

# **Post-Installation Coral Survey Report**



**ECO-ENVIRO CONSULTANTS COMPANY**

**Dec 2023**

Our Ref: TCS01273/22/300/L0013

**Hong Kong Telecommunications HKT) Limited**  
8/F, Lai Chi Kok Engineering Centre II  
4 Yuet Lun Street  
Lai Chi Kok  
Kowloon

**Attn: Mr. Cliff Ko**

**2 February 2024**  
By email only

Dear Sir,

**Re: Lamma Island Cable System**  
**Environmental Permit No. EP-609/2022**  
**Certification of Post-Installation Coral Survey Report**

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With reference to the Post-Installation Coral Survey Report for Lamma Island Cable System, we herewith certify the report has conformed to the requirement as set out under Conditions 3.2 and 3.3 of the captioned Environmental Permit.

Should you have any queries, please feel free to contact the undersigned at Tel: 2959-6059 or Fax: 2959-6079 or Email: [twtam@fordbusiness.com](mailto:twtam@fordbusiness.com).

Yours sincerely,  
For and on Behalf of  
**Action-United Environmental Services & Consulting (AUES)**



Tam Tak Wing  
Environmental Team Leader

Our ref: 7076911/L30580/AG/TK/rw

2 February 2024

Hong Kong Telecommunications (HKT) Limited  
8/F, Lai Chi Kok Engineering Centre II,  
4 Yuet Lun Street,  
Lai Chi Kok,  
Kowloon,  
Hong Kong

**By Email and Post**  
(cliff.mk.ko@pccw.com)

Attention: Mr Cliff KO

Dear Sir

**Independent Environmental Checker ("IEC") for Environmental Monitoring Work for  
Lamma Island Submarine Cable System  
Verification of Post-installation Coral Survey Report**

With reference to the enclosed Post-installation Coral Survey Report sent by ET to IEC via email on 1 February 2024, we have no adverse comment, and hereby approve the Schedule in accordance with Section 3.3 (b) of the Environmental Permit No. EP-609/2022.

Thank you for your attention. Should you have questions please do not hesitate to contact the undersigned at tel. 3995-8120 or by email to alex.gbaguidi@smec.com.

Yours faithfully



**Alex GBAGUIDI**  
Independent Environmental Checker

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## Summary

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- The Post-installation Spot Dive Survey was carried out at the shore of Telegraph Bay and Pak Kok Tsui on 25<sup>th</sup> and 26<sup>th</sup> October 2023.
  - A total of 63 coral colonies of gorgonian coral *Echinomuricea* sp. were recorded during the spot dive survey. All coral colonies during the survey are in good health condition as the pre-installation dive survey and located within 3 m of the cable alignment.
  - All coral colonies recorded in the survey area are common species in Hong Kong water.
  - 23 less coral colonies were recorded during the post-installation survey when compared to the pre-installation survey. Since some recorded coral colonies are located very close to the cable alignment in both Telegraph Bay and Pak Kok Tsui, these *Echinomuricea* sp. individuals probably lost when the cable was laid. However, according to the Project Profile session B.9.4 to B.9.6, when the seabed has reformed, *Echinomuricea* sp. will recolonise their former locations and the percentage cover will return to pre-installation levels. Therefore, the impact to coral due to the cable installation work can be considered as low.
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## 1. Introduction

- 1.1 In support of the Government's policy initiative, the Office of the Communications Authority (“OFCA”) has implemented the “Subsidy Scheme to Extension Fibre-based Networks to Villages in Remote Areas” (“the Scheme”). The Scheme comprises six projects and Hong Kong Telecommunications (HKT) Limited (“HKT”) has been awarded “Project 6”, which includes the Lamma Island Cable System (“the Project”). The Project will provide a submarine fibre-optic telecommunications cable from Telegraph Bay (“TB”) at southwestern Hong Kong Island to Pak Kok Tsui (“PKT”) on the eastern side of the northern tip of Lamma Island.
- 1.2 The Project includes the offshore and shore-end sections of a cable, approx. 2.3km in length with a diameter of 60mm buried below the seabed that lands at TB on Hong Kong Island and at PKT on Lamma Island. Installation is scheduled to be completed in the fourth quarter of 2022 and the Cable System is planned to be in service by the fourth quarter of 2022.
- 1.3 Coral colonies were recorded in the near shore area of TB and PKT, which may be affected by the installation works. Given the proximity between the proposed cable alignment and recorded coral colonies in the vicinity of the cable landing at TB and PKT, as a precautionary measure a Pre-installation Coral Survey and a Post-project Coral Survey shall be carried out.
- 1.4 The Pre-installation Coral Survey was carried out on 20<sup>th</sup> and 21<sup>st</sup> October 2022 before commencement of the Project. It has identified the locations of the corals in the near shore area of TB and PKT that were in proximity to the proposed cable alignment and the cable alignment that avoided direct impact to the coral colonies as far as possible. The Pre-installation Coral Survey Report was submitted to EPD on 28<sup>th</sup> October 2022 pursuant to Condition 3.3 of the Environmental Permit No. EP-609/2022.
- 1.5 After the cable laying work, a post-installation survey was conducted on 25<sup>th</sup> and 26<sup>th</sup> October 2023 to verify the health condition of the recorded nearby coral colonies. This is the post-installation coral survey report to present the findings of the Post-installation Coral Survey conducted in the near shore area of TB and PKT. The Post -installation Coral Survey Report shall be submitted to EPD within one month after completion of post-installation coral survey pursuant to Condition 3.3 of the Environmental Permit No. EP-609/2022.

## 2. Methodology

- 2.1 One subtidal spot dive survey will be carried out in the near shore area of TB and PKT in proximity to the proposed cable alignment (*Figure 1* and *Figure 2*) after the installation of the proposed cable. For each coral colony found, the following data should be recorded:
  - GPS location
  - Species identification to genus or species level, as far as practicable

- sizes (e.g. maximum diameter) and health of identified corals (e.g. degree of sedimentation, partial mortality, sign of bleaching)
- Photographic record
- Survey date and time
- Underwater visibility
- Atmospheric, sea and tidal conditions

### 3. Result

3.1 The Post-installation Coral Survey was carried out on 25<sup>th</sup> and 26<sup>th</sup> October 2023 and the weather conditions were summarized in **Table 1**.

**Table 1 Weather Condition for the spot dive survey on 25<sup>th</sup> and 26<sup>th</sup> October 2023**

Date	Condition	Average Underwater Visibility
25 <sup>th</sup> October 2023	- Northeast force 5, force 6 - Sunny interval - Tidal level 1.72m	0 to 10 cm
26 <sup>th</sup> October 2023	- East to northeast force 5 to 6 - Sunny period - Tidal level 2.03m	0 to 10 cm

#### **Telegraph Bay**

3.2 Spot dive survey were carried out from 09:00 to 15:30 on 25<sup>th</sup> October 2023 in TB (Figure 1). The water depth during the dive survey was 2 m to 15 m.

3.3 The survey area is mainly composed of sandy bottom with scattered boulders and rocks along the shore area of TB. Because of the strong winter monsoon, the sea condition was so rough and the average visibility along the survey area was less than 10 cm or zero during the dive survey.

3.4 No hard coral was recorded in TB and 25 gorgonian corals were recorded in TB during the spot check survey and all of them are *Echinomuricea sp.* in which they were all grow on rocks. Their GPS coordinates, size and health condition were recorded in **Table 2**. Since the water visibility was nearly zero in more of the time especially water depth, representative photo of corals near the shore were taken and shown in Photo Plate A. All the coral colonies recorded in the survey area are common species in Hong Kong water.

**Table 2 GPS Coordinates, Size and Health Condition of Recorded Coral Colonies in TB during Spot Dive Survey**

No.	Coral species	Size (cm)	% Bleaching	Partial Mortality	% Sediment	GPS Coordinates	
1	<i>Echinomuricea sp.</i>	15	0	0	0	22°15'18.39N	114°07'53.86E
2	<i>Echinomuricea sp.</i>	8	0	0	0	22°15'18.38N	114°07'53.90E
3	<i>Echinomuricea sp.</i>	23	0	0	0	22°15'18.38N	114°07'53.87E
4	<i>Echinomuricea sp.</i>	24	0	0	0	22°15'18.39N	114°07'53.81E
5	<i>Echinomuricea sp.</i>	35	0	0	0	22°15'18.35N	114°07'53.78E
6	<i>Echinomuricea sp.</i>	15	0	0	0	22°15'18.31N	114°07'53.69E



No.	Coral species	Size (cm)	% Bleaching	Partial Mortality	% Sediment	GPS Coordinates	
7	<i>Echinomuricea sp.</i>	11	0	0	0	22°15'18.21N	114°07'53.61E
8	<i>Echinomuricea sp.</i>	16	0	0	0	22°15'18.17N	114°07'53.45E
9	<i>Echinomuricea sp.</i>	14	0	0	0	22°15'18.12N	114°07'53.36E
10	<i>Echinomuricea sp.</i>	6	0	0	0	22°15'18.18N	114°07'53.38E
11	<i>Echinomuricea sp.</i>	12	0	0	0	22°15'18.14N	114°07'53.31E
12	<i>Echinomuricea sp.</i>	17	0	0	0	22°15'18.11N	114°07'53.26E
13	<i>Echinomuricea sp.</i>	24	0	0	0	22°15'18.09N	114°07'53.21E
14	<i>Echinomuricea sp.</i>	16	0	0	0	22°15'17.99N	114°07'53.04E
15	<i>Echinomuricea sp.</i>	19	0	0	0	22°15'17.92N	114°07'52.99E
16	<i>Echinomuricea sp.</i>	35	0	0	0	22°15'17.89N	114°07'52.89E
17	<i>Echinomuricea sp.</i>	41	0	0	0	22°15'17.85N	114°07'52.86E
18	<i>Echinomuricea sp.</i>	26	0	0	0	22°15'17.88N	114°07'52.78E
19	<i>Echinomuricea sp.</i>	15	0	0	0	22°15'17.85N	114°07'52.71E
20	<i>Echinomuricea sp.</i>	22	0	0	0	22°15'17.79N	114°07'52.64E
21	<i>Echinomuricea sp.</i>	29	0	0	0	22°15'17.77N	114°07'52.60E
22	<i>Echinomuricea sp.</i>	20	0	0	0	22°15'17.71N	114°07'52.60E
23	<i>Echinomuricea sp.</i>	15	0	0	0	22°15'17.64N	114°07'52.50E
24	<i>Echinomuricea sp.</i>	16	0	0	0	22°15'17.59N	114°07'52.49E
25	<i>Echinomuricea sp.</i>	24	0	0	0	22°15'17.65N	114°07'52.57E

### **Pak Kok Tsui**

3.5 Spot dive survey were carried out from 9:00 to 15:00 on 26<sup>th</sup> October 2023 in PKT (Figure 2). The water depth during the dive survey was 1.5 m to 14 m.

3.3 The survey area is mainly composed of muddy bottom with scattered boulders and rocks along the survey area of PKT. Because of the strong winter monsoon, the sea condition was so rough and the average visibility along the survey area was less than 10 cm or zero during the dive survey.

3.5 Similar to pre-installation survey, no hard coral was recorded in PKT and 38 gorgonian coral colonies *Echinomuricea sp.* was recorded (all located within 3 m of the cable alignment) near the cable alignment. Their GPS coordinates, size and health condition were recorded in **Table 3**. Since the water visibility was nearly zero in more of the time especially water depth, representative photo of corals near the shore were taken and shown in Photo Plate B. The recorded coral colonines in the survey area is common gorgonian species in Hong Kong water.

**Table 3 GPS Coordinates, Size and Health Condition of Recorded Coral Colonies in PKT during Spot Dive Survey**

No.	Coral species	Size (cm)	% Bleaching	Partial Mortality	% Sediment	GPS Coordinates	
1	<i>Echinomuricea sp.</i>	22	0	0	0	22°14'24.08N	114°07'09.33E
2	<i>Echinomuricea sp.</i>	15	0	0	0	22°14'24.13N	114°07'09.33E
3	<i>Echinomuricea sp.</i>	23	0	0	0	22°14'24.14N	114°07'09.33E
4	<i>Echinomuricea sp.</i>	9	0	0	0	22°14'24.14N	114°07'09.33E
5	<i>Echinomuricea sp.</i>	17	0	0	0	22°14'24.18N	114°07'09.39E
6	<i>Echinomuricea sp.</i>	24	0	0	0	22°14'24.22N	114°07'09.41E
7	<i>Echinomuricea sp.</i>	26	0	0	0	22°14'24.22N	114°07'09.41E
8	<i>Echinomuricea sp.</i>	35	0	0	0	22°14'24.21N	114°07'09.43E
9	<i>Echinomuricea sp.</i>	25	0	0	0	22°14'24.21N	114°07'09.47E
10	<i>Echinomuricea sp.</i>	18	0	0	0	22°14'24.23N	114°07'09.49E

No.	Coral species	Size (cm)	% Bleaching	Partial Mortality	% Sediment	GPS Coordinates	
11	<i>Echinomuricea sp.</i>	19	0	0	0	22°14'24.28N	114°07'09.55E
12	<i>Echinomuricea sp.</i>	25	0	0	0	22°14'24.30N	114°07'09.56E
13	<i>Echinomuricea sp.</i>	23	0	0	0	22°14'24.30N	114°07'09.57E
14	<i>Echinomuricea sp.</i>	24	0	0	0	22°14'24.30N	114°07'09.58E
15	<i>Echinomuricea sp.</i>	26	0	0	0	22°14'24.33N	114°07'09.58E
16	<i>Echinomuricea sp.</i>	35	0	0	0	22°14'24.35N	114°07'09.59E
17	<i>Echinomuricea sp.</i>	34	0	0	0	22°14'24.36N	114°07'09.60E
18	<i>Echinomuricea sp.</i>	19	0	0	0	22°14'24.36N	114°07'09.62E
19	<i>Echinomuricea sp.</i>	42	0	0	0	22°14'24.36N	114°07'09.64E
20	<i>Echinomuricea sp.</i>	19	0	0	0	22°14'24.38N	114°07'09.64E
21	<i>Echinomuricea sp.</i>	23	0	0	0	22°14'24.39N	114°07'09.64E
22	<i>Echinomuricea sp.</i>	35	0	0	0	22°14'24.39N	114°07'09.65E
23	<i>Echinomuricea sp.</i>	32	0	0	0	22°14'24.39N	114°07'09.67E
24	<i>Echinomuricea sp.</i>	16	0	0	0	22°14'24.40N	114°07'09.67E
25	<i>Echinomuricea sp.</i>	18	0	0	0	22°14'24.40N	114°07'09.67E
26	<i>Echinomuricea sp.</i>	25	0	0	0	22°14'24.44N	114°07'09.68E
27	<i>Echinomuricea sp.</i>	23	0	0	0	22°14'24.46N	114°07'09.68E
28	<i>Echinomuricea sp.</i>	15	0	0	0	22°14'24.47N	114°07'09.70E
29	<i>Echinomuricea sp.</i>	19	0	0	0	22°14'24.51N	114°07'09.83E
30	<i>Echinomuricea sp.</i>	16	0	0	0	22°14'24.64N	114°07'09.97E
31	<i>Echinomuricea sp.</i>	17	0	0	0	22°14'24.64N	114°07'10.01E
32	<i>Echinomuricea sp.</i>	25	0	0	0	22°14'24.73N	114°07'10.04E
33	<i>Echinomuricea sp.</i>	16	0	0	0	22°14'24.74N	114°07'10.07E
34	<i>Echinomuricea sp.</i>	37	0	0	0	22°14'24.78N	114°07'10.13E
35	<i>Echinomuricea sp.</i>	29	0	0	0	22°14'25.06N	114°07'10.40E
36	<i>Echinomuricea sp.</i>	31	0	0	0	22°14'25.10N	114°07'10.48E
37	<i>Echinomuricea sp.</i>	37	0	0	0	22°14'25.11N	114°07'10.53E
38	<i>Echinomuricea sp.</i>	28	0	0	0	22°14'25.16N	114°07'10.65E

#### 4. Discussion

4.1 The hard substrates in both TB and PKT were mainly composed of sandy and muddy bottom with scattered boulders and rocks. The visibility was nearly zero in most of the time during the survey. A total of 63 gorgonian coral colonies were recorded (TB:25, PKT:38) during the post-installation dive survey. All coral colonies during the survey are in good health condition as the pre-installation dive survey and located within 3 m of the cable alignment. No rare animals were recorded. All coral colonies recorded in the survey area are common species in Hong Kong Water.

4.2 23 less coral colonies were recorded during the post-installation survey when compared to the pre-installation survey. Since some recorded coral colonies are located very close to the cable alignment in both TB and PKT, These *Echinomuricea sp.* individuals probably lost the cable is laid. However, according to the Project Profile session B.9.4 to B.9.6, when the seabed has reformed, *Echinomuricea sp.* will recolonise their former locations and the percentage cover will return to pre-installation levels. As a result of *Echinomuricea sp.* recolonization, the impact to coral due to the cable installation work can be considered as low.

## 5. References

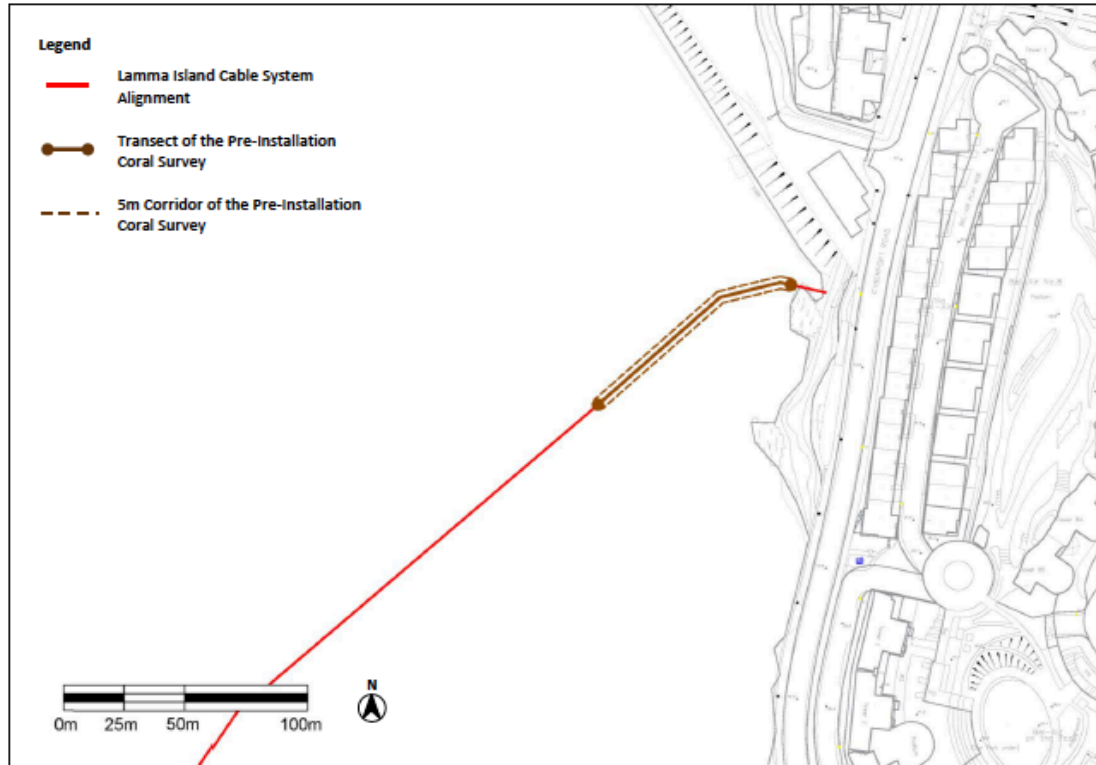
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Binnie Consultants Limited. 1995. Marine Ecology of Hong Kong: Report on Underwater Dive Surveys. Volume I. Civil Engineering Department Geotechnical Engineering Office

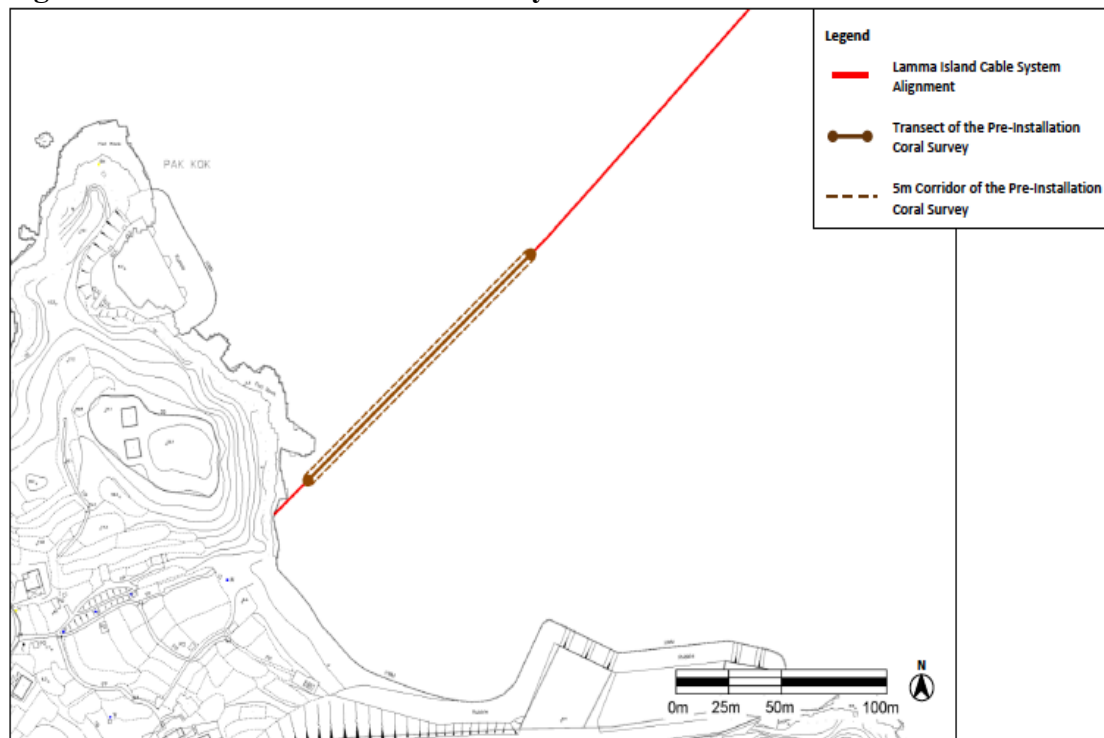
Chan A.L.K., Choi, C.L.S., McCorry D., Chan K.K., Lee, M.W., and Put, A. Jr. 2005. *Field Guide to Hard Corals of Hong Kong*. AFCD.

**END**

**Figure 1 Post-installation Coral Survey Location at TB**

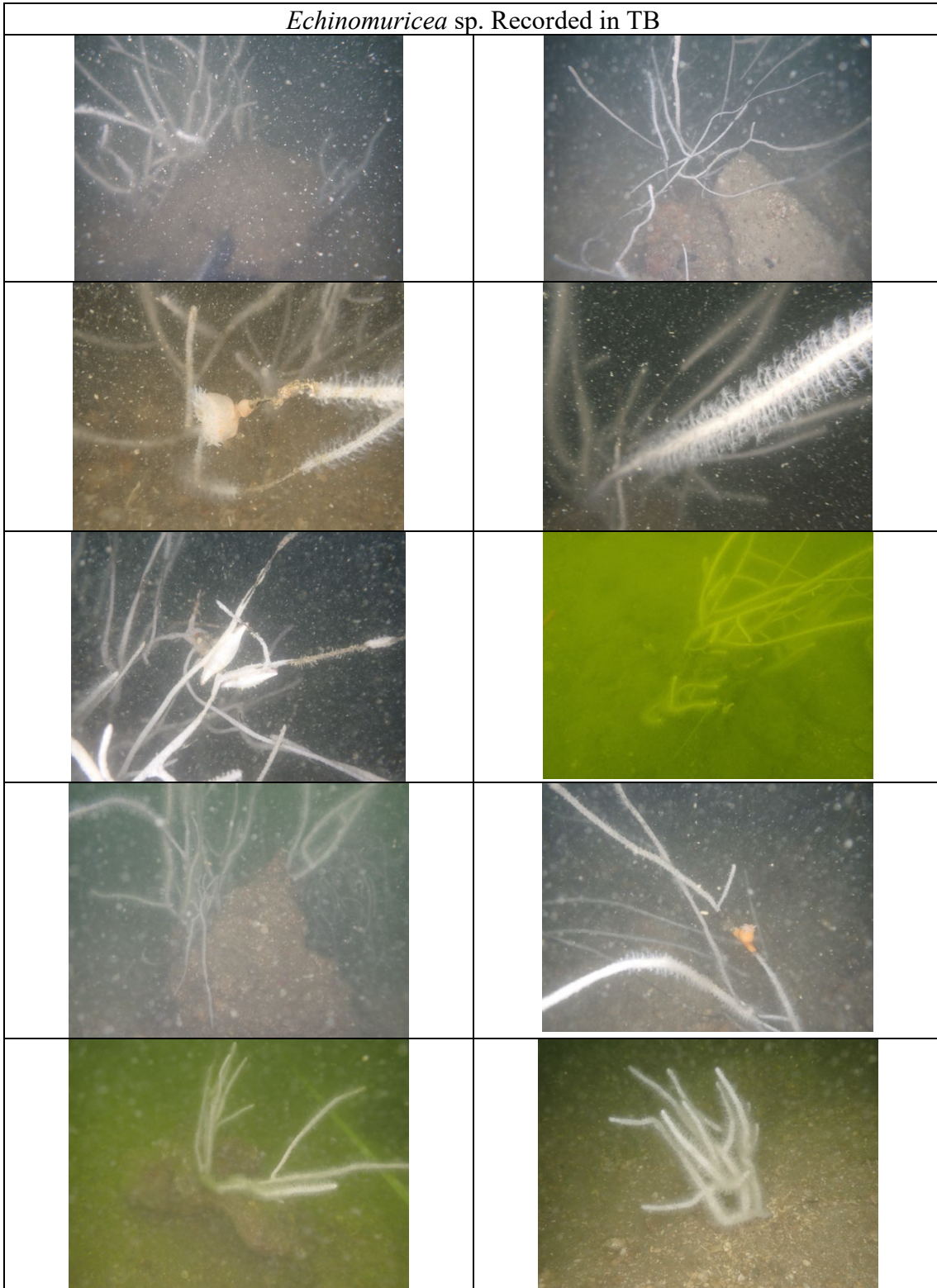


**Figure 2 Post -installation Coral Survey Location at PKT**



**PHOTO PLATE A**

*Echinomuricea* sp. Recorded in TB



**PHOTO PLATE B**

*Echinomuricea* sp. Recorded in PKT

