H2H Express Submarine Cable

HUAWEI MARINE

3rd Weekly Impact Water Quality Monitoring Report (Zone B)

10 June 2021

Project No.: 0586211

The business of sustainability

ERM

Document details	
Document title	H2H Express Submarine Cable
Document subtitle	3rd Weekly Impact Water Quality Monitoring Report (Zone B)
Project No.	0586211
Date	10 June 2021
Version	1.0
Author	Sammi Lam (SL), Clare Ho (CH), Nill Ng (NN)
Client Name	Huawei Marine Networks Co., Ltd

Document history

				ERM approval to issue		
Version	Revision	Author	Reviewed by	Name	Date	Comments
Draft	1.0	SL,CH, NN	Mandy To	Terence Fong	10.06.2021	-

Signature Page

10 June 2021

H2H Express Submarine Cable

3rd Weekly Impact Water Quality Monitoring Report (Zone B)

Terence Fong
Partner

ERM-Hong Kong, Limited
2509, 25/F One Harbourfront,
18 Tak Fung Street,
Hunghom, Kowloon
Hong Kong

中国移动 China Mobile

INTERNATIONAL

Environmental Permit No. EP-575/2020
H2H Express (H2HE) Submarine Cable

Environmental Team Leader Certification & Independent Environmental Checker Verification

Reference Document/Plan

Document/~~Plan~~:	3rd Weekly Water Quality Monitoring Report (Zone B)
Date of Report:	10 June 2021
Certified by ET:	ERM-Hong Kong Ltd.
Verified by IEC:	Ecosystems Ltd.

Reference EP Requirement

EP Condition:	Conditions No. 3.2 – 3.3

Content: *Water Quality Monitoring*

3.2 Samples, measurements and necessary remedial actions shall be taken in accordance with the EM&A requirements described in the Project Profile (Register No.: PP-599/2020) by:

(a) conducting baseline environmental monitoring;

(b) conducting impact monitoring;

(c) conducting post project monitoring; and

(d) carrying out remedial actions described in the Event/Action Plans, or as agreed by the Director, in case where specified criteria are exceeded.

3.3 The Permit Holder shall submit to the Director three hard copies and one electronic copy of the following reports as defined in the EM&A requirements described in the Project Profile (Register No.: PP-599/2020):

(a) Baseline Monitoring Report on water quality at least 2 weeks before the commencement of cable installation works;

(b) Weekly EM&A Report within five days after the relevant monitoring data are collected and audited by IEC; and

(c) Post Project Monitoring Report within one month after completion of the marine works.

ET Certification

I hereby certify that the above referenced document/~~plan~~ complies with the above referenced condition of EP-575/2020.

Mandy To

Mandy To, Environmental Team Leader

Date: 9 June 2021

中国移动
China Mobile
INTERNATIONAL

IEC Verification

I hereby verify that the above referenced document/~~plan~~ complies with the above referenced condition of EP-575/2020.

Dr Vincent Lai, Independent Environmental Checker:

Date: 09 June 2021

CONTENTS

List of Tables

List of Figures

EXECUTIVE SUMMARY

The cable installation works for the **H2H Express (H2HE) Submarine Cable** (the 'Project') have been scheduled to be carried out in phases:

- **Phase 1** Land & Shore-End Cable Installation and Submarine Cable Installation up to end of Zone A – completed on 17 April 2021; and
- **Phase 2** Remaining Submarine Cable Installation (from end of Zone A to the eastern boundary of HKSAR waters; including Zone B) – commenced on 23 May 2021, tentatively scheduled to be completed around June 2021.

Phase 2 of the Project commenced with the remaining installation marine diver jetting works from end of Zone A to the eastern boundary of HKSAR waters (including Zone B), on 23 May 2021. This is the *3rd Weekly Impact Water Quality Monitoring Report (Zone B),* presenting the water quality impact monitoring conducted in Zone B only during the period of 24 to 26 May 2021, in accordance with the EM&A Manual.

Summary of Construction Works undertaken during the Reporting Period

During the reporting week, diver hand jetting operations (i.e. simultaneous jetting and burial of cable) were carried out between 24 and 26 May 2021 inclusive. Marine installation works were conducted within Zone B during the reporting period.

Water Quality

Monitoring events were conducted for the installation period between 24 and 26 May 2021 in Zone B. The monitoring was carried out for two (2) days over the period of three (3) work days within this period, at mid-flood and mid-ebb tides, at three (3) depths (surface, middle and bottom). The intervals between two (2) sets of monitoring were not less than 36 hours. All monitoring events at the four (4) designated monitoring stations (including one [1] Sensitive Receiver Station, one [1] Gradient Station and two [2] Control Stations) were performed on schedule, i.e. on 24 and 26 May 2021.

Environmental Non-conformance

No non-conformance was recorded; results of detailed investigations indicated none of the exceedances recorded were attributed to the Project construction works:

- Two (2) Notification of Exceedances (NOEs) with detailed investigation reports were issued to EPD during the reporting period for recording daily exceedances of Action and Limit Levels for dissolved oxygen, both bottom layer as well as surface and middle (on all monitoring days). Also, there were exceedances of turbidity.

- The Contractors have been requested by the Environmental Team (ET) to be aware that exceedances have recently occurred, and to take care to ensure all necessary procedures are followed to avoid the Project impacting the water environment.

Future Key Issues

There are no key issues identified during the reporting period.

1. INTRODUCTION

1.1 Background

ERM-Hong Kong, Limited (ERM) was appointed by Huawei Marine Networks Co., Ltd (HMN) as the Environmental Team (ET) to implement the Environmental Monitoring and Audit (EM&A) programme for the H2H Express Submarine Cable (hereafter known as 'H2HE' and / or the 'Project').

The proposed submarine cable is a section of the H2HE optical fibre cable system, which is over 680 kilometers long in total. The system will further boost the external telecommunications capacity of Hong Kong, reinforcing Hong Kong as a key communication hub in Asia.

The cable will connect to Chung Hom Kok (CHK) within the HKSAR. **China Mobile International (CMI)** is providing the cable landing point and the associated cable landing services in Hong Kong.

The route of the proposed H2HE submarine cable system within Hong Kong SAR is depicted in ***Figure 1.1***. The proposed cable would land at an existing Beach Manhole (BMH) location at Sha Shek Tan (SST), CHK, and connect to an existing Cable Landing Station (CLS).

It should be noted that CHK is currently the landing site for a number of submarine cables (i.e. New T&T domestic cable route, C2C Cable network; and SJC). The existing BMH is connected to the CLS on the hill above the landing beach and existing conduits connect the BMH and CLS.

The cable will travel from SST of CHK southward, exiting Stanley Bay, running south-east, passing the Stanley Peninsular, turning east near the south of Po Toi Island, to the eastern boundary of HKSAR waters, where it will enter the South China Sea.

The Project Profile (PP-599/2020) which includes an assessment of the potential environmental impacts associated with the installation of the submarine telecommunications cable system within HKSAR (including connection to land at CHK) was prepared and submitted to the Environmental Protection Department (EPD) under section 5(1)(b) and 5(11) of the *Environmental Impact Assessment Ordinance* (EIAO) for the application for Permission to apply directly for Environmental Permit (EP). On 17 April 2020, EPD issued a letter to CMI permitting direct application for an environmental permit and following an application, EPD subsequently issued an Environmental Permit (EP-575/2020) on 21 May 2020.

Pursuant to *Condition 3.1* of the EP, an Environmental Monitoring and Audit (EM&A) programme, as set out in the Project Profile (PP) is required for this Project. As per *Condition 3.2* of the EP regarding Water Quality Monitoring, there is a requirement to conduct water quality baseline monitoring and impact monitoring. The corresponding Action and Limit Levels will be derived from the baseline data.

The H2HE cable installation is scheduled to be carried out in two (2) phases, with Phase 1 covering land & shore-end works and up to end of Zone A, and Phase 2 covering the remaining marine works of the submarine cable installation. The phasing of the cable installation works is shown in ***Figure 1.2*** to ***Figure 1.4***, and the current schedule and works carried out to date for each Phase is as follows:

1) **Phase 1 Land & Shore-End Cable Installation and Submarine Cable Installation up to end of Zone A:** Shore-end cable installation to the BMH at SST, CHK, involving land trench excavation and shore-end cable installation of the H2HE submarine cable (i.e. from seaward edge of the beach to approximately 300 m out from the BMH) using diver jetting. Installation of the H2HE submarine cable from shore-end to the end of Zone A (i.e. HK Grid coordinate 838858.620E 806852.911N / at 1.933 km from the landing point), using injector burial tools / sledge tools for simultaneous lay and burial operations.

    a. Baseline data for Zone A was collected prior to the start of Phase 1 cable installation works (i.e. between 17 February and 15 March 2021) and Action and Limit Levels derived from these data, as presented in the final *Baseline Water Quality Monitoring Report (Zone A)*.

b. Land trenching commenced 8 April 2021. Following issue of Marine Department Notice on 25 February 2021, land trenching completed on 9 April 2021.

c. Nearshore marine diver jetting works commenced on 8 April 2021, and was completed on 17 April 2021, as presented in the two (2) Weekly Impact Water Quality Monitoring Reports for Zone A.

2) **Phase 2 Remaining Submarine Cable Installation:** Installation of the H2HE submarine cable from the end of Zone A (i.e. HK Grid coordinate 838858.620E 806852.911N / at 1.933 km from the landing point), to HKSAR marine eastern boundary, using injector burial tools/ sledge tools for simultaneous lay and burial operations, and potential diver jetting in specific areas (e.g. HK Electric Pipeline crossing).

a. Remaining marine installation works from end of Zone A to the HKSAR marine eastern boundary using jetting technique have commenced on 23 May 2021, and tentatively scheduled to be completed by June 2021.

Given the commencement dates for Phase 1 and Phase 2 cable installation and jetting works were originally scheduled to start at least two (2) months apart, the baseline data (and corresponding Action and Limit Levels) were subsequently presented in separate reports for each Phase.

This report covers the Project's *Phase 2 Remaining Submarine Cable Installation* (as show in ***Figure 1.4***) and refers to the *Baseline Water Quality Monitoring Report (Zone B*) for Action and Limit Levels.

1.2 Purpose of this Report

This is the 3rd Weekly Water Quality Impact Monitoring Report (Zone B) for Phase 2 of the Project (Remaining Submarine Cable Installation), and summarises the water quality impact monitoring results during the reporting period on 24 and 26 May 2021.

Under the requirement of *Condition 3.3(b)* of the EP, weekly impact monitoring reports on water quality shall be prepared and submitted to the EPD within five (5) days after the relevant monitoring data are collected and audited by the Independent Environmental Checker (IEC).

This impact monitoring EM&A exercise covers only Zone B as stipulated in *Table G2.1* of the approved PP. A separate EM&A exercise has been conducted for Phase 1 cable installation, covering Zone A before the commencement of the Phase 1 cable installation.

1.3 Structure of this Report

The remainder of the report is structured as follows:

Section 1: Introduction
Provide details of the background, purpose and structure of the report, and scope of the Project.

Section 2: Project Information
Summarises the construction works undertaken and the status of Environmental Permits/Licenses during the reporting period.

Section 3: Water Quality Monitoring Requirements
Summarises the monitoring parameters, monitoring programmes, monitoring methodologies, monitoring frequency, monitoring locations, Action and Limit Levels, and Event / Action Plans.

Section 4: Monitoring Results

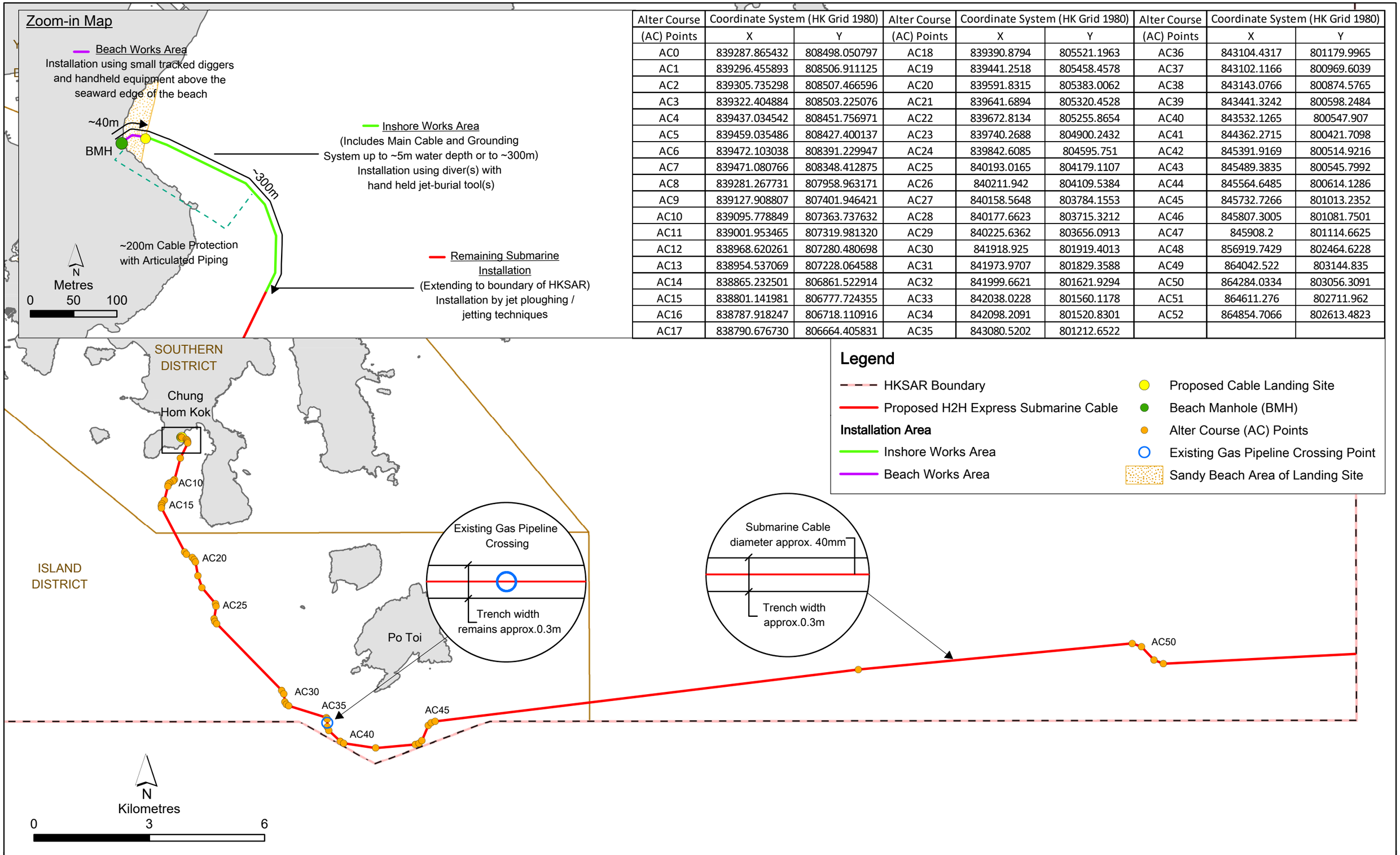
Summarises the monitoring results obtained in the reporting period.

Section 5: Environmental Non-conformance & Future Key Issues

Summarises any monitoring exceedance, environmental complaints and environmental summons within the reporting period, and the monitoring schedule for the next week.

Section 6: Conclusions

Presents the key findings of the impact monitoring results.



Alter Course (AC) Points	Coordinate System (HK Grid 1980) X	Y	Alter Course (AC) Points	Coordinate System (HK Grid 1980) X	Y	Alter Course (AC) Points	Coordinate System (HK Grid 1980) X	Y
AC0	839287.865432	808498.050797	AC18	839390.8794	805521.1963	AC36	843104.4317	801179.9965
AC1	839296.455893	808506.911125	AC19	839441.2518	805458.4578	AC37	843102.1166	800969.6039
AC2	839305.735298	808507.466596	AC20	839591.8315	805383.0062	AC38	843143.0766	800874.5765
AC3	839322.404884	808503.225076	AC21	839641.6894	805320.4528	AC39	843441.3242	800598.2484
AC4	839437.034542	808451.756971	AC22	839672.8134	805255.8654	AC40	843532.1265	800547.907
AC5	839459.035486	808427.400137	AC23	839740.2688	804900.2432	AC41	844362.2715	800421.7098
AC6	839472.103038	808391.229947	AC24	839842.6085	804595.751	AC42	845391.9169	800514.9216
AC7	839471.080766	808348.412875	AC25	840193.0165	804179.1107	AC43	845489.3835	800545.7992
AC8	839281.267731	807958.963171	AC26	840211.942	804109.5384	AC44	845564.6485	800614.1286
AC9	839127.908807	807401.946421	AC27	840158.5648	803784.1553	AC45	845732.7266	801013.2352
AC10	839095.778849	807363.737632	AC28	840177.6623	803715.3212	AC46	845807.3005	801081.7501
AC11	839001.953465	807319.981320	AC29	840225.6362	803656.0913	AC47	845908.2	801114.6625
AC12	838968.620261	807280.480698	AC30	841918.925	801919.4013	AC48	856919.7429	802464.6228
AC13	838954.537069	807228.064588	AC31	841973.9707	801829.3588	AC49	864042.522	803144.835
AC14	838865.232501	806861.522914	AC32	841999.6621	801621.9294	AC50	864284.0334	803056.3091
AC15	838801.141981	806777.724355	AC33	842038.0228	801560.1178	AC51	864611.276	802711.962
AC16	838787.918247	806718.110916	AC34	842098.2091	801520.8301	AC52	864854.7066	802613.4823
AC17	838790.676730	806664.405831	AC35	843080.5202	801212.6522			

Figure 1.1

Proposed H2H Express Submarine Cable

File: T:\GIS\CONTRACT\0586211\mxd\0586211_Cable_Overview_with_crossing_and_zoom.mxd
Date: 18/3/2021

Environmental Resources Management

ERM

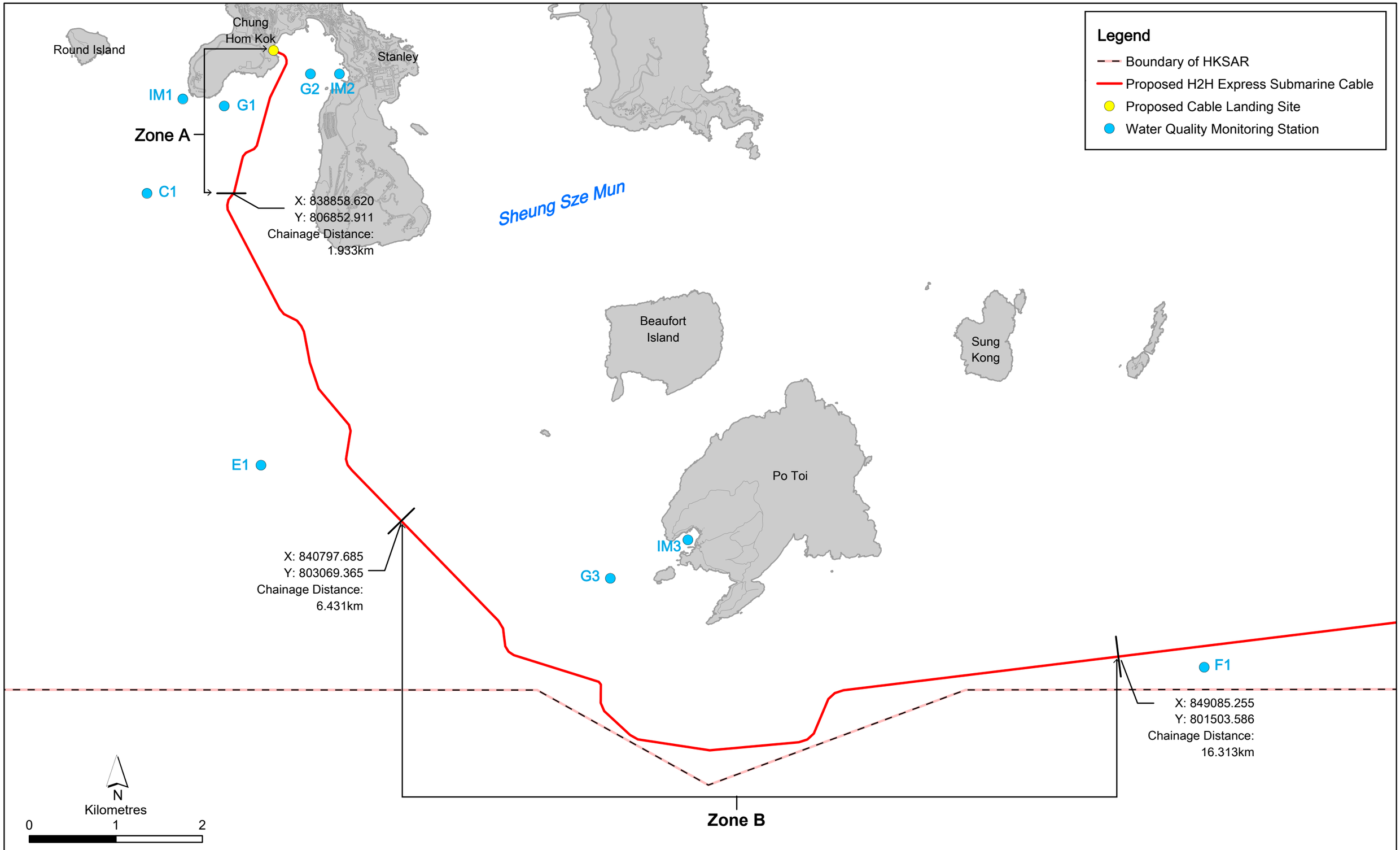


Figure 1.2

Water Quality Monitoring Stations

File: T:\GIS\CONTRACT\0586211\mxd\0586211_Water_Quality_Monitoring_Station.mxd
Date: 8/4/2021

Environmental Resources Management

ERM

Legend

Proposed H2H Express Submarine Cable

Proposed Cable Landing Site

Water Quality Monitoring Station

Chung Hom Kok

Stanley

IM1

G1

G2

IM2

C1

N

Meters

0 250 500

Figure 1.3

Water Quality Monitoring Stations - Zone A

File: T:\GIS\CONTRACT\0586211\mxd\0586211_WQMS_ZoneA.mxd
Date: 8/4/2021

Environmental Resources Management

ERM

Legend

Boundary of HKSAR

Proposed H2H Express Submarine Cable

Water Quality Monitoring Station

Beaufort Island

Sung Kong

Po Toi

E1

IM3

G3

F1

N

Meters

0 1,000 2,000

Figure 1.4

Water Quality Monitoring Stations - Zone B

File: T:\GIS\CONTRACT\0586211\mxd\0586211_WQMS_ZoneB.mxd
Date: 8/4/2021

Environmental Resources Management

ERM

2. PROJECT INFORMATION

2.1 Marine Construction Works Undertaken during Reporting Week

A summary of the key works undertaken during the reporting week is shown in ***Table 2.1***:

Table 2.1 Summary of Marine Works Undertaken During the Reporting Week

Date	Works Area	Activity
Mon 24 May 2021	Phase 2 in Zone B	Diver hand jetting and burial of cable simultaneously.
Tue 25 May 2021	Phase 2 of Zone B	Diver hand jetting and burial of cable simultaneously.
Wed 26 May 2021	Phase 2 of Zone B	Diver hand jetting and burial of cable simultaneously; installation works in Zone B completed.

2.2 Status of Environmental Approval Documents

A summary of the relevant permits, licences, notifications and/or reports on environmental protection for this Project is presented in ***Table 2.2***:

Table 2.2 Summary of Environmental Licensing, Notification, Permit and Reporting Status

Permit / Licence / Notification / Report	Reference	Validity Period	Remarks
Environmental Permit	(EP-575/2020) Available at https://www.epd.gov.hk/eia/register/permit/latest/ep5752020.htm	Throughout construction & operation period	Granted on 21 May 2020
EM&A Manual	(PP-599/2020) As part of the Project Profile; available at: https://www.epd.gov.hk/eia/english/alpha/aspd_764.html	Throughout construction & operation period	Approved by EPD on 17 April 2020
Marine Department Notice	(No. 45/2021) Available at: https://www.mardep.gov.hk/en/notices/pdf/mdn21045.pdf	Throughout construction & operation period	Issued by the Marine Department on 25 February 2021
Baseline Water Quality Monitoring Report (Zone A) and *Pre-Installation Coral Survey Report*	Available at: https://www.epd.gov.hk/eia/english/register/aep/ep5752020_content.html	Throughout construction period for Phase 1 works in Zone A	Approved by EPD as of 23 April 2021
Baseline Water Quality Monitoring Report (Zone B)	Available at: https://www.epd.gov.hk/eia/register/english/permit/ep5752020/documents/blwqmr2/pdf/blwqmr2.pdf	Throughout construction period for Phase 2 works in Zone B	Approved by EPD as of 26 May 2021

Permit / Licence / Notification / Report	Reference	Validity Period	Remarks
1st Weekly Impact Water Quality Monitoring Report (Zone A)	Available at: https://www.epd.gov.hk/eia/register/english/permit/ep5752020/documents/1wiwqmr/pdf/1wiwqmr.pdf	Throughout construction period for Phase 1 works in Zone A	Approved by EPD as of 26 May 2021
Post Project Water Quality Monitoring Report (Zone A)	Available at: https://www.epd.gov.hk/eia/register/english/permit/ep5752020/documents/ppwqmr/pdf/ppwqmr.pdf	Throughout construction period for Phase 1 works in Zone A	Approved by EPD as of 26 May 2021
2nd Weekly Impact Water Quality Monitoring Report (Zone A)	Currently unavailable online, at the time of this report	Throughout construction period for Phase 1 works in Zone A	Approval by EPD still ongoing at the time of report writing

3. WATER QUALITY MONITORING

3.1 Monitoring Location

In accordance with the *Appendix G* of approved PP, during the installation of H2HE, water quality sampling was undertaken at stations situated around the cable laying works in Zone B. The locations of the sampling stations within Zone B are listed in ***Table 3.1*** and shown in ***Figure 1.2*** and ***Figure 1.4.***

Table 3.1 Water Quality Monitoring Stations

Station [2]	Nature	Approx. Geodesic Distance [1] to Proposed Cable Alignment (m)	Easting	Northing
Zone **B**: The waters to the west and south of the Po Toi Island. Covers the cable alignment between Chainage 6.431 km and 16.312 km.				
IM3	Po Toi Fish Culture Zone	2020	844111	802850
G3	Gradient Stations (Between Po Toi Fish Culture Zone cable alignment)	1170	843215	802408
E1	Control Station for Zone B in Ebb Tide	980	839178	803714
F1	Control Station for Zone B in Flood Tide	240	850078	801380

Note:
(1) Geodesic distance refers to the shortest straight line distance between two locations, without regard on the physical obstacles in between.
(2) These station will also serve as monitoring stations for Spawning Ground of Commercial Fisheries Resources.

3.2 Sampling and Testing Methodology

The impact water quality monitoring was conducted in accordance with the requirements stated in the *Appendix G* of approved PP. These are presented below.

3.2.1 Parameters Measured

The parameters measured *in situ* were:

- dissolved oxygen (DO) (% saturation and mgL^{-1})
- temperature (°C)
- turbidity (NTU)
- salinity (‰ or ppt)

The only parameter to be measured in the laboratory was:

- suspended solids (SS) (mgL^{-1})

In addition to the water quality parameters, other relevant data had also been measured and recorded in field logs, including the location of the sampling stations and cable vessel/ burial machine at the time of sampling, water depth, time, weather conditions, sea conditions, tidal state, current direction and speed, special phenomena and work activities undertaken around the monitoring and works area that may influence the monitoring results.

3.2.2 Equipment

Table 3.2 summaries the equipment used for the impact water quality monitoring.

Table 3.2 Equipment used during Impact Water Quality Monitoring (Zone B)

Equipment	Model
Global Positioning Device	Garmin etrex 20x
Water Depth Gauge	Sontek Riversurveyor
Water Sampling Equipment	Aquatic Research Instruments horizontal / vertical types 2.2L
Salinity, DO, Temperature Measuring Meter	YSI ProDSS (Multi-Parameter)
Current Velocity and Direction	Sontek Riversurveyor
Turbidity Meter	YSI ProDSS (Multi-Parameter)

3.2.3 Monitoring Frequency and Timing

Impact Monitoring at all monitoring stations within Zone B (i.e. IM3, G3, E1, and F1) took place when the cable installation works were undertaken within Zone B as shown in ***Figure 1.4***. The sampling works ceased when no cable installation works were conducted inside Zone B.

All Phase 2 construction works were undertaken during the designated working hours (i.e. 07:00 - 23:00; including Sundays and public holidays). A total of four (4) monitoring rounds were conducted during the 16-hour work period on each work-day from 07:00 to 23:00. The interval between two (2) sets of impact monitoring (i.e. including the collection of *In-situ* and SS data) during the cable installation works was no less than 36 hours and samples were taken twice during a 4 hour window of 2 hours before and 2 hours after a mid-flood and mid-ebb tidal state on each sampling occasion.

Reference was made to the predicted tides at Waglan Island, which is the tidal station nearest to the Project Site, published on the website of the Hong Kong Observatory [(1)]. Based on the predicted tidal levels at Waglan Island, the impact water quality monitoring was conducted between 24 and 26 May 2021, following the schedule presented in **Appendix A**.

3.2.4 Sampling / Testing Protocols

All *in situ* monitoring instruments were checked, calibrated and certified by a laboratory accredited under HOKLAS (Quality Pro Test-Consult Limited) before use (see calibration reports in **Appendix B**), and will subsequently be re-calibrated at-monthly intervals throughout all stages of the water quality monitoring. Responses of sensors and electrodes were checked with certified standard solutions before each use.

For the on-site calibration of field equipment, the *BS 1427: 1993*, *Guide to Field and On-Site Test Methods for the Analysis of Waters* were observed. Sufficient stocks of spare parts shall be maintained for replacements when necessary. Backup monitoring equipment were made available so that monitoring could proceed uninterrupted even when equipment is under maintenance, calibration etc.

Water samples for SS measurements were collected in high density polythene bottles, packed in ice (cooled to 4°C without being frozen), and delivered to a HOKLAS laboratory as soon as possible after collection.

At least two (2) replicate samples were collected from each of the monitoring events for *in situ* measurement and lab analysis.

3.2.5 Laboratory Analysis

All laboratory work was carried out in a HOKLAS accredited laboratory (ALS Technichem (HK) Pty Ltd). Water samples of about 1,000 mL were collected at the monitoring, gradient and control stations for carrying out the laboratory determinations. The determination work shall start within the next

(1) Hong Kong Observatory (2021) http://www.hko.gov.hk/tide/predtide.htm?s=WAG [Accessed in May 2021]

working day after collection of the water samples. The SS laboratory measurements were provided within five (5) days of the sampling event. The analyses followed the standard methods as described in *APHA Standard Methods for the Examination of Water and Wastewater, 19th Edition*, unless otherwise specified (APHA 2540D for SS).

The submitted information included pre-treatment procedures, instrument use, Quality Assurance/Quality Control (QA/QC) details (such as blank, spike recovery, number of duplicate samples per-batch etc.), detection limits and accuracy. The QA/QC details were in accordance with requirements of HOKLAS or another internationally accredited scheme (**Appendix C**).

3.2.6 Sampling Depths

At each station, measurements and water samples were taken at three (3) depths, namely 1 m below water surface, mid-depth and 1 m above seabed. For stations that are less than 3 m in depth, only the mid-depth sample was taken. For stations that are less than 6 m in depth, only the surface and seabed sample was taken.

3.2.7 Action and Limit Levels

The Action and Limit levels for Zone B, which were established based on the results of *Baseline Water Quality Monitoring (Zone B)*, are presented in ***Table 3.3***.

Table 3.3 Action and Limit Level for Water Quality

Parameter	Action Level	Limit Level
SS in mgL^{-1} (Depth-averaged)	95%-ile of baseline data (4.7 mg L^{-1}), or 20% exceedance of value at any impact station compared with corresponding data from control station, whichever monitoring result is higher	99%-ile of baseline data (6.4 mg L^{-1}), or 30% exceedance of value at any impact station compared with corresponding data from control station, whichever monitoring result is higher
DO in mgL^{-1}	Surface and Middle 5%-ile of baseline data for surface or middle layer (6.81 mg L^{-1}) Bottom 5%-ile of baseline data for bottom layers (6.63 mg L^{-1})	Surface and Middle 4mg/L or 1%-ile of baseline for surface and middle layer, whichever is lower (4 mg L^{-1}) Bottom 2mg/L or 1%-ile of baseline data for bottom layer whichever is lower (2 mg L^{-1})
Turbidity in NTU (Depth-averaged)	95%-ile of baseline data (3.4 NTU), or 20% exceedance of value at any impact station compared with corresponding data from control station, whichever monitoring result is higher	99%-ile of baseline data (3.7 NTU), or 30% exceedance of value at any impact station compared with corresponding data from control station, whichever monitoring result is higher

Notes:
a. For DO, non-compliance of the water quality limits occurs when the monitoring result is lower than the limits.
b. "Depth-averaged" is calculated by taking the arithmetic means of reading of all sampled depths.
c. For SS and turbidity, non-compliance of the water quality limits occurs when monitoring result is higher than the limits.
d. Limit level for DO was derived from the Water Quality Objectives (WQO) for Southern, Eastern Buffer, and Mirs Bay Water Control Zones under the Water Pollution Control Ordinance (WPCO) Chapters 358L, 358Y, and 358I respectively.

4. IMPACT MONITORING RESULTS

A total of two (2) monitoring events were carried out on 24 and 26 May 2021 at Zone B, for two (2) days over the period of three (3) work days of the 3rd week of impact monitoring reporting. All monitoring events at all designated monitoring stations within Zone B were performed on schedule, i.e. 24 and 26 May 2021.

No major Project activities that influenced the water quality within Zone B were identified between 24 and 26 May 2021.

4.1 Data Collected

The impact monitoring data taken for this 3rd weekly impact monitoring report within Zone B are presented in **Appendix D.** In general, the Zone B water quality parameters were stable throughout each sampling day (i.e. 24 and 26 May 2021), and in correspondence with Action and Limit Levels as indicated in the *Baseline Water Quality Monitoring Report (Zone B).*

Recorded levels of dissolved oxygen, albeit frequently recorded as being below the corresponding Action and Limit Levels, were deemed to be due to natural fluctuations, as similar fluctuation of dissolved oxygen was observed at the corresponding control stations E1 and F1 (which is away from potential impact from any works at the cable alignment) during the specific tide.

5. ENVIRONMENTAL NON-CONFORMANCES

5.1 Summary of Environmental Exceedance

Exceedances were recorded during both monitoring days on 24 and 26 May 2021 for dissolved oxygen, and turbidity at some of the monitoring stations. None of the exceedances recorded were attributed to the Project construction works as detailed below.

Two (2) NOEs with detailed investigation report will be issued to EPD for recording exceedances of Action and Limit Levels for turbidity and suspended solids.

The exceedances were examined against the Project works in the NOEs. Recorded levels of dissolved oxygen at gradient station G3 were similar to that observed in the corresponding control stations E1 and F1 during the specific tide. Also, there was no exceedance in dissolved oxygen level at the corresponding impact station IM3 and thus no material impact was recorded at water sensitive receiver. The recorded turbidity level at G3 (which resulted in exceedance on ebb tide of 24 May 2021) was very low (3.28 NTU only), such that minor natural fluctuation of less than 1 NTU could result in exceedance of 120% of the control station data.

The Contractors have been requested by the ET to be aware that exceedances have recently occurred, and to take care to ensure all necessary procedures are followed to avoid the Project impacting the water environment.

5.2 Summary of Environmental Non-compliance

No non-compliance events were recorded during the reporting period.

5.3 Summary of Environmental Complaint

No environmental complaints were received during the reporting period.

5.4 Summary of Environmental Summons and Prosecution

No summons or prosecution on environmental matters were received during the reporting period.

5.5 Future Key Issues

There are no key issue identified.

Diver jetting works in Zone B were completed on Wednesday 26 May 2021, no further impact monitoring works are required for Zone B.

6. CONCLUSION

This 3rd Weekly Impact Monitoring Report presents the EM&A work undertaken on 24 and 26 May 2021 in accordance with the *Appendix G* of the approved Project Profile (PP) and the requirements under EP-575/2020.

No non-compliance events were recorded during the reporting week due to the Project.

There were exceedances of Action and Limit Levels for dissolved oxygen, and turbidity during both monitoring days on 24 and 26 May 2021.

The exceedances were examined against the Project works in the NOEs. Recorded levels of dissolved oxygen at gradient station G3 were similar to that observed in the corresponding control stations E1 and F1 during the specific tide. Also, there was no exceedance in dissolved oxygen level at the corresponding impact station IM3 and thus no material impact was recorded at water sensitive receiver. The recorded turbidity level at G3 (which resulted in exceedance on ebb tide of 24 May 2021) was very low (3.28 NTU only), such that minor natural fluctuation of less than 1 NTU could result in exceedance of 120% of the control station data.

The Contractors have been requested by the Environmental Team (ET) to be aware that exceedances have recently occurred, and to take care to ensure all necessary procedures are followed to avoid the Project impacting the water environment.

No environmental complaints, summons or prosecution on environmental matters were received during the reporting period.

The ET will keep track of the EM&A programme to verify compliance of environmental requirements and the proper implementation of all necessary mitigation measures.

APPENDIX A IMPACT WATER QUALITY MONITORING SCHEDULE (ZONE B)

Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
ebb tide 8:33 - 12:33 flood tide 14:54 - 18:54 ***Zone B impact*** 24-May	25-May	ebb tide 9:59 - 13:59 flood tide 16:50 - 20:50 ***Zone B impact*** 26-May	27-May	28-May	29-May	30-May
31-May	01-Jun	02-Jun	03-Jun	04-Jun	**Appendix A** **H2HE Impact Monitoring Schedule (Zone B)**	

APPENDIX B CERTIFICATES OF CALIBRATION FOR *IN SITU* MONITORING INSTRUMENTS

專業化驗有限公司
QUALITY PRO TEST-CONSULT LIMITED
Unit 10, 14/F, Wah Wai Centre, 38-40 Au Pui Wan St., Fotan, Hong Kong
Email: info@qualityprotest.com; Website: www.qualityprotest.com
Tel: (852) 3956 8717; Fax: (852) 3956 3928

REPORT OF EQUIPMENT PERFORMANCE CHECK/ CALIBRATION

Report No. : BA050076
Date of Issue : 21 May 2021

PART A – CUSTOMER INFORMATION

Enovative Environmental Service Ltd.
Flat 2207, Yu Fun House,
Yu Chui Court, Shatin
New Territories, Hong Kong
Attn: Mr. Thomas WONG

PART B – DESCRIPTION

Name of Equipment	:	YSI ProDSS (Multi-Parameters)
Manufacturer	:	YSI (a xylem brand)
Serial Number	:	16H104233
Date of Received	:	May 20, 2021
Date of Calibration	:	May 20, 2021
Date of Next Calibration[a]	:	Aug 19, 2021

PART C – REFERENCE METHODS/ DOCUMENTS FOR THE CALIBRATION

Parameter	Reference Method
pH at 25°C	APHA 21e 4500-H^+ B
Dissolved Oxygen	APHA 21e 4500-O G
Conductivity at 25°C	APHA 21e 2510 B
Salinity	APHA 21e 2520 B
Turbidity	APHA 21e 2130 B
Temperature	Section 6 of international Accreditation New Zealand Technical Guide no. 3 Second edition March 2008: Working Thermometer Calibration Procedure.

PART D – CALIBRATION RESULTS[b,c]

(1) pH at 25°C

Target (pH unit)	Displayed Reading[d] (pH Unit)	Tolerance[e](pH Unit)	Results
4.00	4.03	0.03	Satisfactory
7.42	7.44	0.02	Satisfactory
10.01	9.98	-0.03	Satisfactory

Tolerance of pH should be less than ±0.20 (pH unit)

(2) Temperature

Reading of Ref. thermometer (°C)	Displayed Reading (°C)	Tolerance (°C)	Results
10	10.05	0.05	Satisfactory
25	24.96	-0.04	Satisfactory
50	49.92	-0.08	Satisfactory

Tolerance limit of temperature should be less than ±2.0 (°C)

~ CONTINUED ON NEXT PAGE ~

Remark(s): -

[a] *The "Date of Next Calibration" is recommended according to best practice principals as practiced by QPT or quoted form relevant international standards.*
[b] *The results relate only to the calibrated equipment as received*
[c] *The performance of the equipment stated in this report is checked with independent reference material and results compared against a calibrated secondary source.*
[d] *"Displayed Reading" denotes the figure shown on item under calibration/ checking regardless of equipment precision or significant figures.*
[e] *The "Tolerance Limit" mentioned is the acceptance criteria applicable for similar equipment used by Quality Pro Test-Consult Ltd. or quoted form relevant international standards..*

LEE Chun-ning, Desmond
Senior Chemist

專業化驗有限公司
QUALITY PRO TEST-CONSULT LIMITED
Unit 10, 14/F, Wah Wai Centre, 38-40 Au Pui Wan St., Fotan, Hong Kong
Email: info@qualityprotest.com; Website: www.qualityprotest.com
Tel: (852) 3956 8717; Fax: (852) 3956 3928

REPORT OF EQUIPMENT PERFORMANCE CHECK/ CALIBRATION

Report No. : BA050076
Date of Issue : 21 May 2021

PART D – CALIBRATION RESULTS (Cont'd)

(3) Dissolved Oxygen

Expected Reading (mg/L)	Displayed Reading (mg/L)	Tolerance (mg/L)	Results
0.01	0.30	0.29	Satisfactory
1.30	1.20	-0.10	Satisfactory
4.34	4.44	0.10	Satisfactory
7.53	7.60	0.07	Satisfactory

Tolerance limit of dissolved oxygen should be less than ±0.50 (mg/L)

(4) Conductivity at 25°C

Conc. of KCl (M)	Expected Reading (µS/cm)	Displayed Reading (µS/cm)	Tolerance (%)	Results
0.001	146.9	152.8	4.02	Satisfactory
0.01	1412	1452	2.83	Satisfactory
0.1	12890	12834	-0.43	Satisfactory
0.5	58670	58016	-1.11	Satisfactory
1.0	111900	110890	-0.90	Satisfactory

Tolerance limit of conductivity should be less than ±10.0 (%)

(5) Salinity

Expected Reading (g/L)	Displayed Reading (g/L)	Tolerance (%)	Results
10	9.89	-1.10	Satisfactory
20	20.51	2.55	Satisfactory
30	29.87	-0.43	Satisfactory

Tolerance limit of salinity should be less than ±10.0 (%)

(6) Turbidity

Expected Reading (NTU)	Displayed Reading[f] (NTU)	Tolerance[g] (%)	Results
0	0.11	--	Satisfactory
10	10.08	0.80	Satisfactory
20	19.33	-3.35	Satisfactory
100	97.88	-2.12	Satisfactory
800	813.47	1.68	Satisfactory

Tolerance limit of turbidity should be less than ±10.0 (%)

~ END OF REPORT ~

Remark(s): -
(f) "Displayed Reading" presents the figures shown on item under calibration/ checking regardless of equipment precision or significant figures.
(g) The "Tolerance Limit" mentioned is the acceptance criteria applicable for similar equipment used by Quality Pro Test-Consult Ltd. or quoted form relevant international standards.

APPENDIX C QA/ QC RESULTS FOR SUSPENDED SOLIDS TESTING

QA/QC Results of Laboratory Analysis of Total Suspended Solids				
Sampling Date	Sample Duplicate		Method Blank *	Laboratory Control Spike
	Sample ID	% Error	(mg/L)	% Recovery **
24-May-21	E1-ME-S-1	23.8	<0.5	93.0
	F1-ME-B-1	12.5		
	G3-ME-B-1	21.1	<0.5	99.5
	F1-MF-M-1	13.3		
	G3-MF-M-1	7.1	<0.5	106.0
26-May-21	E1-ME-S-1	23.8	<0.5	93.0
	F1-ME-B-1	12.5		
	G3-ME-B-1	21.1	<0.5	99.5
	F1-MF-M-1	13.3		
	G3-MF-M-1	7.1	<0.5	106.0

Note: (*) Reporting limit of SS is 0.5 mg/L.

(**) % Recovery of laboratory control spike should be between 85% to 115%.

CERTIFICATE OF ANALYSIS

Client	:	ENOVATIVE ENVIRONMENTAL SERVICE LTD	*Laboratory*	:	ALS Technichem (HK) Pty Ltd	*Page*	: 1 of 5
Contact	:	MR THOMAS WONG	*Contact*	:	Richard Fung	*Work Order*	: **HK2114613**
Address	:	FLAT 2207, YU FUN HSE, YU CHUI COURT, SHATIN, N.T. HONG KONG	*Address*	:	11/F., Chung Shun Knitting Centre, 1 - 3 Wing Yip Street, Kwai Chung, N.T., Hong Kong		
E-mail	:	thomas.wong@eno.com.hk	*E-mail*	:	richard.fung@alsglobal.com		
Telephone	:	----	*Telephone*	:	+852 2610 1044		
Facsimile	:	----	*Facsimile*	:	+852 2610 2021		
Project	:	H2H EXPRESS SUBMARINE CABLE				*Date received*	: 26-May-2021
Order number	:	—	*Quote number*	:	HKE/1236/2021	*Date of issue*	: 31-May-2021
C-O-C number	:	—				*No. of samples*	- *Received* : 44
Site	:	—					- *Analysed* : 44

This document has been signed by those names that appear on this report and are the authorised signatories.

Signatory	*Position*	*Authorised results for:*
		
Fung Lim Chee, Richard	**Managing Director**	**Inorganics**

General Comments

This report supersedes any previous report(s) with this reference. All pages of this report have been checked and approved for release. When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes. Testing period is from 26-May-2021 to 31-May-2021.

Key: LOR = Limit of reporting; CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

Specific Comments for Work Order HK2114613 :

Sample(s) was/ were submitted by client. Sample(s) arrived laboratory in chilled condition. The result(s) related only to the item(s) tested.

Sample information (Project name, Sample ID, Sampling date/time, etc.) is provided by client.

Analytical Results

Sub-Matrix: MARINE WATER			Compound	EA025: Suspended Solids (SS)	----	----	----	----
			LOR Unit	0.5 mg/L	----	----	----	----
Sample ID	Sampling date / time	Laboratory sample ID		EA/ED: Physical and Aggregate Properties	----	----	----	----
E1-ME-S-1	26-May-2021	HK2114613-001		2.1	----	----	----	----
E1-ME-S-2	26-May-2021	HK2114613-002		2.8	----	----	----	----
E1-ME-M-1	26-May-2021	HK2114613-003		2.6	----	----	----	----
E1-ME-M-2	26-May-2021	HK2114613-004		1.7	----	----	----	----
E1-ME-B-1	26-May-2021	HK2114613-005		2.0	----	----	----	----
E1-ME-B-2	26-May-2021	HK2114613-006		1.7	----	----	----	----
F1-ME-S-1	26-May-2021	HK2114613-007		2.5	----	----	----	----
F1-ME-S-2	26-May-2021	HK2114613-008		2.9	----	----	----	----
F1-ME-M-1	26-May-2021	HK2114613-009		2.4	----	----	----	----
F1-ME-M-2	26-May-2021	HK2114613-010		2.3	----	----	----	----
F1-ME-B-1	26-May-2021	HK2114613-011		1.6	----	----	----	----
F1-ME-B-2	26-May-2021	HK2114613-012		1.4	----	----	----	----
IM3-ME-S-1	26-May-2021	HK2114613-013		2.2	----	----	----	----
IM3-ME-S-2	26-May-2021	HK2114613-014		1.4	----	----	----	----
IM3-ME-B-1	26-May-2021	HK2114613-017		1.3	----	----	----	----
IM3-ME-B-2	26-May-2021	HK2114613-018		1.2	----	----	----	----
G3-ME-S-1	26-May-2021	HK2114613-019		2.0	----	----	----	----
G3-ME-S-2	26-May-2021	HK2114613-020		2.8	----	----	----	----
G3-ME-M-1	26-May-2021	HK2114613-021		2.2	----	----	----	----
G3-ME-M-2	26-May-2021	HK2114613-022		2.5	----	----	----	----
G3-ME-B-1	26-May-2021	HK2114613-023		1.9	----	----	----	----
G3-ME-B-2	26-May-2021	HK2114613-024		1.4	----	----	----	----
E1-MF-S-1	26-May-2021	HK2114613-025		2.1	----	----	----	----
E1-MF-S-2	26-May-2021	HK2114613-026		1.7	----	----	----	----
E1-MF-M-1	26-May-2021	HK2114613-027		2.3	----	----	----	----
E1-MF-M-2	26-May-2021	HK2114613-028		2.8	----	----	----	----
E1-MF-B-1	26-May-2021	HK2114613-029		2.3	----	----	----	----
E1-MF-B-2	26-May-2021	HK2114613-030		3.0	----	----	----	----
F1-MF-S-1	26-May-2021	HK2114613-031		3.1	----	----	----	----
F1-MF-S-2	26-May-2021	HK2114613-032		3.8	----	----	----	----
F1-MF-M-1	26-May-2021	HK2114613-033		3.0	----	----	----	----

Sub-Matrix: **MARINE WATER**

			Compound	EA025: Suspended Solids (SS)	----	----	----	----
			LOR Unit	0.5 mg/L	----	----	----	----
Sample ID	Sampling date / time	Laboratory sample ID		EA/ED: Physical and Aggregate Properties	----	----	----	----
F1-MF-M-2	26-May-2021	HK2114613-034		2.7	----	----	----	----
F1-MF-B-1	26-May-2021	HK2114613-035		2.5	----	----	----	----
F1-MF-B-2	26-May-2021	HK2114613-036		2.9	----	----	----	----
IM3-MF-S-1	26-May-2021	HK2114613-037		2.8	----	----	----	----
IM3-MF-S-2	26-May-2021	HK2114613-038		3.3	----	----	----	----
IM3-MF-B-1	26-May-2021	HK2114613-041		2.6	----	----	----	----
IM3-MF-B-2	26-May-2021	HK2114613-042		3.6	----	----	----	----
G3-MF-S-1	26-May-2021	HK2114613-043		2.7	----	----	----	----
G3-MF-S-2	26-May-2021	HK2114613-044		2.4	----	----	----	----
G3-MF-M-1	26-May-2021	HK2114613-045		2.8	----	----	----	----
G3-MF-M-2	26-May-2021	HK2114613-046		3.6	----	----	----	----
G3-MF-B-1	26-May-2021	HK2114613-047		3.3	----	----	----	----
G3-MF-B-2	26-May-2021	HK2114613-048		4.0	----	----	----	----

Laboratory Duplicate (DUP) Report

Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report				
				LOR	Unit	Original Result	Duplicate Result	RPD (%)
EA/ED: Physical and Aggregate Properties (QC Lot: 3703359)								
HK2114613-001	E1-ME-S-1	EA025: Suspended Solids (SS)	----	0.5	mg/L	2.1	2.6	20.1
HK2114613-011	F1-ME-B-1	EA025: Suspended Solids (SS)	----	0.5	mg/L	1.6	1.8	16.1
EA/ED: Physical and Aggregate Properties (QC Lot: 3703360)								
HK2114613-023	G3-ME-B-1	EA025: Suspended Solids (SS)	----	0.5	mg/L	1.9	1.5	20.6
HK2114613-033	F1-MF-M-1	EA025: Suspended Solids (SS)	----	0.5	mg/L	3.0	2.6	17.0
EA/ED: Physical and Aggregate Properties (QC Lot: 3703361)								
HK2114613-045	G3-MF-M-1	EA025: Suspended Solids (SS)	----	0.5	mg/L	2.8	2.6	7.5

Method Blank (MB), Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report

Matrix: **WATER**

Method: Compound	CAS Number	Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report						
					Spike	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
		LOR	Unit	Result	Concentration	LCS	DCS	Low	High	Value	Control Limit
EA/ED: Physical and Aggregate Properties (QCLot: 3703359)											
EA025: Suspended Solids (SS)	----	0.5	mg/L	<0.5	20 mg/L	93.0	----	85.9	117	----	----
EA/ED: Physical and Aggregate Properties (QCLot: 3703360)											
EA025: Suspended Solids (SS)	----	0.5	mg/L	<0.5	20 mg/L	99.5	----	85.9	117	----	----
EA/ED: Physical and Aggregate Properties (QCLot: 3703361)											
EA025: Suspended Solids (SS)	----	0.5	mg/L	<0.5	20 mg/L	106	----	85.9	117	----	----

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report

- **No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.**

CERTIFICATE OF ANALYSIS

Client	:	ENOVATIVE ENVIRONMENTAL SERVICE LTD	*Laboratory*	:	ALS Technichem (HK) Pty Ltd	*Page*	: 1 of 5
Contact	:	MR THOMAS WONG	*Contact*	:	Richard Fung	*Work Order*	: **HK2114613**
Address	:	FLAT 2207, YU FUN HSE, YU CHUI COURT, SHATIN, N.T. HONG KONG	*Address*	:	11/F., Chung Shun Knitting Centre, 1 - 3 Wing Yip Street, Kwai Chung, N.T., Hong Kong		
E-mail	:	thomas.wong@eno.com.hk	*E-mail*	:	richard.fung@alsglobal.com		
Telephone	:	----	*Telephone*	:	+852 2610 1044		
Facsimile	:	----	*Facsimile*	:	+852 2610 2021		
Project	:	H2H EXPRESS SUBMARINE CABLE				*Date received*	: 26-May-2021
Order number	:	—	*Quote number*	:	HKE/1236/2021	*Date of issue*	: 31-May-2021
C-O-C number	:	—				*No. of samples*	- *Received* : 44
Site	:	—					- *Analysed* : 44

This document has been signed by those names that appear on this report and are the authorised signatories.

Signatory	*Position*	*Authorised results for:*
		
Fung Lim Chee, Richard	**Managing Director**	**Inorganics**

General Comments

This report supersedes any previous report(s) with this reference. All pages of this report have been checked and approved for release. When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes. Testing period is from 26-May-2021 to 31-May-2021.

Key: LOR = Limit of reporting; CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

Specific Comments for Work Order HK2114613 :

Sample(s) was/ were submitted by client. Sample(s) arrived laboratory in chilled condition. The result(s) related only to the item(s) tested.

Sample information (Project name, Sample ID, Sampling date/time, etc.) is provided by client.

Analytical Results

Sub-Matrix: MARINE WATER			Compound	EA025: Suspended Solids (SS)	----	----	----	----
			LOR Unit	0.5 mg/L	----	----	----	----
Sample ID	Sampling date / time	Laboratory sample ID		EA/ED: Physical and Aggregate Properties	----	----	----	----
E1-ME-S-1	26-May-2021	HK2114613-001		2.1	----	----	----	----
E1-ME-S-2	26-May-2021	HK2114613-002		2.8	----	----	----	----
E1-ME-M-1	26-May-2021	HK2114613-003		2.6	----	----	----	----
E1-ME-M-2	26-May-2021	HK2114613-004		1.7	----	----	----	----
E1-ME-B-1	26-May-2021	HK2114613-005		2.0	----	----	----	----
E1-ME-B-2	26-May-2021	HK2114613-006		1.7	----	----	----	----
F1-ME-S-1	26-May-2021	HK2114613-007		2.5	----	----	----	----
F1-ME-S-2	26-May-2021	HK2114613-008		2.9	----	----	----	----
F1-ME-M-1	26-May-2021	HK2114613-009		2.4	----	----	----	----
F1-ME-M-2	26-May-2021	HK2114613-010		2.3	----	----	----	----
F1-ME-B-1	26-May-2021	HK2114613-011		1.6	----	----	----	----
F1-ME-B-2	26-May-2021	HK2114613-012		1.4	----	----	----	----
IM3-ME-S-1	26-May-2021	HK2114613-013		2.2	----	----	----	----
IM3-ME-S-2	26-May-2021	HK2114613-014		1.4	----	----	----	----
IM3-ME-B-1	26-May-2021	HK2114613-017		1.3	----	----	----	----
IM3-ME-B-2	26-May-2021	HK2114613-018		1.2	----	----	----	----
G3-ME-S-1	26-May-2021	HK2114613-019		2.0	----	----	----	----
G3-ME-S-2	26-May-2021	HK2114613-020		2.8	----	----	----	----
G3-ME-M-1	26-May-2021	HK2114613-021		2.2	----	----	----	----
G3-ME-M-2	26-May-2021	HK2114613-022		2.5	----	----	----	----
G3-ME-B-1	26-May-2021	HK2114613-023		1.9	----	----	----	----
G3-ME-B-2	26-May-2021	HK2114613-024		1.4	----	----	----	----
E1-MF-S-1	26-May-2021	HK2114613-025		2.1	----	----	----	----
E1-MF-S-2	26-May-2021	HK2114613-026		1.7	----	----	----	----
E1-MF-M-1	26-May-2021	HK2114613-027		2.3	----	----	----	----
E1-MF-M-2	26-May-2021	HK2114613-028		2.8	----	----	----	----
E1-MF-B-1	26-May-2021	HK2114613-029		2.3	----	----	----	----
E1-MF-B-2	26-May-2021	HK2114613-030		3.0	----	----	----	----
F1-MF-S-1	26-May-2021	HK2114613-031		3.1	----	----	----	----
F1-MF-S-2	26-May-2021	HK2114613-032		3.8	----	----	----	----
F1-MF-M-1	26-May-2021	HK2114613-033		3.0	----	----	----	----

Sub-Matrix: **MARINE WATER**

			Compound	EA025: Suspended Solids (SS)	----	----	----	----
			LOR Unit	0.5 mg/L	----	----	----	----
Sample ID	Sampling date / time	Laboratory sample ID		EA/ED: Physical and Aggregate Properties	----	----	----	----
F1-MF-M-2	26-May-2021	HK2114613-034		2.7	----	----	----	----
F1-MF-B-1	26-May-2021	HK2114613-035		2.5	----	----	----	----
F1-MF-B-2	26-May-2021	HK2114613-036		2.9	----	----	----	----
IM3-MF-S-1	26-May-2021	HK2114613-037		2.8	----	----	----	----
IM3-MF-S-2	26-May-2021	HK2114613-038		3.3	----	----	----	----
IM3-MF-B-1	26-May-2021	HK2114613-041		2.6	----	----	----	----
IM3-MF-B-2	26-May-2021	HK2114613-042		3.6	----	----	----	----
G3-MF-S-1	26-May-2021	HK2114613-043		2.7	----	----	----	----
G3-MF-S-2	26-May-2021	HK2114613-044		2.4	----	----	----	----
G3-MF-M-1	26-May-2021	HK2114613-045		2.8	----	----	----	----
G3-MF-M-2	26-May-2021	HK2114613-046		3.6	----	----	----	----
G3-MF-B-1	26-May-2021	HK2114613-047		3.3	----	----	----	----
G3-MF-B-2	26-May-2021	HK2114613-048		4.0	----	----	----	----

Laboratory Duplicate (DUP) Report

Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report				
				LOR	Unit	Original Result	Duplicate Result	RPD (%)
EA/ED: Physical and Aggregate Properties (QC Lot: 3703359)								
HK2114613-001	E1-ME-S-1	EA025: Suspended Solids (SS)	----	0.5	mg/L	2.1	2.6	20.1
HK2114613-011	F1-ME-B-1	EA025: Suspended Solids (SS)	----	0.5	mg/L	1.6	1.8	16.1
EA/ED: Physical and Aggregate Properties (QC Lot: 3703360)								
HK2114613-023	G3-ME-B-1	EA025: Suspended Solids (SS)	----	0.5	mg/L	1.9	1.5	20.6
HK2114613-033	F1-MF-M-1	EA025: Suspended Solids (SS)	----	0.5	mg/L	3.0	2.6	17.0
EA/ED: Physical and Aggregate Properties (QC Lot: 3703361)								
HK2114613-045	G3-MF-M-1	EA025: Suspended Solids (SS)	----	0.5	mg/L	2.8	2.6	7.5

Method Blank (MB), Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report

Matrix: **WATER**

Method: Compound	CAS Number	Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report						
					Spike	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
		LOR	Unit	Result	Concentration	LCS	DCS	Low	High	Value	Control Limit
EA/ED: Physical and Aggregate Properties (QCLot: 3703359)											
EA025: Suspended Solids (SS)	----	0.5	mg/L	<0.5	20 mg/L	93.0	----	85.9	117	----	----
EA/ED: Physical and Aggregate Properties (QCLot: 3703360)											
EA025: Suspended Solids (SS)	----	0.5	mg/L	<0.5	20 mg/L	99.5	----	85.9	117	----	----
EA/ED: Physical and Aggregate Properties (QCLot: 3703361)											
EA025: Suspended Solids (SS)	----	0.5	mg/L	<0.5	20 mg/L	106	----	85.9	117	----	----

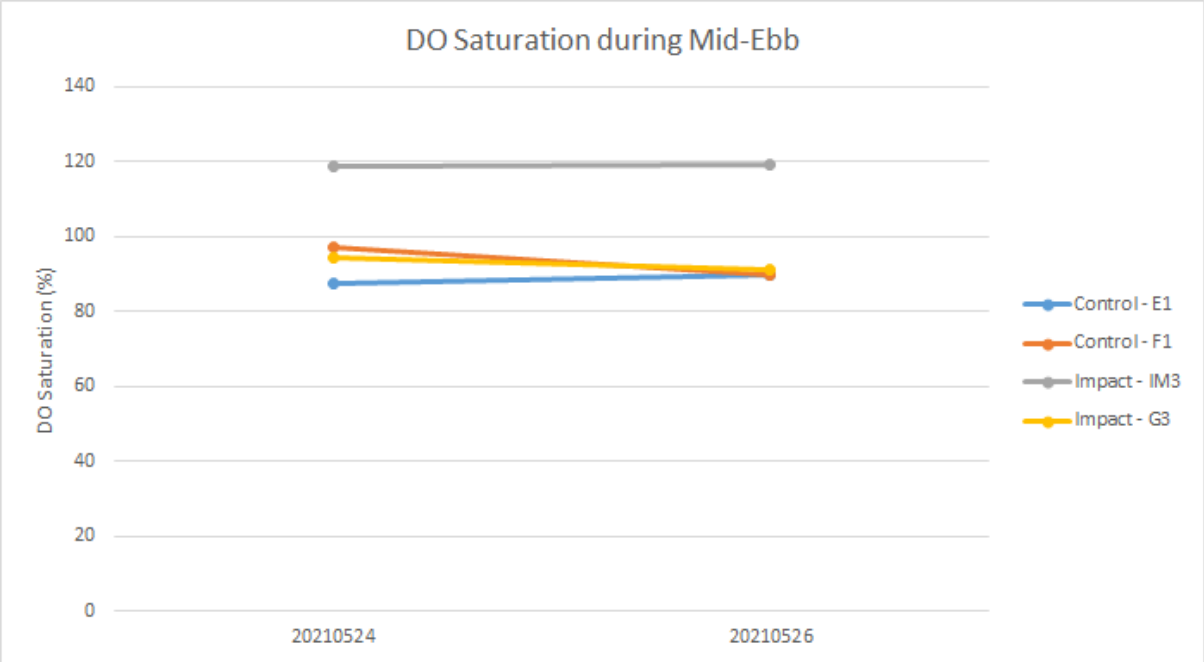
Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report

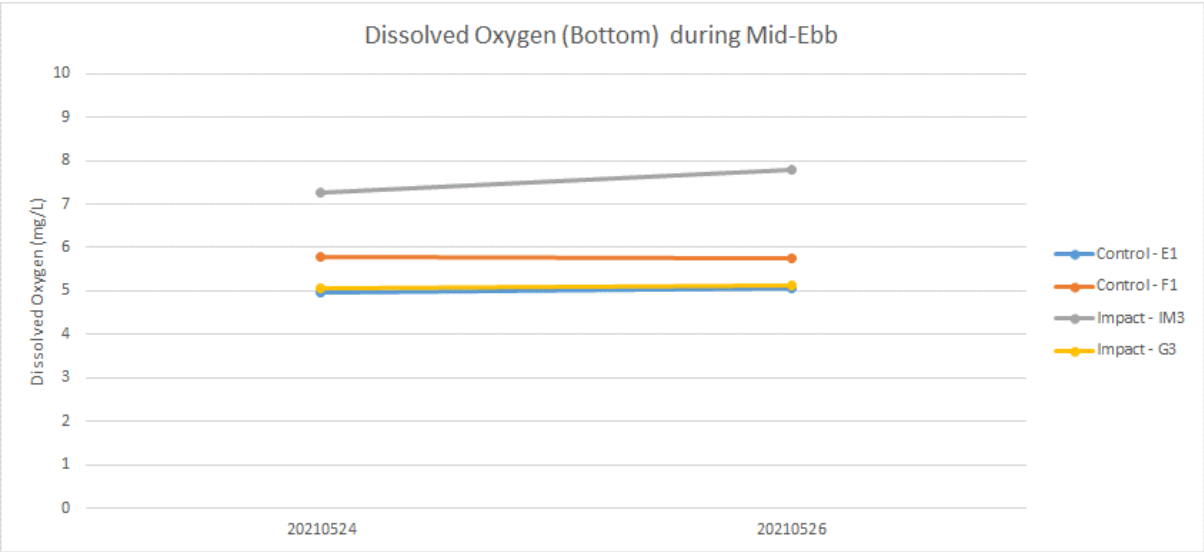
- **No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.**

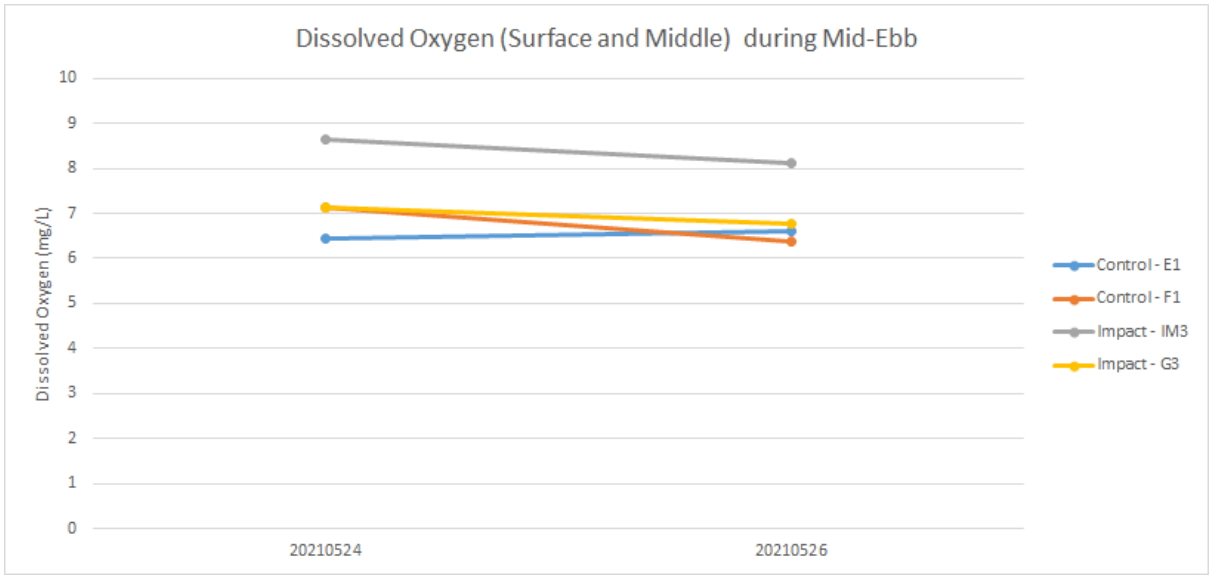
APPENDIX D IMPACT WATER QUALITY MONITORING RESULTS (ZONE B)

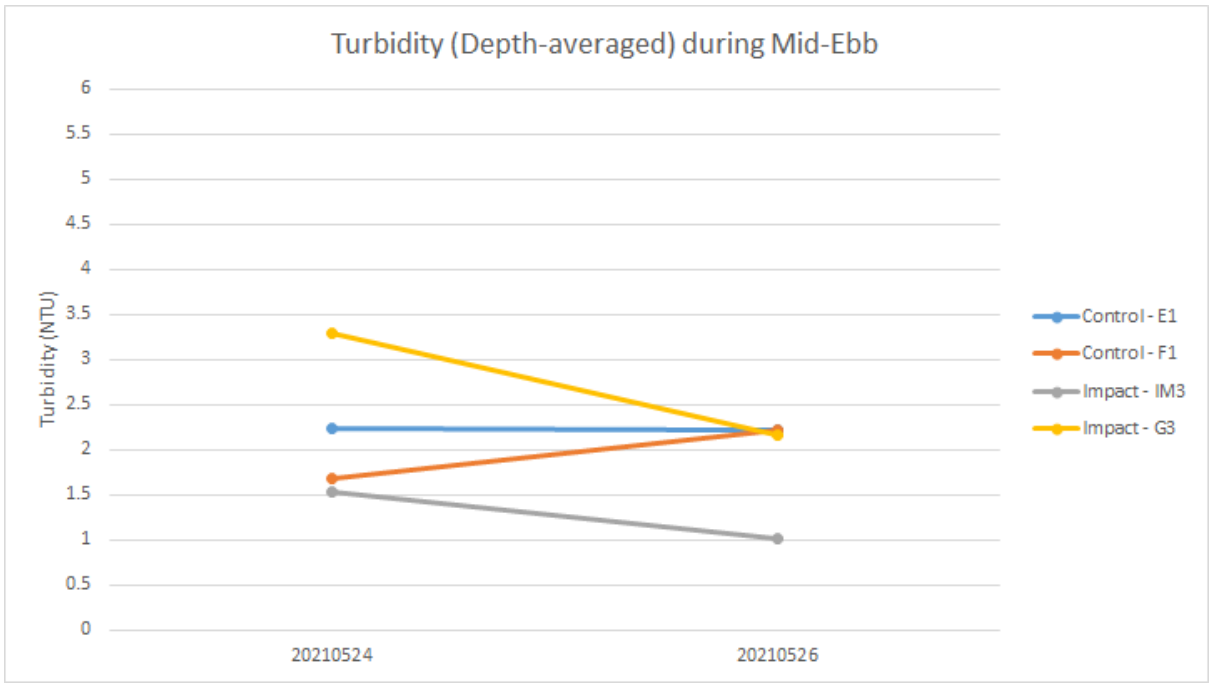
Graphical presentation of the baseline monitoring result for Zone A

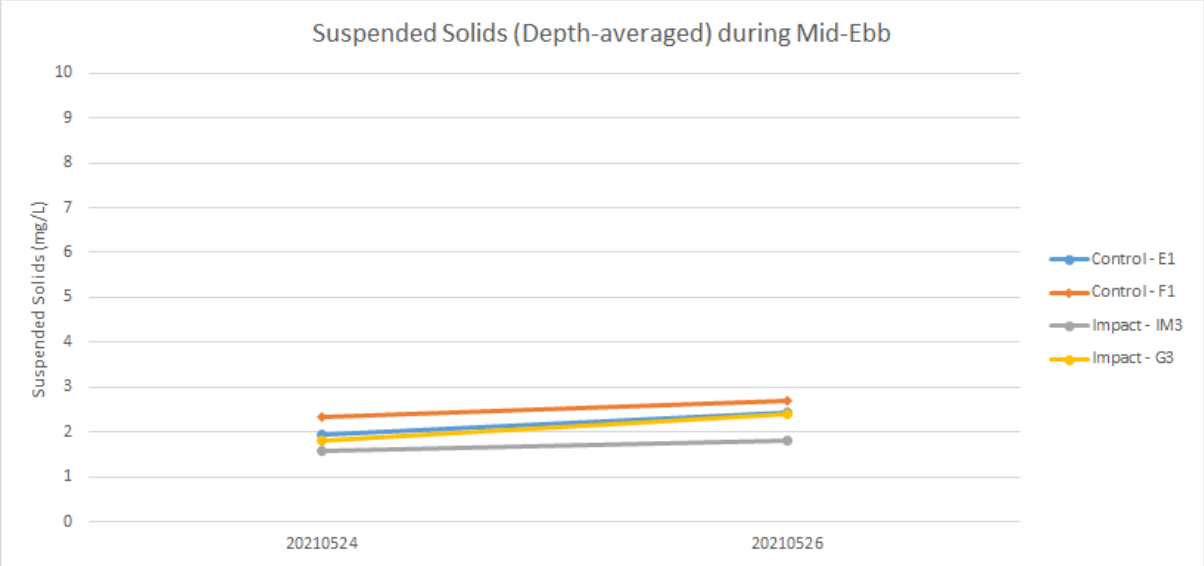
During Mid-Ebb



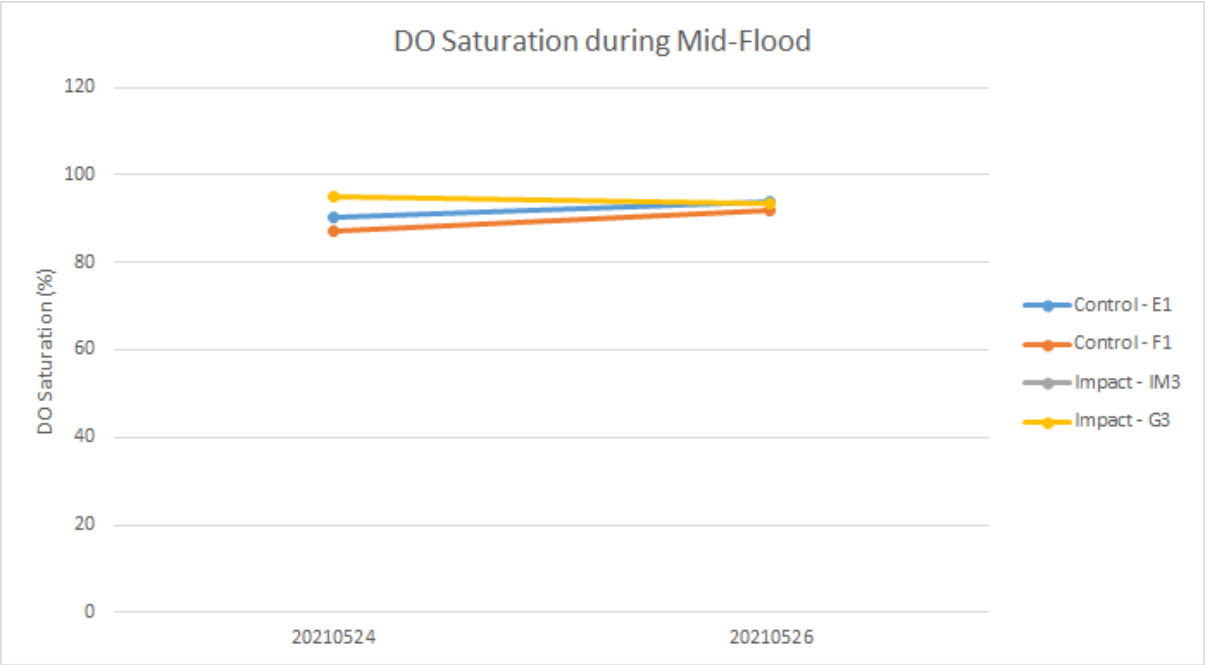


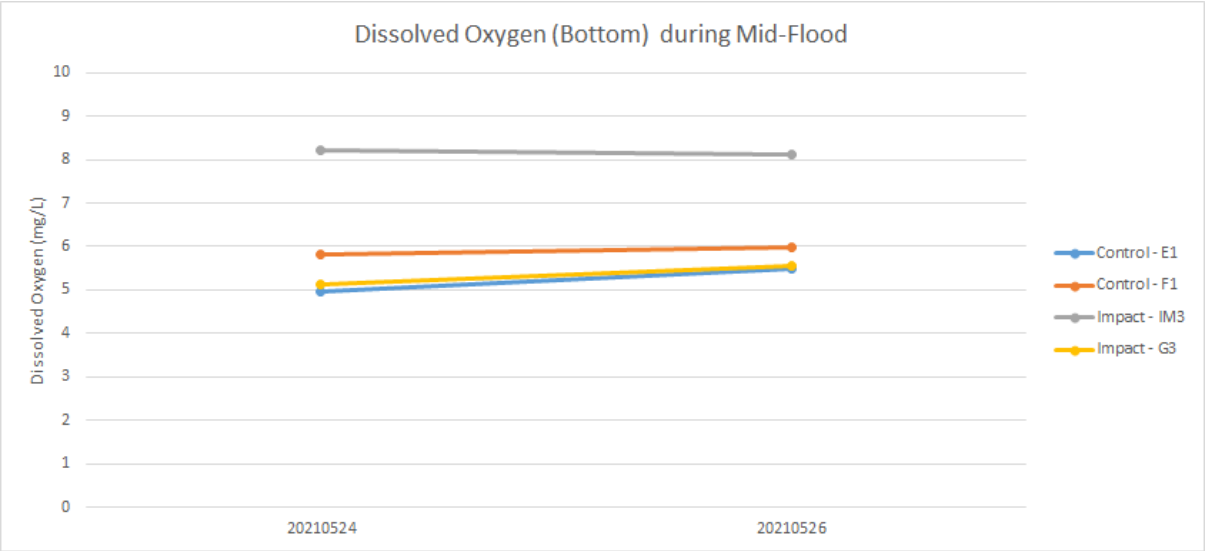

Dissolved Oxygen (Surface and Middle) during Mid-Ebb
Dissolved Oxygen (mg/L)
10
9
8
7
6
5
4
3
2
1
0
20210524
20210526
Control - E1
Control - F1
Impact - IM3
Impact - G3

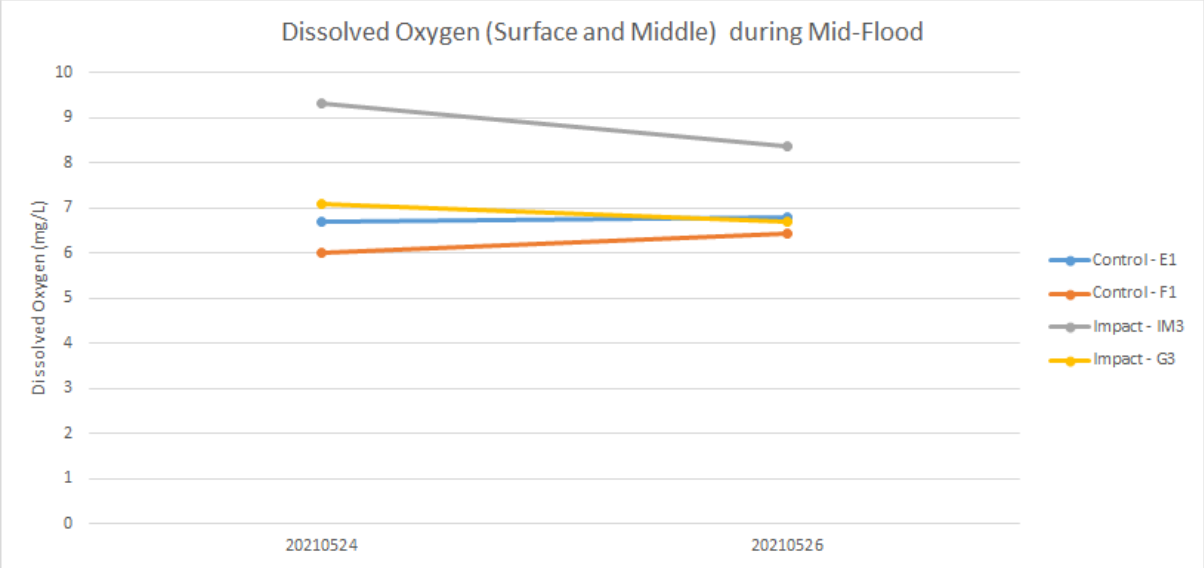

Turbidity (Depth-averaged) during Mid-Ebb
Turbidity (NTU)
6
5.5
5
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
20210524
20210526
Control - E1
Control - F1
Impact - IM3
Impact - G3

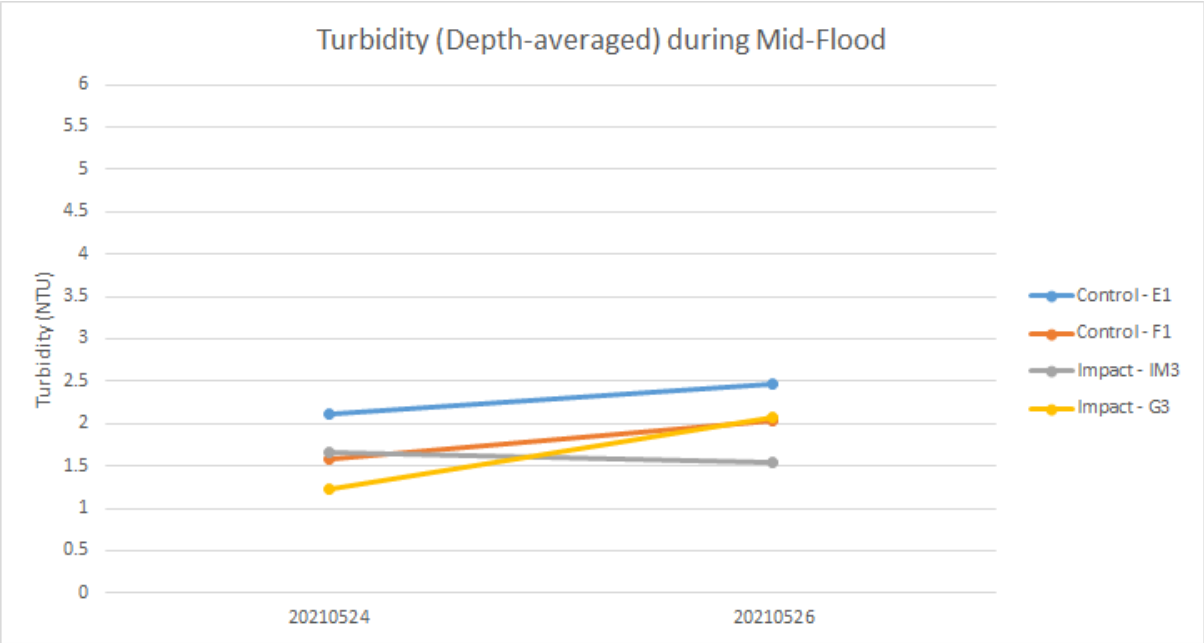

Suspended Solids (Depth-averaged) during Mid-Ebb
Suspended Solids (mg/L)
10
9
8
7
6
5
4
3
2
1
0
20210524
20210526
Control - E1
Control - F1
Impact - IM3
Impact - G3

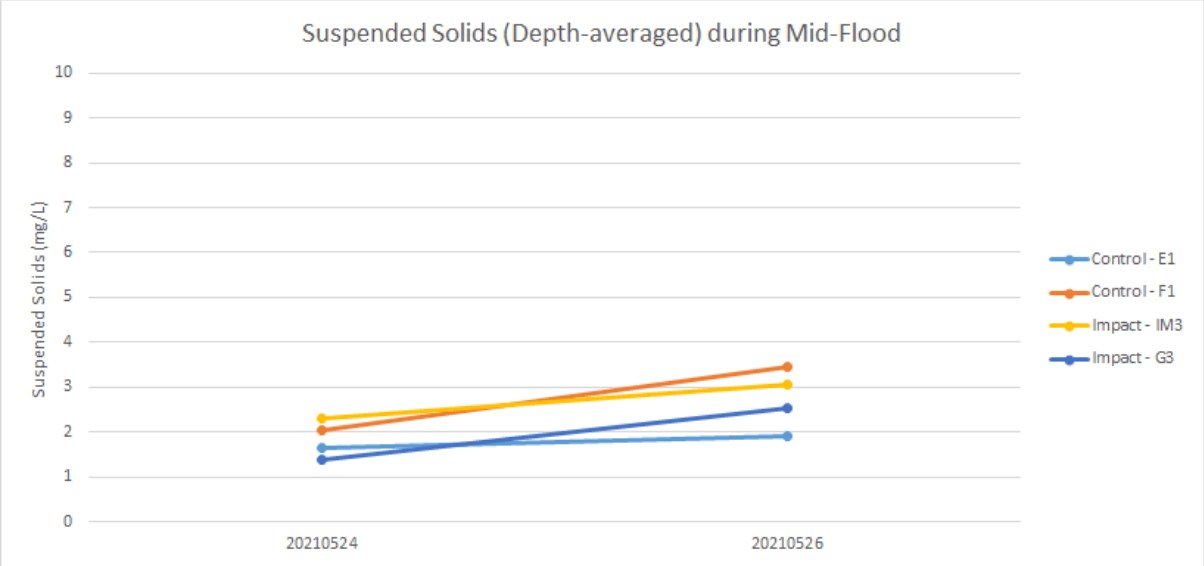
During Mid-Flood






Dissolved Oxygen (Surface and Middle) during Mid-Flood
Dissolved Oxygen (mg/L)
10
9
8
7
6
5
4
3
2
1
0
20210524
20210526
Control - E1
Control - F1
Impact - IM3
Impact - G3


Turbidity (Depth-averaged) during Mid-Flood
Turbidity (NTU)
6
5.5
5
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
20210524
20210526
Control - E1
Control - F1
Impact - IM3
Impact - G3


Suspended Solids (Depth-averaged) during Mid-Flood
Suspended Solids (mg/L)
10
9
8
7
6
5
4
3
2
1
0
20210524
20210526
Control - E1
Control - F1
Impact - IM3
Impact - G3

Water Quality Monitoring Data Log Sheet **24-May-2021** **Tide: Mid-Ebb**

Monitoring Station	Weather Condition	Sea Condition**	Sampling Time	Water Depth (m)	Depth Level ***	Current Velocity (m/s)	CurrentDirection	Temperature (°C)		Salinity (ppt)		pH		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)		
								Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
E1	Sunny	Moderate	12:30	24.5	S	1.67	153	29.8	29.8	22.96	22.97	8.54	8.54	129.1	128.9	8.64	8.62	6.43	1.14	1.15	2.23	2.0	2.0	2.2
						1.67	165	29.8		22.97		8.54		128.6		8.60			1.15			1.9		
					M	2.70	165	24.7	24.7	34.10	34.12	8.10	8.10	61.6	62.0	4.22	4.25		1.92	1.99		2.0	2.1	
						2.86	167	24.7		34.13		8.10		62.4		4.27			2.05			2.2		
					B	2.26	165	23.9	23.9	34.36	34.37	8.12	8.12	71.8	71.8	4.98	4.98		3.54	3.55		2.5	2.7	
						2.33	178	23.8		34.37		8.12		71.7		4.98			3.55			2.8		
F1	Sunny	Moderate	10:53	33.1	S	2.66	88	29.2	29.2	23.43	23.44	8.49	8.49	125.2	124.8	8.43	8.40	7.12	1.13	1.14	1.68	2.3	2.4	2.0
						2.76	96	29.2		23.44		8.48		124.3		8.36			1.14			2.4		
					M	2.49	96	24.0	24.0	34.34	34.35	8.10	8.10	84.4	84.4	5.84	5.84		1.82	1.82		1.9	2.1	
						2.62	96	24.0		34.35		8.10		84.3		5.84			1.82			2.2		
					B	2.69	93	23.2	23.2	34.44	34.44	8.11	8.11	82.7	82.7	5.80	5.80		2.07	2.08		1.5	1.5	
						2.73	101	23.2		34.44		8.11		82.7		5.80			2.08			1.5		
IM3	Sunny	Moderate	12:03	4.2	S	0.03	9	30.4	30.4	21.28	21.28	8.62	8.62	129.8	129.5	8.67	8.65	8.65	1.22	1.24	1.52	1.6	1.6	1.4
						0.03	9	30.4		21.28		8.62		129.2		8.62			1.26			1.6		
					M	0.00	0		-		-		-		-		-			-			-		
						0.00	0																	
					B	0.12	56	27.5	27.5	28.27	28.38	8.31	8.31	107.5	107.4	7.26	7.25		1.75	1.81		1.4	1.3	
						0.12	60	27.4		28.48		8.31		107.3		7.24			1.86			1.1		
G3	Sunny	Moderate	11:51	33.4	S	2.04	106	29.7	29.7	22.73	22.75	8.52	8.52	136.5	136.3	9.16	9.15	7.13	1.14	1.15	3.28	1.7	1.8	1.4
						2.09	108	29.6		22.77		8.52		136.1		9.14			1.16			1.9		
					M	1.76	118	23.8	23.8	34.34	34.34	8.12	8.12	73.8	73.7	5.12	5.11		2.37	2.41		1.4	1.5	
						1.82	123	23.8		34.34		8.12		73.5		5.10			2.45			1.5		
					B	1.75	127	23.5	23.5	34.39	34.39	8.14	8.14	72.8	72.9	5.07	5.08		6.38	6.29		0.8	0.8	
						1.85	136	23.5		34.39		8.14		72.9		5.09			6.19			0.8		

Remark: * DA: Depth-Averaged
***** S: 1 m below the sea surface; M: mid-depth; S: 1 m above the seabed**
Note: Exceedance of 95th / 99th-percentile of baseline data or 120% / 130% of control station results are underlined. Exceedance of 95th / 99th-percentile of baseline data at control station is not considered.

Water Quality Monitoring Data Log Sheet **24-May-2021** **Tide: Mid-Flood**

Monitoring Station	Weather Condition	Sea Condition**	Sampling Time	Water Depth (m)	Depth Level ***	Current Velocity (m/s)	CurrentDirection	Temperature (°C)		Salinity (ppt)		pH		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)		
								Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
E1	Cloudy	Moderate	14:54	24.5	S	3.33	105	30.1	30.1	22.63	22.63	8.56	8.56	139.0	138.9	9.27	9.27	6.69	1.13	1.14	2.11	1.4	1.7	2.2
						3.47	110	30.1		22.62		8.56		138.8		9.26			1.14			1.9		
					M	3.86	108	24.8	24.8	33.99	34.00	8.06	8.06	60.1	60.2	4.11	4.11		1.05	1.05		2.1	2.2	
						4.05	114	24.8		34.00		8.06		60.2		4.11			1.04			2.2		
					B	3.62	104	24.0	24.0	34.33	34.33	8.15	8.15	71.8	71.9	4.96	4.97		3.87	4.15		2.6	2.7	
						3.92	107	24.0		34.32		8.15		72.0		4.98			4.43			2.7		
F1	Cloudy	Moderate	16:00	34	S	0.60	200	28.2	28.2	27.50	27.51	8.33	8.33	101.1	101.1	6.77	6.77	6.02	0.85	0.85	1.58	1.9	2.1	1.5
						0.65	204	28.2		27.51		8.33		101.1		6.77			0.85			2.2		
					M	1.37	209	24.5	24.5	34.25	34.25	8.13	8.13	76.8	76.9	5.27	5.27		1.35	1.35		1.2	1.4	
						1.43	229	24.5		34.25		8.13		76.9		5.27			1.34			1.5		
					B	0.79	220	23.2	23.2	34.60	34.64	8.17	8.17	83.3	83.3	5.83	5.83		2.65	2.54		1.1	1.2	
						0.86	221	23.2		34.68		8.17		83.3		5.83			2.42			1.2		
IM3	Cloudy	Moderate	15:20	4.3	S	0.09	41	30.6	30.6	22.10	22.10	8.61	8.61	140.4	140.3	9.31	9.31	9.31	1.13	1.14	1.67	2.5	2.3	2.0
						0.10	42	30.6		22.10		8.61		140.2		9.30			1.15			2.1		
					M	0.00	0		-		-		-		-		-			-			-		
						0.00	0																	
					B	0.08	56	29.0	29.0	25.46	25.51	8.45	8.45	123.4	123.1	8.24	8.23		2.15	2.20		1.7	1.8	
						0.08	58	28.9		25.56		8.44		122.8		8.21			2.25			1.8		
G3	Cloudy	Moderate	15:28	30.4	S	2.05	161	30.2	30.2	22.49	22.49	8.58	8.58	140.8	140.7	9.37	9.37	7.08	1.00	0.99	1.23	1.5	1.4	1.8
						2.13	165	30.2		22.49		8.58		140.6		9.36			0.98			1.3		
					M	2.68	157	24.8	24.8	34.12	34.13	8.10	8.10	70.0	70.1	4.78	4.79		1.02	1.02		1.9	1.9	
						2.71	161	24.8		34.13		8.10		70.1		4.79			1.01			1.8		
					B	3.13	152	24.6	24.6	34.23	34.23	8.13	8.13	74.7	74.8	5.12	5.13		1.67	1.67		2.4	2.2	
						3.32	162	24.6		34.23		8.13		74.8		5.13			1.67			2.0		

Remark: * DA: Depth-Averaged
***** S: 1 m below the sea surface; M: mid-depth; S: 1 m above the seabed**
Note: Exceedance of 95th / 99th-percentile of baseline data or 120% / 130% of control station results are underlined. Exceedance of 95th / 99th-percentile of baseline data at control station is not considered.

Water Quality Monitoring Data Log Sheet **26-May-2021** **Tide: Mid-Ebb**

Monitoring Station	Weather Condition	Sea Condition**	Sampling Time	Water Depth (m)	Depth Level ***	Current Velocity (m/s)	CurrentDirection	Temperature (°C)		Salinity (ppt)		pH		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)		
								Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
E1	Fine	Moderate	13:00	24.4	S	3.21	147	28.9	28.9	24.61	24.62	8.43	8.43	124.7	124.8	8.39	8.40	6.62	1.13	1.14	2.21	2.1	2.5	2.2
						3.51	158	28.9		24.63		8.43		124.8		8.40			1.15			2.8		
					M	3.50	152	25.1	25.1	33.37	33.40	8.12	8.12	70.8	71.0	4.83	4.84		1.71	1.70		2.6	2.2	
						3.70	154	25.1		33.42		8.12		71.1		4.85			1.68			1.7		
					B	3.55	152	23.8	23.8	34.34	34.34	8.15	8.16	73.1	73.1	5.07	5.07		3.81	3.79		2.0	1.9	
						3.62	153	23.8		34.33		8.16		73.1		5.07			3.77			1.7		
F1	Fine	Moderate	11:20	34.4	S	0.61	36	27.5	27.5	28.44	28.45	8.26	8.26	103.6	103.6	6.98	6.98	6.39	1.06	1.07	2.22	2.5	2.7	2.2
						0.66	39	27.5		28.45		8.26		103.5		6.98			1.07			2.9		
					M	1.24	6	24.1	24.1	34.34	34.34	8.09	8.09	84.1	84.1	5.80	5.80		1.64	1.64		2.4	2.4	
						1.31	6	24.1		34.34		8.08		84.0		5.80			1.64			2.3		
					B	0.74	3	23.0	23.0	34.48	34.48	8.06	8.06	81.9	81.9	5.76	5.76		3.96	3.95		1.6	1.5	
						0.78	3	23.0		34.48		8.06		81.8		5.76			3.93			1.4		
IM3	Fine	Moderate	12:25	4.8	S	0.08	31	29.2	29.2	24.65	24.65	8.46	8.46	121.6	121.6	8.13	8.13	8.13	0.99	1.00	1.00	2.2	1.8	1.5
						0.08	31	29.2		24.64		8.46		121.5		8.13			1.00			1.4		
					M	0.00	0		-		-		-		-		-			-			-		
						0.00	0																	
					B	0.02	41	29.3	29.3	25.01	25.02	8.43	8.43	116.8	116.8	7.78	7.78		0.99	1.01		1.3	1.3	
						0.02	42	29.3		25.02		8.42		116.7		7.78			1.03			1.2		
G3	Fine	Moderate	12:14	24.9	S	2.52	146	28.8	28.8	24.82	24.82	8.44	8.44	125.7	125.6	8.45	8.44	6.78	1.13	1.14	2.16	2.0	2.4	2.1
						2.67	151	28.8		24.82		8.44		125.4		8.43			1.15			2.8		
					M	3.36	152	24.1	24.1	34.17	34.18	8.12	8.12	73.9	74.0	5.11	5.12		1.88	1.91		2.2	2.4	
						3.51	154	24.1		34.18		8.12		74.1		5.13			1.94			2.5		
					B	3.81	151	23.3	23.3	34.37	34.37	8.14	8.14	73.3	73.4	5.13	5.14		3.38	3.42		1.9	1.7	
						3.93	165	23.3		34.37		8.14		73.4		5.14			3.45			1.4		

Remark: * DA: Depth-Averaged
***** S: 1 m below the sea surface; M: mid-depth; S: 1 m above the seabed**
Note: Exceedance of 95th / 99th-percentile of baseline data or 120% / 130% of control station results are underlined. Exceedance of 95th / 99th-percentile of baseline data at control station is not considered.

Water Quality Monitoring Data Log Sheet **26-May-2021** **Tide: Mid-Flood**

Monitoring Station	Weather Condition	Sea Condition**	Sampling Time	Water Depth (m)	Depth Level ***	Current Velocity (m/s)	CurrentDirection	Temperature (°C)		Salinity (ppt)		pH		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)		
								Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
E1	Fine	Rough	16:52	23.8	S	0.85	242	29.3	29.3	24.36	24.35	8.46	8.46	130.9	131.0	8.76	8.77	6.78	1.22	1.23	2.47	2.1	1.9	2.4
						0.91	243	29.3		24.33		8.46		131.1		8.77			1.23			1.7		
					M	3.22	261	24.8	24.8	33.83	33.84	8.11	8.12	69.8	70.0	4.78	4.79		2.43	2.42		2.3	2.6	
						3.32	275	24.8		33.85		8.12		70.1		4.80			2.41			2.8		
					B	3.37	261	24.6	24.6	34.28	34.28	8.16	8.16	80.0	80.0	5.48	5.48		3.76	3.76		2.3	2.7	
						3.54	277	24.6		34.28		8.16		80.0		5.48			3.75			3.0		
F1	Fine	Moderate	17:56	33.5	S	1.11	344	27.9	27.9	31.17	30.16	8.30	8.30	105.4	105.3	7.03	7.02	6.45	1.05	1.05	2.03	3.1	3.5	3.0
						1.20	316.48	27.9		29.14		8.30		105.2		7.01			1.05			3.8		
					M	0.60	326	24.3	24.3	34.31	34.31	8.18	8.18	85.3	85.4	5.87	5.87		1.85	1.85		3.0	2.9	
						0.60	344	24.3		34.31		8.18		85.4		5.87			1.85			2.7		
					B	0.15	278	23.2	23.3	34.44	34.43	8.21	8.21	85.3	85.4	5.97	5.97		3.31	3.19		2.5	2.7	
						0.15	291	23.3		34.42		8.21		85.5		5.97			3.06			2.9		
IM3	Fine	Moderate	17:16	4.1	S	0.05	104	29.2	29.2	25.30	25.30	8.45	8.45	125.7	125.7	8.38	8.38	8.38	1.49	1.48	1.54	2.8	3.1	3.1
						0.05	107	29.2		25.30		8.45		125.7		8.37			1.46			3.3		
					M	0.00	0		-		-		-		-		-			-			-		
						0.00	0																	
					B	0.02	75	28.9	28.9	25.57	25.56	8.42	8.42	121.4	121.3	8.12	8.12		1.62	1.61		2.6	3.1	
						0.02	76	28.9		25.55		8.41		121.2		8.11			1.59			3.6		
G3	Fine	Moderate	17:22	23.7	S	0.94	243	29.0	29.0	25.73	25.76	8.42	8.42	126.0	126.0	8.41	8.41	6.71	1.37	1.39	2.07	2.7	2.6	3.1
						0.95	257	29.0		25.79		8.42		126.0		8.41			1.40			2.4		
					M	1.14	272	25.2	25.2	33.32	33.37	8.15	8.15	73.4	73.5	5.00	5.01		1.57	1.59		2.8	3.2	
						1.21	280	25.1		33.41		8.15		73.5		5.01			1.60			3.6		
					B	1.02	253	24.4	24.4	34.24	34.24	8.19	8.19	81.0	81.0	5.56	5.57		3.23	3.24		3.3	3.7	
						1.11	265	24.4		34.24		8.19		81.0		5.57			3.25			4.0		

Remark: * DA: Depth-Averaged
***** S: 1 m below the sea surface; M: mid-depth; S: 1 m above the seabed**
Note: Exceedance of 95th / 99th-percentile of baseline data or 120% / 130% of control station results are underlined. Exceedance of 95th / 99th-percentile of baseline data at control station is not considered.

ERM has over 160 offices across the following countries and territories worldwide

Argentina
Australia
Belgium
Brazil
Canada
China
Colombia
France
Germany
Hong Kong
Hungary
India
Indonesia
Ireland
Italy
Japan
Kazakhstan
Kenya
Malaysia
Mexico
Myanmar
The Netherlands
New Zealand
Norway
Panama
Peru
Poland
Portugal
Puerto Rico
Romania
Russia
Singapore
South Africa
South Korea
Spain
Sweden
Switzerland
Taiwan
Thailand
UAE
UK
US
Vietnam

ERM-Hong Kong, Limited
2507, 25/F One Harbourfront
18 Tak Fung Street
Hunghom
Kowloon
Hong Kong

T: +852 2271 3000
F: +852 2723 5660

www.erm.com

The business of sustainability

ERM