H2H Express Submarine Cable

HUAWEI MARINE

Post Project Water Quality Monitoring Report (Zone A)

17 May 2021

Project No.: 0586211

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H2H Express Submarine Cable

Post Project Water Quality Monitoring Report (Zone A)

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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~~:	Post Project Water Quality Monitoring Report (Zone A)
Date of Report:	17 May 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: 13 May 2021

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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: 17 May 2021

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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) – tentatively scheduled to commence around mid to late May 2021.

Phase 1 of the Project commenced with land works at Sha Shek Tan (SST), Chung Hom Kok (CHK) on 8 April 2021 (note: no jetting work and no water quality [WQ] impact monitoring requirements). Land works were completed on 9 April 2021. Nearshore marine diver jetting works also started on 8 April 2021, and were completed on 17 April 2021.

This is the *Post Project Water Quality Monitoring Report (Zone A),* presenting the EM&A post installation water quality monitoring in Zone A, conducted from 28 April to 3 May 2021, in accordance with *Appendix G* of the *Project Profile* and the requirements under EP-575/2020.

Water Quality in Zone A

Post Project Water Quality Monitoring was carried out on three (3) occasions (i.e. days) at all monitoring stations within Zone A and took place within two (2) weeks after the completion of the *Phase 1 Land & Shore-End Cable Installation and Submarine Cable Installation up to end of Zone A,* and the intervals between two (2) sets of monitoring were not less than 36 hours. The water quality sampling was undertaken within 2 hours before and 2 hours after mid-flood and mid-ebb tidal state on each sampling occasion.

Post project data showed smaller dissolved oxygen (DO) ranges (and on average lower values), similar turbidity and similar SS records compared to the baseline data. The overall water quality at the impact monitoring stations and gradient stations in Zone A was found to be similar to that at the control station, and the control station is far away (i.e. about 940 m) from the proposed cable alignment. As such, water quality at the control station could not have been affected by the Project, and it is concluded that the overall changes in DO, turbidity and SS levels during the post project monitoring period at all designated stations in Zone A, including the control station, are likely to represent natural variation and were not due to the Project.

Conclusion

No deterioration of water quality was observed between post project and baseline monitoring for marine works for *Phase 1 Land & Shore-End Cable Installation and Submarine Cable Installation up to end of Zone A* of this Project, and therefore it is considered that the Project works had negligible impact on water quality.

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 are derived from the baseline data.

The H2HE cable installation has been 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.

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 tentatively scheduled around mid to late May 2021.

Given the commencement dates for Phase 1 and Phase 2 cable installation and jetting works are scheduled to start around 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 1 Land & Shore-End Cable Installation and Submarine Cable Installation up to end of Zone A* (as show in ***Figure 1.3***).

1.2 Purpose of this Report

This is the Post Project Water Quality Monitoring Report in Zone A for Phase 1 of the Project (Land & Shore-End Cable Installation and Submarine Cable Installation up to end of Zone A), and summarises the post installation water quality monitoring results in Zone A from 28 April to 3 May 2021. The post installation water quality monitoring results are used to compare with the Baseline and Impact monitoring results from Zone A in order to investigate any potential impact of the Project works on the water quality in the vicinity of the Project at Chung Hom Kok.

Under the requirement of *Condition 3.3(c)* of the EP, the post project monitoring report on water quality shall be prepared and submitted to the EPD within one (1) month after completion of the marine works.

1.3 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 1.1***:

Table 1.1 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

Permit / Licence / Notification / Report	Reference	Validity Period	Remarks
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
Notice of Exceedances (for Water Quality in Zone A from data collected on 9 to 13 April 2021)	N/A	Throughout construction period for Phase 1 works in Zone A	Submitted to EPD as on 23 April 2021
Notice of Exceedance (for Water Quality in Zone A from data collected on 17 April 2021)	N/A	Throughout construction period for Phase 1 works in Zone A	Submitted to EPD as on 3 May 2021
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 7 May 2021
2nd Weekly Impact Water Quality Monitoring Report (Zone A)	Currently unavailable online, at the time of report writing	Throughout construction period for Phase 1 works in Zone A	Approval by EPD still ongoing at the time of report writing

1.4 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, the status of Environmental Permits/Licenses during the reporting period, and structure of the report.

Section 2: Water Quality Monitoring Requirements

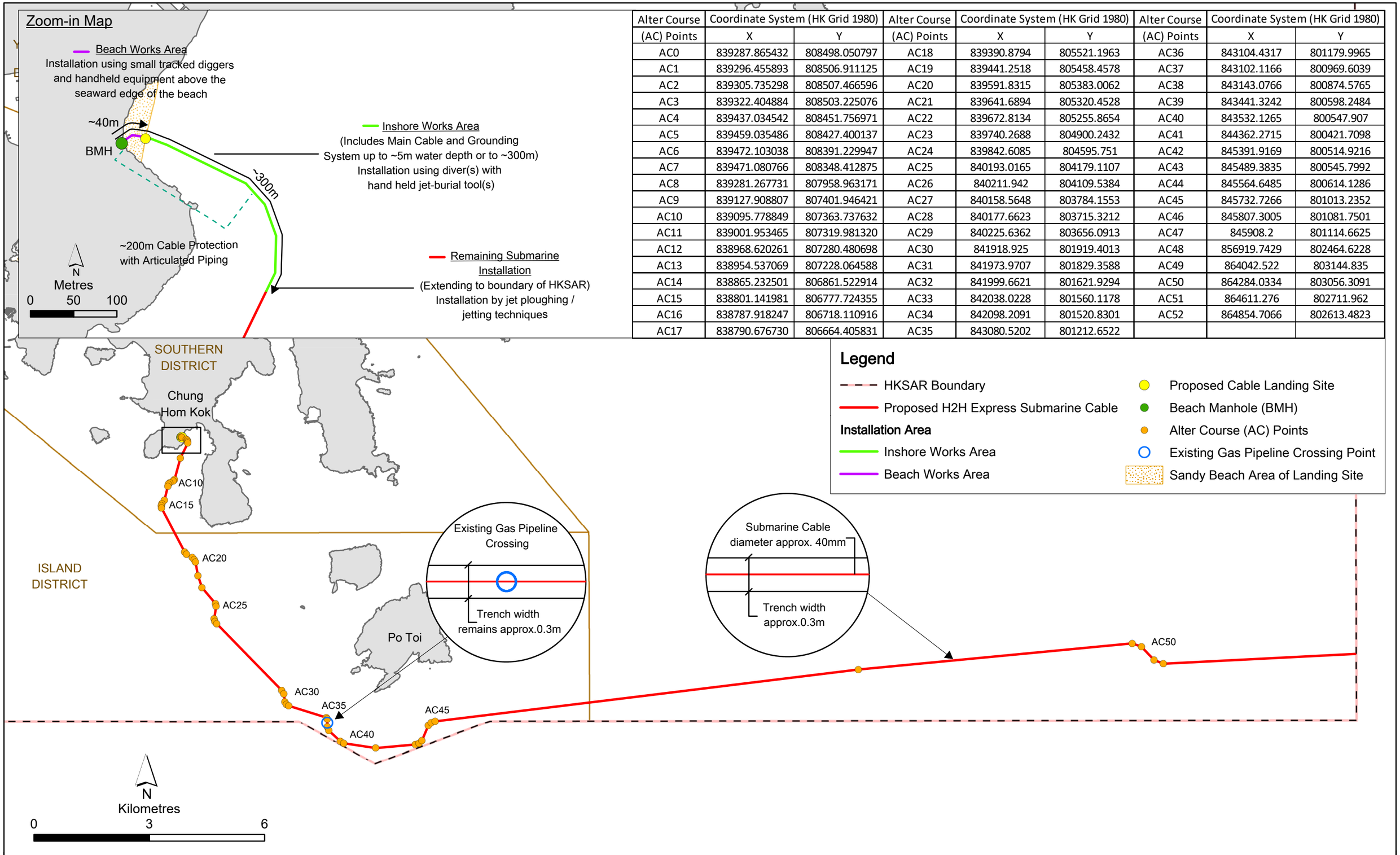
Summarises the monitoring parameters, monitoring programmes, monitoring methodologies, monitoring frequency, monitoring locations, Action and Limit Levels, and Event / Action Plans.

Section 3: Monitoring Results

Summarises the monitoring results obtained in the reporting period.

Section 4: Conclusions

Presents the key findings of the post installation monitoring results in Zone A.



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

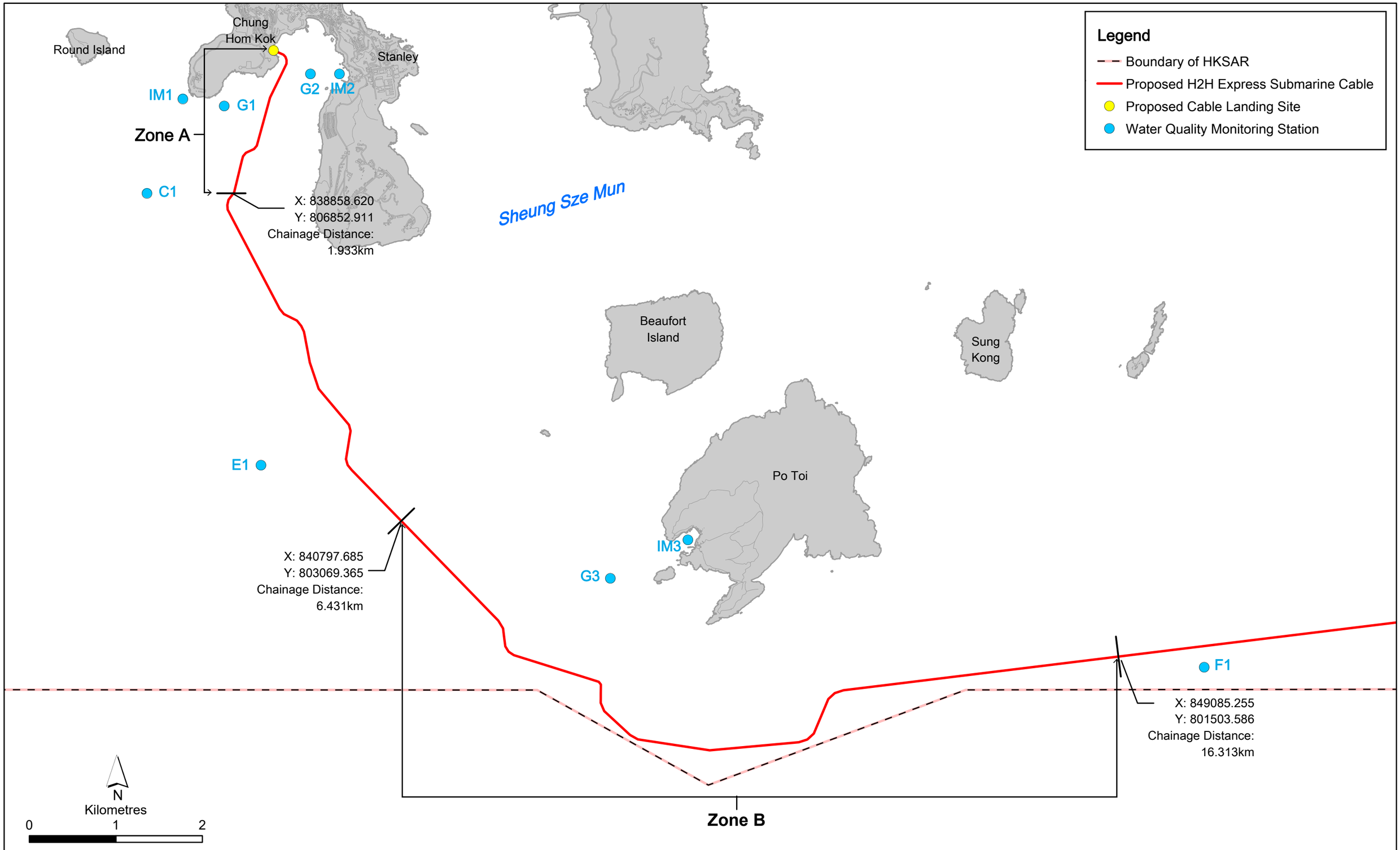


Figure 1.2

Water Quality Monitoring Stations

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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

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Date: 8/4/2021

Environmental Resources Management

ERM

2. WATER QUALITY MONITORING

2.1 Monitoring Location

In accordance with the *Appendix G* of approved PP, during the installation of H2HE in Zone A, water quality sampling was undertaken at stations situated around the cable laying works at CHK in Zone A. The locations of the sampling stations within Zone A are listed in ***Table 2.1*** and shown in ***Figure 1.2*** and ***Figure 1.3.***

Table 2.1 Water Quality Monitoring Stations

Station	Nature	Approx. Geodesic Distance (1) to Proposed Cable Alignment (m)	Easting	Northing
Zone **A**: The waters near Stanley Bay Covers the cable alignment between Chainage 0 and 1.933 km.				
IM1	Coral sites along the coast of Chung Hom Kok	960	838275	807941
IM2	Saint Stephen's Beach	620	840083	808232
G1	Gradient Stations (Between Coral sites along the coast of Chung Hom Kok and cable alignment)	480	838753	807861
G2	Gradient Stations (Between Saint Stephen's Beach and cable alignment)	300	839749	808232
C1 (2)	Control Station for Zone A	940	837859	806853

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

2.2 Sampling and Testing Methodology

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

2.2.1 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.

2.2.2 Equipment

Table 2.2 summaries the equipment used for the impact water quality monitoring.

Table 2.2 Equipment used during Impact Water Quality Monitoring (Zone A)

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)

2.2.3 Monitoring Frequency and Timing

Post Installation Monitoring at all monitoring stations within Zone A (i.e. IM1, IM2, G1, G2, and C1) took place within two (2) weeks after the completion of the Phase 1 cable installation works within Zone A as shown in ***Figure 1.3***.

The interval between two (2) sets of post installation 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 post installation water quality monitoring in Zone A was conducted between 28 April and 3 May 2021, following the schedule presented in **Appendix A**.

2.2.4 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.

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

2.2.5 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 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**).

2.2.6 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. POST PROJECT MONITORING RESULTS IN ZONE A

A total of three (3) monitoring events were carried out between 28 April to 3 May 2021 at Zone A for post installation water quality monitoring. All monitoring events at all designated monitoring stations within Zone A were performed on schedule, i.e. on 28, 30 April and 3 May 2021, as detailed in ***Section 2.2.3***, following completion of the Project Phase 1 installation works on 17 April 2021. The post installation monitoring data within Zone A, with graphical presentations to compare the data against baseline and impact monitoring data for Zone A are presented in **Appendix D**.

The levels of DO measured during the post project monitoring period had a smaller range than that of the baseline and impact monitoring period, and the recorded DO levels were generally lower as well. Accordingly, exceedances in DO action and limit levels were recorded, including at both impact monitoring stations and gradient stations (i.e. IM1, IM2, G1 and G2) for all three (3) survey days (for both tides). The lower DO levels in post-project monitoring is expected to be a result of increasing water temperature (recorded during baseline:,18.70-21.60°C, during impact: 22.9-23.9°C (W1), 23.3-23.5°C (W2); during post-project: 23.70-24.55°C) that reduce the maximum DO at saturation, as DO saturation recorded during baseline, impact and post-project monitoring stages are all very close to 100% saturation. Measured DO levels at the control station (i.e. C1; about 940 m from the proposed cable alignment) were similar to that at the impact monitoring stations and gradient stations, indicating water quality variations during post-project monitoring was due to widespread natural variation and not isolated incidents due to the previous Project works. Detailed analysis during the impact water quality monitoring period also showed similar results at the control and impact monitoring stations. Therefore, although there is some difference between the baseline monitoring period and post project monitoring, it is considered that the widespread water quality variation are due to natural causes (as explained above). Overall, the DO levels recorded were high and always above 6.5 mg/L with minimum DO saturation of at least 96%, which is higher than the corresponding Water Quality Objectives of DO of 4 mg/L for surface and middle layer and 2 mg/L for bottom layer.

Levels of Turbidity measured during the post project monitoring period have similar range of that of the baseline monitoring period and is slightly lower than that of the impact monitoring period.. Exceedance of limit level of turbidity were recorded at G2 during flood tide monitoring on 28 April 2021, while exceedance of action level of turbidity were recorded at IM1 and G2 during ebb tide monitoring on 30 April 2021.

For SS, the recorded levels were higher than that of the impact monitoring period but within the range of baseline monitoring period. Accordingly, exceedances in SS level were recorded, including at impact monitoring stations and gradient stations (i.e. IM1, IM2, G1 and G2) for four (4) out of the six (6) survey events. For mid-ebb survey on 28 and 30 April 2021, where exceedance in SS level at relatively high number of survey stations (i.e. four [4] out of five [5] stations, including the control station) were recorded, the recorded SS elevation at the control station C1 was the second highest among all monitoring stations in the same survey event. This indicates the elevation was a result of widespread natural variation. There were also exceedance of action and limit level for SS recorded in other survey events. Both of such events involve G2 and IM2. In both cases, the recorded levels at G2 were lower than that at IM2, which indicates the elevation originated from direction away from the project cable alignment.

In general, measured turbidity and SS levels at control station (i.e. C1; about 940 m from the proposed cable alignment) were similar to that of the rest of the monitoring stations during monitoring. Therefore, similar to that for DO levels, the differences between the baseline and post project monitoring period are considered to be due to natural variation and not isolated incidents due to the previous Project works.

Given the above information, particularly with regards to the control station in comparison to the impact monitoring stations and gradient stations, as well as the absence of marine works from the H2HE Project in the vicinity during post-project monitoring, the overall changes in DO, Turbidity and SS levels during the post project monitoring period at all designated stations compared to baseline data are likely to represent a natural phenomenon, and / or not due to Project works.

4. CONCLUSION

This *Post Project Water Quality Monitoring Report (Zone A)* presents the EM&A work undertaken from 28 April to 3 May 2021 in accordance with the *Appendix G* of the approved Project Profile (PP) and the requirements under EP-575/2020.

Post Project Water Quality Monitoring was carried out on three (3) occasions (i.e. days) at all monitoring stations within Zone A and took place within two (2) weeks after the completion of the Phase 1 cable installation works within Zone A on 17 April 2021. The intervals between two (2) sets of monitoring were not less than 36 hours. The water quality sampling was undertaken within 2 hours before and 2 hours after mid-flood and mid-ebb tidal state on each sampling occasion.

Post project data showed smaller dissolved oxygen (DO) ranges (and on average lower values), similar turbidity and similar SS records compared to the baseline data. The overall water quality at the impact monitoring stations and gradient stations in Zone A was found to be similar to that at the control station, and the control station is far away (i.e. about 940 m) from the proposed cable alignment. As such, water quality at the control station could not have been affected by the Project, and it is concluded that the overall changes in DO, turbidity and SS levels during the post project monitoring period at all designated stations in Zone A, including the control station, are likely to represent natural variation and were not due to the Project.

Although some changes in water quality were observed between post project and baseline monitoring for marine works under Phase 1 in Zone A of this Project, for the reasons explained above in ***Section 3***, none of these changes are considered to be as a result of the Phase 1 Project works. Phase 1 of this Project therefore had negligible impact on water quality.

APPENDIX A POST PROJECT WATER QUALITY MONITORING SCHEDULE (ZONE A)

Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
		ebb tide 11:03 - 15:03 flood tide 17:44 - 21:44		ebb tide 12:37 - 16:37 flood tide 5:48 - 9:48		
26-Apr	27-Apr	***Zone A post project*** 28-Apr	29-Apr	***Zone A post project*** 30-Apr	01-May	02-May
ebb tide 15:47 - 19:47 flood tide 3:06 - 7:06						
Zone A post project 03-May	04-May	05-May	06-May	07-May	08-May	09-May
10-May						

Appendix A
H2HE Post project Monitoring Schedule (Zone A)

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. : BA040092
Date of Issue : 22 April 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	:	16H104234
Date of Received	:	Apr 22, 2021
Date of Calibration	:	Apr 22, 2021
Date of Next Calibration[a]	:	Jul 21, 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	3.98	-0.02	Satisfactory
7.42	7.40	-0.02	Satisfactory
10.01	9.92	-0.09	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	10.02	0.02	Satisfactory
25	24.00	-1.00	Satisfactory
40	40.00	0.00	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

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PART D – CALIBRATION RESULTS (Cont'd)

(3) Dissolved Oxygen

Expected Reading (mg/L)	Displayed Reading (mg/L)	Tolerance (mg/L)	Results
0.15	0.27	0.12	Satisfactory
1.88	1.92	0.04	Satisfactory
5.79	5.79	0.00	Satisfactory
8.49	8.42	-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	145.3	-1.09	Satisfactory
0.01	1412	1331	-5.74	Satisfactory
0.1	12890	12364	-4.08	Satisfactory
0.5	58670	56724	-3.32	Satisfactory
1.0	111900	109210	-2.40	Satisfactory

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

(5) Salinity

Expected Reading (g/L)	Displayed Reading (g/L)	Tolerance (%)	Results
10	10.18	1.80	Satisfactory
20	20.25	1.25	Satisfactory
30	30.04	0.13	Satisfactory

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

(6) Turbidity

Expected Reading (NTU)	Displayed Reading[f] (NTU)	Tolerance[g] (%)	Results
0	0.00	--	Satisfactory
10	10.10	1.0	Satisfactory
20	20.14	0.7	Satisfactory
100	107.6	7.6	Satisfactory
800	790	-1.3	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 **
28-Apr-21	IM1-E-S-1	3.2	<0.5	107.0
	G1-E-S-2	9.1		
	G2-E-B-2	2.1	<0.5	94.5
	IM1-F-M-1	10.3		
	G1-F-M-1	12.5	<0.5	106.0
	C1-F-S-1	16.7		
30-Apr-21	IM1-E-S-1	3.1	<0.5	107.0
	G1-E-S-1	11.9		
	G2-E-B-1	8.0	<0.5	108.0
	IM1-F-M-1	2.9		
	G1-F-M-1	6.3	<0.5	99.5
	C1-F-S-1	13.3		
03-May-21	IM1-E-S-1	13.0	<0.5	104.0
	G1-E-S-1	8.8		
	G2-E-B-1	3.7	<0.5	109.0
	IM1-F-M-1	12.5		
	G1-F-M-1	9.1	<0.5	106.0
	C1-F-S-1	4.2		

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*	: **HK2116482**
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*	: 28-Apr-2021
Order number	:	—	*Quote number*	:	HKE/1236/2021	*Date of issue*	: 03-May-2021
C-O-C number	:	—				*No. of samples*	- *Received* : 56
Site	:	—					- *Analysed* : 56

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 28-Apr-2021 to 03-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 HK2116482 :

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	----	----	----	----
IM1-E-S-1	28-Apr-2021	HK2116482-001		6.3	----	----	----	----
IM1-E-S-2	28-Apr-2021	HK2116482-002		6.1	----	----	----	----
IM1-E-M-1	28-Apr-2021	HK2116482-003		6.4	----	----	----	----
IM1-E-M-2	28-Apr-2021	HK2116482-004		7.0	----	----	----	----
IM1-E-B-1	28-Apr-2021	HK2116482-005		7.2	----	----	----	----
IM1-E-B-2	28-Apr-2021	HK2116482-006		6.2	----	----	----	----
IM2-E-S-1	28-Apr-2021	HK2116482-007		4.1	----	----	----	----
IM2-E-S-2	28-Apr-2021	HK2116482-008		4.5	----	----	----	----
IM2-E-B-1	28-Apr-2021	HK2116482-011		5.1	----	----	----	----
IM2-E-B-2	28-Apr-2021	HK2116482-012		6.2	----	----	----	----
G1-E-S-1	28-Apr-2021	HK2116482-013		4.6	----	----	----	----
G1-E-S-2	28-Apr-2021	HK2116482-014		4.4	----	----	----	----
G1-E-M-1	28-Apr-2021	HK2116482-015		4.7	----	----	----	----
G1-E-M-2	28-Apr-2021	HK2116482-016		5.8	----	----	----	----
G1-E-B-1	28-Apr-2021	HK2116482-017		7.4	----	----	----	----
G1-E-B-2	28-Apr-2021	HK2116482-018		4.9	----	----	----	----
G2-E-S-1	28-Apr-2021	HK2116482-019		6.3	----	----	----	----
G2-E-S-2	28-Apr-2021	HK2116482-020		5.9	----	----	----	----
G2-E-M-1	28-Apr-2021	HK2116482-021		6.1	----	----	----	----
G2-E-M-2	28-Apr-2021	HK2116482-022		5.7	----	----	----	----
G2-E-B-1	28-Apr-2021	HK2116482-023		9.6	----	----	----	----
G2-E-B-2	28-Apr-2021	HK2116482-024		8.1	----	----	----	----
C1-E-S-1	28-Apr-2021	HK2116482-025		5.1	----	----	----	----
C1-E-S-2	28-Apr-2021	HK2116482-026		6.2	----	----	----	----
C1-E-M-1	28-Apr-2021	HK2116482-027		4.9	----	----	----	----
C1-E-M-2	28-Apr-2021	HK2116482-028		5.7	----	----	----	----
C1-E-B-1	28-Apr-2021	HK2116482-029		4.9	----	----	----	----
C1-E-B-2	28-Apr-2021	HK2116482-030		4.8	----	----	----	----
IM1-F-S-1	28-Apr-2021	HK2116482-031		3.8	----	----	----	----
IM1-F-S-2	28-Apr-2021	HK2116482-032		3.3	----	----	----	----
IM1-F-M-1	28-Apr-2021	HK2116482-033		3.9	----	----	----	----

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	----	----	----	----
IM1-F-M-2	28-Apr-2021	HK2116482-034		3.3	----	----	----	----
IM1-F-B-1	28-Apr-2021	HK2116482-035		2.6	----	----	----	----
IM1-F-B-2	28-Apr-2021	HK2116482-036		2.3	----	----	----	----
IM2-F-S-1	28-Apr-2021	HK2116482-037		6.4	----	----	----	----
IM2-F-S-2	28-Apr-2021	HK2116482-038		6.3	----	----	----	----
IM2-F-B-1	28-Apr-2021	HK2116482-041		2.7	----	----	----	----
IM2-F-B-2	28-Apr-2021	HK2116482-042		3.4	----	----	----	----
G1-F-S-1	28-Apr-2021	HK2116482-043		3.5	----	----	----	----
G1-F-S-2	28-Apr-2021	HK2116482-044		3.6	----	----	----	----
G1-F-M-1	28-Apr-2021	HK2116482-045		3.2	----	----	----	----
G1-F-M-2	28-Apr-2021	HK2116482-046		2.5	----	----	----	----
G1-F-B-1	28-Apr-2021	HK2116482-047		2.4	----	----	----	----
G1-F-B-2	28-Apr-2021	HK2116482-048		3.1	----	----	----	----
G2-F-S-1	28-Apr-2021	HK2116482-049		4.2	----	----	----	----
G2-F-S-2	28-Apr-2021	HK2116482-050		5.3	----	----	----	----
G2-F-M-1	28-Apr-2021	HK2116482-051		3.7	----	----	----	----
G2-F-M-2	28-Apr-2021	HK2116482-052		4.8	----	----	----	----
G2-F-B-1	28-Apr-2021	HK2116482-053		3.8	----	----	----	----
G2-F-B-2	28-Apr-2021	HK2116482-054		4.5	----	----	----	----
C1-F-S-1	28-Apr-2021	HK2116482-055		2.4	----	----	----	----
C1-F-S-2	28-Apr-2021	HK2116482-056		2.8	----	----	----	----
C1-F-M-1	28-Apr-2021	HK2116482-057		3.1	----	----	----	----
C1-F-M-2	28-Apr-2021	HK2116482-058		2.5	----	----	----	----
C1-F-B-1	28-Apr-2021	HK2116482-059		3.0	----	----	----	----
C1-F-B-2	28-Apr-2021	HK2116482-060		6.8	----	----	----	----

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: 3650408)								
HK2116482-001	IM1-E-S-1	EA025: Suspended Solids (SS)	----	0.5	mg/L	6.3	6.5	2.34
HK2116482-014	G1-E-S-2	EA025: Suspended Solids (SS)	----	0.5	mg/L	4.4	4.0	9.47
EA/ED: Physical and Aggregate Properties (QC Lot: 3650409)								
HK2116482-023	G2-E-B-1	EA025: Suspended Solids (SS)	----	0.5	mg/L	9.6	9.8	2.58
HK2116482-033	IM1-F-M-1	EA025: Suspended Solids (SS)	----	0.5	mg/L	3.9	3.5	12.2
EA/ED: Physical and Aggregate Properties (QC Lot: 3650410)								
HK2116482-045	G1-F-M-1	EA025: Suspended Solids (SS)	----	0.5	mg/L	3.2	3.6	12.6
HK2116482-055	C1-F-S-1	EA025: Suspended Solids (SS)	----	0.5	mg/L	2.4	2.8	15.5

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: 3650408)											
EA025: Suspended Solids (SS)	----	0.5	mg/L	<0.5	20 mg/L	107	----	85.9	117	----	----
EA/ED: Physical and Aggregate Properties (QCLot: 3650409)											
EA025: Suspended Solids (SS)	----	0.5	mg/L	<0.5	20 mg/L	94.5	----	85.9	117	----	----
EA/ED: Physical and Aggregate Properties (QCLot: 3650410)											
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*	: **HK2117148**
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*	: 30-Apr-2021
Order number	:	—	*Quote number*	:	HKE/1236/2021	*Date of issue*	: 05-May-2021
C-O-C number	:	—				*No. of samples*	- *Received* : 56
Site	:	—					- *Analysed* : 56

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 30-Apr-2021 to 05-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 HK2117148 :

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	----	----	----	----
IM1-E-S-1	30-Apr-2021	HK2117148-001		6.4	----	----	----	----
IM1-E-S-2	30-Apr-2021	HK2117148-002		6.6	----	----	----	----
IM1-E-M-1	30-Apr-2021	HK2117148-003		7.4	----	----	----	----
IM1-E-M-2	30-Apr-2021	HK2117148-004		6.3	----	----	----	----
IM1-E-B-1	30-Apr-2021	HK2117148-005		7.5	----	----	----	----
IM1-E-B-2	30-Apr-2021	HK2117148-006		6.4	----	----	----	----
IM2-E-S-1	30-Apr-2021	HK2117148-007		5.5	----	----	----	----
IM2-E-S-2	30-Apr-2021	HK2117148-008		4.6	----	----	----	----
IM2-E-B-1	30-Apr-2021	HK2117148-011		5.9	----	----	----	----
IM2-E-B-2	30-Apr-2021	HK2117148-012		4.9	----	----	----	----
G1-E-S-1	30-Apr-2021	HK2117148-013		4.2	----	----	----	----
G1-E-S-2	30-Apr-2021	HK2117148-014		4.5	----	----	----	----
G1-E-M-1	30-Apr-2021	HK2117148-015		4.7	----	----	----	----
G1-E-M-2	30-Apr-2021	HK2117148-016		5.2	----	----	----	----
G1-E-B-1	30-Apr-2021	HK2117148-017		5.6	----	----	----	----
G1-E-B-2	30-Apr-2021	HK2117148-018		6.2	----	----	----	----
G2-E-S-1	30-Apr-2021	HK2117148-019		4.7	----	----	----	----
G2-E-S-2	30-Apr-2021	HK2117148-020		4.5	----	----	----	----
G2-E-M-1	30-Apr-2021	HK2117148-021		4.2	----	----	----	----
G2-E-M-2	30-Apr-2021	HK2117148-022		4.4	----	----	----	----
G2-E-B-1	30-Apr-2021	HK2117148-023		5.0	----	----	----	----
G2-E-B-2	30-Apr-2021	HK2117148-024		5.9	----	----	----	----
C1-E-S-1	30-Apr-2021	HK2117148-025		5.3	----	----	----	----
C1-E-S-2	30-Apr-2021	HK2117148-026		4.9	----	----	----	----
C1-E-M-1	30-Apr-2021	HK2117148-027		5.6	----	----	----	----
C1-E-M-2	30-Apr-2021	HK2117148-028		4.8	----	----	----	----
C1-E-B-1	30-Apr-2021	HK2117148-029		4.3	----	----	----	----
C1-E-B-2	30-Apr-2021	HK2117148-030		3.7	----	----	----	----
IM1-F-S-1	30-Apr-2021	HK2117148-031		3.8	----	----	----	----
IM1-F-S-2	30-Apr-2021	HK2117148-032		3.4	----	----	----	----
IM1-F-M-1	30-Apr-2021	HK2117148-033		3.5	----	----	----	----

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	----	----	----	----
IM1-F-M-2	30-Apr-2021	HK2117148-034		4.1	----	----	----	----
IM1-F-B-1	30-Apr-2021	HK2117148-035		4.2	----	----	----	----
IM1-F-B-2	30-Apr-2021	HK2117148-036		4.8	----	----	----	----
IM2-F-S-1	30-Apr-2021	HK2117148-037		3.7	----	----	----	----
IM2-F-S-2	30-Apr-2021	HK2117148-038		4.8	----	----	----	----
IM2-F-B-1	30-Apr-2021	HK2117148-041		5.0	----	----	----	----
IM2-F-B-2	30-Apr-2021	HK2117148-042		5.3	----	----	----	----
G1-F-S-1	30-Apr-2021	HK2117148-043		2.7	----	----	----	----
G1-F-S-2	30-Apr-2021	HK2117148-044		3.0	----	----	----	----
G1-F-M-1	30-Apr-2021	HK2117148-045		3.2	----	----	----	----
G1-F-M-2	30-Apr-2021	HK2117148-046		3.5	----	----	----	----
G1-F-B-1	30-Apr-2021	HK2117148-047		4.2	----	----	----	----
G1-F-B-2	30-Apr-2021	HK2117148-048		4.6	----	----	----	----
G2-F-S-1	30-Apr-2021	HK2117148-049		5.3	----	----	----	----
G2-F-S-2	30-Apr-2021	HK2117148-050		6.0	----	----	----	----
G2-F-M-1	30-Apr-2021	HK2117148-051		4.5	----	----	----	----
G2-F-M-2	30-Apr-2021	HK2117148-052		4.8	----	----	----	----
G2-F-B-1	30-Apr-2021	HK2117148-053		3.6	----	----	----	----
G2-F-B-2	30-Apr-2021	HK2117148-054		3.0	----	----	----	----
C1-F-S-1	30-Apr-2021	HK2117148-055		1.5	----	----	----	----
C1-F-S-2	30-Apr-2021	HK2117148-056		2.0	----	----	----	----
C1-F-M-1	30-Apr-2021	HK2117148-057		4.8	----	----	----	----
C1-F-M-2	30-Apr-2021	HK2117148-058		5.4	----	----	----	----
C1-F-B-1	30-Apr-2021	HK2117148-059		5.6	----	----	----	----
C1-F-B-2	30-Apr-2021	HK2117148-060		5.0	----	----	----	----

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: 3655667)								
HK2117148-001	IM1-E-S-1	EA025: Suspended Solids (SS)	----	0.5	mg/L	6.4	6.2	2.78
HK2117148-013	G1-E-S-1	EA025: Suspended Solids (SS)	----	0.5	mg/L	4.2	4.7	10.1
EA/ED: Physical and Aggregate Properties (QC Lot: 3655668)								
HK2117148-023	G2-E-B-1	EA025: Suspended Solids (SS)	----	0.5	mg/L	5.0	5.4	7.66
HK2117148-033	IM1-F-M-1	EA025: Suspended Solids (SS)	----	0.5	mg/L	3.5	3.6	4.91
EA/ED: Physical and Aggregate Properties (QC Lot: 3655669)								
HK2117148-045	G1-F-M-1	EA025: Suspended Solids (SS)	----	0.5	mg/L	3.2	3.4	7.63
HK2117148-055	C1-F-S-1	EA025: Suspended Solids (SS)	----	0.5	mg/L	1.5	1.7	12.5

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: 3655667)											
EA025: Suspended Solids (SS)	----	0.5	mg/L	<0.5	20 mg/L	107	----	85.9	117	----	----
EA/ED: Physical and Aggregate Properties (QCLot: 3655668)											
EA025: Suspended Solids (SS)	----	0.5	mg/L	<0.5	20 mg/L	108	----	85.9	117	----	----
EA/ED: Physical and Aggregate Properties (QCLot: 3655669)											
EA025: Suspended Solids (SS)	----	0.5	mg/L	<0.5	20 mg/L	99.5	----	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*	: **HK2117149**
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*	: 03-May-2021
Order number	:	—	*Quote number*	:	HKE/1236/2021	*Date of issue*	: 06-May-2021
C-O-C number	:	—				*No. of samples*	- *Received* : 56
Site	:	—					- *Analysed* : 56

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 03-May-2021 to 06-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 HK2117149 :

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	----	----	----	----
IM1-E-S-1	03-May-2021	HK2117149-001		2.3	----	----	----	----
IM1-E-S-2	03-May-2021	HK2117149-002		2.4	----	----	----	----
IM1-E-M-1	03-May-2021	HK2117149-003		2.4	----	----	----	----
IM1-E-M-2	03-May-2021	HK2117149-004		2.3	----	----	----	----
IM1-E-B-1	03-May-2021	HK2117149-005		4.1	----	----	----	----
IM1-E-B-2	03-May-2021	HK2117149-006		4.5	----	----	----	----
IM2-E-S-1	03-May-2021	HK2117149-007		2.8	----	----	----	----
IM2-E-S-2	03-May-2021	HK2117149-008		3.9	----	----	----	----
IM2-E-B-1	03-May-2021	HK2117149-011		3.3	----	----	----	----
IM2-E-B-2	03-May-2021	HK2117149-012		2.6	----	----	----	----
G1-E-S-1	03-May-2021	HK2117149-013		3.4	----	----	----	----
G1-E-S-2	03-May-2021	HK2117149-014		3.2	----	----	----	----
G1-E-M-1	03-May-2021	HK2117149-015		3.6	----	----	----	----
G1-E-M-2	03-May-2021	HK2117149-016		4.4	----	----	----	----
G1-E-B-1	03-May-2021	HK2117149-017		3.7	----	----	----	----
G1-E-B-2	03-May-2021	HK2117149-018		4.4	----	----	----	----
G2-E-S-1	03-May-2021	HK2117149-019		3.3	----	----	----	----
G2-E-S-2	03-May-2021	HK2117149-020		3.4	----	----	----	----
G2-E-M-1	03-May-2021	HK2117149-021		2.6	----	----	----	----
G2-E-M-2	03-May-2021	HK2117149-022		2.9	----	----	----	----
G2-E-B-1	03-May-2021	HK2117149-023		2.7	----	----	----	----
G2-E-B-2	03-May-2021	HK2117149-024		2.8	----	----	----	----
C1-E-S-1	03-May-2021	HK2117149-025		3.4	----	----	----	----
C1-E-S-2	03-May-2021	HK2117149-026		3.4	----	----	----	----
C1-E-M-1	03-May-2021	HK2117149-027		3.7	----	----	----	----
C1-E-M-2	03-May-2021	HK2117149-028		3.3	----	----	----	----
C1-E-B-1	03-May-2021	HK2117149-029		5.0	----	----	----	----
C1-E-B-2	03-May-2021	HK2117149-030		4.9	----	----	----	----
IM1-F-S-1	03-May-2021	HK2117149-031		2.8	----	----	----	----
IM1-F-S-2	03-May-2021	HK2117149-032		2.4	----	----	----	----
IM1-F-M-1	03-May-2021	HK2117149-033		3.2	----	----	----	----

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	----	----	----	----
IM1-F-M-2	03-May-2021	HK2117149-034		3.8	----	----	----	----
IM1-F-B-1	03-May-2021	HK2117149-035		4.0	----	----	----	----
IM1-F-B-2	03-May-2021	HK2117149-036		3.4	----	----	----	----
IM2-F-S-1	03-May-2021	HK2117149-037		4.3	----	----	----	----
IM2-F-S-2	03-May-2021	HK2117149-038		4.4	----	----	----	----
IM2-F-B-1	03-May-2021	HK2117149-041		3.1	----	----	----	----
IM2-F-B-2	03-May-2021	HK2117149-042		4.2	----	----	----	----
G1-F-S-1	03-May-2021	HK2117149-043		2.8	----	----	----	----
G1-F-S-2	03-May-2021	HK2117149-044		2.5	----	----	----	----
G1-F-M-1	03-May-2021	HK2117149-045		3.3	----	----	----	----
G1-F-M-2	03-May-2021	HK2117149-046		4.0	----	----	----	----
G1-F-B-1	03-May-2021	HK2117149-047		3.5	----	----	----	----
G1-F-B-2	03-May-2021	HK2117149-048		4.2	----	----	----	----
G2-F-S-1	03-May-2021	HK2117149-049		4.0	----	----	----	----
G2-F-S-2	03-May-2021	HK2117149-050		4.5	----	----	----	----
G2-F-M-1	03-May-2021	HK2117149-051		3.6	----	----	----	----
G2-F-M-2	03-May-2021	HK2117149-052		4.2	----	----	----	----
G2-F-B-1	03-May-2021	HK2117149-053		3.5	----	----	----	----
G2-F-B-2	03-May-2021	HK2117149-054		3.0	----	----	----	----
C1-F-S-1	03-May-2021	HK2117149-055		4.8	----	----	----	----
C1-F-S-2	03-May-2021	HK2117149-056		4.6	----	----	----	----
C1-F-M-1	03-May-2021	HK2117149-057		3.5	----	----	----	----
C1-F-M-2	03-May-2021	HK2117149-058		3.5	----	----	----	----
C1-F-B-1	03-May-2021	HK2117149-059		3.5	----	----	----	----
C1-F-B-2	03-May-2021	HK2117149-060		3.6	----	----	----	----

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: 3658125)								
HK2117149-001	IM1-E-S-1	EA025: Suspended Solids (SS)	----	0.5	mg/L	2.3	2.0	12.6
HK2117149-013	G1-E-S-1	EA025: Suspended Solids (SS)	----	0.5	mg/L	3.4	3.7	9.12
EA/ED: Physical and Aggregate Properties (QC Lot: 3658126)								
HK2117149-023	G2-E-B-1	EA025: Suspended Solids (SS)	----	0.5	mg/L	2.7	2.6	0.00
HK2117149-033	IM1-F-M-1	EA025: Suspended Solids (SS)	----	0.5	mg/L	3.2	3.6	10.3
EA/ED: Physical and Aggregate Properties (QC Lot: 3658127)								
HK2117149-045	G1-F-M-1	EA025: Suspended Solids (SS)	----	0.5	mg/L	3.3	3.7	12.2
HK2117149-055	C1-F-S-1	EA025: Suspended Solids (SS)	----	0.5	mg/L	4.8	5.0	3.54

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: 3658125)											
EA025: Suspended Solids (SS)	----	0.5	mg/L	<0.5	20 mg/L	104	----	85.9	117	----	----
EA/ED: Physical and Aggregate Properties (QCLot: 3658126)											
EA025: Suspended Solids (SS)	----	0.5	mg/L	<0.5	20 mg/L	109	----	85.9	117	----	----
EA/ED: Physical and Aggregate Properties (QCLot: 3658127)											
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 POST PROJECT WATER QUALITY MONITORING RESULTS (ZONE A)

Figure D1 Surface and Mid-depth Dissolved Oxygen at Sampling Stations during Cable Installation Works within Zone A

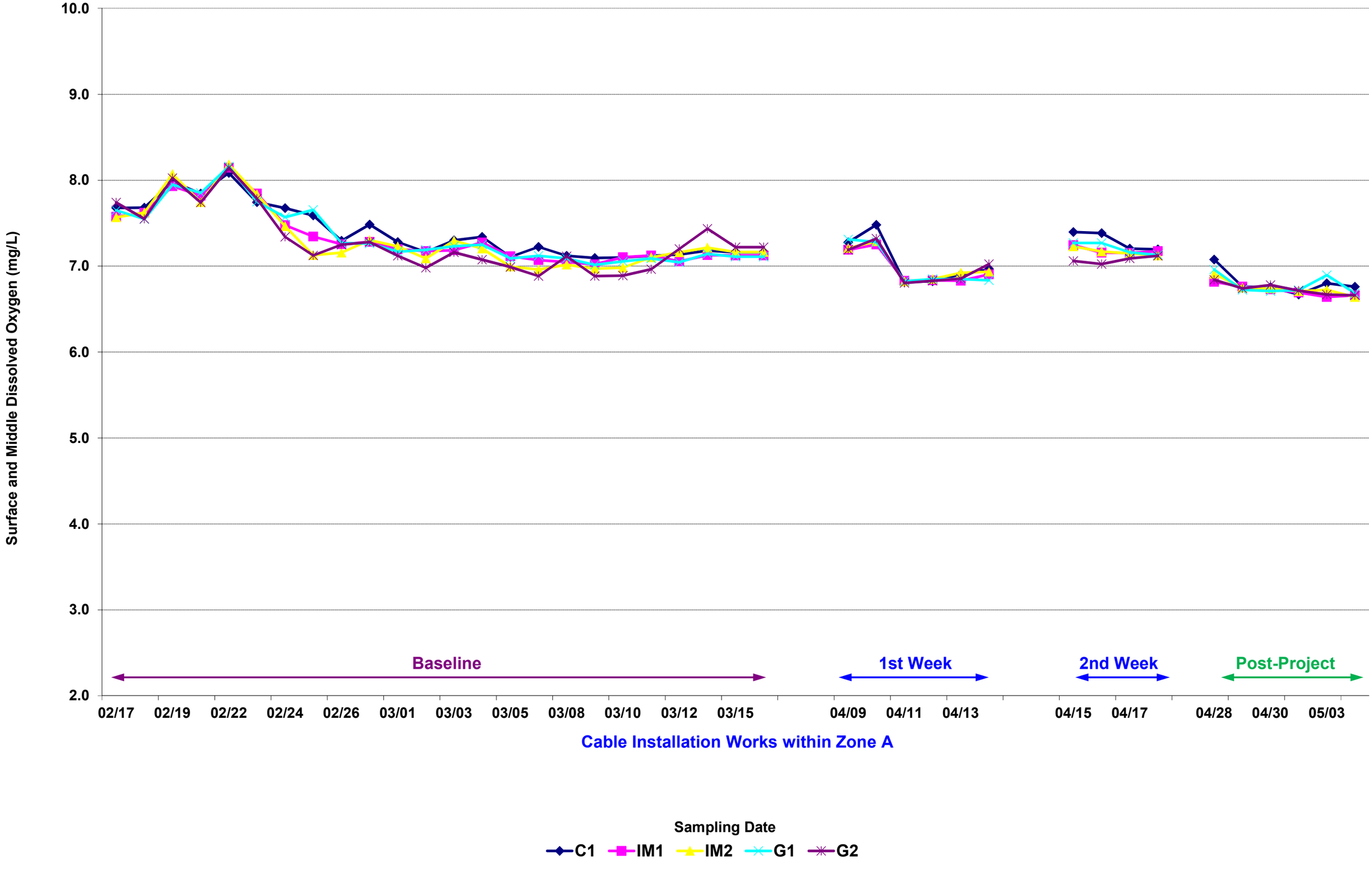


Figure D2 Bottom Dissolved Oxygen at Sampling Stations during Cable Installation Works within Zone A

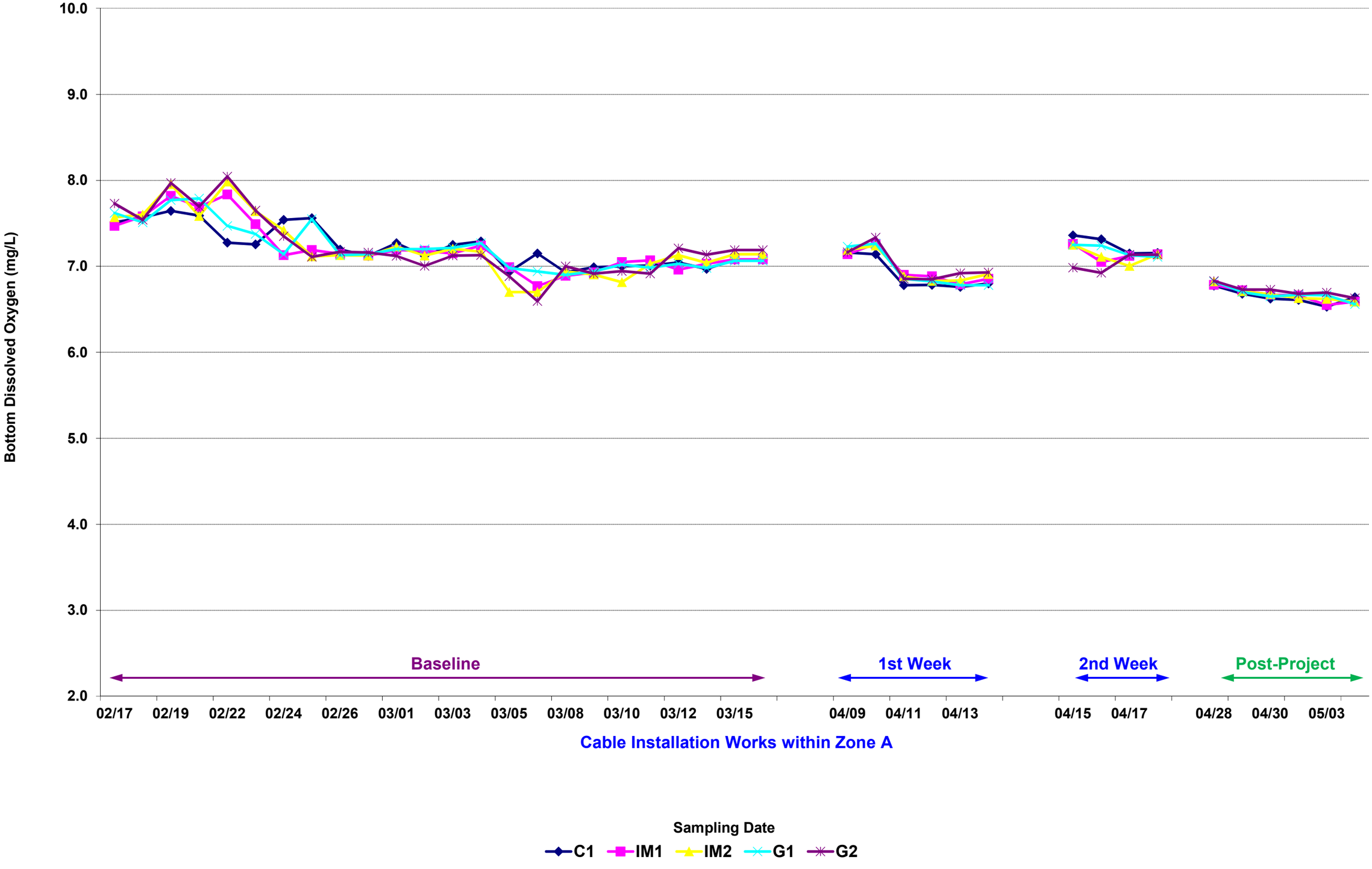


Figure D3 Depth-averaged Turbidity at Sampling Stations during Cable Installation Works within Zone A

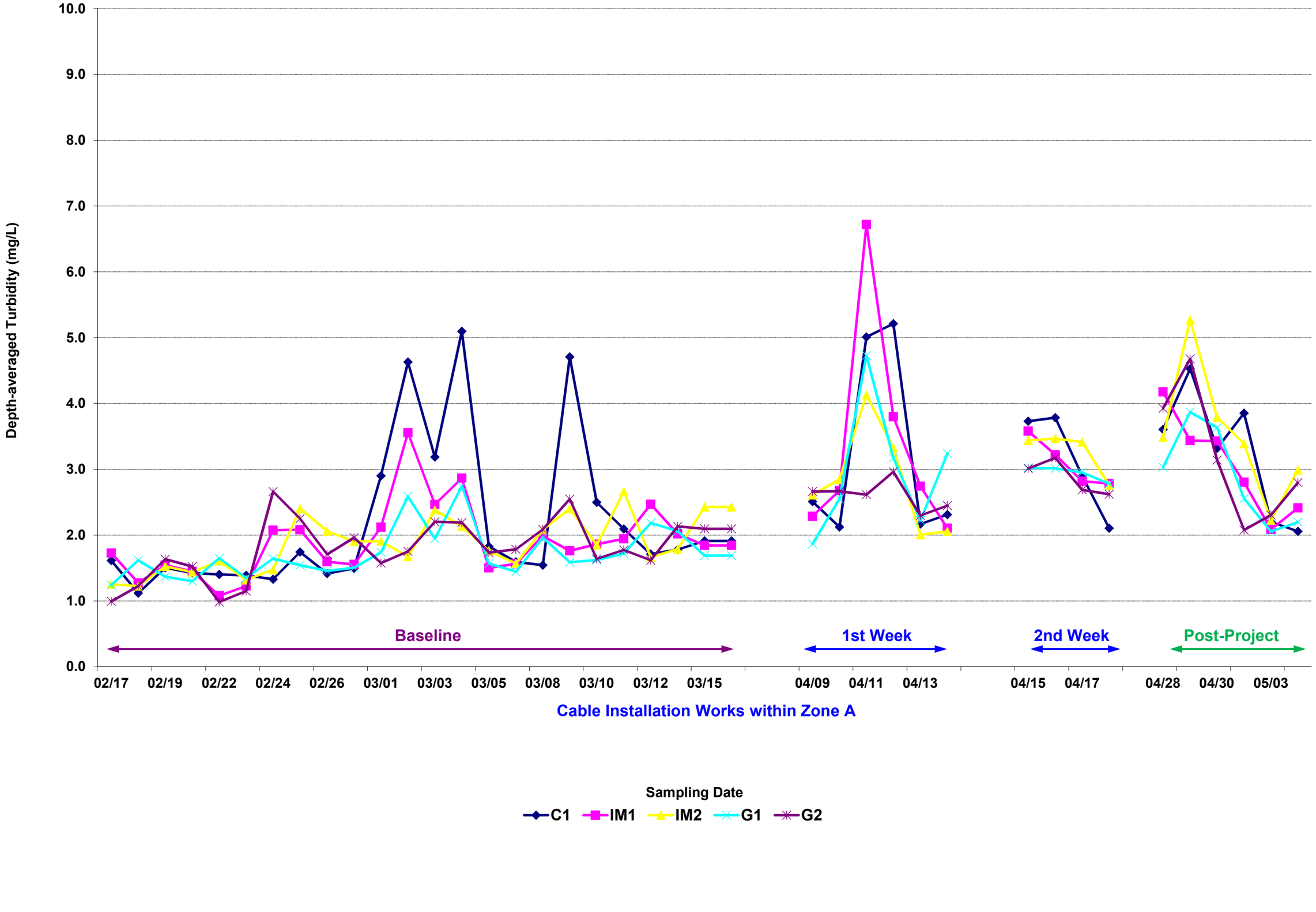
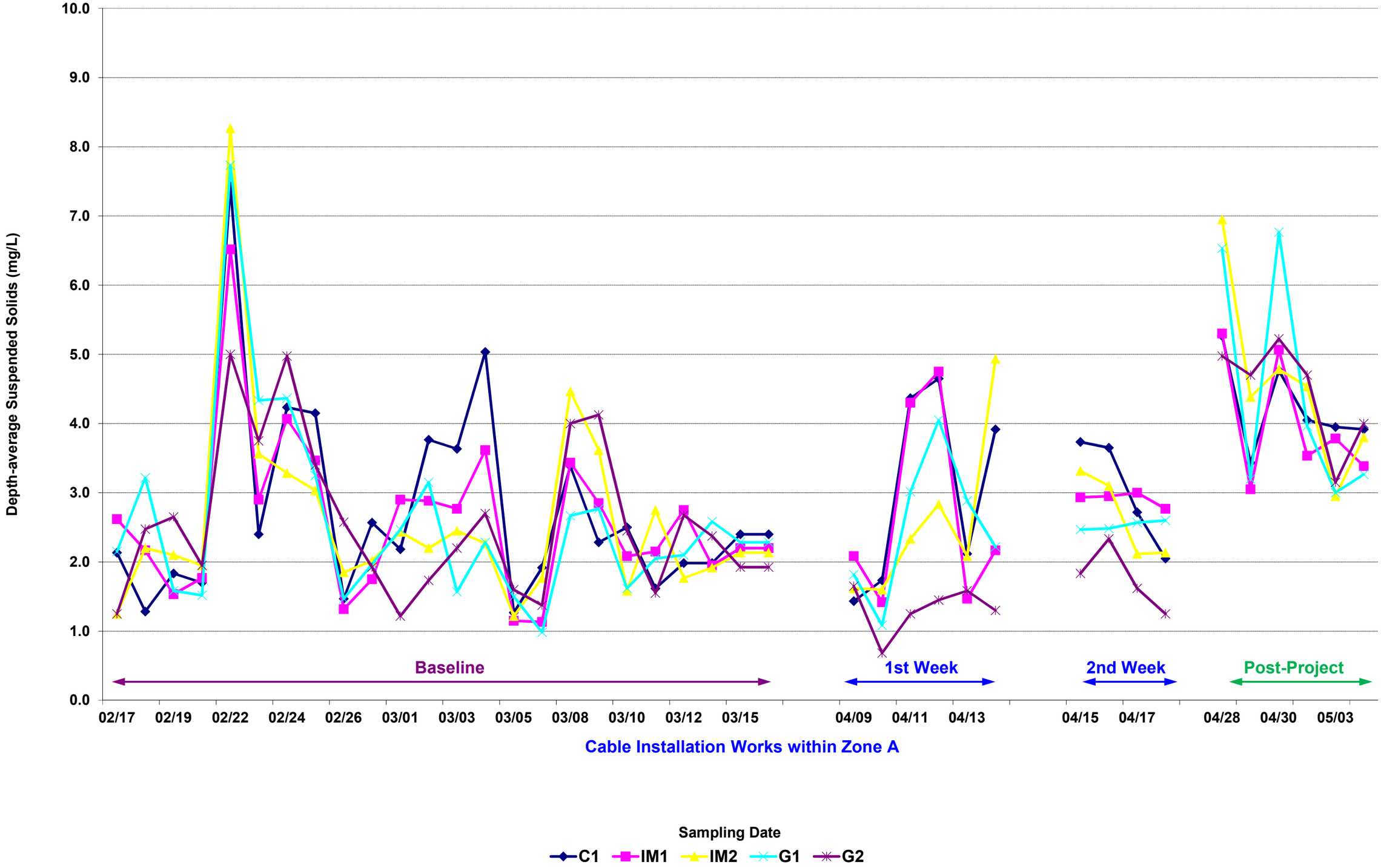


Figure D4 Depth-average Suspended Solids at Sampling Stations during Cable Installation Works within Zone A



Water Quality Monitoring Data Log Sheet **28-Apr-2021** **Tide: Mid-Ebb**

Monitoring Station	Weather Condition	Sea Condition**	Sampling Time	Water Depth (m)	Depth Level ***	Current Velocity (m/s)	CurrentDirection	Temperature (^{o}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*
C1	Cloudy	Moderate	11:17	22.6	S	2.33	225	24.4	24.4	33.96	33.96	8.18	8.18	107.9	107.7	7.43	7.42	7.08	1.75	1.77	3.60	5.1	5.7	5.3
						2.44	240	24.4		33.96		8.18		107.5		7.40			1.79			6.2		
					M	2.40	222	23.8	23.8	34.81	34.81	8.16	8.16	97.4	97.4	6.74	6.74		3.21	3.24		4.9	5.3	
						2.50	231	23.8		34.81		8.16		97.3		6.74			3.27			5.7		
					B	2.87	221	23.8	23.8	34.85	34.85	8.19	8.19	97.7	97.8	6.77	6.78		5.90	5.80		4.9	4.9	
						2.95	225	23.8		34.84		8.18		97.9		6.78			5.70			4.8		
IM1	Cloudy	Moderate	11:29	19.4	S	0.46	229	24.1	24.1	34.66	34.66	8.16	8.16	102.4	102.4	7.06	7.06	6.96	2.28	2.30	3.03	6.3	6.2	6.5
						0.49	229	24.1		34.65		8.16		102.4		7.05			2.31			6.1		
					M	0.75	66	24.0	24.0	34.85	34.86	8.17	8.17	99.6	99.6	6.87	6.87		3.08	3.08		6.4	6.7	
						0.76	71	24.0		34.86		8.17		99.5		6.86			3.08			7.0		
					B	1.25	70	23.8	23.8	34.96	34.96	8.18	8.18	98.6	98.7	6.82	6.83		3.77	3.72		7.2	6.7	
						1.27	71	23.8		34.95		8.18		98.8		6.83			3.66			6.2		
IM2	Cloudy	Moderate	11:56	5.2	S	2.57	284	23.8	23.8	34.96	34.96	8.26	8.27	99.0	99.0	6.84	6.84	6.84	3.40	3.25	3.93	4.1	4.3	5.0
						2.78	291	23.8		34.96		8.27		99.0		6.84			3.10			4.5		
					M	0.00	0		-		-		-		-		-			-			-		
						0.00	0																	
					B	2.76	283	23.8	23.8	34.99	35.00	8.29	8.30	98.8	98.8	6.83	6.83		4.50	4.60		5.1	5.7	
						2.94	294	23.8		35.00		8.30		98.8		6.83			4.70			6.2		
G1	Cloudy	Moderate	11:37	17.8	S	0.58	6	24.1	24.1	34.97	34.97	8.16	8.16	99.9	99.8	6.88	6.87	6.82	2.46	2.53	4.18	4.6	4.5	5.3
						0.63	6	24.0		34.97		8.16		99.6		6.86			2.60			4.4		
					M	0.42	16	23.7	23.7	34.97	34.97	8.18	8.18	97.7	97.7	6.77	6.77		3.43	3.50		4.7	5.3	
						0.44	16	23.7		34.97		8.18		97.7		6.76			3.56			5.8		
					B	0.53	39	23.7	23.7	34.97	34.97	8.18	8.18	97.9	98.0	6.78	6.79		6.50	6.50		7.4	6.2	
						0.54	42	23.7		34.97		8.17		98.1		6.79			6.50			4.9		
G2	Cloudy	Moderate	11:49	7.7	S	2.87	181	24.2	24.2	34.96	34.97	8.17	8.18	101.6	101.5	6.97	6.97	6.91	2.41	2.43	3.49	6.3	6.1	7.0
						3.00	184	24.2		34.97		8.18		101.3		6.96			2.45			5.9		
					M	2.53	180	23.8	23.8	34.97	34.97	8.19	8.20	99.1	99.1	6.86	6.86		2.67	2.71		6.1	5.9	
						2.59	184	23.8		34.97		8.20		99.0		6.85			2.74			5.7		
					B	2.74	180	23.7	23.7	34.97	34.97	8.19	8.19	98.5	98.6	6.82	6.83		5.21	5.33		9.6	8.9	
						2.79	180	23.7		34.97		8.18		98.7		6.83			5.44			8.1		

Remark: * DA: Depth-Averaged
***** S: 1 m below the sea surface; M: mid-depth; S: 1 m above the seabed**

Water Quality Monitoring Data Log Sheet **28-Apr-2021** **Tide: Mid-Flood**

Monitoring Station	Weather Condition	Sea Condition**	Sampling Time	Water Depth (m)	Depth Level ***	Current Velocity (m/s)	CurrentDirection	Temperature (^{o}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*
C1	Cloudy	Moderate	06:48	23.1	S	0.18	56	23.8	23.8	34.99	34.99	8.18	8.18	98.2	98.2	6.79	6.79	6.76	2.97	2.98	4.53	2.4	2.6	3.4
						0.19	61	23.8		34.99		8.18		98.2		6.79			2.99			2.8		
					M	3.15	6	23.7	23.7	34.98	34.98	8.20	8.20	97.1	97.1	6.73	6.73		3.11	3.12		3.1	2.8	
						3.30	6	23.7		34.98		8.20		97.0		6.73			3.13			2.5		
					B	3.22	2	23.7	23.7	34.99	34.99	8.24	8.24	96.4	96.4	6.68	6.68		7.36	7.48		3.0	4.9	
						3.44	2	23.7		34.99		8.24		96.4		6.68			7.60			6.8		
IM1	Cloudy	Moderate	06:56	20.1	S	2.74	51	23.7	23.7	34.97	34.97	8.15	8.15	97.3	97.3	6.74	6.74	6.73	4.12	4.14	3.87	3.8	3.6	3.2
						2.94	54	23.7		34.97		8.15		97.2		6.74			4.15			3.3		
					M	2.92	55	23.7	23.7	34.99	34.99	8.15	8.15	96.9	96.9	6.71	6.71		3.57	3.62		3.9	3.6	
						2.93	56	23.6		34.99		8.15		96.8		6.71			3.66			3.3		
					B	2.68	46	23.7	23.7	34.99	34.99	8.14	8.14	96.6	96.6	6.70	6.70		3.85	3.86		2.6	2.5	
						2.83	47	23.7		34.99		8.14		96.6		6.70			3.87			2.3		
IM2	Cloudy	Moderate	07:19	5.9	S	0.04	335	23.8	23.8	34.99	34.99	8.17	8.17	97.5	97.5	6.74	6.74	6.74	3.52	3.69	4.68	6.4	6.4	4.7
						0.04	351	23.8		34.99		8.17		97.4		6.74			3.86			6.3		
					M	0.00	0		-		-		-		-		-			-			-		
						0.00	0																	
					B	0.03	338	23.7	23.7	35.01	35.01	8.15	8.15	97.1	97.2	6.73	6.73		5.63	5.67		2.7	3.1	
						0.03	355	23.7		35.01		8.14		97.2		6.73			5.70			3.4		
G1	Cloudy	Moderate	07:10	18.4	S	2.81	99	23.8	23.8	34.97	34.97	8.15	8.15	98.4	98.4	6.80	6.80	6.76	2.74	2.75	3.44	3.5	3.6	3.1
						2.85	101	23.8		34.97		8.15		98.3		6.80			2.76			3.6		
					M	2.87	95	23.7	23.7	34.99	34.99	8.15	8.15	97.0	97.0	6.73	6.73		3.50	3.54		3.2	2.9	
						2.89	102	23.7		34.99		8.15		97.0		6.72			3.57			2.5		
					B	2.86	98	23.7	23.7	34.99	34.99	8.16	8.16	96.9	97.0	6.72	6.72		4.08	4.03		2.4	2.8	
						2.90	99	23.7		34.99		8.16		97.0		6.72			3.97			3.1		
G2	Cloudy	Moderate	07:13	9.7	S	1.11	43	23.8	23.8	34.98	34.98	8.16	8.16	97.9	97.9	6.77	6.77	6.75	3.32	3.39	5.27	4.2	4.8	4.4
						1.12	45	23.7		34.98		8.16		97.8		6.77			3.46			5.3		
					M	1.42	54	23.7	23.7	34.99	34.99	8.16	8.17	97.1	97.1	6.73	6.73		5.30	5.38		3.7	4.3	
						1.45	54	23.7		34.99		8.17		97.1		6.73			5.46			4.8		
					B	1.22	59	23.7	23.7	34.99	34.99	8.17	8.17	96.9	96.9	6.71	6.71		6.54	7.05		3.8	4.2	
						1.30	60	23.7		34.99		8.16		96.9		6.71			7.55			4.5		

Remark: * DA: Depth-Averaged
***** S: 1 m below the sea surface; M: mid-depth; S: 1 m above the seabed**

Water Quality Monitoring Data Log Sheet **30-Apr-2021** **Tide: Mid-Ebb**

Monitoring Station	Weather Condition	Sea Condition**	Sampling Time	Water Depth (m)	Depth Level ***	Current Velocity (m/s)	CurrentDirection	Temperature (^{o}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*
C1	Fine	Moderate	12:38	24	S	0.26	159	24.6	24.6	34.76	34.77	8.19	8.19	99.4	99.4	6.79	6.80	6.76	2.16	2.18	3.32	5.3	5.1	4.8
						0.27	159	24.5		34.77		8.19		99.4		6.80			2.20			4.9		
					M	0.29	148	23.8	23.8	34.80	34.80	8.24	8.24	97.1	97.1	6.72	6.72		1.71	1.73		5.6	5.2	
						0.32	157	23.8		34.80		8.24		97.0		6.71			1.74			4.8		
					B	0.30	146	23.8	23.8	34.84	34.84	8.32	8.33	95.8	95.8	6.62	6.63		6.02	6.05		4.3	4.0	
						0.31	153	23.8		34.84		8.33		95.8		6.63			6.08			3.7		
IM1	Fine	Moderate	12:49	20.9	S	0.25	166	24.0	24.0	34.80	34.80	8.14	8.14	97.6	97.6	6.73	6.73	6.71	3.08	3.08	3.63	6.4	6.5	6.8
						0.25	170	24.0		34.80		8.14		97.6		6.73			3.07			6.6		
					M	0.25	155	23.8	23.8	34.80	34.80	8.16	8.16	96.7	96.7	6.69	6.69		2.82	2.82		7.4	6.9	
						0.27	168	23.8		34.80		8.16		96.7		6.69			2.81			6.3		
					B	0.30	160	23.8	23.8	34.78	34.78	8.19	8.19	96.1	96.1	6.65	6.65		4.99	5.01		7.5	7.0	
						0.32	169	23.8		34.78		8.19		96.1		6.65			5.02			6.4		
IM2	Fine	Calm	13:10	5.8	S	0.03	84	24.2	24.2	34.77	34.77	8.15	8.15	98.6	98.6	6.78	6.78	6.78	2.67	2.68	3.14	5.5	5.1	5.2
						0.03	88	24.2		34.77		8.15		98.6		6.78			2.69			4.6		
					M	0.00	0		-		-		-		-		-			-			-		
						0.00	0																	
					B	0.04	128	24.0	24.0	34.81	34.81	8.18	8.18	97.5	97.5	6.73	6.73		3.60	3.60		5.9	5.4	
						0.04	138	24.0		34.81		8.18		97.5		6.73			3.59			4.9		
G1	Fine	Moderate	12:56	18.1	S	0.13	204	24.3	24.3	34.85	34.86	8.14	8.14	98.9	98.6	6.78	6.77	6.73	2.45	2.50	3.43	4.2	4.4	5.1
						0.13	215	24.2		34.86		8.14		98.3		6.76			2.55			4.5		
					M	0.12	204	23.8	23.8	34.85	34.85	8.15	8.15	96.7	96.7	6.69	6.69		3.01	3.04		4.7	5.0	
						0.12	208	23.8		34.85		8.15		96.7		6.69			3.07			5.2		
					B	0.15	207	23.8	23.8	34.86	34.86	8.16	8.17	96.4	96.4	6.67	6.67		4.67	4.75		5.6	5.9	
						0.16	218	23.8		34.85		8.17		96.4		6.67			4.83			6.2		
G2	Fine	Calm	13:04	9.9	S	0.08	320	24.4	24.4	34.73	34.74	8.14	8.14	99.2	99.2	6.80	6.80	6.74	2.35	2.35	3.79	4.7	4.6	4.8
						0.09	323	24.4		34.74		8.14		99.2		6.80			2.35			4.5		
					M	0.08	274	23.8	23.8	34.84	34.84	8.16	8.16	96.5	96.5	6.68	6.68		3.95	3.96		4.2	4.3	
						0.09	280	23.8		34.84		8.16		96.5		6.68			3.97			4.4		
					B	0.10	280	23.8	23.8	34.84	34.84	8.18	8.19	96.5	96.5	6.67	6.68		5.08	5.07		5.0	5.5	
						0.11	299	23.8		34.84		8.19		96.5		6.68			5.05			5.9		

Remark: * DA: Depth-Averaged
***** S: 1 m below the sea surface; M: mid-depth; S: 1 m above the seabed**

Water Quality Monitoring Data Log Sheet **30-Apr-2021** **Tide: Mid-Flood**

Monitoring Station	Weather Condition	Sea Condition**	Sampling Time	Water Depth (m)	Depth Level ***	Current Velocity (m/s)	CurrentDirection	Temperature (^{o}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*
C1	Cloudy	Moderate	08:53	24.5	S	0.18	316	23.9	23.9	34.83	34.83	8.17	8.17	96.8	96.8	6.69	6.69	6.67	2.63	2.66	3.85	1.5	1.8	4.1
						0.19	333	23.8		34.83		8.17		96.8		6.69			2.69			2.0		
					M	0.11	345	23.8	23.8	34.84	34.84	8.17	8.17	96.0	96.0	6.65	6.65		3.41	3.42		4.8	5.1	
						0.11	317.4	23.8		34.84		8.17		96.0		6.65			3.43			5.4		
					B	0.08	43	23.8	23.8	34.83	34.83	8.18	8.18	95.5	95.5	6.61	6.61		5.41	5.48		5.6	5.3	
						0.08	43	23.8		34.83		8.18		95.5		6.61			5.54			5.0		
IM1	Cloudy	Moderate	09:00	20.4	S	0.11	75	24.0	24.0	34.81	34.81	8.14	8.14	97.7	97.7	6.74	6.74	6.72	2.08	2.08	2.56	3.8	3.6	4.0
						0.12	80	24.0		34.80		8.14		97.7		6.74			2.07			3.4		
					M	0.07	53	23.8	23.8	34.77	34.77	8.15	8.15	96.7	96.7	6.70	6.70		2.57	2.58		3.5	3.8	
						0.07	53	23.8		34.77		8.15		96.7		6.70			2.59			4.1		
					B	0.08	83	23.8	23.8	34.57	34.56	8.14	8.14	96.1	96.1	6.67	6.67		2.99	3.02		4.2	4.5	
						0.09	91	23.8		34.54		8.14		96.1		6.67			3.04			4.8		
IM2	Cloudy	Calm	09:22	5.9	S	0.08	56	24.0	24.0	34.53	34.54	8.13	8.13	97.2	97.2	6.72	6.72	6.72	2.03	2.04	2.08	3.7	4.3	4.7
						0.08	56	24.0		34.54		8.13		97.1		6.71			2.04			4.8		
					M	0.00	0		-		-		-		-		-			-			-		
						0.00	0																	
					B	0.06	336	23.9	23.9	34.56	34.56	8.13	8.13	96.6	96.6	6.68	6.68		2.12	2.12		5.0	5.2	
						0.06	351	23.9		34.55		8.13		96.5		6.68			2.12			5.3		
G1	Cloudy	Moderate	09:08	17.8	S	0.24	57	23.9	23.9	34.80	34.80	8.14	8.14	96.9	96.9	6.70	6.70	6.69	2.69	2.68	2.81	2.7	2.9	3.5
						0.25	60	23.9		34.80		8.14		96.9		6.70			2.67			3.0		
					M	0.26	77	23.8	23.8	34.76	34.76	8.14	8.14	96.6	96.6	6.69	6.69		2.52	2.56		3.2	3.4	
						0.27	80	23.8		34.75		8.14		96.6		6.68			2.60			3.5		
					B	0.20	59	23.8	23.8	34.67	34.67	8.14	8.14	96.2	96.2	6.66	6.66		3.17	3.18		4.2	4.4	
						0.21	60	23.8		34.66		8.14		96.2		6.66			3.18			4.6		
G2	Cloudy	Calm	09:15	9.7	S	0.23	13	24.0	24.0	34.69	34.69	8.14	8.14	97.4	97.5	6.73	6.73	6.71	2.12	2.12	3.39	5.3	5.7	4.5
						0.25	13	24.0		34.69		8.14		97.5		6.73			2.12			6.0		
					M	0.12	12	23.9	23.9	34.70	34.70	8.14	8.14	96.7	96.6	6.69	6.69		2.52	2.69		4.5	4.7	
						0.12	12	23.8		34.70		8.14		96.5		6.68			2.85			4.8		
					B	0.09	333	23.8	23.8	34.67	34.67	8.14	8.14	95.7	95.7	6.63	6.63		5.26	5.36		3.6	3.3	
						0.10	306.36	23.8		34.67		8.14		95.6		6.63			5.46			3.0		

Remark: * DA: Depth-Averaged
***** S: 1 m below the sea surface; M: mid-depth; S: 1 m above the seabed**

Water Quality Monitoring Data Log Sheet **3-May-2021** **Tide: Mid-Ebb**

Monitoring Station	Weather Condition	Sea Condition**	Sampling Time	Water Depth (m)	Depth Level ***	Current Velocity (m/s)	CurrentDirection	Temperature (^{o}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*
C1	Cloudy	Rough	15:37	24	S	0.39	215	24.4	24.4	34.38	34.38	8.22	8.22	101.5	101.5	6.97	6.97	6.80	1.57	1.57	2.20	3.4	3.4	4.0
						0.42	223	24.4		34.38		8.22		101.4		6.97			1.57			3.4		
					M	0.23	161	24.1	24.1	34.76	34.76	8.22	8.22	96.4	96.4	6.63	6.63		2.33	2.34		3.7	3.5	
						0.25	163	24.1		34.76		8.22		96.3		6.63			2.35			3.3		
					B	0.18	125	24.1	24.1	34.82	34.82	8.24	8.24	94.7	94.7	6.53	6.53		2.64	2.69		5.0	5.0	
						0.19	132	24.1		34.82		8.24		94.7		6.53			2.74			4.9		
IM1	Cloudy	Rough	16:02	19.9	S	0.39	220	24.5	24.5	34.34	34.34	8.22	8.22	102.3	102.3	7.02	7.02	6.90	1.50	1.50	2.05	2.3	2.4	3.0
						0.42	224	24.5		34.34		8.22		102.3		7.02			1.49			2.4		
					M	0.39	174	24.3	24.3	34.52	34.52	8.22	8.22	98.4	98.4	6.77	6.77		2.02	2.02		2.4	2.4	
						0.41	185	24.3		34.52		8.22		98.4		6.77			2.01			2.3		
					B	0.39	167	24.2	24.2	34.61	34.61	8.25	8.25	96.8	96.8	6.66	6.67		2.64	2.65		4.1	4.3	
						0.41	180	24.2		34.61		8.25		96.8		6.67			2.66			4.5		
IM2	Cloudy	Calm	16:29	5.6	S	0.21	64	24.1	24.1	34.87	34.87	8.24	8.24	96.9	96.9	6.67	6.67	6.67	2.30	2.31	2.31	2.8	3.4	3.2
						0.22	66	24.1		34.87		8.24		96.9		6.67			2.31			3.9		
					M	0.00	0		-		-		-		-		-			-			-		
						0.00	0																	
					B	0.12	83	24.0	24.0	34.87	34.87	8.27	8.28	97.1	97.2	6.69	6.70		2.30	2.31		3.3	3.0	
						0.13	85	24.0		34.87		8.28		97.2		6.70			2.31			2.6		
G1	Cloudy	Moderate	16:11	17.8	S	0.21	274	24.1	24.1	34.73	34.73	8.21	8.21	97.0	97.0	6.68	6.68	6.64	1.88	1.89	2.09	3.4	3.3	3.8
						0.22	291	24.1		34.73		8.21		97.0		6.68			1.89			3.2		
					M	0.06	228	24.1	24.1	34.77	34.77	8.22	8.22	95.8	95.8	6.60	6.60		2.01	2.03		3.6	4.0	
						0.06	248	24.1		34.77		8.22		95.7		6.60			2.04			4.4		
					B	0.06	264	24.0	24.0	34.81	34.81	8.25	8.25	94.9	95.0	6.55	6.55		2.36	2.35		3.7	4.1	
						0.06	285	24.0		34.81		8.25		95.0		6.55			2.34			4.4		
G2	Cloudy	Moderate	16:22	9.4	S	0.07	250	24.1	24.1	34.85	34.85	8.22	8.22	97.8	97.8	6.73	6.73	6.73	2.00	2.00	2.23	3.3	3.4	3.0
						0.08	273	24.1		34.85		8.22		97.8		6.73			1.99			3.4		
					M	0.01	315	24.1	24.1	34.85	34.85	8.23	8.23	97.6	97.6	6.72	6.72		1.99	1.99		2.6	2.8	
						0.01	321	24.1		34.85		8.23		97.6		6.72			1.99			2.9		
					B	0.03	305	24.0	24.0	34.89	34.89	8.29	8.29	96.0	96.0	6.62	6.62		2.69	2.69		2.7	2.8	
						0.03	315	24.0		34.89		8.29		96.0		6.62			2.69			2.8		

Remark: * DA: Depth-Averaged
***** S: 1 m below the sea surface; M: mid-depth; S: 1 m above the seabed**

Water Quality Monitoring Data Log Sheet **3-May-2021** **Tide: Mid-Flood**

Monitoring Station	Weather Condition	Sea Condition**	Sampling Time	Water Depth (m)	Depth Level ***	Current Velocity (m/s)	CurrentDirection	Temperature (^{o}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*
C1	Cloudy	Rough	03:12	23.9	S	0.33	278	24.4	24.4	34.21	34.21	8.22	8.22	99.9	99.8	6.87	6.87	6.76	1.76	1.77	2.06	4.8	4.7	3.9
						0.35	283	24.4		34.21		8.22		99.7		6.86			1.77			4.6		
					M	0.15	309	24.1	24.1	34.46	34.46	8.23	8.23	96.5	96.5	6.66	6.66		2.15	2.16		3.5	3.5	
						0.15	330	24.1		34.46		8.23		96.4		6.65			2.16			3.5		
					B	0.12	14	24.1	24.1	34.31	34.30	8.25	8.25	96.1	96.1	6.64	6.64		2.25	2.25		3.5	3.6	
						0.13	15	24.1		34.29		8.25		96.1		6.64			2.24			3.6		
IM1	Cloudy	Rough	03:35	20.4	S	0.26	231	24.3	24.3	34.46	34.46	8.21	8.21	97.9	97.9	6.74	6.74	6.69	1.83	1.83	2.20	2.8	2.6	3.3
						0.28	238	24.3		34.46		8.21		97.9		6.74			1.83			2.4		
					M	0.24	188	24.0	24.0	34.75	34.75	8.22	8.22	96.1	96.1	6.63	6.63		1.96	1.96		3.2	3.5	
						0.26	190	24.0		34.75		8.22		96.1		6.63			1.95			3.8		
					B	0.23	165	24.0	24.0	34.85	34.85	8.25	8.25	95.1	95.1	6.56	6.56		2.70	2.81		4.0	3.7	
						0.25	173	24.0		34.85		8.25		95.1		6.56			2.91			3.4		
IM2	Cloudy	Moderate	03:58	5.4	S	0.06	35	24.1	24.1	34.81	34.81	8.23	8.23	96.6	96.6	6.66	6.66	6.66	2.32	2.32	2.80	4.3	4.4	4.0
						0.06	36	24.1		34.81		8.23		96.6		6.66			2.32			4.4		
					M	0.00	0		-		-		-		-		-			-			-		
						0.00	0																	
					B	0.06	327	24.0	24.0	34.86	34.86	8.28	8.28	96.0	96.1	6.63	6.63		3.25	3.28		3.1	3.7	
						0.06	358	24.0		34.86		8.28		96.1		6.63			3.30			4.2		
G1	Cloudy	Rough	03:42	18	S	0.16	74	24.1	24.1	34.70	34.70	8.20	8.20	96.6	96.6	6.66	6.66	6.66	2.34	2.34	2.41	2.8	2.7	3.4
						0.17	77	24.1		34.70		8.20		96.6		6.66			2.33			2.5		
					M	0.19	65	24.0	24.0	34.76	34.76	8.21	8.21	96.5	96.5	6.66	6.66		1.89	1.89		3.3	3.7	
						0.21	69	24.0		34.76		8.21		96.5		6.66			1.88			4.0		
					B	0.16	69	24.0	24.0	34.84	34.84	8.23	8.23	95.5	95.5	6.59	6.59		3.05	3.02		3.5	3.9	
						0.18	72	24.0		34.84		8.23		95.5		6.59			2.99			4.2		
G2	Cloudy	Moderate	03:51	9.5	S	0.02	344	24.0	24.0	34.80	34.81	8.22	8.22	96.8	96.8	6.68	6.68	6.64	2.35	2.36	2.99	4.0	4.3	3.8
						0.02	344	24.0		34.81		8.22		96.8		6.67			2.37			4.5		
					M	0.05	43	24.0	24.0	34.87	34.87	8.23	8.23	95.8	95.8	6.61	6.61		2.72	2.79		3.6	3.9	
						0.05	44	24.0		34.87		8.23		95.7		6.60			2.85			4.2		
					B	0.04	16	24.0	24.0	34.87	34.87	8.27	8.27	95.4	95.5	6.59	6.59		3.85	3.82		3.5	3.3	
						0.04	17	24.0		34.87		8.27		95.5		6.59			3.79			3.0		

Remark: * DA: Depth-Averaged
***** S: 1 m below the sea surface; M: mid-depth; S: 1 m above the seabed**

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