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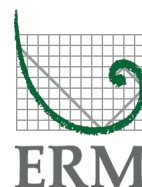
Pacific Light Cable Network (PLCN) - Deep Water Bay (EP-539/2017)

Baseline Coral Monitoring Survey Report

August 2018

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Baseline Coral Monitoring Survey Report

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Client:		GMS No:			
PCCW Global (HK) Limited		0448409			
Summary:		Date:			
<p>This report presents the monitoring requirements, methodologies and results of the baseline monitoring survey on coral communities in accordance with the Project Profile (PP-550/2017).</p>		21 August 2018			
		Approved by :			
					
		Terence Fong			
		Partner			
2	Baseline Coral Monitoring Survey Report	Var	FZino	TFONG	21/08/18
1	Baseline Coral Monitoring Survey Report	Var	FZino	TFONG	07/08/18
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Pacific Light Cable Network (PLCN) – Deep Water Bay
Environmental Certification Sheet
EP-539/2017

Reference Document/Plan

Document/ Plan to be Certified / Verified:	Baseline Coral Monitoring Survey Report (v2)
Date of Report:	21 August 2018
Date prepared by ET:	ERM-Hong Kong Ltd
Date received by IEC:	Ecosystem Ltd

Reference EM&A Manual/ EP Requirement

EM&A Manual Requirement:	Section 3
Content:	<i>Coral Monitoring</i>
G.3.1	Baseline Survey will be conducted within two weeks before any jetting works for the cable installation/ repair operation commence.
G3.4	The Baseline Monitoring Survey Report should be submitted within two weeks after the completion of the baseline monitoring and the report should include the following details: <ul style="list-style-type: none">• Brief project background information;• Monitoring results together with the information including monitoring methodology, parameters monitored, monitoring locations (and depth), monitoring date, time, frequency and duration; and• Comments and conclusions.
EP Condition:	Conditions No. 3.4 – 3.5
Content:	<i>Coral Monitoring</i>
3.4	The Permit Holder shall conduct coral monitoring to verify that the cable installation works will not result in any unacceptable impacts to the coral communities at Round Island and Sung Kong Islet in accordance with the monitoring requirements described in the Project Profile (Register No. PP-550/2017).
3.5	Submit to the Director three hard copies and one electronic copy of the following, as defined in the EM&A requirements described in the Project Profile (Register No. PP-550/2017): <ul style="list-style-type: none">(a) Baseline Monitoring Survey Report on coral communities within two weeks after completion of the baseline monitoring survey of the coral communities(b) Post Project Survey Report on coral communities within one month after completion of the post project survey monitoring to verify.

ET Certification

I hereby certify that the above referenced document/~~plan~~ complies with the above referenced condition of EP-539/2017.

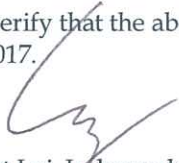


Terence Fong, Environmental
Team Leader:

Date: 21 August 2018

IEC Verification

I hereby verify that the above referenced document/~~plan~~ complies with the above referenced condition of EP-539/2017.



Dr Vincent Lai, Independent
Environmental Checker:

Date: 24/8/2018

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1.1

PROJECT BACKGROUND

In order to help meet the tremendous telecommunication services requirements between Asia and North America, the **PLCN Consortium** has decided to build a submarine telecommunication cable system, which will be approximately 12,800 km in length, connecting HKSAR and the United States.

The cable will connect to Deep Water Bay (DWB) within the HKSAR. **PCCW Global (HK) Limited** is providing the cable landing point and the associated cable landing service in HKSAR for the PLCN Consortium.

The route of the PLCN submarine cable system is depicted in *Figure 1.1*. The cable will land at an existing manhole location at DWB. DWB is currently the landing site for a number of submarine cables.

The cable will travel from DWB southward approaching the East Lamma Channel. Near to Round Island, the cable is approximately parallel to the East Lamma Channel until the south of Stanley Peninsula. The cable will then travel eastward to the boundary of HKSAR waters and will enter the South China Sea.

The PLCN submarine cable in HKSAR waters has an intended burial depth of up to 5 m below the sea bed in the HKSAR waters. The total length of the submarine cable within HKSAR waters is approximately 40 km.

The cable laying process will only require minor works within the marine environment. The landing is situated to the far northwest end of the Deepwater Bay, away from the shark preventive net swimming area. Only small scale construction works are required at the cable landing site to enable the cable to enter the existing Beach Manhole (BMH) system.

1.2

OBJECTIVE OF THE BASELINE CORAL SURVEY

A *Project Profile* (PP-550/2017), which includes an assessment of the potential environmental impacts associated with the installation of the PLCN-Deep Water Bay submarine telecommunications cable system within HKSAR, 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). The EPD subsequently issued an *Environmental Permit* (EP- 529/2017) for the Project.

In accordance with the *Environmental Monitoring & Audit (EM&A) Manual* appended with the approved *Project Profile*, Baseline Coral Survey should be conducted within two weeks before jetting works for the cable installation commenced. The objective of the Baseline Coral Survey is to identify suitable coral monitoring locations and to collect baseline monitoring data of corals at those locations for comparison with data collected during the Post Project

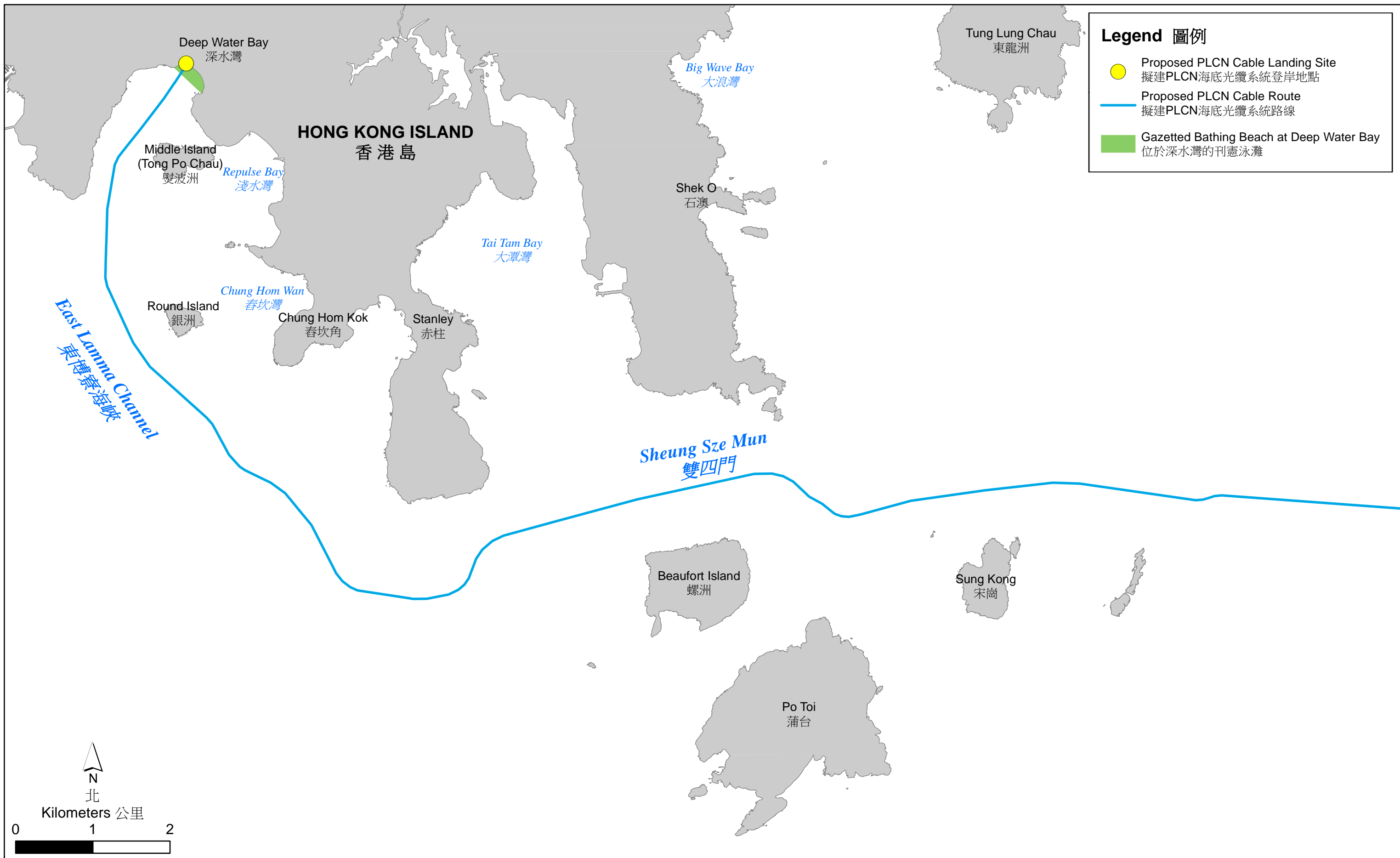


Figure 1.1
圖 1.1

Proposed PLCN Cable Route
擬建PLCN海底光纜系統的路線

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Survey. The comparison of baseline and post Project data would be used to determine any observable impacts to corals as a result of the cable installation works.

1.3 PURPOSE OF THIS REPORT

This Baseline Coral Monitoring Survey Report (“the Report”) is prepared by ERM-Hong Kong, Limited (ERM) on behalf of PLCN Consortium to present the methodology and findings of the Baseline Coral Survey for the Project in accordance with requirements of the *EM&A Manual* appended with the approved *Project Profile*.

1.4 STRUCTURE OF THE REPORT

The remainder of the report is structured as follows:

Section 2: Baseline Coral Monitoring Methodology

Presents the baseline monitoring methodology, parameters monitored, monitoring locations and depth, monitoring date, time, frequency and duration in accordance with the *EM&A Manual*.

Section 3: Baseline Coral Monitoring Results

Summarizes the baseline coral monitoring results according to the stipulated monitoring methodology, in accordance with the *EM&A Manual*.

Section 4: Conclusion

Provides comments and a conclusion based on the findings from the Baseline Coral Survey of the Project.

2 *BASELINE CORAL MONITORING METHODOLOGY*

2.1 *MONITORING LOCATIONS*

Coral monitoring was undertaken at Round Island and Sung Kong (Monitoring Stations), and a Control Station at Po Toi which is located more than 1 km from the cable alignment and thus unlikely to be impacted by cable works. The monitoring locations are shown in *Figure 2.1* and detailed below:

Monitoring Stations:

- Zone A: Round Island; and
- Zone B: Sung Kong.

Control Station:

- Zone C: Po Toi.

At each monitoring station, coral monitoring was undertaken in two depth zones (ie shallow water: -2 to -5 mCD and deep water: -5 to -15 mCD), with minor revisions to the depth ranges based on observations of coral distribution during surveys.

2.2 *MONITORING METHODOLOGY*

2.2.1 *Monitoring Personnel*

The coral monitoring works were undertaken by qualified coral specialists hired by the ET, degrees in marine sciences and with at least three 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.

2.2.2 *Survey Methodology*

The Baseline Survey comprised the following three components:

- Qualitative spot dive survey;
- Semi-quantitative Rapid Ecological Assessment (REA) survey; and
- Coral Colony Monitoring.

(The Post Project Survey comprises the same components as the Baseline Survey, except that the qualitative spot dive survey will not be undertaken) Survey methodology of the three components is described below.

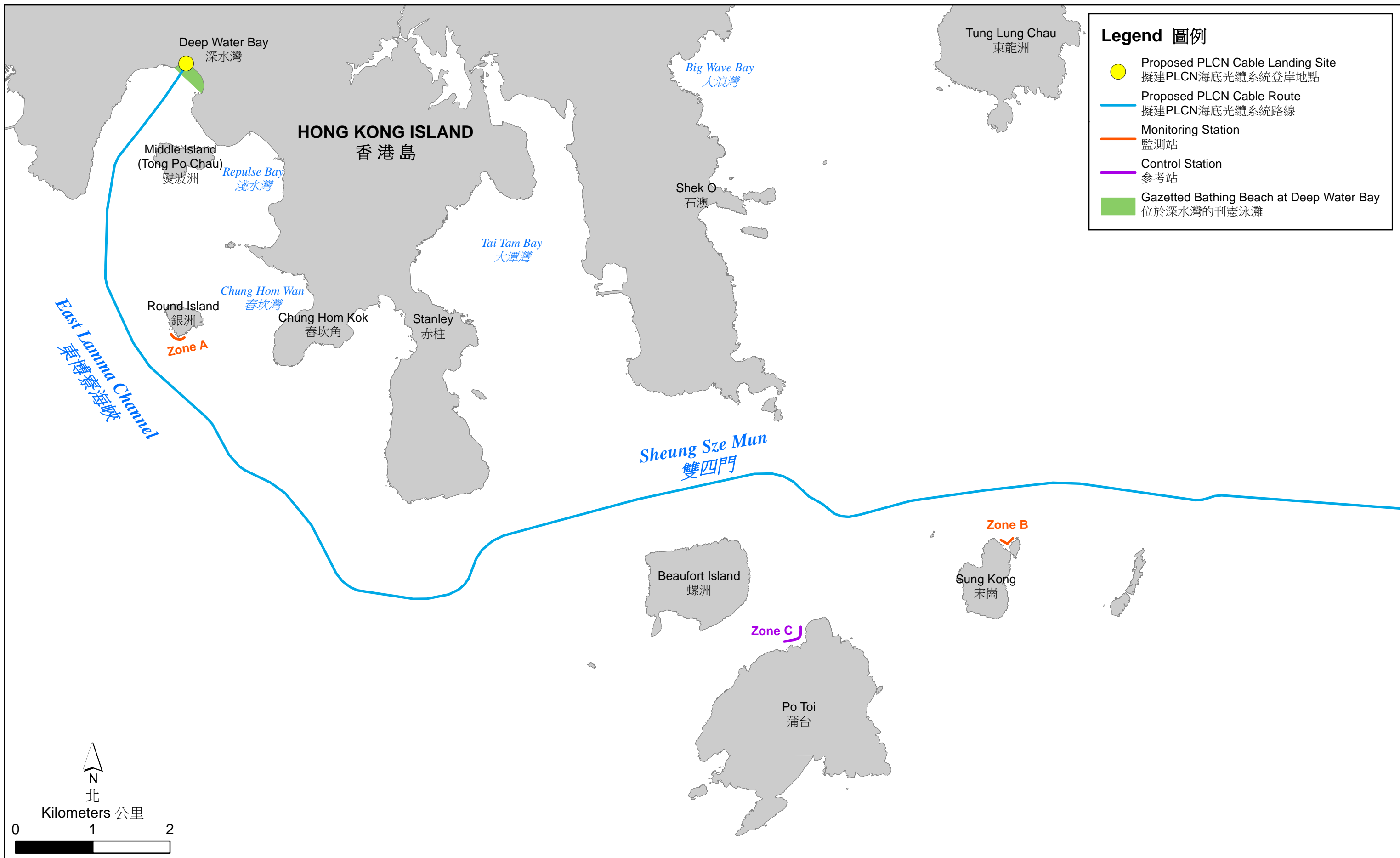


Figure 2.1
圖 2.1

Locations of the Baseline and Post Project Coral Monitoring
基線及工程項目完成後珊瑚監測地點

Qualitative Spot Dive Survey

The qualitative spot dive survey was undertaken as part of the Baseline Survey only to identify suitable coral monitoring locations at Round Island, Sung Kong and Po Toi. During the survey, spot dive reconnaissance checks were conducted within the designated Monitoring and Control Stations by SCUBA to collect qualitative information including coral composition, abundance and distribution. Based on the information collected, locations with relatively higher coral abundance and number of species/genus were selected for each station for the subsequent REA survey and coral colony monitoring during the Baseline and Post Project Surveys. The depth range (shallow and deep) was monitored and finalised based on observed coral distribution.

Rapid Ecological Assessment (REA) Survey Method

A standardised semi-quantitative REA survey technique was used to investigate the general conditions of the coral communities (hard, soft and black corals) associated with subtidal hard bottom habitats at the Monitoring and Control Stations. The collection of REA data during the Baseline Surveys allowed for a comparison of coral conditions before and after cable installation works in order to determine any changes in conditions due to the works.

The REA technique allows semi-quantitative information on the ecological attributes of the subtidal habitat to be obtained in a relatively simple way without compromising scientific rigour. This technique is the standard practice for EIA marine baseline surveys in HKSAR and has been modified from the standardised REA survey technique established for the assessment of coral communities on the Great Barrier Reef ⁽¹⁾ for marine environment of HKSAR ⁽²⁾.

A series of REA surveys were conducted by qualified coral specialists using SCUBA at the Monitoring stations (Round Island and Sung Kong; *Figure 2.1*) and Control Station (Po Toi; *Figure 2.1*) with the aim to record the condition of substratum, estimate the diversity and relative abundance of coral assemblages (ie hard corals, octocorals and black corals) and with all hard coral colonies identified to species level while octocorals and black corals recorded to genus level. The surveys were undertaken on REA transects laid onto the seabed, each of which measured 100 m in length, at the following two depth zones of each station:

- Shallow depth region: typically the depth range of hard coral colonies associated with subtidal hard bottom habitat is -2 to -5 m CD but may be adjusted based on the Spot Diver survey and observations of coral distribution during the surveys); and

(1) DeVantier, L.M., G.De'Ath, T.J. Done and E. Turak (1998). *Ecological assessment of a complex natural system: A case study from the Great Barrier Reef*. Ecological Applications 8: 480-496.

(2) Fabricius, K.E. and D. McCorry. (2006). *Changes in octocoral communities and benthic cover along a water quality gradient in reefs of Hong Kong*. Marine Pollution Bulletin 52: 22-23.

- Deep depth region: typically -5 to -15 m CD but may be adjusted based on observations of coral distribution during the surveys).

The location of the REA transects as well as the depth ranges of the monitored depth zones were determined based on findings from the qualitative spot dive survey. A total of two (2) REA transects were monitored at each depth region of Round Island, Sung Kong and Po Toi.

Following the laying of the transect line, the coral specialists swam along the transect slowly and conducted the REA survey. The REA methodology encompassed an assessment of the benthic cover (Tier I) and taxon abundance (Tier II) undertaken in a swathe ~ 2 m wide, 1 m either side of each transect according to the reduced underwater visibility. An explanation of the two assessment categories (Tiers) used in the survey is presented below.

Tier I – Categorisation of Benthic Cover

Upon the completion of each survey transect, ecological and substratum attributes were assigned to standard ranked (ordinal) categories (*Tables 2.1 and 2.2*).

Table 2.1 *Tier I Benthic Attribute Categories*

Ecological Attributes	Substratum Attributes
Hard coral	Bedrock
Dead standing coral	Continuous pavement
Octocoral (Soft corals and Gorgonians)	Rocks (<26 cm)
Black coral	Large boulders (>50 cm)
Macroalgae	Small boulders (<50 cm)
Other Benthos (including sponges, zoanthids, ascidians and bryozoans)	Rubble
	Sand
	Mud/ Silt
	Other

Table 2.2 *Tier I Ordinal Ranks of Percentage Cover of Benthic Attributes*

Rank	Percentage Cover (%)
0	None recorded
1	1-5
2	6-10
3	11-30
4	31-50
5	51-75
6	76-100

Tier II – Taxonomic Inventories to Define Types of Benthic Communities

An inventory of benthic taxa was compiled for each transect. Taxa were identified *in situ* to the following levels:

- Scleractinian (hard) corals to species wherever possible;
- Octocorals, black corals, anemones and conspicuous macroalgae recorded according to morphological features and to genus level where possible; and
- Other benthos (including sponges, zoanthids, ascidians and bryozoans) recorded to genus level, where possible, or phylum plus growth form.

Following the completion of the survey of each transect, each taxon in the inventory was ranked in terms of abundance in the community (*Table 2.3*). These broad categories rank taxa in terms of relative abundance of individuals, rather than the contribution to benthic cover along each transect. The ranks are subjective assessments of abundance, rather than quantitative counts of each taxon. Representative photos of organisms were taken as presented in the results.

Table 2.3 *Ordinal Ranks of Taxon Abundance*

Rank	Abundance
0	Absent
1	Sparse ^(a)
2	Uncommon
3	Common
4	Abundant
5	Dominant

Note:

(a) The classification of “sparse” abundance refers to low abundance (small quantity) on the transect, rather than in terms of distribution in HKSAR waters.

A set of environmental site descriptors were also recorded for each REA transect as follows:

- (A) The degree of exposure to prevailing wave energy ranked from 1 - 4, where:
- 1 = sheltered (highly protected by topographic features from prevailing waves);
 - 2 = semi-sheltered (moderately protected);
 - 3 = semi-exposed (only partly protected); and
 - 4 = exposed (experiences the full force of prevailing wave energy).
- (B) Sediment deposition on the reef substratum (particle sizes ranging from very fine to moderately coarse) rated on a four point scale, from 0 – 3, where:
- 0 = no sediment;
 - 1 = minor (thin layer) sediment deposition;
 - 2 = moderate sediment deposition (thick layer), but substrate can be cleaned by fanning off the sediment; and

3 = major sediment deposition (thick, deep layer), and substrate cannot be cleaned by fanning.

During the REA survey, the field data were recorded by an observer experienced in the underwater identification of sessile benthic taxa (coral specialist), swimming along identified sections of coastline on SCUBA from haphazardly-chosen starting points. REA surveys were carried out using 100 m long transect with the transect tapes laid out within a single ecological zone - habitat - depth range. A suite of representative photographs were captured for each REA transect.

All field data were checked upon completion of each REA transect and a dive survey proforma sheet was completed at the end of the fieldwork day. Upon completion of the fieldwork, photographs were compiled for each transect. Photographs for each REA transect were then reviewed and REA data verified.

Once the transect photographs had been reviewed and REA data checked, all data were inputted and stored in Excel spreadsheets. Two spreadsheets were used and data separated into:

- site (transect) information (Tier I and II data), depth and environmental descriptors; and
- species abundance data for each transect.

Coral Colony Monitoring

Coral colony monitoring was undertaken during the Baseline Surveys to identify any evidence of sediment stress to corals before and after cable installation works. At each coral monitoring station, a total of fifteen (15) hard coral colonies and fifteen (15) octocoral/black coral colonies were selected for monitoring. Priority was given to selecting colonies of horizontal plate-like and massive growth forms which present large stable surfaces for the interception and retention of settling solids. Each of the selected corals were identified to species or genus levels and photographed. The following data were collected:

- Maximum diameter of the identified hard coral and soft coral colonies;
- Maximum height and width of the identified gorgonians and black corals;
- Percentage of sediment cover on the identified colonies and the colouration, texture and approximate thickness of sediment on the coral colonies and adjacent substrate. Any contiguous patches of sediment cover >10 % were recorded;
- Percentage of bleached area on the identified colonies of which two categories were recorded: a. blanched (ie pale) and b. bleached (ie whitened);
- Percentage of colony area showing partiality mortality; and

- Physical damage to colonies, tissue distension, mucous production and any other factors relevant will be noted in the field.

The coral colony monitoring exercise was undertaken to ensure colonies of similar growth forms and size were selected for the Baseline (and subsequent Post Project) Monitoring. Although coral tagging is a common practice for repeated monitoring of an individual colony, this technique was not employed in this monitoring programme due to difficulties in locating the tagged corals given the generally low visibility in the area and low light conditions in deep water.

The Baseline Coral Survey was conducted over two days on 25 and 26 June 2018. The weather condition was cloudy with rainy intervals on 25 June and sunny on 26 June 2018. Slight to moderate swell was present in the sea on the two survey days. The underwater visibility generally ranged between 1 to 2 m.

3.1 RESULTS OF QUALITATIVE SPOT DIVE SURVEY

3.1.1 Zone A - Round Island

Results of qualitative spot dive survey at Round Island (Zone A; *Figure 2.1*) confirmed that the seabed was composed of hard bottom substrates which were mainly boulders. Generally, cover of hard corals and octocoral was less than 5% in the shallow water (from -3 to -5m CD). The cover of hard coral, octocoral and black coral was also observed to be low in the deep water (from -5 to -10m CD), also estimated at less than 5% cover. A total of 13 hermatypic hard coral species, one (1) ahermatypic hard coral species, four (4) octocoral species and two (2) black coral species were recorded (*Table 3.1*).

Similar abiotic composition was found along the entire Zone A. At the southwest tip of Round Island, more hard coral species, octocoral and black coral colonies were found although the estimated coral cover and number of octocoral species recorded was similar to other areas in Zone A. As such, the area around the southwest tip of Round Island was considered as significant coral habitats and was selected as the area for the REA survey and coral colony monitoring (*Figure 3.1*).

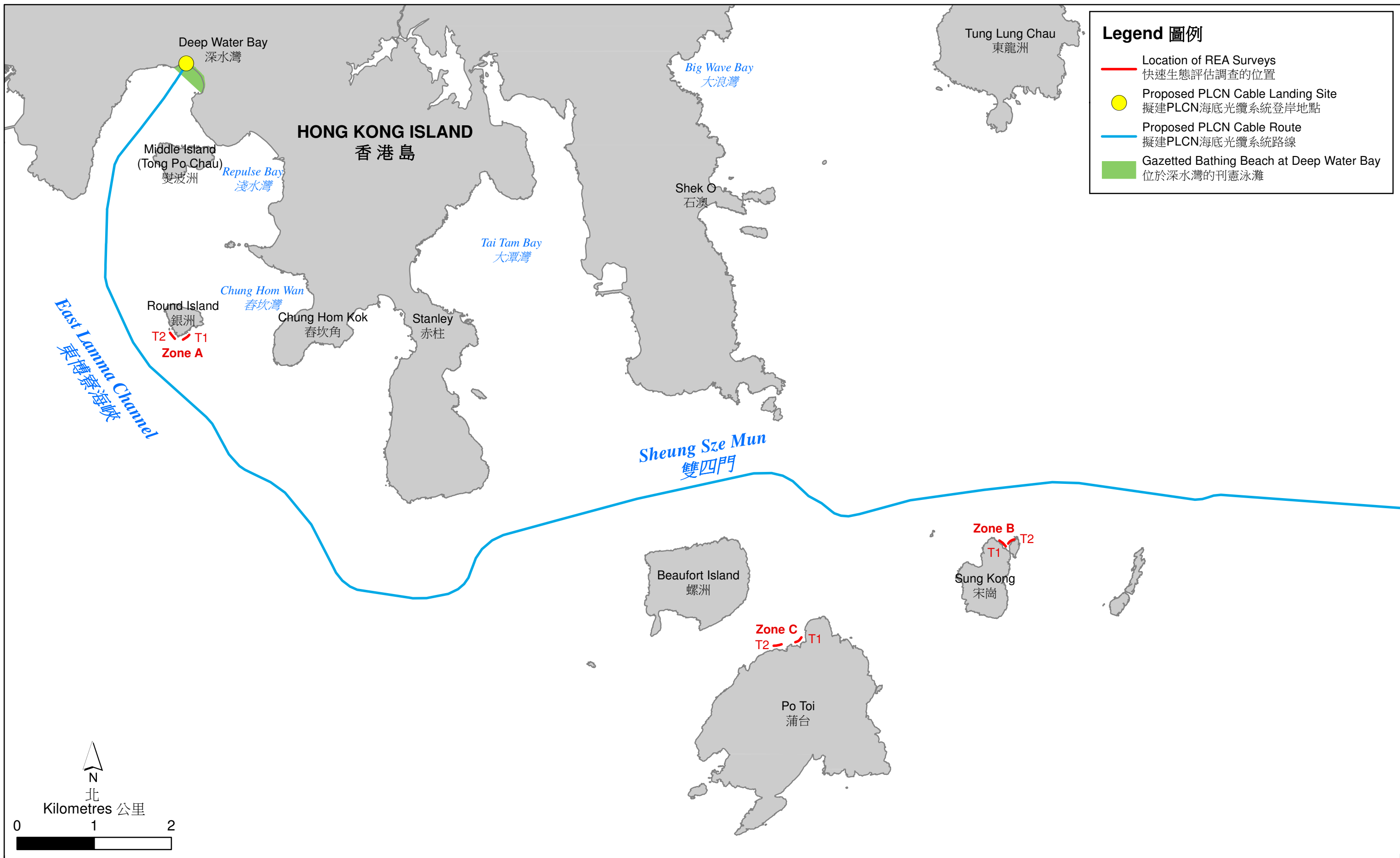
3.1.2 Zone B - Sung Kong

Results of qualitative spot dive survey at Sung Kong (Zone B; *Figure 2.1*) confirmed that the seabed was composed of mainly boulders in shallow waters (from -3 to -5m CD) and boulders and sand in deep waters (from -6 to -11m CD). In both shallow and deep water, coverage and abundance of hard corals and octocoral was very low (less than 5%) with 11 hermatypic hard coral species, one (1) ahermatypic coral species, three (3) octocoral species and one (1) black coral species recorded.

The cover and diversity of hard coral were similar within the shoreline of Zone B while octocoral were only recorded at the eastern coast of the zone. REA survey and coral colony monitoring were undertaken at the eastern and western region which is considered as significant coral habitat. (*Figure 3.1*).

3.1.3 Zone C - Po Toi

Results of qualitative spot dive survey at Po Toi (Zone C; *Figure 2.1*) confirmed that the seabed was composed mainly of boulders in shallow water (from -3 to -5m CD) and sand in deep water (from -6 to -12m CD). Six (6) hermatypic hard coral species, one (1) ahermatypic hard coral species, four (4) octocorals



species and one (1) black coral species were recorded. The estimated covers of hard coral and octocoral were lower than 5%. Hermatypic hard coral can be found at the hard substratum along the coast in both depth region, but octocoral can only be observed at the deep water of the western part of the zone.

The coral assemblages in this area is considered similar and comparable to the biotic assemblages at the Zone A and Zone B monitoring stations and it was therefore selected as the Control station for the REA survey and coral colony monitoring

Table 3.1 Coral Species Recorded at the Qualitative Spot Dive Survey Zone A, B & C

Taxon	Family	Species	
Zone A - Round Island (Monitoring Station)			
Hard Coral (hermatypic)	Acroporidae	<i>Acropora solitaryensis</i>	
		<i>Montipora venosa</i>	
		<i>Coscinaraeaea</i> sp.	
		<i>Turbinaria peltata</i>	
	Incertae sedis	<i>Leptastrea pruinosa</i>	
		<i>Plesiastrea versipora</i>	
	Merulinidae	<i>Favites chinensis</i>	
		<i>Favites pentagona</i>	
		<i>Platygyra acuta</i>	
	Poritidae	<i>Goniopora stutchburyi</i>	
<i>Porites</i> sp.			
Hard Coral (ahermatypic) Octocoral	Psammocoridae	<i>Psammocora superficialis</i>	
		<i>Psammocora haimeana</i>	
	Dendrophyllidae	<i>Tubastrea/Dendrophyllia</i> sp.	
		<i>Acanthogorgiidae</i>	<i>Anthogorgia</i> sp.
		<i>Nephtheidae</i>	<i>Dendronephthya</i> sp.
		<i>Plexauridae</i>	<i>Echinomuricea</i> sp.
	Black Coral	Antipathidae	<i>Menella</i> sp. / <i>Paraplexaura</i> sp.
			<i>Antipathes curvata</i>
			<i>Cirrhipathes</i> sp.
	Zone B - Sung Kong (Monitoring Station)		
Hard Coral (hermatypic)	Acroporidae	<i>Acropora pruinosa</i>	
		<i>Acropora solitaryensis</i>	
		<i>Plesiastrea versipora</i>	
		<i>Cyphastrea serailia</i>	
	Merulinidae	<i>Favites abdita</i>	
		<i>Favites pentagona</i>	
		<i>Platygyra acuta</i>	
		<i>Astrea curta</i>	
	Poritidae	<i>Goniopora stutchburyi</i>	
		<i>Porites</i> sp.	
Hard Coral (ahermatypic) Octocoral	Psammocoridae	<i>Psammocora superficialis</i>	
	Dendrophyllidae	<i>Tubastrea/Dendrophyllia</i> sp.	
	Alcyoniidae	<i>Cladiella</i> sp.	
	Nephtheidae	<i>Dendronephthya</i> sp.	
	Plexauridae	<i>Menella</i> sp. / <i>Paraplexaura</i> sp.	
	Black Coral	Antipathidae	<i>Cirrhipathes</i> sp.
	Zone C - Po Toi (Control Station)		
	Hard Coral (Hermatypic)	Coscinaraeidae	<i>Coscinaraea</i> sp.
		Incertae sedis	<i>Plesiastrea versipora</i>
Merulinidae		<i>Hydnophora exesa</i>	
Poritidae		<i>Goniopora stutchburyi</i>	
		<i>Porites</i> sp.	
	Psammocoridae	<i>Psammocora superficialis</i>	

Taxon	Family	Species
Hard Coral (ahermatypic)	Dendrophyllidae	<i>Tubastrea/Dendrophyllia</i> sp.
Octocoral	Acanthogorgiidae	<i>Anthogorgia</i> sp.
	Nephtheidae	<i>Echinomuricea</i> sp.
	Plexauridae	<i>Euplexaura</i> sp.
		<i>Menella</i> sp. / <i>Paraplexaura</i> sp.
Black Coral	Antipathidae	<i>Antipathes curvata</i>

3.2 RESULTS OF REA SURVEY

The seabed composition along each transect within Zone A, Zone B and Zone C are shown in Tables 3.2 - 3.3. Locations of the REA survey are presented in Figure 3.1.

3.2.1 Zone A – Round Island

The seabed at the REA survey area of Zone A was predominately composed of boulders in shallow depth region (-3 to -5 m CD) while at deep depth region (-6 to -10m CD) the seabed was also mainly composed of sand and boulders.

Cover of hard corals was less than 5% in both the shallow and deep water, with 13 hermatypic and one (1) ahermatypic hard coral species recorded. Octocoral community was only found at the shallow water of transect 1 and deep water of transect 2 and black coral was only observed in the deepwater of transect 2. A total of four (4) species of octocorals and two (2) species of black corals were recorded during REA survey. *Plesiastrea versipora* and *Echinomuricea* sp. was the dominant hard coral and octocoral species found in the region, respectively.

3.2.2 Zone B – Sung Kong

The seabed was predominately composed of bedrocks in both shallow (-4 to -5 m CD) and deep (-8 to -11 m CD) depth zones.

A total of 11 hermatypic hard coral species were recorded in shallow depth zone along the two transects of the coast of the zone. In the western coast of Zone B, one (1) ahermatypic hard coral species was recorded in shallow depth zone and one (1) black coral species was recorded in deep depth zone. Whilst three (3) species of octocorals were only recorded in the eastern coast of the zone and their abundance was low. The dominant species in Zone B was hard coral *Plesiastrea versipora* and *Porites* sp.

3.2.3 Zone C – Po Toi

The seabed in the shallow (-4 to -5 mCD) and deep (-6 to -12 m CD) depth zones of Zone C were predominately composed of boulders and sand, respectively.

Hard coral community was recorded in both shallow and deep depth zones with six (6) hermatypic hard coral species and one (1) species of ahermatypic hard coral species recorded. Octocorals and black coral were only observed in the deep depth zone (beyond -6 m CD) with four (4) species of octocoral

and one (1) species of black coral. Hard coral *Plesiastrea versipora* and *Porites* sp. were dominant on the hard substratum along all transects and octocoral, *Echinomuricea* sp. were commonly observed in the deep water of transect 2.

Table 3.2 *Seabed Attributes along the REA Survey Transects*

Zone	A				B				C			
Depth Zone ^(a)	S1	S2	D1	D2	S1	S2	D1	D2	S1	S2	D1	D2
Depth (-m CD)	3-5	3-5	6-9	7-10	4-5	4-5	8-9	9-11	4-5	4-5	6-10	10-12
Seabed attributes ^(b)												
Bedrock	0	0	0	0	0	0	0	0	0	0	0	0
Boulders – large	5	5	3	1	5	4	2	4	3	3	1	0
Boulders – small	3	3	2	1	1	3	4	2	4	4	1	1
Rock	1	1	1	1	1	1	1	0	1	1	0	0
Rubble	0	0	1	1	1	1	0	0	1	1	0	0
Sand	1	1	4	5	1	1	3	1	1	1	5	5
Silt	0	0	1	1	0	0	0	0	0	0	0	0
Ecological attributes ^(b)												
Hard coral	1	1	1	1	1	1	1	1	1	1	1	1
Dead standing coral	0	0	0	0	0	0	0	0	0	0	0	0
Octocoral	1	0	0	1	0	1	0	0	0	0	1	1
Black coral	0	0	0	1	0	0	1	0	0	0	0	1
Turf algae	0	0	0	0	0	0	0	0	0	0	0	0
Macroalgae	0	0	0	0	0	0	0	0	0	0	0	0
Coralline algae	2	2	0	0	2	2	0	0	3	3	0	0

Notes:

(a) S = shallow water; M = mid water; D=deep water

(b) 1=<5% Cover, 2= 6-10% Cover, 3 = 11-30% Cover, 4 = 31-50% Cover, 5 = 51-75% Cover, 6 = 76-100% Cover.

Table 3.3 Seabed Attributes along the REA Survey Transects

Type	Taxon/ Family	Species	Zone											
			A	A	A	A	B	B	B	B	C	C	C	C
Hard Coral	Acroporidae	Depth ^(a)	S1	S2	D1	D2	S1	S2	D1	D2	S1	S2	D1	D2
		<i>Acropora pruinosa</i>	0	0	0	0	1	1	0	0	0	0	0	0
		<i>Acropora solitaryensis</i>	1	0	0	0	2	2	0	0	0	0	0	0
	Coccinaridae	<i>Montipora venosa</i>	2	1	2	0	0	0	0	0	0	0	0	0
		<i>Coccinaraea</i> sp.	0	0	1	0	0	0	0	0	0	1	1	0
	Dendrophyllidae	<i>Turbinaria peltata</i>	1	0	0	0	0	0	0	0	0	0	0	0
		<i>Tubastrea/</i>	0	0	0	1	1	0	0	0	0	0	0	1
		<i>Dendrophyllia</i> sp.												
	Incertae sedis	<i>Leptastrea pruinosa</i>	1	0	0	0	0	0	0	0	0	0	0	0
		<i>Plesiastrea versipora</i>	3	2	3	1	3	3	2	2	3	3	1	0
	Merulinidae	<i>Cyphastrea serailia</i>	0	0	0	0	0	0	1	1	0	0	0	0
		<i>Favites abdita</i>	0	0	0	0	0	1	0	0	0	0	0	0
		<i>Favites chinensis</i>	2	0	0	0	0	0	0	0	0	0	0	0
		<i>Favites pentagona</i>	2	0	0	0	1	0	0	0	0	0	0	0
		<i>Hydnophora exesa</i>	0	0	0	0	0	0	0	0	1	0	0	0
		<i>Platygyra acuta</i>	1	0	0	0	0	1	0	0	0	0	0	0
		<i>Astrea curta</i>	0	0	0	0	0	1	0	0	0	0	0	0
	Poritidae	<i>Goniopora stutchburyi</i>	1	0	2	0	0	0	1	1	1	0	1	0
		<i>Goniopora planulata</i>	0	0	0	0	0	0	0	0	0	0	0	0
		<i>Porites</i> sp.	2	1	2	0	3	3	1	1	3	0	1	0
	Psammocoridae	<i>Psammocora superficialis</i>	1	1	3	0	1	0	1	1	1	1	1	0
		<i>Psammocora haimeana</i>	0	0	1	0	0	0	0	0	0	0	0	0
Octocoral	Acanthogorgiidae	<i>Anthogorgia</i> sp.	0	0	0	2	0	0	0	0	0	0	0	1
		<i>Muricella</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0
	Alcyoniidae	<i>Cladiella</i> sp.	0	0	0	0	0	1	0	0	0	0	0	0

Type	Taxon/ Family	Species	Zone											
			A	A	A	A	B	B	B	B	C	C	C	C
	Nephthidae	<i>Dendronephthya</i> sp.	2	0	0	0	0	2	0	0	0	0	0	0
	Plexauridae	<i>Echinomuricea</i> sp.	0	0	0	3	0	0	0	0	0	0	2	3
		<i>Euplexaura</i> sp.	0	0	0	0	0	0	0	0	0	0	0	1
		<i>Menella</i> sp. /	0	0	0	2	0	1	0	0	0	0	0	2
		<i>Paraplexaura</i> sp.												
Black Coral	Antipathidae	<i>Antipathes curvata</i>	0	0	0	1	0	0	0	0	0	0	0	2
		<i>Cirripathes</i> sp.	0	0	0	1	0	0	1	0	0	0	0	0

Notes:

(a) S = shallow water; M = mid water; D=deep water

(b) 1=Rare, 2= Uncommon, 3 = Common, 4 = Abundant, 5 = Dominant.

Coral Colony Monitoring was undertaken at Zone A, Zone B and Zone C. The monitoring area was the same as the REA survey area (*Figure 3.1*). At Zone A, hard corals at -3 to -5 m CD and octocorals/ black corals at -9 to -10 m CD were selected for monitoring. At Zone B, hard coral and octocoral colonies at -4 to -5 m CD and black coral colonies at -8 to -9m CD were selected. At Zone C, hard corals at - 4 to - 5 m CD and octocorals/ black corals at -10 to -12 m CD were selected for monitoring.

The following data were collected for the selected hard coral, soft coral, black coral and gorgonian colonies and are summarized in *Table 3.4 to 3.6*:

- Maximum diameter of the identified hard coral and soft coral colonies;
- Maximum height and width of the identified gorgonians and black corals;
- Percentage of sediment cover on the identified colonies and the colouration, texture and approximate thickness of sediment on the coral colonies and adjacent substrate. Any contiguous patches of sediment cover >10 % were recorded;
- Percentage of bleached area on the identified colonies of which two categories were recorded: a. blanched (i.e. pale) and b. bleached (i.e. whitened);
- Percentage of colony area showing partiality mortality; and
- Physical damage to colonies, tissue distension, mucous production and any other factors relevant will be noted in the field.

Photographic records of the selected coral colonies for coral colony monitoring are shown in *Annex A*.

The sediment cover observed on hard corals at Zone A (Monitoring Station), Zone B (Monitoring Station) and Zone C (Control Station) was generally low. Out of 15 colonies observed, one (1) colony at Zone B and seven (7) colonies at Zone C were observed with 1-5% sediment cover while the remainder, including all at Zone A, were free from sediments. Octocorals/black corals at all the stations (both Monitoring and Control) were free of sediments. The health conditions of hard corals and octocorals were generally good with no bleaching or partial mortality recorded, except 5% partial mortality observed on one (1) of 15 octocoral colonies at Zone A and one (1) of 15 hard coral colonies at Zone B.

Coral Colony Monitoring will be undertaken after the Project cable laying works phase (Post Project Monitoring) in which the same number of coral colonies (15 at each Zone) with similar growth forms and size to those monitored during the Baseline Coral Survey will be selected and measured. The comparison of baseline and post Project data will allow for determination

of any observable adverse impacts to the health conditions of coral colonies as a result to the cable laying works.

Table 3.4 Species, Size, Sediment Cover, Bleached Area, Partial Mortality and Physical Damage to the Identified Coral Colonies in Zone A (Round Island)

Coral No.	Family	Genus	Species	Max. diameter (cm)	Max. height (cm)	Max. width (cm)	Sediment cover (%)	Sediment color	Sediment Texture	Sediment thickness (cm)	Bleached area (%)	Partial mortality (%)	Physical damage to colonies
Hard Corals													
1	Incertae sedis	<i>Plesiastrea</i>	<i>versipora</i>	40	N/A	N/A	None	N/A	N/A	N/A	N/A	N/A	N/A
2	Psammocoridae	<i>Psammocora</i>	<i>superficialis</i>	32	N/A	N/A	None	N/A	N/A	N/A	N/A	N/A	N/A
3	Incertae sedis	<i>Plesiastrea</i>	<i>versipora</i>	35	N/A	N/A	None	N/A	N/A	N/A	N/A	N/A	N/A
4	Poritidae	<i>Porites</i>	-	25	N/A	N/A	None	N/A	N/A	N/A	N/A	N/A	N/A
5	Incertae sedis	<i>Plesiastrea</i>	<i>versipora</i>	50	N/A	N/A	None	N/A	N/A	N/A	N/A	N/A	N/A
6	Poritidae	<i>Porites</i>	-	22	N/A	N/A	None	N/A	N/A	N/A	N/A	N/A	N/A
7	Incertae sedis	<i>Plesiastrea</i>	<i>versipora</i>	18	N/A	N/A	None	N/A	N/A	N/A	N/A	N/A	N/A
8	Incertae sedis	<i>Plesiastrea</i>	<i>versipora</i>	16	N/A	N/A	None	N/A	N/A	N/A	N/A	N/A	N/A
9	Psammocoridae	<i>Psammocora</i>	<i>superficialis</i>	12	N/A	N/A	None	N/A	N/A	N/A	N/A	N/A	N/A
10	Merulinidae	<i>Favites</i>	<i>pentagona</i>	15	N/A	N/A	None	N/A	N/A	N/A	N/A	N/A	N/A
11	Incertae sedis	<i>Plesiastrea</i>	<i>versipora</i>	35	N/A	N/A	None	N/A	N/A	N/A	N/A	N/A	N/A
12	Psammocoridae	<i>Psammocora</i>	<i>superficialis</i>	30	N/A	N/A	None	N/A	N/A	N/A	N/A	N/A	N/A
13	Poritidae	<i>Porites</i>	-	20	N/A	N/A	None	N/A	N/A	N/A	N/A	N/A	N/A
14	Incertae sedis	<i>Plesiastrea</i>	<i>versipora</i>	27	N/A	N/A	None	N/A	N/A	N/A	N/A	N/A	N/A
15	Incertae sedis	<i>Plesiastrea</i>	<i>versipora</i>	14	N/A	N/A	None	N/A	N/A	N/A	N/A	N/A	N/A
Octocorals/Black Corals													
1	Nephtheidae	<i>Dendronephthya</i>	-	20	N/A	N/A	None	N/A	N/A	N/A	N/A	N/A	N/A
2	Nephtheidae	<i>Dendronephthya</i>	-	22	N/A	N/A	None	N/A	N/A	N/A	N/A	N/A	N/A
3	Nephtheidae	<i>Dendronephthya</i>	-	31	N/A	N/A	None	N/A	N/A	N/A	N/A	N/A	N/A
4	Nephtheidae	<i>Dendronephthya</i>	-	37	N/A	N/A	None	N/A	N/A	N/A	N/A	N/A	N/A
5	Plexauridae	<i>Echinomuricea</i>	-	N/A	40	10	None	N/A	N/A	N/A	N/A	N/A	N/A

Coral No.	Family	Genus	Species	Max. diameter (cm)	Max. height (cm)	Max. width (cm)	Sediment cover (%)	Sediment color	Sediment Texture	Sediment thickness (cm)	Bleached area (%)	Partial mortality (%)	Physical damage to colonies
6	Plexauridae	<i>Echinomuricea</i>	-	N/A	20	5	None	N/A	N/A	N/A	N/A	N/A	N/A
7	Plexauridae	<i>Echinomuricea</i>	-	N/A	20	15	None	N/A	N/A	N/A	N/A	N/A	N/A
8	Acanthogorgiidae	<i>Anthogorgia</i>	-	N/A	25	25	None	N/A	N/A	N/A	N/A	N/A	N/A
9	Plexauridae	<i>Menella/</i> <i>Paraplexaura</i>	-	N/A	20	23	None	N/A	N/A	N/A	N/A	5	N/A
10	Plexauridae	<i>Menella/</i> <i>Paraplexaura</i>	-	N/A	17	15	None	N/A	N/A	N/A	N/A	N/A	N/A
11	Plexauridae	<i>Menella/</i> <i>Paraplexaura</i>	-	N/A	30	35	None	N/A	N/A	N/A	N/A	N/A	N/A
12	Antipathidae	<i>Antipathes</i>	<i>curvata</i>	N/A	50	50	None	N/A	N/A	N/A	N/A	N/A	N/A
13	Plexauridae	<i>Menella/</i> <i>Paraplexaura</i>	-	N/A	20	25	None	N/A	N/A	N/A	N/A	N/A	N/A
14	Plexauridae	<i>Menella/</i> <i>Paraplexaura</i>	-	N/A	13	10	None	N/A	N/A	N/A	N/A	N/A	N/A
15	Acanthogorgiidae	<i>Anthogorgia</i>	-	N/A	30	25	None	N/A	N/A	N/A	N/A	N/A	N/A

Table 3.5 Species, Size, Sediment Cover, Bleached Area, Partial Mortality and Physical Damage to the Identified Coral Colonies in Zone B (Sung Kong)

Cora 1 No.	Family	Genus	Species	Max. diameter (cm)	Max. height (cm)	Max. width (cm)	Sediment cover (%)	Sediment color	Sediment Texture	Sediment thickness (cm)	Bleached area (%)	Partial mortality (%)	Physical damage to colonies
Hard Corals													
1	Poritidae	<i>Porites</i>	-	50	N/A	N/A	None	N/A	N/A	N/A	N/A	5	N/A
2	Poritidae	<i>Porites</i>	-	50	N/A	N/A	None	N/A	N/A	N/A	N/A	N/A	N/A
3	Poritidae	<i>Porites</i>	-	30	N/A	N/A	None	N/A	N/A	N/A	N/A	N/A	N/A
4	Poritidae	<i>Porites</i>	-	30	N/A	N/A	None	N/A	N/A	N/A	N/A	N/A	N/A
5	Incertae sedis	<i>Plesiastrea</i>	<i>versipora</i>	33	N/A	N/A	None	N/A	N/A	N/A	N/A	N/A	N/A
6	Incertae sedis	<i>Plesiastrea</i>	<i>versipora</i>	50	N/A	N/A	None	N/A	N/A	N/A	N/A	N/A	N/A
7	Incertae sedis	<i>Plesiastrea</i>	<i>versipora</i>	33	N/A	N/A	None	N/A	N/A	N/A	N/A	N/A	N/A
8	Incertae sedis	<i>Plesiastrea</i>	<i>versipora</i>	27	N/A	N/A	None	N/A	N/A	N/A	N/A	N/A	N/A
9	Poritidae	<i>Porites</i>	-	28	N/A	N/A	None	N/A	N/A	N/A	N/A	N/A	N/A
10	Incertae sedis	<i>Plesiastrea</i>	<i>versipora</i>	27	N/A	N/A	None	N/A	N/A	N/A	N/A	N/A	N/A
11	Incertae sedis	<i>Plesiastrea</i>	<i>versipora</i>	15	N/A	N/A	None	N/A	N/A	N/A	N/A	N/A	N/A
12	Siderastreidae	<i>Psammocora</i>	<i>superficialis</i>	22	N/A	N/A	None	N/A	N/A	N/A	N/A	N/A	N/A
13	Incertae sedis	<i>Plesiastrea</i>	<i>versipora</i>	30	N/A	N/A	None	N/A	N/A	N/A	N/A	N/A	N/A
14	Incertae sedis	<i>Plesiastrea</i>	<i>versipora</i>	30	N/A	N/A	None	N/A	N/A	N/A	N/A	N/A	N/A
15	Acroporidae	<i>Acropora</i>	<i>solitaryensis</i>	38	N/A	N/A	1	Light yellow	Coarse	<1mm	N/A	N/A	N/A
Octocorals/Black Corals													
1	Antipathidae	<i>Cirripathes</i>	-	N/A	120	1	None	N/A	N/A	N/A	N/A	N/A	N/A
2	Antipathidae	<i>Cirripathes</i>	-	N/A	150	1	None	N/A	N/A	N/A	N/A	N/A	N/A
3	Nephtheidae	<i>Dendronephthya</i>	-	20	N/A	N/A	None	N/A	N/A	N/A	N/A	N/A	N/A
4	Nephtheidae	<i>Dendronephthya</i>	-	10	N/A	N/A	None	N/A	N/A	N/A	N/A	N/A	N/A
5	Nephtheidae	<i>Dendronephthya</i>	-	7	N/A	N/A	None	N/A	N/A	N/A	N/A	N/A	N/A
6	Alcyoniidae	<i>Cladiella</i>	-	N/A	15	40	None	N/A	N/A	N/A	N/A	N/A	N/A

Cora 1 No.	Family	Genus	Species	Max. diameter (cm)	Max. height (cm)	Max. width (cm)	Sediment cover (%)	Sediment color	Sediment Texture	Sediment thickness (cm)	Bleached area (%)	Partial mortality (%)	Physical damage to colonies
7	Alcyoniidae	<i>Cladiella</i>	-	N/A	10	10	None	N/A	N/A	N/A	N/A	N/A	N/A
8	Nephthidae	<i>Dendronephthya</i>	-	50	N/A	N/A	None	N/A	N/A	N/A	N/A	N/A	N/A
9	Nephthidae	<i>Dendronephthya</i>	-	30	N/A	N/A	None	N/A	N/A	N/A	N/A	N/A	N/A
10	Nephthidae	<i>Dendronephthya</i>	-	18	N/A	N/A	None	N/A	N/A	N/A	N/A	N/A	N/A
11	Nephthidae	<i>Dendronephthya</i>	-	25	N/A	N/A	None	N/A	N/A	N/A	N/A	N/A	N/A
12	Nephthidae	<i>Dendronephthya</i>	-	20	N/A	N/A	None	N/A	N/A	N/A	N/A	N/A	N/A
13	Nephthidae	<i>Dendronephthya</i>	-	15	N/A	N/A	None	N/A	N/A	N/A	N/A	N/A	N/A
14	Nephthidae	<i>Dendronephthya</i>	-	10	N/A	N/A	None	N/A	N/A	N/A	N/A	N/A	N/A
15	Nephthidae	<i>Dendronephthya</i>	-	27	N/A	N/A	None	N/A	N/A	N/A	N/A	N/A	N/A

Table 3.6 Species, Size, Sediment Cover, Bleached Area, Partial Mortality and Physical Damage to the Identified Coral Colonies in Zone C (Po Toi)

Coral No.	Family	Genus	Species	Max. diameter (cm)	Max. height (cm)	Max. width (cm)	Sediment cover (%)	Sediment color	Sediment Texture	Sediment thickness (cm)	Bleached area (%)	Partial mortality (%)	Physical damage to colonies
Hard Corals													
1	Poritidae	<i>Porites</i>	-	10	N/A	N/A	5	Light yellow	Coarse	1mm	N/A	N/A	N/A
2	Incertae sedis	<i>Plesiastrea</i>	<i>versipora</i>	30	N/A	N/A	None	N/A	N/A	N/A	N/A	N/A	N/A
3	Incertae sedis	<i>Plesiastrea</i>	<i>versipora</i>	22	N/A	N/A	1	Light yellow	Coarse	1mm	N/A	N/A	N/A
4	Incertae sedis	<i>Plesiastrea</i>	<i>versipora</i>	35	N/A	N/A	5	Light yellow	Coarse	1mm	N/A	N/A	N/A
5	Incertae sedis	<i>Plesiastrea</i>	<i>versipora</i>	45	N/A	N/A	5	Light yellow	Coarse	1mm	N/A	N/A	N/A
6	Incertae sedis	<i>Plesiastrea</i>	<i>versipora</i>	30	N/A	N/A	1	Light yellow	Coarse	1mm	N/A	N/A	N/A
7	Merulinidae	<i>Hydnophora</i>	<i>exesa</i>	30	N/A	N/A	None	N/A	N/A	N/A	N/A	N/A	N/A
8	Poritidae	<i>Porites</i>	-	30	N/A	N/A	1	Light yellow	Coarse	1mm	N/A	N/A	N/A
9	Poritidae	<i>Porites</i>	-	23	N/A	N/A	None	N/A	N/A	N/A	N/A	N/A	N/A
10	Poritidae	<i>Porites</i>	-	20	N/A	N/A	1	Light yellow	Coarse	<1mm	N/A	N/A	N/A
11	Poritidae	<i>Goniopora</i>	<i>stutchburyi</i>	26	N/A	N/A	None	N/A	N/A	N/A	N/A	N/A	N/A
12	Poritidae	<i>Porites</i>	-	20	N/A	N/A	None	N/A	N/A	N/A	N/A	N/A	N/A
13	Incertae sedis	<i>Plesiastrea</i>	<i>versipora</i>	28	N/A	N/A	None	N/A	N/A	N/A	N/A	N/A	N/A
14	Incertae sedis	<i>Plesiastrea</i>	<i>versipora</i>	30	N/A	N/A	None	N/A	N/A	N/A	N/A	N/A	N/A
15	Incertae sedis	<i>Plesiastrea</i>	<i>versipora</i>	40	N/A	N/A	None	N/A	N/A	N/A	N/A	N/A	N/A

Coral No.	Family	Genus	Species	Max. diameter (cm)	Max. height (cm)	Max. width (cm)	Sediment cover (%)	Sediment color	Sediment Texture	Sediment thickness (cm)	Bleached area (%)	Partial mortality (%)	Physical damage to colonies
Octocorals/Black Corals													
1	Antipathidae	<i>Antipathes</i>	<i>curvata</i>	N/A	60	60	None	N/A	N/A	N/A	N/A	N/A	N/A
2	Antipathidae	<i>Antipathes</i>	<i>curvata</i>	N/A	40	80	None	N/A	N/A	N/A	N/A	N/A	N/A
3	Plexauridae	<i>Echinomuricea</i>	-	N/A	15	10	None	N/A	N/A	N/A	N/A	N/A	N/A
4	Plexauridae	<i>Echinomuricea</i>	-	N/A	15	5	None	N/A	N/A	N/A	N/A	N/A	N/A
5	Plexauridae	<i>Echinomuricea</i>	-	N/A	17	6	None	N/A	N/A	N/A	N/A	N/A	N/A
6	Plexauridae	<i>Echinomuricea</i>	-	N/A	15	7	None	N/A	N/A	N/A	N/A	N/A	N/A
7	Plexauridae	<i>Echinomuricea</i>	-	N/A	20	5	None	N/A	N/A	N/A	N/A	N/A	N/A
8	Plexauridae	<i>Echinomuricea</i>	-	N/A	22	10	None	N/A	N/A	N/A	N/A	N/A	N/A
9	Plexauridae	<i>Euplexaua</i>	-	N/A	10	10	None	N/A	N/A	N/A	N/A	N/A	N/A
10	Plexauridae	<i>Menella/</i> <i>Paraplexaura</i>	-	N/A	15	10	None	N/A	N/A	N/A	N/A	N/A	N/A
11	Plexauridae	<i>Echinomuricea</i>	-	N/A	10	15	None	N/A	N/A	N/A	N/A	N/A	N/A
12	Plexauridae	<i>Echinomuricea</i>	-	N/A	20	5	None	N/A	N/A	N/A	N/A	N/A	N/A
13	Plexauridae	<i>Echinomuricea</i>	-	N/A	35	5	None	N/A	N/A	N/A	N/A	N/A	N/A
14	Plexauridae	<i>Echinomuricea</i>	-	N/A	20	10	None	N/A	N/A	N/A	N/A	N/A	N/A
15	Plexauridae	<i>Echinomuricea</i>	-	N/A	20	5	None	N/A	N/A	N/A	N/A	N/A	N/A


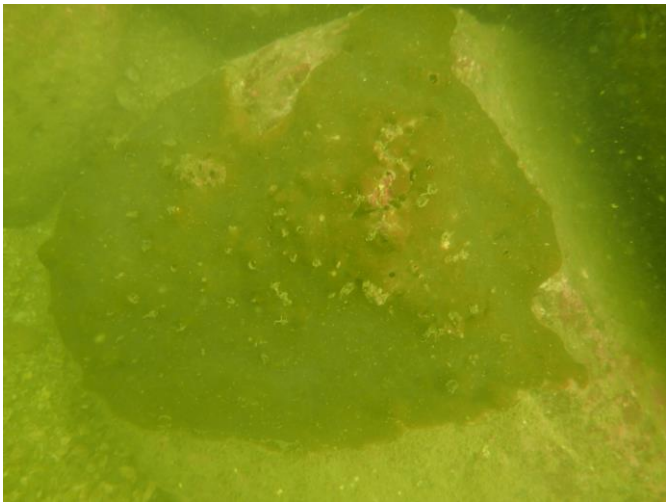
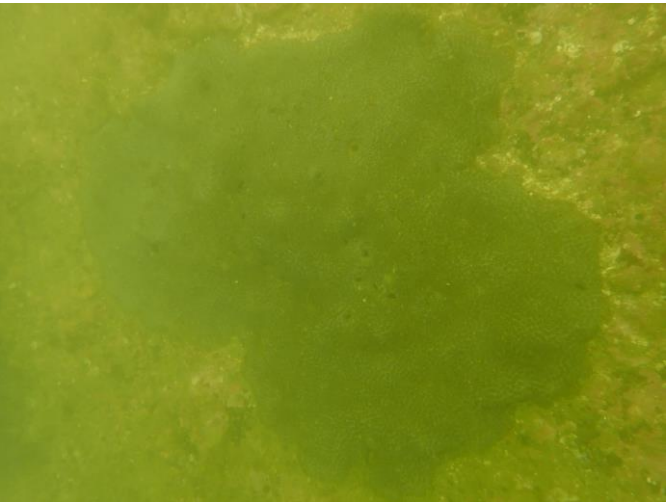
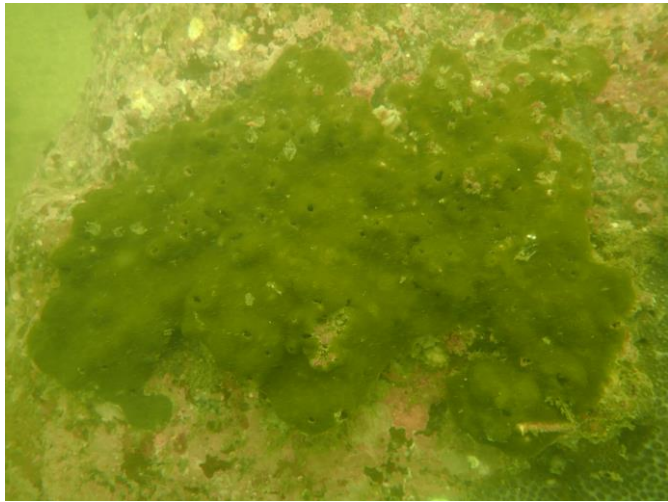
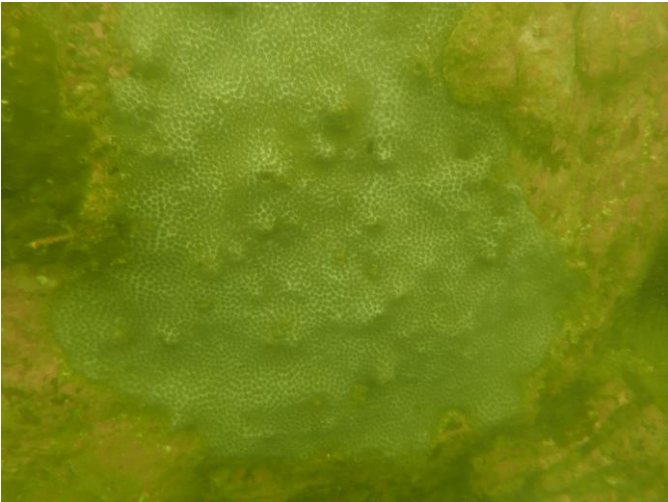
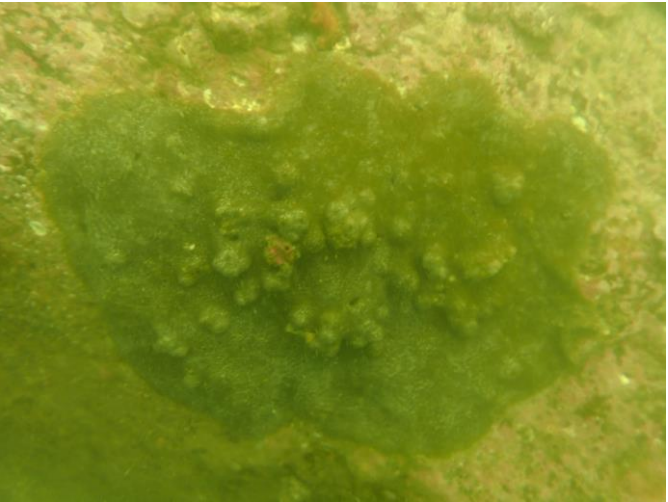
Baseline Coral Surveys were undertaken on 25 and 26 June 2018 at three designated zones (including two monitoring stations at Round Island and Sung Kong, and one Control station at Po Toi) in accordance with the *EM&A Manual* of the Project Profile. During the Baseline Survey, qualitative spot dive surveys were firstly undertaken to identify significant coral habitats/identified coral communities (defined as locations within relatively higher coral abundance and species/ genus number for the purpose of this coral monitoring programme). The significant coral habitats/identified coral communities were selected for the subsequent REA survey and Coral Colony Monitoring during the Baseline and Post Project Coral Surveys.





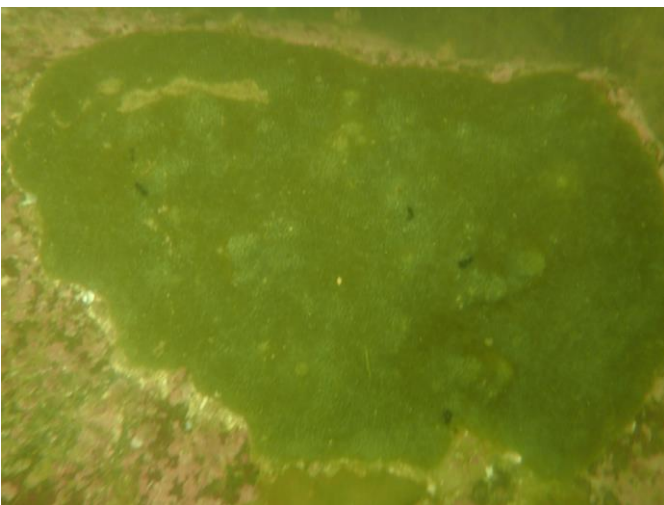
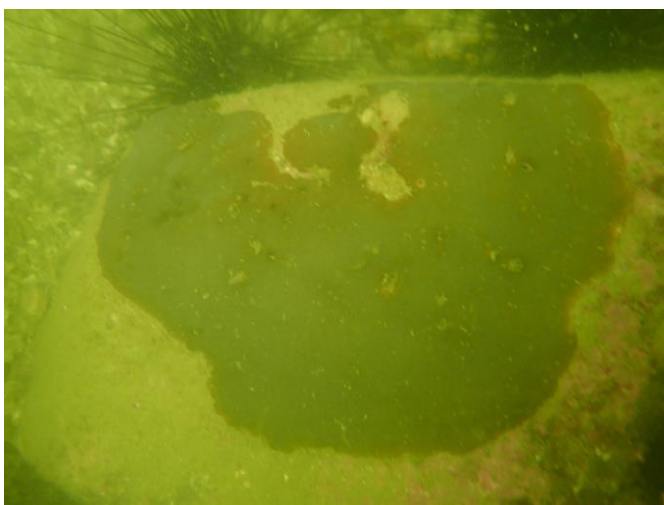
Baseline REA surveys and Coral Colony Monitoring were then undertaken at the monitoring stations at Round Island and Sung Kong as well as the Control station at Po Toi. The conditions of coral colonies at these stations were generally good. Data obtained from the baseline surveys will be used to compare with post Project monitoring data in order to determine any observable adverse impacts to corals as a result of the cable installation works.

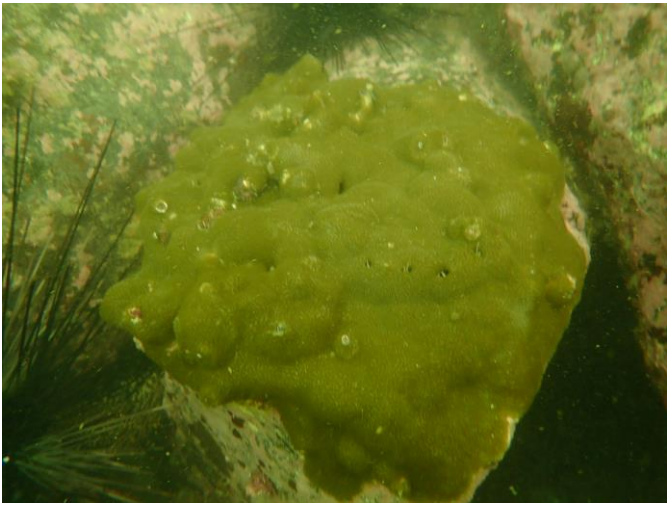

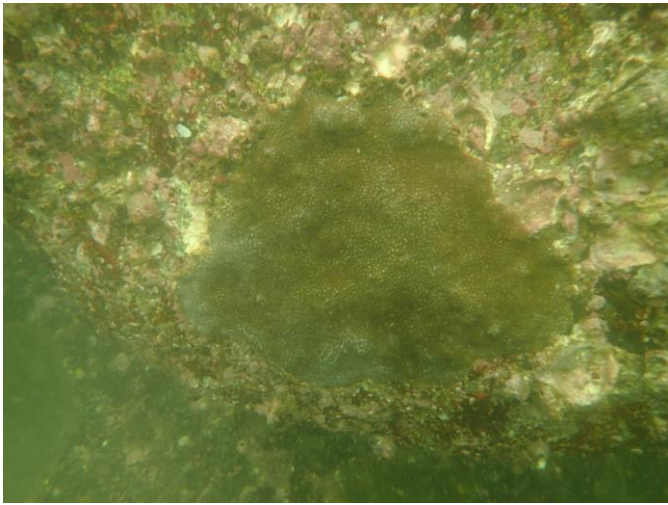
Annex A

Photographic Results of Identified Coral Colonies in Zone A, B & C for Coral Colony Monitoring







Annex A1 Photographic Records of Identified Hard Coral Colonies at Monitoring Station (Zone A – Round Island) for Coral Colony Monitoring during the Baseline Coral Monitoring Survey

Colony No. 1	Colony No. 2	Colony No. 3
		
Colony No. 4	Colony No. 5	Colony No. 6
		

Colony No. 7	Colony No. 8	Colony No. 9
		
Colony No. 10	Colony No. 11	Colony No. 12
		

Colony No. 13	Colony No. 14	Colony No. 15
		

Annex A2 Photographic Records of Identified Octocoral/ Black Coral Colonies at Monitoring Station (Zone A – Round Island) for Coral Colony Monitoring during Baseline Coral Monitoring Survey

Colony No. 1	Colony No. 2	Colony No. 3
		
Colony No. 4	Colony No. 5	Colony No. 6
		

Colony No. 7



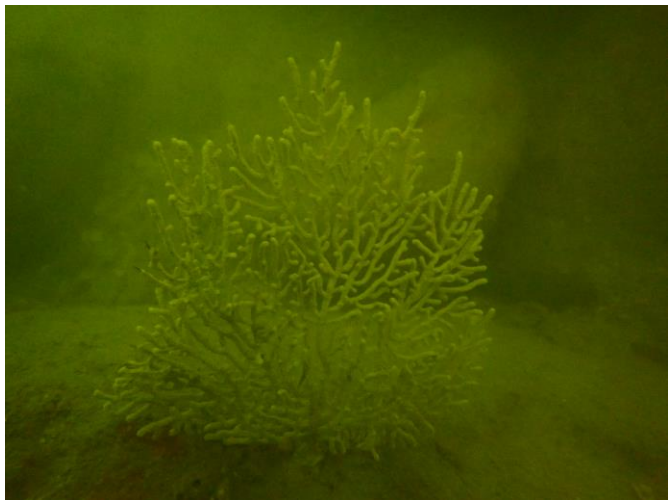
Colony No. 8



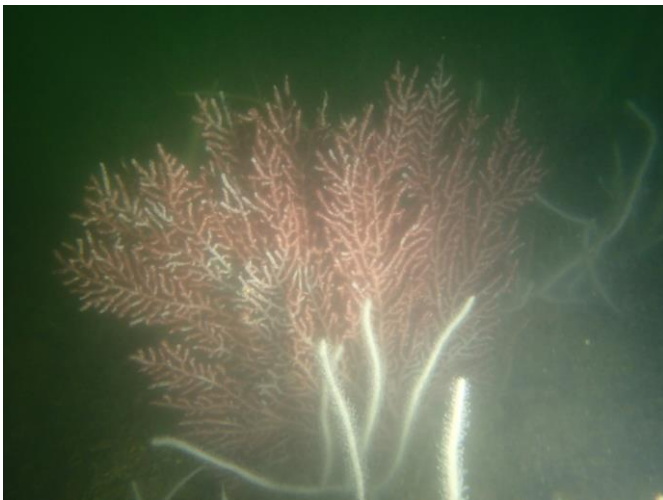
Colony No. 9



Colony No. 10



Colony No. 11



Colony No. 12



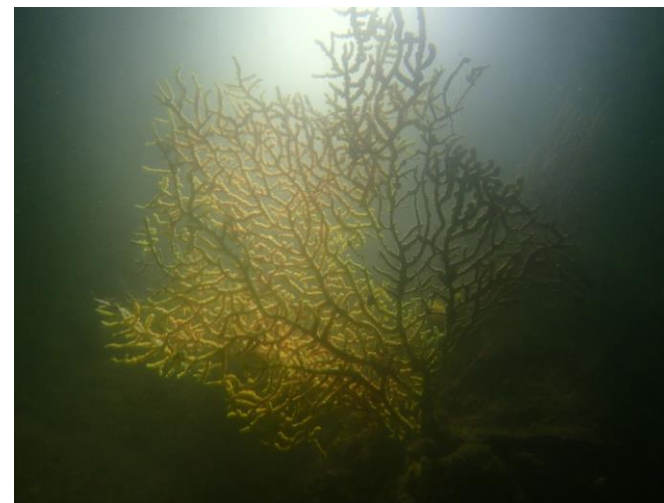
Colony No. 13




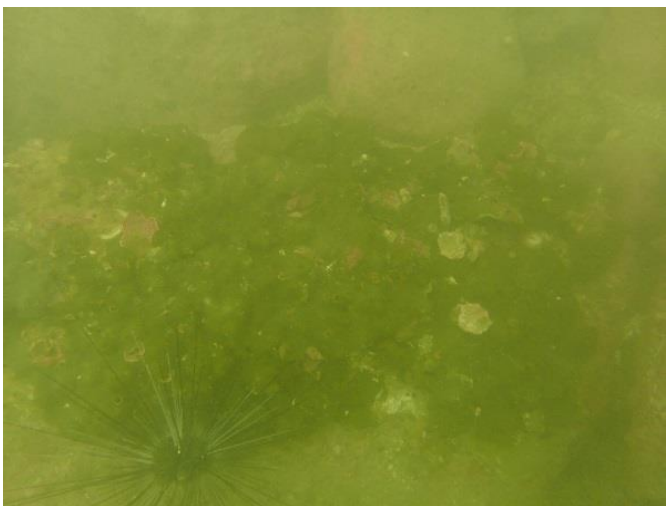

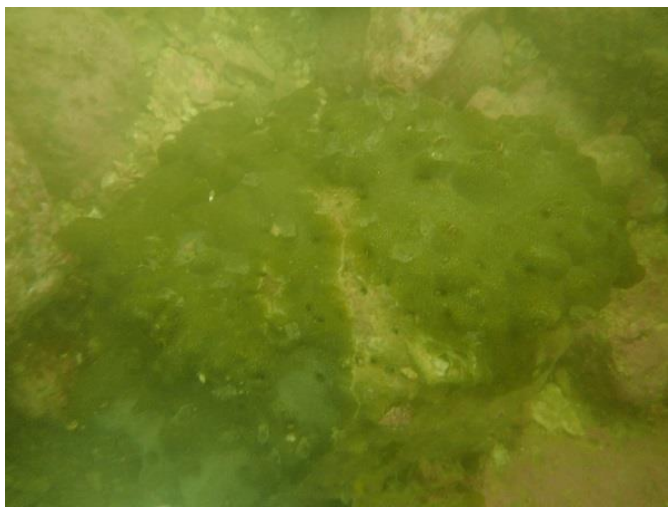
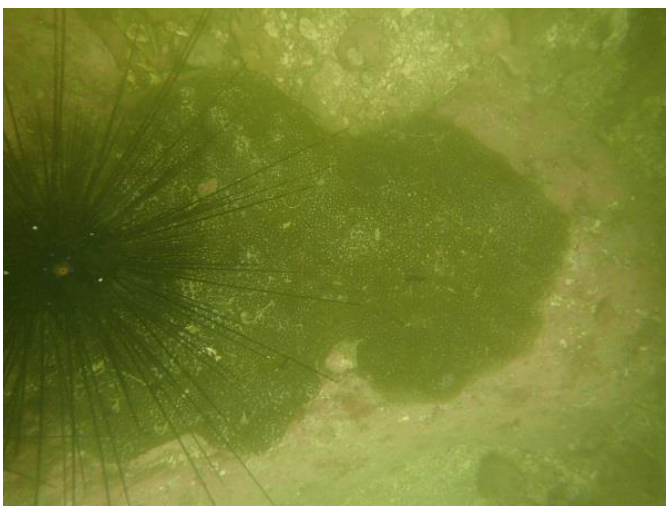
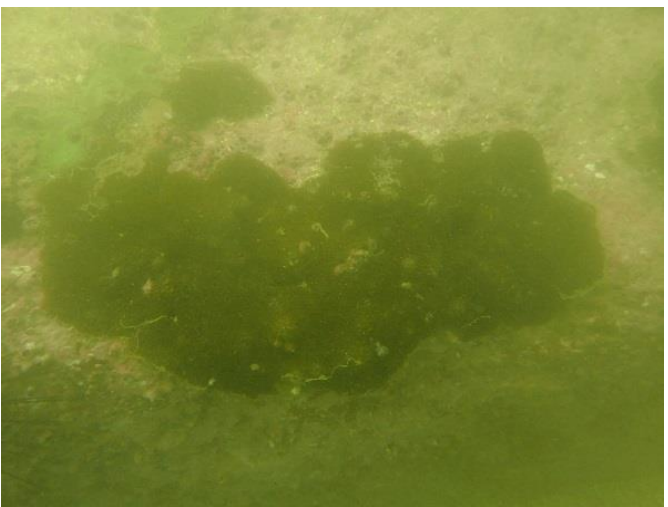
Colony No. 14

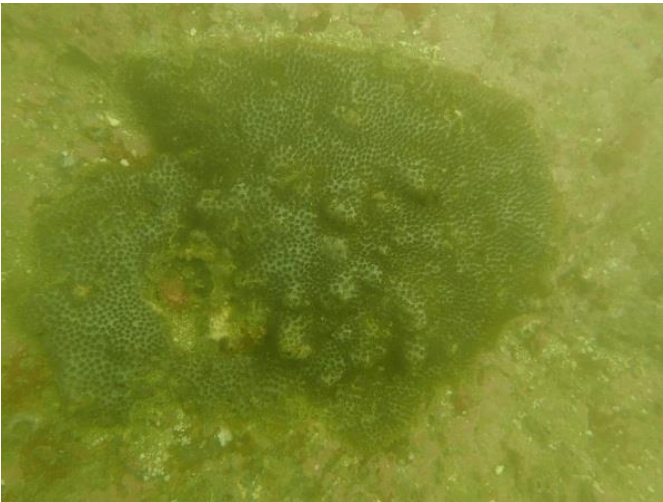
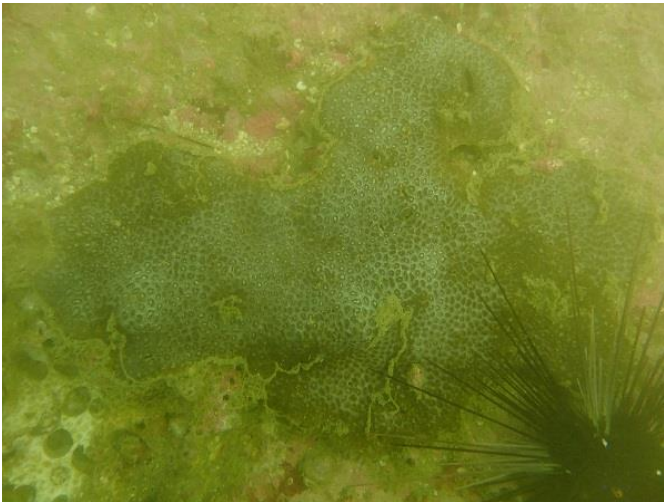
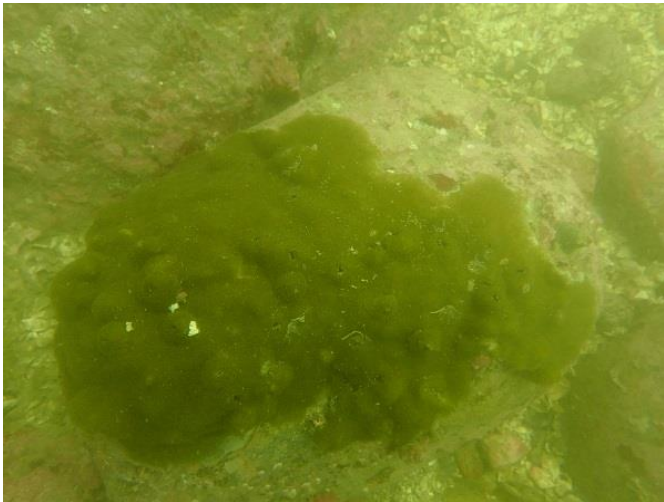






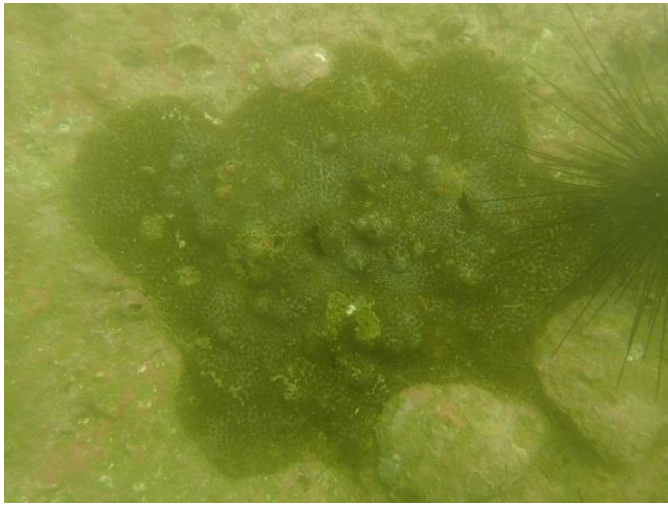
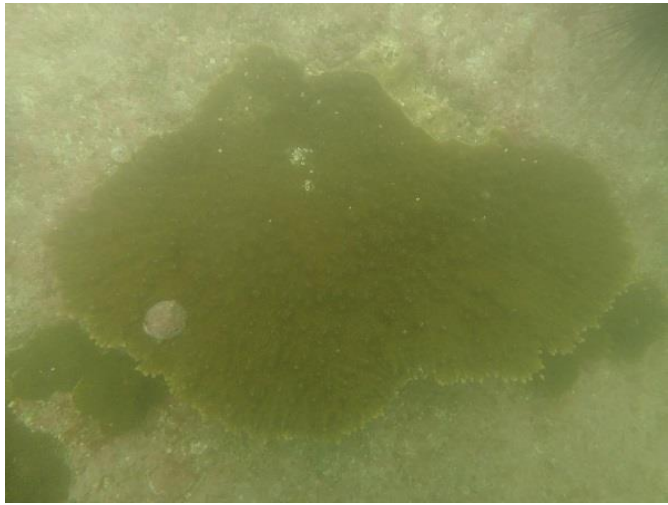
Colony No. 15









Annex A3 Photographic Records of Identified Hard Coral Colonies at Monitoring Station (Zone B – Sung Kong) for Coral Colony Monitoring during the Baseline Coral Monitoring Survey

Colony No. 1	Colony No. 2	Colony No. 3
		
Colony No. 4	Colony No. 5	Colony No. 6
		

Colony No. 7	Colony No. 8	Colony No. 9
		
Colony No. 10	Colony No. 11	Colony No. 12
		

Colony No. 13	Colony No. 14	Colony No. 15
		

Annex A4 Photographic Records of Identified Octocoral/ Black Coral Colonies at Monitoring Station (Zone B – Sung Kong) for Coral Colony Monitoring during the Baseline Coral Monitoring Survey

Colony No. 1	Colony No. 2	Colony No. 3
		
Colony No. 4	Colony No. 5	Colony No. 6
		

Colony No. 7



Colony No. 8



Colony No. 9



Colony No. 10



Colony No. 11



Colony No. 12



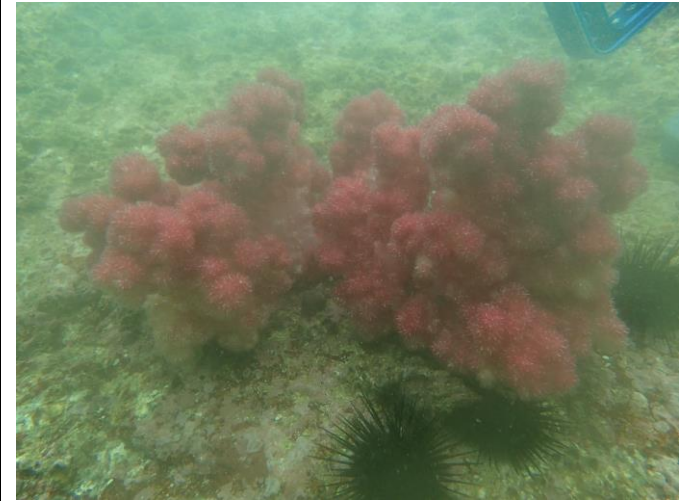
Colony No. 13









Colony No. 14



Colony No. 15



Annex A5 Photographic Records of Identified Hard Coral Colonies at Control Station (Zone C -Po Toi) for Coral Colony Monitoring during the Baseline Coral Monitoring Survey

Colony No. 1	Colony No. 2	Colony No. 3
		
Colony No. 4	Colony No. 5	Colony No. 6
		

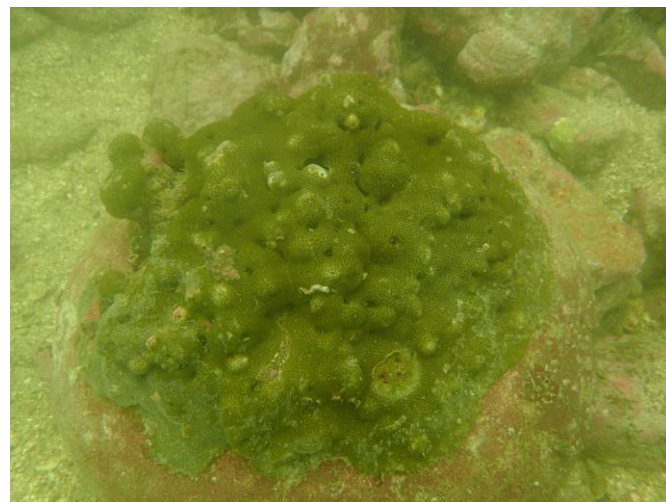
Colony No. 7



Colony No. 8



Colony No. 9



Colony No. 10



Colony No. 11



Colony No. 12



Colony No. 13



Colony No. 14



Colony No. 15

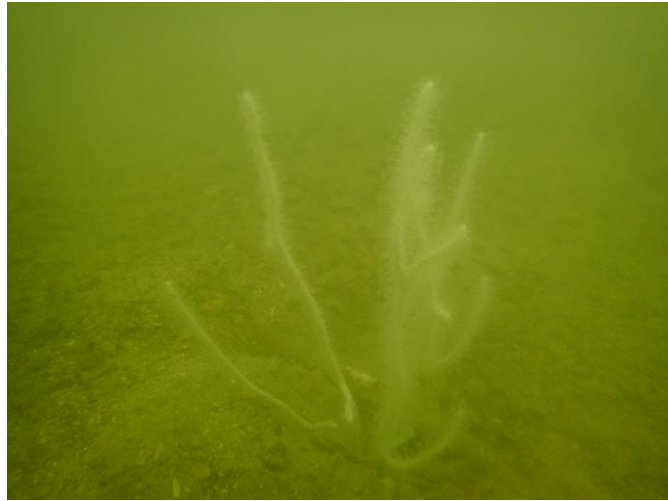


Annex A6 Photographic Records of Identified Octocoral/ Black Coral Colonies at Control Station (Zone C –Po Toi) for Coral Colony Monitoring during the Baseline Coral Monitoring Survey

Colony No. 1	Colony No. 2	Colony No. 3
		
Colony No. 4	Colony No. 5	Colony No. 6
		

Colony No. 7	Colony No. 8	Colony No. 9
		
Colony No. 10	Colony No. 11	Colony No. 12
		

Colony No. 13



Colony No. 14



Colony No. 15



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