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OPTIC MARINE SINGAPORE PTE. LTD

Bay to Bay Express Cable System - Hong Kong Segment (BtoBE-HK) – Chung Hom Kok

Monthly EM&A Report For June 2021

[07/2021]

	Name	Signature
Prepared & Checked:	Alex Chan	
Reviewed & Certified:	Lemon Lam	

Version:	Rev. 0	Date: 13 July 2021

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local people
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Our Ref: 7076640/L27649/AB/TSC/JC/rw

12 July 2021

OMS Group Sdn Bhd (previously known as Optic Marine Services Sdn Bhd)
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Laman Seri Business Park
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Selangor D.E., Malaysia

By Email Only
(david.lim@opticmarine.com)

Attention: Mr. David LIM

Dear Sir

Bay to Bay Express Cable System – Hong Kong Segment (BtoBE-HK) – Chung Hom Kok
Verification of Monthly EM&A Report for June 2021

Reference is made to the *Monthly EM&A Report for June 2021 (Rev. 0)* dated 9 July 2021, submitted by the Environmental Team via e-mail on 9 July 2021.

We hereby verify the said Monthly EM&A Report has complied with the requirement as set out under Condition 3.3 of the Environmental Permit.

Thank you very much for your kind attention. Please do not hesitate to contact the undersigned should you have any queries.

Yours faithfully

Cindy CHUNG
Independent Environmental Checker

cc: AECOM Ms. Lemon LAM (By Email: lemon.lam@aecom.com)

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EXECUTIVE SUMMARY

The impact EM&A programme for the Project commenced on 17 May 2021. The impact environmental monitoring included water quality monitoring, silt curtain monitoring and marine mammal observations.

This report documents the findings of EM&A works conducted in the period from 6 to 9 June 2021.

Breaches of Action and Limit Levels for Water Quality Monitoring

Seven (7) Action Level exceedances were recorded in the reporting period. Seven (7) recorded Action Level exceedances related to suspended solid. After investigation, the recorded Action Level exceedances were considered non-project related.

Twelve (12) Limit Level exceedances were recorded in the reporting period. Twelve (12) recorded Limit Level exceedances related to suspended solid. After investigation, the recorded Limit Level exceedances were considered non-project related.

Breaches of Limit Level for Silt Curtain Monitoring

Since no cable burial work was operated within 500m of boundary of St. Stephen's Beach, no silt curtain monitoring was conducted in the reporting period.

Marine Mammal Observation

No cetacean was observed in the exclusion zone for 30 minutes before and during the cable laying works in the reporting period.

Complaint, Notification of Summons and Successful Prosecution

No notification of environmental complaint, summons and successful prosecution was received in the reporting period.

1 INTRODUCTION

1.1 Background

1.1.1 The Bay to Bay Express (BtoBE) Cable System is a 38mm diameter submarine telecommunications cable that will further enhance and contribute to the much-needed expansion of communications networks between Hong Kong, the United States, Malaysia and Singapore. With multiple pairs of optical fibres, BtoBE will enable high capacity transmission of data across the Pacific Ocean with round trip latency of less than 130ms. BtoBE will be built with advanced optical submarine transmission equipment, thereby improving network redundancy, flexibility and ensuring highly reliable communications. The indicative alignment of the BtoBE Cable System is shown in **Figure 1.1**.

1.1.2 The total length of the whole BtoBE Cable System will be 16,000km, of which this Project – the Hong Kong Segment (BtoBE-HK) – is about 36.6km in length within Hong Kong waters. Buried below the seabed, the BtoBE-HK Cable enters the eastern waters of Hong Kong, follows the established "east-west cable corridor (north)" and lands at an existing Beach Manhole (BMH) at Sha Shek Tan Beach (SST Beach) on the Chung Hom Kok (CHK) peninsula, which is at the south side of Hong Kong Island. This is the same landing location of the existing South-East Asia Japan Cable System ("SJC") and other cables, including City-to-City Cable System ("C2C") and the East Asia Crossing + C2C cable system ("EAC-C2C").

1.1.3 CHK is an important telecommunications and media hub in Hong Kong. There are currently teleport substations, GB21 Cable Station Chung Hom Kok Teleport Substation and Smartone Station Chung Hom Kok Teleport Substation, located at CHK. It is anticipated that this area further developed to cater for more telecommunication infrastructure in the future.

1.1.4 A Project Profile was prepared to assess potential environmental impacts associated with the installation of the submarine telecommunications cable system within Hong Kong. The Project Profile was submitted to the Environmental Protection Department (EPD) under section 5(1)(b) and 5(11) of the Environmental Impact Assessment Ordinance (EIAO) for application for permission to apply directly for an Environmental Permit (EP) (Application No.: DIR-272/2020). Permission granted by EPD via an approval letter dated 2 April 2020 (Ref. EP2/H19/C/10) and the Environmental Permit (EP-573/2020) issued by the EPD on 5 May 2020.

1.1.5 The Project Profile recommended carrying out precautionary water quality monitoring to ensure no adverse impacts to the water quality, marine ecology and fisheries.

1.1.6 The impact EM&A programme for the Project commenced on 17 May 2021. The impact environmental monitoring included water quality monitoring, silt curtain monitoring and marine mammal observations.

1.2 Scope of Report

1.2.1 This is the second monthly Environmental Monitoring and Audit (EM&A) Report and this report presents a summary of the environmental monitoring and audit works, list of activities and mitigation measures of the Project in June 2021.

1.3 Project Organization

1.3.1 The project organization is shown in **Appendix A**. The key personnel contact names and numbers are summarized in **Table 1.1**.

Table 1.1 Contact Information of Key Personnel

Party	Position	Name	Telephone	Fax
IEC (SMEC Asia Limited)	Independent Environmental Checker	Cindy Chung	3995 8124	3995 8101
Contractor (OPTIC MARINE GROUP)	OSP Manager	Vincent Chia	+603 5569 3881 / +6012 670 6588	--
ET (AECOM)	ET Leader	Lemon Lam	3922 3981	2371 7609

1.4 Summary of Construction Works

1.4.1 According to the information from the Contractor, the construction works within area of Stanley Bay were completed in May 2021, the remaining construction works carried out by the Contractor in this reporting period are listed below:

- Laying and burying cable with injector
- Cable end seal capping and streaming off
- Dismantling injector

1.4.2 Environmental monitoring was conducted during the construction works carried out within Zone A, as shown in **Figure 2.1**.

1.4.3 The EM&A programme required environmental monitoring for water quality monitoring, silt curtain monitoring and marine mammal observations. The EM&A requirements for each parameter described in the following sections include:

- All monitoring parameters;
- Monitoring schedules for the reporting period;
- Action and Limit levels for all environmental parameters;
- Event / Action Plan;
- Environmental mitigation measures, as recommended in the Project Profile; and
- Environmental requirement in contract documents.

2 WATER QUALITY MONITORING

2.1 Monitoring Requirements

2.1.1 In accordance with the Project Profile, the impact water quality monitoring shall be conducted three times each week and the interval between any two sets of monitoring shall not be less than 36 hours. For each set, monitoring should undertake within a 4 hours window of 2 hours before and 2 hours after mid-flood and mid-ebb tides.

2.2 Monitoring Equipment

2.2.1 The brand and model of water quality monitoring equipment is given in **Table 2.1**.

Table 2.1 Water Quality Monitoring Equipment

Equipment	Brand and Model
Dissolved Oxygen Meter	YSI 6820 V2
Water Temperature Meter	
Salinity Meter	
Water Sampler	Kahlsico Water Sampler
Echo Sounder	Lowrance x-4
Global Positioning System	Garmin GPS72H
Air Velocity Meter	TSI TA410

2.3 Monitoring Locations

2.3.1 In accordance with the Project Profile, the stations for impact water quality monitoring are presented in **Table 2.2** and shown in **Figure 2.1**.

Table 2.2 Locations of Impact Water Quality Monitoring Stations

Type of Station	Station	Location	Easting	Northing	Closest Distance from Cable Alignment (m)
Water Quality Monitoring Station	B2	St. Stephen's Beach	840 068	808 258	253
	C3	Coral Communities at the Coast of Beaufort Island	843 179	805 885	211
	C4	Coral Communities at the Coast of Cape d' Aguilar	844 950	806 897	647
	F1	Po Toi FCZ	842 725	805 654	470
	F2	Spawning Ground of Commercial Fisheries Resources	839 231	807 458	274
	GS1	Gradient Station	839 954	808 249	126
Control Station	CS1	Control Station	837 905	803 508	2,800

2.4 Monitoring Parameters, Frequency and Duration

2.4.1 The monitoring parameters, frequency and duration of water quality monitoring are summarized in **Table 2.3**.

Table 2.3 Water Quality Monitoring Parameters, Frequency and Duration

Parameter	Frequency and Duration
Turbidity, Suspended Solids, Dissolved Oxygen, Salinity and Temperature	Three times each week, at mid-flood and mid-ebb tides

2.5 Monitoring Methodology

2.5.1 The water quality monitoring procedures are presented in the following:

- All monitoring equipment were checked and calibrated before use. Responses of sensors and electrodes were also checked with certified standard solutions before each use.
- For each set, monitoring was undertaken within a 4 hours window of 2 hours before and 2 hours after mid-flood and mid-ebb tides.
- The interval between 2 sets of monitoring was not less than 36 hours.
- Duplicate in-situ measurements and water sampling were carried out in each sampling event.
- Measurements were taken at 3 water depths, namely, 1m below water surface, mid-depth and 1m above seabed, except where the water depth less than 6m, the mid-depth station may be omitted. Should the water depth be less than 3m, only the mid-depth station was monitored.
- Analysis of suspended solids was carried out by ALS Technichem (HK) Pty Ltd. Sufficient water samples were collected at the monitoring stations for carrying out the laboratory analysis. The analysis followed the standard methods as described in APHA Standard Methods for the Examination of Water and Wastewater, 19th Edition (APHA 2540D for SS).
- Water samples for suspended solids measurements were collected in high density polythene bottles, packed in ice (cooled to 4^{o}C without being frozen), and delivered to a HOKLAS laboratory as soon as possible after collection.
- All monitoring equipment were certified by a laboratory accredited under HOKLAS. Calibration certificates of all monitoring equipment are provided in **Appendix B**.

2.6 Monitoring Schedule for the Reporting Period

2.6.1 The schedule for environmental monitoring in June 2021 is provided in **Appendix C**.

2.7 Action/Limit Levels

2.7.1 A baseline water quality monitoring for 7 locations were carried out 3 days per week for 4 weeks between 27 February 2021 and 25 March 2021. Action and Limit Levels for water quality were established and summarized in **Table 2.4** and **Appendix F**.

2.8 Results and Observations

2.8.1 The water quality monitoring was conducted on 6 and 8 June 2021.

2.8.2 The monitoring results are summarized in **Table 2.4**. Detailed water quality monitoring data and laboratory results are presented in **Appendix D** and **Appendix E** respectively.

2.8.3 The event and action plan is presented in **Appendix G**.

Table 2.4 Summary of Water Quality Monitoring Results in the Reporting Period

Locations		Dissolved Oxygen (mg/L)		Turbidity (NTU)	Suspended Solids (mg/L)
		Result (Surface & Middle)	Result (Bottom)	Result	Result
C4	Avg.	7.51	7.48	2.17	3.48
	Min.	7.49	7.46	1.47	2.97
	Max.	7.56	7.52	2.92	4.05
C3	Avg.	7.51	7.47	2.30	3.74
	Min.	7.50	7.44	1.87	2.90
	Max.	7.54	7.49	2.93	4.17
F1	Avg.	7.50	7.49	2.28	3.82
	Min.	7.48	7.42	1.53	2.98
	Max.	7.51	7.61	2.95	5.32
F2	Avg.	7.53	7.52	2.29	4.14
	Min.	7.50	7.50	1.63	3.73
	Max.	7.57	7.58	2.80	4.87
GS1	Avg.	7.52	7.49	2.27	4.28
	Min.	7.46	7.42	1.45	4.15
	Max.	7.58	7.56	3.02	4.37
B2	Avg.	7.50	7.46	2.04	3.53
	Min.	7.46	7.39	1.48	3.20
	Max.	7.55	7.51	2.70	3.93
CS1	Avg.	7.52	7.50	2.22	4.14
	Min.	7.47	7.44	1.67	3.27
	Max.	7.57	7.60	2.68	5.37
Action Level		7.38	7.33	3.45*1	3.12*1
Limit Level		7.31	7.23	4.37*2	3.91*2

*1 According with the Project Profile, the Action Level shall be derived as 95th percentile of baseline date, which listed on the Table 2.4, or 20% exceedance of value at any impact station with the control station.
*2 According with the Project Profile, the Limit Level shall be derived as 99th percentile of baseline date, which listed on the Table 2.4, or 30% exceedance of value at any impact station with the control station.

2.8.4 Seven (7) Action Level exceedances were recorded in the reporting period. Seven (7) recorded Action Level exceedances related to suspended solid (SS). After investigation, the recorded Action Level exceedances were considered non-project related.

2.8.5 Twelve (12) Limit Level exceedances were recorded in the reporting period. Twelve (12) recorded Limit Level exceedances related to SS. After investigation, the recorded Limit Level exceedances were considered non-project related.

2.8.6 Two (2) Action Level and four (4) Limit Level exceedances related to SS were recorded at mid-ebb tide on 6 June 2021. The exceedances were recorded at all monitoring stations, which were C4(3.87mg/L), C3(3.97mg/L), F1(3.87mg/L), F2(4.87mg/L), GS1(4.32mg/L) and B2(3.93mg/L). The water quality monitoring was conducted from 08:30 to 11:30 on 6 June 2021. Investigation was conducted for the exceedances. According the information provided by the Contractor, the cable laying and burial works were carried out at the cable alignment area near the Bluff Head (which located about 500m from Bluff Head and outside of the Area of Stanley Bay) during water quality monitoring process. It was also reviewed the SS concentration at the control station (CS1) at the same tide, 5.37mg/L was recorded, which exceeded the Limit Level. According to the monitoring result at the control station, the high SS concentration in the environment was considered due to the local factor. Considered the SS concentration at control station, the exceedances were considered not due to the Project.

2.8.7 Two (2) Action Level and two (2) Limit Level exceedances related to SS were recorded at mid-flood tide on 6 June 2021. The exceedances were recorded at C3(3.92mg/L), F2(3.73mg/L), GS1(4.37mg/L) and B2(3.20mg/L). The water quality monitoring was conducted from 14:00 to 17:00 on 6 June 2021. Investigation was conducted for the exceedance. According to the information provided by the Contractor, the cable laying and burial works were carried out at the cable alignment area near the Bluff Head (which located about 500m from Bluff Head and outside of the Area of Stanley Bay) during water quality monitoring process. The distances between works area and exceedances recorded stations were around 1.6km from B2 and GS1, 1km from F2, and 4.6km from C3. The most sensitive monitoring station to the cable laying work carried out at that time should be F2. Reviewing the SS concentration at F2(3.73mg/L), GS1(4.37mg/L), and C3(3.92mg/L), the F2 was the closest monitoring station, which recorded the lowest SS concentration. The monitoring stations at GS1 and C3 were located farther than F2, which recorded higher SS concentrations. From that comparison, it can predict that the cable laying works were not major factors affecting the SS concentration. For exceedance recorded at B2, 3.20 mg/L of SS concentration was recorded at B2, but it was lower than the SS concentration (3.27mg/L) at control station (CS1). Since the exceedance at B2 was lower than the background condition (SS concentration at CS1), the exceedance at B2 was considered not due to the Project. Considered locations of monitoring locations and the background condition, the recorded exceedances were considered not due to the Project.

2.8.8 Two (2) Action Level and one (1) Limit Level exceedances related to SS were recorded at mid-ebb tide on 8 June 2021. The exceedances were recorded at water quality monitoring stations – F2(3.73mg/L), GS1(4.28mg/L), and B2(3.23mg/L). The water quality monitoring was conducted from 09:30 to 11:30 on 8 June 2021. Investigation was conducted for the exceedance. According to the information provided by the Contractor, the cable laying and burial works were carried out at the cable alignment area between monitoring stations C3 and C4 during the water quality monitoring process. Considering the distances between the works area and water quality monitoring stations, the water quality monitoring station at C3(located around 0.7km from the works area) and C4(located around 1km from the works area) were located closer to the works area. The water quality at C3 and C4 should be more sensitive to the cable laying works carried out at that time. However, there was no exceedance recorded at C3 and C4. The exceedances were recorded at F2, GS1, and B2, where were located 4km from the works area, the water quality at these stations should not have significant influence from the construction works compared to C3 and C4. From this comparison, it can predict that the exceedances were not due to the cable laying works. Considered locations of monitoring locations, the exceedances were considered not due to the Project.

2.8.9 One (1) Action Level and five (5) Limit Level exceedances related to SS were recorded at mid-flood tide on 8 June 2021. The exceedances were recorded at all monitoring stations, which were C4(4.05mg/L), C3(4.17mg/L), F1(5.32mg/L), F2(4.23mg/L), GS1(4.15mg/L) and B2(3.45mg/L). The water quality monitoring was conducted from 16:00 to 18:00 on 8 June 2021. Investigation was conducted for the exceedance. According the information provided by the Contractor, the cable laying and burial works were carried out at the cable alignment area outside of Zone A during water quality monitoring process. The closest monitoring station to the works area was C4, where was around 1km from the works area. It was also reviewed the SS concentration at the control station (CS1) at the same tide, 4.52mg/L was recorded, which exceeded Limit Level. The monitoring result at the control station, the high SS concentration in the environment was considered due to the local factor. Considered location of works area and monitoring result at control station, the exceedances were considered not due to the Project.

2.8.10 Proper mitigation measures on water quality (e.g. maximum speed of the Cable Burial Tool shall be limited) have been provided to reduce adverse impacts on water quality during construction activities. The effective implementation of mitigation measures ensured the compliance with action and limit levels of water quality during the reporting period.

3 SILT CURTAIN MONITORING

3.1 Monitoring Requirements

3.1.1 In accordance with the Project Profile, the silt curtain monitoring was conducted on an hourly basis when cable burial tool is operating within 500m of boundary of St. Stephen's Beach in order to provide near-real time result so that prompt action can be taken if needed.

3.2 Monitoring Equipment

3.2.1 The brand and model of water quality monitoring equipment is given in **Table 3.1**.

Table 3.1 Silt Curtain Monitoring Equipment

Equipment	Brand and Model
Turbiditimeter	YSI 6820 V2
Echo Sounder	Lowrance x-4
Global Positioning System	Garmin GPS72H

3.3 Monitoring Locations

3.3.1 In accordance with the Project Profile, water quality monitoring "inside" the silt curtain and "outside" of the silt curtain were conducted during cable laying operating within 500m of boundary of St. Stephen's Beach. The **Figure 2.2** shown the location of silt curtain.

3.4 Monitoring Parameters, Frequency and Duration

3.4.1 The monitoring parameters, frequency and duration of silt curtain monitoring are summarized in **Table 3.2**.

Table 3.2 Silt Curtain Monitoring Parameters, Frequency and Duration

Parameter	Frequency and Duration
Turbidity	Once per hour

3.5 Monitoring Methodology

3.5.1 The water quality monitoring procedures are presented in the following:

- The silt curtain monitoring was conducted on an hourly basis when cable burial tool is operating within 500m of boundary of St. Stephen's Beach.
- All monitoring equipment were checked and calibrated before use. Responses of sensors and electrodes were also checked with certified standard solutions before each use.
- Duplicate in-situ measurements were carried out in each sampling event.
- Measurements were taken at 1m above seabed.
- All monitoring equipment were certified by a laboratory accredited under HOKLAS. Calibration certificates of all monitoring equipment are provided in **Appendix C**.

3.6 Limit Level

3.6.1 In an increase in turbidity was noticed “outside” the silt curtain compared to “inside” the silt curtain, then additional water quality control measures would be implemented.

3.7 Event and Action

3.7.1 If Limit Level was measured by the ET team, the mitigation measures (including decreasing the speed of cable installation barge, halting the burial works temporarily, increasing monitoring frequency, applying an additional layer of silt curtain, etc.) would be implemented until no further Limit Level measured.

3.8 Results and Observations

3.8.1 No silt curtain monitoring was conducted in the reporting period, since the cable burial works within 500m of boundary of St. Stephen’s Beach were finished in May 2021.

4 MARINE MAMMAL OBSERVATION

4.1 Monitoring Requirements

4.1.1 In accordance with the Project Profile, marine mammal observations shall be conducted each day during the cable laying works in day-time hours.

4.2 Monitoring Equipment

4.2.1 Table 3.1 summarizes the equipment used for the marine mammal observation.

Table 4.1 Marine Mammal Observation Equipment

Equipment	Brand and Model
Binocular	Bushnell 8x32
Camera	Sony RX10 III 24-600mm
Global Positioning System	Garmin GPS MAP 64S

4.3 Monitoring Locations and Frequency

4.3.1 In accordance with the Project Profile, a marine mammal exclusion zone within a radius of 250m from the cable laying works was set up. The mammal observations were performed before 30 minutes and during the cable laying works in day-time hours, as shown in **Figure 2.1**.

4.4 Results and Observations

4.4.1 Marine mammal observations were conducted on 6 to 9 June 2021.

4.4.2 The weathers during the observation days were mainly sunny with good visibility. Sea conditions were mainly at a Beaufort Sea State of 3.

4.4.3 No cetacean was observed in the exclusion zone for 30 minutes before and during the cable laying works on 6 to 9 June 2021.

5 ENVIRONMENTAL COMPLAINT, NOTIFICATION OF SUMMONS AND SUCCESSFUL PROSECUTION

5.1 Environmental Complaint, Notification of Summons and Successful Prosecution

5.1.1 No environmental complaint, notification of summons and successful prosecution was received in the reporting period.

6 CONCLUSIONS AND RECOMMENDATIONS

6.1.1 Seven (7) Action Level exceedances were recorded in the reporting period. Seven (7) recorded Action Level exceedances were related to suspended solid. After investigation, the recorded Action Level exceedances were considered non-project related.

6.1.2 Twelve (12) Limit Level exceedances were recorded in the reporting period. Twelve (12) recorded Limit Level exceedances were related to suspended solid. After investigation, the recorded Limit Level exceedances were considered non-project related.

6.1.3 Since no cable burial work was operated within 500m of boundary of St. Stephen's Beach, no silt curtain monitoring was conducted in the reporting month,

6.1.4 No cetacean was observed in the exclusion zone for 30 minutes before and during the cable laying works in the reporting period.

6.1.5 No environmental complaint, notification of summons and successful prosecution was received in the reporting period.

FIGURES

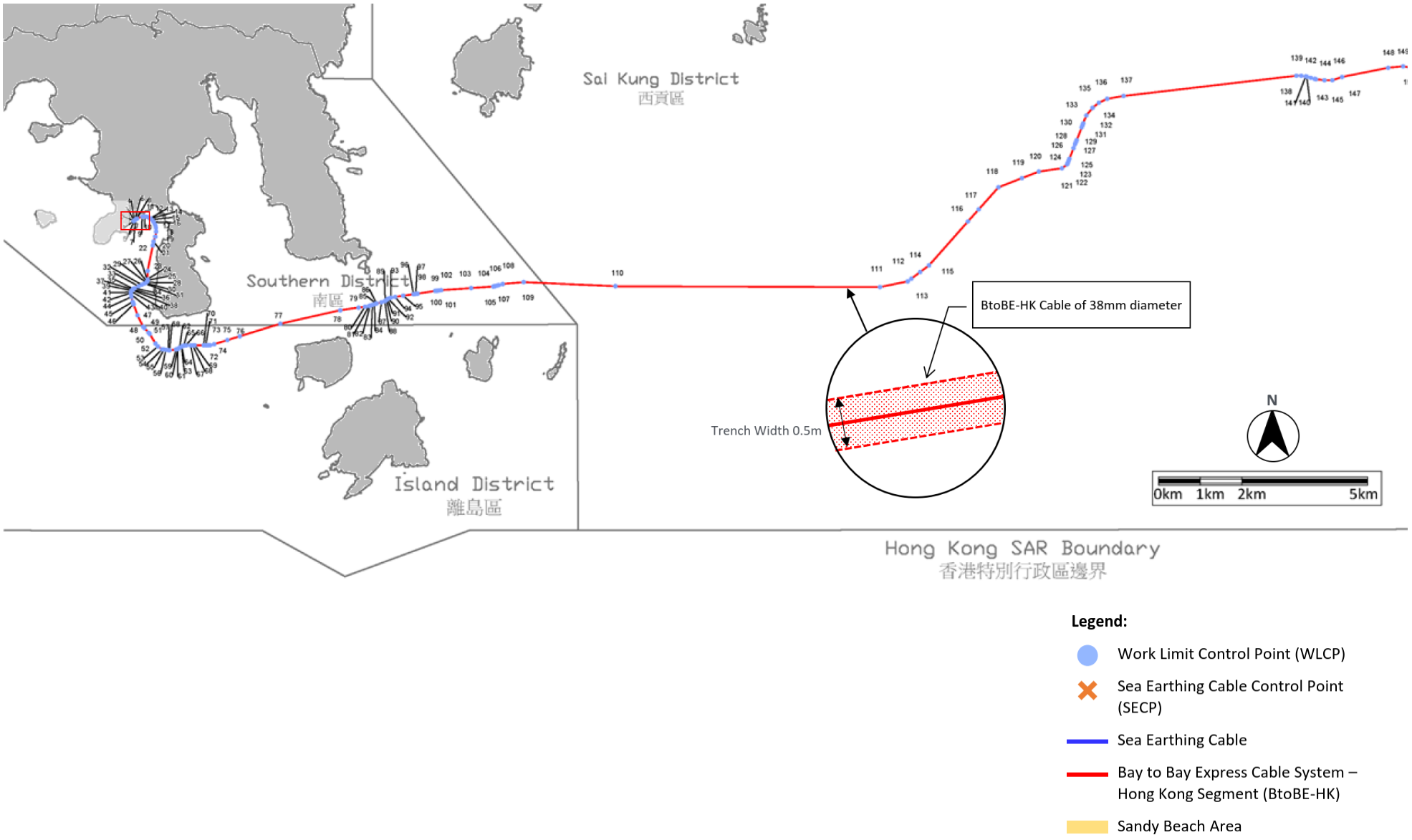


Figure 1.1 Alignment of BtoBE-HK Cable System within Hong Kong (Source: Figure 1-3 of the Project Profile)

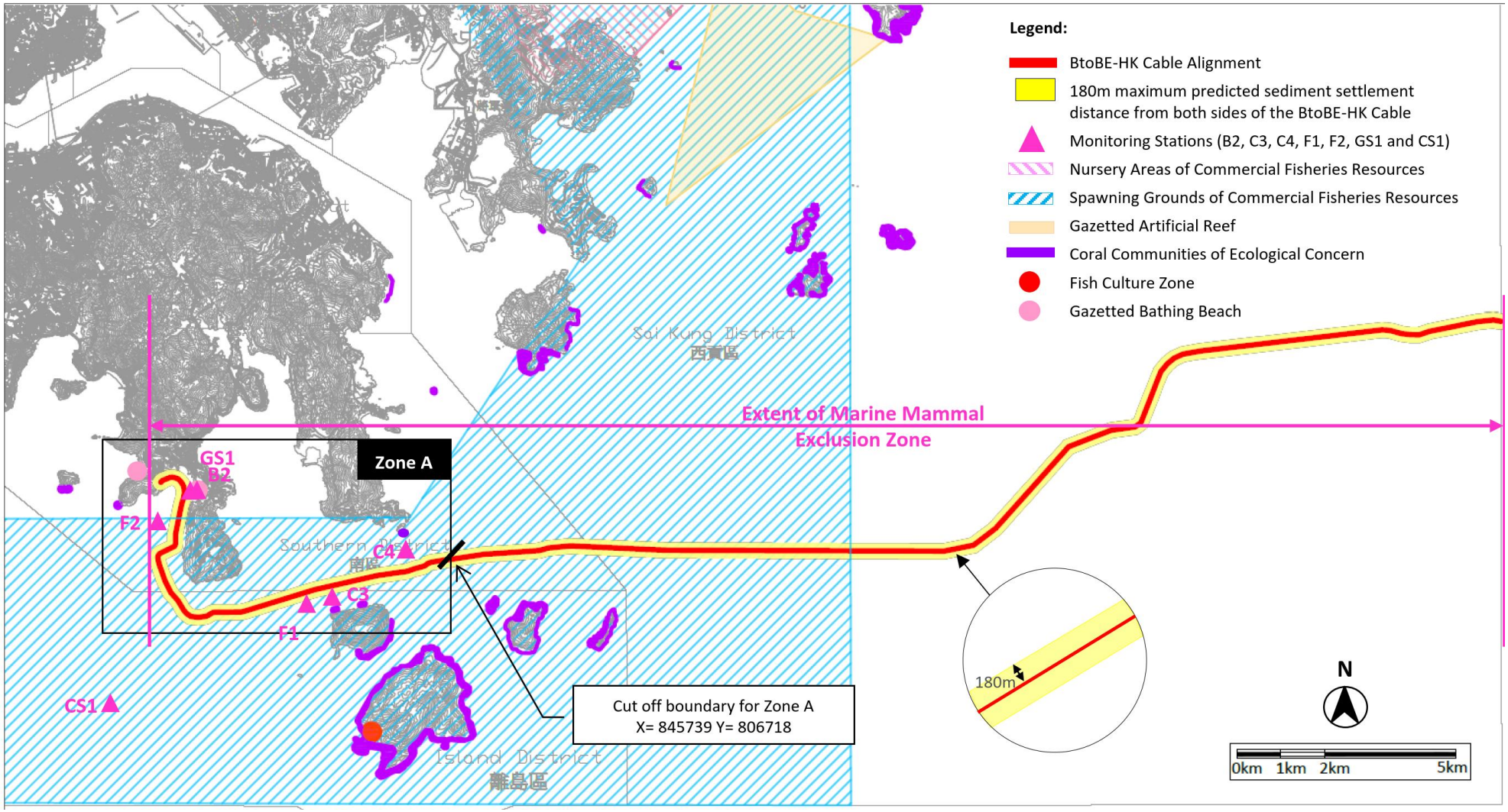


Figure 2.1 Locations of Water Quality Monitoring Station (Source: Figure F.1 of the Project Profile)

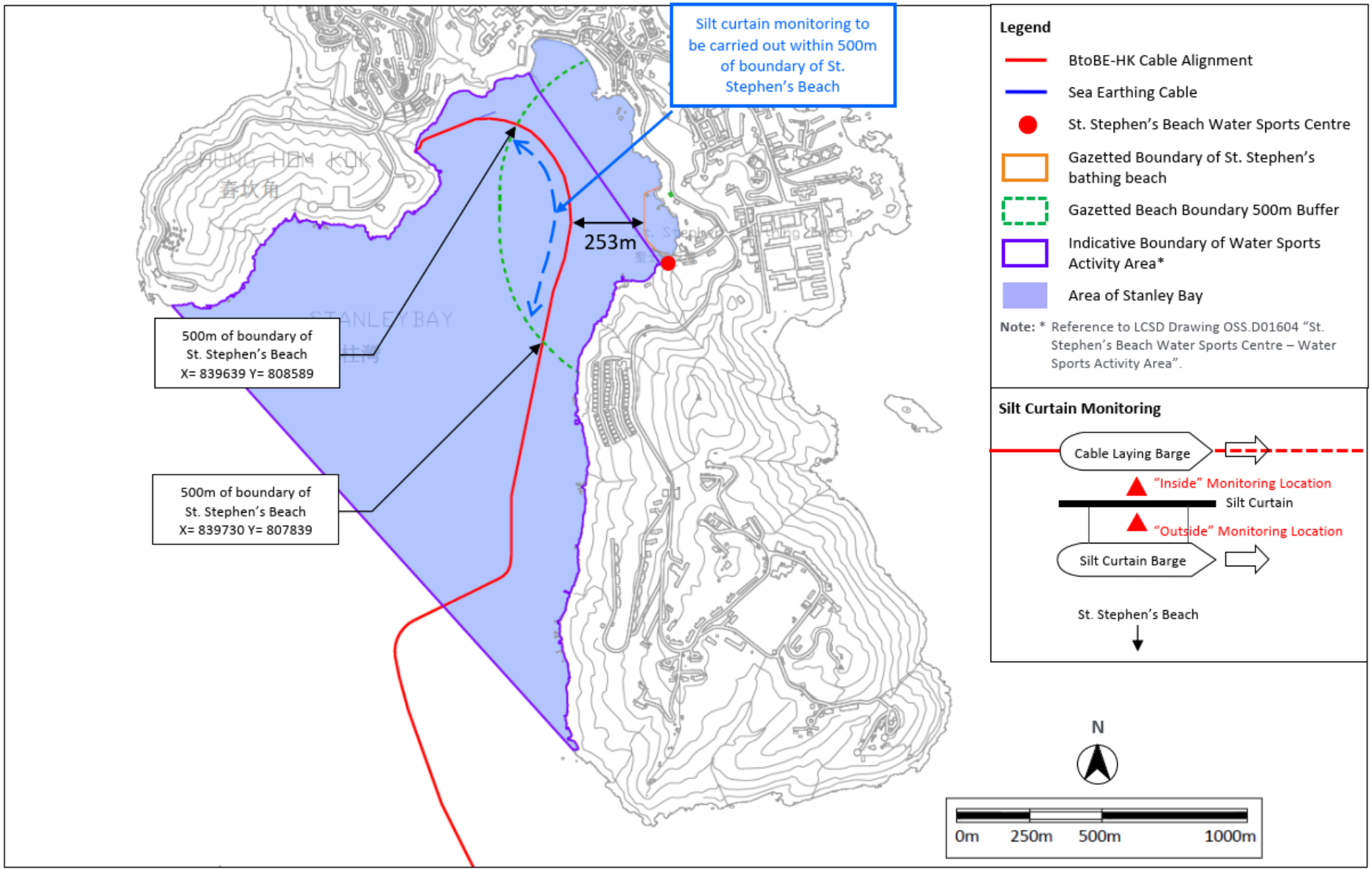
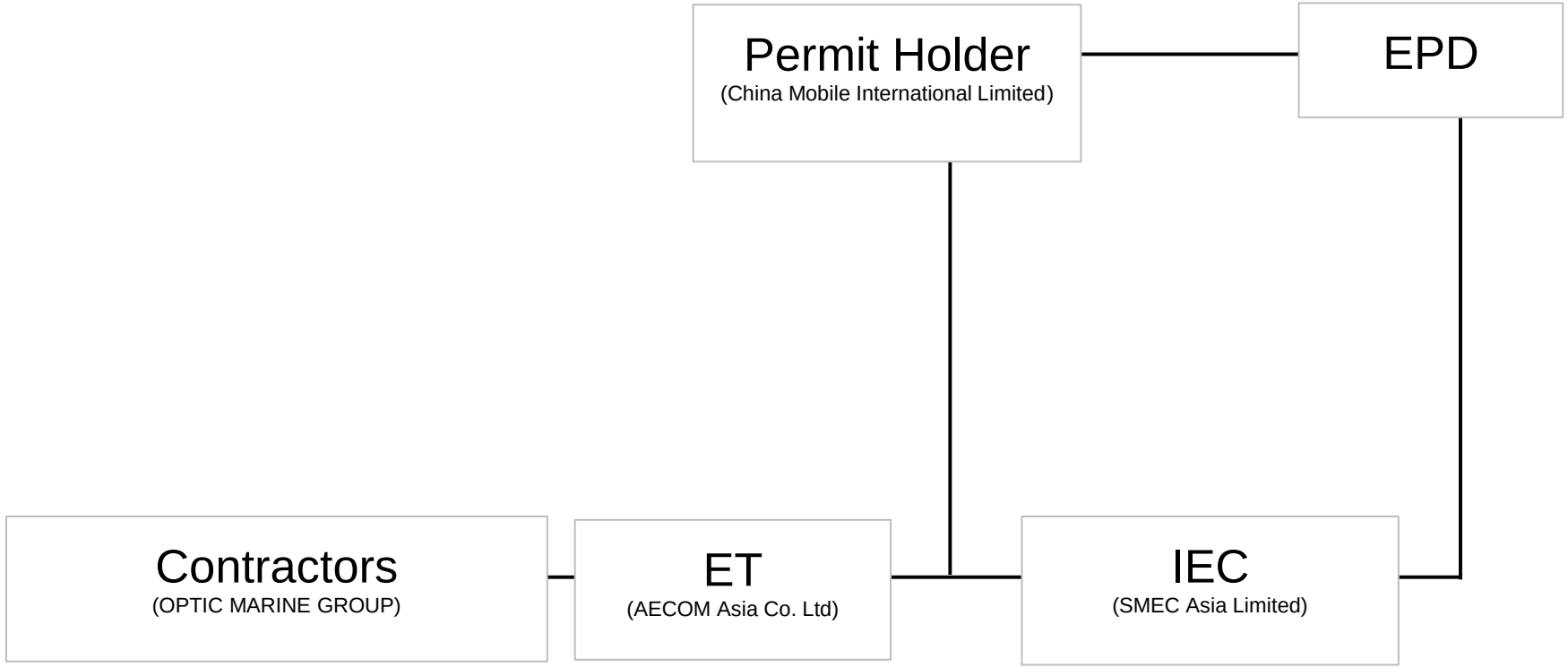


Figure 2.2 Location of Silt Curtain Monitoring (Source: Figure F.2 of the Project Profile)

APPENDIX A
PROJECT ORGANIZATION STRUCTURE



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Bay to Bay Express Cable System -
Hong Kong Segment (BtoBE-HK) – Chung Hom Kok

Project Organization Structure

Date: June 2021

Appendix A

APPENDIX B
CALIBRATION CERTIFICATES OF MONITORING EQUIPMENT

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

REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

CONTACT:	MR MIKE SHEK	**WORK ORDER:**	HK2114769
CLIENT:	AECOM ASIA COMPANY LIMITED		
ADDRESS:	13/F, TOWER 2, GRAND CENTRAL PLAZA, 138 SHATIN RURAL COMMITTEE ROAD, SHATIN, HONG KONG	**SUB- BATCH:**	0
		LABORATORY:	HONG KONG
		DATE RECEIVED:	15- Apr- 2021
		DATE OF ISSUE:	19- Apr- 2021

SPECIFIC COMMENTS

Equipment information (Brand name, Model No., Serial No. and Equipment No.) is provided by client.
The performance of the equipment stated in this report is checked with independent reference material and results compared against a calibrated secondary source.
The "Tolerance Limit" quoted is the acceptance criteria applicable for similar equipment used by the laboratory or quoted from relevant international standards.
The "Next Calibration Date" is recommended according to best practice principle as practised by the laboratory or quoted from relevant international standards.
The validity of equipment/ meter performance only applies to the result(s) stated in the report.

Equipment Type:	Multifunctional Meter
Service Nature:	Performance Check
Scope:	Conductivity, Dissolved Oxygen, pH Value, Turbidity, Salinity and Temperature
Brand Name/ Model No.:	[YSI]/ [6820 V2]
Serial No./ Equipment No.:	[00H1019]/ [W.026.09]
Date of Calibration:	15- April- 2021

GENERAL COMMENTS

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

Mr Chan Siu Ming, Vico
Manager - Inorganic

REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

WORK ORDER: HK2114769

SUB- BATCH: 0
DATE OF ISSUE: 19- Apr- 2021
CLIENT: AECOM ASIA COMPANY LIMITED

Equipment Type: Multifunctional Meter
Brand Name/ Model No.: [YSI]/ [6820 V2]
Serial No./ Equipment No.: [00H1019]/ [W.026.09]
Date of Calibration: 15- April- 2021 Date of Next Calibration: 15- July- 2021

PARAMETERS:

Conductivity

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

Expected Reading (µS/cm)	Displayed Reading (µS/cm)	Tolerance (%)
146.9	145.0	- 1.3
6667	6657	- 0.1
12890	12949	+ 0.5
58670	57984	- 1.2
	Tolerance Limit (%)	± 10.0

Dissolved Oxygen

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

Expected Reading (mg/L)	Displayed Reading (mg/L)	Tolerance (mg/L)
2.80	2.86	+ 0.06
5.25	5.20	- 0.05
7.65	7.68	+ 0.03
	Tolerance Limit (mg/L)	± 0.20

pH Value

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

Expected Reading (pH unit)	Displayed Reading (pH unit)	Tolerance (pH unit)
4.0	4.06	+ 0.06
7.0	6.99	- 0.01
10.0	10.00	+ 0.00
	Tolerance Limit (pH unit)	± 0.20

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

Mr Chan Siu Ming, Vico
Manager - Inorganic

REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

WORK ORDER: HK2114769

SUB- BATCH: 0
DATE OF ISSUE: 19- Apr- 2021
CLIENT: AECOM ASIA COMPANY LIMITED

Equipment Type: Multifunctional Meter
Brand Name/ Model No.: [YSI]/ [6820 V2]
Serial No./ Equipment No.: [00H1019]/ [W.026.09]
Date of Calibration: 15- April- 2021 Date of Next Calibration: 15- July- 2021

PARAMETERS:

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

Expected Reading (NTU)	Displayed Reading (NTU)	Tolerance (%)
0	0.0	- -
4	4.2	+5.0
10	10.3	+3.0
20	19.9	- 0.5
50	49.4	- 1.2
100	100.1	+0.1
	Tolerance Limit (%)	±10.0

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

Expected Reading (ppt)	Displayed Reading (ppt)	Tolerance (%)
0	0.00	- -
10	10.17	+1.7
20	19.88	- 0.6
30	29.56	- 1.5
	Tolerance Limit (%)	±10.0

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

Mr Chan Siu Ming, Vico
Manager - Inorganic

REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

WORK ORDER: HK2114769

SUB- BATCH: 0
DATE OF ISSUE: 19- Apr- 2021
CLIENT: AECOM ASIA COMPANY LIMITED

Equipment Type: Multifunctional Meter
Brand Name/ Model No.: [YSI]/ [6820 V2]
Serial No./ Equipment No.: [00H1019]/ [W.026.09]
Date of Calibration: 15- April- 2021 Date of Next Calibration: 15- July- 2021

PARAMETERS:

Temperature

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

Expected Reading (°C)	Displayed Reading (°C)	Tolerance (°C)
10.0	9.91	- 0.1
20.5	20.12	- 0.4
39.5	39.64	+ 0.1
	Tolerance Limit (°C)	± 2.0

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

Mr Chan Siu Ming, Vico
Manager - Inorganic

AIRFLOW INSTRUMENTS — CERTIFICATE OF CALIBRATION AND TESTING

TSI Instruments Ltd, Stirling Road, Cressex Business Park
High Wycombe Bucks HP12 3ST England
Tel: (Int +44) (UK 0) 1494 459200 Fax: (Int +44) (UK 0) 1494 459700
http://www.airflowinstruments.co.uk

Environment Conditions		
Temperature	20.5	°C
Relative Humidity	51.91	%RH
Barometric Pressure	997.6	hPa

Model	TA410
Serial Number	TA4102035007

☒ As Left ☐ As Found

☒ In Tolerance ☐ Out of Tolerance

– Calibration Verification Results –

Temperature Verification — System T-200 — *Unit: °C*

#	Standard	Measured	Allowable Range	#	Standard	Measured	Allowable Range
1	0.0	0.1	−0.3~0.3	2	60.0	60.0	59.7~60.3

Velocity Verification — System V-352 — *Unit: m/s*

#	Standard	Measured	Allowable Range	#	Standard	Measured	Allowable Range
1	0.00	0.00	−0.03~0.03	7	3.57	3.58	3.39~3.74
2	0.15	0.15	0.13~0.18	8	6.12	6.13	5.81~6.42
3	0.31	0.31	0.28~0.33	9	9.64	9.56	9.15~10.12
4	0.51	0.51	0.48~0.53	10	13.57	13.66	12.89~14.25
5	1.02	1.00	0.97~1.07	11	19.20	19.32	18.24~20.16
6	2.05	2.05	1.95~2.16				

TSI does hereby certify that the above described instrument conforms to the original manufacturer's specification (not applicable to As Found data) and has been calibrated using standards whose accuracies are traceable to members of the European co-operation for Accreditation (EA) (for example: UKAS, SWEDAC, DAkkS) or has been verified with respect to instrumentation whose accuracy is traceable to some member of EA, or is derived from accepted values of physical constants. TSI's calibration system is registered to ISO-9001:2015.

Measurement Variable	System ID	Last Cal.	Cal. Due	Measurement Variable	System ID	Last Cal.	Cal. Due
Temperature	E006020	26-02-20	26-02-21	Temperature	E006019	26-02-20	26-02-21
Pressure	E006001	28-02-20	28-02-21	Pressure	E006038	28-02-20	28-02-21
DC Voltage	E006010	28-02-20	28-02-21	Temp	E006183	26-02-20	26-02-21
Pressure	E006059	28-02-20	28-02-21	Velocity	E006017	06-03-20	06-03-23

P. McBAIN
Calibrated

18 SEP 2020
Date

APPENDIX C
ENVIRONMENTAL MONITORING SCHEDULE

Appendix C - Environmental Monitoring Schedule for BtoBE Cable System for June 2021

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
		1-Jun	2-Jun	3-Jun	4-Jun	5-Jun
6-Jun	7-Jun	8-Jun	9-Jun	10-Jun	11-Jun	12-Jun
WQM ***MMO***	***MMO***	**WQM** ***MMO***	***MMO***			
13-Jun	14-Jun	15-Jun	16-Jun	17-Jun	18-Jun	19-Jun
20-Jun	21-Jun	22-Jun	23-Jun	24-Jun	25-Jun	26-Jun
27-Jun	28-Jun	29-Jun	30-Jun			

MMO : Marine Mammal Observations
WQM : Water Quality Monitoring

APPENDIX D
WATER QUALITY MONITORING RESULTS

Appendix D - Water Quality Monitoring Result

Water Quality Moniyoring Result on 06 June 2021 - Mid-Ebb Tide

Date	Location	Weather Condition	Sea Condition	Sampling Time	Depth (m)		Temperature (°C) Value	Temperature (°C) Average	Salinity (ppt) Value	Salinity (ppt) Average	pH Value	pH Average	DO Saturation (%) Value	DO Saturation (%) Average	Dissolved Oxygen (mg/L) Value	Dissolved Oxygen (mg/L) Average	Dissolved Oxygen (mg/L) DA*	Turbidity(NTU) Value	Turbidity(NTU) Average	Turbidity(NTU) DA*	Suspended Soild (mg/m3) Value	Suspended Soild (mg/m3) Average	Suspended Soild (mg/m3) DA*	Wind Direction	Wind Speed (m/s)	Remark
6-Jun-21	C4	Fine	Moderate	8:40	Surface	1.0	26.02 26.03	26.03	36.01 36.01	36.01	8.06 8.05	8.06	100.2 100.6	100.4	7.54 7.55	7.55	7.50	2.90 2.90	2.90	2.92	4.40 4.50	4.45	**3.87**	SE	0.6	No any influencing factor was observed during monitoring.
					Middle	24.3	23.96 24.30	24.13	37.46 37.27	37.37	7.97 7.97	7.97	99.2 99.6	99.4	7.45 7.47	7.46		3.00 3.00	3.00		3.90 3.20	3.55				
					Bottom	47.5	23.71 23.80	23.76	37.66 37.58	37.62	7.97 7.97	7.97	100.0 99.0	99.5	7.50 7.42	7.46	7.46	3.00 2.70	2.85		3.40 3.80	3.60				
6-Jun-21	C3	Fine	Moderate	9:10	Surface	1.0	26.01 26.01	26.01	36.05 36.06	36.06	8.07 8.09	8.08	100.4 100.8	100.6	7.55 7.58	7.57	7.51	2.70 2.80	2.75	2.93	4.00 4.50	4.25	**<u>3.97</u>**	S	0.8	No any influencing factor was observed during monitoring.
					Middle	29.9	24.90 24.97	24.94	36.87 36.84	36.86	8.05 8.04	8.05	99.5 99.1	99.3	7.47 7.44	7.46		2.90 2.70	2.80		3.30 4.20	3.75				
					Bottom	58.7	23.87 24.79	24.33	37.56 36.98	37.27	8.01 8.05	8.03	98.9 99.3	99.1	7.42 7.46	7.44	7.44	3.30 3.20	3.25		4.30 3.50	3.90				
6-Jun-21	F1	Fine	Moderate	9:35	Surface	1.0	26.01 25.93	25.97	36.09 36.15	36.12	8.10 8.11	8.11	100.5 100.2	100.4	7.55 7.53	7.54	7.48	2.70 2.40	2.55	2.95	3.00 2.20	2.60	**3.87**	S	0.8	No any influencing factor was observed during monitoring.
					Middle	30.1	24.94 24.94	24.94	36.86 36.85	36.86	8.06 8.06	8.06	98.7 98.9	98.8	7.42 7.42	7.42		3.00 3.10	3.05		4.70 4.00	4.35				
					Bottom	59.1	23.66 23.70	23.68	37.65 37.63	37.64	8.02 8.05	8.04	98.8 98.8	98.8	7.42 7.42	7.42	7.42	3.20 3.30	3.25		5.10 4.20	4.65				
6-Jun-21	CS1	Fine	Moderate	10:20	Surface	1.0	25.30 25.31	25.31	36.52 36.51	36.52	8.08 8.08	8.08	100.3 100.1	100.2	7.53 7.52	7.53	7.47	2.50 2.50	2.50	2.52	4.80 4.50	4.65	5.37	S	0.2	No any influencing factor was observed during monitoring.
					Middle	12.0	24.96 24.80	24.88	36.94 37.01	36.98	8.06 8.05	8.06	99.2 98.8	99.0	7.42 7.40	7.41		2.40 2.50	2.45		5.90 5.60	5.75				
					Bottom	23.0	24.02 24.01	24.02	37.60 37.61	37.61	8.04 8.03	8.04	99.4 99.3	99.4	7.44 7.44	7.44	7.44	2.60 2.60	2.60		5.40 6.00	5.70				
6-Jun-21	F2	Fine	Moderate	10:52	Surface	1.0	25.36 25.32	25.34	36.42 36.43	36.43	8.02 8.01	8.02	100.5 100.5	100.5	7.54 7.55	7.55	7.51	2.70 2.70	2.70	2.80	5.60 5.00	5.30	**<u>4.87</u>**	SE	0.2	No any influencing factor was observed during monitoring.
					Middle	7.2	24.39 24.40	24.40	37.16 37.16	37.16	7.97 7.96	7.97	99.8 99.5	99.7	7.49 7.46	7.48		3.10 3.00	3.05		4.70 4.90	4.80				
					Bottom	13.4	23.91 23.90	23.91	37.56 37.56	37.56	7.94 7.96	7.95	100.2 99.6	99.9	7.52 7.47	7.50	7.50	2.60 2.70	2.65		4.60 4.40	4.50				
6-Jun-21	GS1	Fine	Moderate	11:07	Surface	1.0	25.52 25.52	25.52	36.54 36.56	36.55	8.03 7.99	8.01	100.5 100.3	100.4	7.50 7.49	7.50	7.46	2.90 3.10	3.00	3.02	4.00 1.80	2.90	**<u>4.32</u>**	S	0.5	No any influencing factor was observed during monitoring.
					Middle	3.3	25.20 25.20	25.20	36.68 36.67	36.68	7.98 8.01	8.00	99.5 99.9	99.7	7.41 7.45	7.43		3.00 3.00	3.00		4.00 4.60	4.30				
					Bottom	5.6	25.24 25.29	25.27	36.67 36.62	36.65	7.99 7.96	7.98	100.0 98.1	99.1	7.46 7.38	7.42	7.42	3.00 3.10	3.05		5.70 5.80	5.75				
6-Jun-21	B2	Fine	Moderate	11:18	Surface	1.0	25.37 25.37	25.37	36.57 36.61	36.59	8.07 8.05	8.06	100.4 99.7	100.1	7.49 7.43	7.46	7.46	2.70 2.60	2.65	2.70	4.10 3.90	4.00	**<u>3.93</u>**	NE	0.3	No any influencing factor was observed during monitoring.
					Bottom	4.2	25.36 25.28	25.32	36.60 36.63	36.62	8.06 8.02	8.04	99.6 98.7	99.2	7.42 7.36	7.39	7.39	2.60 2.90	2.75		4.30 3.40	3.85				

* Depth Average

Action Level Exceednaces

<u>Limit Level Exceedance</u>

Appendix D - Water Quality Monitoring Result

Water Quality Moniyoring Result on 06 June 2021 - Mid-Flood Tide

Date	Location	Weather Condition	Sea Condition	Sampling Time	Depth (m)		Temperature (°C) Value	Temperature (°C) Average	Salinity (ppt) Value	Salinity (ppt) Average	pH Value	pH Average	DO Saturation (%) Value	DO Saturation (%) Average	Dissolved Oxygen (mg/L) Value	Dissolved Oxygen (mg/L) Average	Dissolved Oxygen (mg/L) DA*	Turbidity(NTU) Value	Turbidity(NTU) Average	Turbidity(NTU) DA*	Suspended Solids (mg/L) Value	Suspended Solids (mg/L) Average	Suspended Solids (mg/L) DA*	Wind Direction	Wind Speed (m/s)	Remark
6-Jun-21	C4	Fine	Moderate	17:20	Surface	1.0	26.06 26.05	26.06	35.35 35.36	35.36	8.06 8.09	8.08	101.5 101.0	101.3	7.59 7.56	7.58	7.49	2.30 2.40	2.35	2.58	2.90 3.70	3.30	3.05	E	0.5	No any influencing factor was observed during monitoring.
					Middle	24.4	24.33 24.45	24.39	37.20 37.05	37.13	7.96 7.99	7.98	99.1 98.8	99.0	7.42 7.40	7.41		2.70 2.60	2.65		3.40 2.80	3.10				
					Bottom	47.8	23.89 23.87	23.88	37.65 37.65	37.65	7.95 7.98	7.97	99.4 99.7	99.6	7.45 7.47	7.46	7.46	2.80 2.70	2.75		2.70 2.80	2.75				
6-Jun-21	C3	Fine	Moderate	16:54	Surface	1.0	26.06 26.02	26.04	35.41 35.57	35.49	8.10 8.10	8.10	100.7 101.0	100.9	7.55 7.57	7.56	7.50	2.50 2.40	2.45	2.50	4.50 4.30	4.40	**<u>3.92</u>**	SE	0.3	No any influencing factor was observed during monitoring.
					Middle	30.0	23.91 23.94	23.93	37.55 37.52	37.54	7.98 7.97	7.98	99.1 99.1	99.1	7.43 7.43	7.43		2.60 2.60	2.60		3.50 4.00	3.75				
					Bottom	58.9	23.89 23.87	23.88	37.61 37.63	37.62	8.03 7.99	8.01	99.9 99.2	99.6	7.49 7.44	7.47	7.47	2.60 2.30	2.45		4.00 3.20	3.60				
6-Jun-21	F1	Fine	Moderate	16:26	Surface	1.0	26.06 26.08	26.07	35.38 35.39	35.39	8.09 8.09	8.09	101.1 100.9	101.0	7.59 7.57	7.58	7.50	2.70 2.60	2.65	2.75	3.00 2.80	2.90	3.10	E	0.2	No any influencing factor was observed during monitoring.
					Middle	30.0	23.88 23.88	23.88	37.59 37.60	37.60	7.97 7.97	7.97	98.9 98.8	98.9	7.42 7.41	7.42		3.00 2.90	2.95		3.40 2.80	3.10				
					Bottom	58.9	23.90 23.87	23.89	37.59 37.63	37.61	8.02 7.97	8.00	99.1 99.6	99.4	7.44 7.46	7.45	7.45	2.70 2.60	2.65		3.00 3.60	3.30				
6-Jun-21	CS1	Fine	Moderate	15:39	Surface	1.0	26.00 26.00	26.00	35.45 35.47	35.46	8.06 8.07	8.07	101.0 101.1	101.1	7.58 7.59	7.59	7.54	2.80 2.60	2.70	2.68	3.10 2.30	2.70	3.27	E	0.7	No any influencing factor was observed during monitoring.
					Middle	11.9	23.91 23.93	23.92	37.65 37.63	37.64	7.95 7.96	7.96	100.6 99.4	100.0	7.53 7.44	7.49		2.70 2.80	2.75		3.50 3.40	3.45				
					Bottom	22.9	23.90 23.90	23.90	37.67 37.66	37.67	7.97 7.99	7.98	100.5 99.7	100.1	7.52 7.46	7.49	7.49	2.50 2.70	2.60		4.20 3.10	3.65				
6-Jun-21	F2	Fine	Moderate	15:02	Surface	1.0	25.85 25.98	25.92	35.69 35.44	35.57	8.00 8.05	8.03	100.5 100.4	100.5	7.54 7.53	7.54	7.50	2.70 2.80	2.75	2.65	4.40 4.00	4.20	**3.73**	SE	0.7	No any influencing factor was observed during monitoring.
					Middle	7.4	24.64 24.61	24.63	36.90 36.92	36.91	7.98 7.98	7.98	100.0 99.9	100.0	7.47 7.47	7.47		2.80 2.60	2.70		3.70 3.30	3.50				
					Bottom	13.8	23.92 23.91	23.92	37.65 37.66	37.66	7.99 7.99	7.99	100.1 100.4	100.3	7.48 7.51	7.50	7.50	2.50 2.50	2.50		3.60 3.40	3.50				
6-Jun-21	GS1	Fine	Moderate	14:47	Surface	1.0	25.93 25.96	25.95	35.42 35.39	35.41	8.01 8.03	8.02	100.7 100.9	100.8	7.56 7.56	7.56	7.54	2.70 2.70	2.70	2.60	4.40 3.70	4.05	**<u>4.37</u>**	E	0.5	No any influencing factor was observed during monitoring.
					Middle	3.4	25.76 25.60	25.68	35.80 35.91	35.86	8.01 7.99	8.00	100.4 100.2	100.3	7.53 7.51	7.52		2.50 2.80	2.65		4.10 3.90	4.00				
					Bottom	5.7	25.52 25.47	25.50	36.00 36.03	36.02	8.00 7.99	8.00	100.6 100.1	100.4	7.54 7.50	7.52	7.52	2.50 2.40	2.45		5.50 4.60	5.05				
6-Jun-21	B2	Fine	Moderate	14:34	Surface	1.0	25.95 26.01	25.98	35.35 35.26	35.31	7.94 7.95	7.95	100.5 100.7	100.6	7.54 7.55	7.55	7.55	2.60 2.50	2.55	2.50	2.80 3.60	3.20	**3.20**	E	0.4	No any influencing factor was observed during monitoring.
					Bottom	4.3	25.89 25.58	25.74	35.64 35.96	35.80	7.93 7.93	7.93	100.3 100.0	100.2	7.52 7.50	7.51	7.51	2.40 2.50	2.45		3.40 3.00	3.20				

* Depth Average

Action Level Exceednaces

<u>Limit Level Exceedance</u>

Appendix D - Water Quality Monitoring Result

Water Quality Moniyoring Result on 08 June 2021 - Mid-Ebb Tide

Date	Location	Weather Condition	Sea Condition	Sampling Time	Depth (m)		Temperature (°C)		Salinity (ppt)		pH		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Soild (mg/m3)			Wind		Remark
							Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*	Direction	Speed (m/s)	
8-Jun-21	C4	Fine	Moderate	9:33	Surface	1.0	27.77 27.76	27.77	34.61 34.60	34.61	8.18 8.13	8.16	102.4 102.9	102.7	7.59 7.61	7.60	7.56	1.50 1.50	1.50	1.72	3.00 3.50	3.25	2.97	N	1.6	No any influencing factor was observed during monitoring.
					Middle	23.3	24.25 24.84	24.55	37.34 36.94	37.14	7.97 7.98	7.98	101.3 102.1	101.7	7.50 7.55	7.53		1.70 1.50	1.60		2.80 3.30	3.05				
					Bottom	45.6	23.97 23.81	23.89	37.55 37.66	37.61	7.97 7.97	7.97	101.2 102.1	101.7	7.49 7.55	7.52	7.52	2.10 2.00	2.05		2.70 2.50	2.60				
8-Jun-21	C3	Fine	Moderate	9:54	Surface	1.0	27.72 27.74	27.73	34.71 34.70	34.71	8.19 8.17	8.18	102.2 102.8	102.5	7.57 7.61	7.59	7.54	1.80 1.80	1.80	1.92	2.40 2.60	2.50	2.90	NE	3.8	No any influencing factor was observed during monitoring.
					Middle	30.6	26.00 25.89	25.95	36.17 36.24	36.21	8.10 8.10	8.10	101.2 101.1	101.2	7.49 7.49	7.49		1.80 2.00	1.90		2.70 3.20	2.95				
					Bottom	60.2	24.09 25.67	24.88	37.56 36.44	37.00	8.08 8.09	8.09	100.9 101.2	101.1	7.48 7.49	7.49	7.49	2.00 2.10	2.05		3.00 3.50	3.25				
8-Jun-21	F1	Fine	Moderate	10:08	Surface	1.0	27.59 27.71	27.65	34.86 34.76	34.81	8.21 8.20	8.21	101.8 101.7	101.8	7.54 7.54	7.54	7.50	1.70 1.60	1.65	1.87	2.70 2.20	2.45	2.98	NE	5.2	No any influencing factor was observed during monitoring.
					Middle	30.3	25.94 25.95	25.95	36.23 36.19	36.21	8.11 8.10	8.11	100.9 100.6	100.8	7.48 7.45	7.47		1.70 1.80	1.75		3.00 3.50	3.25				
					Bottom	59.7	23.70 23.76	23.73	37.76 37.73	37.75	8.04 8.07	8.06	100.7 100.9	100.8	7.46 7.48	7.47	7.47	2.30 2.10	2.20		3.40 3.10	3.25				
8-Jun-21	CS1	Fine	Moderate	10:38	Surface	1.0	26.50 26.52	26.51	35.54 35.52	35.53	8.17 8.16	8.17	101.8 101.7	101.8	7.54 7.53	7.54	7.49	2.00 1.80	1.90	2.02	2.60 3.40	3.00	3.40	N	1.9	No any influencing factor was observed during monitoring.
					Middle	11.9	25.67 25.94	25.81	36.32 36.21	36.27	8.08 8.11	8.10	100.7 101.0	100.9	7.44 7.46	7.45		1.90 2.00	1.95		2.90 3.90	3.40				
					Bottom	22.9	24.29 24.31	24.30	37.50 37.49	37.50	8.04 8.07	8.06	101.1 101.4	101.3	7.46 7.49	7.48	7.48	2.10 2.30	2.20		4.20 3.40	3.80				
8-Jun-21	F2	Fine	Moderate	11:07	Surface	1.0	26.56 26.61	26.59	35.38 35.36	35.37	8.03 8.04	8.04	101.9 101.9	101.9	7.55 7.54	7.55	7.52	2.00 2.00	2.00	2.08	4.20 4.80	4.50	**3.73**	N	2.6	No any influencing factor was observed during monitoring.
					Middle	6.8	24.97 24.99	24.98	36.81 36.79	36.80	7.94 7.94	7.94	101.5 100.9	101.2	7.52 7.48	7.50		1.90 2.00	1.95		3.50 3.50	3.50				
					Bottom	12.5	24.11 24.09	24.10	37.54 37.55	37.55	7.93 7.92	7.93	101.7 101.2	101.5	7.54 7.50	7.52	7.52	2.30 2.30	2.30		2.90 3.50	3.20				
8-Jun-21	GS1	Fine	Moderate	11:20	Surface	1.0	26.88 26.91	26.90	35.33 35.30	35.32	8.02 8.08	8.05	102.2 102.4	102.3	7.52 7.54	7.53	7.49	1.90 1.80	1.85	2.00	4.20 4.80	4.50	**<u>4.28</u>**	N	3.0	No any influencing factor was observed during monitoring.
					Middle	3.2	26.34 26.35	26.35	35.49 35.49	35.49	8.05 8.00	8.03	101.7 100.9	101.3	7.48 7.42	7.45		1.90 1.70	1.80		4.00 4.80	4.40				
					Bottom	5.4	26.52 26.42	26.47	35.38 35.46	35.42	8.00 8.00	8.00	100.5 102.0	101.3	7.40 7.50	7.45	7.45	2.40 2.30	2.35		3.90 4.00	3.95				
8-Jun-21	B2	Fine	Moderate	11:29	Surface	1.0	26.64 26.63	26.64	35.33 35.32	35.33	8.14 8.16	8.15	101.1 101.8	101.5	7.43 7.49	7.46	7.46	1.40 1.40	1.40	1.48	2.40 2.80	2.60	**3.23**	E	1.8	No any influencing factor was observed during monitoring.
					Bottom	3.7	26.49 26.64	26.57	35.39 35.32	35.36	8.12 8.15	8.14	100.6 101.7	101.2	7.39 7.47	7.43	7.43	1.60 1.50	1.55		4.00 3.70	3.85				

* Depth Average

Action Level Exceednaces

<u>Limit Level Exceedance</u>

Appendix D - Water Quality Monitoring Result

Water Quality Moniyoring Result on 08 June 2021 - Mid-Flood Tide

Date	Location	Weather Condition	Sea Condition	Sampling Time	Depth (m)		Temperature (°C) Value	Temperature (°C) Average	Salinity (ppt) Value	Salinity (ppt) Average	pH Value	pH Average	DO Saturation (%) Value	DO Saturation (%) Average	Dissolved Oxygen (mg/L) Value	Dissolved Oxygen (mg/L) Average	Dissolved Oxygen (mg/L) DA*	Turbidity(NTU) Value	Turbidity(NTU) Average	Turbidity(NTU) DA*	Suspended Solids (mg/L) Value	Suspended Solids (mg/L) Average	Suspended Solids (mg/L) DA*	Wind Direction	Wind Speed (m/s)	Remark
8-Jun-21	C4	Fine	Moderate	18:08	Surface	1.0	27.67	27.68	33.34	33.34	8.23	8.22	101.6	101.9	7.52	7.54	7.49	1.40	1.35	1.47	3.50	3.80	**4.05**	E	4.3	No any influencing factor was observed during monitoring.
							27.68		33.33		8.20		102.1		7.55			1.30			4.10					
					Middle	23.3	25.06	24.95	36.52	36.67	8.00	8.01	100.5	100.5	7.44	7.44		1.50	1.50		4.20	4.10				
							24.83		36.81		8.01		100.5		7.44			1.50			4.00					
					Bottom	45.6	24.05	24.06	37.68	37.68	8.00	8.03	101.1	101.0	7.48	7.47	7.47	1.60	1.55		4.00	4.25				
							24.07		37.68		8.05		100.9		7.46			1.50			4.50					
8-Jun-21	C3	Fine	Moderate	17:48	Surface	1.0	27.69	27.64	33.45	33.61	8.24	8.24	101.4	101.6	7.52	7.53	7.50	1.50	1.55	1.87	3.40	3.70	**4.17**	N	3.7	No any influencing factor was observed during monitoring.
							27.58		33.77		8.23		101.8		7.54			1.60			4.00					
					Middle	30.3	24.17	24.15	37.55	37.58	7.97	7.98	100.8	100.8	7.47	7.47		2.00	1.90		4.10	4.30				
							24.12		37.60		7.99		100.8		7.47			1.80			4.50					
					Bottom	59.7	24.06	24.08	37.65	37.63	8.01	8.05	100.6	100.9	7.45	7.48	7.48	2.20	2.15		4.70	4.50				
							24.10		37.61		8.09		101.2		7.50			2.10			4.30					
8-Jun-21	F1	Fine	Moderate	17:33	Surface	1.0	27.66	27.68	33.40	33.42	8.22	8.22	102.1	101.8	7.57	7.55	7.51	1.50	1.50	1.53	4.40	4.10	**5.32**	N	3.0	No any influencing factor was observed during monitoring.
							27.69		33.44		8.21		101.5		7.52			1.50			3.80					
					Middle	30.1	24.07	24.08	37.64	37.64	7.97	7.96	100.8	100.7	7.47	7.47		1.40	1.45		5.10	5.55				
							24.08		37.63		7.95		100.6		7.46			1.50			6.00					
					Bottom	59.2	24.07	24.09	37.65	37.63	7.96	8.03	101.2	102.9	7.49	7.61	7.61	1.70	1.65		6.00	6.30				
							24.10		37.60		8.10		104.5		7.72			1.60			6.60					
8-Jun-21	CS1	Fine	Moderate	17:01	Surface	1.0	27.58	27.57	33.55	33.57	8.16	8.17	102.8	102.6	7.61	7.60	7.57	1.50	1.45	1.67	4.00	3.90	4.52	N	2.8	No any influencing factor was observed during monitoring.
							27.56		33.58		8.18		102.3		7.58			1.40			3.80					
					Middle	11.9	24.10	24.10	37.61	37.61	7.95	7.95	101.5	102.0	7.51	7.54		1.60	1.55		4.20	4.05				
							24.09		37.61		7.95		102.4		7.57			1.50			3.90					
					Bottom	22.9	24.07	24.08	37.65	37.64	8.01	8.01	102.8	103.0	7.59	7.60	7.60	2.00	2.00		5.40	5.60				
							24.08		37.63		8.01		103.2		7.61			2.00			5.80					
8-Jun-21	F2	Fine	Moderate	16:32	Surface	1.0	27.55	27.45	33.52	33.76	8.14	8.10	102.4	102.4	7.59	7.59	7.57	1.60	1.55	1.63	5.00	4.55	**4.23**	N	1.6	No any influencing factor was observed during monitoring.
							27.35		34.00		8.06		102.4		7.58			1.50			4.10					
					Middle	6.8	25.36	25.33	36.14	36.17	7.99	8.00	102.4	102.4	7.57	7.56		1.60	1.55		4.20	4.35				
							25.30		36.20		8.00		102.3		7.55			1.50			4.50					
					Bottom	12.6	24.10	24.10	37.58	37.60	8.02	8.03	102.5	102.6	7.57	7.58	7.58	1.90	1.80		3.60	3.80				
							24.09		37.61		8.04		102.7		7.58			1.70			4.00					
8-Jun-21	GS1	Fine	Moderate	16:16	Surface	1.0	27.53	27.52	33.42	33.45	8.19	8.18	102.6	102.5	7.60	7.59	7.58	1.50	1.50	1.45	3.50	3.70	**4.15**	NE	1.5	No any influencing factor was observed during monitoring.
							27.50		33.47		8.16		102.4		7.57			1.50			3.90					
					Middle	3.1	27.22	27.09	34.21	34.32	8.16	8.14	102.4	102.3	7.58	7.57		1.30	1.35		4.20	4.10				
							26.96		34.43		8.12		102.1		7.55			1.40			4.00					
					Bottom	5.3	26.81	26.82	34.53	34.53	8.15	8.14	102.6	102.3	7.58	7.56	7.56	1.60	1.50		5.00	4.65				
							26.83		34.52		8.12		102.0		7.54			1.40			4.30					
8-Jun-21	B2	Fine	Moderate	16:07	Surface	1.0	27.64	27.59	33.15	33.23	8.04	8.04	101.9	101.7	7.54	7.53	7.53	1.50	1.40	1.48	3.90	4.30	**3.78**	E	1.9	No any influencing factor was observed during monitoring.
							27.54		33.30		8.03		101.5		7.51			1.30			4.70					
					Bottom	3.4	26.96	27.21	34.47	34.18	8.00	8.00	100.8	101.3	7.46	7.50	7.50	1.50	1.55		2.70	3.25				
							27.45		33.88		8.00		101.8		7.53			1.60			3.80					

* Depth Average

Action Level Exceednaces

Limit Level Exceedance

APPENDIX E
LABORATORY ANALYIS RESULTS

CERTIFICATE OF ANALYSIS

Client	:	AECOM ASIA COMPANY LIMITED	Laboratory	:	ALS Technichem (HK) Pty Ltd	Page	: 1 of 6
Contact	:	MR Y W FUNG	Contact	:	Richard Fung	Work Order	: HK2122044
Address	:	12/F, TOWER 2, GRAND CENTRAL PLAZA, NO. 138 SHATIN RURAL COMMITTEE ROAD, SHATIN, N.T.,	Address	:	11/F., Chung Shun Knitting Centre, 1 - 3 Wing Yip Street, Kwai Chung, N.T., Hong Kong		
E-mail	:	yw.fung@aecom.com	E-mail	:	richard.fung@alsglobal.com		
Telephone	:	+852 3105 8544	Telephone	:	+852 2610 1044		
Facsimile	:	----	Facsimile	:	+852 2610 2021		
Project	:	ET SERVICES FOR SJC2 AND BTOBE CABLE PROJECTS (BTOBE)				Date received	: 06-Jun-2021
Order number	:	—	Quote number	:	HKE/1289/2021_V2	Date of issue	: 15-Jun-2021
C-O-C number	:	—				No. of samples	- Received : 80
Site	:	—					- Analysed : 80

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 06-Jun-2021 to 15-Jun-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 HK2122044 :

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: WATER			Compound	EA025: Suspended Solids (SS)	----	----	----	----
			LOR Unit	1.0 mg/L	----	----	----	----
Sample ID	Sampling date / time	Laboratory sample ID		EA/ED: Physical and Aggregate Properties	----	----	----	----
B2/S/ Mid-Ebb	06-Jun-2021	HK2122044-001		4.1	----	----	----	----
B2/S/Duplicate Mid-Ebb	06-Jun-2021	HK2122044-002		3.9	----	----	----	----
B2/B/ Mid-Ebb	06-Jun-2021	HK2122044-005		4.3	----	----	----	----
B2/B/Duplicate Mid-Ebb	06-Jun-2021	HK2122044-006		3.4	----	----	----	----
C3/S/ Mid-Ebb	06-Jun-2021	HK2122044-007		4.0	----	----	----	----
C3/S/Duplicate Mid-Ebb	06-Jun-2021	HK2122044-008		4.5	----	----	----	----
C3/M/ Mid-Ebb	06-Jun-2021	HK2122044-009		3.3	----	----	----	----
C3/M/Duplicate Mid-Ebb	06-Jun-2021	HK2122044-010		4.2	----	----	----	----
C3/B/ Mid-Ebb	06-Jun-2021	HK2122044-011		4.3	----	----	----	----
C3/B/Duplicate Mid-Ebb	06-Jun-2021	HK2122044-012		3.5	----	----	----	----
C4/F1/S/ Mid-Ebb	06-Jun-2021	HK2122044-013		4.4	----	----	----	----
C4/F1/S/Duplicate Mid-Ebb	06-Jun-2021	HK2122044-014		4.5	----	----	----	----
C4/F1/M/ Mid-Ebb	06-Jun-2021	HK2122044-015		3.9	----	----	----	----
C4/F1/M/Duplicate Mid-Ebb	06-Jun-2021	HK2122044-016		3.2	----	----	----	----
C4/F1/B/ Mid-Ebb	06-Jun-2021	HK2122044-017		3.4	----	----	----	----
C4/F1/B/Duplicate Mid-Ebb	06-Jun-2021	HK2122044-018		3.8	----	----	----	----
F1/S/ Mid-Ebb	06-Jun-2021	HK2122044-019		3.0	----	----	----	----
F1/S/Duplicate Mid-Ebb	06-Jun-2021	HK2122044-020		2.2	----	----	----	----
F1/M/ Mid-Ebb	06-Jun-2021	HK2122044-021		4.7	----	----	----	----
F1/M/Duplicate Mid-Ebb	06-Jun-2021	HK2122044-022		4.0	----	----	----	----
F1/B/ Mid-Ebb	06-Jun-2021	HK2122044-023		5.1	----	----	----	----
F1/B/Duplicate Mid-Ebb	06-Jun-2021	HK2122044-024		4.2	----	----	----	----
F2/S/ Mid-Ebb	06-Jun-2021	HK2122044-025		5.6	----	----	----	----
F2/S/Duplicate Mid-Ebb	06-Jun-2021	HK2122044-026		5.0	----	----	----	----
F2/M/ Mid-Ebb	06-Jun-2021	HK2122044-027		4.7	----	----	----	----
F2/M/Duplicate Mid-Ebb	06-Jun-2021	HK2122044-028		4.9	----	----	----	----
F2/B/ Mid-Ebb	06-Jun-2021	HK2122044-029		4.6	----	----	----	----
F2/B/Duplicate Mid-Ebb	06-Jun-2021	HK2122044-030		4.4	----	----	----	----
GS1/S/ Mid-Ebb	06-Jun-2021	HK2122044-031		4.0	----	----	----	----
GS1/S/Duplicate Mid-Ebb	06-Jun-2021	HK2122044-032		1.8	----	----	----	----
GS1/M/ Mid-Ebb	06-Jun-2021	HK2122044-033		4.0	----	----	----	----

Sub-Matrix: **WATER**

Sample ID	Sampling date / time	Laboratory sample ID	Compound	EA025: Suspended Solids (SS)	----	----	----	----
			LOR Unit	1.0 mg/L	----	----	----	----
				EA/ED: Physical and Aggregate Properties	----	----	----	----
GS1/M/Duplicate Mid-Ebb	06-Jun-2021	HK2122044-034		4.6	----	----	----	----
GS1/B/ Mid-Ebb	06-Jun-2021	HK2122044-035		5.7	----	----	----	----
GS1/B/Duplicate Mid-Ebb	06-Jun-2021	HK2122044-036		5.8	----	----	----	----
CS1/S/ Mid-Ebb	06-Jun-2021	HK2122044-037		4.8	----	----	----	----
CS1/S/Duplicate Mid-Ebb	06-Jun-2021	HK2122044-038		4.5	----	----	----	----
CS1/M/ Mid-Ebb	06-Jun-2021	HK2122044-039		5.9	----	----	----	----
CS1/M/Duplicate Mid-Ebb	06-Jun-2021	HK2122044-040		5.6	----	----	----	----
CS1/B/ Mid-Ebb	06-Jun-2021	HK2122044-041		5.4	----	----	----	----
CS1/B/Duplicate Mid-Ebb	06-Jun-2021	HK2122044-042		6.0	----	----	----	----
B2/S/ Mid-Flood	06-Jun-2021	HK2122044-043		2.8	----	----	----	----
B2/S/Duplicate Mid-Flood	06-Jun-2021	HK2122044-044		3.6	----	----	----	----
B2/B/ Mid-Flood	06-Jun-2021	HK2122044-047		3.4	----	----	----	----
B2/B/Duplicate Mid-Flood	06-Jun-2021	HK2122044-048		3.0	----	----	----	----
C3/S/ Mid-Flood	06-Jun-2021	HK2122044-049		4.5	----	----	----	----
C3/S/Duplicate Mid-Flood	06-Jun-2021	HK2122044-050		4.3	----	----	----	----
C3/M/ Mid-Flood	06-Jun-2021	HK2122044-051		3.5	----	----	----	----
C3/M/Duplicate Mid-Flood	06-Jun-2021	HK2122044-052		4.0	----	----	----	----
C3/B/ Mid-Flood	06-Jun-2021	HK2122044-053		4.0	----	----	----	----
C3/B/Duplicate Mid-Flood	06-Jun-2021	HK2122044-054		3.2	----	----	----	----
C4/F1/S/ Mid-Flood	06-Jun-2021	HK2122044-055		2.9	----	----	----	----
C4/F1/S/Duplicate Mid-Flood	06-Jun-2021	HK2122044-056		3.7	----	----	----	----
C4/F1/M/ Mid-Flood	06-Jun-2021	HK2122044-057		3.4	----	----	----	----
C4/F1/M/Duplicate Mid-Flood	06-Jun-2021	HK2122044-058		2.8	----	----	----	----
C4/F1/B/ Mid-Flood	06-Jun-2021	HK2122044-059		2.7	----	----	----	----
C4/F1/B/Duplicate Mid-Flood	06-Jun-2021	HK2122044-060		2.8	----	----	----	----
F1/S/ Mid-Flood	06-Jun-2021	HK2122044-061		3.0	----	----	----	----
F1/S/Duplicate Mid-Flood	06-Jun-2021	HK2122044-062		2.8	----	----	----	----
F1/M/ Mid-Flood	06-Jun-2021	HK2122044-063		3.4	----	----	----	----
F1/M/Duplicate Mid-Flood	06-Jun-2021	HK2122044-064		2.8	----	----	----	----
F1/B/ Mid-Flood	06-Jun-2021	HK2122044-065		3.0	----	----	----	----
F1/B/Duplicate Mid-Flood	06-Jun-2021	HK2122044-066		3.6	----	----	----	----
F2/S/ Mid-Flood	06-Jun-2021	HK2122044-067		4.4	----	----	----	----
F2/S/Duplicate Mid-Flood	06-Jun-2021	HK2122044-068		4.0	----	----	----	----

Sub-Matrix: **WATER**

Sample ID	*Sampling date / time*	*Laboratory sample ID*	*Compound*	**EA025: Suspended Solids (SS)**	**----**	**----**	**----**	**----**
			LOR Unit	1.0 mg/L	----	----	----	----
				EA/ED: Physical and Aggregate Properties	----	----	----	----
F2/M/ Mid-Flood	06-Jun-2021	HK2122044-069		**3.7**	**----**	**----**	**----**	**----**
F2/M/Duplicate Mid-Flood	06-Jun-2021	HK2122044-070		**3.3**	**----**	**----**	**----**	**----**
F2/B/ Mid-Flood	06-Jun-2021	HK2122044-071		**3.6**	**----**	**----**	**----**	**----**
F2/B/Duplicate Mid-Flood	06-Jun-2021	HK2122044-072		**3.4**	**----**	**----**	**----**	**----**
GS1/S/ Mid-Flood	06-Jun-2021	HK2122044-073		**4.4**	**----**	**----**	**----**	**----**
GS1/S/Duplicate Mid-Flood	06-Jun-2021	HK2122044-074		**3.7**	**----**	**----**	**----**	**----**
GS1/M/ Mid-Flood	06-Jun-2021	HK2122044-075		**4.1**	**----**	**----**	**----**	**----**
GS1/M/Duplicate Mid-Flood	06-Jun-2021	HK2122044-076		**3.9**	**----**	**----**	**----**	**----**
GS1/B/ Mid-Flood	06-Jun-2021	HK2122044-077		**5.5**	**----**	**----**	**----**	**----**
GS1/B/Duplicate Mid-Flood	06-Jun-2021	HK2122044-078		**4.6**	**----**	**----**	**----**	**----**
CS1/S/ Mid-Flood	06-Jun-2021	HK2122044-079		**3.1**	**----**	**----**	**----**	**----**
CS1/S/Duplicate Mid-Flood	06-Jun-2021	HK2122044-080		**2.3**	**----**	**----**	**----**	**----**
CS1/M/ Mid-Flood	06-Jun-2021	HK2122044-081		**3.5**	**----**	**----**	**----**	**----**
CS1/M/Duplicate Mid-Flood	06-Jun-2021	HK2122044-082		**3.4**	**----**	**----**	**----**	**----**
CS1/B/ Mid-Flood	06-Jun-2021	HK2122044-083		**4.2**	**----**	**----**	**----**	**----**
CS1/B/Duplicate Mid-Flood	06-Jun-2021	HK2122044-084		**3.1**	**----**	**----**	**----**	**----**

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: 3722022)								
HK2122044-001	B2/S/ Mid-Ebb	EA025: Suspended Solids (SS)	----	0.5	mg/L	4.1	4.5	8.7
HK2122044-013	C4/F1/S/ Mid-Ebb	EA025: Suspended Solids (SS)	----	0.5	mg/L	4.4	4.6	3.9
EA/ED: Physical and Aggregate Properties (QC Lot: 3722023)								
HK2122044-023	F1/B/ Mid-Ebb	EA025: Suspended Solids (SS)	----	0.5	mg/L	5.1	4.7	8.2
HK2122044-033	GS1/M/ Mid-Ebb	EA025: Suspended Solids (SS)	----	0.5	mg/L	4.0	4.3	7.3
EA/ED: Physical and Aggregate Properties (QC Lot: 3722024)								
HK2122044-043	B2/S/ Mid-Flood	EA025: Suspended Solids (SS)	----	0.5	mg/L	2.8	3.2	13.1
HK2122044-055	C4/F1/S/ Mid-Flood	EA025: Suspended Solids (SS)	----	0.5	mg/L	2.9	2.6	11.0
EA/ED: Physical and Aggregate Properties (QC Lot: 3722025)								
HK2122044-065	F1/B/ Mid-Flood	EA025: Suspended Solids (SS)	----	0.5	mg/L	3.0	3.2	6.4
HK2122044-075	GS1/M/ Mid-Flood	EA025: Suspended Solids (SS)	----	0.5	mg/L	4.1	4.6	11.0

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: 3722022)											
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: 3722023)											
EA025: Suspended Solids (SS)	----	0.5	mg/L	<0.5	20 mg/L	110	----	85.9	117	----	----
EA/ED: Physical and Aggregate Properties (QCLot: 3722024)											
EA025: Suspended Solids (SS)	----	0.5	mg/L	<0.5	20 mg/L	102	----	85.9	117	----	----
EA/ED: Physical and Aggregate Properties (QCLot: 3722025)											
EA025: Suspended Solids (SS)	----	0.5	mg/L	<0.5	20 mg/L	102	----	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	:	AECOM ASIA COMPANY LIMITED	Laboratory	:	ALS Technichem (HK) Pty Ltd	Page	: 1 of 6
Contact	:	MR Y W FUNG	Contact	:	Richard Fung	Work Order	: HK2122046
Address	:	12/F, TOWER 2, GRAND CENTRAL PLAZA, NO. 138 SHATIN RURAL COMMITTEE ROAD, SHATIN, N.T.,	Address	:	11/F., Chung Shun Knitting Centre, 1 - 3 Wing Yip Street, Kwai Chung, N.T., Hong Kong		
E-mail	:	yw.fung@aecom.com	E-mail	:	richard.fung@alsglobal.com		
Telephone	:	+852 3105 8544	Telephone	:	+852 2610 1044		
Facsimile	:	----	Facsimile	:	+852 2610 2021		
Project	:	ET SERVICES FOR SJC2 AND BTOBE CABLE PROJECTS (BTOBE)				Date received	: 08-Jun-2021
Order number	:	—	Quote number	:	HKE/1289/2021_V2	Date of issue	: 17-Jun-2021
C-O-C number	:	—				No. of samples	- Received : 80
Site	:	—					- Analysed : 80

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 08-Jun-2021 to 17-Jun-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 HK2122046 :

Sample(s) was/ were picked up from client by ALS staff. 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: WATER			Compound	EA025: Suspended Solids (SS)	----	----	----	----
			LOR Unit	1.0 mg/L	----	----	----	----
Sample ID	Sampling date / time	Laboratory sample ID		EA/ED: Physical and Aggregate Properties	----	----	----	----
B2/S/ Mid-Ebb	08-Jun-2021	HK2122046-001		2.4	----	----	----	----
B2/S/Duplicate Mid-Ebb	08-Jun-2021	HK2122046-002		2.8	----	----	----	----
B2/B/ Mid-Ebb	08-Jun-2021	HK2122046-005		4.0	----	----	----	----
B2/B/Duplicate Mid-Ebb	08-Jun-2021	HK2122046-006		3.7	----	----	----	----
C3/S/ Mid-Ebb	08-Jun-2021	HK2122046-007		2.4	----	----	----	----
C3/S/Duplicate Mid-Ebb	08-Jun-2021	HK2122046-008		2.6	----	----	----	----
C3/M/ Mid-Ebb	08-Jun-2021	HK2122046-009		2.7	----	----	----	----
C3/M/Duplicate Mid-Ebb	08-Jun-2021	HK2122046-010		3.2	----	----	----	----
C3/B/ Mid-Ebb	08-Jun-2021	HK2122046-011		3.0	----	----	----	----
C3/B/Duplicate Mid-Ebb	08-Jun-2021	HK2122046-012		3.5	----	----	----	----
C4/F1/S/ Mid-Ebb	08-Jun-2021	HK2122046-013		3.0	----	----	----	----
C4/F1/S/Duplicate Mid-Ebb	08-Jun-2021	HK2122046-014		3.5	----	----	----	----
C4/F1/M/ Mid-Ebb	08-Jun-2021	HK2122046-015		2.8	----	----	----	----
C4/F1/M/Duplicate Mid-Ebb	08-Jun-2021	HK2122046-016		3.3	----	----	----	----
C4/F1/B/ Mid-Ebb	08-Jun-2021	HK2122046-017		2.7	----	----	----	----
C4/F1/B/Duplicate Mid-Ebb	08-Jun-2021	HK2122046-018		2.5	----	----	----	----
F1/S/ Mid-Ebb	08-Jun-2021	HK2122046-019		2.7	----	----	----	----
F1/S/Duplicate Mid-Ebb	08-Jun-2021	HK2122046-020		2.2	----	----	----	----
F1/M/ Mid-Ebb	08-Jun-2021	HK2122046-021		3.0	----	----	----	----
F1/M/Duplicate Mid-Ebb	08-Jun-2021	HK2122046-022		3.5	----	----	----	----
F1/B/ Mid-Ebb	08-Jun-2021	HK2122046-023		3.4	----	----	----	----
F1/B/Duplicate Mid-Ebb	08-Jun-2021	HK2122046-024		3.1	----	----	----	----
F2/S/ Mid-Ebb	08-Jun-2021	HK2122046-025		4.2	----	----	----	----
F2/S/Duplicate Mid-Ebb	08-Jun-2021	HK2122046-026		4.8	----	----	----	----
F2/M/ Mid-Ebb	08-Jun-2021	HK2122046-027		3.5	----	----	----	----
F2/M/Duplicate Mid-Ebb	08-Jun-2021	HK2122046-028		3.5	----	----	----	----
F2/B/ Mid-Ebb	08-Jun-2021	HK2122046-029		2.9	----	----	----	----
F2/B/Duplicate Mid-Ebb	08-Jun-2021	HK2122046-030		3.5	----	----	----	----
GS1/S/ Mid-Ebb	08-Jun-2021	HK2122046-031		4.2	----	----	----	----
GS1/S/Duplicate Mid-Ebb	08-Jun-2021	HK2122046-032		4.8	----	----	----	----
GS1/M/ Mid-Ebb	08-Jun-2021	HK2122046-033		4.0	----	----	----	----

Sub-Matrix: **WATER**

Sample ID	Sampling date / time	Laboratory sample ID	Compound	EA025: Suspended Solids (SS)	----	----	----	----
			LOR Unit	1.0 mg/L	----	----	----	----
				EA/ED: Physical and Aggregate Properties	----	----	----	----
GS1/M/Duplicate Mid-Ebb	08-Jun-2021	HK2122046-034		4.8	----	----	----	----
GS1/B/ Mid-Ebb	08-Jun-2021	HK2122046-035		3.9	----	----	----	----
GS1/B/Duplicate Mid-Ebb	08-Jun-2021	HK2122046-036		4.0	----	----	----	----
CS1/S/ Mid-Ebb	08-Jun-2021	HK2122046-037		2.6	----	----	----	----
CS1/S/Duplicate Mid-Ebb	08-Jun-2021	HK2122046-038		3.4	----	----	----	----
CS1/M/ Mid-Ebb	08-Jun-2021	HK2122046-039		2.9	----	----	----	----
CS1/M/Duplicate Mid-Ebb	08-Jun-2021	HK2122046-040		3.9	----	----	----	----
CS1/B/ Mid-Ebb	08-Jun-2021	HK2122046-041		4.2	----	----	----	----
CS1/B/Duplicate Mid-Ebb	08-Jun-2021	HK2122046-042		3.4	----	----	----	----
B2/S/ Mid-Flood	08-Jun-2021	HK2122046-043		3.9	----	----	----	----
B2/S/Duplicate Mid-Flood	08-Jun-2021	HK2122046-044		4.7	----	----	----	----
B2/B/ Mid-Flood	08-Jun-2021	HK2122046-047		2.7	----	----	----	----
B2/B/Duplicate Mid-Flood	08-Jun-2021	HK2122046-048		3.8	----	----	----	----
C3/S/ Mid-Flood	08-Jun-2021	HK2122046-049		3.4	----	----	----	----
C3/S/Duplicate Mid-Flood	08-Jun-2021	HK2122046-050		4.0	----	----	----	----
C3/M/ Mid-Flood	08-Jun-2021	HK2122046-051		4.1	----	----	----	----
C3/M/Duplicate Mid-Flood	08-Jun-2021	HK2122046-052		4.5	----	----	----	----
C3/B/ Mid-Flood	08-Jun-2021	HK2122046-053		4.7	----	----	----	----
C3/B/Duplicate Mid-Flood	08-Jun-2021	HK2122046-054		4.3	----	----	----	----
C4/F1/S/ Mid-Flood	08-Jun-2021	HK2122046-055		3.5	----	----	----	----
C4/F1/S/Duplicate Mid-Flood	08-Jun-2021	HK2122046-056		4.1	----	----	----	----
C4/F1/M/ Mid-Flood	08-Jun-2021	HK2122046-057		4.2	----	----	----	----
C4/F1/M/Duplicate Mid-Flood	08-Jun-2021	HK2122046-058		4.0	----	----	----	----
C4/F1/B/ Mid-Flood	08-Jun-2021	HK2122046-059		4.0	----	----	----	----
C4/F1/B/Duplicate Mid-Flood	08-Jun-2021	HK2122046-060		4.5	----	----	----	----
F1/S/ Mid-Flood	08-Jun-2021	HK2122046-061		4.4	----	----	----	----
F1/S/Duplicate Mid-Flood	08-Jun-2021	HK2122046-062		3.8	----	----	----	----
F1/M/ Mid-Flood	08-Jun-2021	HK2122046-063		5.1	----	----	----	----
F1/M/Duplicate Mid-Flood	08-Jun-2021	HK2122046-064		6.0	----	----	----	----
F1/B/ Mid-Flood	08-Jun-2021	HK2122046-065		6.0	----	----	----	----
F1/B/Duplicate Mid-Flood	08-Jun-2021	HK2122046-066		6.6	----	----	----	----
F2/S/ Mid-Flood	08-Jun-2021	HK2122046-067		5.0	----	----	----	----
F2/S/Duplicate Mid-Flood	08-Jun-2021	HK2122046-068		4.1	----	----	----	----

Sub-Matrix: **WATER**

Sample ID	Sampling date / time	Laboratory sample ID	Compound	EA025: Suspended Solids (SS)	----	----	----	----
			LOR Unit	1.0 mg/L	----	----	----	----
				EA/ED: Physical and Aggregate Properties	----	----	----	----
F2/M/ Mid-Flood	08-Jun-2021	HK2122046-069		**4.2**	----	----	----	----
F2/M/Duplicate Mid-Flood	08-Jun-2021	HK2122046-070		**4.5**	----	----	----	----
F2/B/ Mid-Flood	08-Jun-2021	HK2122046-071		**3.6**	----	----	----	----
F2/B/Duplicate Mid-Flood	08-Jun-2021	HK2122046-072		**4.0**	----	----	----	----
GS1/S/ Mid-Flood	08-Jun-2021	HK2122046-073		**3.5**	----	----	----	----
GS1/S/Duplicate Mid-Flood	08-Jun-2021	HK2122046-074		**3.9**	----	----	----	----
GS1/M/ Mid-Flood	08-Jun-2021	HK2122046-075		**4.2**	----	----	----	----
GS1/M/Duplicate Mid-Flood	08-Jun-2021	HK2122046-076		**4.0**	----	----	----	----
GS1/B/ Mid-Flood	08-Jun-2021	HK2122046-077		**5.0**	----	----	----	----
GS1/B/Duplicate Mid-Flood	08-Jun-2021	HK2122046-078		**4.3**	----	----	----	----
CS1/S/ Mid-Flood	08-Jun-2021	HK2122046-079		**4.0**	----	----	----	----
CS1/S/Duplicate Mid-Flood	08-Jun-2021	HK2122046-080		**3.8**	----	----	----	----
CS1/M/ Mid-Flood	08-Jun-2021	HK2122046-081		**4.2**	----	----	----	----
CS1/M/Duplicate Mid-Flood	08-Jun-2021	HK2122046-082		**3.9**	----	----	----	----
CS1/B/ Mid-Flood	08-Jun-2021	HK2122046-083		**5.4**	----	----	----	----
CS1/B/Duplicate Mid-Flood	08-Jun-2021	HK2122046-084		**5.8**	----	----	----	----

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: 3727115)								
HK2122046-001	B2/S/ Mid-Ebb	EA025: Suspended Solids (SS)	----	0.5	mg/L	2.4	2.1	13.2
HK2122046-013	C4/F1/S/ Mid-Ebb	EA025: Suspended Solids (SS)	----	0.5	mg/L	3.0	3.1	0.0
EA/ED: Physical and Aggregate Properties (QC Lot: 3727116)								
HK2122046-023	F1/B/ Mid-Ebb	EA025: Suspended Solids (SS)	----	0.5	mg/L	3.4	3.6	6.4
HK2122046-033	GS1/M/ Mid-Ebb	EA025: Suspended Solids (SS)	----	0.5	mg/L	4.0	4.4	10.1
EA/ED: Physical and Aggregate Properties (QC Lot: 3727117)								
HK2122046-043	B2/S/ Mid-Flood	EA025: Suspended Solids (SS)	----	0.5	mg/L	3.9	4.4	13.8
HK2122046-055	C4/F1/S/ Mid-Flood	EA025: Suspended Solids (SS)	----	0.5	mg/L	3.5	3.7	4.2
EA/ED: Physical and Aggregate Properties (QC Lot: 3727118)								
HK2122046-065	F1/B/ Mid-Flood	EA025: Suspended Solids (SS)	----	0.5	mg/L	6.0	6.5	8.0
HK2122046-075	GS1/M/ Mid-Flood	EA025: Suspended Solids (SS)	----	0.5	mg/L	4.2	4.5	8.0

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: 3727115)											
EA025: Suspended Solids (SS)	----	0.5	mg/L	<0.5	20 mg/L	101	----	85.9	117	----	----
EA/ED: Physical and Aggregate Properties (QCLot: 3727116)											
EA025: Suspended Solids (SS)	----	0.5	mg/L	<0.5	20 mg/L	96.5	----	85.9	117	----	----
EA/ED: Physical and Aggregate Properties (QCLot: 3727117)											
EA025: Suspended Solids (SS)	----	0.5	mg/L	<0.5	20 mg/L	110	----	85.9	117	----	----
EA/ED: Physical and Aggregate Properties (QCLot: 3727118)											
EA025: Suspended Solids (SS)	----	0.5	mg/L	<0.5	20 mg/L	102	----	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 F
SUMMARY OF ACTION AND LIMIT LEVELS

Appendix F - Summary of Action and Limit Levels

Action and Limit Levels Impact Water Quality Monitoring

Parameters	Action	Limit
DO in mg/L (Surface & Middle, Bottom)	Surface & Middle: **7.38** (5th percentile of baseline data for surface and middle layer) Bottom: **7.33** (5th percentile of baseline data for bottom layer)	Surface & Middle: **7.31** (1st percentile of baseline data for surface and middle layer) Bottom: **7.23** (1st percentile of baseline data for bottom layer)
SS in mg/L (Depth-averaged)	**3.12**[*1] (95th percentile of baseline data)	**3.91**[*2] (99th percentile of baseline data)
Turbidity in NTU (Depth-averaged)	**3.45**[*1] (95th percentile of baseline data)	**4.37**[*2] (99th percentile of baseline data)

*1 According to the Project Profile, the Action Level shall be derived as 95th percentile of baseline date, which listed on the Table, or 20% exceedance of value at any impact station with the control station.

*2 According to the Project Profile, the Limit Level shall be derived as 99th percentile of baseline date, which listed on the Table, or 30% exceedance of value at any impact station with the control station.

APPENDIX G
EVENT AND ACTION PLAN

Appendix G - Event / Action Plan for Water Quality

Event / Action Plan for Water Quality

Event	Environmental Team
Action Level Exceedance	1. Repeat sampling event. 2. Inform EPD and AFCD and confirm notification of the non-compliance in writing. 3. Discuss with cable installation contractor and the IEC/IC the most appropriate method of reducing suspended solids during cable installation and agree with EPD. 4. Repeat measurements after implementation of mitigation for confirmation of compliance. 5. If non-compliance continues, increase measures in Step 3 and repeat measurement in Step 4. If non-compliance occurs a third time, suspend cable laying operations and continue sampling until normal water quality resumes.
Limit Level Exceedance	Suspend cable laying operations and undertake Step 1-4 immediately. Cable laying should only continue when the water quality shows compliance again.