

**Environmental Permit No. EP-388/2010**

**Development of a Bathing Beach at Lung Mei, Tai Po**

**Independent Environmental Checker Verification**


**Reference Document/Plan**

Document/Plan to be Certified/ Verified:	1 <sup>st</sup> Post-Construction Seahorse Monitoring Report
Date of Report:	29 June 2021
Date received by IEC:	29 June 2021

**Reference EP Condition / Updated EM&A Manual Requirement**

Environmental Permit Condition / Updated EM&A Manual Reference	Section 7.2.3.10
Post-construction monitoring shall be undertaken at the installed shark net during the maintenance period of the Project. The shark net shall be inspected by the qualified Fish Specialist using SCUBA to search for the presence of any seahorse species. Monitoring shall commence three months after installation of the shark net. Quarterly monitoring shall be undertaken until the end of the maintenance period of the Contract. A Quarterly Post-construction Monitoring Report shall be submitted within two weeks of completion of the quarterly monitoring survey to present ecological information of the seahorse found, if any, along the shark net.	

**IEC Verification**

I hereby verify that the above referenced document/ <del>plan</del> complies with the above referenced <del>condition</del> / section of EP-388/2010 / Updated EM&A Manual	
Mr Terence Fong	Date: 30 June 2021
Independent Environmental Checker	

Our ref: P:\Projects\0206709 IEC for Lung Mei EM&A\07\_ET Submission\42\_Post construction seahorse monitoring

Our Ref: TCS00874/16/300/L0762

**Welcome Construction Co., Ltd.**

Flat 01, 19/F, Westley Square,  
48 Hoi Yuen Road,  
Kwun Tong, Kowloon.

Attn: Mr. William Lam

**30 June 2021**

By e-mail

Dear Sir,

**Re: CEDD Contract No. CV/2012/05 - Bathing Beach at Lung Mei, Tai Po**  
**1st Post-Construction Seahorse Monitoring Report**

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With reference to the 1st Post-Construction Seahorse Monitoring Report, we have no adverse comment on the report. We herewith certify the captioned submission in accordance with Section 7.2.3.10 of the Updated EM&A Manual.

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

Yours sincerely,

For and on Behalf of

**Action-United Environmental Services & Consulting**



T. W. Tam  
Environmental Team Leader  
TW/nh

CEDD  
ERM

Mr. K F Chan  
Mr. Terence Fong

via email  
via email

**Development of a Bathing Beach at Lung Mei, Tai Po**  
**Environmental Permit No. EP-388/2010**

**REPORT**  
**1<sup>st</sup> POST-CONSTRUCTION SEAHORSE**  
**MONITORING**



**ECO-ENVIRO CONSULTANTS COMPANY**  
**January 2021**

Updated on 29 June 2021

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## 1. Introduction

1.1 The ex-Provisional Regional Council (ex-PRC) considered that one swimming pool complex in Tai Po was insufficient and hence suggested developing a bathing beach at Lung Mei, Tai Po. Therefore, on 12 May 1998, the Culture, Recreation and Sports Committee of ex-PRC approved funding for the Architectural Services Department (ArchSD) to study the feasibility of developing an artificial beach at Lung Mei. The Feasibility Study, which commenced in December 1999 and completed in mid-2001, concluded that it was technically viable to construct a bathing beach at Lung Mei, Tai Po.

1.2 There is no beach facility in the east region of the New Territories, except in the Sai Kung District, which is very far from Tai Po District. Moreover, the existing swimming facility in the Tai Po areas could not satisfy the demand for a bathing beach. Therefore, the public has been requesting repeatedly to the Leisure and Cultural Services Department (LCSD) for a beach development in the Tai Po District.

1.3 In light of the above, the Tai Po District Council (TPDC) strongly requested for the development of a bathing beach at Lung Mei and members of the TPDC urged for early implementation of the Project. In a Legislative Council case conference on 20 April 2004, Members requested the Government to accord priority to this Project.

1.4 The Project will involve the construction of a 200m long beach with two groynes, which includes dredging and sandfilling. Translocation of marine animals including seahorse *Hippocampus kuda* within the dredging and sandfilling will be required before the commencement of any construction work.

1.5 According to the updated EM&A manual of “Development of a Bathing Beach at Lung Mei, Tai Po Environmental, Drainage and Traffic Impact Assessments – Investigation – CE 59/2005 (EP)”, Seahorse translocation work required to be conducted and it was performed on 17 to 22 January 2018. Post-construction monitoring shall be undertaken at the installed shark net during the maintenance period of the Project. The shark net shall be inspected by the qualified fish expert using SCUBA. The objective of the post-construction monitoring is to search for the presence of any seahorse species after completion of the Lung Mei beach. Quarterly monitoring shall be undertaken until the end of the maintenance period of the Contract.

## 2. Methodology

2.1 Followed by completing the installation of the shark net for three months, post-construction monitoring will be carried out. Quarterly monitoring will be undertaken until the end of the maintenance period of the Contract. During the post-construction monitoring, the following surveys were undertaken to search for any presence of seahorse along the installed shark net.

2.2 Standard Underwater Visual Census (UVC) (AIMS, 1994)<sup>1</sup> surveys were conducted at the installed shark net at Lung Mei Beach at a depth range of -0.0 m CD to -6.0 m CD along survey area. Four subtidal dive surveys were conducted, two in day time and two in night time. UVC was performed on belt transects of 1 m width along the whole shark net. UVC surveys were performed at least 10 minutes after deployment of the buoys and transects. Sample survey method was also conducted for night time surveys. Similar to the baseline survey, two survey events were conducted (in two days). Each survey event included not less than four man-hours of day survey and four man-hours of night survey. At least a total of 16 man-hours would be spent over the two survey events. The actual man-hours spent during each survey was recorded. Six SCUBA divers were parallel to each other and dived along the whole shark net (Figure 1) to locate any seahorse presence next or on the shark net.

### (a) Data Collection

2.3 After the installation of shark net was completed for three months, the whole shark net was monitored regularly by the qualified fish expert until the end of the maintenance period, following the same survey methodology for the pre-translocation monitoring.

The following information was provided in the post-construction monitoring report for any seahorse was found:

- Seahorse species recorded;
- Seahorse abundance;
- Size structure;
- Sex ratio;
- Population estimates through mark/ recapture of the tagged seashores;
- Observation of any temporal / seasonal fluctuations;
- Reproductive status;
- Habitat preferences; and

- Presence of putative pairs.

2.4 There would be at least 28 man-hours spent on the survey for day and night survey along the installed shark net. At least two photos, comprising both side profile of the seahorse and close-up of the side profile of the head were taken.

### 3. Results

3.1 The first seahorse post-construction monitoring work was done during the period of 10<sup>th</sup> and 11<sup>th</sup> December 2020. The weather conditions for the 2 days post-translocation monitoring work were shown in Appendix A.

3.2 Post-construction surveys were conducted at the Lung Mei Beach with six to eight divers including fish expert. The GPS coordinates of the four corners at the survey area were shown in Table 1.

Table 1 GPS Coordinates at Lung Mei Beach Shark Net

Points	Lung Mei Beach Shark Net	
<b>A</b>	N 22'28"14.01	E 114'13"36.96
<b>B</b>	N 22'28"10.54	E 114'13"39.66
<b>C</b>	N 22'28"13.72	E 114'13"45.78
<b>D</b>	N 22'28"16.76	E 114'13"43.93

3.3 A total of at least 14 man-hours were done each day during the two days of survey (Table 2) with 5-7 divers including the fish expert. Details of diver survey man-hours were shown in Table 2.

3.4 One male seahorse *Hippocampus kuda* (Photo Plate A) was recorded next to the shark net during the second day survey (Appendix B-1) and the location of the recorded seahorse was shown in Figure 2

Table 2 Total Man-Hours of intertidal and subtidal survey during the 2 days Post-Construction Monitoring at Lung Mei Beach Shark Net

	10-12-20	11-12-20
	<b>Survey Time</b>	
<b>Day Survey</b>	9 hours 20 mins (7 divers)	8 hours (6 divers)
	<b>Survey Time/Diver</b>	
<b>Night Survey</b>	9 hours 20 mins (7	6 hours (5 divers)



	divers)	
Total Man-hours for Each Day Survey	18 Hours 40 Mins	14 Hours
<b>Total Man-hours for Two Days Survey</b>	<b>32 Hours 40 Mins</b>	

#### 4. Conclusion

4.1 The seahorse post-construction monitoring was conducted on 10<sup>th</sup> and 11<sup>th</sup> December 2020. A total of 32 hours and 40 minutes man-hours with 5-7 divers including fish expert were conducted along the installed shark net..

4.2 One male seahorse *Hippocampus kuda* was recorded during the December monitoring near the shark net (Figure 2) in which the seahorse was anchored onto the shark net.

4.2 Quarterly post-construction monitoring will be continued to search for the tagged seahorse in March 2021.

#### 5. References

1. Australian Institute of Marine Science. 1994. Survey Manual for Tropical Marine Resources 2<sup>nd</sup> Edition: Coral Reef Fish Visual Census, p86-92

Figure 1. First Post-Construction Monitoring Survey Route at Lung Mei Beach Shark Net



Figure 2 Seahorse Location at Lung Mei Beach Shark Net



**Appendix A Weather Condition at Lung Mei Beach Shark Net during the First Post-Construction Monitoring Survey**

Date	Weather Condition	Water Temperature (°C)	Underwater Visibility (m)
10 December 2020	Sunny, Northeast Force 3 to 4	21	Less than 0.5
11 December 2020	Sunny, Northeast Force 4	20	Less than 0.5

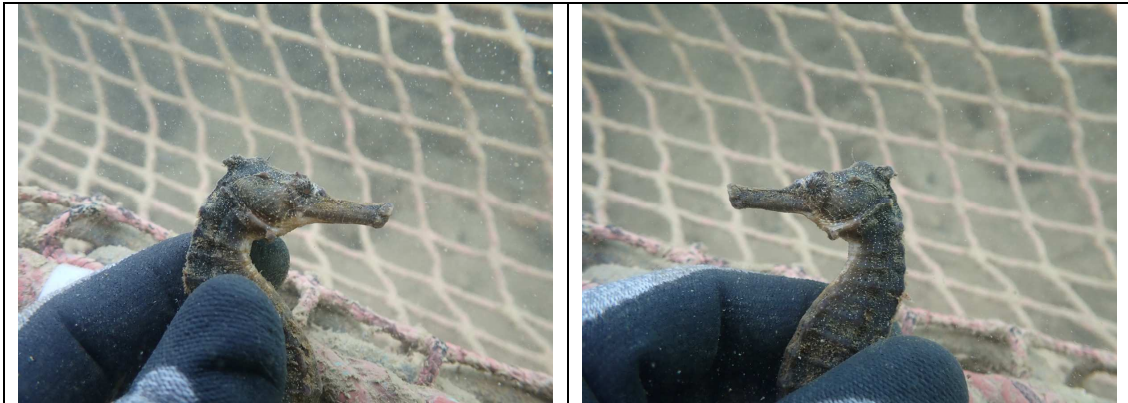
**Appendix B-1 Local Seahorses Recorded at Lung Mei Beach during First Post-Construction Monitoring Surveys**

Seahorse #	Species	Sex	Reproductive Status	Torso Length (cm)	Total Length (cm) (Body + Head)	Sighting Location	Depth (m CD)	Holdfast	Proximity to the nearest seahorse	Sign of stress or injury
1	<i>Hippocampus kuda</i>	M	NA	4.5	13	Sandy Bottom	-4.5	Yes	NA	No

**Appendix B-2 Seahorses Information at Lung Mei Beach during First Post-Construction Monitoring Surveys**

Sex ratio	Population estimates through mark/recapture of the tagged seashores;	Observation of any temporal / seasonal fluctuations;	Habitat preferences	Presence of putative pairs
1 males : 0 females	No	No	Sandy and Rocky	No

Photo Plate A



*Hipposcampus Kuda #1*



*Hipposcampus Kuda #1*

THE END