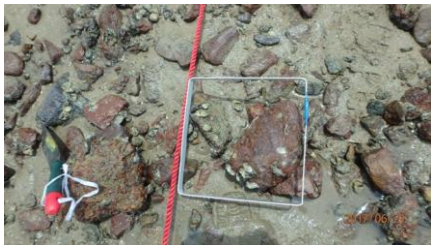
Development of a Bathing Beach at Lung Mei, Tai Po
Environmental Permit No. EP-388/2010
Baseline Marine Ecological Monitoring Report (at the vicinity of Lung Mei)

（Revised version, 05 October 2018）




Report Submitted by China Hong Kong Ecology Consultants Ltd.			
Checked by	Dr. Mark Shea		Date: October 05, 2018
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1 Introduction

1.1 In accordance with the project EP condition (Part C Permit Conditions) Section 4.2 (a), it is required to conducting baseline environmental monitoring before construction of the project. Detailed requirements including monitoring methodology for ecological baseline monitoring were stipulated in Section 7.2 of the updated EM & A manual.

1.2 Aim of this report is to present pre-construction ecological baseline monitoring objectives, methods, locations and results.

2 Objective

2.1 The objectives of the marine ecological monitoring are to collect data for determining whether there is any impact on the marine ecological resources (i) in the vicinity of the Site due to the development of the bathing beach at Lung Mei, and (ii) at the Receptor Site of Ting Kok East due to relocation of the target marine fauna.

2.2 This report covers the baseline marine ecological surveys conducted in the vicinity of the site at Lung Mei. Future monitoring results from the same site and by the same sampling methods will be used for comparing with baseline data to determine if there are any significant changes during construction period.

3 Scope of Baseline Marine Ecological Survey

- Intertidal quantitative transect survey at one location
- Intertidal fish survey at two locations
- Benthic survey at three depth zones
- Gill netting surveys at five stations

4 Method

4.1 Intertidal quantitative transect survey

4.1.1 The intertidal quantitative transect survey was undertaken during daytime low tide (<1mCD), Three 30-m horizontal transects parallel to the shoreline were haphazardly deployed at each of the three shore heights (0.5 mCD, 1.0 mCD and 1.5 mCD) areas where most of the intertidal fauna inhabit) within the intertidal and shallow subtidal zones. Five 0.25m x 0.25m quadrats were placed randomly along each transect to assess the abundance and diversity of marine fauna (total sample number = 3 shore heights x 3 transects x 5 quadrats = 45). For each quadrat, photographic records were obtained, and the abundance of sessile fauna (e.g. barnacles and rock oysters, expressed as percentage planar cover of the quadrat) was then been estimated. Average percentage cover of each species was calculated by cumulated cover divided by number of quadrat. Surface sediment (approximate volume = 25 cm x 25cm x 5 cm = 3125 cm^3) was wet-sieved in situ (mesh size of 2 mm) to obtain all organisms living on

or in the surface sediment within each quadrat ('epifauna', including underside of the boulders/cobbles). Epifauna was identified to species level where possible and their abundance recorded to calculate epifaunal abundance per quadrat for comparison of abundance during subsequent ecological monitoring.

4.1.2 Location of sampling transects is shown in Figure 1 of **Appendix I**. The selected marine ecological monitoring/survey site is about 500 m from the boundary of the project site. As the area east of the site is already highly developed or disturbed by human activities, the areas to be monitored therefore to the west and south of the site. This was suggested in the project Particular Specification Appendix 25.13.

4.2 Semi-quantitative survey

4.2.1 To supplement quantitative survey by quadrat described above, semi- quantitative survey was performed by walking along transects lines to observe and record of animals. All species observed and their relative abundance along approximately 1 m each side of transects were recorded during the transect survey.

4.3 Intertidal fish survey

4.3.1 The intertidal fish survey involved field observation, photographic record and drop-trapping during daytime low tide (tidal level <1.5 mCD) to examine the diversity and abundance of fish species. One-metre-square drop-traps was deployed by two persons, each holding the trap above the water surface when the water depth is about 0.2-0.5 m, and then dropped onto the sediment surface to capture intertidal fish. All intertidal fish captured using this method was recorded. 10 drop-trap samples were collected during each survey. All captured intertidal fish was identified to species level wherever possible and returned to their natural habitats after identification works as far as practicable. Intertidal fish survey area is given in Figure 1 of **Appendix I.**

4.4 Benthic survey

4.4.1 During the benthic survey, benthic samples were collected from sub-tidal area within the monitoring area at 0 mCD, -1 mCD and -2 mCD. Three grab samples (at least 50m apart) were taken randomly at each depth zone. Each grab sampler with an opening dimension approx. 15cm x 20cm, and 15cm depth. The sediments were sieved in situ. The sediments were washed onto a sieve stack (comprising 1mm and 500μm meshes). Grab sampling procedure, sampler and sieve are shown in **Appendix IIa.** Sediments put in the sieve were gently rinsed with seawater to remove all fine material. Material remaining on the sieve was removed into pre-labeled thick triple-bagged ziplock plastic bags. A 20% solution of buffered formalin containing Rose Bengal in seawater was then added to the bag to ensure tissue

preservation. Samples were sealed in plastic containers for transport to the laboratory for sorting and identification of benthic organisms. Benthic sampling area is given in Figure 2 of **Appendix I.**

4.4.2 In the laboratory, benthic organisms were sorted from the sieved sediments. Taxonomic identification of benthic organisms was performed using stereo dissecting and high-power compound microscopes. Benthic organisms were counted and identified to species level as far as practicable with biomass (wet weight, to 0.01gram) of each individual recorded. If breakage of soft-bodied organism occurs, only anterior portions of fragments were counted, although all fragments were retained and weighted for biomass determinations (wet weight, to 0.01gram). Data of species abundance and biomass was obtained.

4.4.3 As part of QA/QC requirements, field logs were maintained for all sampling works, noting the survey date, equipment used, name of field survey supervisor, and a record of all activities and observations. For sampling quality control purpose, only sediment fully filled grab samples were accepted. Otherwise, sediments were abandoned and re-sampling was performed.

4.5 Gill netting surveys

4.5.1 Five gill netting stations were sampled within the monitoring area. Two independent trammel (gill) nets were deployed for one hour at each of the five stations. The animals caught by the two independent gill nets were recorded as two replicates. The nets were 1 m deep, 36 m in length and comprised 3-layers, with two 20 cm mesh stretches sandwiching a 5 cm mesh stretch. When different sizes of nets were considered suitable to be used, approval by Engineer was obtained. Gill netting survey area is given in Figure 2 of **Appendix I**.

4.5.2 All fish and macro-invertebrates species captured during the one hour deployment were recorded. Community parameters, comprising: species composition, abundance and biomass of captured species were measured.

4.6 Shannon diversity index (H) and Pielou's evenness index (J)

4.6.1 The Shannon diversity index (H) is another index that is commonly used to characterize species diversity in a community. Shannon's index accounts for both abundance and evenness of the species present. The proportion of species *i* relative to the total number of species (p_i) is calculated, and then multiplied by the natural logarithm of this proportion ($\ln p_i$). The resulting product is summed across species, and multiplied by -1:

$$H = -\sum_{i=1}^{s} p_i \ln p_i$$

The evenness of a community can be represented by Pielou's evenness index:

$$J = H' / Hmax = H' / \ln S$$

Where H ′ is the number derived from the Shannon diversity index and H’ max is the maximum possible value of H ′, equal to:

$$H_{max} = -\sum_{i=1}^{S} \frac{1}{S} \ln \frac{1}{S} = \ln S$$

J is constrained between 0 and 1. The less evenness in communities between the species (and the presence of a dominant species), the lower J is.

4.7 In order to make data comparable, same sampling methodology including sampling technique, replicates and locations will be used during impact monitoring.

4.8 Statistic analysis such as ANOVA or any other suitable multidimensional scaling method may be used to detect where significant difference of data between baseline and impact monitoring occurred. This will be further elaborated when preparing impact monitoring report.

5 Survey Results

Quantitative quadrat survey results

5.1 Quantitative quadrat surveys were conducted at the vicinity site of Lung Mei beach in June 2017 (dates and time: 22/6/2017(10:00-18:00), 23/6/2017 (12:00-18:00), 27/6/2017 (15:00-18:00). A total of 45 quadrats were surveyed from three shore heights (0.5 mCD, 1.0 mCD and 1.5 mCD), shown as **Appendix IIb** for the representative photos of the surveys and **Appendix IIIa** for the survey results**.** A total of 21 epifauna species were recorded, comprising 17 mobile fauna and 4 sessile fauna. At three heights, the highest number of species was the Mollusca among other taxonomic group, followed by Crustacea (**Table.1**)

Table.1 Total Number of Recorded Epifauna Species in each Phylum/Subphylum

Phylum/Subphylum	Number of Species
Mollusca	14
Crustacea	3
Chordata	1
Annelida	1
Arthropoda	1
Polyplacophora	1

5.2 The highest abundance of epifauna was recorded at 1 mCD, in which total of 621 individuals of epifauna were recorded, followed by 1.5 mCD (229 individuals) and 0.5 mCD (73 individuals). Sea snail *Batillaria multiformis* and mussel *Brachidontes variabilis* were the most abundant species at 0.5 mCD. A t 1 mCD, Sea snail *Batillaria multiformis* was the most abundant species while the crowned turban shell *Lunella coronata* was the most abundant species at 1.5 mCD. The most abundant species were all under taxonomic group of Mollusca. The summary of mobile species recoded with numerical abundance and percentage of the total were presented in **Table 2**. The mean abundance of Mobile Fauna per quadrat (volume of each quadrat is 3,125 cm^2) at three tidal levels (0.5 mCD, 1.0mCD and 1.5mCD) were summarized in the **Table 2**. The highest abundance (41.40±16.12) of mobile fauna was recorded at 1.0mCD.

Table 2. Numerical Abundance and Percentage of Mobile Faunal Species Recorded at Three Tidal Levels on Tidal Zone (0.5 mCD, 1 mCD and 0. 1.5 mCD).

0.5 mCD				1 mCD				1.5 mCD			
Common name	Species	Abundance	Percentage	Common name	Species	Abundance	Percentage	Common name	Species	Abundance	Percentage
Zoned Horned Shell	*Batillaria zonalis*	6	8.22%	Zoned Horned Shell	*Batillaria zonalis*	269	43.32%	Zoned Horned Shell	*Batillaria zonalis*	16	6.99%
Many-formed Cerith	*Batillaria multiformis*	16	21.92%	Many-formed Cerith	*Batillaria multiformis*	287	46.22%	Many-formed Cerith	*Batillaria multiformis*	79	34.50%
Mud snail	*Cerithidea cingulata*	14	19.18%	Mud snail	*Cerithidea cingulata*	2	0.32%	Turban shell	*Lunella coronata*	83	36.24%
Turban shell	*Lunella coronata*	7	9.59%	The truncated mangrove snail	*Cerithidea djadjariensis*	3	0.48%	Venus clams	*Gafrarium sp.*	12	5.24%
Shouldered Castor Bean	*Cronia margariticola*	3	4.11%	Dubious Nerite	*Clithon oualaniensis*	1	0.16%	Lipped Top Shell	*Monodonta labio*	4	1.75%
Blood clam	*Barbatia virescens*	5	6.85%	Turban shell	*Lunella coronata*	27	4.35%	Japanese grata limpet	*Cellana grata*	1	0.44%
Variable mussel	*Brachidontes variabilis*	16	21.92%	Venus clams	*Gafrarium sp.*	14	2.25%	Shouldered Castor Bean	*Cronia margariticola*	23	10.04%
Purplish bifurcate mussel	*Septifer virgatus*	2	2.74%	Blood clam	*Barbatia virescens*	2	0.32%	Asian Green Mussel	*Perna viridis*	1	0.44%
Homed ghost crab	*Ocypode ceratophthalmus*	1	1.37%	Variable mussel	*Brachidontes variabilis*	16	2.58%	Variable mussel	*Brachidontes variabilis*	8	3.49%
Brownbar snapping shrimp	*Alpheus lobidens*	3	4.11%					Purple climber crabs	*Metopograpsus frontalis*	2	0.87%
No of replicates		15		No of replicates		15		No of replicates		15	
Column Total		73	100%	Column Total		621	100%	Column Total		229	100%
Mean		4.87		Mean		41.40		Mean		15.27	
Standard deviations		5.85		Standard deviations		16.12		Standard deviations		31.45	

5.3 The coverage of sessile fauna within each quadrat was estimated and the results were summarized in **Table 3.** *Saccostrea cucullata* had the highest coverage at all shore heights among other sessile fauna recorded. The mean abundance of Sessile organisms per quadrat (volume of each quadrat is 3,125 cm^2) at three tidal levels (0.5 mCD, 1.0mCD and 1.5mCD) were summarized in the **Table 3**. The highest of sessile organisms was found at 0.5mCD (17.27%).

Table 3. Abundance Presented as Percentage Cover of Sessile Faunal Species Recorded at Three Tidal Levels on Tidal Zone (0.5 mCD, 1 mCD and 0. 1.5 mCD).

0.5 mCD			**1 mCD**			**1.5 mCD**		
Common name	Species	Average Coverage Percentage/ Standard Deviation	Common name	Species	Average Coverage Percentage/ Standard Deviation	Common name	Species	Average Coverage Percentage/ Standard Deviation
Rock Oyster	*Saccostrea cucullata*	11.20% (±12.24%)	Rock Oyster	*Saccostrea cucullata*	3.64% (±4.67%)	Rock Oyster	*Saccostrea cucullata*	4.57% (±4.27%)
Pleated Sea Squirt	*Styela plicata*	5.40% (±14.55%)	Barnacle	*Amphibalanus amphitrite*	0.14% (±0.53%)	Chitons	*Acanthopleura japonica*	0.07% (±0.27%)
Worm -snails	*Serpulorbis imbricatus*	0.67% (±1.76%)	Worm -snails	*Serpulorbis imbricatus*	0.29% (±0.83%)			
Number of replicates		15	Number of replicates		15	Number of replicates		15
Total coverage by mean		17.27%	Total coverage by mean		4.07%	Total coverage by mean		4.34%

5.4 The mean number of species per quadrat for mobile epifauna and sessile epifauna at three tidal levels (0.5 mCD, 1.0mCD and 1.5mCD) were summarized in the **Table 4.** The highest mean number of species of mobile fauna was 3.47±1.64 at 1.0mCD, while the species number of sessile organisms was similar among different tidal level. The overall mean of species number of mobile fauna and sessile organisms at Lung Mei were 2.69±1.74 and 0.91±0.67 respectively.

Table 4. The Mean Number of Epifaunal Species per Quadrat

	Tidal level			
	0.5 mCD	1.0 mCD	1.5 mCD	Overall
Mobile Fauna (No. of species)	1.53±1.51	3.47±1.64	3.07±1.53	2.69±1.74
Sessile Organisms (No. of species)	1.07±0.70	0.67±0.82	1.00±0.38	0.91±0.67
Number of replicates	15	15	15	15

5.5 Based on the calculation of Shannon-Weiner diversity and Pielou's Evenness (excluding sessile organism) and the calculated results were showed in **Table 5.** The species diversity (H) at 0.5mCD (H=2.02) was higher than species diversity at 1.0mCD (H=1.11) and 1.5mCD (H=1.58). The most evenness of species (J) for three tidal levels was 0.5mCD (J=0.88), while the evenness at 1.0mCD and 1.5mCD were J=0.50 and J=0.69 respectively. The overall species diversity (H) and species evenness of epifauna at Lung Mei were 1.55 and 0.55 respectively.

Table 5. Species Diversity and Evenness

	Tidal level			
	0.5 mCD	1.0 mCD	1.5 mCD	Overall
Shannon diversity index(H)	2.02	1.11	1.58	1.55
Pielou's evenness(J)	0.88	0.50	0.69	0.55

Semi-quantitative survey results

5.6 Semi-quantitative surveys were undertaken to record epifauna along 1 m belt area on each side of the transect line, shown as **Appendix IIb.** The survey results were shown in **Appendix IIIb**. The highest number of species recorded was at 1.0 mCD (42 species), followed by 0.5 mCD (41 species) and 1.5 mCD (21 species). The species of the Mollusca occupied the highest proportion of species composition among the rest of taxonomic group, followed by the Arthropoda (**Table 6.**). In total, 59 species were recorded from 9 transect lines at 3 different shore heights. The recorded species belong to common species (with no conservation interest). Some representative photos of recorded fauna were shown in **Appendix IIc.**

Table 6. Total Number of Species Recorded from Semi-quantitative Survey

	0.5 mCD	1.0 mCD	1.5 mCD
Phylum	Number of Species		
Mollusca	15	20	14
Chordata	2	4	0
Echinodermata	4	0	0
Annelida	1	3	1
Sipuncula	1	1	1
Arthropoda	17	13	5
Cnidaria	0	1	0
Porifera	1	0	0
Total number of species	41	42	21

Inter-tidal fish survey result

5.7 The inter-tidal fish survey was conducted in the area indicated in **Appendix I**. From the survey, a total of 7 species was recorded. The recorded species were low in abundance ranging from 0.1 to 0.5 individual per square meter. The list of the recorded species and their abundance were shown in **Table 7.** The recorded fish species belongs to common species (with no conservation interest). The survey results were shown in **Appendix IIIc.**

Table 7. Fish Species Recorded from the Inter-tidal Fish Survey (Average number of the 10 drop-traps)

Common name	Species	Abundance (no. of individual per $m^{2)}$
Brown frillfin goby	*Bathygobius fuscus*	0.5
Target shrimp goby	*Cryptocentrus strigilliceps*	0.1
Fan-bellied leatherjacket	*Monacanthus chinensis*	0.1

Pointed goatfish	*Parupeneus biaculeatus*	0.2
Mottled Spinefoot	*Siganus fuscescens*	0.5
Shimofuri goby	*Tridentiger bifasciatus*	0.2
Chameleon goby	*Tridentiger trigonocephalus*	0.1
Note: All the recorded fishes are common and listed as Least Concern in IUCN Red List except *Parupeneus biaculeatus* and *Tridentiger trigonocephalus* which were not assessed.		

Benthic fauna survey result

5.8 The benthic survey was conducted at three different height of tidal level, shown as **Appendix I.** A total of 9 samples were obtained from the survey. In total, 34 species of benthic fauna were recorded from the survey. The highest number of benthic fauna species was at the height at 0mCD (23 species) and at -1 mCD (23 species) tidal levels, while highest numbers of benthic fauna was also recorded at -1 mCD tidal level (94 individuals) (**Table.8**). The representative photos of the benthic fauna survey were shown in **Appendix IIa.** The detailed result of the benthic fauna recorded was presented in **Appendix IIId**.

5.9 Two individuals of *Asymmetron cultellum* (短刀文昌魚，belongs to Phylum Chordata) were recorded from benthic samples with length approx. 9-13 mm, biomass 0.04-0.08 grams, reproductive status unknown, density was calculated as: 2/{9x(0.2x0.15)} =7.4 individuals/m2.

Table 8. Abundance and Species Diversity of Benthic Fauna Recorded

	Locations		
	H*	M*	L*
Abundance (no. of individual)	60	94	66
Number of species	23	23	17
Note: *= H, high tidal level(0 mCD); M, medium tidal level(-1 mCD); L, low tidal level (-2 mCD)			

5.10 Based on the calculation of Shannon-Weiner diversity and Pielou's Evenness and the calculated results of Benthic Fauna were showed in **Table 9.** The species diversity (H) at 0mCD (H=2.73) and -1.0mCD (H=2.74) were similar and they were higher than species diversity at -2.0mCD (H=2.32). The Pielou's evenness (J) at 0mCD, -1.0mCD and -2.0mCD were 0.87, 0.6 and 0.81 respectively. The overall of species diversity (H) was 2.94 and the overall evenness (J) was 0.81 at Lung Mei.

Table 9. Species Diversity and Evenness for Benthic Survey

	Tidal level			
	0 mCD	-1.0 mCD	-2.0mCD	Overall
Shannon diversity index(H)	2.73	2.74	2.32	2.94
Pielou's evenness(J)	0.87	0.60	0.55	0.81

Gill netting survey result

5.11 Gill netting survey was performed at five locations. 9 species comprising 6 species of Chordata and 3 species of Crustacea were recorded from the survey. The weight of caught species ranged from 11g to 603g. The survey result was summarized in **Appendix IIIe.** The representative photos of the gill netting survey were shown in **Appendix IIa.** Species diversity and evenness were calculated and they were 2.09 (H) and 0.95 (J) respectively.

Table 10. Species Diversity and Evenness for Gill Netting Survey

	Overall
Shannon diversity index(H)	2.09
Pielou's evenness(J)	0.95

6 Summary

6.1 In summary, 21 epifauna species were recorded from the quantitative quadrat survey, of which the Mollucus was the taxonomic group contributed the highest number of species diversity. The highest abundance of epidfauna was recorded at 1 mCD, in which total of 621 individuals of epifauna were recorded. The most abundant species were the Mollusks.

6.2 For the sessile fauna, rocky oyster *Saccostrea cucullata* had the highest coverage at all shore heights among other sessile fauna recorded. Species diversity in terms of number of species at 0.5 mCD and 1.0mCD were relatively high (41 and 42 species recorded respectively), and low number of species were recorded from the transect lines set at 1.5mCD.

6.3 For the inter-tidal fish survey, a total of 7 species of fish were recorded from the surveyed area.

6.4 34 benthic fauna were recorded from the benthic survey, with the highest species diversity at medium and high tidal levels and the highest abundance at medium tidal level. Total of 9 species were recorded from the gill netting survey with species comprised of fish and crustacean species;

Appendix 1： Figures

Figure 1. Survey transects and area for intertidal quantitative transect survey and intertidal fish survey in Lung Mei and Ting Kok, Tai Po.

Figure 2. Survey areas for benthic survey and gill netting survey in Lung Mei and Ting Kok, Tai Po.

Appendix IIa Photos – Sampling Photos

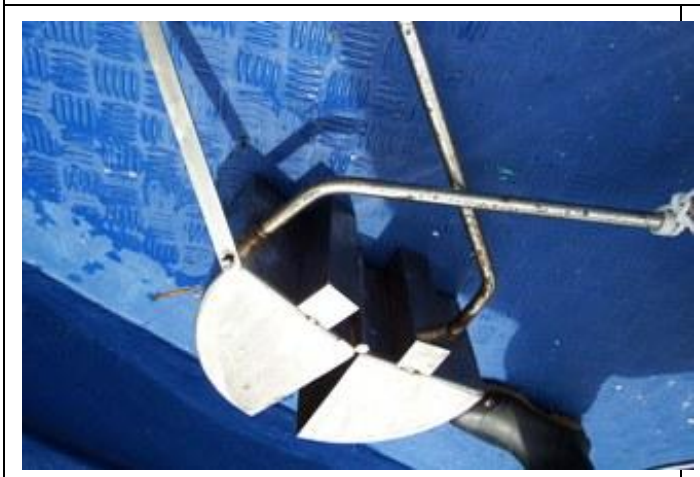
<table>
<tr><th colspan="2">Benthic Sampling</th></tr>
<tr><td>  </td><td>  </td></tr>
<tr><td>Photo1. Grab sampler</td><td>Photo2. Grab sampler operation</td></tr>
<tr><td>  </td><td>  </td></tr>
<tr><td>Photo3. Grab sampler and sediment-benthic sample</td><td>Photo4. Sediment washing sieve</td></tr>
</table>

Photo5. Benthic samples

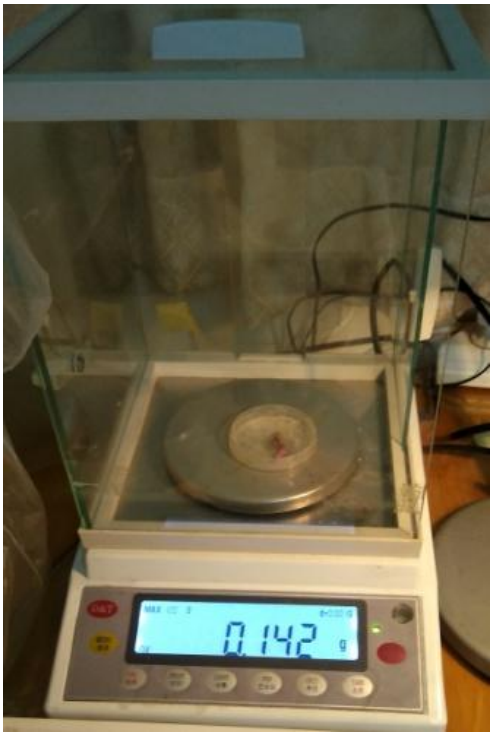


Photo6. Weighting with electronic scale

Photo7. Photo shown benthic species, *Asymmetron cultellum.*

Gill Netting	
	
Photo8. Gill net operation	Photo9. *Leiognathus brevirostris*
	
Photo10. *Portunus pelagicus*	Photo11. *Brachirus orientalis*
	
Photo12. *Monacanthus chinensis*	Photo13. *Gerres filamentosus*

Appendix IIb Photos – Survey Transects and Quadrats

Survey Location: Lung Mei

Transect 1: 0.5 m above mCD (relative low tidal level)

Transect 2: 1 m above mCD (medium tidal level)

Transect 3: 1.5 m above mCD (relative high tidal level)

Transect 1 A

			
Date: 22/6/2017	Quadrat 1	Date: 22/6/2017	Quadrat 2
			
Date: 22/6/2017	Quadrat 3	Date: 22/6/2017	Quadrat 4
			
Date: 22/6/2017	Quadrat 5	Date: 22/6/2017	Full View

Transect 1 B

			
Date: 23/6/2017	Quadrat 1	Date: 23/6/2017	Quadrat 2
			
Date: 23/6/2017	Quadrat 3	Date: 23/6/2017	Quadrat 4
			
Date: 23/6/2017	Quadrat 5	Date: 23/6/2017	Full View

Transect 1 C

			
Date: 27/6/2017	Quadrat 1	Date: 27/6/2017	Quadrat 2
			
Date: 27/6/2017	Quadrat 3	Date: 27/6/2017	Quadrat 4
			
Date: 27/6/2017	Quadrat 5	Date: 27/6/2017	Full View

Transect 2A

			
Date: 22/6/2017	Quadrat 1	Date: 22/6/2017	Quadrat 2
			
Date: 22/6/2017	Quadrat 3	Date: 22/6/2017	Quadrat 4
			
Date: 22/6/2017	Quadrat 5	Date: 22/6/2017	Full View

Transect 2B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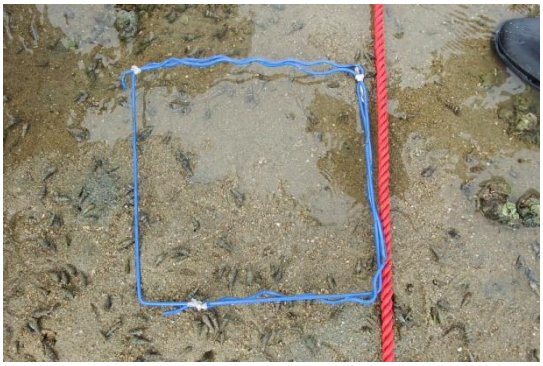
			
Date: 27/6/2017	Quadrat 3	Date: 27/6/2017	Quadrat 4
			
Date: 27/6/2017	Quadrat 5	Date: 27/6/2017	Full View

Transect 2C

			
Date: 27/6/2017	Quadrat 1	Date: 27/6/2017	Quadrat 2
			
Date: 27/6/2017	Quadrat 3	Date: 27/6/2017	Quadrat 4
			
Date: 27/6/2017	Quadrat 5	Date: 27/6/2017	Full View

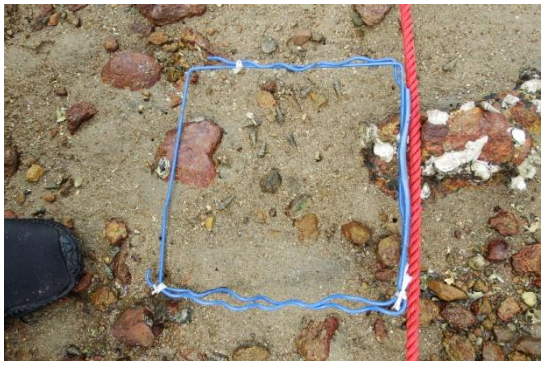
Transect 3A

			
Date: 22/6/2017	Quadrat 1	Date: 22/6/2017	Quadrat 2
			
Date: 22/6/2017	Quadrat 3	Date: 22/6/2017	Quadrat 4
			
Date: 22/6/2017	Quadrat 5	Date: 22/6/2017	Full View

Transect 3B

			
Date: 23/6/2017	Quadrat 1	Date: 23/6/2017	Quadrat 2
			
Date: 23/6/2017	Quadrat 3	Date: 23/6/2017	Quadrat 4
			
Date: 23/6/2017	Quadrat 5	Date: 23/6/2017	Full View

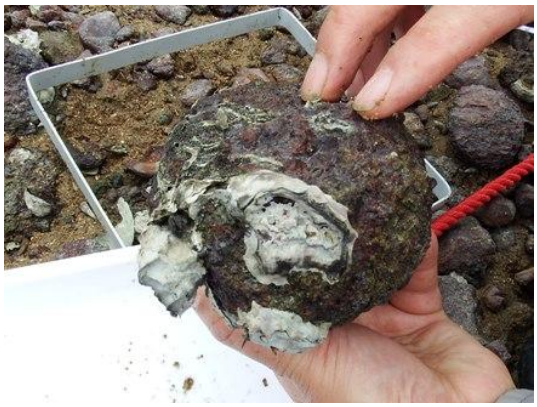
Transect 3C

			
Date: 27/6/2017	Quadrat 1	Date: 27/6/2017	Quadrat 2
			
Date: 27/6/2017	Quadrat 3	Date: 27/6/2017	Quadrat 4
			
Date: 27/6/2017	Quadrat 5	Date: 27/6/2017	Full View

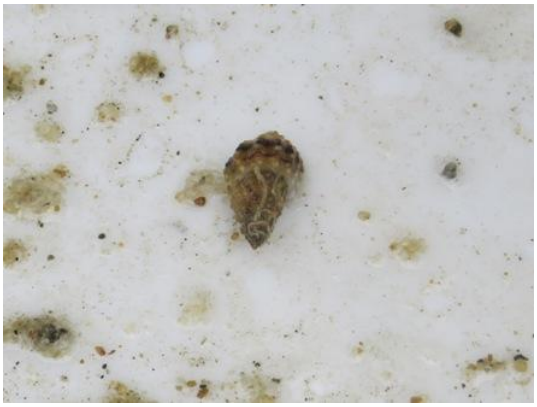
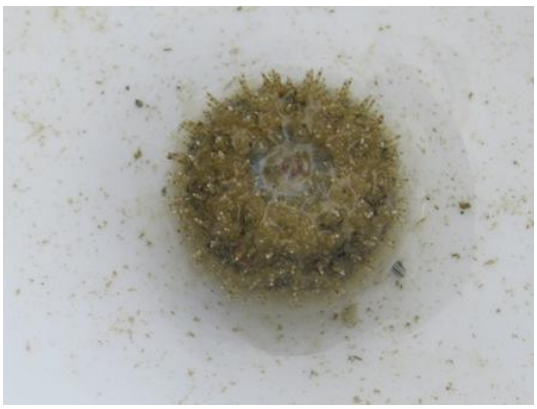
Appendix IIc - Photographs of species were found at Mei Lung Mei

	
Acanthopagrus schlegelii	*Brachirus orientalis*
	
Gerres filamentosus	*Leiognathus brevirostris*
	
Monacanthus chinensis	*Rhabdosargus sarba*

	
Siganus fuscescens	*Portunus pelagicus*
	
Charybdis japonica	*Thalamita crenata*
	
Etisus laevimanus	*Alpheus lobidens*

	
Saccostrea cucullata	*Scapharca cornea*
	
Metopograpsus frontalis	*Archaster typicus*
	
Gafrarium sp.	*Thalamita crenata*

	
Barbatia virescens	*Petrolisthes japonicus*
	
Circe scripta	*Leptodius exaratus*
	
Paguroidea sp.	*Halichondria sp*

	
Holothuria atra	*Thalamita danae Stimpson*
	
Philyra carinata	*Cronia margariticola*
	
Anomalocardia squamosa	*Salmacis sphaeroides*

	
Batillaria zonalis	*Placamen tiara*
	
Circe scripta subsp. scripta	*Capitella capitata*
	
Liolophura japonica	*Ophiocoma dentata*

	
Lysmata wurdemanni	*Isognomon isognomum*
	
Portunus trituberculatus	*Styela plicata*

Appendix III Survey Results

Appendix IIIa Quantitative quadrat survey results (0.5 mCD)

Survey date				22/6/2017, 23/6/2017, 27/6/2017															
No. of surveyor				5															
Survey time				22/6/2017(10:00-18:00), 23/6/2017 (12:00-18:00), 27/6/2017 (15:00-18:00)															
Survey location				Lung Mei															
Tidal level				0.5 m above mCD (relative low tidal level)															
Intertidal type				Sand with rubbles															
Transect Length (m)				30 m															
Transect				1					2					3					
Quadrat				1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	
	Phylum	Scientific Name	Conversation	Relative Abundance															
Mobile Fauna	**Mollusca**	*Batillaria zonalis*	-	-	-	3	-	-	-	-	-	-	3	-	-	-	-	-	
		Batillaria multiformis	-	-	-	4	-	-	-	-	-	-	2	-	10	-	-	-	
		Cerithidea cingulata	-	-	-	-	-	-	-	-	-	-	4	-	-	10	-	-	
		Lunella coronata	-	-	-	-	-	-	3	-	-	-	-				4		
		Cronia margariticola	-	-	-	1	-	-	-	-	-	-	1	-	-	1	-	-	
		Barbatia virescens	-	-	-	-	-	-	-	-	-	4	1	-	-	-	-	-	
		Brachidontes variabilis	-						-	2	-	3	-	-	-	6	-	5	
		Septifer virgatus	-						-	-	-	1	-	-	-		1	-	
	Crustacea	*Ocypode ceratophthalmus*	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	
		Alpheus lobidens	-	-	-	-	1	-	-	-	-	-	-	-	2	-	-	-	
Sessile Organisms	**Mollusca**	*Saccostrea cucullata*	-	-	-	20%	-	5%	20%	20%	-	25%	10%	5%	1%	40%	2%	20%	
	Annelida	*Serpulorbis imbricatus*	-	-	-	5%	-	-	-	5%	-	-	-	-	-	-	-	-	
	Chordata	*Styela plicata*	-	30%	-	1%	50%	-	-	-	-	-	-	-	-	-	-	-	

Appendix IIIa Quantitative quadrat survey results (1.0 mCD)

Survey date				22/6/2017, 27/6/2017													
No. of surveyor				5													
Survey time				22/6/2017(10:00-18:00), 27/6/2017 (15:00-18:00)													
Survey location				Lung Mei													
Tidal level				1.0 m above mCD (Medium tidal level)													
Intertidal type				Sand with rubbles													
Transect Length (m)				30 m													
Transect				1					2					3				
Quadrat				1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
	Phylum	Scientific Name	Conservation	Relative Abundance														
Mobile Fauna	**Mollusca**	*Batillaria zonalis*	-	8	5	12	10	14	16	28	20	22	21	17	21	20	25	30
		Batillaria multiformis	-	5	16	6	22	20	15	33	23	21	18	23	22	15	20	28
		Cerithidea cingulata	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2
		Cerithidea djadjariensis	-	-	-	-	-	1	-	-	1	-	-	1	-	-	-	-
		Clithon oualaniensis	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-
		Lunella coronata	-	-	-	-	-	-	2	-	4	-	5	4	-	7	-	5
		Gafrarium sp.	-	-	-	-	-	-	1	-	-	-	1	2	-	4	-	6
		Barbatia virescens	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1
		Brachidontes variabilis	-	-	-	-	-	-	1	-	5	-	5	-	-	5	-	-
Sessile Organisms	**Mollusca**	*Saccostrea cucullata*	-	-	-	-	5%	-	6%	-	3%	-	7%	15%	-	10%	-	5%
	Arthropoda	*Amphibalanus amphitrite*	-	-	-	-	-	-	-	-	-	-	2%	-	-	-	-	-
	Annelida	*Serpulorbis imbricatus*	-	-	-	-	3%	-	-	-	-	-	-	<1%	-	-	-	-

Appendix IIIa Quantitative quadrat survey results (1.5 mCD)

Survey date				22/6/2017, 23/6/2017, 27/6/2017														
No. of surveyor				5														
Survey time				22/6/2017(10:00-18:00), 23/6/2017 (12:00-18:00), 27/6/2017 (15:00-18:00)														
Survey location				Lung Mei														
Tidal level				1.5 m above mCD (relative low tidal level)														
Intertidal type				Sand with rubbles														
Transect Length (m)				30 m														
Transect				1					2					3				
Quadrat				1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
	Phylum	Scientific Name	Consevation	Relative Abundance														
Mobile Fauna	**Mollusca**	*Batillaria zonalis*	-	-	-	-	-	1	3	3	-	-	_	4	5	-	-	-
		Batillaria multiformis	-	-	-	-	15	4	17	16	5	3	_	4	4	-	5	6
		Lunella coronata	-	-	2	-	-	8	3	4	8	8	9	6	3	15	12	5
		Gafrarium sp.	-	2	1	-	-	-	-	-	-	-	2	1	2	2	2	-
		Monodonta labio	-	-	-	3	-	-	-	-	-	-	-	-	-	-	-	1
		Cellana grata	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-
		Cronia margariticola	-	-	-	-	-	-	-	-	-	-	1	-	-	-	2	20
		Perna viridis	-	-	1	-	-	-	-	-	-	-	_	-	-	-	-	-
		Brachidontes variabilis	-	-	-	-	-	-	-	-	-	3	_	-	-	-	2	3
	Crustacea	*Metopograpsus frontalis*	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	1
Sessile Organisms	**Mollusca**	*Saccostrea cucullata*	-	-	5%	2%	1%	3%	1%	3%	15%	5%	10%	1%	2%	1%	10%	5%
	Polyplacophora	*Acanthopleura japonica*	-	-	1%	-	-	-	-	-	-	-	_	-	-	-	-	-

Appendix IIIb Semi-quantitative survey results

Survey date				22/06/2017, 23/06/2017, 27/06/2017								
Survey Location				Lung Mei								
Transect Length (m)				30 m								
Tidal Level				0.5m above mCD (Relative low tidal level)			1.0m above mCD (Medium tidal level)			1.5m above mCD (Relative high tidal level)		
Transect				1	2	3	1	2	3	1	2	3
Intertidal Type		Rock		35%	40%	35%	0%	0%	10%	90%	95%	90%
		Sand		65%	60%	65%	100%	100%	90%	10%	5%	10%
	Phylum	Scientific Name	Conservation Status	Relative abundance								
Mobile Fauna	Mollusca	*Cerithidea djadjariensis*	-				+	+	+			
		Anomalocardia squamosa	-		+	+		+				
		Asaphis dichotoma	-								+	
		Barbatia virescens	-		++				+			
		Batillaria multiformis	-	++	+	++	+++	+++	+++	+++	+++	++
		Batillaria zonalis	-	++	++	++	+++	+++	+++	+	++	++
		Brachidontes variabilis	-		++	++				+	++	++
		Cellana grata	-					++	++		+	
		Cerithidea cingulata	-		+	++			+			
		Circe scripta	-			+						
		Circe scripta subsp. Scripta	-		+	+	+					
		Clithon oualaniensis	-						+			
		Cronia margariticola	-	+	+	+				+	+	++
		Cyclina sp.	-				+			+		+
		Gafrarium sp.	-					++	++	+	++	++
		Isognomon isognomum	-	+			+	+	+			
		Lunella coronata	-	+	+	+		++	++	++	++	+++
		Monodonta labio	-				+	+		+		+
		Patelloida pygmaea	-				+					
		Perna viridis	-									
		Placamen tiara	-				+	+				
		Scapharca cornea	-				+	+				
		Septifer virgatus	-		+	+				+		
	Chordata	*Bathygobius fuscus*	-		+	+	++	+				
		Cryptocentrus strigilliceps	-						+			
		Tridentiger bifasciatus	-				+	++	+			
	Echinodermata	*Archaster typicus*	-	+		+						
		Holothuria atra	-	+		+						
		Ophiocoma dentata	-		+	+						
		Salmacis sphaeroides	-			+						
	Annelida	*Capitella capitata*	-				+	+				
		Dendronereides sp.	-		+			+	+	+		
		Ochetostoma erythrogrammon	-				+	++	+			
		Ligia exotica	-		+			+		++	+	++
		Etisus laevimanus	-		+	+		+				
		Gaetice depressus	-		+	+	++	+	+		+	
		Lysmata wurdemanni	-	+	+							
		Metopograpsus frontalis	-	+	++	++	++	++	++	++	++	+
		Ocypode ceratophthalmus	-	+								
		Palaemon serrifer	-		+	++	++	++	+			
		Petrolisthes japonicus	-			+		+				

	Arthropoda	*Philyra carinata*	-				+					
		Portunus pelagicus	-	+		+						
		Portunus trituberculatus	-		+							
		Thalamita crenata	-	+	+	+		+	+			
		Thalamita danae Stimpson	-		+							
		Leptodius exaratus	-	+	+	+	+	+	+			
		Leptodius sp.	-						+			
		Alpheus brevicristatus	-		+	+	+		+			
		Alpheus lobidens	-	+		+						
		Paguroidea sp.	-		+	+	+	+	+		+	
	Sipuncula	*Sipunculus nudus*	-	+	+	+	+	+	+	+	+	+
essile Organism	**Chordata**	*Styela plicata*	-	+++	+	+		+				
	Cnidaria	*Haliplanella lineata*	-						+			
	Mollusca	*Liolophura japonica*	-		+	+		+			+	+
		Serpulorbis imbricatus	-	+	+	+	+	+	+	+	+	+
		Saccostrea cucullata	-	++	++	++	+	++	++	++	++	+
	Porifera	*Halichondria sp.*	-		+	+						
	Arthropoda	*Amphibalanus amphitrite*	-		+	+		+		+	+	

NOTE: "+" Occur "++" Common "+++" Abundant
* Species listed as "Least Concern" in IUCN Red List was not shown in the Conservation Status Column

Appendix IIIc. Inter-tidal fish survey results

	Net Drop Replicates									
	1	2	3	4	5	6	7	8	9	10
Species	Abundance									
Bathygobius fuscus		2			1				1	1
Cryptocentrus strigilliceps			1							
Monacanthus chinensis										1
Parupeneus biaculeatus						2				
Siganus fuscescens		1			2			1	1	
Tridentiger bifasciatus	1								1	
Tridentiger trigonocephalus							1			
All the recorded fishes are common and listed as Least Concern in IUCN Red List except *Parupeneus biaculeatus* and *Tridentiger trigonocephalus* which were not assessed.										

Appendix IIId Benthic survey results

Sampling date:	20-Jul-17							
Station:	H, high tidal level(0 mCD); M, medium tidal level(-1 mCD); L, low tidal level (-2 mCD)							
ID	Station	Mass(g)	Number	Phylum	Class	Order	Family	Genus/ Species
1	H-1	0.01	1	Annelida	Polychaeta	Capitellida	Capitellidae	*Capitella sp.*
2	H-1	0.01	1	Annelida	Polychaeta	Phyllodocida	Nephtyidae	*Nephthys sp.*
3	H-1	0.01	3	Annelida	Polychaeta	Spionida	Spionidae	*Paraprionospio sp.*
4	H-2	0.01	1	Annelida	Polychaeta	Phyllodocida	Goniadidae	*Glycindesp.*
5	H-2	0.02	1	Annelida	Polychaeta	Phyllodocida	Nereidae	*Ceratonereis sp.*
6	H-2	0.03	1	Annelida	Polychaeta	Phyllodocida	Nereidae	*Dendronereides sp.*
7	H-2	0.01	1	Annelida	Polychaeta	Eunicida	Lumbrineridae	*Scoletoma sp.*
8	H-2	0.01	2	Annelida	Polychaeta	Capitellida	Capitellidae	*Capitella sp.*
9	H-2	0.01	2	Annelida	Polychaeta	Phyllodocida	Nephtyidae	*Nephthys sp.*
10	H-2	0.01	4	Annelida	Polychaeta	Spionida	Spionidae	*Prionospio sp.*
11	H-2	0.98	6	Annelida	Polychaeta	Canalipalpata	Chaetopteridae	*Chaetopterus sp.*
12	H-2	0.01	1	Annelida	Polychaeta	Terebellida	Cirratulidae	*Cirriformia sp.*
13	H-2	0.04	1	Mollusca	Bivalvia	Mytiloida	Mitilidae	*c.f.Musculus cupreus*
14	H-2	0.42	1	Mollusca	Bivalvia	Veneroida	Veneridae	*Cyclina sp.*
15	H-2	0.05	1	Mollusca	Bivalvia	Veneroida	Veneridae	*Meretrix sp.*
16	H-2	0.03	1	Mollusca	Bivalvia	-	-	juvenil
17	H-3	0.01	2	Annelida	Polychaeta	Phyllodocida	Glyceridae	*Glycera sp.*
18	H-3	0.01	5	Annelida	Polychaeta	Capitellida	Capitellidae	*Capitella sp.*
19	H-3	0.01	1	Annelida	Polychaeta	-	Maldanidae	*Maldanella sp.*
20	H-3	0.01	2	Annelida	Polychaeta	Phyllodocida	Nephtyidae	*Nephthys sp.*
21	H-3	0.02	5	Annelida	Polychaeta	Spionida	Spionidae	*Paraprionospio sp.*
22	H-3	0.02	6	Annelida	Polychaeta	Spionida	Spionidae	*Prionospio sp.*
23	H-3	0.01	1	Annelida	Polychaeta	Terebellida	Cirratulidae	*Cirriformia sp.*
24	H-3	0.01	2	Arthropoda	Malacostraca	Amphipoda	Liljeborgiidae	*c.f.Listriella sp.*
25	H-3	0.346	1	Arthropoda	Malacostraca	Decapoda	Pilumnidae	*Typhlocarcinus sp.*
26	H-3	0.118	1	Arthropoda	Malacostraca	Decapoda	Pinnotheridae	*c.f. Pinnotheres sp.*
27	H-3	0.66	2	Echinodermata	Echinoidea	Camarodonta	Temnopleuridae	*Salmacis sphaeroides*
28	H-3	0.52	1	Mollusca	Bivalvia	Veneroida	Veneridae	*Aomalocardia squamosa*
29	H-3	0.36	1	Mollusca	Bivalvia	Veneroida	Veneridae	*Circe scripta*
30	H-3	0.12	2	Chordata	Amphioxi	Amphioxiformes	Amphioxidae	*Asymmetron cultellum*
31	M-1	0.01	1	Annelida	Polychaeta	Phyllodocida	Glyceridae	*Glycera sp.*
32	M-1	0.03	1	Annelida	Polychaeta	Phyllodocida	Nereidae	*Ceratonereis sp.*
33	M-1	0.01	4	Annelida	Polychaeta	Capitellida	Capitellidae	*Capitella sp.*
34	M-1	0.05	3	Annelida	Polychaeta	Phyllodocida	Nephtyidae	*Nephthys sp.*
35	M-1	0.02	3	Annelida	Polychaeta	Spionida	Spionidae	*Paraprionospio sp.*
36	M-1	0.01	1	Annelida	Polychaeta	Terebellida	Cirratulidae	*Cirriformia sp.*
37	M-1	1.62	5	Mollusca	Bivalvia	Mytiloida	Mitilidae	*c.f.Musculus cupreus*
38	M-1	0.83	1	Mollusca	Bivalvia	Veneroida	Veneridae	*Aomalocardia squamosa*
39	M-1	0.32	1	Mollusca	Bivalvia	Veneroida	Veneridae	*Circe scripta*
40	M-1	0.14	3	Mollusca	Bivalvia	-	-	juvenil
41	M-2	0.01	2	Annelida	Polychaeta	Phyllodocida	Glyceridae	*Glycera sp.*
42	M-2	0.01	1	Annelida	Polychaeta	Phyllodocida	Nereidae	*Nereis sp.*
43	M-2	0.01	1	Annelida	Polychaeta	Phyllodocida	Nereidae	*Ceratonereis sp.*
44	M-2	0.03	1	Annelida	Polychaeta	Eunicida	Eunicidae	*Eunice sp.*
45	M-2	0.01	5	Annelida	Polychaeta	Capitellida	Capitellidae	*Capitella sp.*
46	M-2	0.01	2	Annelida	Polychaeta	Phyllodocida	Nephtyidae	*Nephthys sp.*
47	M-2	0.01	2	Annelida	Polychaeta	Spionida	Spionidae	*Paraprionospio sp.*
48	M-2	0.01	3	Annelida	Polychaeta	Spionida	Spionidae	*Prionospio sp.*
49	M-2	0.01	2	Annelida	Polychaeta	Terebellida	Cirratulidae	*Cirriformia sp.*
50	M-2	0.12	1	Echinodermata	Ophiuroidea	Ophiurida	Amphiuridae	*Amphioplus sp.*
51	M-2	7.82	2	Echinodermata	Echinoidea	Camarodonta	Temnopleuridae	*Salmacis sphaeroides*
52	M-2	0.46	1	Mollusca	Bivalvia	Ostreoida	Ostreidae	*Saccostrea sp.*
53	M-2	0.03	1	Mollusca	Bivalvia	-	-	juvenil
54	M-2	1.87	2	Mollusca	Gastropoda	Caenogastropoda	Batillariidae	*Batillaria multiformis*
55	M-2	0.01	1	Nemertea	Enopla	Hoplonemertea	Prosorhochmidae	sp UNID
56	M-3	0.01	1	Annelida	Polychaeta	Phyllodocida	Nereidae	*Nereis sp.*
57	M-3	0.01	4	Annelida	Polychaeta	Capitellida	Capitellidae	*Capitella sp.*
58	M-3	0.03	3	Annelida	Polychaeta	Phyllodocida	Nephtyidae	*Nephthys sp.*

59	M-3	0.01	4	Annelida	Polychaeta	Spionida	Spionidae	*Paraprionospio sp.*
60	M-3	0.02	5	Annelida	Polychaeta	Spionida	Spionidae	*Prionospio sp.*
61	M-3	0.21	1	Echinodermata	Echinoidea	Camarodonta	Temnopleuridae	*Salmacis sphaeroides*
62	M-3	2.85	1	Mollusca	Bivalvia	Arcoida	Arcidae	*Scapharca sp.*
63	M-3	0.78	5	Mollusca	Bivalvia	Mytiloida	Mitilidae	*c.f.Musculus cupreus*
64	M-3	0.65	1	Mollusca	Bivalvia	Veneroida	Veneridae	*Cyclina sp.*
65	M-3	0.64	4	Mollusca	Bivalvia	Veneroida	Veneridae	*Tapes variegatus*
66	M-3	0.05	2	Mollusca	Bivalvia	-	-	juvenil
67	M-3	0.98	12	Mollusca	Polyplacophora	Neoloricata	Chitonidae	*Acanthopleura japonica*
68	M-3	8.44	1	Chordata	Ascidlacea	Stolidobranchia	Styelidae	*Styela plicata*
69	L-1	0.03	1	Annelida	Polychaeta	Eunicida	Eunicidae	*Eunice sp.*
70	L-1	0.18	2	Annelida	Polychaeta	Eunicida	Lumbrineridae	*Scoletoma sp.*
71	L-1	0.02	5	Annelida	Polychaeta	Capitellida	Capitellidae	*Capitella sp.*
72	L-1	0.23	4	Annelida	Polychaeta	Phyllodocida	Nephtyidae	*Nephthys sp.*
73	L-1	0.01	1	Annelida	Polychaeta	Spionida	Spionidae	*Paraprionospio sp.*
74	L-1	0.02	6	Annelida	Polychaeta	Spionida	Spionidae	*Prionospio sp.*
75	L-1	0.24	2	Arthropoda	Malacostraca	Decapoda	Penaeidae	juvenil
76	L-1	0.12	1	Echinodermata	Echinoidea	Camarodonta	Temnopleuridae	*Salmacis sphaeroides*
77	L-1	0.35	2	Mollusca	Bivalvia	Veneroida	Mactridae	*Meropesta sp.*
78	L-1	0.16	1	Mollusca	Bivalvia	-	-	juvenil
79	L-2	0.07	2	Annelida	Polychaeta	Eunicida	Eunicidae	*Eunice sp.*
80	L-2	0.02	3	Annelida	Polychaeta	Capitellida	Capitellidae	*Capitella sp.*
81	L-2	0.01	1	Annelida	Polychaeta	Capitellida	Capitellidae	*Notomastus sp.*
82	L-2	0.07	2	Annelida	Polychaeta	Phyllodocida	Nephtyidae	*Nephthys sp.*
83	L-2	0.02	3	Annelida	Polychaeta	Spionida	Spionidae	*Prionospio sp.*
84	L-2	1.42	2	Mollusca	Bivalvia	Mytiloida	Mitilidae	*c.f.Musculus cupreus*
85	L-2	2.54	1	Mollusca	Bivalvia	Veneroida	Veneridae	*Tapes variegatus*
86	L-2	0.3	2	Mollusca	Bivalvia	-	-	juvenil
87	L-2	6.48	1	Chordata	Ascidlacea	Stolidobranchia	Styelidae	*Styela plicata*
88	L-3	0.02	1	Annelida	Polychaeta	Phyllodocida	Glyceridae	*Glycera sp.*
89	L-3	0.02	6	Annelida	Polychaeta	Capitellida	Capitellidae	*Capitella sp.*
90	L-3	0.08	5	Annelida	Polychaeta	Phyllodocida	Nephtyidae	*Nephthys sp.*
91	L-3	0.02	4	Annelida	Polychaeta	Spionida	Spionidae	*Prionospio sp.*
92	L-3	0.04	2	Arthropoda	Malacostraca	Decapoda	Penaeidae	juvenil
93	L-3	1.55	1	Mollusca	Bivalvia	Veneroida	Veneridae	*Ruditapes sp.*
94	L-3	0.38	4	Mollusca	Bivalvia	-	-	juvenil
95	L-3	0.01	1	Nemertea	Enopla	Hoplonemertea	Prosorhochmidae	sp UNID

Remark:

UNID: Unknown species

Appendix IIIe Lung Mei Gill Netting survey results

Survey date		**20/07/2017**									
No. of surveyor		**3**									
Survey location		**1**	**2**	**3**	**4**	**5**	**1**	**2**	**3**	**4**	**5**
Net		**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Time		**09:40-10:40**	**09:42-10:42**	**09:45-10:45**	**09:47-10:47**	**09:50-10:50**	**09:52-10:52**	**09:55-10:55**	**09:57-10:57**	**09:59-10:59**	**10:01-11:01**
Scientific Name	**Phylum**	**Abundance /Mass (g)**									
Acanthopagrus schlegelii	Chordata	-	1(603)	-	-	-	-	-	-	-	-
Brachirus orientalis		-	1(67)	-	-	-	-	-	-	-	-
Gerres filamentosus		-	-	1(42)	-	-	-	-	-	-	-
Leiognathus brevirostris		-	-	1(25)	-	-		-	1(40)	-	1(46)
Monacanthus chinensis		-	-	1(11)	-	-	-	-	-	-	-
Rhabdosargus sarba		1(93)	-	-	-	-	-	-	-	-	-
Charybdis japonica	Crustacea						1(35)				
Portunus pelagicus						1(77)			1(242)		
Thalamita crenata		-	1(102)	-	-	-	-	-	-	-	-