Our Ref: TCS00874/16/300/L0073

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

Attn: Mr. Lucas Wong

11 December 2017
By e-mail

Dear Sir,

Re: CEDD Contract No. CV/2012/05 - Bathing Beach at Lung Mei, Tai Po
Fauna Translocation Plan (Version 7)

I refer to the captioned submission submitted to us, please note that we have no adverse comment on this submission. We herewith certify the captioned submission in accordance with Condition 3.11 of the Environmental Permit no. EP-388/2010.

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.

Yours sincerely,
For and on Behalf of
Action-United Environmental Services & Consulting

T. W. Tam
Environmental Team Leader
TW/nh

CEDD	Mr. K F Chan	via email
ERM	Mr. Jovy Tam	via email

土木工程拓展署
Civil Engineering and Development Department

ERM

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:	Fauna Translocation Plan – Stage 1
Date of Report:	7 December 2017 (Version 6)
Date received by IEC:	7 December 2017

Reference EP Condition

Environmental Permit Condition: 3.11

To minimize the potential ecological impact on fish species of conservation importance including Two-spot Goby *Psammogobius biocellatus*, Tropical Sand *Goby Favonigobius reichei* and Grass Puffer *Takifugu niphobles*, the following precautionary measures shall be implemented:

(a) The removal of rocks/hard objects in the intertidal zone shall be conducted during low tide and the area shall not exceed 10m² for each removal. The rock removal works shall be conducted under the supervision of a qualified fish specialist who will be responsible for checking for any species of concerns under the rocks/hard objects to be removed. The proposed fish specialist shall be agreed by the Director.

(b) The "cleared" areas shall be properly fenced off immediately after removal of the rocks/hard objects. The qualified fish specialist shall inspect the areas beforehand to avoid trapping any species of concerns inside the enclosed area; and

(c) A trial shall be conducted in the beginning of the rock removal work so as to further fine-tune the above method, if necessary.

IEC Verification

I hereby verify that the above referenced ~~document~~/plan complies with the above referenced condition of EP-388/2010.

Mr Jovy Tam

Independent Environmental Checker

Date: 7 December 2017

Our ref: P:\Projects\0206709 IEC for Lung Mei EM&A\07_ET Submission\17_MS for Marine Fauna Relocation\20171207

Contract No. CV/2012/05

Fauna Translocation Plan- Stage 1

Dr. Mark Shea

（Version 6; 7 December, 2017）

1 Objective

1.1 To comply with the EP [EP No. EP-388/2010; Section 3.11 (c), under Part C, Permit Conditions], i.e., "A trial shall be conducted in the beginning of the rock removal work so as to further fine-tune the 'fauna translocation method' if necessary. Trials for move rocks were performed on the 21st September and 4th October 2017.

1.2 To relocate the target fauna species as specified in EP and particular specification (PS). The main target species included 3 fish species specified in the EP, i.e., Two-spot Goby (*Psammogobius biocellatus*), Tropical Sand Goby (*Favonigobius reichei*), Grass Puffer (*Takifugu niphobles*), as well as starfish, sea urchins, sea cucumbers within the intertidal zone of the Site. Nine other fish species that are specified in the PS will also be included in the translocation exercise, including: Brown frillin goby (*Bathygobius fuscus*), Fork tongue goby (*Glossogobius giuris*), Estuarine goby (*Mugilogobius abei*), Barcheek goby (*Rhinogobius giurinus*), Shimofuri goby (*Tridentiger bifasciatus*), Saddle grunt (*Pomadasys maculatus*), Spotted scat (*Scatophagus argus*), Japanese sillago (*Sillago japonica*) and Jarbua terapon (*Terapon jarbua*); and to release the collected animals at the reception site of Ting Kok East Tai Po.

2 Scope of Fauna Translocation

- Setting up Fencing Structure
- Fauna Collection within Project Site at Lung Mei, Tai Po
- Fauna Releasing at Reception Site of Ting Kok East, Tai Po

3 Method

Setting up Fencing Structure

3.1 Objective of setting up fencing is to prevent the target fauna return to the cleared project section after performing fauna translocation. The fencing structure should tolerate tidal changes and hydraulic force. Major components of the fencing structure with its functions are listed below and shown in Photos 1 to 3 and Figure 1:

- concrete blocks: anchoring of silt curtain;
- silt curtain: allowing water flow in and out and prevent animals get through;
- metal chain: provision of weight for sinking bottom side of silt curtain to seabed;
- buoy: provision of floating force for upper side of silt curtain;
- ropes: anchoring buoy to concrete block; and
- red flashing lights and flags: for safety warning.

Fauna Translocation Trial

3.2 Two trials were conducted for rock removal and capturing marine fauna within the $10m^2$ block on the 21st September and 4th October 2017. Representatives from EPD, AFCD and CEDD have presence in the trial on 4th October 2017.

Set up Fencing System

3.3 Fencing and fauna translocation will be divided into 4 stages at different areas as shown in Figure 2. Sequence of fencing in stages and one day fauna translocation operation cycle (Zone 1 to Zone 5 for trial) or sequence is shown in Figures 3a to 3g. Excavator with dimensions 4m (Long) × 2.5m (Wide), will be deployed for moving concrete blocks in Figures 3h to 3n. Prior to moving of plant onto the seabed and set up the fencing system. Fish specialist will inspect the excavator travelling route and cleared the marine fauna prior excavator to move forward. If marine fauna is observed in the excavator route, target faunas will be collected in a container filled with seawater with air supply, others will be moved out of the fenced area. Silt curtain will be extend to 0.3m CD to allow a wet zone at all tidal conditions to allow sufficient water inside the silt curtain.

Fauna Collection

3.4 Fauna capture at the exposed upper tidal area will be performed in grids that are approximately $10m^2$ each, marked by nylon string laid on the surface of the seabed. Search of target fauna will be undertaken systematically from the one side of the grid to the other side. Moveable rocks will be turned over to check animals under the rock and the checked rocks will be moved to nearby "cleared" area within the grid. When target faunas or other large animals are encountered, hand capture with assistance of hand net will be done and animals will be put to a small container with seawater and will be transferred to battery-powered air pumping fish container with sea water located on upper shore. Fauna capture and translocation process will be supervised by the qualified fish specialist (Dr. Mark Shea, refer to Appendix A: the approval letter issued by EPD). Translocation of captured marine faunas will be all in accordance to the approved fauna translocation plan. All fauna (including fish and echinoderm) will be captured by hand (capturing fauna on land) with the aid of net (capturing fauna in water).

3.5 When working in intertidal area, seawater clarity is a crucial factor in finding and capturing marine faunas inside seawater. Animal capture will be performed at grids that are approximately $10m^2$ each. The grids will be temporally fenced off by setting up floating buoys fixed with nets. When moveable rocks are encountered, animals under rocks will be checked by turnover and remove rocks to nearby "cleared" area within the grid. The objective of this measure is to facilitate more precise inspection and checking by the fish specialist under a better controlled environment. The "cleared" area will then be fenced off afterwards.

3.6 During fauna translocation, only manual effort, instead of machinery, will be deployed in order to minimize disturbance.

3.7 Target fishes and echinoderms are the two main groups of target marine fauna for translocation. Search and capture of these species will be performed to find animals on the substrates as well as under the rocks/hard objects in the intertidal area. During the operation, rocks/hard objects will be lifted up manually to facilitate inspection and checking for any concerned species hiding under them. The non target fauna captured by nets during fauna translocation operation will be released outside the fenced area. Capturing of fishes within the grids will be undertaken using hand nets. Captured fishes will be immediately transferred to fish containers (volume > 5 litres)

filled with seawater from Lung Mei and oxygenated with portable air pumps after completed the grid. Fauna searching and capturing will be conducted during low tide.

3.8 Particular attention will be paid to the three fish species of conservation importance specified under the Environmental Permit Condition 3.11 (Permit No. EP-388/2010): Two-spot Goby (*Psammogobius biocellatus*), Tropical Sand Goby (*Favonigobius reichei*) and Grass Puffer (*Takifugu niphobles*).

3.9 Echinoderms including starfish, sea urchins and sea cucumbers will be captured by hand. Starfish, sea cucumbers and urchins will be put to hand-carry small barrel with seawater first, and will be transferred to larger plastic / polystrene containers / (volume > 10 litres) with a shallow layer (> 4 cm) of seawater to retain moisture for oxygen exchange until translocation. The plastic / polystrene containers will be filled with seawater oxygenated with portable air pumps (aerated water tanks). Seawater collected from Lung Mei will be used for holding the captured marine fauna.

3.10 Records of the captured organisms will be kept using the template form in **Appendix B**.

3.11 A grid will be considered as "cleared" upon completion of the inspection, checking and capture of target marine fauna and final checking by the qualified fish specialist to confirm no trapping of target species in the area. The grid will then be fenced off by temporal floating buoys with fish nets. All "cleared" grids will be fenced off by silt curtain with concrete blocks at the end of the each capturing day to prevent re-entering of fauna.

3.12 The conditions of the captured target marine fauna will be checked at 30-minute intervals or less. Water level check in fish containers will be conducted every hour or at any interval deemed necessary by the qualified fish specialist. The captured fishes and echinoderms will be transported to Ting Kok East within four hours after captured. Transportation and release of the captured creatures shall be performed as quick as possible in order to minimize the transportation and release time of the organisms.

Fauna Releasing at Reception Site of Ting Kok East

3.13 The captured target marine fauna from the Project Site will be transported to the Reception Site at Ting Kok East (Figure 4) during the same day of capture by land transportation or by marine vessel. Care will be taken during the whole process to ensure no harm to the captured species.

3.14 The captured target marine fauna will be kept separately in three different substratum type containers (Type A, Type B and Type C) based on the seabed substratum types where they were captured. There will be three types of the seabed substratum: Type A, sand; Type B, soft bottom with scattered rubbles; Type C, boulders and rubbles with soft bottom. At the reception site at Ting Kok East, the captured organisms will be released to habitats and elevations that are similar to the environment where capturing was conducted (Figures 5a & 5b). The relevant habitat types will be pre-marked at the reception site and red flags will be set up for locating these habitats for the release of the captured organisms. Photo records of the capturing habitats and releasing habitats will be taken.

3.15 Proper records for the translocation works will be kept (the template in **Appendix B**) and duly completed by the qualified fish specialist daily. The record will be submitted to the Engineer's Representative before noon of the following working day. Details such as capturing time, location, approximate size, species, survival percentage, releasing time of the captured individuals etc., will be included. Any dead creatures found during the translocation exercise will be recorded in the log book.

3.16 Translocation records and report will be submitted upon completion of the whole stage of mitigation.

3.17 Works could be commenced on any cleared zone. Translocation records will be provided by the fish specialist and verified by the IEC before it can be declared that the zone is cleared.

3.18 Plant and workers will be used in the entire marine faunas translocation exercise include:

a. Concrete blocks positioning and setting up
   - One excavator
   - One fish specialist
   - One to two labourers

b. Silt curtain transportation and hanging
   - One excavator
   - One fish specialist
   - One to two labourers

c. Rock removal
   - One fish specialist
   - Two to four workers

d. Fauna capture
   - 3 fish container(s) with portable air pump (aerated water tanks) and sea water
   - Hand nets, spates, bamboo poles, nylon nets
   - One fish specialist as supervisor
   - 3 to 5 ecologist/assistant ecologist/ecology technicians/workers

e. Fauna transportation from Lung Mei to reception site at Ting Kok East
   - One vehicle
   - One fish specialist
   - One worker

4 Fauna Translocation Programme

4.1 Tentative work schedule in **Appendix C.**

5 Seahorses Found During Fauna Translocation and Seahorse Translocation

5.1 If seahorse(s) is/are found inside fauna translocation area, fish specialist will inform seahorse translocation team marine ecologist to come and undertake seahorse translocation as stated in seahorses translocation method statement.

6 Reporting

Monthly report for fauna translocation will be submitted and verified by the fish specialist within 14 working days from the end of a reporting month to the Engineer's Representative.

Photo 1. Close-up of the fencing structure with concrete blocks and silt curtain

Photo 2. Demonstration of the fencing structure with concrete blocks and silt curtain on land

Photo 3. Demonstration of the fencing structure with concrete blocks and silt curtain in water

Figure 1: Diagram shown components of fencing structure.

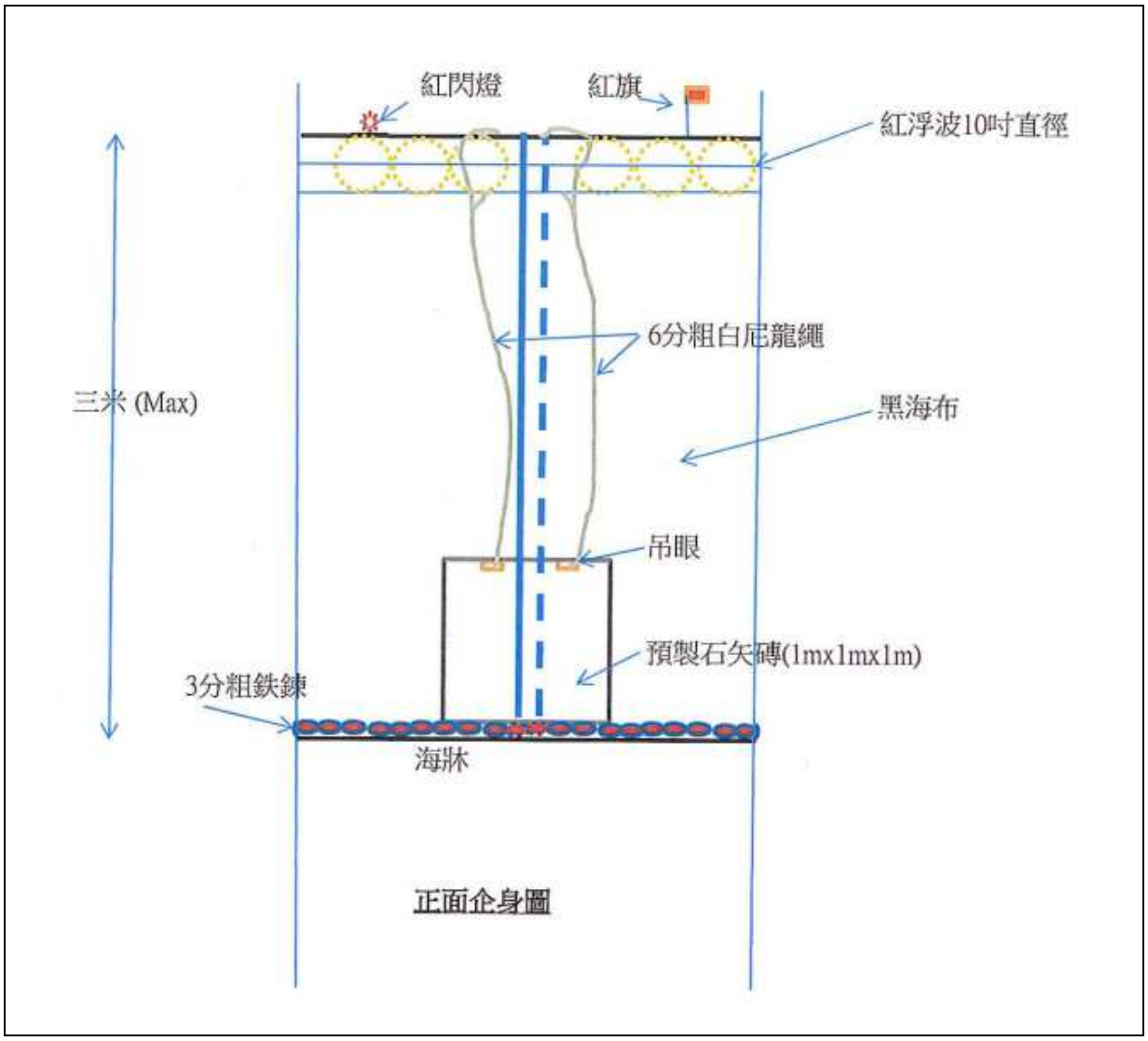


Figure 2: Diagram shown stages of fauna translocation at Lung Mei, Tai Po.

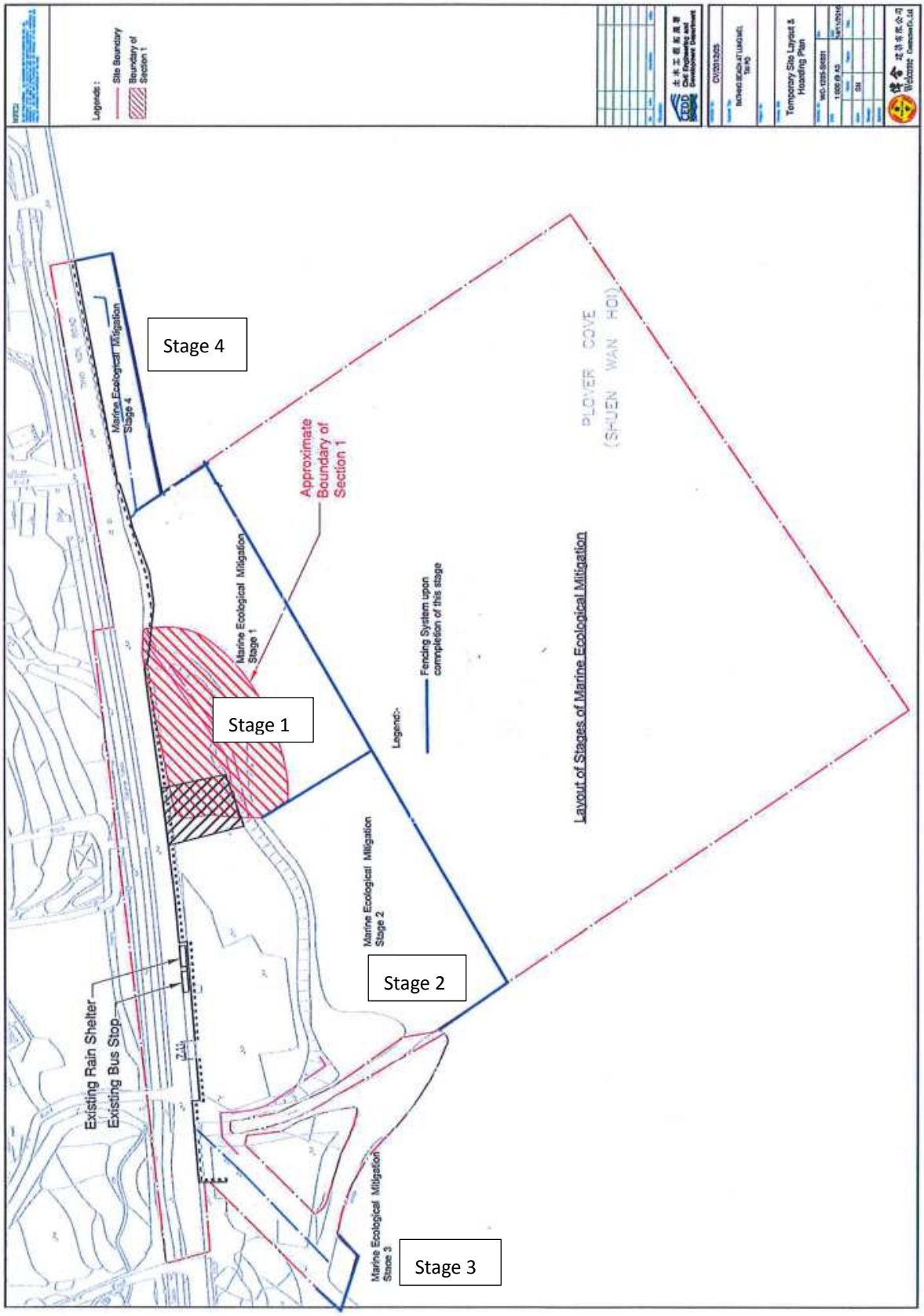
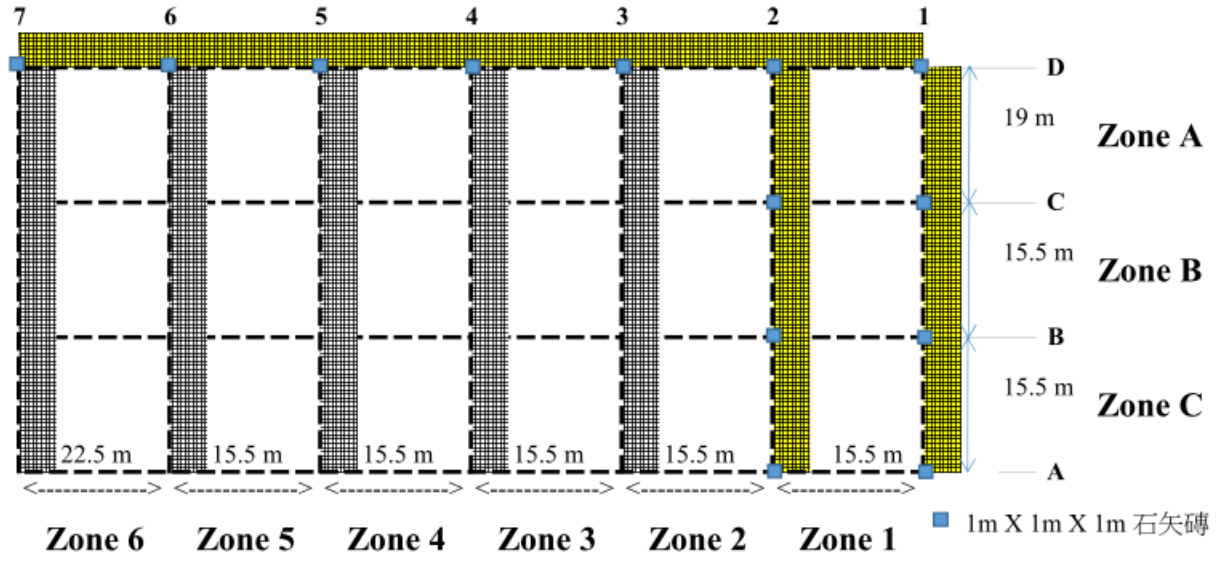


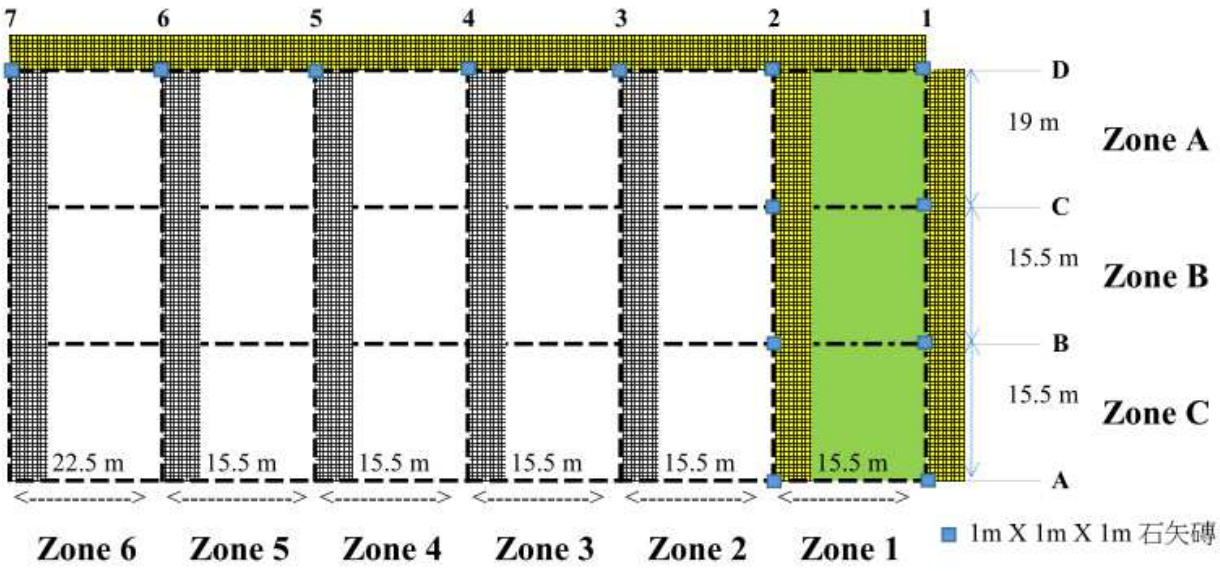
Figure 3 a-g: Diagram shown sequence of fencing at stage 1 area at Lung Mei, Tai Po.

Figure 3a



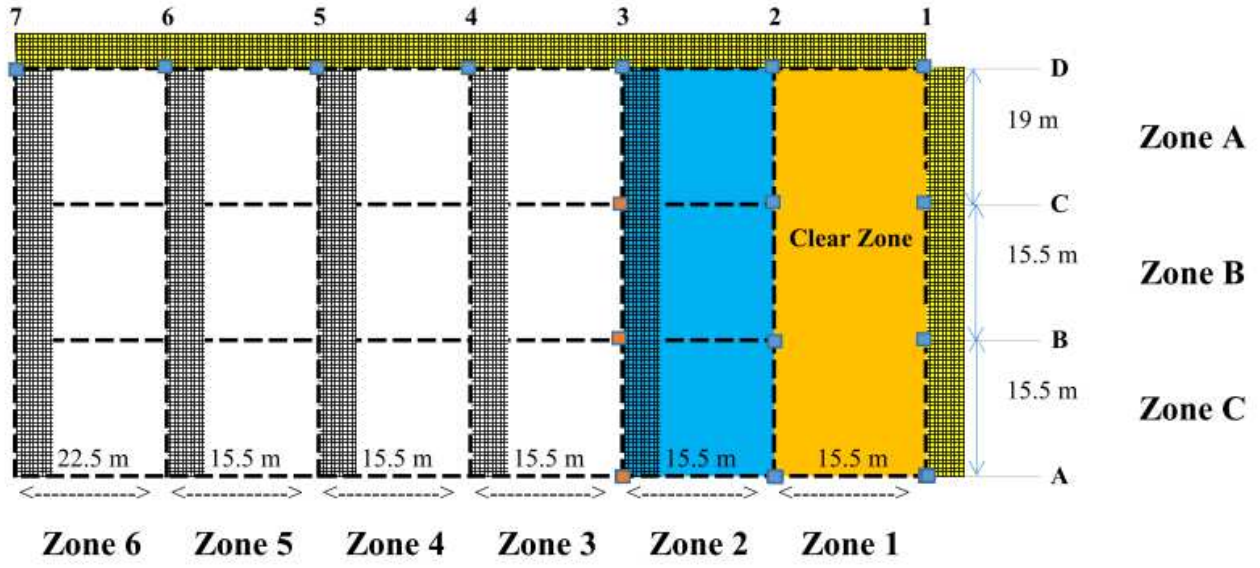
Sequence 1
(放黃色部份石矢磚，並且掛上silt curtain)

Figure 3b



Sequence 2
(Zone 1 mitigation 預期3天完成)

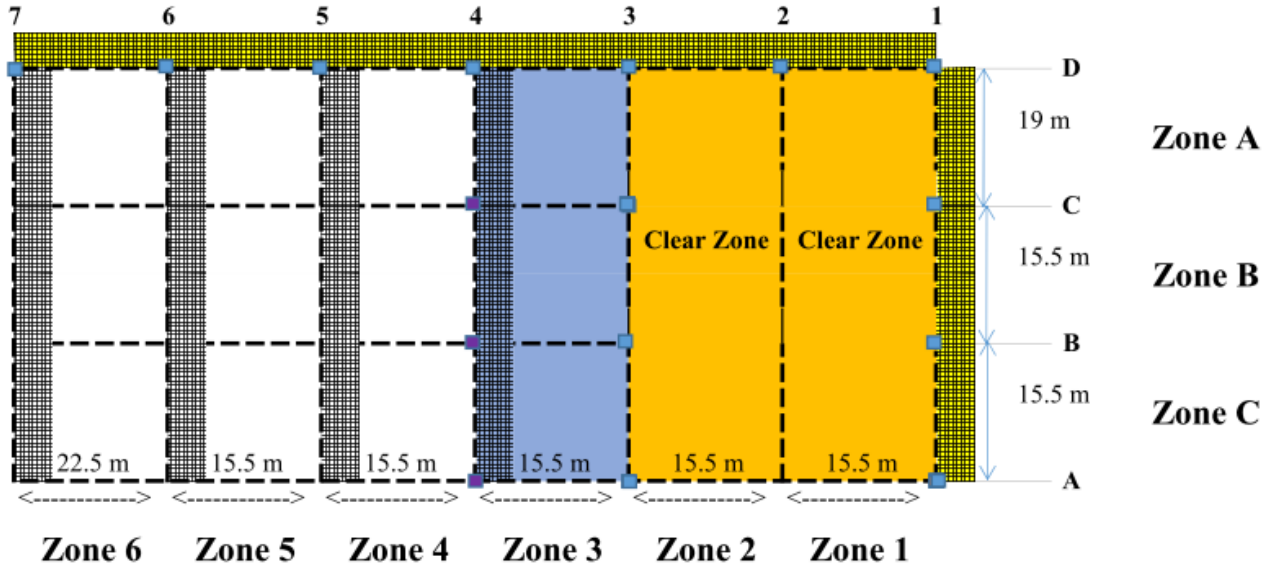
Figure 3c



Sequence 3

預期3天內放石矢磚(橙色標示)、掛上silt curtain及完成Zone 2 mitigation

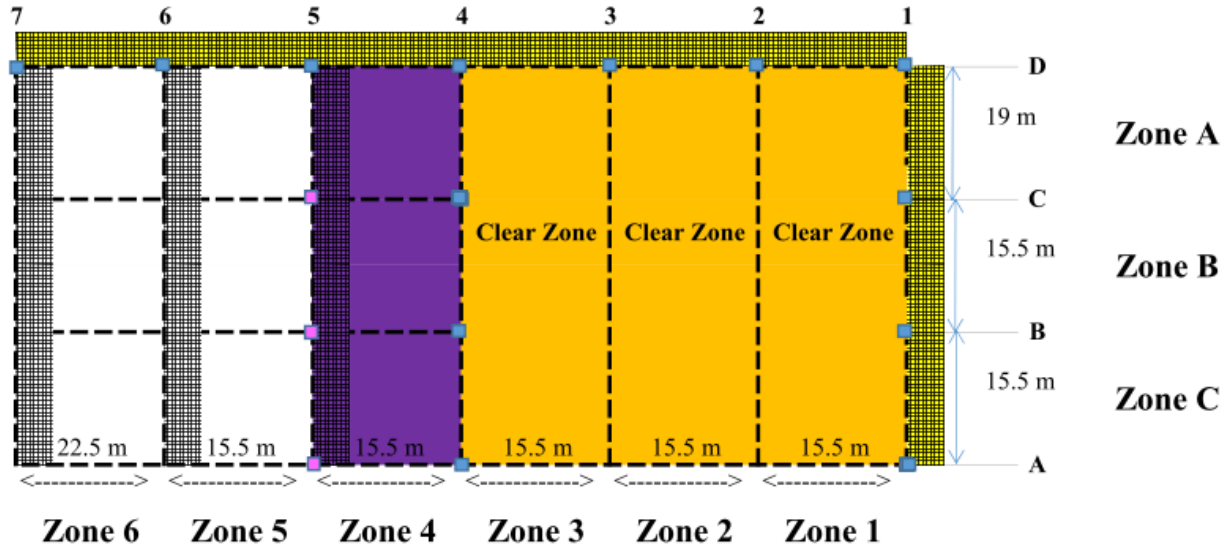
Figure 3d



Sequence 4

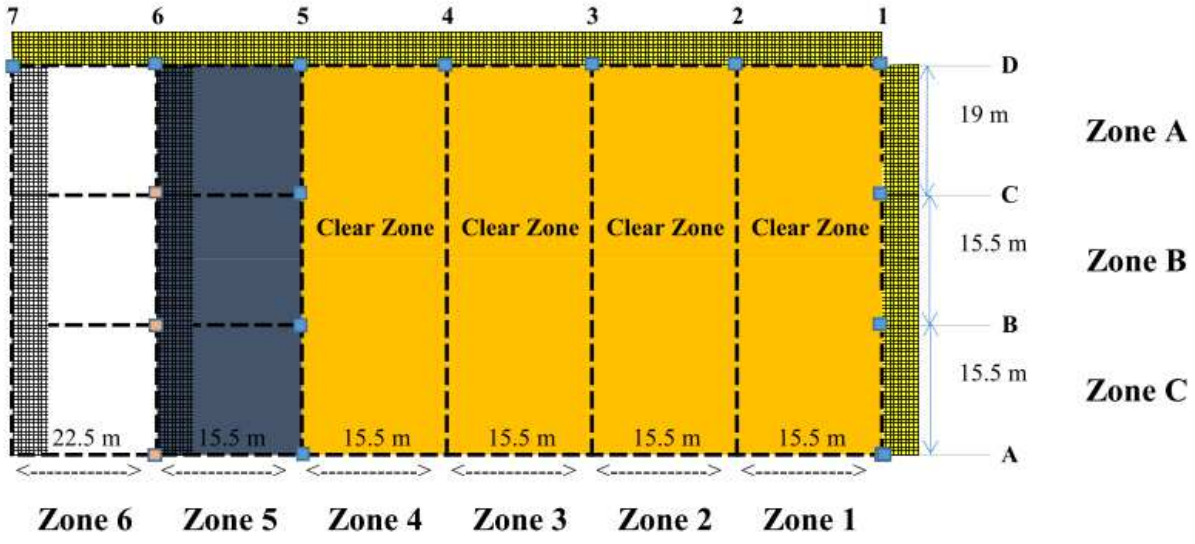
預期3天內放石矢磚(紫色標示)、掛上silt curtain及完成Zone 3 mitigation

Figure 3e



Sequence 5
預期3天內放石矢磚(粉紅色標示)、掛上silt curtain及完成Zone 4 mitigation

Figure 3f



Sequence 6
預期3天內放石矢磚(橙色標示)、掛上silt curtain及完成Zone 5 mitigation

Figure 3g

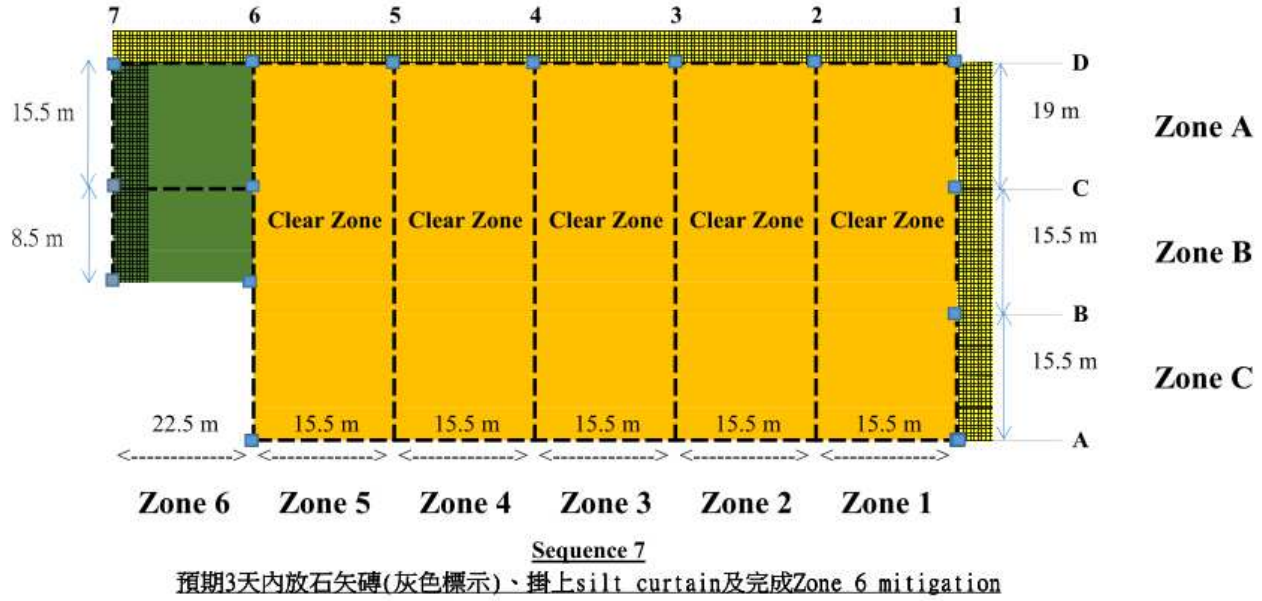

7
6
5
4
3
2
1
D
C
B
A
15.5 m
8.5 m
19 m
15.5 m
15.5 m
Zone A
Zone B
Zone C
Clear Zone
Clear Zone
Clear Zone
Clear Zone
Clear Zone
22.5 m
15.5 m
15.5 m
15.5 m
15.5 m
15.5 m
Zone 6
Zone 5
Zone 4
Zone 3
Zone 2
Zone 1
Sequence 7
預期3天內放石矢磚(灰色標示)、掛上silt curtain及完成Zone 6 mitigation

Figure 3h-n: Diagram shown sequence of excavator movement at stage 1 area at Lung Mei, Tai Po.

Figure 3h

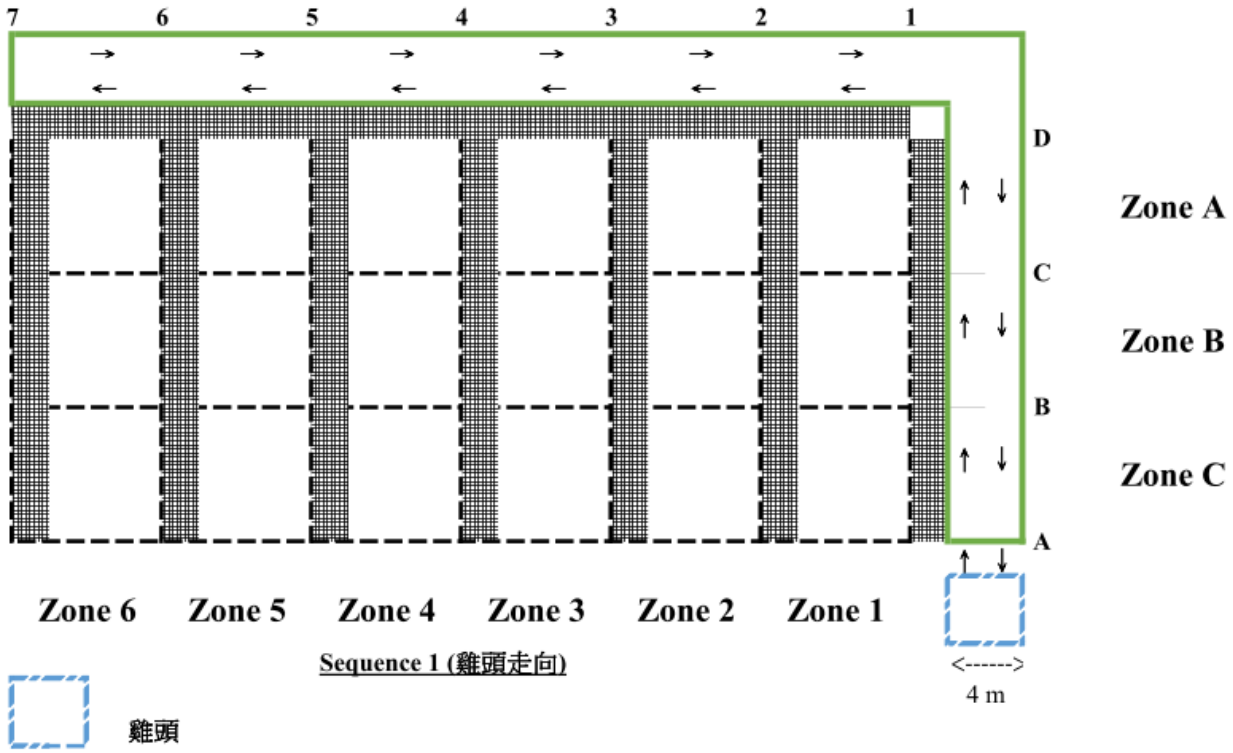


Figure 3i

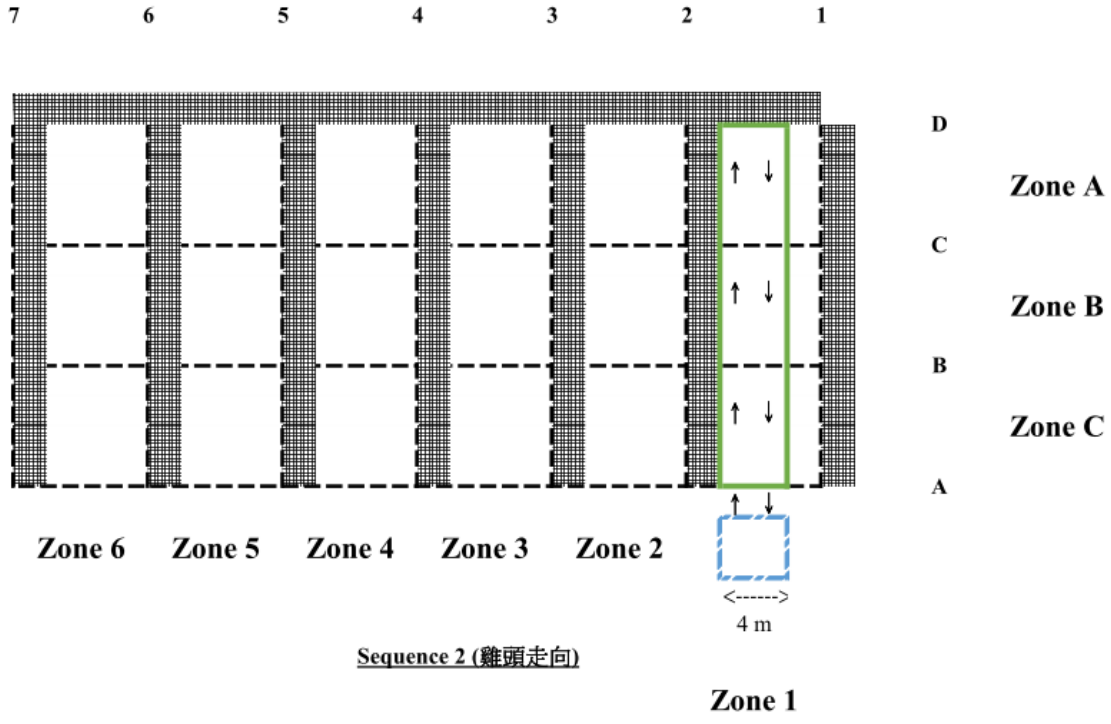
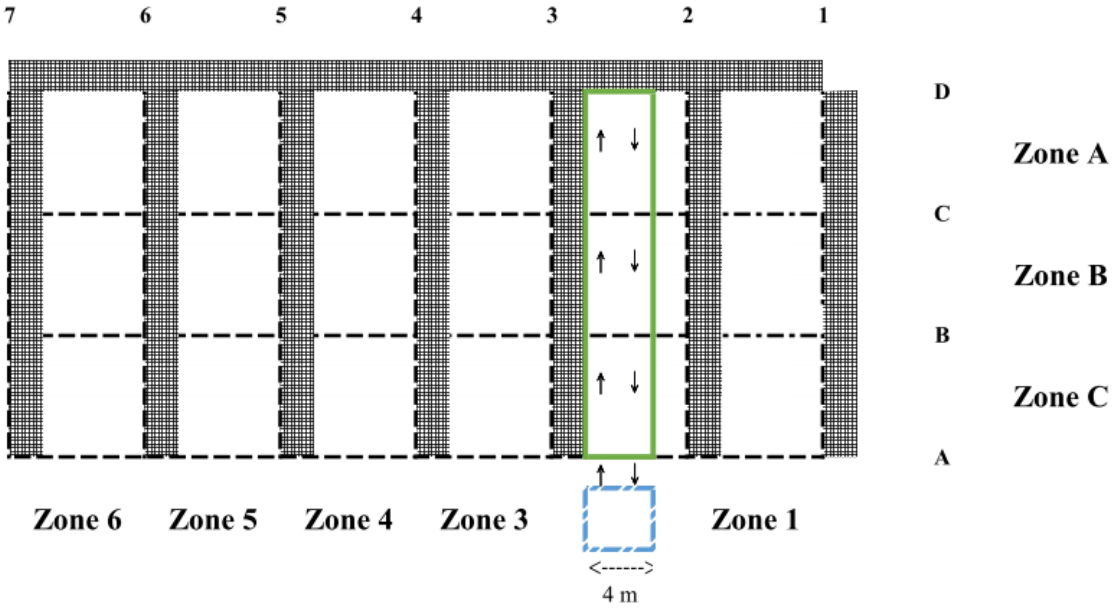
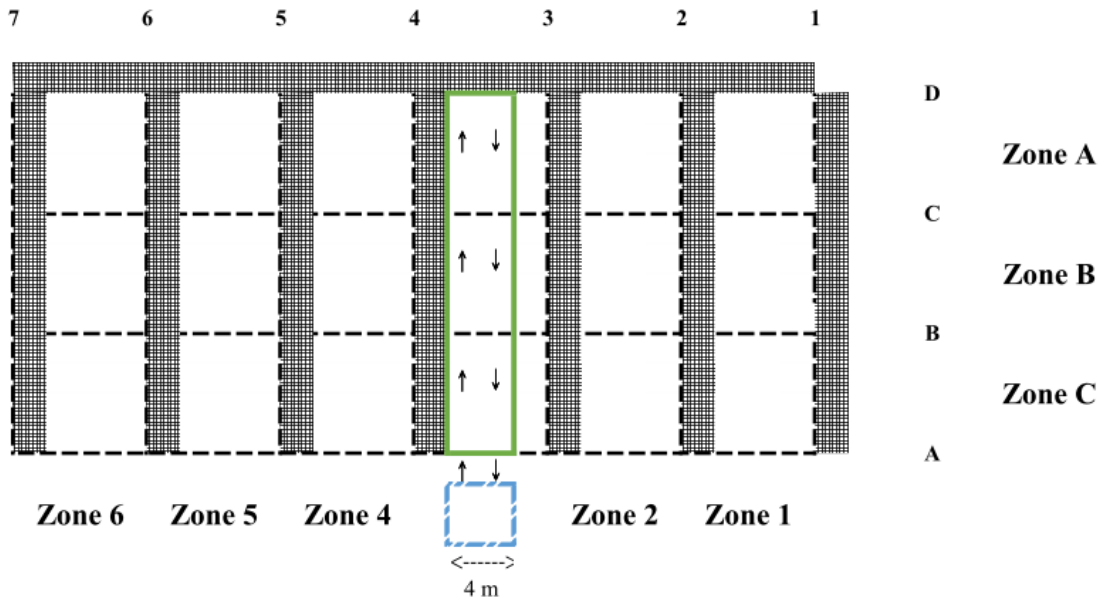


Figure 3j



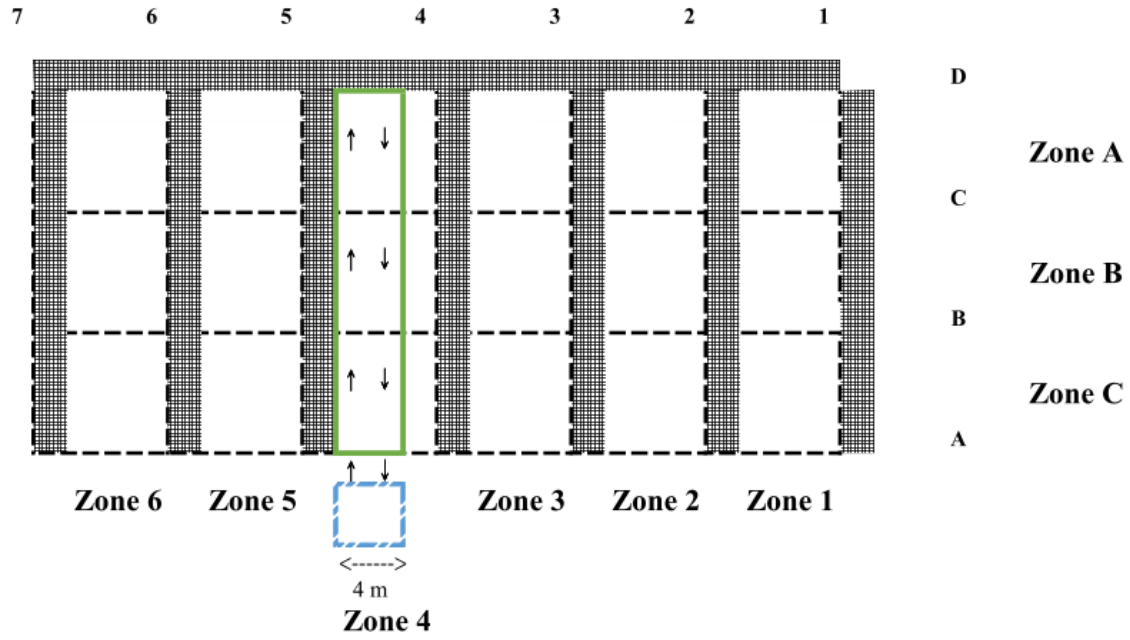
Sequence 3 (雞頭走向)

Figure 3k



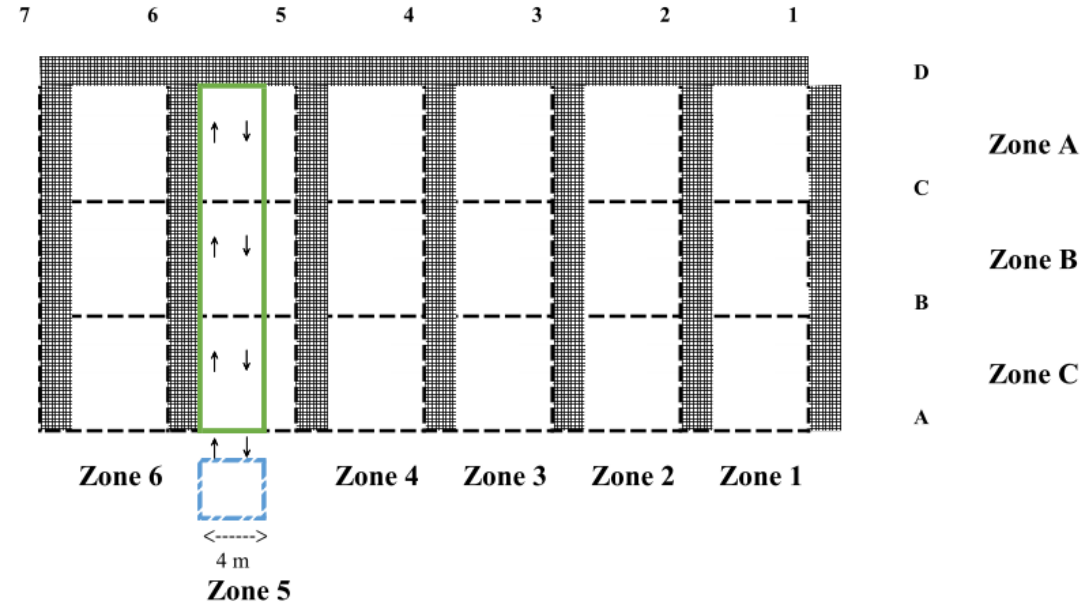
Sequence 4 (雞頭走向)

Figure 3l



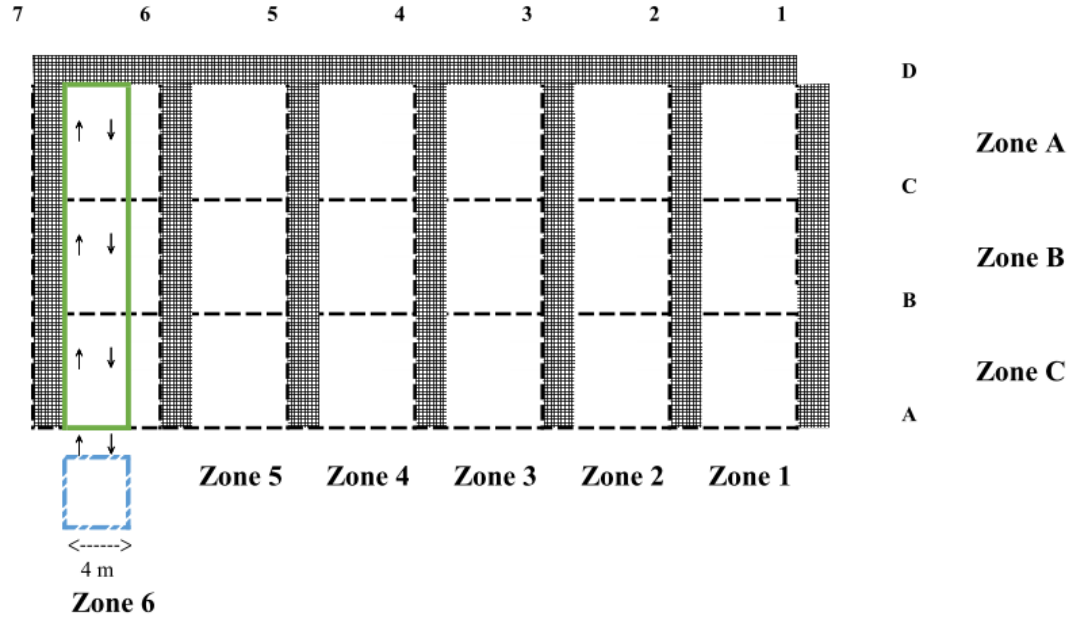
Sequence 5 (雞頭走向)

Figure 3m



Sequence 6 (雞頭走向)

Figure 3n

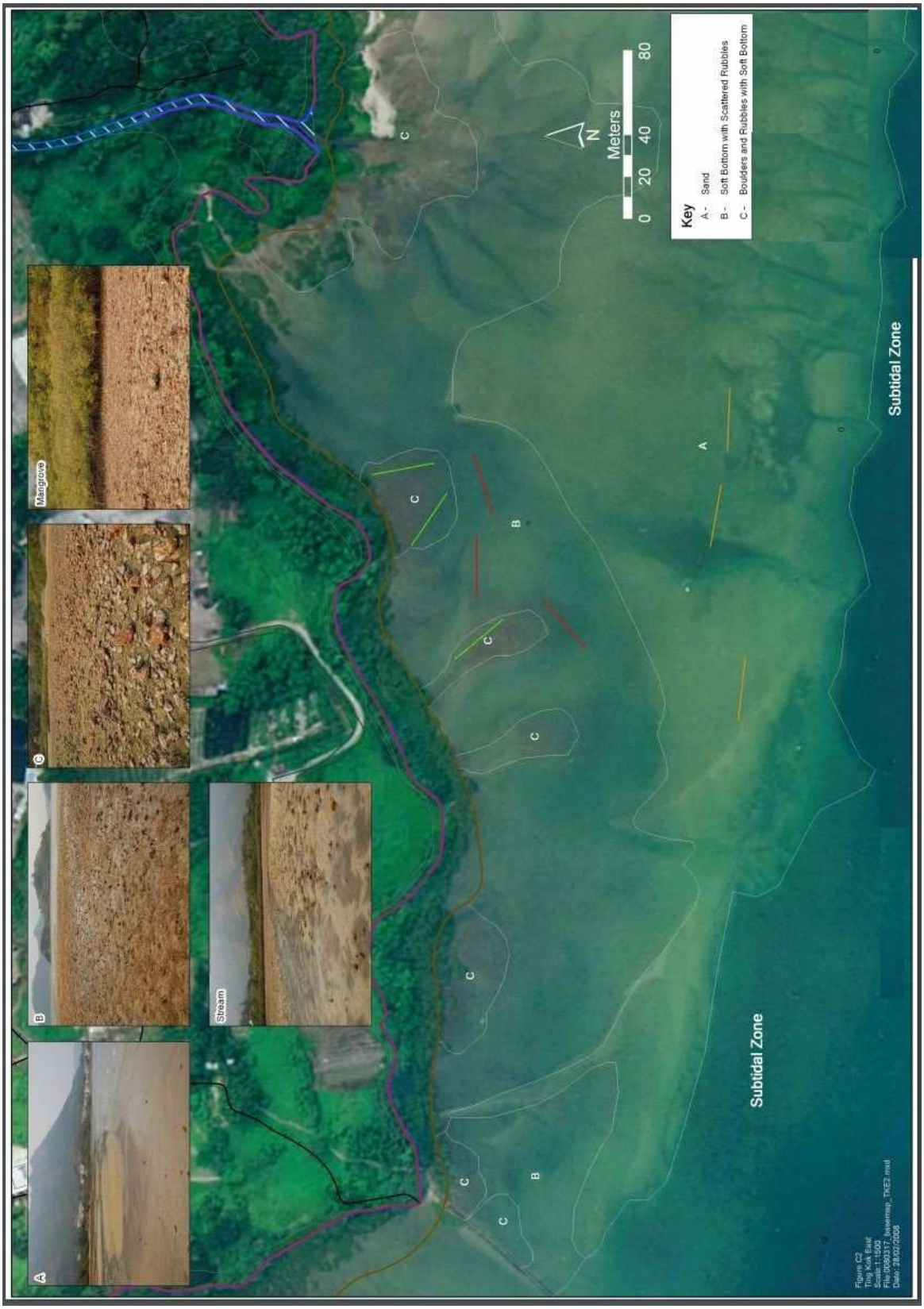


Sequence 7 (雞頭走向)

Figure 4: Proposed reception area for fauna translocation at Ting Kok East, Tai Po.

Figure 5a: Habitat map showing different substratum type at Lung Mei, Tai Po.

Figure 5b: Habitat map showing different substratum types at Ting Kok East, Tai Po.



Appendix A: The approval letter for fish specialist issued by EPD

本署檔號
OUR REF: (32) in EP2/N5/C/46 Pt.5
來函檔號
YOUR REF:
電話
TEL. NO.: 2835 1335
圖文傳真
FAX NO.: 2591 0558
電子郵件
E-MAIL:
網址
HOMEPAGE: http://www.epd.gov.hk

Environmental Protection Department
Branch Office
28th Floor, Southorn Centre,
130 Hennessy Road,
Wan Chai, Hong Kong.

環境保護署分處
香港灣仔
軒尼詩道
一三〇號
修頓中心廿八樓

RECEIVED ON
26 APR 2017
Port Works Division

By Registered Post & By Fax 2714 2054
Civil Engineering and Development Department
101 Princess Margaret Road,
Kowloon, Hong Kong
(Attn: Mr. C Y Wong)

26 April 2017

Dear Mr. Wong,

Environmental Impact Assessment (EIA) Ordinance, Cap.499
Project title: Development of a Bathing Beach at Lung Mei, Tai Po
(Environmental Permit No. EP-388/2010)

Proposed Qualified Fish Specialist and Specialist for Mangrove Seedling Planting
EP Conditions 3.11(a) & 3.12(a)

I refer to the letter from your Mr. C.F. Chan dated 15.2.2017 as cover of your memo on 19.1.2017 which enclosed the curriculum vitae of Mr. Shea she-sang, Mark.

We note the professional qualifications and experiences of Dr. Shea and we agree Dr. Shea to be the:-

(i) Qualified fish specialist in accordance with Condition 3.11(a) of the EP; and
(ii) Qualified specialist to supervise the mangrove seedling planting works in accordance with Condition 3.12(a) of the EP.

The above nomination under EP Conditions 3.11(a) & 3.12(a) will be kept on the EIAO Register for public inspection as per EIAO section 15 and EP Condition 1.10. You are reminded to follow up on the remaining submission (i.e. Mangrove Seedling Planting Proposal) required under Condition and 3.12 (b) to (c) of the EP

Yours sincerely,

C/E	SE/D	SE/M1	SE/M2	SE/P1	SE/P2	SE/P3	SE/P4	SE/P5	SE/SD	E/	PC/	
B.U.			C.C			Circ to						

(Ms. Holy To)
Assistant Environmental Protection Officer
for Director of Environmental Protection

Internal
S(SA)6, S(RN)1
c.c.
AFCD/ Mr. K.T. WO Fax: 2377 4427

EDMS No. _____

TOTAL P.01

Appendix B:Template Record Sheet of Fauna Translocation

Date: **Weather Conditions:** **Container No:**

Site	Weather Condition	Temperature	DO (mg/L)	Turbidity (NTU)	Salinity (0/00)	pH
Project Site						
Reception Site						

Capture Time :

I. Detail of Captured Individuals in Container

Captured Location (Plot No., Shore Height and Associated Substrates) Eg, Sandy/ Sandy with Stones/Boulders	Captured Species	Number of Captured Individuals	Approximate Size (in size class of 5 cm range, eg, <5cm, 5 to 10 cm)
Plot No.1 1.0 mCD Boulders	Two- spot Goby	2	<5cm

II. Detail of Holding Conditions of The Captured Individuals

Time Departed from Project Site	Timing of Checking Individuals	Survival % during Time of Checking	Species and No, of Dead Individual Recorded	Partial Water Change Conducted (for Fish Fauna)	Arrival Time at the Reception Site
eg	10:30 am	100%			
eg 11:00 am		100%			
eg	11:30 am	100%		Y	

III. Detail of Captured Individual just before Release to the Reception Site

Arrival Time at Reception Site	Timing of Checking of Individuals	Survival % during Time of Checking	Species and No. of Dead Individual Recorded	Partial Water Change Conducted	Released Location (Shore Height and Associated Substrates)	Released Time and Survival % just before release to the Reception Site
Eg 12:45 pm		100%				
	13:00pm	100%		Y		
	13:30pm	100%				
					1.0mCD Boulders	13:45pm, 100%

Contract No. CV/2012/05
Bathing Beach at Lung Mei , Tai Po

Appendix C

Tentative Working Schedules for the Works of on Phase 1 (100 metre length and 50 metre width) Mitigation and fauna translocation

Date: 17/11/2017

Date	Time	低/低水位	Work Description 1	Work Area 1	Time Interval 1	Work Description 2	Work Area 2	Time Interval 2	Work Description 3	Work Area 3	Time Intervial 3	Work Description 4	Work area 4	Time intervial 4
20-21/11/2017	**Seahorses**	**pre-survey**	**at Lung Mei**											
23-24/11/2017	**Seahorses**	**pre-survey**	**at Ting Kok East**											
30/11/2017	**Seahorses**	**pre-survey**	**at Ting Kok East**											
1/12/2017	**Seahorses**	**pre-survey**	**at Ting Kok East**											
23/11/2017	8 am to 12 pm	0.97 m	Placing Concrete blocks	Zone 1A to 1B	8 am to 10 am		Zone 1B to 1C	10 am to 12 pm						
24/11/2017	8 am to 12 am	0.88 m	Placing Concrete blocks	Zone 1C to 6C	8 am to 12 pm									
25/11/2017	8 am to 1pm	0.88 m	Placing Concrete blocks, silt curtain (vert.)	Zone 2A to 2C	8 am to 10 am	Mitigation	Zone 1A to 1B	10 am to 1 pm	fauna translocation	for zone 1A to 1B	by the same time			
27/11/2017	8 am to 12 pm	0.93 m	Mitigation	Zone 1C	8am to 10am	Placing Concrete blocks, silt curtain (vert.)	Zone 3A to 3C	10 am to 12 pm	Mitigation	for Zone 2A	10am to 12 pm	fauna translocation	Zone 1C, 2A	by the same time
28/11/2017	9 am to 1 pm	0.96 m	Mitigation	Zone 2B	9 am to 1 pm	fauna translocation	for Zone 2B	by the same time						
29/11/2017	9 am to 1 pm	0..99 m	Mitigation	Zone 2C	9 am to 1 pm	fauna translocation	for Zone 2C	by the same time						
30/11/2017	11 am to 2 pm	1.03 m	Placing Concrete blocks, silt curtain (vert.)	Zone 4A to 4C	11am to 12pm	Mitigation	Zone 3A	12 pm to 2pm	fauna translocation	for Zone 3A	by the same time			
1/12/2017	12 pm to 3 pm	1.06 m	Mitigation	Zone 3B	12 pm to 3pm	fauna translocation	Zone 3B	by the same time						
6/12/2017	8 am to 9 am	0.92 m	Mitigation	Zone 3C	8 am to 9pm	fauna translocation	for zone 3C	by the same time	Placing Concrete blocks, silt curtain (vert.)	Zone 5A to 5C	8 am to 9pm			
7/12/2017	8 am to 9 am	0.75 m	Mitigation	Zone 4A	8 am to 9 am	fauna translocation	for Zone 4A	by the same time						
8/12/2017	8 am to 10 am	0.67 m	Mitigation	Zone 4B	8 am to 10 am	fauna translocation	for Zone 4B	by the same time						
9/12/2017	8 am to 10 am	0.62 m	Mitigation	Zone 4C	8 am to 10 am	fauna translocation	for Zone 4C	by the same time						
11/12/2017	9 am to 1 pm	0.86 m	Mitigation	Zone 5A	9 am to 10 am	Mitigation	Zone 5B	10 am to 1 pm	fauna translocation	for Zone 5A and 5I	by the same time			
12/12/2017	9 am to 1 pm	0.95 m	Mitigation	Zone 5C	9 am to 1 pm	fauna translocation	for Zone 5C	by the same time						
13/12/2017	9 am to 1 pm	1.02 m	Placing Concrete blocks, silt curtain (vert.)	Zone 6A to 6C	9 am to 10 am	Mitigation	Zone 6A	10 am to 1 pm	fauna translocation	for Zone 6A	by the same time			
20/12/2017	8 am to 9 am	1.02 m	Mitigation	Zone 6B	8 am to 9 am	fauna translocation	for Zone 6B	by the same time						
21/12/2017	8 am to 9 am	0.95 m												
22/12/2017	8 am to 9 am	0.88 m												
23/12/2017	8 am to 10 am	0.79 m												
30/12/2017	11 am to 1 pm	1.03 m												
31/12/2017	11 am to 3 pm	1.01 m												

Remark:
Actual workdone shall be subject to actual site Condition effected by intertidal water level and ER's approval