surface was picked up and poured into the hopper by the Contractor on 07/12. Also, the big lump of sand at the edge of the barge surface was cleaned by the Contractor on 07/12. The Contractor was reminded to clean up the sand more frequently and use an elongated soft hose, and hence to avoid the sand was leaked outside the silt curtain. Examination of environmental performance of the Project will be continued during the weekly inspection, and the Contractor is reminded to implement all applicable mitigation measures as per the Updated EM&A Manual.
Remarks	Current direction during mid-ebb sampling on 7/12:  (Sourced from http://current.hydro.gov.hk/en/map.html)

Prepared by	Polar Chan
Date	13 December 2018

Incident Report on Action Level or Limit Level Non-compliance

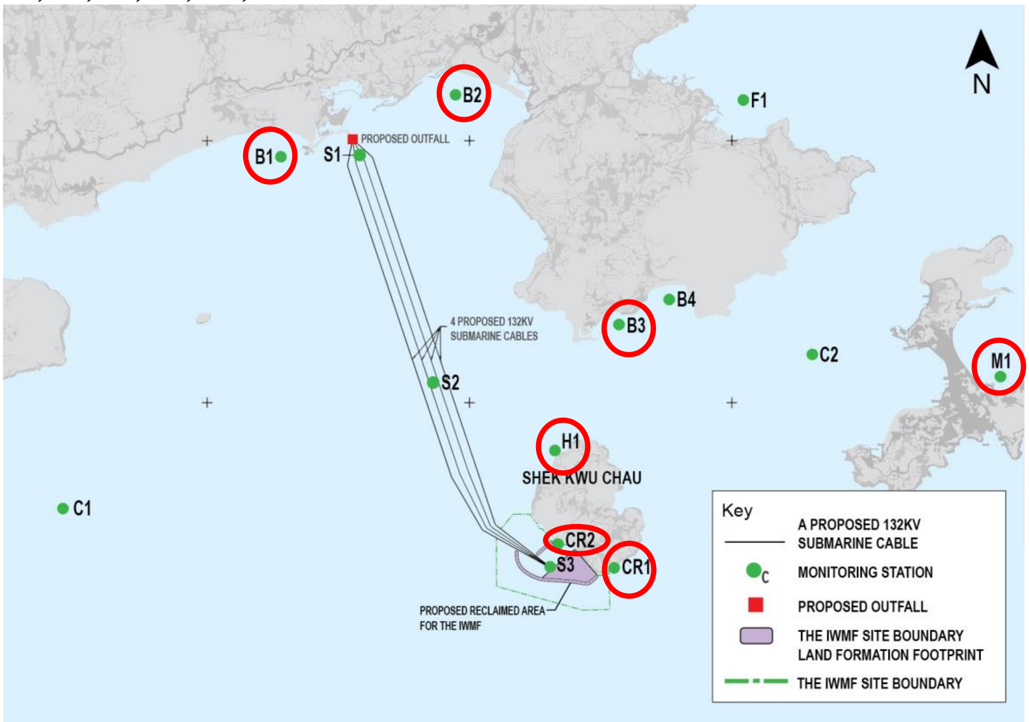
<table>
<tr><td>Project</td><td colspan="3">Integrated Waste Management Facilities, Phase 1</td></tr>
<tr><td>Date</td><td colspan="3">10 December 2018 (Lab result received on 13 December 2018)</td></tr>
<tr><td>Time</td><td colspan="3">08:00 – 10:52 (Mid-Flood)
12:37 – 16:07 (Mid-Ebb)</td></tr>
<tr><td colspan="4">Mid-Flood</td></tr>
<tr><td>Monitoring Location</td><td colspan="3">B1, B2, B3, B4, F1, S2 & S3

</td></tr>
<tr><td>Parameter</td><td colspan="3">Suspended Solid (SS)</td></tr>
<tr><td rowspan="2">Action & Limit Levels</td><td>Action Level</td><td colspan="2">Limit Level</td></tr>
<tr><td>≥ 11.2 mg/L (120% of C2)</td><td colspan="2">≥ 12.1 mg/L (130 % of C2)</td></tr>
<tr><td rowspan="2">Measurement Level</td><td>Impact Station(s) of Exceedance</td><td>Control Stations</td><td>Impact Station(s) without Exceedance</td></tr>
<tr><td>13.0 mg/L (B1)
13.8 mg/L (B2)
14.0 mg/L (B3)
13.3 mg/L (B4)
12.2 mg/L (F1)
15.3 mg/L (S2)
13.5 mg/L (S3)</td><td>7.0 mg/L (C1)
9.3 mg/L (C2)</td><td>8.8 mg/L (H1)
7.3 mg/L (M1)
11.0 mg/L (CR1)
8.7 mg/L (CR2)
10.5 mg/L (S1)</td></tr>
<tr><td>Possible reason for Action or Limit Level Non-compliance</td><td colspan="3">Works scheduled on site on 10/12 include ground investigation (GI) work of 2 borehole drilling and DCM sample coring for pre-construction site trial, which shall not be a major source of SS concentration increase considering the limited scale and nature of works.

Dominating sea current direction was found to be from Southeast to Northwest at waters around Shek Kwu Chau.

B1, B2, B3, B4, F1 and S2 are located at unrelated stream direction (neither upstream nor downstream, far away) to the works location, exceedance of these monitoring locations are deemed to be unrelated to the Project.

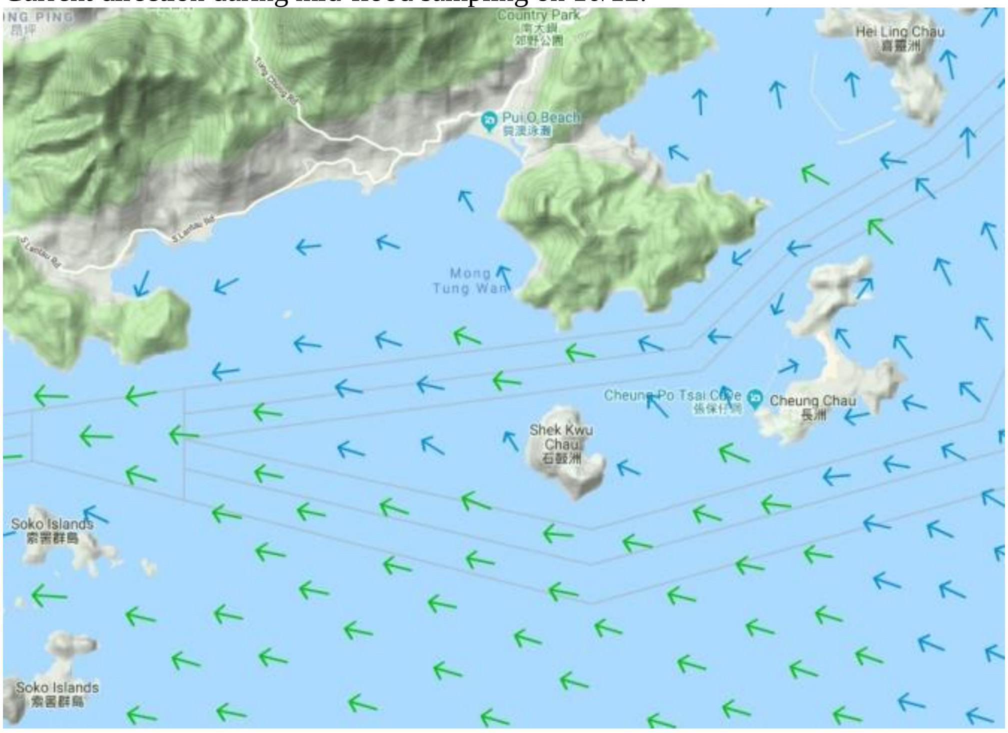
S3 is located close to the works location within the Project site, while no observation of silt plume was made during the sampling event. The absence of site works and</td></tr>
</table>

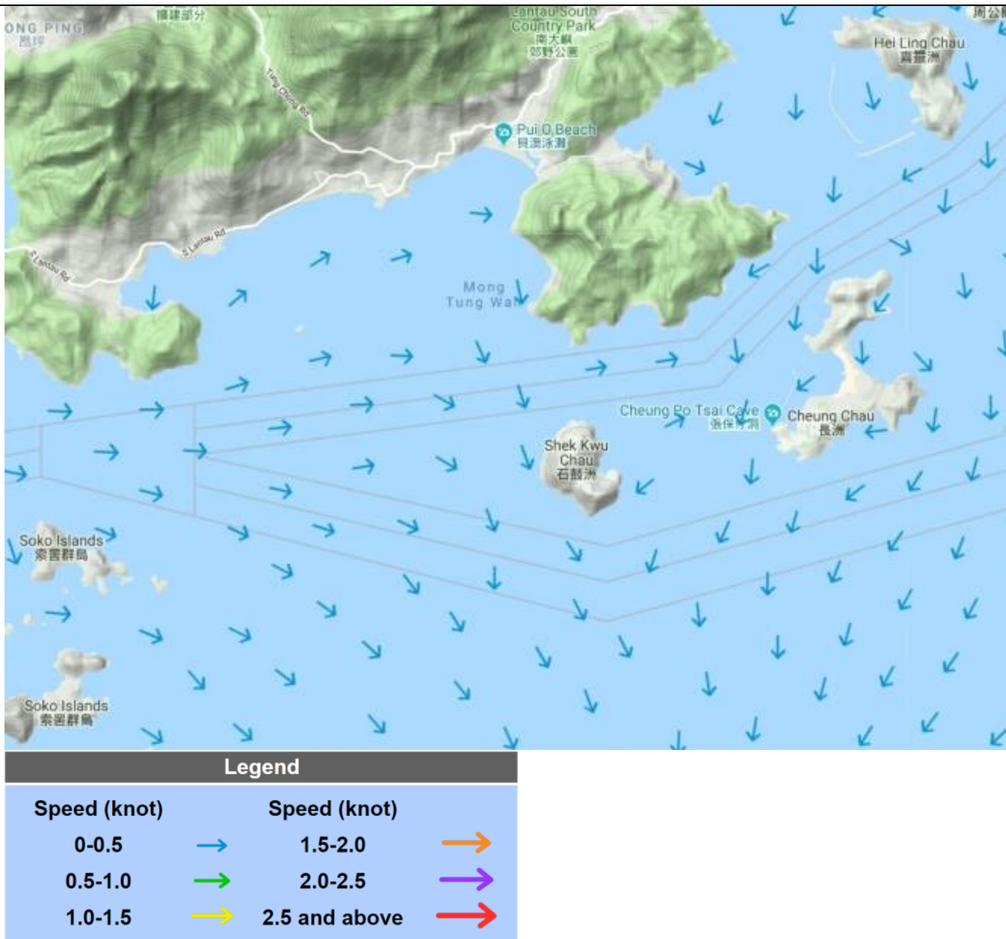
<table>
<tr><td></td><td colspan="4">above rationales might suggest that the high SS level exceedance at S3 is deemed to be unrelated to the project.

Site tidiness in the present barges in the Project site were checked during weekly site inspection on 14/12, where there was no major observation of improper site practice that might contribute to the increase in SS level was observed during the inspection.</td></tr>
<tr><td>Actions taken / to be taken</td><td colspan="4">Examination of environmental performance of the Project will be continued during the weekly inspection, and the Contractor is reminded to implement all applicable mitigation measures as per the Updated EM&A Manual.</td></tr>
<tr><td colspan="5">Mid-Ebb</td></tr>
<tr><td>Monitoring Location</td><td colspan="4">B1, B2, B3, H1, M1, CR1 & CR2

</td></tr>
<tr><td>Parameter</td><td colspan="4">Suspended Solid (SS)</td></tr>
<tr><td rowspan="2">Action & Limit Levels</td><td colspan="2">Action Level</td><td colspan="2">Limit Level</td></tr>
<tr><td colspan="2">≥ 8.2 mg/L (120% of C1)</td><td colspan="2">≥ 10.0 mg/L</td></tr>
<tr><td rowspan="2">Measurement Level</td><td>Impact Station(s) of Exceedance</td><td colspan="2">Control Stations</td><td>Impact Station(s) without Exceedance</td></tr>
<tr><td>10.8 mg/L (B1)
10.0 mg/L (B2)
10.0 mg/L (B3)
9.8 mg/L (H1)
9.7 mg/L (M1)
10.7 mg/L (CR1)
11.0 mg/L (CR2)</td><td colspan="2">6.8 mg/L (C1)
6.2 mg/L (C2)</td><td>6.0 mg/L (B4)
6.0 mg/L (F1)
6.5 mg/L (S1)
6.8 mg/L (S2)
7.7 mg/L (S3)</td></tr>
<tr><td>Possible reason for Action or Limit Level Non-compliance</td><td colspan="4">Works scheduled on site on 10/12 include ground investigation (GI) work of 2 borehole drilling and DCM sample coring for pre-construction site trial, which shall not be a major source of SS concentration increase considering the limited scale and nature of works.

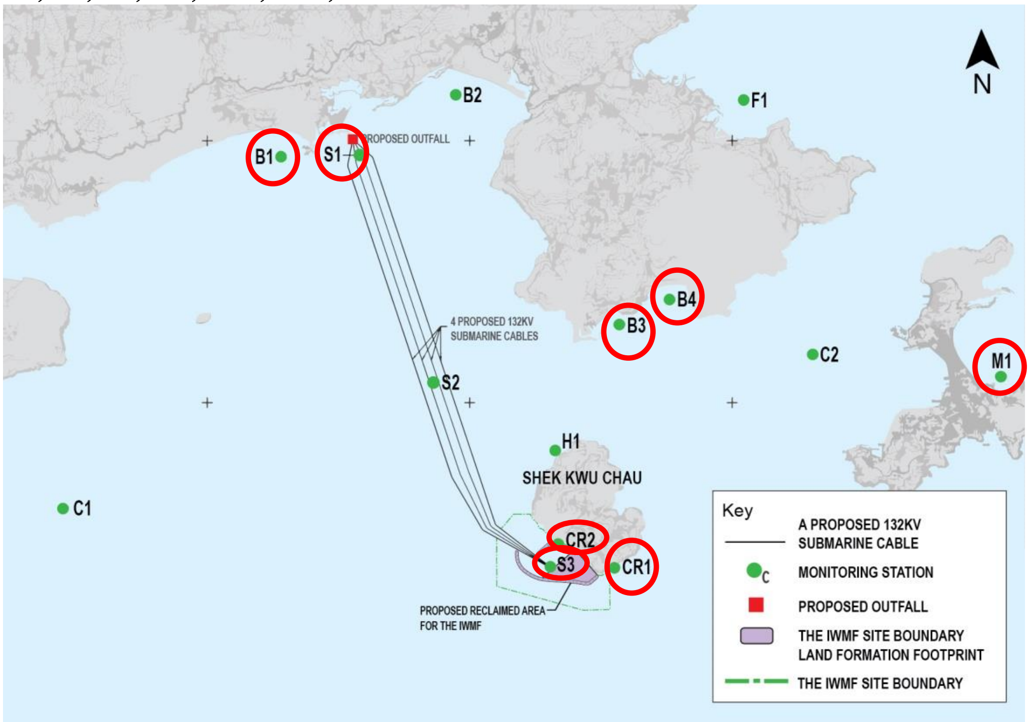
Dominating sea current direction was found to be from Southeast to Northwest at waters around Shek Kwu Chau.

B1, B2, B3 and M1 are located at unrelated stream direction (neither upstream nor</td></tr>
</table>

	downstream, far away) to the works location, exceedance of these monitoring locations are deemed to be unrelated to the Project. H1 is located upstream direction, CR1 is located at downstream direction and CR2 is located close to the works location within the Project site, while no observation of silt plume was made during the sampling event. The absence of site works and above rationales might suggest that the high SS level exceedance at H1, CR1 and CR2 are deemed to be unrelated to the project. Site tidiness in the present barges in the Project site were checked during weekly site inspection on 14/12, where there was no major observation of improper site practice that might contribute to the increase in SS level was observed during the inspection.
Actions taken / to be taken	Examination of environmental performance of the Project will be continued during the weekly inspection, and the Contractor is reminded to implement all applicable mitigation measures as per the Updated EM&A Manual.
Remarks	Current direction during mid-flood sampling on 10/12:  Current direction during mid-ebb sampling on 10/12:

	 (Sourced from http://current.hydro.gov.hk/en/map.html)
Prepared by	Polar Chan
Date	14 December 2018

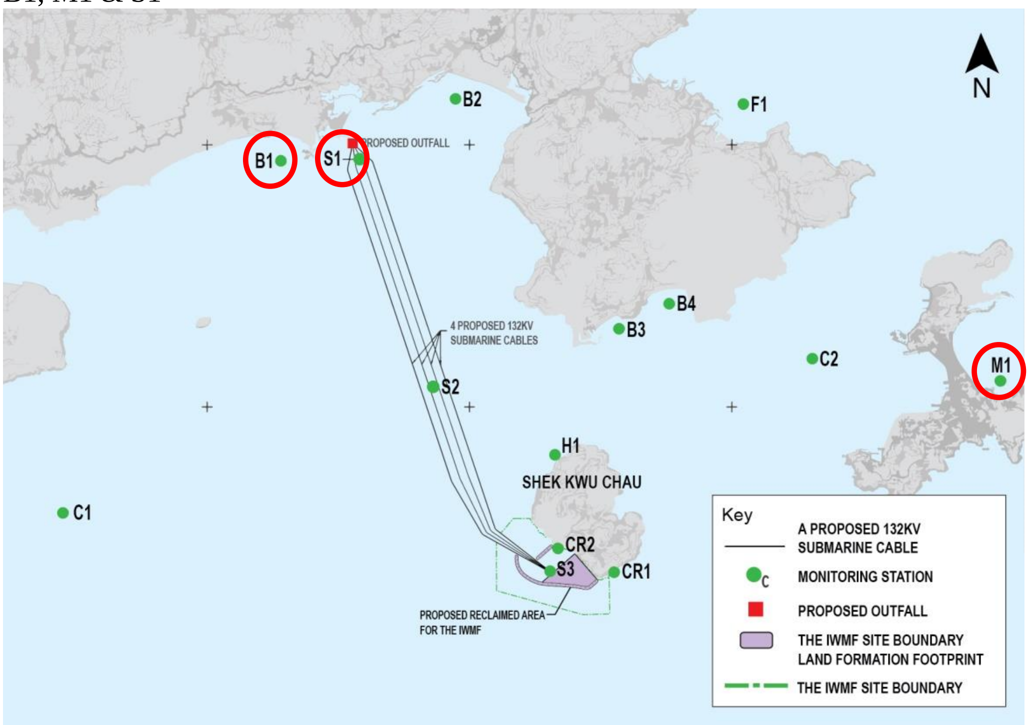
Incident Report on Action Level or Limit Level Non-compliance

<table>
<tr><td>Project</td><td colspan="4">Integrated Waste Management Facilities, Phase 1</td></tr>
<tr><td>Date</td><td colspan="4">12 December 2018 (Lab result received on 18 December 2018)</td></tr>
<tr><td>Time</td><td colspan="4">08:37 – 12:07 (Mid-Flood)
14:09 – 16:51 (Mid-Ebb)</td></tr>
<tr><td colspan="5">Mid-Flood</td></tr>
<tr><td>Monitoring Location</td><td colspan="4">B1, B3, B4, M1, CR1, CR2, S1 & S3

</td></tr>
<tr><td>Parameter</td><td colspan="4">Suspended Solid (SS)</td></tr>
<tr><td rowspan="2">Action & Limit Levels</td><td colspan="2">Action Level</td><td colspan="2">Limit Level</td></tr>
<tr><td colspan="2">≥ 11.2 mg/L (120% of C2)</td><td colspan="2">≥ 12.1 mg/L (130 % of C2)</td></tr>
<tr><td rowspan="2">Measurement Level</td><td>Impact Station(s) of Exceedance</td><td colspan="2">Control Stations</td><td>Impact Station(s) without Exceedance</td></tr>
<tr><td>12.3 mg/L (B1)
12.3 mg/L (B3)
14.8 mg/L (B4)
15.0 mg/L (M1)
13.3 mg/L (CR1)
15.2 mg/L (CR2)
13.5 mg/L (S1)
13.7 mg/L (S3)</td><td colspan="2">9.5 mg/L (C1)
9.3 mg/L (C2)</td><td>11.0 mg/L (B2)
10.7 mg/L (F1)
9.3 mg/L (H1)
10.7 mg/L (S2)</td></tr>
<tr><td>Possible reason for Action or Limit Level Non-compliance</td><td colspan="4">Works scheduled on site on 12/12 include ground investigation (GI) work of borehole drilling, DCM sample coring for pre-construction site trial, DCM main works, laying of geotextile with sand placing for ballasting and laying of sand blanket at caisson seawall area.

Dominating sea current direction was found to be from Southeast to Northwest at waters around Shek Kwu Chau.

B1, B3, B4, S1, F1 and M1 are located at unrelated stream direction (neither upstream nor downstream, far away) to the works location, exceedance of these monitoring locations are deemed to be unrelated to the Project.</td></tr>
</table>

	CR1 is located at upstream direction, CR2 & S3 are located close to the works location within the Project site, while no observation of silt plume was made during the sampling event. Silt curtain checking was implemented by the contractor and checking result showed that no deficiency of silt curtain was found on that day. Control stations and most of the monitoring stations showed considerably high SS level of that tidal period, implying the high background SS level of surrounding waters. It might suggest that the high SS level exceedance at CR1, CR2 & S3 are deemed to be unrelated to the project. Site tidiness in the present barges in the Project site were checked during weekly site inspection on 14/12, where there was no major observation of improper site practice that might contribute to the increase in SS level was observed during the inspection.		
Actions taken / to be taken	Examination of environmental performance of the Project will be continued during the weekly inspection, and the Contractor is reminded to implement all applicable mitigation measures as per the Updated EM&A Manual.		
Mid-Ebb			
Monitoring Location	B1, M1 & S1		



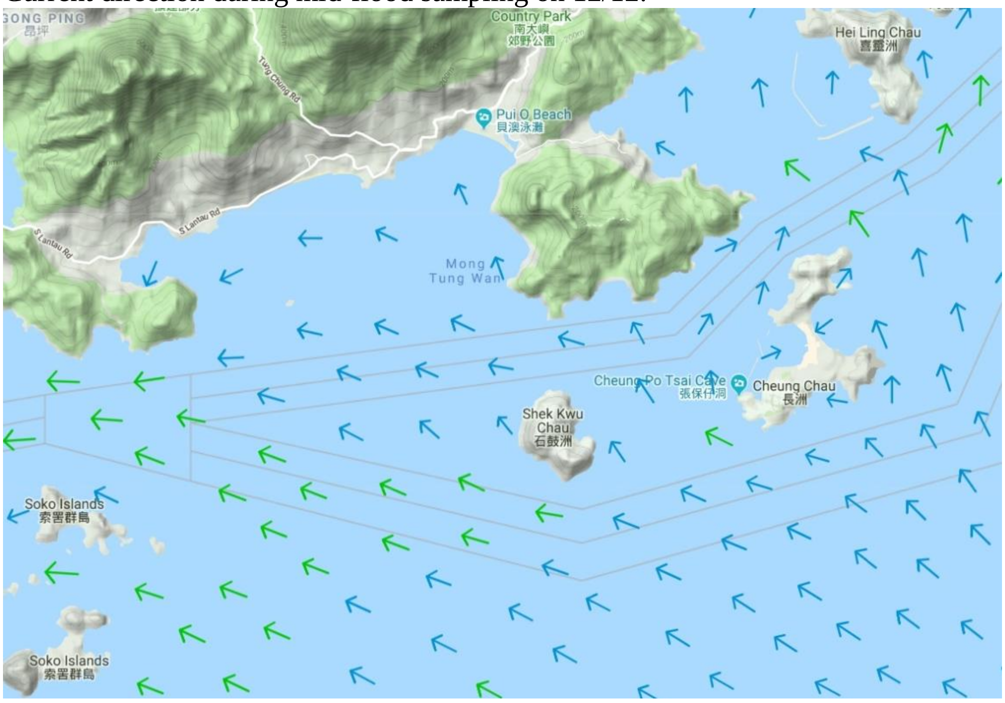
Parameter	Suspended Solid (SS)		
Action & Limit Levels	Action Level		Limit Level
	≥ 15.0 mg/L (120% of C1)		≥ 16.3 mg/L (130% of C1)
Measurement Level	Impact Station(s) of Exceedance	Control Stations	Impact Station(s) without Exceedance
	18.5 mg/L (B1) 17.0 mg/L (M1) 16.8 mg/L (S1)	12.5 mg/L (C1) 13.2 mg/L (C2)	11.5 mg/L (B2) 14.3 mg/L (B3) 11.8 mg/L (B4) 11.7 mg/L (F1) 12.0 mg/L (H1) 10.7 mg/L (CR1) 12.5 mg/L (CR2) 11.2 mg/L (S2) 13.0 mg/L (S3)
Possible reason for Action or Limit Level Non-compliance	Works scheduled on site on 12/12 include ground investigation (GI) work of borehole drilling, DCM sample coring for pre-construction site trial, DCM main works, laying		

<table>
<tr><td></td><td>of geotextile with sand placing for ballasting and laying of sand blanket at caisson seawall area.

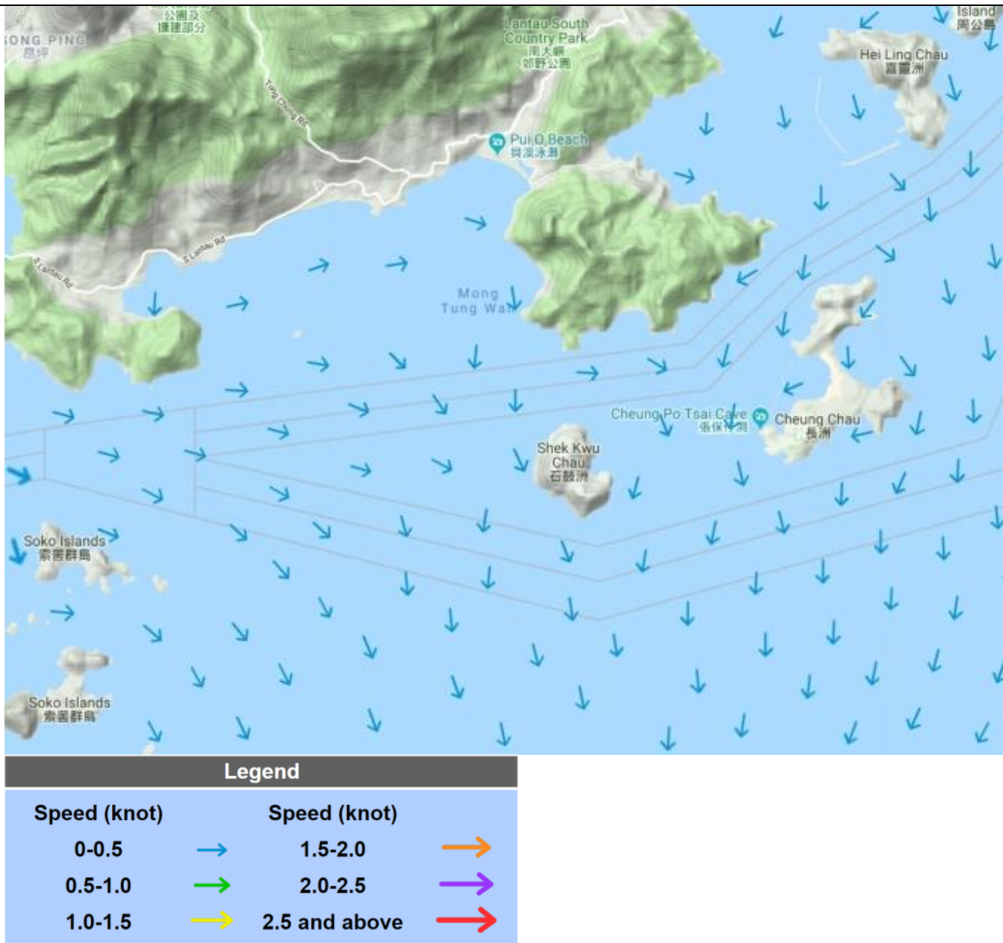
Dominating sea current direction was found to be from Northwest to Southwest waters around Shek Kwu Chau.

B1, S1 and M1 are located at unrelated stream direction (neither upstream nor downstream, far away) to the works location, exceedance of these monitoring locations are deemed to be unrelated to the Project. Silt curtain checking was implemented by the contractor and checking result showed that no deficiency of silt curtain was found on that day.

Site tidiness in the present barges in the Project site were checked during weekly site inspection on 14/12, where there was no major observation of improper site practice that might contribute to the increase in SS level was observed during the inspection.</td></tr>
<tr><td>Actions taken / to be taken</td><td>Examination of environmental performance of the Project will be continued during the weekly inspection, and the Contractor is reminded to implement all applicable mitigation measures as per the Updated EM&A Manual.</td></tr>
<tr><td>Remarks</td><td>Current direction during mid-flood sampling on 12/12:



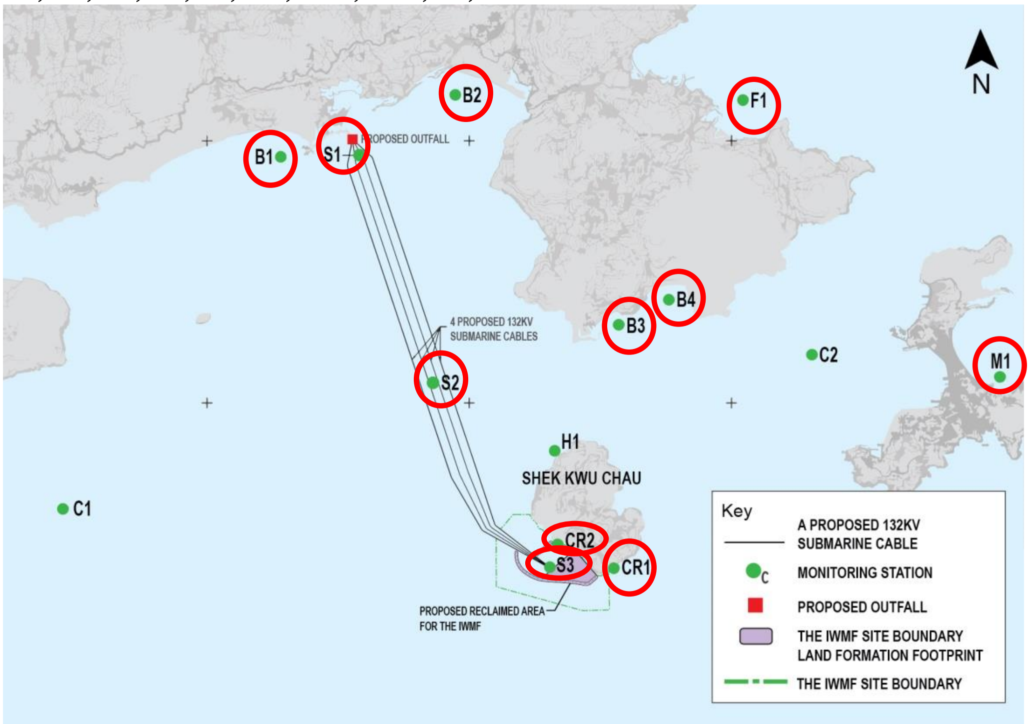
Current direction during mid-ebb sampling on 12/12:</td></tr>
</table>



(Sourced from http://current.hydro.gov.hk/en/map.html)

Prepared by	Polar Chan
Date	19 December 2018

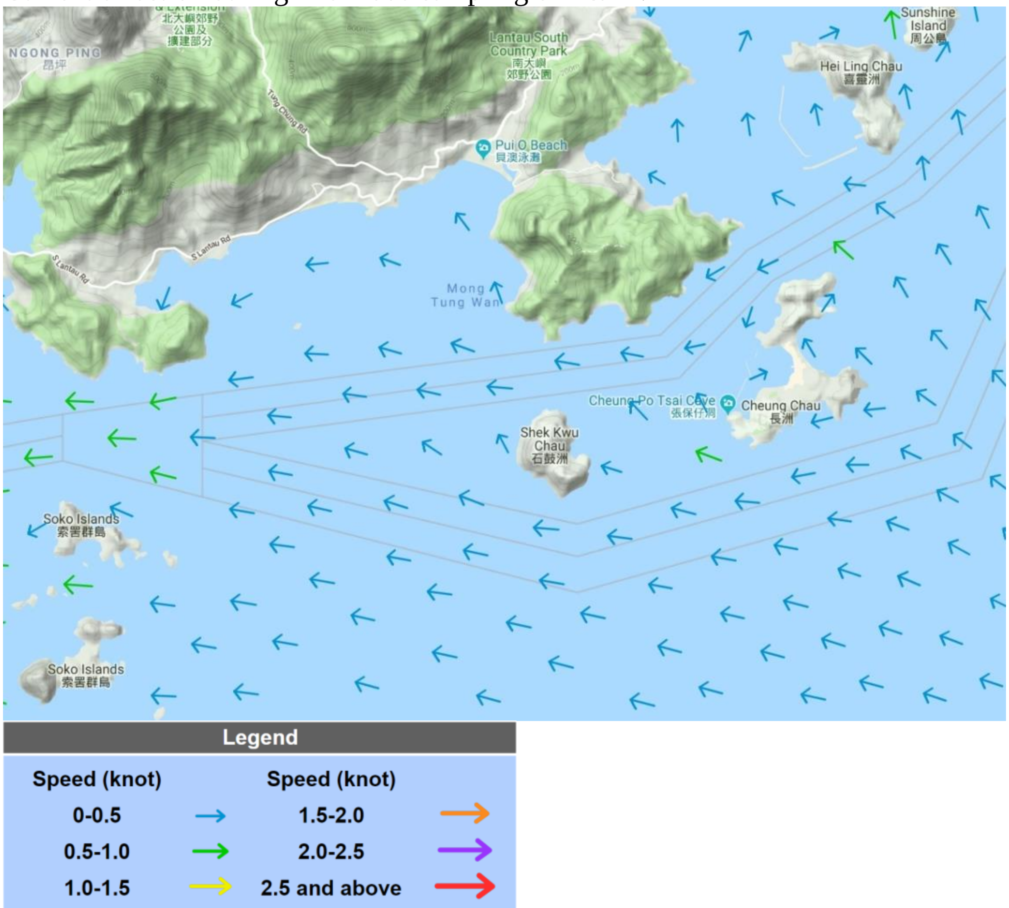
Incident Report on Action Level or Limit Level Non-compliance

<table>
<tr><td>Project</td><td colspan="4">Integrated Waste Management Facilities, Phase 1</td></tr>
<tr><td>Date</td><td colspan="4">15 December 2018 (Lab result received on 19 December 2018)</td></tr>
<tr><td>Time</td><td colspan="4">11:42 – 15:12 (Mid-Flood)</td></tr>
<tr><td colspan="5">Mid-Flood</td></tr>
<tr><td>Monitoring Location</td><td colspan="4">B1, B2, B3, B4, F1, M1, CR1, CR2, S1, S2 & S3

</td></tr>
<tr><td>Parameter</td><td colspan="4">Suspended Solid (SS)</td></tr>
<tr><td rowspan="2">Action & Limit Levels</td><td colspan="2">Action Level</td><td colspan="2">Limit Level</td></tr>
<tr><td colspan="2">≥ 9.6 mg/L (120% of C2)</td><td colspan="2">≥ 10.4 mg/L (130% of C2)</td></tr>
<tr><td rowspan="2">Measurement Level</td><td>Impact Station(s) of Exceedance</td><td colspan="2">Control Stations</td><td>Impact Station(s) without Exceedance</td></tr>
<tr><td>11.3 mg/L (B1)
15.0 mg/L (B2)
13.5 mg/L (B3)
14.5 mg/L (B4)
10.0 mg/L (F1)
14.2 mg/L (M1)
12.0 mg/L (CR1)
15.5 mg/L (CR2)
13.5 mg/L (S1)
13.2 mg/L (S2)
12.3 mg/L (S3)</td><td colspan="2">11.0 mg/L (C1)
8.0 mg/L (C2)</td><td>8.5 mg/L (H1)</td></tr>
<tr><td>Possible reason for Action or Limit Level Non-compliance</td><td colspan="4">Works scheduled on site on 15/12 include ground investigation (GI) work of 2 borehole drilling, DCM main works and laying of sand blanket at both caisson seawall area and DCM plant trial area.

Dominating sea current direction was found to be from Southeast to Northwest at waters around Shek Kwu Chau.

B1, B2, B3, B4, S1, S2, F1 and M1 are located at unrelated stream direction (neither upstream nor downstream, far away) to the works location, exceedance of these monitoring locations are deemed to be unrelated to the Project.</td></tr>
</table>

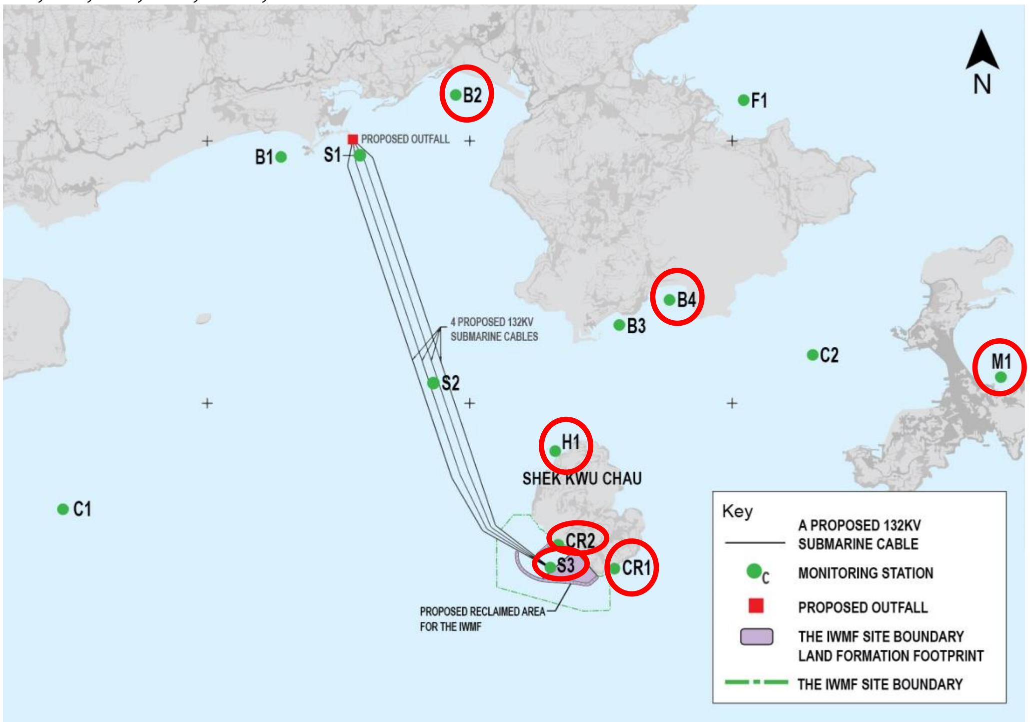
	CR1 is located at upstream direction, CR2 & S3 are located close to the works location within the Project site, while no observation of silt plume was made during the sampling event. Silt curtain checking was implemented by the contractor and checking result showed that no deficiency of silt curtain was found on that day. Control stations and most of the monitoring stations showed considerably high SS level of that tidal period, implying the high background SS level of surrounding waters. It might suggest that the high SS level exceedance at CR1, CR2 & S3 are deemed to be unrelated to the project. Site tidiness in the present barges in the Project site were checked during weekly site inspection on 14/12, where there was no major observation of improper site practice that might contribute to the increase in SS level was observed during the inspection.
Actions taken / to be taken	Examination of environmental performance of the Project will be continued during the weekly inspection, and the Contractor is reminded to implement all applicable mitigation measures as per the Updated EM&A Manual.
Remarks	Current direction during mid-flood sampling on 15/12:



(Sourced from http://current.hydro.gov.hk/en/map.html)

Prepared by	Polar Chan
Date	20 December 2018

Incident Report on Action Level or Limit Level Non-compliance

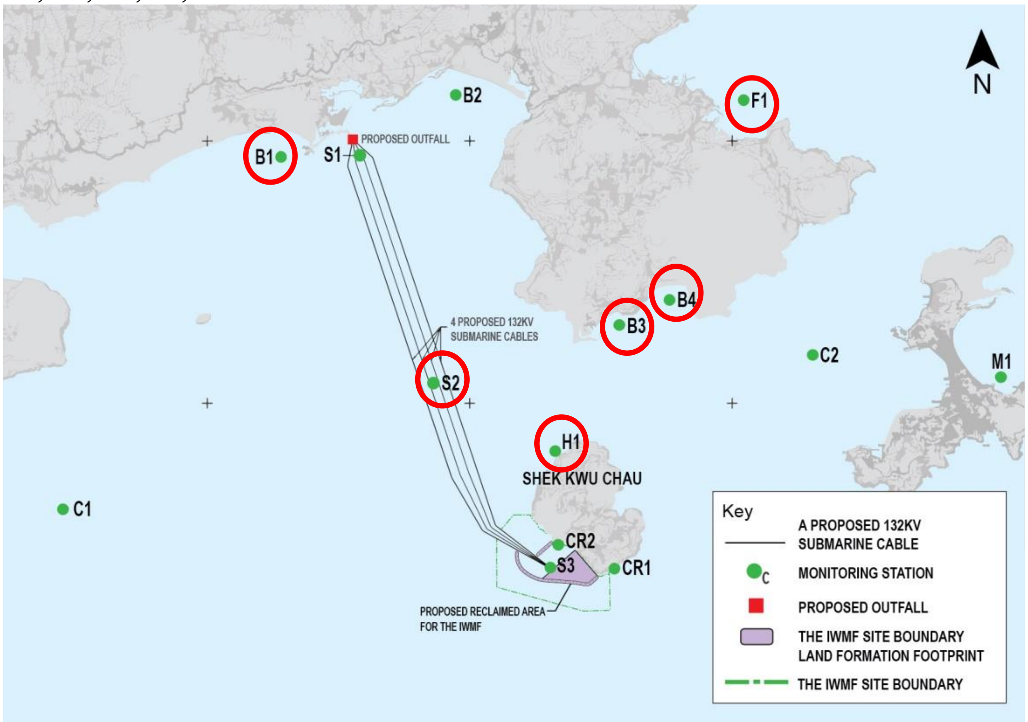
<table>
<tr><td>Project</td><td colspan="3">Integrated Waste Management Facilities, Phase 1</td></tr>
<tr><td>Date</td><td colspan="3">17 December 2018 (Lab result received on 20 December 2018)</td></tr>
<tr><td>Time</td><td colspan="3">08:00 – 08:44 (Mid-Ebb)
12:50 – 16:20 (Mid-Flood)</td></tr>
<tr><td colspan="4">Mid-Ebb</td></tr>
<tr><td>Monitoring Location</td><td colspan="3">B2, B4, H1, M1, CR1, CR2 & S3

</td></tr>
<tr><td>Parameter</td><td colspan="3">Suspended Solid (SS)</td></tr>
<tr><td rowspan="2">Action & Limit Levels</td><td>Action Level</td><td colspan="2">Limit Level</td></tr>
<tr><td>≥ 8.2 mg/L (120% of C1)</td><td colspan="2">≥ 10.0 mg/L</td></tr>
<tr><td rowspan="2">Measurement Level</td><td>Impact Station(s) of Exceedance</td><td>Control Stations</td><td>Impact Station(s) without Exceedance</td></tr>
<tr><td>8.5 mg/L (B2)
8.8 mg/L (B4)
8.5 mg/L (H1)
13.2 mg/L (M1)
12.7 mg/L (CR1)
9.5 mg/L (CR2)
8.8 mg/L (S3)</td><td>6.8 mg/L (C1)
6.7 mg/L (C2)</td><td>5.8 mg/L (B1)
7.0 mg/L (B3)
6.3 mg/L (F1)
7.5 mg/L (S1)
6.7 mg/L (S2)</td></tr>
<tr><td>Possible reason for Action or Limit Level Non-compliance</td><td colspan="3">Works scheduled on site on 17/12 include ground investigation (GI) work of 2 borehole drilling, DCM main works, laying of geotextile with sand placing for ballasting at caisson seawall area and laying of sand blanket at caisson seawall area.

Dominating sea current direction was found to be from Northwest to Southeast at waters around Shek Kwu Chau.

B2, B4 and M1 are located at unrelated stream direction (neither upstream nor downstream, far away) to the works location, exceedance of these monitoring locations are deemed to be unrelated to the Project.

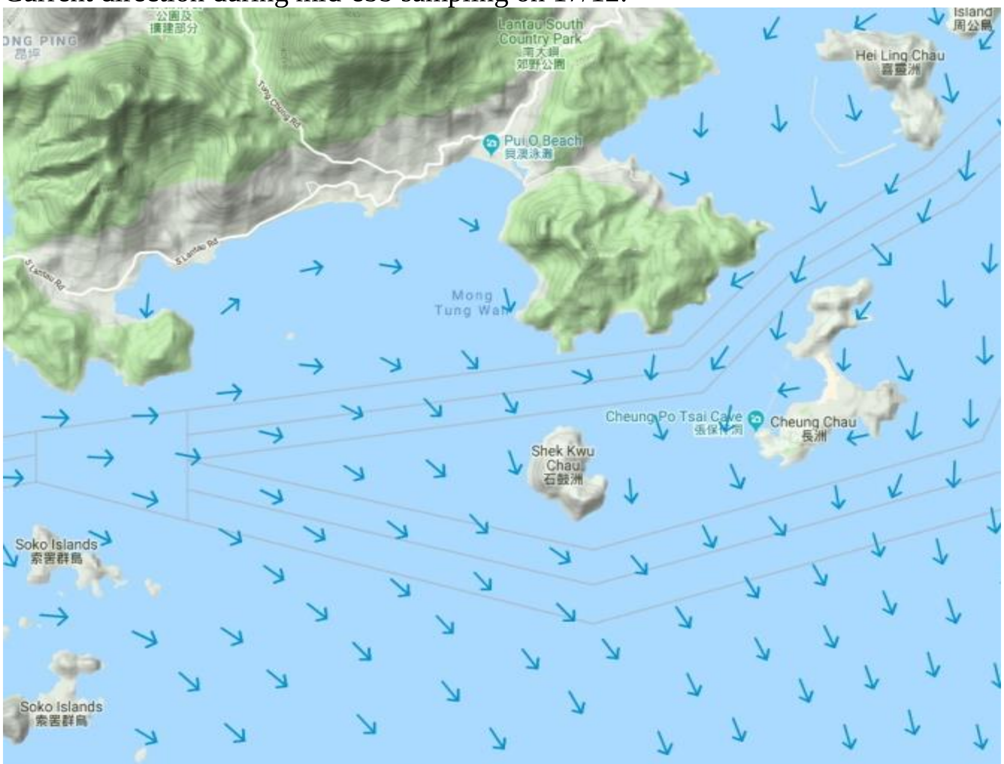
H1 is located at upstream location, CR1 is located at downstream direction, CR2 & S3 are located close to the works location within the Project site, while no observation of</td></tr>
</table>

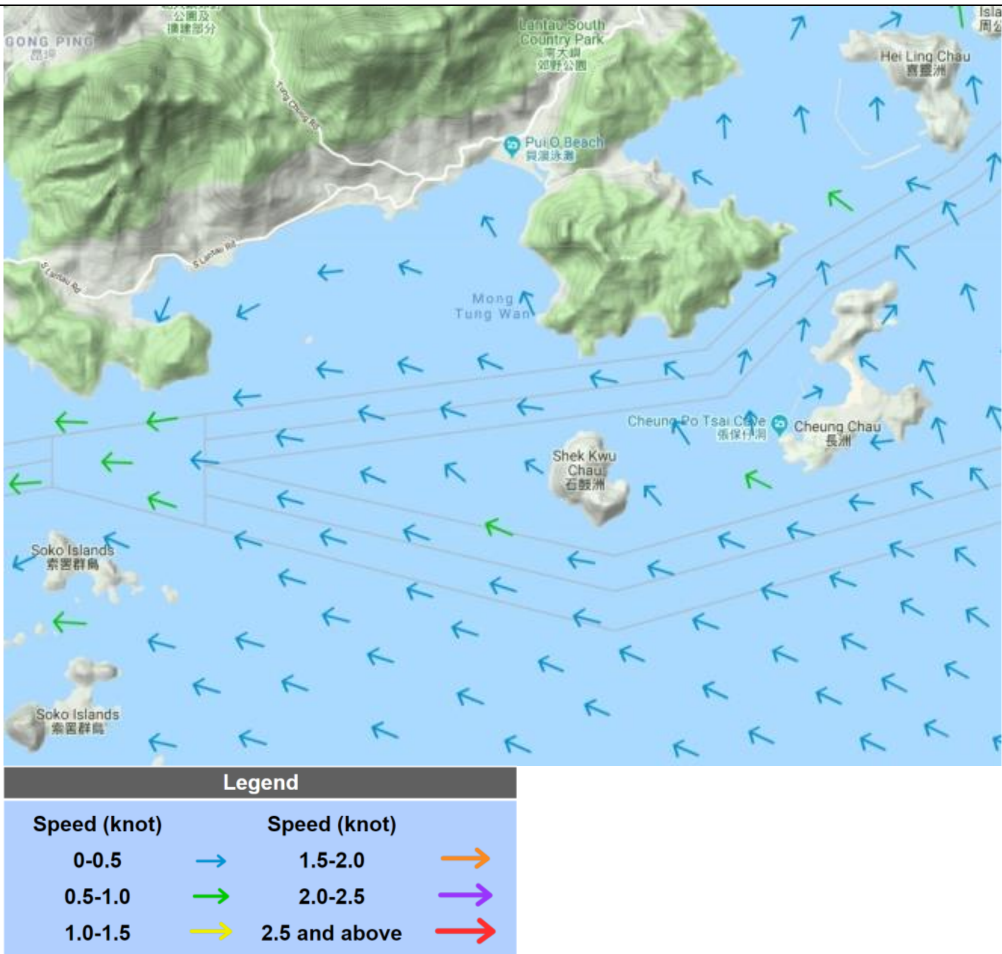
<table>
<tr><td></td><td colspan="3">silt plume was made during the sampling event. Silt curtain checking was implemented by the Contractor and checking results showed that no deficiency of silt curtain was found on that day. It might suggest that the high SS level exceedance at H1, CR1, CR2 & S3 are deemed to be unrelated to the Project.

Site tidiness in the present barges in the Project site were checked during weekly site inspection on 18/12, where was no major observation of improper site practice that might contribute to the increase in SS level was observed during the inspection.</td></tr>
<tr><td>Actions taken / to be taken</td><td colspan="3">Examination of environmental performance of the Project will be continued during the weekly inspection, and the Contractor is reminded to implement all applicable mitigation measures as per the Updated EM&A Manual.</td></tr>
<tr><td colspan="4">Mid-Flood</td></tr>
<tr><td>Monitoring Location</td><td colspan="3">B1, B3, B4, F1, H1 & S2

</td></tr>
<tr><td>Parameter</td><td colspan="3">Suspended Solid (SS)</td></tr>
<tr><td rowspan="2">Action & Limit Levels</td><td colspan="2">Action Level</td><td>Limit Level</td></tr>
<tr><td colspan="2">≥ 8.2 mg/L (120% of C2)</td><td>≥ 10.0 mg/L</td></tr>
<tr><td rowspan="2">Measurement Level</td><td>Impact Station(s) of Exceedance</td><td>Control Stations</td><td>Impact Station(s) without Exceedance</td></tr>
<tr><td>8.5 mg/L (B1)
8.3 mg/L (B3)
9.3 mg/L (B4)
8.7 mg/L (F1)
10.8 mg/L (H1)
10.0 mg/L (S2)</td><td>5.7 mg/L (C1)
6.8 mg/L (C2)</td><td>6.8 mg/L (B2)
6.8 mg/L (M1)
6.7 mg/L (CR1)
6.3 mg/L (CR2)
7.8 mg/L (S1)
7.7 mg/L (S3)</td></tr>
<tr><td>Possible reason for Action or Limit Level Non-compliance</td><td colspan="3">Works scheduled on site on 17/12 include ground investigation (GI) work of 2 borehole drilling, DCM main works, laying of geotextile with sand placing for ballasting at caisson seawall area and laying of sand blanket at caisson seawall area.

Dominating sea current direction was found to be from Southeast to Northwest at waters around Shek Kwu Chau.

B1, B3, B4, F1 and S2 are located at unrelated stream direction (neither upstream nor downstream, far away) to the works location, exceedance of these monitoring locations are deemed to be unrelated to the Project.</td></tr>
</table>

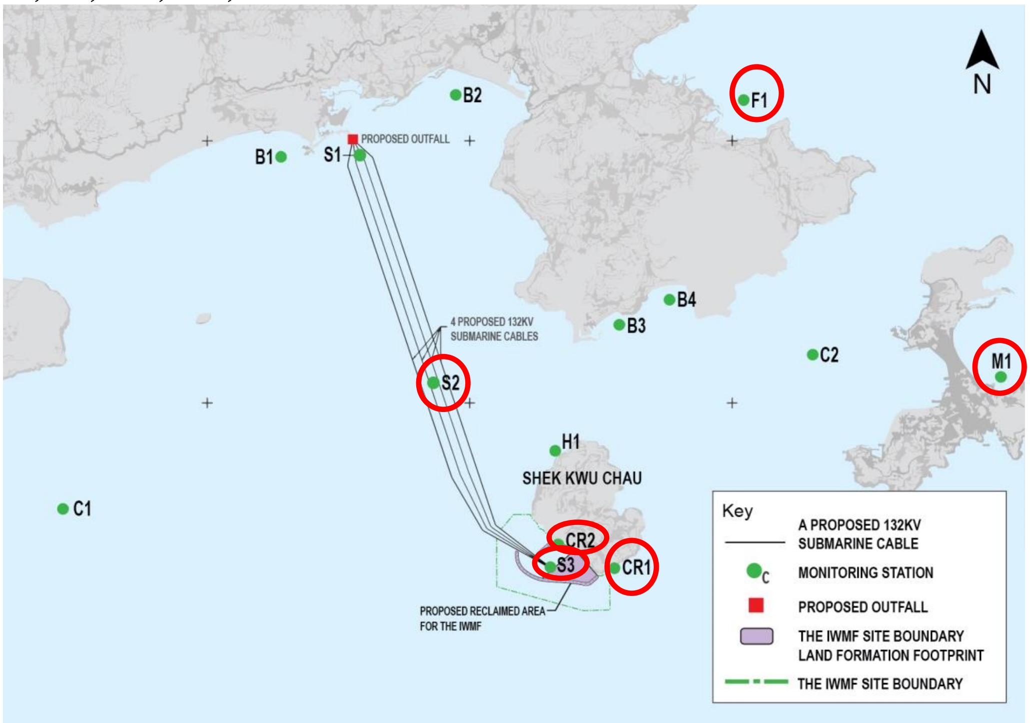
	CR1, CR2 and S3, the closet monitoring stations to the site location when comparing to H1 (downstream monitoring station), exhibited a smaller SS level. It might suggest that the high SS level exceedance at H1 is deemed to be unrelated to the Project. However, questionable silt curtain deployment condition in the present pelican barge was observed by MMO and SO, where presence of sandy water outside the silt curtain were found around 2:30pm. Also, silt plume was observed near the pelican barge YGZH 1332 and it was recorded by SO around 11:10 am, and the mal-practice was stopped immediately.
Actions taken / to be taken	The sand blanket laying works were suspended by the Contractor immediately and the Contractor was reminded to properly fix and maintain the deployed silt curtain for the operation of sand blanket laying works. Further diver inspection on silt curtain was implemented on 18/12/2018 and checking result showed no deficiency of silt curtain was found. Silt plume near pelican barge "YGZH 1332" vanished immediately after switching off the propeller of the barge. The environmental department of the Contractor was reminded to keep paying attention to avoid the repeating of such incidents. Examination of environmental performance of the Project will be continued during the weekly inspection, and the Contractor is reminded to implement all applicable mitigation measures as per the Updated EM&A Manual.
Remarks	Current direction during mid-ebb sampling on 17/12:  Current direction during mid-flood sampling on 17/12:



(Sourced from http://current.hydro.gov.hk/en/map.html)

Prepared by	Polar Chan
Date	21 December 2018

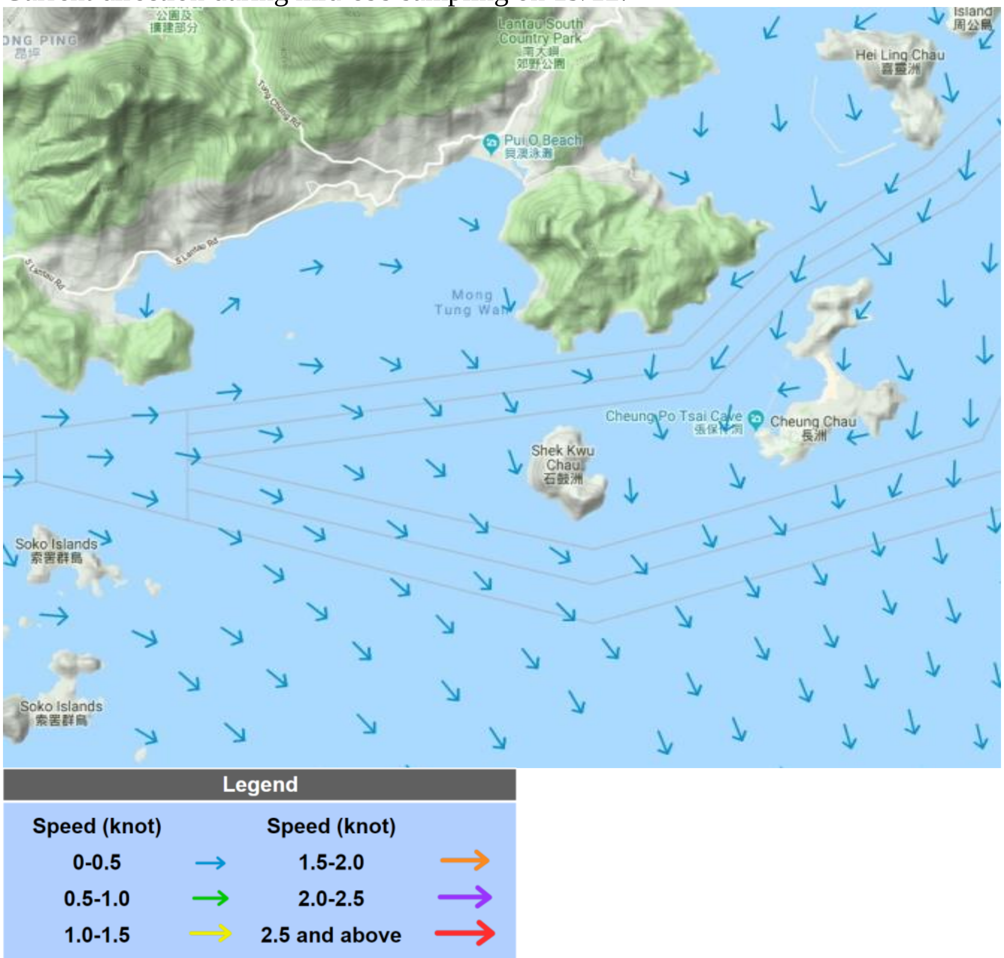
Incident Report on Action Level or Limit Level Non-compliance

<table>
<tr><td>Project</td><td colspan="4">Integrated Waste Management Facilities, Phase 1</td></tr>
<tr><td>Date</td><td colspan="4">19 December 2018 (Lab result received on 27 December 2018)</td></tr>
<tr><td>Time</td><td colspan="4">08:00 – 10:41 (Mid-Ebb)</td></tr>
<tr><td colspan="5">Mid-Ebb</td></tr>
<tr><td>Monitoring Location</td><td colspan="4">F1, M1, CR1, CR2, S2 & S3

</td></tr>
<tr><td>Parameter</td><td colspan="4">Suspended Solid (SS)</td></tr>
<tr><td rowspan="2">Action & Limit Levels</td><td colspan="2">Action Level</td><td colspan="2">Limit Level</td></tr>
<tr><td colspan="2">≥ 10.4 mg/L (120% of C1)</td><td colspan="2">≥ 11.3 mg/L (130% of C1)</td></tr>
<tr><td rowspan="2">Measurement Level</td><td>Impact Station(s) of Exceedance</td><td colspan="2">Control Stations</td><td>Impact Station(s) without Exceedance</td></tr>
<tr><td>10.5 mg/L (F1)
13.8 mg/L (M1)
14.0 mg/L (CR1)
15.3 mg/L (CR2)
11.0 mg/L (S2)
11.8 mg/L (S3)</td><td colspan="2">8.7 mg/L (C1)
9.5 mg/L (C2)</td><td>7.8 mg/L (B1)
7.5 mg/L (B2)
5.5 mg/L (B3)
7.5 mg/L (B4)
6.2 mg/L (H1)
7.5 mg/L (S1)</td></tr>
<tr><td>Possible reason for Action or Limit Level Non-compliance</td><td colspan="4">Works scheduled on site on 19/12 include ground investigation (GI) work of 2 borehole drilling and laying of sand blanket at both plant trial area and seawall area.

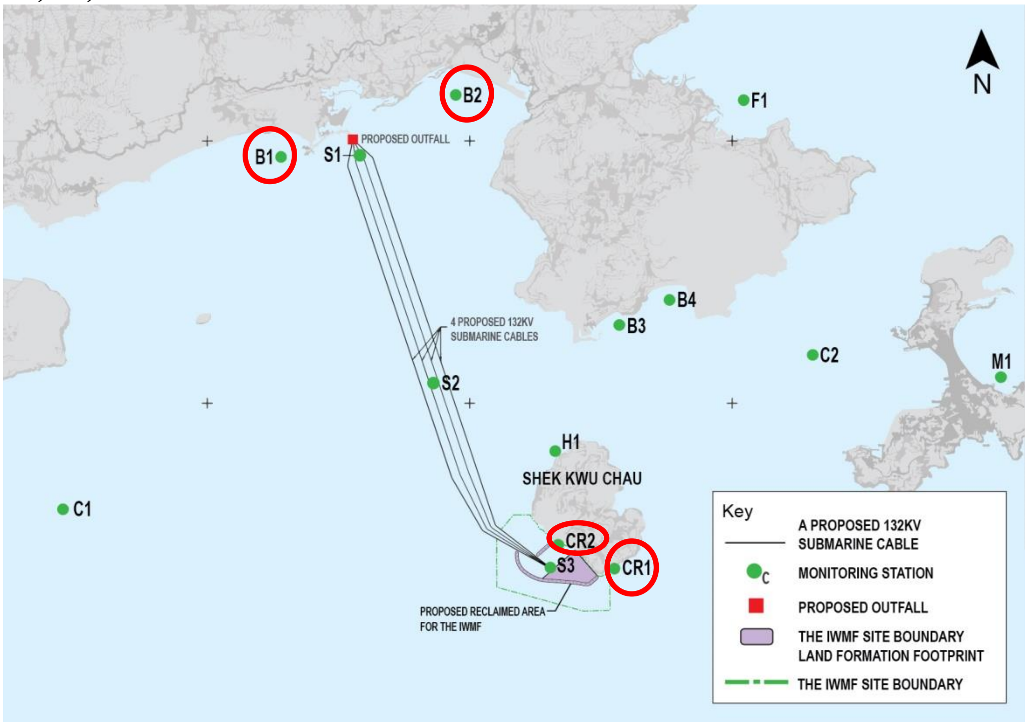
Dominating sea current direction was found to be from Northwest to Southeast at waters around Shek Kwu Chau.

S2, F1 and M1 are located at unrelated stream direction (neither upstream nor downstream, far away) to the works location, exceedance of these monitoring locations are deemed to be unrelated to the Project.

CR1 is located at downstream direction, CR2 & S3 are located close to the works location within the Project site, while silt curtain checking was implemented by the Contractor and checking result showed that no deficiency of silt curtain was found on that day. It might suggest that the high SS exceddance at CR1, CR2 & S3 are deemed to be unrelated to the Project.</td></tr>
</table>

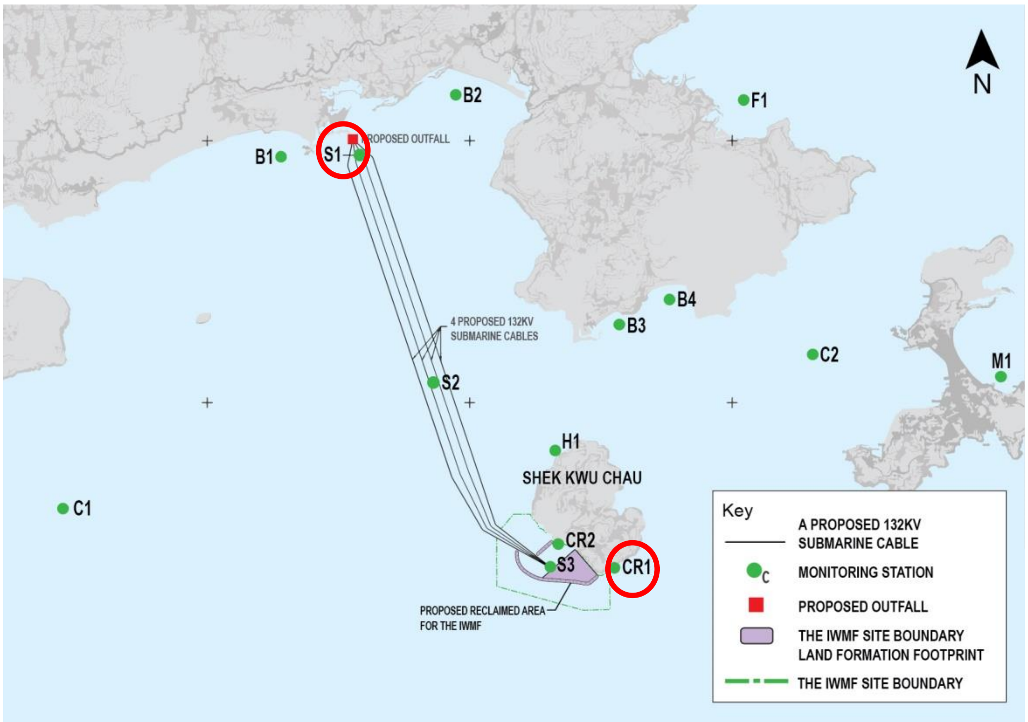
	However, a track of observable silt plume at the back of the pelican barge deployed for sand blanket laying works was found around 3:00 pm.
Actions taken / to be taken	After switching off the engine of the pelican barge, the observable silt plume had vanished. The Contractor confirmed the observable silt plume was related to the engine operation of pelican barge in shallow water. The Contractor designed to use the tugboat to manoeuvre the pelican barge especially in shallow water. The environmental department of the Contractor was reminded to keep paying attention to avoid the repeating of such incidents. Examination of environmental performance of the Project will be continued during the weekly inspection, and the Contractor is reminded to implement all applicable mitigation measures as per the Updated EM&A Manual.
Remarks	Current direction during mid-ebb sampling on 19/12:  (Sourced from http://current.hydro.gov.hk/en/map.html)
Prepared by	Polar Chan
Date	31 December 2018

Interim Incident Report on Action Level or Limit Level Non-compliance

<table>
<tr><td>Project</td><td colspan="3">Integrated Waste Management Facilities, Phase 1</td></tr>
<tr><td>Date</td><td colspan="3">27 December 2018 (Lab result received on 05 January 2019)</td></tr>
<tr><td>Time</td><td colspan="3">08:59 – 12:29 (Mid-Flood)
14:26 – 17:56 (Mid-Ebb)</td></tr>
<tr><td colspan="4">Mid-Flood</td></tr>
<tr><td>Monitoring Location</td><td colspan="3">B1, B2, CR1 & CR2

</td></tr>
<tr><td>Parameter</td><td colspan="3">Suspended Solid (SS)</td></tr>
<tr><td rowspan="2">Action & Limit Levels</td><td colspan="2">Action Level</td><td>Limit Level</td></tr>
<tr><td colspan="2">≥ 8.0 mg/L</td><td>≥ 10.0 mg/L</td></tr>
<tr><td rowspan="2">Measurement Level</td><td>Impact Station(s) of Exceedance</td><td>Control Stations</td><td>Impact Station(s) without Exceedance</td></tr>
<tr><td>9.3 mg/L (B1)
8.5 mg/L (B2)
9.2 mg/L (CR1)
10.3 mg/L (CR2)</td><td>7.8 mg/L (C1)
6.3 mg/L (C2)</td><td>4.0 mg/L (B3)
6.0 mg/L (B4)
6.8 mg/L (F1)
5.8 mg/L (H1)
7.2 mg/L (M1)
7.5 mg/L (S1)
7.2 mg/L (S2)
6.3 mg/L (S3)</td></tr>
<tr><td>Possible reason for Action or Limit Level Non-compliance</td><td colspan="3">From MMO monitoring records on 27/12, two DCM barges (ESC-61 & ESC-62) and two dumb lighters (DT 12 & FTB 19) were in operations on that day. No deficiency of silt curtain was found before the start of construction activity.

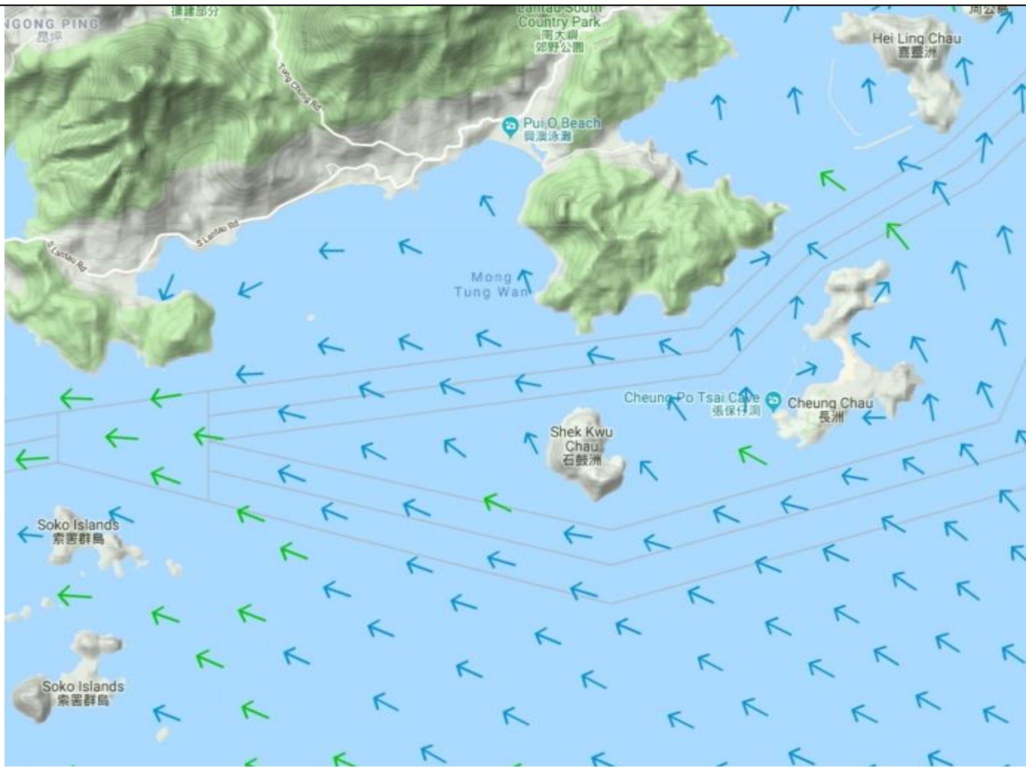
Silt curtain checking was implemented by the Contractor and checking results showed no deficiency of silt curtain was found on that day.

Site tidiness in the present barges in the Project site were checked during weekly site inspection on 27/12, where was no major observation of improper site practice that might contribute to the increase in SS level was observed during the inspection.</td></tr>
<tr><td>Actions taken / to be taken</td><td colspan="3">Asking the Contractor to provide more information.</td></tr>
<tr><td colspan="4">Mid-Ebb</td></tr>
</table>

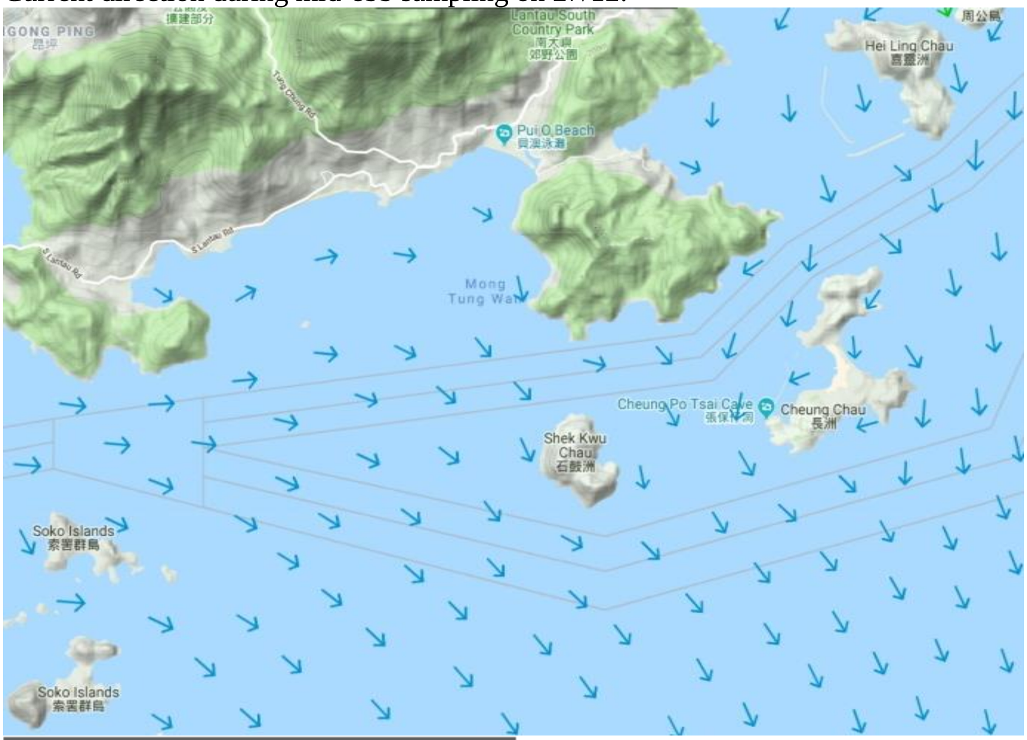
<table>
<tr><td>Monitoring Location</td><td colspan="3">CR1 & S1

</td></tr>
<tr><td>Parameter</td><td colspan="3">Suspended Solid (SS)</td></tr>
<tr><td rowspan="2">Action & Limit Levels</td><td colspan="2">Action Level</td><td>Limit Level</td></tr>
<tr><td colspan="2">≥ 8.0 mg/L</td><td>≥ 10.0 mg/L</td></tr>
<tr><td rowspan="2">Measurement Level</td><td>Impact Station(s) of Exceedance</td><td>Control Stations</td><td>Impact Station(s) without Exceedance</td></tr>
<tr><td>8.5 mg/L (CR1)
9.8 mg/L (S1)</td><td>5.5 mg/L (C1)
6.7 mg/L (C2)</td><td>7.3 mg/L (B1)
7.8 mg/L (B2)
7.8 mg/L (B3)
5.8 mg/L (B4)
5.8 mg/L (F1)
6.3 mg/L (H1)
5.3 mg/L (M1)
7.8 mg/L (CR2)
7.5 mg/L (S2)
7.7 mg/L (S3)</td></tr>
<tr><td>Possible reason for Action or Limit Level Non-compliance</td><td colspan="3">From MMO monitoring records on 27/12, two DCM barges (ESC-61 & ESC-62) and two dumb lighters (DT 12 & FTB 19) were in operations on that day. No deficiency of silt curtain was found before the start of construction activity.

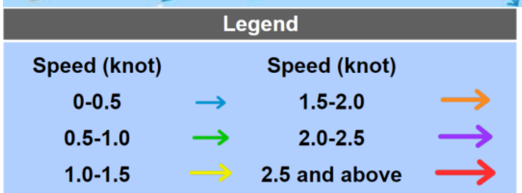
Silt curtain checking was implemented by the Contractor and checking results showed no deficiency of silt curtain was found on that day.

Site tidiness in the present barges in the Project site were checked during weekly site inspection on 27/12, where was no major observation of improper site practice that might contribute to the increase in SS level was observed during the inspection.</td></tr>
<tr><td>Actions taken / to be taken</td><td colspan="3">Asking the Contractor to provide more information.</td></tr>
<tr><td>Remarks</td><td colspan="3">Current direction during mid-flood sampling on 27/12:</td></tr>
</table>



Current direction during mid-ebb sampling on 27/12:

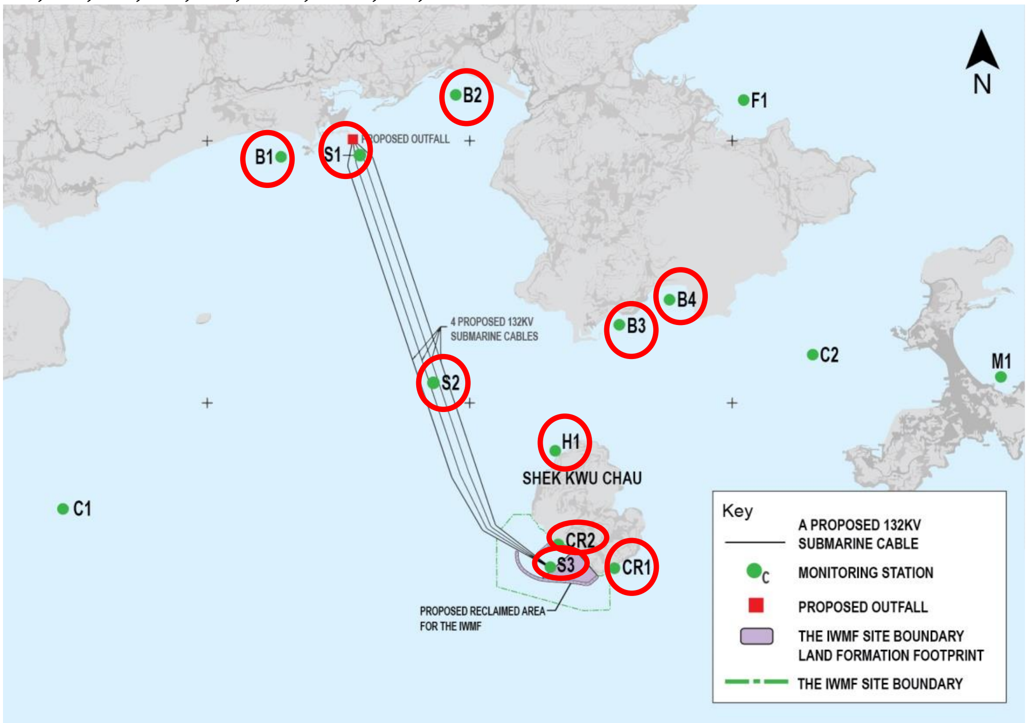




(Sourced from http://current.hydro.gov.hk/en/map.html)

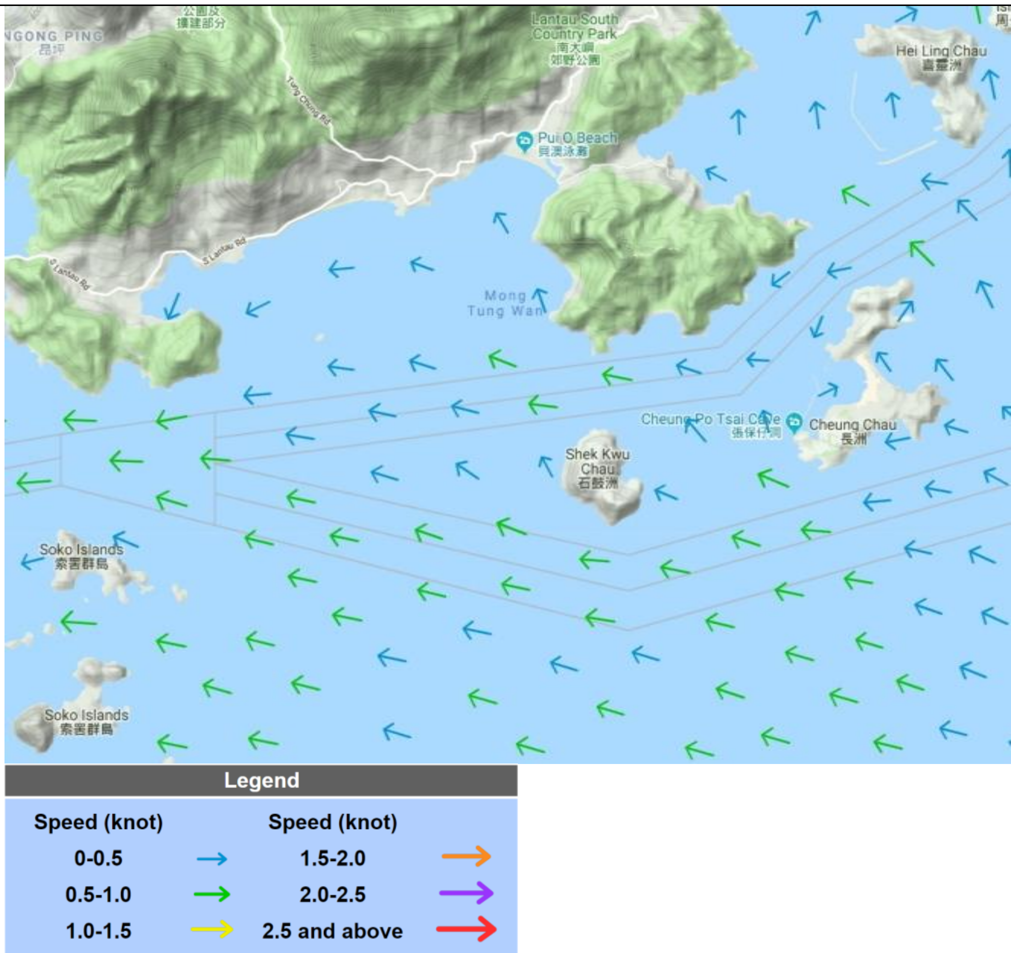
Prepared by	Polar Chan
Date	7 January 2019

Interim Incident Report on Action Level or Limit Level Non-compliance

<table>
<tr><td>Project</td><td colspan="6">Integrated Waste Management Facilities, Phase 1</td></tr>
<tr><td>Date</td><td colspan="6">29 December 2018 (Lab result received on 9 January 2019)</td></tr>
<tr><td>Time</td><td colspan="6">10:40 – 14:10 (Mid-Flood)</td></tr>
<tr><td colspan="7">Mid-Flood</td></tr>
<tr><td>Monitoring Location</td><td colspan="6">B1, B2, B3, B4, H1, CR1, CR2, S1, S2 & S3

</td></tr>
<tr><td>Parameter</td><td colspan="6">Suspended Solid (SS)</td></tr>
<tr><td rowspan="2">Action & Limit Levels</td><td colspan="3">Action Level</td><td colspan="3">Limit Level</td></tr>
<tr><td colspan="3">≥ 8.6 mg/L (120% of C2)</td><td colspan="3">≥ 10.0 mg/L</td></tr>
<tr><td rowspan="2">Measurement Level</td><td colspan="2">Impact Station(s) of Exceedance</td><td colspan="2">Control Stations</td><td colspan="2">Impact Station(s) without Exceedance</td></tr>
<tr><td colspan="2">21.8 mg/L (B1)
16.0 mg/L (B2)
10.3 mg/L (B3)
8.8 mg/L (B4)
10.5 mg/L (H1)
22.8 mg/L (CR1)
23.3 mg/L (CR2)
22.8 mg/L (S1)
23.0 mg/L (S2)
23.5 mg/L (S3)</td><td colspan="2">20.7 mg/L (C1)
7.2 mg/L (C2)</td><td colspan="2">7.7 mg/L (F1)
7.7 mg/L (M1)</td></tr>
<tr><td>Possible reason for Action or Limit Level Non-compliance</td><td colspan="6">From MMO monitoring records on 29/12, one DCM barge (ESC-61) and two dumb lighters (Shun Tat D12 & FTB-12) were in operations on that day while no deficiency of silt curtain was found before the start of construction activity.

Silt curtain checking was implemented by the Contractor and checking results showed no deficiency of silt curtain was found on that day.

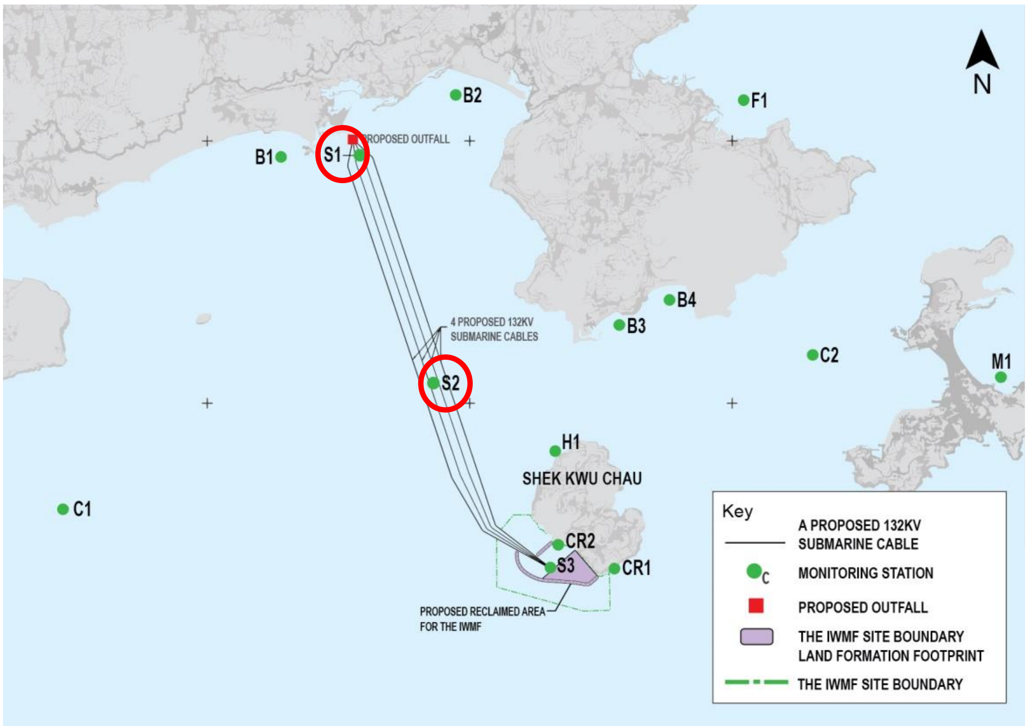
Site tidiness in the present barges in the Project site were checked during weekly site inspection on 27/12, where was no major observation of improper site practice that might contribute to the increase in SS level was observed during the inspection.</td></tr>
<tr><td>Actions taken / to be taken</td><td colspan="6">Asking the Contractor to provide more information.</td></tr>
<tr><td>Remarks</td><td colspan="6">Current direction during mid-ebb sampling on 29/12:</td></tr>
</table>



(Sourced from http://current.hydro.gov.hk/en/map.html)

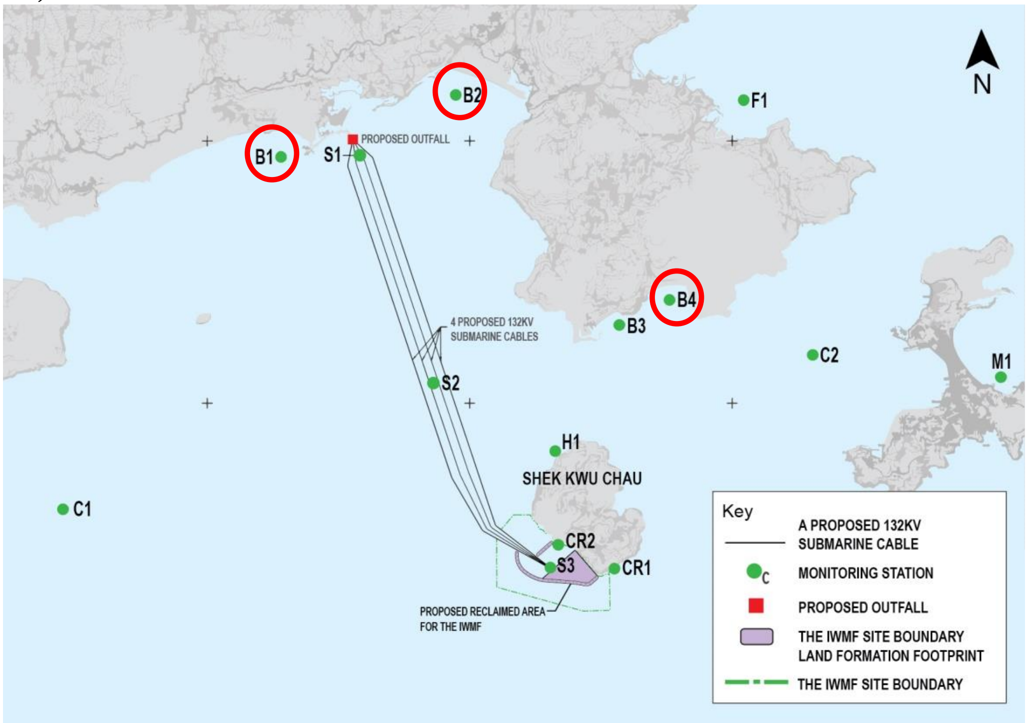
Prepared by	Polar Chan
Date	9 January 2019

Interim Incident Report on Action Level or Limit Level Non-compliance

<table>
<tr><td>Project</td><td colspan="6">Integrated Waste Management Facilities, Phase 1</td></tr>
<tr><td>Date</td><td colspan="6">31 December 2018 (Lab result received on 09 January 2019)</td></tr>
<tr><td>Time</td><td colspan="6">08:00 – 09:30 (Mid-Ebb)
12:31 – 16:00 (Mid-Flood)</td></tr>
<tr><td colspan="7">Mid-Ebb</td></tr>
<tr><td>Monitoring Location</td><td colspan="6">S1 & S2

</td></tr>
<tr><td>Parameter</td><td colspan="6">Suspended Solid (SS)</td></tr>
<tr><td rowspan="2">Action & Limit Levels</td><td colspan="3">Action Level</td><td colspan="3">Limit Level</td></tr>
<tr><td colspan="3">≥ 13.2 mg/L (120% of C1)</td><td colspan="3">≥ 14.3 mg/L (130% of C1)</td></tr>
<tr><td rowspan="2">Measurement Level</td><td colspan="2">Impact Station(s) of Exceedance</td><td colspan="2">Control Stations</td><td colspan="2">Impact Station(s) without Exceedance</td></tr>
<tr><td colspan="2">16.0 mg/L (S1)
15.5 mg/L (S2)</td><td colspan="2">11.0 mg/L (C1)
8.8 mg/L (C2)</td><td colspan="2">9.3 mg/L (B1)
9.0 mg/L (B2)
9.5 mg/L (B3)
10.8 mg/L (B4)
11.3 mg/L (F1)
9.5 mg/L (H1)
10.3 mg/L (M1)
11.2 mg/L (CR1)
9.5 mg/L (CR2)
11.5 mg/L (S3)</td></tr>
<tr><td>Possible reason for Action or Limit Level Non-compliance</td><td colspan="6">From MMO monitoring records on 31/12, two DCM barges (ESC-61 & ESC-62) and two dumb lighters (Shun Tat D12 & FTB 19) were in operations on that day while no deficiency of silt curtain was found before the start of construction activity.

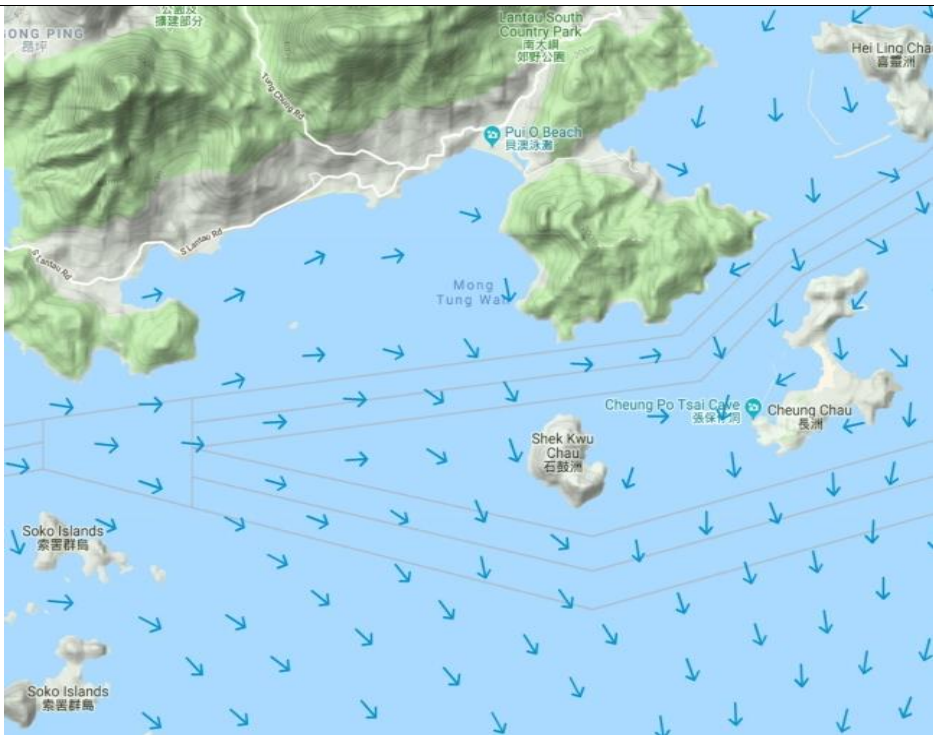
Silt curtain checking was implemented by the Contractor and checking results showed no deficiency of silt curtain was found on that day.

Site tidiness in the present barges in the Project site were checked during weekly site inspection on 27/12, where was no major observation of improper site practice that might contribute to the increase in SS level was observed during the inspection.</td></tr>
<tr><td>Actions taken / to be taken</td><td colspan="6">Asking the Contractor to provide more information.</td></tr>
</table>

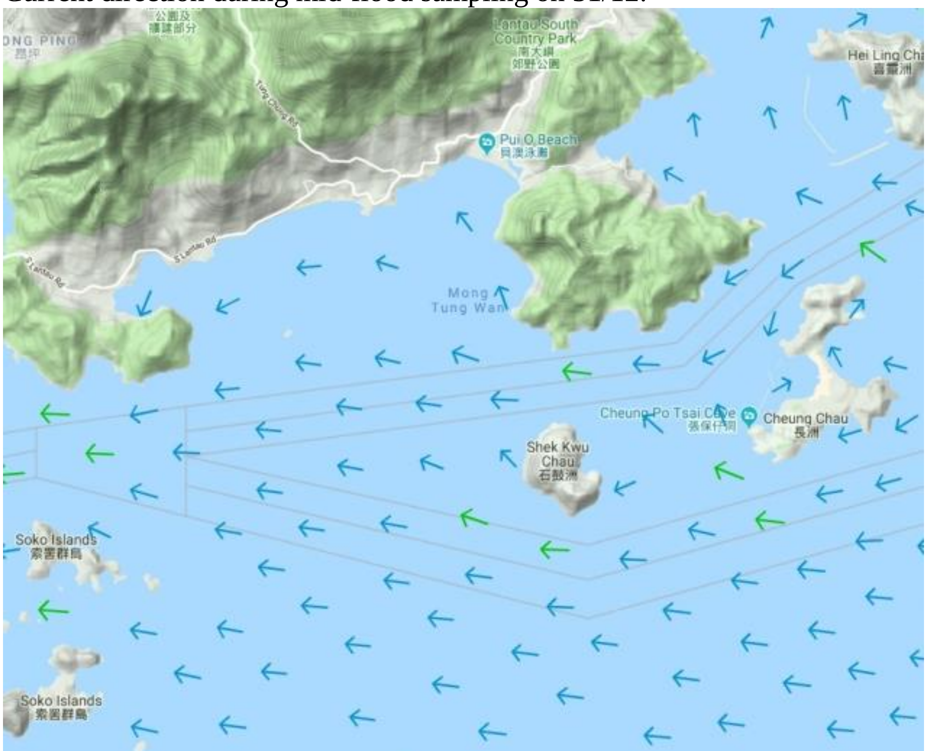
<table>
<tr><td colspan="4">Mid-Flood</td></tr>
<tr><td>Monitoring Location</td><td colspan="3">B1, B2 & B4

</td></tr>
<tr><td>Parameter</td><td colspan="3">Suspended Solid (SS)</td></tr>
<tr><td rowspan="2">Action & Limit Levels</td><td colspan="2">Action Level</td><td>Limit Level</td></tr>
<tr><td colspan="2">≥ 13.8 mg/L (120% of C2)</td><td>≥ 15.0 mg/L (130% of C2)</td></tr>
<tr><td rowspan="2">Measurement Level</td><td>Impact Station(s) of Exceedance</td><td>Control Stations</td><td>Impact Station(s) without Exceedance</td></tr>
<tr><td>16.0 mg/L (B1)
15.8 mg/L (B2)
16.3 mg/L (B4)</td><td>11.2 mg/L (C1)
11.5 mg/L (C2)</td><td>11.8 mg/L (B3)
12.2 mg/L (F1)
13.3 mg/L (H1)
10.8 mg/L (M1)
7.8 mg/L (CR1)
11.8 mg/L (CR2)
12.5 mg/L (S1)
13.0 mg/L (S2)
12.0 mg/L (S3)</td></tr>
<tr><td>Possible reason for Action or Limit Level Non-compliance</td><td colspan="3">From MMO monitoring records on 31/12, two DCM barges (ESC-61 & ESC-62) and two dumb lighters (Shun Tat D12 & FTB 19) were in operations on that day while no deficiency of silt curtain was found before the start of construction activity.

Silt curtain checking was implemented by the Contractor and checking results showed no deficiency of silt curtain was found on that day.

Site tidiness in the present barges in the Project site were checked during weekly site inspection on 27/12, where was no major observation of improper site practice that might contribute to the increase in SS level was observed during the inspection.</td></tr>
<tr><td>Actions taken / to be taken</td><td colspan="3">Asking the Contractor to provide more information.</td></tr>
<tr><td>Remarks</td><td colspan="3">Current direction during mid-ebb sampling on 31/12:</td></tr>
</table>



Current direction during mid-flood sampling on 31/12:



(Sourced from http://current.hydro.gov.hk/en/map.html)

Prepared by	Polar Chan
Date	09 January 2019

Appendix O Complaint Log

Statistical Summary of Environmental Complaints

Reporting Period	Environmental Complaint Statistics		
	Frequency	**Cumulative**	**Complaint Nature**
1 Dec 2018- 31 Dec 2018	0	0	N/A

Statistical Summary of Environmental Summons

Reporting Period	Environmental Summons Statistics		
	Frequency	**Cumulative**	**Details**
1 Dec 2018- 31 Dec 2018	0	0	N/A

Statistical Summary of Environmental Prosecution

Reporting Period	Environmental Prosecution Statistics		
	Frequency	**Cumulative**	**Details**
1 Dec 2018- 31 Dec 2018	0	0	N/A

Appendix P Impact Monitoring Schedule of Next Reporting Month

Impact Monitoring Schedule for IWMF

Jan-19

Sun	Mon	Tue	Wed	Thu	Fri	Sat
		1	2	3	4	5
			Impact Water Quality monitoring for B1, B2, B3, B4, H1, C1, C2, F1, CR1, CR2, M1, S1, S2 & S3 Tidal Period: Ebb Tide: 07:45 - 12:00 Flood Tide: 12:00 - 19:08 Monitoring Time: Mid-ebb: 08:07 - 11:37 Mid-flood: 13:49 - 17:19	Impact Ecology monitroing for WBSE	Impact Water Quality monitoring for B1, B2, B3, B4, H1, C1, C2, F1, CR1, CR2, M1, S1, S2 & S3 Tidal Period: Ebb Tide: 09:53 - 13:30 Flood Tide: 13:30 - 20:04 Monitoring Time: Mid-ebb: 09:56 - 13:26 Mid-flood: 15:02 - 18:32	
6	7	8	9	10	11	12
	Impact Water Quality monitoring for B1, B2, B3, B4, H1, C1, C2, F1, CR1, CR2, M1, S1, S2 & S3 Tidal Period: Ebb Tide: 11:47 - 15:19 Flood Tide: 03:28 - 11:47 Monitoring Time: Mid-ebb: 11:48 - 15:18 * Mid-flood: 08:00 - 09:22 Daytime Noise monitoring for M1, M2 & M3		Impact Water Quality monitoring for B1, B2, B3, B4, H1, C1, C2, F1, CR1, CR2, M1, S1, S2 & S3 Tidal Period: Ebb Tide: 12:57 - 16:30 Flood Tide: 05:46 - 12:22 Monitoring Time: Mid-ebb: 12:58 - 16:28 * Mid-flood: 08:00 - 10:49		Impact Water Quality monitoring for B1, B2, B3, B4, H1, C1, C2, F1, CR1, CR2, M1, S1, S2 & S3 Tidal Period: Ebb Tide: 14:09 - 17:52 Flood Tide: 06:46 - 14:09 Monitoring Time: Mid-ebb: 14:15 - 17:45 Mid-flood: 08:42 - 12:12	
13	14	15	16	17	18	19
	Impact Water Quality monitoring for B1, B2, B3, B4, H1, C1, C2, F1, CR1, CR2, M1, S1, S2 & S3 Tidal Period: Ebb Tide: 16:22 - 21:42 Flood Tide: 08:30 - 16:22 Monitoring Time: Mid-ebb: 17:17 - 20:47 Mid-flood: 10:41 - 14:11 Daytime Noise monitoring for M1, M2 & M3 Ecology monitoring for Marine Mammals by Vessel-based Line-transect Survey		Impact Ecology monitroing for WBSE Post coral re-tagging monthly monitoring at both Indirect Impact Site and Control Site	Impact Water Quality monitoring for B1, B2, B3, B4, H1, C1, C2, F1, CR1, CR2, M1, S1, S2 & S3 Tidal Period: Ebb Tide: 06:21 - 10:55 Flood Tide: 10:55 - 18:00 Monitoring Time: * Mid-ebb: 08:00 - 10:23 Mid-flood: 12:42 - 16:12		Impact Water Quality monitoring for B1, B2, B3, B4, H1, C1, C2, F1, CR1, CR2, M1, S1, S2 & S3 Tidal Period: Ebb Tide: 08:54 - 12:39 Flood Tide: 12:39 - 19:29 Monitoring Time: Mid-ebb: 09:01 - 12:31 Mid-flood: 14:19 - 17:49
20	21	22	23	24	25	26
	Impact Water Quality monitoring for B1, B2, B3, B4, H1, C1, C2, F1, CR1, CR2, M1, S1, S2 & S3 Tidal Period: Ebb Tide: 10:42 - 14:33 Flood Tide: 14:33 - 21:11 Monitoring Time: Mid-ebb: 10:52 - 14:22 Mid-flood: 16:07 - 19:37 Daytime Noise monitoring for M1, M2 & M3		Impact Water Quality monitoring for B1, B2, B3, B4, H1, C1, C2, F1, CR1, CR2, M1, S1, S2 & S3 Tidal Period: Ebb Tide: 12:12 - 16:18 Flood Tode: 16:18 - 22:53 Monitoring Time: Mid-ebb: 12:30 - 16:00 Mid-flood: 17:50 - 21:20			Impact Water Quality monitoring for B1, B2, B3, B4, H1, C1, C2, F1, CR1, CR2, M1, S1, S2 & S3 Tidal Period: Ebb Tide: 14:31 - 18:54 Flood Tide: 07:17 - 14:31 Monitoring Time: Mid-ebb: 14:57 - 18:27 Mid-flood: 09:09 - 12:39
27	28	29	30	31		
	Impact Water Quality monitoring for B1, B2, B3, B4, H1, C1, C2, F1, CR1, CR2, M1, S1, S2 & S3 Tidal Period: Ebb Tide: 16:16 - 22:04 Flood Tide: 08:40 - 16:16 Monitoring Time: Mid-ebb: 17:25 - 20:55 Mid-flood: 10:43 - 14:13 Daytime Noise monitoring for M1, M2 & M3 Ecology monitoring for Marine Mammals by Vessel-based Line-transect Survey			Impact Water Quality monitoring for B1, B2, B3, B4, H1, C1, C2, F1, CR1, CR2, M1, S1, S2 & S3 Tidal Period: Ebb Tide: 08:20 - 11:12 Flood Tode: 11:12 - 18:35 Monitoring Time: #$ Mid-ebb: 08:28 - 11:03 Mid-flood: 13:08 - 16:38		

Remarks:
1. Daytime Noise Monitoring (07:00-1900), Evening Time Noise Monitoring (1900-2300), Night Time Noise Monitoring (2300-0700)
2. Water Quality Monitoring for S1,S2 and S3 will only conduct during DCM works, refer to Detailed DCM Plan

Note:
* - as per Marine Department Notice No 107 of 2018, all vessels employed for the works should stay in the works area outside the hours of works (0700 to 2300). Due to safty concern, Water Quality Monitoring would start at 0800 and end at 2200.
# - Prioritized routing: Mid-Ebb: C1→S3→CR2→CR1→H1→Remaining stations and Mid-Flood: C2→CR1→S3→CR2→H1→Remaining stations
$ - Since predicted tide is shorter than 3.5 hours, method of 90% tidal period as monitoring time is approached.