



# H2H Express Submarine Cable



Pre-installation Coral Survey Report

24 March 2021

Project No.: 0586211

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				Name	Date	
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**Signature Page**

24 March 2021

# **H2H Express Submarine Cable**

## **Pre-installation Coral Survey Report**



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Partner

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

**Reference Document/Plan**

Document/ <del>Plan</del> -to be Certified/ <del>Verified</del> :	Baseline Coral Monitoring Report
Date of Report:	24 March 2021
Prepared by ET:	ERM-Hong Kong Ltd

**Reference to EP Requirement**

EP Condition:	Conditions No. 3.4 – 3.5
Content:	<i>Coral Monitoring During Construction Stage</i>
3.4	Coral monitoring shall be conducted to verify that the cable installation works will not result in any unacceptable impacts to the coral colonies in the vicinity of Sha Shek Tan in accordance with the monitoring requirements described in the Project Profile (Register No.: PP-599/2020).
3.5	The Permit Holder shall submit to the Director three hard copies and one electronic copy of the following reports as defined in the EM&A requirements described in the Project Profile (Register No.: PP-599/2020): (a) Pre-installation coral survey report no later than 2 weeks before the cable laying work is scheduled to commence; and (b) Post-project coral survey report within one month after completion of Post-project coral survey.

**ET Certification**

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



Mandy To, Environmental Team  
Leader

Date: 24 March 2021

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

**Reference Document/Plan**

Document/ <del>Plan to be Certified</del> -Verified:	Baseline Coral Monitoring Report
Date of Report:	24 March 2021
Received by IEC:	Ecosystems Ltd

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**IEC Verification**

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



Vincent Lai, Independent  
Environmental Checker:

Date: 24 March 2021

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## 1. INTRODUCTION

### 1.1 Background

The proposed submarine cable is a section of the H2H Express submarine optical fibre cable system (hereafter known as 'H2HE' and / or the Project), which is over 680 kilometers long in total. The system will further boost the external telecommunications capacity of Hong Kong, reinforcing Hong Kong as a key communication hub in Asia. The H2HE submarine cable in HKSAR waters has an approximate burial depth offshore of 2 to 5 m below the sea bed in the HKSAR waters. The total length of the submarine cable within HKSAR waters is approximately 38 km.

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

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

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

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

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

### 1.2 Objective of the Pre-installation Coral Survey

Pursuant to *Conditions 3.1, 3.4 and 3.5 of the EP*, an Environmental Monitoring and Audit (EM&A) programme, as set out in the PP, is required for this Project, with pre-installation coral survey to be conducted no later than two (2) weeks before the cable laying work is scheduled to commence.

As stated in *Section 3.2 of the EM&A Manual*, the pre-installation coral survey consists of a pre-installation review of coral conditions, either from relevant, publically available coral survey data; or from a coral pre-installation survey. Upon checking on the latest publically available information, there are no updated coral survey data since the date of submission of the Project Profile (i.e. March 2020). As such, a coral pre-installation survey has been conducted in the form of subtidal spot dive survey following the methodology as stated in Section 3.2.1 of the EM&A Manual. The approach for the pre-installation coral survey has been agreed with the Agriculture, Fisheries and Conservation Department (AFCD) prior to the survey.

The objective of the Pre-installation Coral Survey, together with the Post-project Coral Survey to be conducted after completion of cable installation works, is to verify that the cable installation works will not result in any unacceptable impacts to the coral colonies in the vicinity of SST in accordance with the monitoring requirements described in the Project Profile.

### 1.3 Purpose of this Report

This Pre-installation Coral Survey Report (hereafter known as "the Report") is prepared by ERM-Hong Kong, Limited (ERM) on behalf of China Mobile International Limited to present the methodology and

findings of the Pre-installation Coral Survey for the Project, in accordance with requirements of the *EM&A Manual* appended with the approved PP.

## 1.4 Structure of this Report

The remainder of the report is structured as follows:

### **Section 2: Pre-installation Coral Survey Methodology**

Presents the pre-installation coral survey methodology, parameters monitored and monitoring locations in accordance with the *EM&A Manual*.

### **Section 3: Pre-installation Coral Survey Results**

Summarizes the pre-installation coral survey results according to the stipulated monitoring methodology in accordance with the *EM&A Manual*.

### **Section 4: Conclusion**

Provides conclusion based on the findings from the Pre-installation Coral Survey of the Project.



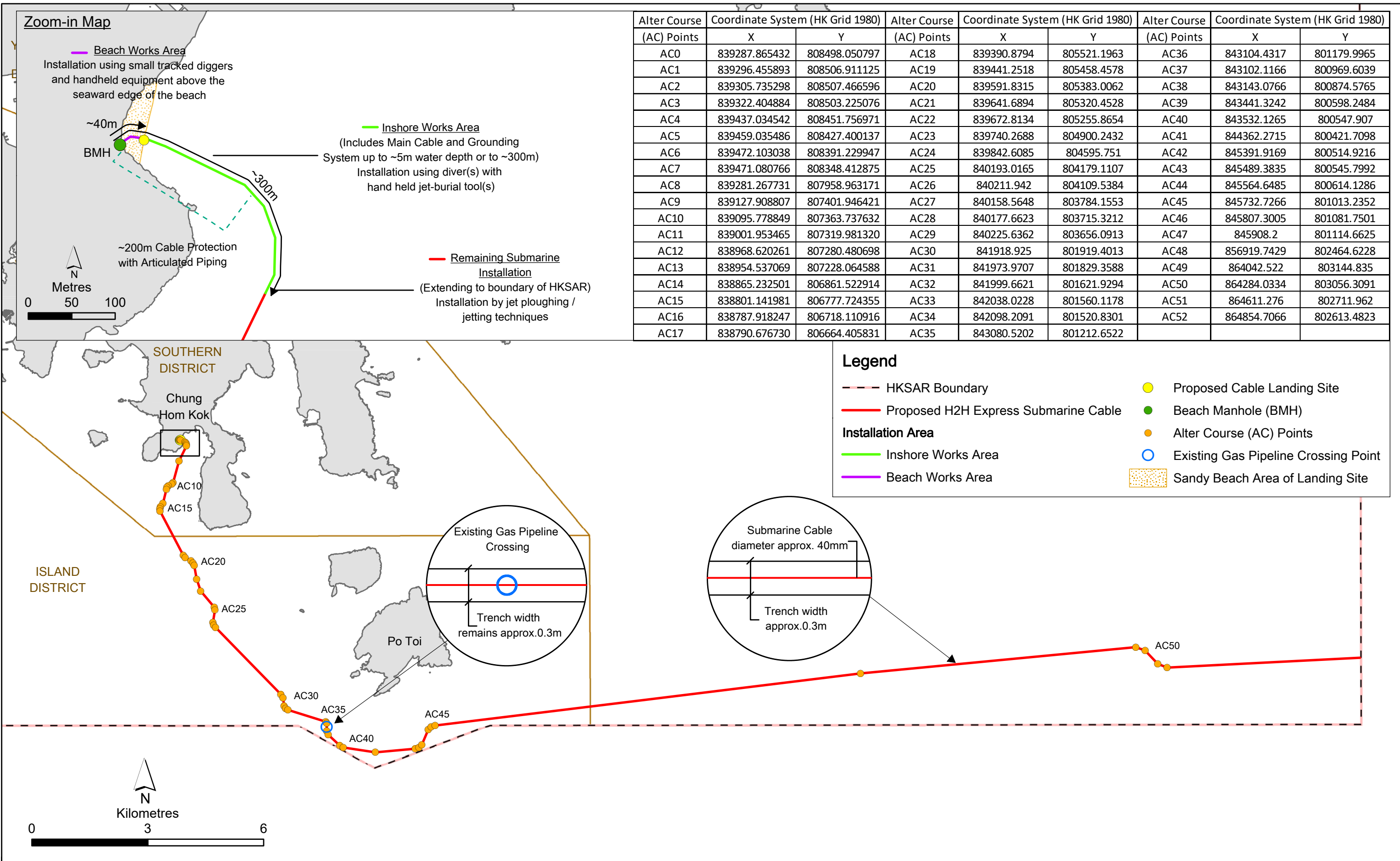


Figure 1.1

Proposed H2H Express Submarine Cable

## 2. PRE-INSTALLATION CORAL SURVEY METHODOLOGY

### 2.1 Survey Methodology

One subtidal spot dive survey was undertaken prior to the installation of the proposed cable. The coral survey works were undertaken by qualified coral specialists appointed by the Environmental Team (ET), degrees in marine sciences and with at least three (3) years of post-graduate experience in the field of marine ecology and undertaking coral surveys.

The same coral specialists should be used for each dive survey to maintain consistency in the documentation of the coral condition and have all been approved by AFCD in advance of undertaking the monitoring work.

### 2.2 Survey Location

The subtidal spot dive survey was conducted at the Coral Survey Area near the landing site in SST, CHK as shown in **Figure 2.1**.

### 2.3 Parameters Monitored

For each coral colony found, the following data were recorded.

- GPS location;
- Species identification to genus or species level, as far as practicable;
- Size (e.g. maximum diameter) and health of identified corals (e.g. degree of sedimentation, partial mortality, sign of bleaching); and
- Photographic record.

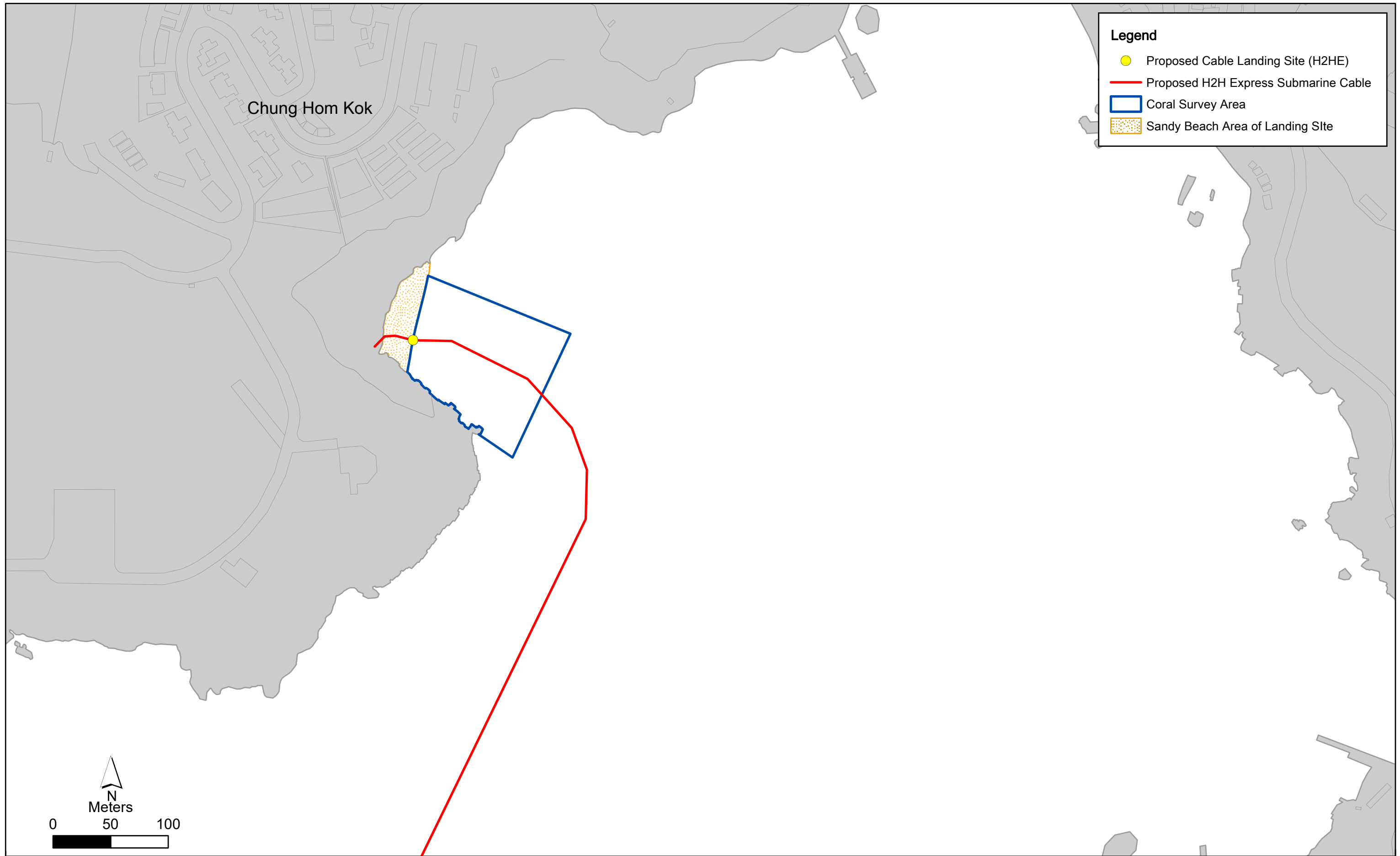


Figure 2.1

Location for the Pre-installation Coral Survey

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 Date: 24/3/2021

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### 3. PRE-INSTALLATION CORAL SURVEY RESULTS

The Pre-installation Coral Survey was conducted on 19 March 2021 between 10:30 and 17:30 (mainly ebb tide). The weather condition was cloudy and the sea condition was moderate. The underwater visibility generally ranged between 1 to 2 m. The subtidal spot dive survey was conducted within the Coral Survey Area with water depth ranged from -2 to -10 mCD.

#### 3.1 Survey Results

##### 3.1.1 General Description of the Coral Survey Area

Results of subtidal spot dive survey in the Coral Survey Area (**Figure 2.1**) indicated that the seabed was mainly composed of sandy and silty substrates. Hard substrates (i.e. rubbles, boulders or bedrock) were scarcely found at the deeper region (-5 to -10 mCD) (i.e. eastern side of the Coral Survey Area) and also in the shallower region (-2 to -5 mCD) (i.e. west and southwest side of the Coral Survey Area).

The coverage of hard corals was observed to be <5% within the Coral Survey Area. No octocoral or black coral was recorded during the survey. Macroalgae, including *Colpomenis* sp., *Petalonia* sp., *Corallina pilulifera* and *Sargassum* sp., were recorded.

Representative photos taken during the survey are shown in **Figure 3.1**.

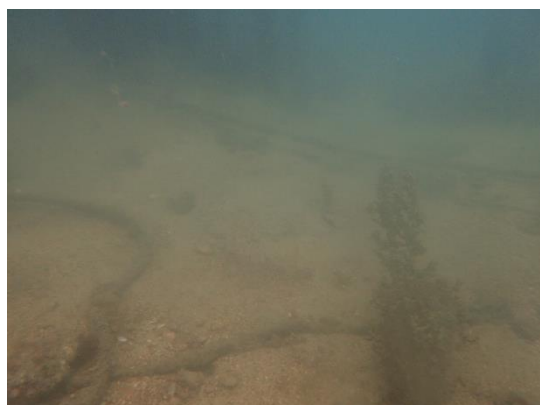
### Figure 3.1 Representative Photos Taken during the Subtidal Spot Dive Survey



a) A diver was measuring the diameter of a coral colony.



b) Macroalgae, *Sargassum* sp., was found during the survey.



c) An overview of the substratum in the shallower region (-2 to -5 mCD) of the Coral Survey Area, composed of mainly sandy and silty substrates.



d) An overview of the substratum in the deeper region (-5 to -10 mCD) of the Coral Survey Area, composed of mainly sandy and silty substrates.

#### 3.1.2 Coral Colonies Recorded during the Survey

A total of 24 nos. of coral colonies (comprised of 13 species of six [6] families) were found during the survey within the Coral Survey Area. The nearest coral colony was found more than 4 m away from the proposed cable. The recorded coral colonies were generally healthy, with no / little degree of sedimentation, no / little partial mortality, and no / little sign of bleaching. Detailed records of the coral colonies are shown in **Table 3.1** and their indicative locations are presented in **Figure 3.2**. Photographic records are provided in **Appendix A**.

#### 3.1.3 Summary

The survey results showed that sparse hard coral colonies of mostly locally common, widely-distributed species are present in the vicinity of the proposed cable landing point at SST. The abundance and diversity of hard corals is considered to be low in the context of subtidal hard bottom habitats in HKSAR. No coral is present in the direct footprint of H2HE cable alignment. The findings are consistent with the information assessed and evaluated in the PP. The cable installation works will not expect to result in any direct and unacceptable impacts to the coral colonies in the vicinity of Sha Shek Tan.

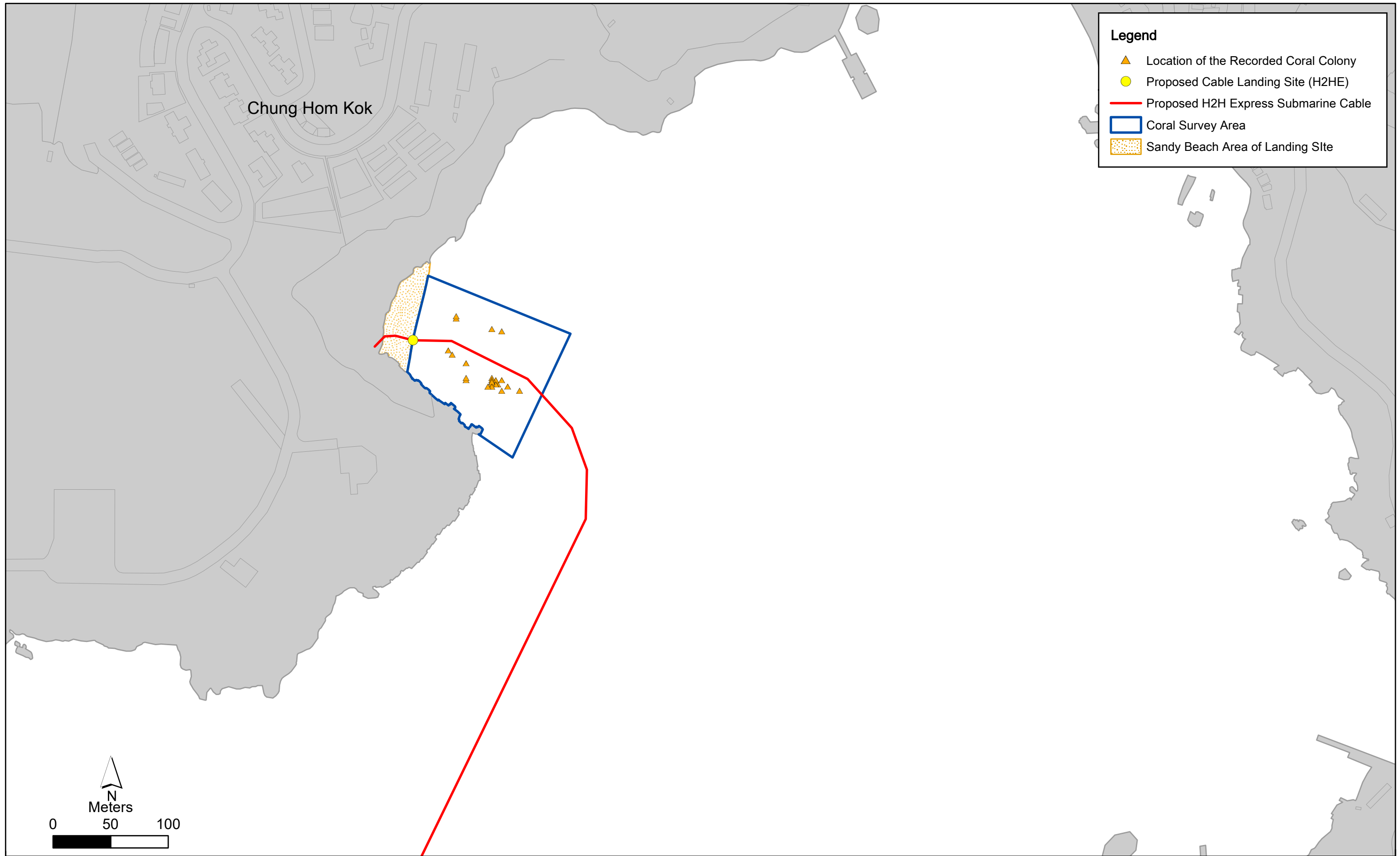


Figure 3.2

Location of the Coral Colonies Recorded during the Survey

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 Date: 24/3/2021

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**Table 3.1 Species, Size, Sediment Cover, Bleached Area, Partial Mortality and Physical Damage to the Identified Coral Colonies**

Coral No.	Family	Genus	Species	Max. diameter (cm)	Max. width (cm)	Sediment cover (%)	Sediment color	Sediment Texture	Sediment thickness (cm)	Bleached area (%)	Partial mortality (%)	Physical damage to colony	Latitude	Longitude
1	Dendrophylliidae	<i>Turbinaria</i>	<i>peltata</i>	65	54	N/A	N/A	N/A	N/A	N/A	15	N/A	N22°12.889	E114°12.427
2	Merulinidae	<i>Cyphastrea</i>	<i>serailia</i>	12	8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N22°12.889	E114°12.437
3	Merulinidae	<i>Cyphastrea</i>	<i>serailia</i>	12	7	5	Light Yellow	Fine	1mm	N/A	15	N/A	N22°12.892	E114°12.434
4	Merulinidae	<i>Dipsastraea</i>	<i>lizardensis</i>	31	30	1	Light Yellow	Fine	<1mm	N/A	5	N/A	N22°12.890	E114°12.431
5	Merulinidae	<i>Dipsastraea</i>	<i>lizardensis</i>	22	18	N/A	N/A	N/A	N/A	N/A	0	N/A	N22°12.891	E114°12.429
6	Merulinidae	<i>Dipsastraea</i>	<i>rotumana</i>	33	30	N/A	N/A	N/A	N/A	N/A	5	N/A	N22°12.889	E114°12.429
7	Merulinidae	<i>Favites</i>	<i>abditata</i>	45	26	5	Light Yellow	Fine	1mm	N/A	15	N/A	N22°12.890	E114°12.429
8	Merulinidae	<i>Favites</i>	<i>abditata</i>	40	20	20	Light Yellow	Fine	1mm	N/A	40	N/A	N22°12.893	E114°12.416
9	Merulinidae	<i>Favites</i>	<i>chinensis</i>	67	58	N/A	N/A	N/A	N/A	N/A	2	N/A	N22°12.921	E114°12.411
10	Merulinidae	<i>Favites</i>	<i>chinensis</i>	27	13	N/A	N/A	N/A	N/A	N/A	10	N/A	N22°12.892	E114°12.416
11	Merulinidae	<i>Favites</i>	<i>pentagona</i>	56	32	10	Light Yellow	Fine	<1mm	N/A	10	N/A	N22°12.904	E114°12.409
12	Merulinidae	<i>Favites</i>	<i>pentagona</i>	58	33	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N22°12.906	E114°12.407
13	Merulinidae	<i>Favites</i>	<i>flexuosa</i>	34	29	5	Light Yellow	Fine	<1mm	N/A	20	N/A	N22°12.890	E114°12.432
14	Merulinidae	<i>Favites</i>	<i>flexuosa</i>	30	26	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N22°12.891	E114°12.429
15	Plesiastreidae	<i>Plesiastrea</i>	<i>versipora</i>	40	30	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N22°12.887	E114°12.443
16	Plesiastreidae	<i>Plesiastrea</i>	<i>versipora</i>	22	20	2	Light Yellow	Fine	<1mm	N/A	5	N/A	N22°12.916	E114°12.429
17	Plesiastreidae	<i>Plesiastrea</i>	<i>versipora</i>	29	16	N/A	N/A	N/A	N/A	N/A	10	N/A	N22°12.893	E114°12.429
18	Poritidae	<i>Bernardpora</i>	<i>stutchburyi</i>	32	18	N/A	N/A	N/A	N/A	2	10	N/A	N22°12.890	E114°12.431
19	Poritidae	<i>Bernardpora</i>	<i>stutchburyi</i>	30	22	N/A	N/A	N/A	N/A	N/A	10	N/A	N22°12.915	E114°12.434
20	Poritidae	<i>Porites</i>	sp.	35	20	5	Light Yellow	Fine	<1mm	2	30	N/A	N22°12.892	E114°12.431
21	Poritidae	<i>Porites</i>	sp.	28	18	10	Light Yellow	Fine	<1mm	5	30	N/A	N22°12.892	E114°12.429
22	Psammocoridae	<i>Psammocora</i>	<i>superficialis</i>	23	14	5	Light Yellow	Fine	<1mm	N/A	0	N/A	N22°12.887	E114°12.434
23	Scleractinia Incertae sedis	<i>Leptastrea</i>	<i>purpurea</i>	50	24	20	Light Yellow	Fine	1mm	2	10	N/A	N22°12.900	E114°12.416
24	Scleractinia Incertae sedis	<i>Leptastrea</i>	<i>purpurea</i>	19	12	N/A	N/A	N/A	N/A	N/A	5	N/A	N22°12.922	E114°12.411

## 4. CONCLUSION

The Pre-installation Coral Survey was undertaken on 19 March 2021 near the landing site area at Sha Shek Tan (SST) of Chung Hom Kok (CHK) in accordance with the *EM&A Manual* for the Project. Subtidal spot dive survey was undertaken to identify and record the location of the coral colonies found within the Coral Survey Area. The results showed that the substrate within the Coral Survey Area was mainly composed of sand and silt, with scarce presence of hard substrate. A total of 24 nos. of hard coral colonies were recorded within the Coral Survey Area with < 5% coverage. No octocoral or black coral was recorded. The survey results showed that sparse hard coral colonies of mostly locally common, widely-distributed species are present in the vicinity of the proposed cable landing point at SST. The abundance and diversity of hard corals is considered to be low in the context of subtidal hard bottom habitats in HKSAR. No coral is present in the direct footprint of H2HE cable alignment. The findings are consistent with the information assessed and evaluated in the Project Profile. The cable installation works will not expect to result in any direct and unacceptable impacts to the coral colonies in the vicinity of Sha Shek Tan.

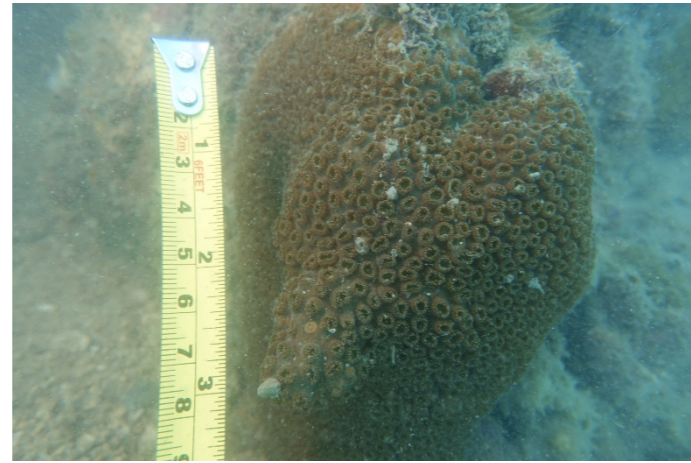
The data obtained from the pre-installation coral survey will be used to compare with those collected during post-project coral survey in order to determine any observable adverse impacts to corals as a result of the cable installation works.



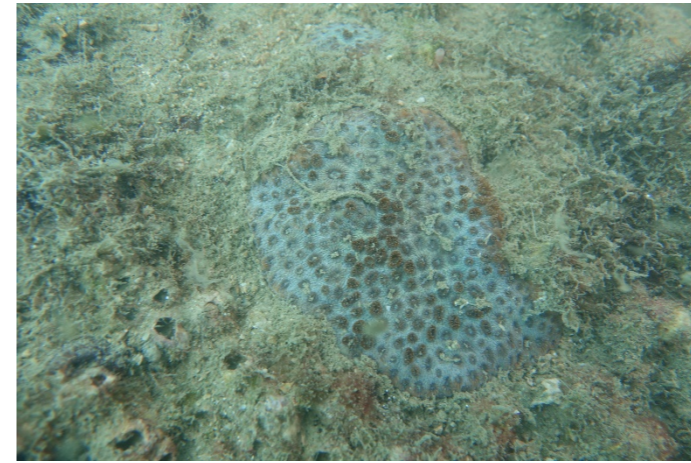
## **APPENDIX A      PHOTOGRAPHIC RECORDS**



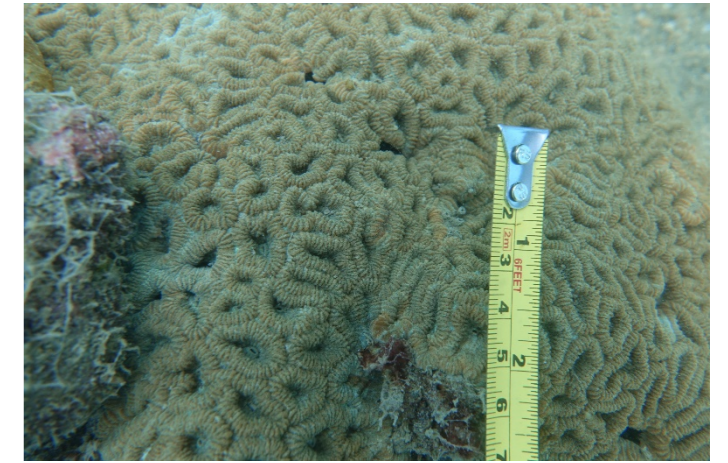
Coral No. 1  
*Turbinaria peltata*



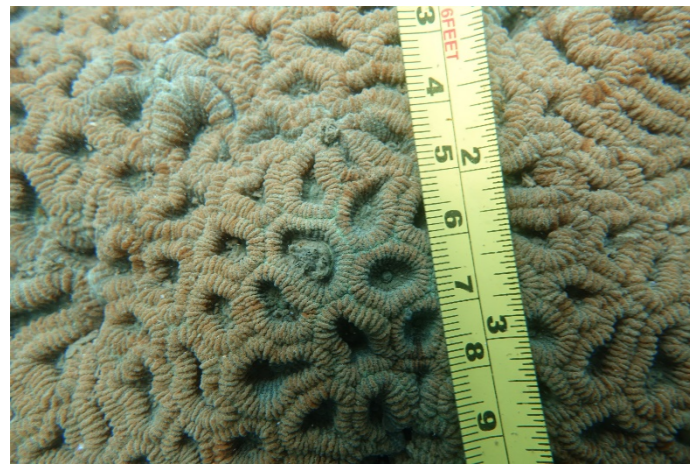
Coral No. 2  
*Cyphastrea serailia*



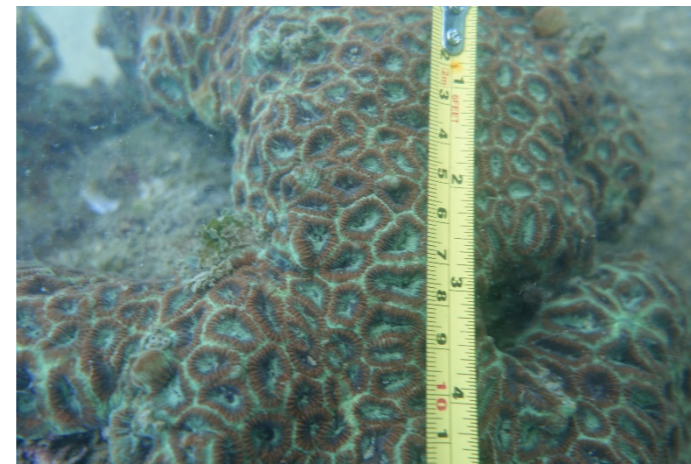
Coral No. 3  
*Cyphastrea serailia*



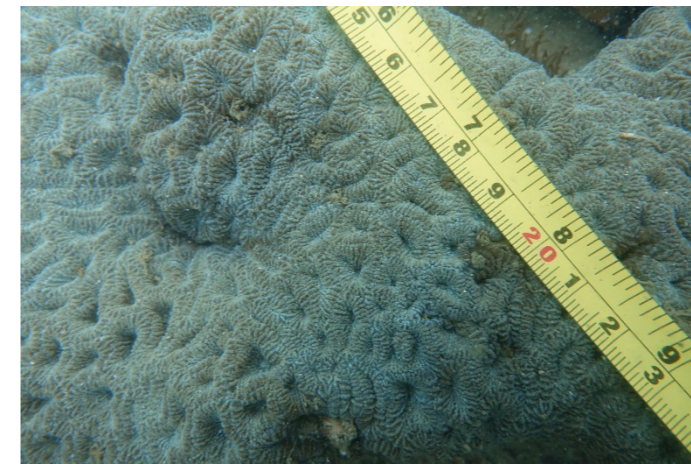
Coral No. 4  
*Dipsastraea lizardensis*



Coral No. 5  
*Dipsastraea lizardensis*



Coral No. 6  
*Dipsastraea rotumana*



Coral No. 7  
*Favites abdita*



Coral No. 8  
*Favites abdita*

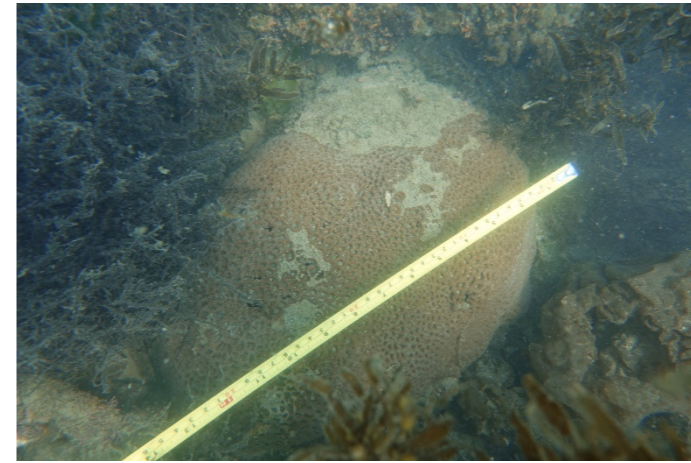
Note: Representative photographs are presented for each recorded coral colony.



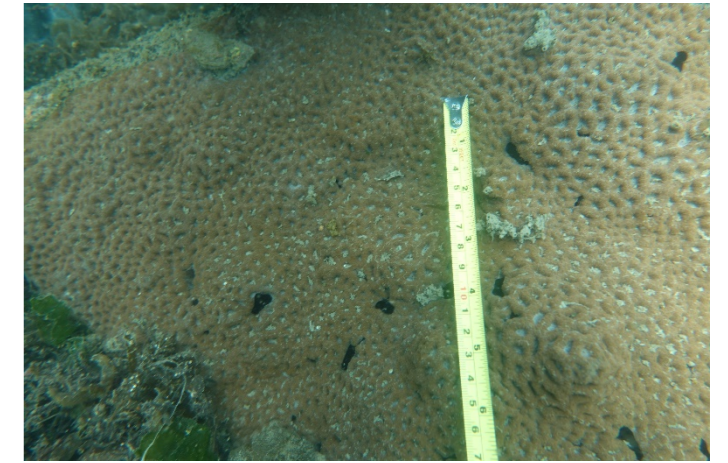
Coral No. 9  
*Favites chinensis*



Coral No. 10  
*Favites chinensis*



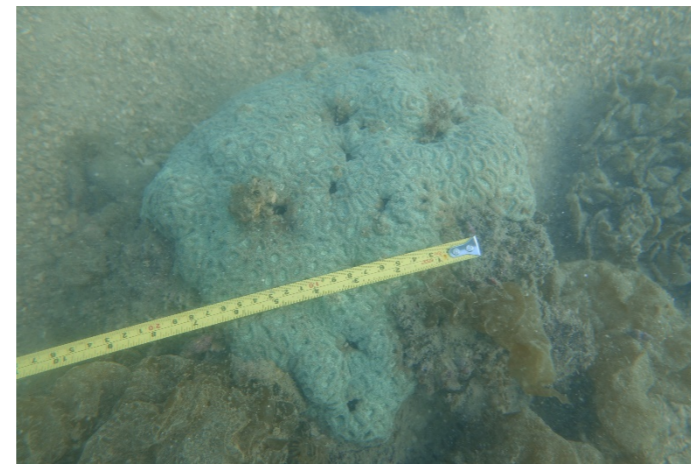
Coral No. 11  
*Favites pentagona*



Coral No. 12  
*Favites pentagona*



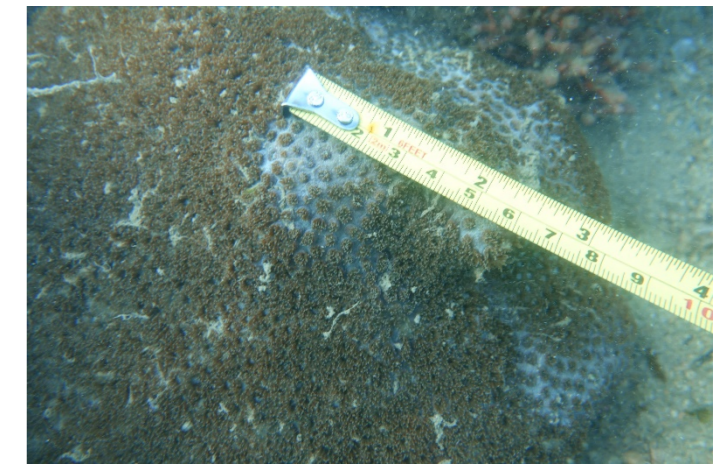
Coral No. 13  
*Favites flexuosa*



Coral No. 14  
*Favites flexuosa*

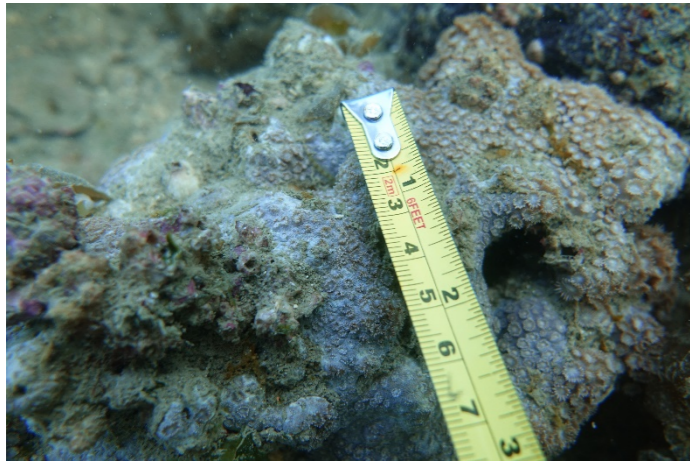


Coral No. 15  
*Plesiastrea versipora*

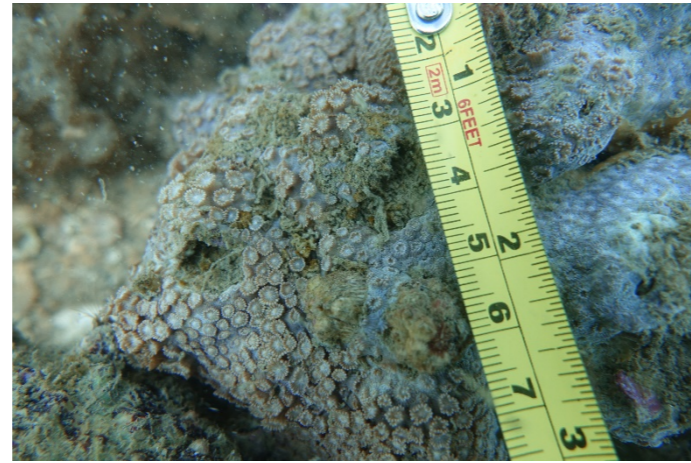


Coral No. 16  
*Plesiastrea versipora*

Note: Representative photographs are presented for each recorded coral colony.



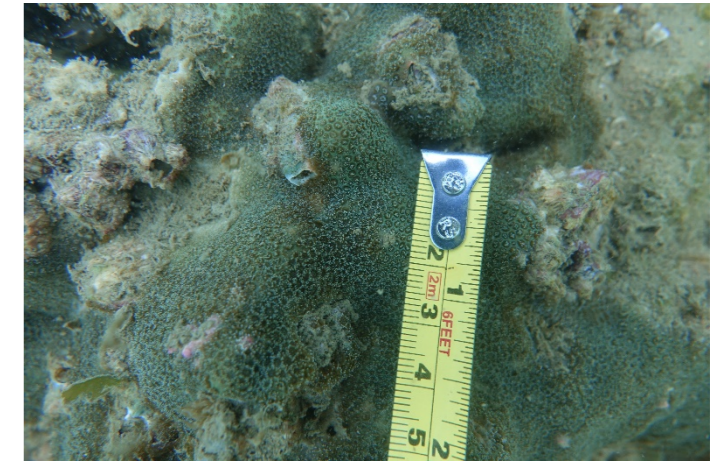
Coral No. 17  
*Plesiastrea versipora*



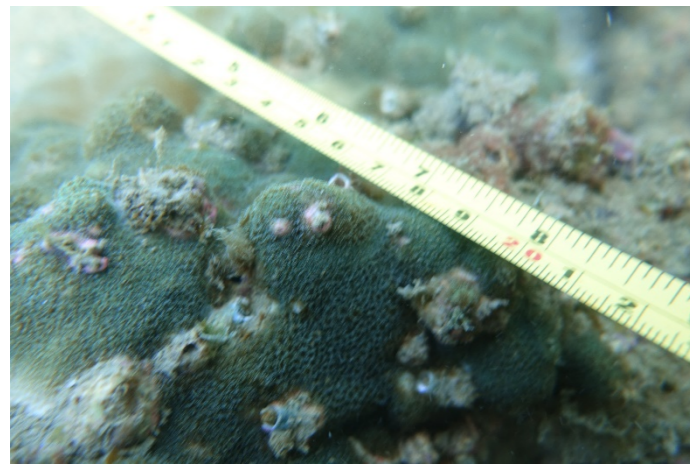
Coral No. 18  
*Bernardpora stutchburyi*



Coral No. 19  
*Bernardpora stutchburyi*



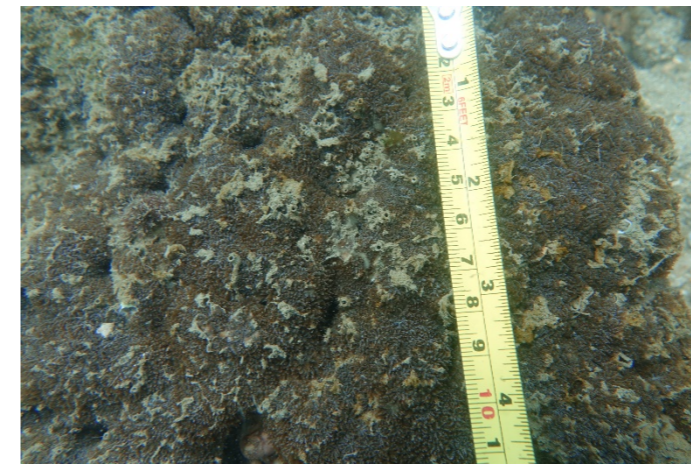
Coral No. 20  
*Porites* sp.



Coral No. 21  
*Porites* sp.



Coral No. 22  
*Psammocora superficialis*



Coral No. 23  
*Leptastrea purpurea*



Coral No. 24  
*Leptastrea purpurea*

Note: Representative photographs are presented for each recorded coral colony.

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Malaysia	UK
Mexico	US
Myanmar	Vietnam
The Netherlands	

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