

## Environmental Permit No. EP-388/2010

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

### Independent Environmental Checker Verification


#### Reference Document/Plan

Document/ <del>Plan to be Certified</del> / Verified:	Twelfth Month Seahorse Post-Translocation Monitoring Report
Date of Report:	19 January 2021
Date received by IEC:	22 February 2021

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

<del>Environmental Permit Condition</del> / Updated EM&A Manual Reference	Section 7.2.3.9
After translocation is completed, the reception site shall be monitored regularly by the qualified Fish Specialist over a period of one year, following the same survey methodology for the pre-translocation monitoring.	
The Post-translocation Monitoring Report shall be submitted monthly which shall present findings of all seahorse surveys undertaken in the reporting month. Each monthly Post-translocation Monitoring Report shall be submitted within two weeks of completion of the last seahorse survey in the reporting month.	

#### 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: 23 February 2021
Independent Environmental Checker	

Our ref: P:\Projects\0206709 IEC for Lung Mei EM&A\07\_ET Submission\36\_Seahorse post translocation report 9th-12th Month

Our Ref: TCS00874/16/300/L0678

**Welcome Construction Co., Ltd.**

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

Attn: Mr. William Lam

22 February 2021

By e-mail

Dear Sir,

**Re: CEDD Contract No. CV/2012/05 - Bathing Beach at Lung Mei, Tai Po  
Twelfth Month Seahorse Post-Translocation Report**

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With reference to the revised Twelfth Month Seahorse Post-Translocation Report dated 19 January 2021, we have no adverse comment on the revised report. We herewith certify the captioned submission in accordance with Section 7.2.3.9 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**  
**TWELFTH MONTH SEAHORSE POST-**  
**TRANSLOCATION MONITORING**



**ECO-ENVIRO CONSULTANTS COMPANY**  
**May 2019**

Revised on 19 January 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 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 Mie, 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. Followed by successful seahorse translocation work, post-translocation monitoring was started according the approved method statement (Seahorse Translocation Plan (Version 1, 11 January 2018) refers). The main objective of the monitoring will be focus both on the 2 translocated seahorses as well as the seahorse population in Ting Kok East. This report represents the findings of the last (twelfth) month seahorse post-translocation monitoring work conducted at Ting Kok East reception site.

## 2. Methodology

2.1 Followed by successfully translocated two female seahorses from Lung Mei to Ting Kok East, a 7 days post-translocation monitoring was conducted at Ting Kok East reception site; then twice per week for the second to fourth week of the first month. Weekly monitoring will be conducted for the second to fourth month and monthly monitoring survey afterwards. During the post-translocation monitoring, the following surveys were undertaken to search for the tagged seahorses #051 and #052.

### (a) Intertidal Survey

2.2 Intertidal survey for seahorses was undertaken by active search at the reception site at Ting Kok East by diving survey using SCUBA diving. Active searches of seahorses were conducted during both day and night time when the tidal level is generally  $>1.5$  m CD, and thus a total of two active search events were undertaken at the reception site.

2.3 The active search covered the intertidal and shallow subtidal zones (-0.5 m CD to 2 m CD) at Ting Kok East reception site. Direct observations and active search of seahorses were conducted in all major habitat/substrate types and in potential hiding places such as among litter/debris, inside holes/crevices and under cobbles/boulders. Hand-netting was used to collect seahorses for data collection such as Torso length and sign of injury. Head light and hand torch were used during the night time surveys. The effort of searching was standardized to facilitate comparison of occurrence of seahorse using the number per standard unit effort approach (i.e. number of man-hours). Two survey events were conducted (in two days). Each survey event included not less than three man-hours of day survey and three man-hours of night survey. At least a total of 12 man-hours would be spent over the two survey events.. The actual man-hours spent during each survey was recorded.

### (b) Subtidal Dive Survey

2.4 Standard Underwater Visual Census (UVC) (AIMS, 1994)<sup>1</sup> surveys were conducted at the reception site at Ting Kok East at a depth range of -0.5 m CD to -1.5 m CD. Four subtidal dive surveys were conducted, two in day time and two in night time. UVC was performed on belt transects of 5 m width covering the whole survey area. UVC surveys were performed at least 10 minutes after deployment of the buoys

and transects. For night time surveys, only underwater qualitative surveys within the survey area were performed. 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 in a zigzag route (Figure 2) within the survey area to locate the tagged seahorses #051 and #052 during each subtidal dive survey. Since the two tagged seahorses #051 and #052 were not recorded during the 2 days post-translocation monitoring survey at Ting Kok East reception site while three seahorses were recorded during the First 7 days post-translocation monitoring at depth of more than -1.5 m CD, divers extended the original survey area (Figure 1) away from Ting Kok East towards the deeper depth as shown in Figure 2.

(c) Data Collection

2.5 After translocation was completed, the reception site was monitored regularly by the qualified fish expert over a period of one year, following the same survey methodology for the pre-translocation monitoring.

The following information was provided in the post-translocation monitoring report when seahorse #051, #052 or any other seahorse were 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.

2.6 There would be at least 28 man-hours spent on the survey (12 hours from intertidal and 16 hours from subtidal dive survey). Tagged seahorses #051 and #052 were released to their natural habitat after data collection. Specimens were handled with care to reduce disturbance to seahorses as low as reasonably practicable. At least two photos, comprising both side profile of the seahorse and close-up of the side profile of the head, were taken. Video footage was also taken for each individual countered.



### 3. Results

3.1 The last (twelfth) month seahorse post-translocation monitoring work was done during the period of 28<sup>th</sup> and 29<sup>th</sup> January 2019. The weather conditions for the 2 days post-translocation monitoring work were shown in Appendix A.

3.2 Post-translocation surveys were conducted at the Ting Kok East reception site with six 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 Ting Kok East Reception Site

Points	Ting Kok East Reception Site	
<b>A</b>	N 22'28"03.74	E 114'13"10.66
<b>B</b>	N 22'28"03.77	E 114'13"17.54
<b>C</b>	N 22'28"56.60	E 114'13"11.26
<b>D</b>	N 22'28"56.50	E 114'13"18.76

3.3 A total of at least 14 man-hours were done each day during the two days of survey (Table 2) with 6 divers including the fish expert. Details of diver survey man-hours were shown in Table 2.

3.4 The two tagged seahorses #051 and #052 were not recorded during the 2 days post-translocation monitoring survey at Ting Kok East reception site. However, two female seahorses (Photo Plate A) were recorded during the twelfth monitoring (Appendix B-1) and they belonged the same species of *Hippocampus kuda*. The locations of the two recorded seahorses were shown in Figure 3.

3.5 Similar to the Eleventh Month Monitoring, lots of fishing nets were found along the survey area underwater this month. Fishing boat also appeared inside the survey area occasionally.

Table 2 Total Man-Hours of intertidal and subtidal survey during the 2 days Post-Translocation Monitoring at Ting Kok Reception Site

	28-01-19	29-01-19
<b>Day Survey</b>	<b>Survey Time</b>	
Intertidal survey	3 hours	3 hours
Subtidal Survey	4 hours	4 hours
Total Man-hours for Day Survey	7 Hours	7 Hours
<b>Night Survey</b>	<b>Survey Time/Diver</b>	

Intertidal survey	4 hours 20 mins	4 hours 20 mins
Subtidal Survey	5 hours 20 mins	5 hours 20 mins
Total Man-hours for Day Survey	9 Hours 20 mins	9 Hours 20 mins
<b>Total Man-hours for Two Days Survey</b>	<b>32 Hours 40 mins</b>	

#### 4. Conclusion

4.1 The twelfth month seahorse post-translocation monitoring survey was conducted on 28<sup>th</sup> and 29<sup>th</sup> January 2019. A total of 32 man-hours and 40 minutes with 6 divers at day and 8 divers at night including fish expert were conducted inside the Ting Kok East reception site as well as area outside the proposed boundary. After twelve months of the translocation, the two tagged seahorses were still not found inside the survey area; so they may have settled in somewhere outside the survey boundary.

4.2 Two female seahorses (Photo Plate A) were recorded during the twelfth monitoring and they belonged the same species of *Hippocampus kuda*. Since this was the last monthly post-translocation monitoring. Post-construction phase monitoring at Lung Mei Beach will be started after all construction works were done at Lung Mei area.

4.3 During the one year seahorse post-translocation monitoring, both the tagged translocated seahorses #051 and #052 were not recorded throughout the whole monitoring period (Table 3). However a total of 9 seahorses (8 *H. kuda* and 1 *H. mohnikie*) were recorded during the 12 months monitoring with 7 females and 2 males. All recorded seahorses were healthy with no sign of injury or stress. No breeding pair or breeding behavior was observed. However, one pregnant seahorse *H. kuda* was recorded during the Seventh Month monitoring. The size (body length) of recorded seahorse ranged from 7.2cm to 17.6cm. No juvenile seahorse was record during the monitoring surveys. Given the absence / low number of seahorses recorded during each survey, it was not possible to estimate the seahorse population at Ting Kok Area based on the data collected

4.4 All seahorses recorded were mainly found next to small rocks in Ting Kok Area. Their habitats are mainly composed of rock and sandy. The habitats are still the same as baseline even encountered the mega typhoon Mangkhut. Although the two tagged seahorses #051 and #0521 were not recorded in survey boundary. However, we still recorded 9 individual seahorses during the monitoring period. That means the habitat in Ting Kok is suitable for seahorses. Since we did not record any injured or dead tagged seahorses #051 and #052, they may move away from the Ting Kok survey area

to find a new place to settle after translocation and we can conclude the seahorse translocation activities was successful.

Table 3 Summary of the Seahorse Post-translocation Monitoring

Item No.	Metrics	
1	Any translocated individuals observed?	No
2	Any individuals observed injured or under sign of stress?	No
3	Any breeding behaviour observed?	No
4	Any pregnant seahorses observed?	Yes
5	Any juvenile seahorses observed?	No
6	Any change in habitat quality?	No

## 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. Original Post-Translocation Monitoring Survey Route at Ting Lok East

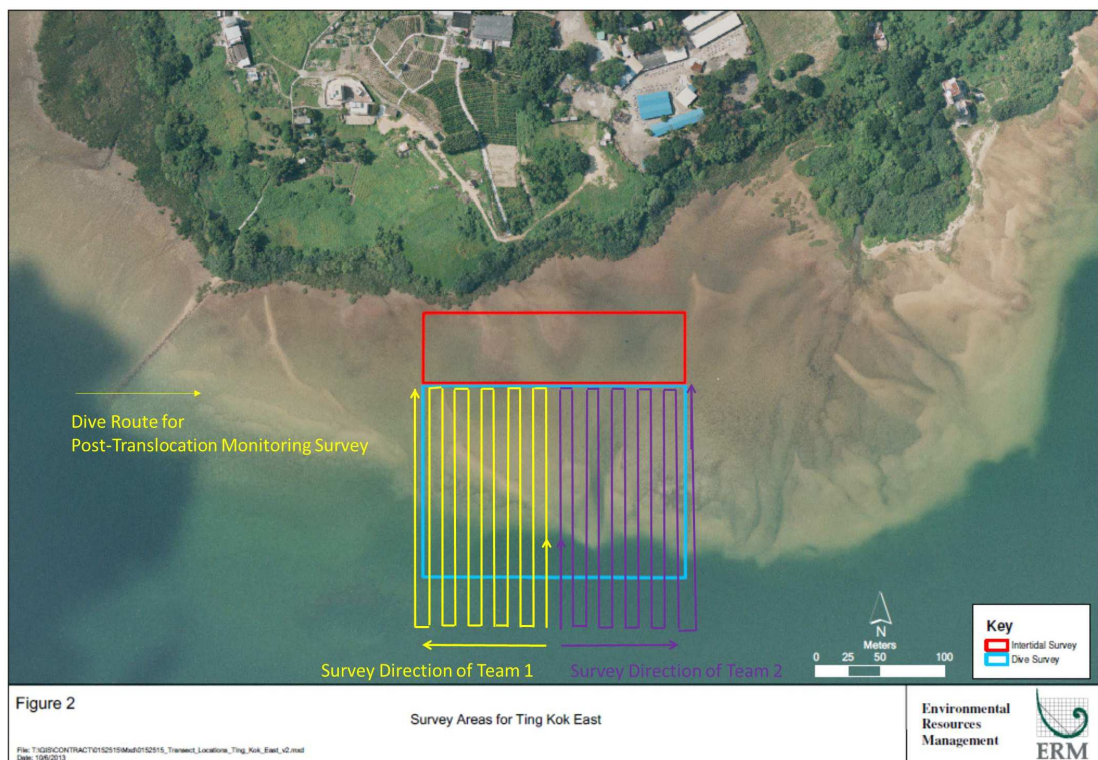


Figure 2. Twelfth Month Post-Translocation Survey Route at Ting Kok East

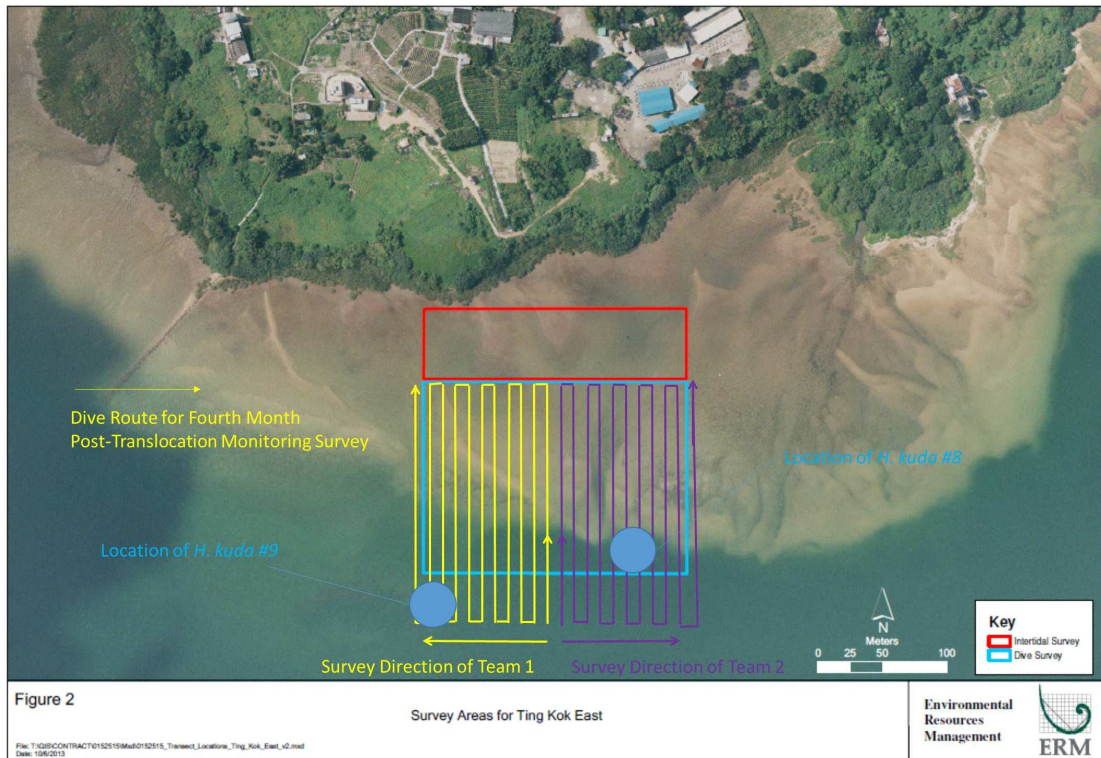


Figure 3. Locations of Seahorses Recorded during the Twelfth Month Monitoring.

**Appendix A Weather Condition at Ting Kok East during Twelfth Month Post-Translocation Monitoring Survey**

<b>Date</b>	<b>Weather Condition</b>	<b>Water Temperature (°C)</b>	<b>Underwater Visibility (m)</b>
<b>28 January 2019</b>	Sunny, Northeast Force 3 to 4	<b>18</b>	<b>Less than 0.5</b>
<b>28 January 2019</b>	Sunny, Northeast Force 4 to 5	<b>18</b>	<b>Less than 0.5</b>

**Appendix B-1 Local Seahorses Recorded at Ting Kok East during Twelfth Month Post-Translocation 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*2	Sign of stress or injury
8*1	<i>H. kuda</i>	F	Non Pregnant	2.4	7.5	Sandy Bottom	-3.5	No	NA	No
9*1	<i>H. kuda</i>	F	Non Pregnant	3.2	9.5	Sandy Bottom	-4.0	Yes	NA	No

\*1 - The cumulative amount of seahorse (sightings) recorded was 9.

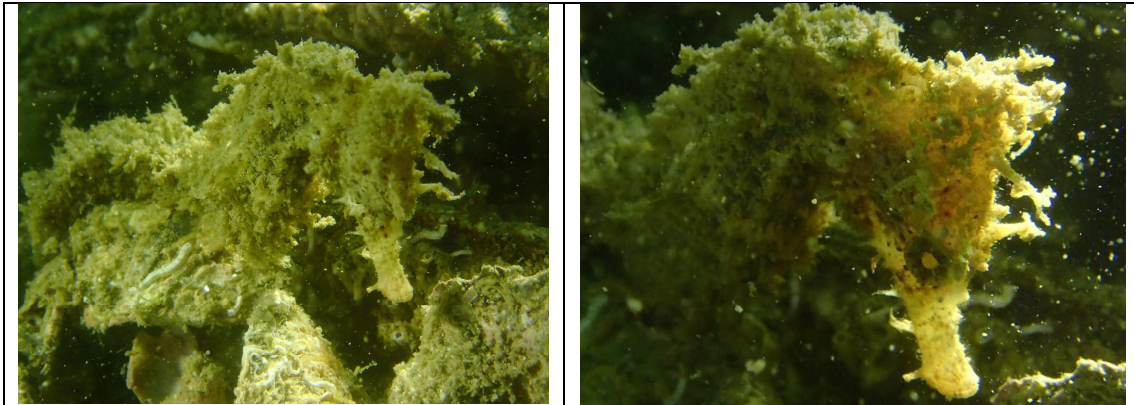
\*2 - N/A: Not Applicable as no nearest seahorse recorded within 50m

**Appendix B-2 Seahorses Information at Ting Kok East during Twelfth Month Post-Translocation Monitoring Surveys**

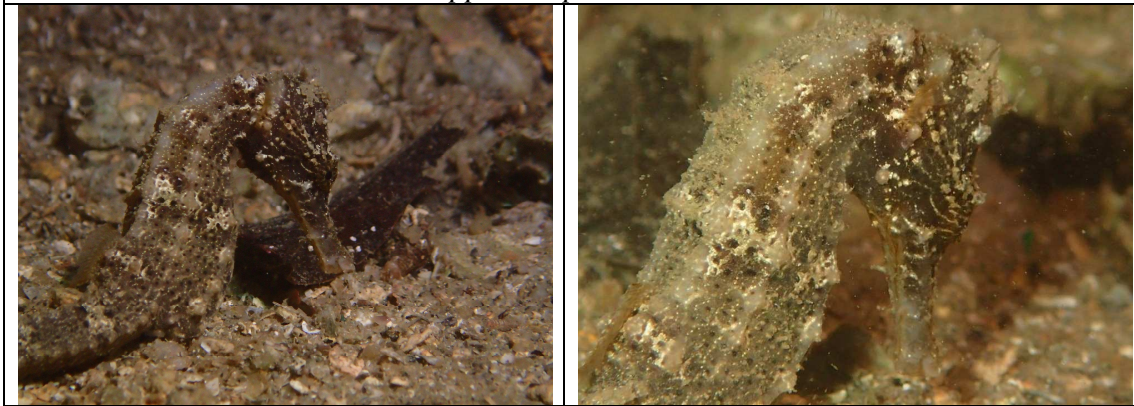
Sex ratio	Population estimates through mark/recapture of the tagged seashores;	Observation of any temporal / seasonal fluctuations;	Habitat preferences	Presence of putative pairs
0 males : 2 females	No	No	Sandy and Rocky	No



**Photo Plate A**



*Hipposcampus Kuda #8*



*Hipposcampus Kuda #9*

THE END