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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 May 2021

[06/2021]

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

Version:	Rev. 0	Date: 16 June 2021

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16 June 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 May 2021

Reference is made to the *Monthly EM&A Report for May 2021 (Rev. 0)* dated 11 June 2021, submitted by the Environmental Team via e-mail on 11 June 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 17 to 19 May 2021.

Breaches of Action and Limit Levels for Water Quality Monitoring

Three (3) Action Level exceedances were recorded in the reporting period. Three (3) recorded Action Level exceedances were related to suspended solid. After investigation, the recorded Action Level exceedances were considered non-project related.

No Limit Level exceedance was recorded in the reporting period.

Breaches of Limit Level for Silt Curtain Monitoring

No exceedance of Limit Level of silt curtain monitoring was recorded 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

One (1) complaint regarding water and noise pollution was received by the EPD on 21 May 2021. After investigation, there was no improper installation work or non-compliance operation was found during the investigation. This complaint was replied to the EPD on 1 June 2021.

No notification of 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 first 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 May 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 Details of the construction works carried out by the Contractor in this reporting period are listed below:

- Mobilization and preparation for landing
- 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 1.1**.

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 May 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 18 May 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.	8.16	7.50	2.63	2.70
	Min.	8.15	7.48	2.55	2.38
	Max.	8.16	7.52	2.72	3.02
C3	Avg.	8.13	7.51	2.29	2.64
	Min.	8.11	7.50	2.18	2.48
	Max.	8.15	7.53	2.40	2.80
F1	Avg.	8.01	7.52	2.14	3.22
	Min.	7.96	7.46	1.83	3.10
	Max.	8.06	7.58	2.45	3.33
F2	Avg.	8.95	8.19	1.93	3.01
	Min.	8.17	7.55	1.55	2.87
	Max.	9.73	8.84	2.30	3.15
GS1	Avg.	10.93	10.73	1.83	2.60
	Min.	10.72	10.52	1.83	2.55
	Max.	11.14	10.95	1.83	2.65
B2	Avg.	11.56	11.49	1.83	3.04
	Min.	11.46	11.40	1.53	2.23
	Max.	11.66	11.58	2.13	3.85
CS1	Avg.	8.17	7.42	2.18	2.81
	Min.	7.88	7.35	2.17	2.60
	Max.	8.47	7.50	2.18	3.02
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 Three (3) Action Level exceedances were recorded in the reporting period. Three (3) recorded Action Level exceedances were related to suspended solid. After investigation, all recorded Action Level exceedances were considered non-project related.

2.8.5 Two (2) Action Level exceedances related to suspended solids (SS) were recorded at mid-flood tide on 18 May 2021. The Action Level exceedances were recorded at water quality monitoring stations – F2 and B2 around 4 am to 5 am. According to the information from the Contractor, there was no cable laying, burial work, or other construction works was carried during the water quality monitoring process. Considered the locations of water quality monitoring stations, if the exceedances were caused by the Project works, the water quality at monitoring station - GS1, was closer to the cable alignment compared to F2 and B2, should be more sensitive to cable laying works. However, there was no exceedance recorded at GS1. The water quality monitoring station at GS1 was closer to the cable alignment, there was no exceedance recorded. The water quality monitoring station at F2 and B2 were farther to the cable alignment, but exceedances were recorded at these stations. From this comparison, it can predict the recorded exceedances were not caused by the cable laying works. After investigation, considering there was no construction work was carried during water quality monitoring, and no exceedance was recorded at the water quality monitoring station with a closer distance to the cable alignment, the exceedances were considered not due to the Project.

2.8.6 One (1) Action Level exceedance related to suspended solid was recorded at mid-ebb tide on 18 May 2021. The Action Level exceedance was recorded at water quality monitoring station - F1. According to the information provided by the contractor, the cable laying and burial works were carried near the Stanley Barracks during the water quality monitoring process. Considering the distances between the works area and water quality monitoring stations, the water quality monitoring station at F2 was closer to the works area. The water quality at F2 should be more sensitive to the cable laying works carried on that time. However, there was no exceedance recorded at F2. The exceedance was recorded at F1, which was located farther than F2, it can be considered the exceedance at F1 was not due to the cable laying work. Therefore, the exceedance was considered not due to the Project.

2.8.7 No Limit Level exceedance was recorded in the reporting period.

2.8.8 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 The silt curtain monitoring was conducted on 17 May 2021. The silt curtain monitoring was not carried out on 18 and 19 May 2021 onwards as cable burial works within 500m of boundary of St. Stephen’s Beach were completed on 17 May 2021. The monitoring results are summarized in **Table 3.3**.

3.8.2 The cable burial works within 500m of boundary of St. Stephen’s Beach was carried between 18:00 and 19:00 on 17 May 2021. During the cable burial works, there was one (1) time of silt curtain monitoring carried out with averaged 38.3 NTU measured at “inside” the silt curtain and 2.2 NTU measured at “outside” the silt curtain.

3.8.3 Since no increase of turbidity was noticed “outside” the silt curtain compared to “inside” the silt curtain, there was no Limit Level exceedance recorded in the silt curtain monitoring.

3.8.4 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 limit levels of water quality during the reporting period.

Table 3.3 Summary of Silt Curtain Monitoring Results in the Reporting Period

Date	Location	Sampling Time	Sampling Depth (m)	Turbidity (NTU)		Average Turbidity (NTU)	Limit Level	
							Outside>Inside	Exceedance
17 May 2021	Inside of Silt Curtain	18:16	5.5	38.0	38.6	38.3	No	No
	Outside of Silt Curtain	18:21	5.5	2.3	2.1	2.2		

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 17 to 19 May 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 17 to 19 May 2021.

5 ENVIRONMENTAL COMPLAINT, NOTIFICATION OF SUMMONS AND SUCCESSFUL PROSECUTION

5.1 Environmental Complaint

5.1.1 One (1) complaint regarding water and noise pollution was received by the EPD on 21 May 2021. The complaint was about a slight sediment plume near the surface was observed at the cable laying works area on 19 May 2021, that day was a general holiday. The complainant also concerned the noise pollution created from marine activities. After investigation, the slight sediment plume was due to the injector was raised and lowered to cross existing cables during the cable laying actives. The Contractor applied construction noise permits for construction works carried at restricted hours. The construction works also complied with the construction noise permit. There was no improper installation work or non-compliance operation was found during the investigation. This complaint was replied to the EPD on 1 June 2021.

5.2 Notification of Summons and Successful Prosecution

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

6 CONCLUSIONS AND RECOMMENDATIONS

6.1.1 Three (3) Action Level exceedances of water quality monitoring were recorded in the reporting period. Three (3) recorded Action Level exceedances were related to suspended solid. After investigation, all recorded Action Level exceedances were considered as non-project related.

6.1.2 No Limit Level exceedance of water quality monitoring was recorded in the reporting period.

6.1.3 No exceedance of Limit Level of silt curtain monitoring was recorded in the reporting period.

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 One (1) complaint regarding water and noise pollution was received by the EPD on 21 May 2021. After investigation, there was no improper installation work or non-compliance operation was found during the investigation. This complaint was replied to the EPD on 1 June 2021.

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

FIGURES

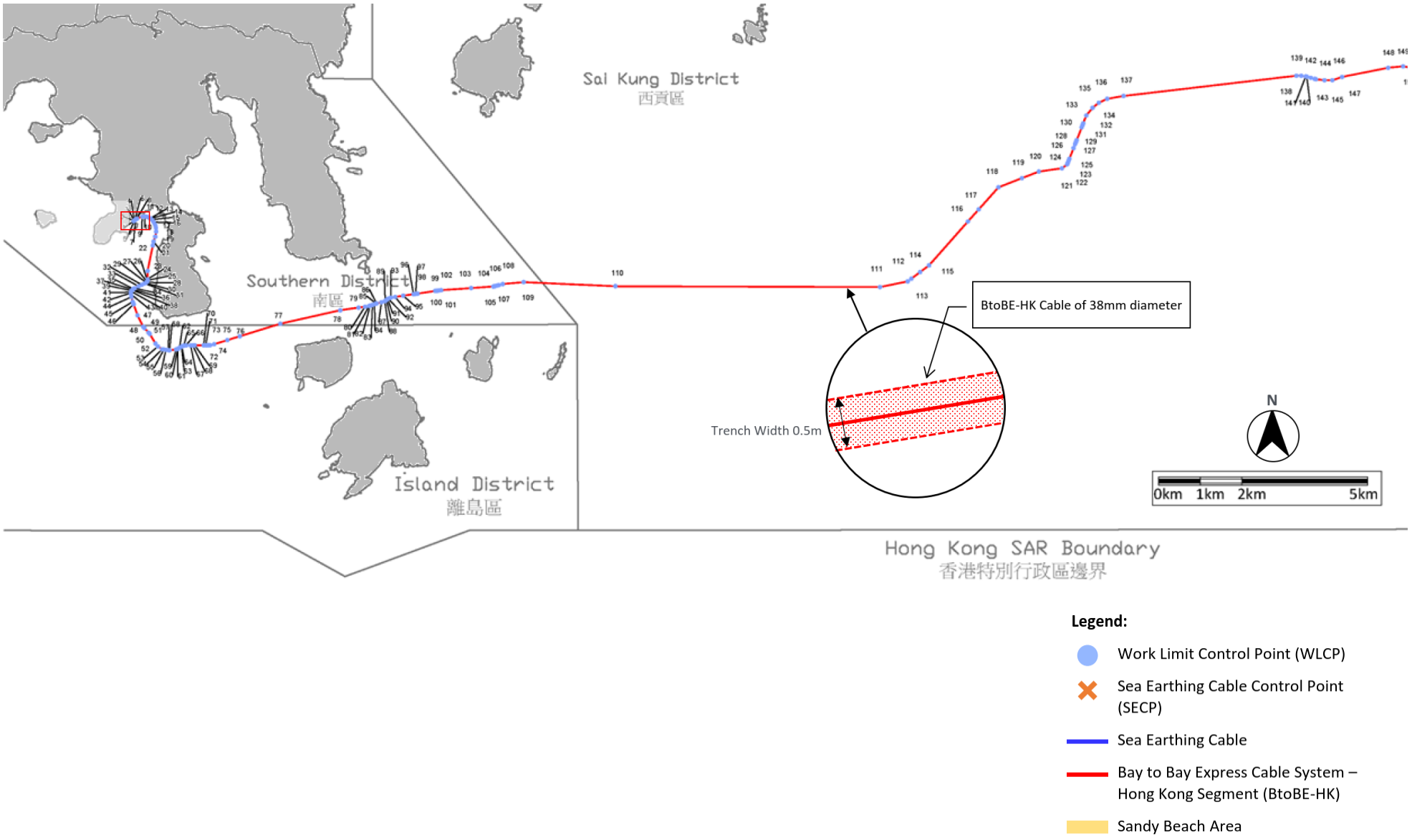


Figure 1.1 Alignment of BtoBE-HK Cable System within Hong Kong (Source: Figure 1-3 of the Project Profile)

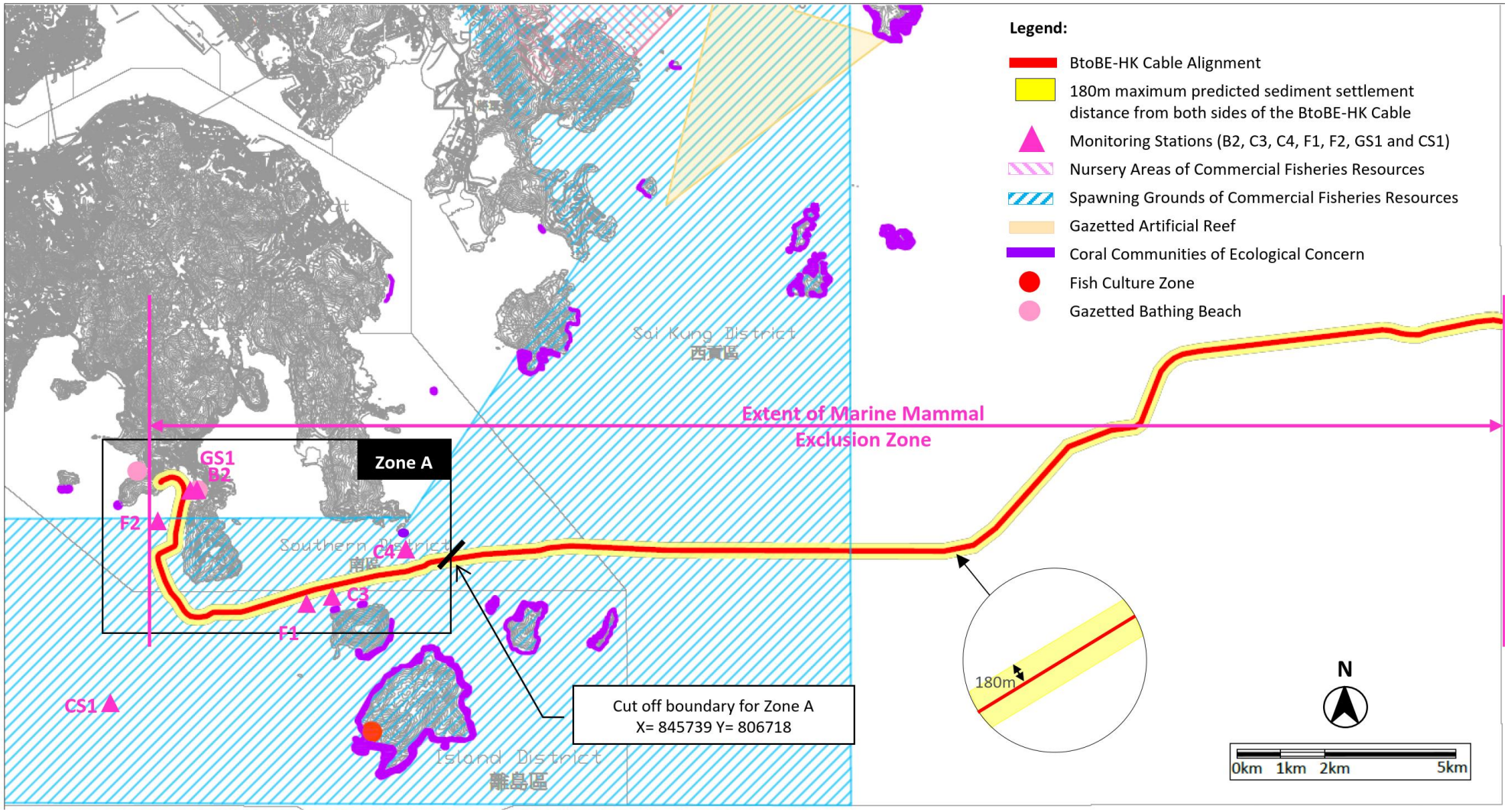


Figure 2.1 Locations of Water Quality Monitoring Station (Source: Figure F.1 of the Project Profile)

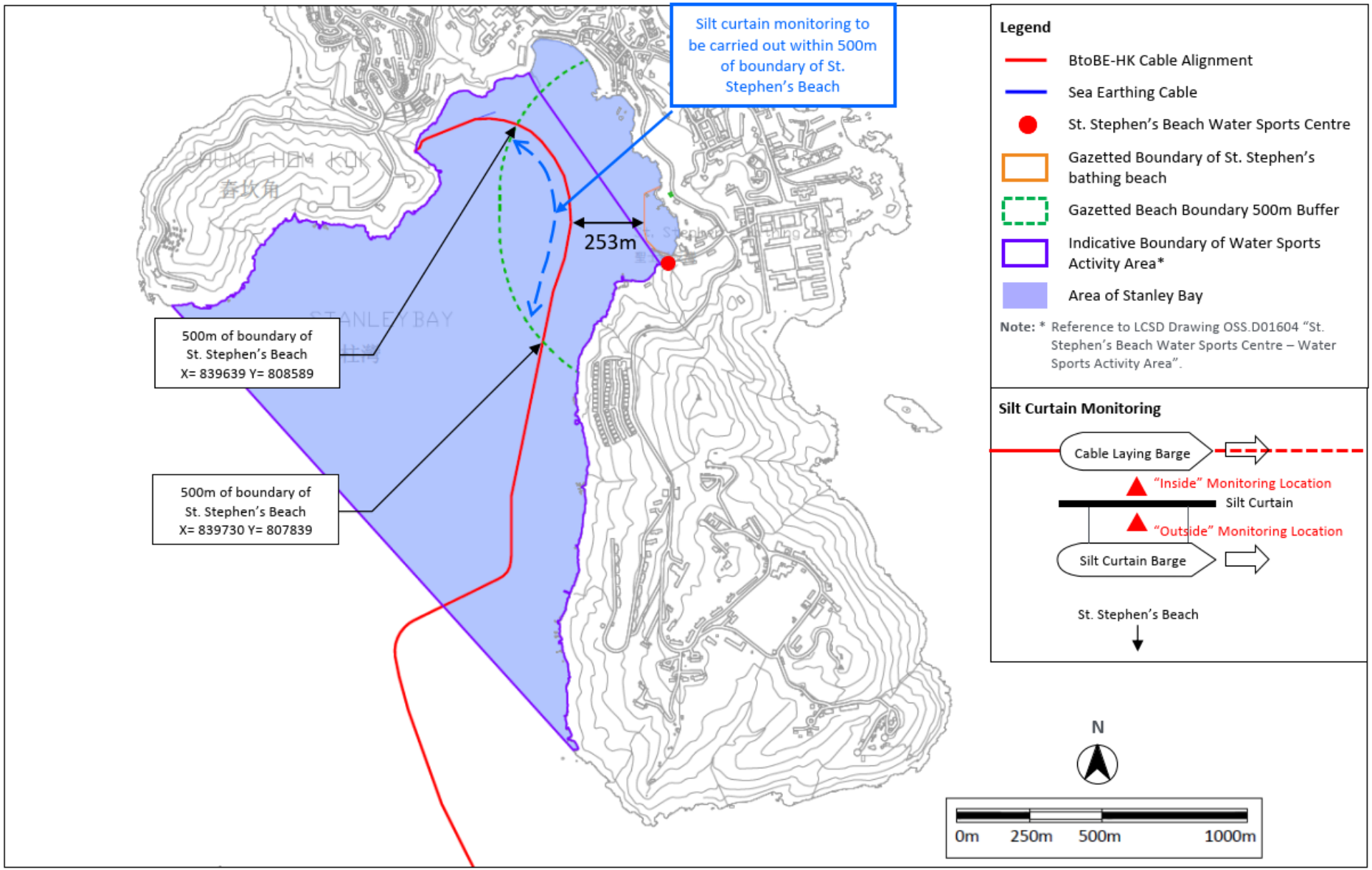
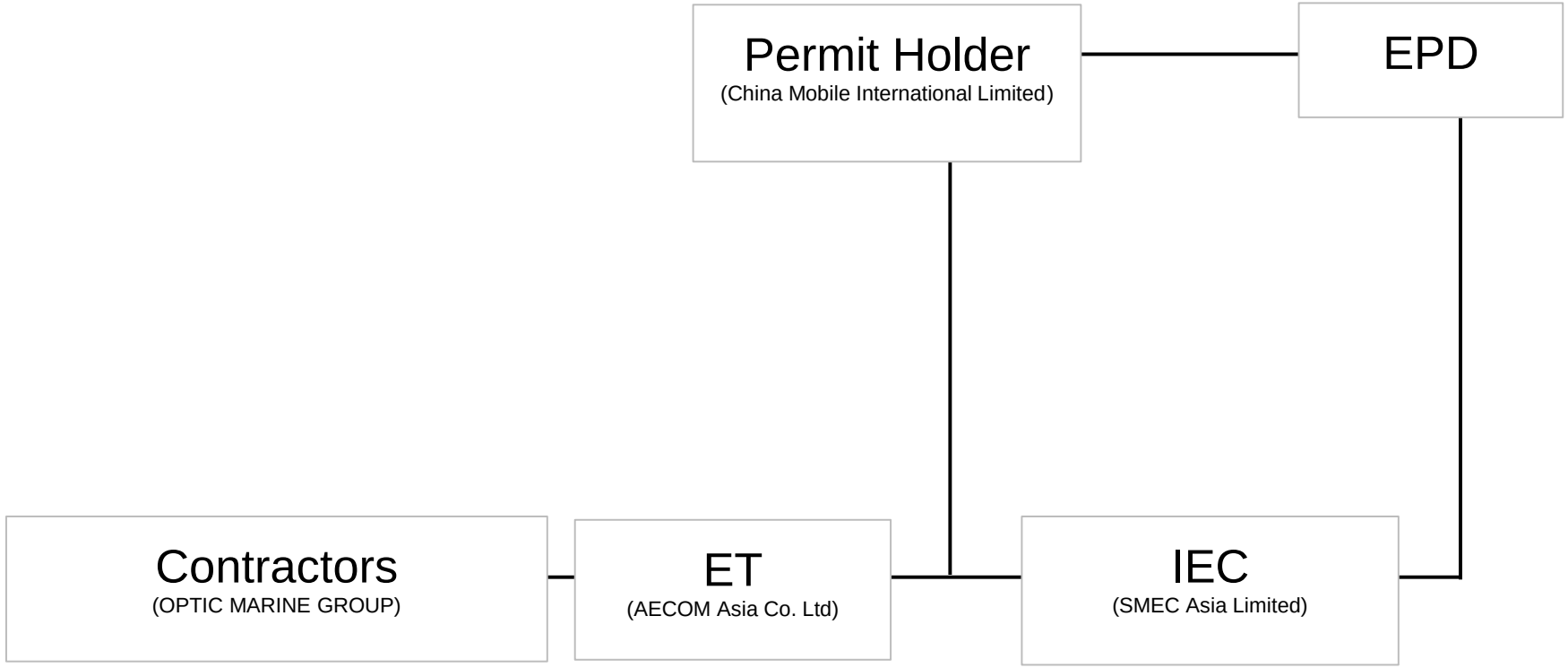


Figure 2.2 Location of Silt Curtain Monitoring (Source: Figure F.2 of the Project Profile)

APPENDIX A
PROJECT ORGANIZATION STRUCTURE



AECOM

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

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
						1-May
2-May	3-May	4-May	5-May	6-May	7-May	8-May
9-May	10-May	11-May	12-May	13-May	14-May	15-May
16-May	17-May	18-May	19-May	20-May	21-May	22-May
	Silt Curtain Monitoring ***MMO***	**WQM** ***MMO***	***MMO***			
23-May	24-May	25-May	26-May	27-May	28-May	29-May
30-May	31-May					

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 18 May 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)	
18-May-21	C4	Sunny	Moderate	16:38	Surface	1.0	26.34 26.38	26.36	30.11 30.06	30.09	7.97 7.95	7.96	134.8 120.7	127.8	9.18 8.21	8.70	8.15	2.50 2.60	2.55	2.55	2.80 2.30	2.55	2.38	S	3.8	No any influencing factor was observed during monitoring.
					Middle	24.2	22.56 22.44	22.50	36.24 36.45	36.35	7.72 7.73	7.73	107.6 108.5	108.1	7.57 7.63	7.60		2.50 2.60	2.55		3.00 2.20	2.60				
					Bottom	47.4	22.22 22.24	22.23	36.82 36.80	36.81	7.75 7.74	7.75	106.6 106.8	106.7	7.51 7.52	7.52	7.52	2.60 2.50	2.55		2.20 1.80	2.00				
18-May-21	C3	Sunny	Moderate	16:03	Surface	1.0	26.17 26.39	26.28	30.29 30.04	30.17	7.95 7.96	7.96	126.5 127.2	126.9	8.63 8.66	8.65	8.15	2.10 2.10	2.10	2.18	2.70 2.30	2.50	2.48	S	4.2	No any influencing factor was observed during monitoring.
					Middle	30.1	22.32 22.41	22.37	36.63 36.49	36.56	7.72 7.72	7.72	107.1 110.4	108.8	7.53 7.76	7.65		2.20 2.20	2.20		2.70 2.00	2.35				
					Bottom	59.3	22.25 22.21	22.23	36.79 36.84	36.82	7.75 7.74	7.75	107.0 106.6	106.8	7.51 7.48	7.50	7.50	2.30 2.20	2.25		2.50 2.70	2.60				
18-May-21	F1	Sunny	Moderate	15:43	Surface	1.0	26.14 26.13	26.14	30.34 30.35	30.35	7.94 7.93	7.94	123.9 116.6	120.3	8.45 7.95	8.20	7.96	1.70 1.80	1.75	1.83	3.30 4.00	3.65	**3.33**	S	4.1	No any influencing factor was observed during monitoring.
					Middle	29.8	22.49 22.40	22.45	36.34 36.54	36.44	7.72 7.72	7.72	109.9 109.2	109.6	7.73 7.69	7.71		1.80 1.90	1.85		4.10 3.30	3.70				
					Bottom	58.6	22.18 22.23	22.21	36.89 36.81	36.85	7.75 7.75	7.75	108.1 108.7	108.4	7.56 7.59	7.58	7.58	1.90 1.90	1.90		2.60 2.70	2.65				
18-May-21	CS1	Sunny	Moderate	14:59	Surface	1.0	26.07 26.09	26.08	30.39 30.36	30.38	7.95 7.93	7.94	121.5 123.5	122.5	8.55 8.67	8.61	8.47	2.10 2.10	2.10	2.17	2.50 1.80	2.15	2.60	SW	3.5	No any influencing factor was observed during monitoring.
					Middle	11.7	22.42 22.47	22.45	36.44 36.35	36.40	7.73 7.75	7.74	120.8 122.1	121.5	8.31 8.33	8.32		2.20 2.20	2.20		2.10 2.90	2.50				
					Bottom	22.4	22.39 22.50	22.45	36.60 36.56	36.58	7.80 7.74	7.77	106.5 106.9	106.7	7.48 7.51	7.50	7.50	2.30 2.10	2.20		3.60 2.70	3.15				
18-May-21	F2	Sunny	Moderate	14:37	Surface	1.0	26.03 26.04	26.04	30.42 30.44	30.43	7.96 7.97	7.97	136.6 153.0	144.8	9.57 10.71	10.14	9.73	1.40 1.50	1.45	1.55	3.90 4.10	4.00	2.87	SW	2.4	No any influencing factor was observed during monitoring.
					Middle	6.8	23.09 24.10	23.60	34.45 33.50	33.98	7.81 7.84	7.83	133.7 139.3	136.5	9.13 9.51	9.32		1.60 1.60	1.60		2.60 2.50	2.55				
					Bottom	12.7	22.66 22.70	22.68	36.08 36.15	36.12	7.86 7.89	7.88	122.1 131.3	126.7	8.57 9.11	8.84	8.84	1.60 1.60	1.60		1.80 2.30	2.05				
18-May-21	GS1	Sunny	Moderate	14:22	Surface	1.0	26.10 26.13	26.12	30.46 30.49	30.48	8.04 8.03	8.04	166.9 163.5	165.2	11.38 11.14	11.26	11.14	1.80 1.90	1.85	1.83	2.70 2.30	2.50	2.55	SW	1.9	No any influencing factor was observed during monitoring.
					Middle	3.1	25.94 26.01	25.98	30.60 30.54	30.57	8.03 8.02	8.03	164.3 158.2	161.3	11.22 10.80	11.01		1.80 1.80	1.80		2.60 2.80	2.70				
					Bottom	5.2	25.39 25.87	25.63	31.25 30.80	31.03	7.99 8.02	8.01	155.8 163.6	159.7	10.71 11.18	10.95	10.95	1.90 1.80	1.85		2.10 2.80	2.45				
18-May-21	B2	Sunny	Moderate	14:13	Surface	1.0	26.14 26.10	26.12	30.48 30.49	30.49	8.05 8.05	8.05	171.5 170.6	171.1	11.69 11.63	11.66	11.66	2.10 2.10	2.10	2.13	2.40 1.90	2.15	2.23	SW	1.5	No any influencing factor was observed during monitoring.
					Bottom	4.1	26.03 26.08	26.06	30.46 30.45	30.46	8.05 8.05	8.05	169.0 170.2	169.6	11.54 11.61	11.58	11.58	2.10 2.20	2.15		2.70 1.90	2.30				

* Depth Average

Action Level Exceednaces

Limit Level Exceedance

Appendix D - Water Quality Monitoring Result

Water Quality Moniyoring Result on 18 May 2021 - Mid-Flood 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 Solids (mg/L)			Wind		Remark
							Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*	Direction	Speed (m/s)	
18-May-21	C4	Cloudy	Moderate	2:27	Surface	1.0	26.17 26.15	26.16	30.42 30.42	30.42	7.95 7.94	7.95	127.0 129.2	128.1	8.65 8.81	8.73	8.16	2.60 2.60	2.60	2.72	3.50 3.40	3.45	3.02	SW	3.6	No any influencing factor was observed during monitoring.
					Middle	24.0	22.12 22.28	22.20	36.98 36.71	36.85	7.71 7.71	7.71	107.9 108.5	108.2	7.58 7.61	7.60		2.80 2.80	2.80		2.90 2.50	2.70				
					Bottom	47.0	22.17 22.12	22.15	36.94 36.98	36.96	7.71 7.71	7.71	106.5 106.2	106.4	7.48 7.47	7.48	7.48	2.80 2.70	2.75		3.00 2.80	2.90				
18-May-21	C3	Cloudy	Moderate	2:57	Surface	1.0	26.20 26.19	26.20	30.41 30.42	30.42	7.95 7.95	7.95	130.5 123.2	126.9	8.89 8.39	8.64	8.11	2.20 2.20	2.20	2.40	1.90 2.70	2.30	2.80	SW	4.0	No any influencing factor was observed during monitoring.
					Middle	30.0	22.38 22.31	22.35	36.55 36.65	36.60	7.71 7.72	7.72	107.9 108.1	108.0	7.58 7.59	7.59		2.40 2.50	2.45		2.80 3.10	2.95				
					Bottom	59.1	22.29 22.12	22.21	36.70 36.97	36.84	7.72 7.73	7.73	107.1 107.4	107.3	7.51 7.55	7.53	7.53	2.60 2.50	2.55		3.50 2.80	3.15				
18-May-21	F1	Cloudy	Moderate	3:14	Surface	1.0	26.13 26.11	26.12	30.47 30.46	30.47	8.03 8.00	8.02	123.8 128.1	126.0	8.44 8.73	8.59	8.06	2.50 2.20	2.35	2.45	2.60 1.80	2.20	3.10	SW	2.8	No any influencing factor was observed during monitoring.
					Middle	29.8	22.44 22.41	22.43	36.45 36.50	36.48	7.76 7.81	7.79	106.7 106.9	106.8	7.52 7.55	7.54		2.50 2.50	2.50		2.80 2.30	2.55				
					Bottom	58.5	22.15 22.17	22.16	36.93 36.90	36.92	7.78 7.85	7.82	106.3 106.1	106.2	7.46 7.45	7.46	7.46	2.40 2.60	2.50		4.90 4.20	4.55				
18-May-21	CS1	Cloudy	Moderate	3:46	Surface	1.0	26.03 26.07	26.05	30.49 30.48	30.49	7.93 8.00	7.97	121.4 122.2	121.8	8.25 8.34	8.30	7.88	2.10 2.20	2.15	2.18	2.30 1.40	1.85	3.02	SW	4.1	No any influencing factor was observed during monitoring.
					Middle	11.8	22.36 22.39	22.38	36.54 36.50	36.52	7.75 7.75	7.75	110.0 105.4	107.7	7.51 7.42	7.47		2.20 2.20	2.20		3.00 2.90	2.95				
					Bottom	22.7	22.13 22.17	22.15	36.96 36.91	36.94	7.78 7.77	7.78	104.4 104.7	104.6	7.34 7.35	7.35	7.35	2.20 2.20	2.20		3.80 4.70	4.25				
18-May-21	F2	Cloudy	Moderate	4:12	Surface	1.0	26.07 26.09	26.08	30.47 30.48	30.48	7.95 8.00	7.98	118.6 132.1	125.4	8.10 9.01	8.56	8.17	2.20 2.20	2.20	2.30	4.40 3.70	4.05	**3.15**	SW	2.1	No any influencing factor was observed during monitoring.
					Middle	7.0	23.74 23.77	23.76	33.82 33.77	33.80	7.80 7.79	7.80	110.9 110.8	110.9	7.78 7.78	7.78		2.30 2.20	2.25		3.20 3.10	3.15				
					Bottom	13.0	22.47 22.47	22.47	36.41 36.42	36.42	7.79 7.81	7.80	106.5 106.8	106.7	7.54 7.55	7.55	7.55	2.50 2.40	2.45		2.10 2.40	2.25				
18-May-21	GS1	Cloudy	Moderate	4:22	Surface	1.0	26.12 26.09	26.11	30.48 30.50	30.49	8.03 8.03	8.03	156.9 161.1	159.0	10.69 10.99	10.84	10.72	1.80 1.80	1.80	1.83	3.40 4.10	3.75	2.65	SW	1.4	No any influencing factor was observed during monitoring.
					Middle	3.2	25.78 25.97	25.88	30.74 30.55	30.65	8.02 8.02	8.02	159.0 151.0	155.0	10.87 10.32	10.60		1.80 1.80	1.80		2.60 3.20	2.90				
					Bottom	5.4	25.04 25.86	25.45	31.78 30.83	31.31	7.97 8.03	8.00	148.2 158.0	153.1	10.22 10.82	10.52	10.52	1.90 1.90	1.90		1.20 1.40	1.30				
18-May-21	B2	Cloudy	Moderate	4:31	Surface	1.0	26.07 26.12	26.10	30.49 30.51	30.50	8.05 8.04	8.05	168.1 167.7	167.9	11.48 11.43	11.46	11.46	1.50 1.50	1.50	1.53	4.00 4.80	4.40	**3.85**	SW	1.2	No any influencing factor was observed during monitoring.
					Bottom	4.1	25.99 26.03	26.01	30.53 30.53	30.53	8.05 8.05	8.05	166.8 167.3	167.1	11.38 11.42	11.40	11.40	1.50 1.60	1.55		3.00 3.60	3.30				

* Depth Average

Action Level Exceednaces

Limit Level Exceedance

APPENDIX E
LABORATORY ANALYIS RESULTS

ALS Technichem (HK) Pty Ltd

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES

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*	: **HK2119862**
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*	: 18-May-2021
Order number	:	—	*Quote number*	:	HKE/1289/2021_V2	*Date of issue*	: 28-May-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 18-May-2021 to 28-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 HK2119862 :

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	18-May-2021	HK2119862-001		2.4	----	----	----	----
B2/S/Duplicate Mid-Ebb	18-May-2021	HK2119862-002		1.9	----	----	----	----
B2/B/ Mid-Ebb	18-May-2021	HK2119862-005		2.7	----	----	----	----
B2/B/Duplicate Mid-Ebb	18-May-2021	HK2119862-006		1.9	----	----	----	----
C3/S/ Mid-Ebb	18-May-2021	HK2119862-007		2.7	----	----	----	----
C3/S/Duplicate Mid-Ebb	18-May-2021	HK2119862-008		2.3	----	----	----	----
C3/M/ Mid-Ebb	18-May-2021	HK2119862-009		2.7	----	----	----	----
C3/M/Duplicate Mid-Ebb	18-May-2021	HK2119862-010		2.0	----	----	----	----
C3/B/ Mid-Ebb	18-May-2021	HK2119862-011		2.5	----	----	----	----
C3/B/Duplicate Mid-Ebb	18-May-2021	HK2119862-012		2.7	----	----	----	----
C4/F1/S/ Mid-Ebb	18-May-2021	HK2119862-013		2.8	----	----	----	----
C4/F1/S/Duplicate Mid-Ebb	18-May-2021	HK2119862-014		2.3	----	----	----	----
C4/F1/M/ Mid-Ebb	18-May-2021	HK2119862-015		3.0	----	----	----	----
C4/F1/M/Duplicate Mid-Ebb	18-May-2021	HK2119862-016		2.2	----	----	----	----
C4/F1/B/ Mid-Ebb	18-May-2021	HK2119862-017		2.2	----	----	----	----
C4/F1/B/Duplicate Mid-Ebb	18-May-2021	HK2119862-018		1.8	----	----	----	----
F1/S/ Mid-Ebb	18-May-2021	HK2119862-019		3.3	----	----	----	----
F1/S/Duplicate Mid-Ebb	18-May-2021	HK2119862-020		4.0	----	----	----	----
F1/M/ Mid-Ebb	18-May-2021	HK2119862-021		4.1	----	----	----	----
F1/M/Duplicate Mid-Ebb	18-May-2021	HK2119862-022		3.3	----	----	----	----
F1/B/ Mid-Ebb	18-May-2021	HK2119862-023		2.6	----	----	----	----
F1/B/Duplicate Mid-Ebb	18-May-2021	HK2119862-024		2.7	----	----	----	----
F2/S/ Mid-Ebb	18-May-2021	HK2119862-025		3.9	----	----	----	----
F2/S/Duplicate Mid-Ebb	18-May-2021	HK2119862-026		4.1	----	----	----	----
F2/M/ Mid-Ebb	18-May-2021	HK2119862-027		2.6	----	----	----	----
F2/M/Duplicate Mid-Ebb	18-May-2021	HK2119862-028		2.5	----	----	----	----
F2/B/ Mid-Ebb	18-May-2021	HK2119862-029		1.8	----	----	----	----
F2/B/Duplicate Mid-Ebb	18-May-2021	HK2119862-030		2.3	----	----	----	----
GS1/S/ Mid-Ebb	18-May-2021	HK2119862-031		2.7	----	----	----	----
GS1/S/Duplicate Mid-Ebb	18-May-2021	HK2119862-032		2.3	----	----	----	----
GS1/M/ Mid-Ebb	18-May-2021	HK2119862-033		2.6	----	----	----	----

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	18-May-2021	HK2119862-034		2.8	----	----	----	----
GS1/B/ Mid-Ebb	18-May-2021	HK2119862-035		2.1	----	----	----	----
GS1/B/Duplicate Mid-Ebb	18-May-2021	HK2119862-036		2.8	----	----	----	----
CS1/S/ Mid-Ebb	18-May-2021	HK2119862-037		2.5	----	----	----	----
CS1/S/Duplicate Mid-Ebb	18-May-2021	HK2119862-038		1.8	----	----	----	----
CS1/M/ Mid-Ebb	18-May-2021	HK2119862-039		2.1	----	----	----	----
CS1/M/Duplicate Mid-Ebb	18-May-2021	HK2119862-040		2.9	----	----	----	----
CS1/B/ Mid-Ebb	18-May-2021	HK2119862-041		3.6	----	----	----	----
CS1/B/Duplicate Mid-Ebb	18-May-2021	HK2119862-042		2.7	----	----	----	----
B2/S/ Mid-Flood	18-May-2021	HK2119862-043		4.0	----	----	----	----
B2/S/Duplicate Mid-Flood	18-May-2021	HK2119862-044		4.8	----	----	----	----
B2/B/ Mid-Flood	18-May-2021	HK2119862-047		3.0	----	----	----	----
B2/B/Duplicate Mid-Flood	18-May-2021	HK2119862-048		3.6	----	----	----	----
C3/S/ Mid-Flood	18-May-2021	HK2119862-049		1.9	----	----	----	----
C3/S/Duplicate Mid-Flood	18-May-2021	HK2119862-050		2.7	----	----	----	----
C3/M/ Mid-Flood	18-May-2021	HK2119862-051		2.8	----	----	----	----
C3/M/Duplicate Mid-Flood	18-May-2021	HK2119862-052		3.1	----	----	----	----
C3/B/ Mid-Flood	18-May-2021	HK2119862-053		3.5	----	----	----	----
C3/B/Duplicate Mid-Flood	18-May-2021	HK2119862-054		2.8	----	----	----	----
C4/F1/S/ Mid-Flood	18-May-2021	HK2119862-055		3.5	----	----	----	----
C4/F1/S/Duplicate Mid-Flood	18-May-2021	HK2119862-056		3.4	----	----	----	----
C4/F1/M/ Mid-Flood	18-May-2021	HK2119862-057		2.9	----	----	----	----
C4/F1/M/Duplicate Mid-Flood	18-May-2021	HK2119862-058		2.5	----	----	----	----
C4/F1/B/ Mid-Flood	18-May-2021	HK2119862-059		3.0	----	----	----	----
C4/F1/B/Duplicate Mid-Flood	18-May-2021	HK2119862-060		2.8	----	----	----	----
F1/S/ Mid-Flood	18-May-2021	HK2119862-061		2.6	----	----	----	----
F1/S/Duplicate Mid-Flood	18-May-2021	HK2119862-062		1.8	----	----	----	----
F1/M/ Mid-Flood	18-May-2021	HK2119862-063		2.8	----	----	----	----
F1/M/Duplicate Mid-Flood	18-May-2021	HK2119862-064		2.3	----	----	----	----
F1/B/ Mid-Flood	18-May-2021	HK2119862-065		4.9	----	----	----	----
F1/B/Duplicate Mid-Flood	18-May-2021	HK2119862-066		4.2	----	----	----	----
F2/S/ Mid-Flood	18-May-2021	HK2119862-067		4.4	----	----	----	----
F2/S/Duplicate Mid-Flood	18-May-2021	HK2119862-068		3.7	----	----	----	----

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	18-May-2021	HK2119862-069		**3.2**	----	----	----	----
F2/M/Duplicate Mid-Flood	18-May-2021	HK2119862-070		**3.1**	----	----	----	----
F2/B/ Mid-Flood	18-May-2021	HK2119862-071		**2.1**	----	----	----	----
F2/B/Duplicate Mid-Flood	18-May-2021	HK2119862-072		**2.4**	----	----	----	----
GS1/S/ Mid-Flood	18-May-2021	HK2119862-073		**3.4**	----	----	----	----
GS1/S/Duplicate Mid-Flood	18-May-2021	HK2119862-074		**4.1**	----	----	----	----
GS1/M/ Mid-Flood	18-May-2021	HK2119862-075		**2.6**	----	----	----	----
GS1/M/Duplicate Mid-Flood	18-May-2021	HK2119862-076		**3.2**	----	----	----	----
GS1/B/ Mid-Flood	18-May-2021	HK2119862-077		**1.2**	----	----	----	----
GS1/B/Duplicate Mid-Flood	18-May-2021	HK2119862-078		**1.4**	----	----	----	----
CS1/S/ Mid-Flood	18-May-2021	HK2119862-079		**2.3**	----	----	----	----
CS1/S/Duplicate Mid-Flood	18-May-2021	HK2119862-080		**1.4**	----	----	----	----
CS1/M/ Mid-Flood	18-May-2021	HK2119862-081		**3.0**	----	----	----	----
CS1/M/Duplicate Mid-Flood	18-May-2021	HK2119862-082		**2.9**	----	----	----	----
CS1/B/ Mid-Flood	18-May-2021	HK2119862-083		**3.8**	----	----	----	----
CS1/B/Duplicate Mid-Flood	18-May-2021	HK2119862-084		**4.7**	----	----	----	----

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: 3689295)								
HK2119862-001	B2/S/ Mid-Ebb	EA025: Suspended Solids (SS)	----	0.5	mg/L	2.4	2.6	6.9
HK2119862-013	C4/F1/S/ Mid-Ebb	EA025: Suspended Solids (SS)	----	0.5	mg/L	2.8	3.0	7.7
EA/ED: Physical and Aggregate Properties (QC Lot: 3689296)								
HK2119862-023	F1/B/ Mid-Ebb	EA025: Suspended Solids (SS)	----	0.5	mg/L	2.6	2.4	9.9
HK2119862-033	GS1/M/ Mid-Ebb	EA025: Suspended Solids (SS)	----	0.5	mg/L	2.6	2.6	0.0
EA/ED: Physical and Aggregate Properties (QC Lot: 3689297)								
HK2119862-043	B2/S/ Mid-Flood	EA025: Suspended Solids (SS)	----	0.5	mg/L	4.0	4.3	9.1
HK2119862-055	C4/F1/S/ Mid-Flood	EA025: Suspended Solids (SS)	----	0.5	mg/L	3.5	3.1	12.2
EA/ED: Physical and Aggregate Properties (QC Lot: 3689298)								
HK2119862-065	F1/B/ Mid-Flood	EA025: Suspended Solids (SS)	----	0.5	mg/L	4.9	5.2	5.0
HK2119862-075	GS1/M/ Mid-Flood	EA025: Suspended Solids (SS)	----	0.5	mg/L	2.6	2.7	4.7

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: 3689295)											
EA025: Suspended Solids (SS)	----	0.5	mg/L	<0.5	20 mg/L	108	----	85.9	117	----	----
EA/ED: Physical and Aggregate Properties (QCLot: 3689296)											
EA025: Suspended Solids (SS)	----	0.5	mg/L	<0.5	20 mg/L	106	----	85.9	117	----	----
EA/ED: Physical and Aggregate Properties (QCLot: 3689297)											
EA025: Suspended Solids (SS)	----	0.5	mg/L	<0.5	20 mg/L	97.0	----	85.9	117	----	----
EA/ED: Physical and Aggregate Properties (QCLot: 3689298)											
EA025: Suspended Solids (SS)	----	0.5	mg/L	<0.5	20 mg/L	104	----	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.