
SHEUNG SHUI TO LOK MA CHAU SPUR LINE

Environmental Committee Meeting

Minutes of Meeting No. 32 held at 10:00am
on Wednesday, 19th January 2017,
at Room 10A, 10/F, MTR Headquarters Building, Telford Plaza, Kowloon Bay

Present:		
Dr. Xianji Wen	WWF Hong Kong	Member (NGO)
Mr. Michael Kilburn	The Hong Kong Bird Watching Society	Member (NGO)
Dr. Ng Cho Nam	The University of Hong Kong	Member (NGO)
Ms. Karen Barretto	Friends of the Earth (Hong Kong)	Member (NGO)
Mr. Liston Szeto	Maintenance Manager	Member (MTR)
Ms. Catherine Leung	Environmental Engineering Manager	Member (MTR)
Ms. Kenny Yiu	Manager-Environmental Engineering	Member (MTR)
Mr. Peter Choi	Environmental Engineer	Member (MTR)
Mr. Paul Leader	Ecological Consultant	Member (consultant)
Ms. Elizabeth Wu	Ecological Consultant	Member (consultant)
Absent with apology:		

Attachments	
Annex A	Presentation Material of EC Meeting No. 32

<u>Item/Description</u>	<u>Action By</u>
1. Welcomed Members to the EC Meeting No. 32.	Noted
Item 1 – <u>Confirmation of minutes of Meeting No. 31</u>	
2. There were no comments on the minutes of Meeting No. 31 and the minutes were confirmed.	Noted
Item 2 – <u>Ecological Enhancement Works and Monitoring – an Update on Management Works and Look Ahead</u>	
3. <i>A Member (consultant)</i> reported on the ecological monitoring and management works undertaken during 2016 at the LMC EEA (detailed in Annex A). It was noted that:	
3.1 <i>A Member (consultant)</i> reported that there were some ponds drained in the autumn/winter period to provide foraging ground for waterbirds, to facilitate the reprofiling in Ponds 19 – 22, and to control the spread of vegetation.	Noted
3.2 <i>A Member (consultant)</i> reported that small Tilapia was stocked in the winter to provide food for waterbirds. The small fish stocked this winter was generally small enough for foraging waterbirds.	Noted
3.3 <i>A Member (consultant)</i> reported that large Tilapia was stocked to replenish fish stocks after the winter drain-down and as breeding stock. These were fed to encourage breeding and avoid smaller fish being eaten. Grass Carp were also stocked into Pond 2 to control vegetation in the Pond.	Noted
3.4 <i>A Member (consultant)</i> reported that routine grass cutting on bunds, removal of unwanted vegetation species and transplanting lilies from Pond 15 to Pond 8 were conducted this year.	Noted
3.5 <i>A Member (consultant)</i> reported that 939 Red Fire Ant nests were treated with the approved pesticide. The ant nests will be treated continuously. Adults and eggs of Apple Snails were removed by hand. Fewer dogs were recorded on site in 2016 than in previous years possibly due to the installation of obstacles at the gaps underneath the fence at Pond 2.	Noted
3.6 <i>A Member (consultant)</i> reported that Ponds 19 – 22 were reprofiled in 2016. The reprofiling of Pond 19 was just finished; it would be re-filled soon and, with the natural colonization of vegetation and suitable water level adjustment, would provide suitable shallow water habitat for species, such as, Greater-painted Snipe. <i>A Member (NGO)</i> enquired about the profile of the Pond. <i>A Member (consultant)</i> explained that the profile of the Pond was similar to the ridge and furrow system which the ridges can provide exposed mud when the water level drops. <i>A Member (NGO)</i> enquired if the Pond was going to be re-filled by rainwater. <i>A Member (consultant)</i> confirmed that the Pond would be re-filled from the nearby pond within the LMC EEA.	Noted

<u>Item/Description</u>	<u>Action By</u>
<p>3.7 <u>A Member (consultant)</u> reported on the performance of the numerical bird target species and highlighted that the Eurasian Teal had a very high density ratio. <u>A Member (NGO)</u> enquired if this was related to the intensification of farming in commercial fish ponds. <u>A Member (consultant)</u> believed that this might be related to a combination of intensification, limited emergent vegetation cover and higher disturbance levels in commercial fishponds. He further pointed out Little Egret had a low density ratio in 2016, and that the density in the Control Areas was highest in the past five years. <u>A Member (NGO)</u> enquired if this was related to the intensification of draining pond. <u>A Member (consultant)</u> thought that it could be related to the drain down frequency in the Control Areas. <u>A Member (NGO)</u> thought that a higher drain down frequency, under the Management Agreement of “Fishpond Conservation Scheme in Ramsar Site 2015 – 17”, would be beneficial for biodiversity and overall population in the whole Deep Bay area. <u>A Member (consultant)</u> reminded that there were only around 10 ponds for drain down in the LMC EEA, and most of the numerical target species achieved target levels. <u>A Member (NGO)</u> enquired about the number of Eurasian Coots in the LMC EEA and <u>A Member (consultant)</u> clarified that the numbers in the table (on Slide 8) showed the density ratio not the abundance.</p>	Noted
<p>3.8 <u>A Member (consultant)</u> further reported on the performance of the non-numerical bird target species. The density of Little Grebe at LMC EEA did not reach twice of that at Control Areas. Cinnamon Bittern was not recorded in the Control Areas.</p>	Noted
<p>3.9 <u>A Member (consultant)</u> reported on the bird winter roost count results at LMC EEA, and concluded that LMC EEA continued to attract Great Cormorant, at what is now the third largest roosting site for the species in Hong Kong. Birds also roosted on the island of Pond 2, which was also expected to attract the establishment of egret. <u>A Member (NGO)</u> enquired if Great Cormorants roosted at Pond 2. <u>A Member (consultant)</u> confirmed they did but in <i>Melia</i> spp. (and not the bamboos on the island) and also in the <i>Casuarinas</i> along the Border Fence Road. <u>A Member (NGO)</u> enquired if the roosting Great Cormorant affected nest boxes by killing trees. <u>A Member (consultant)</u> explained that the droppings of the Great Cormorant did not kill the trees and the starlings bred after the cormorants had left. He further explained that there is a high capacity within LMC EEA to relocate nest boxes if necessary.</p>	Noted
<p>3.10 <u>A Member (consultant)</u> reported that 30 decoys were installed and 29 were taken down (one was missing) in June 2016 to avoid the typhoon period. However, there was no success in attracting the egret establishment. The 29 decoys were re-installed in late December 2016.</p>	Noted
<p>3.11 <u>A Member (consultant)</u> reported the checking of nest boxes was done by endoscope to minimize the disturbance. Some nest boxes were inaccessible as they were outside the boundary fence. 106 boxes were occupied by White-shouldered Starlings; this compares to about 50 pairs in all of Hong Kong in 2000 (Carey <i>et al.</i> 2001). Red-billed Starling and White-cheeked Starling were also suspected to have bred near LMC EEA.</p>	Noted

<u>Item/Description</u>	<u>Action By</u>
3.12 <u>A Member (consultant)</u> reported that juvenile of Little Grebes, Cinnamon Bittern and White-breasted Waterhen were recorded and that the Cinnamon Bittern was suspected to have bred on site or nearby; and the LMC EEA continued to provide suitable foraging habitat for this species.	Noted
3.13 <u>A Member (consultant)</u> reported that a total of 263 bird species have been recorded, a high number of species for a site smaller than 40ha. Three new bird species were recorded this year: Cotton Pygmy Goose, Common Emerald Dove and Red-breasted Flycatcher. Record of Common Emerald Dove is quite interesting as this is a resident woodland species.	Noted
3.14 <u>A Member (consultant)</u> reported that Eurasian Otter, one of the target species, was recorded once at Pond 14. The Eurasian Wild Pig was regularly recorded on site. <u>A Member (NGO)</u> enquired why the dog could not get into the site through the fence, but the Eurasian Wild Pig could. <u>A Member (consultant)</u> explained that there was gap underneath the boundary fence surrounding the main site, and the pigs probably got into the site through this gap. <u>A Member (NGO)</u> enquired if the existence of the Eurasian Wild Pig had any ecological problem. <u>A Member (consultant)</u> did not think that the Eurasian Wild Pig cause any problem, but actually help by turning over the soil. <u>A Member (NGO)</u> agreed on this.	Noted
3.15 <u>A Member (consultant)</u> reported that there were low number of Eurasian Otter had been recorded since 2006, whereas Leopard Cat had been increased in recent years. <u>A Member (NGO)</u> enquired about if the table (on Slide 17) showed the number of Eurasian Otter recorded. <u>A Member (consultant)</u> clarified that the number represented the maximum number recorded on one day; as the species has a wide range, so the low number recorded is expected.	Noted
3.16 <u>A Member (consultant)</u> reported that there were one adult Leopard Cat and two kittens recorded in 2016.	Noted
3.17 <u>A Member (consultant)</u> presented some photos recorded by the installed infra-red cameras. <u>A Member (NGO)</u> enquired if there was a pile of pipes in the pictures (on Slide 19). <u>A Member (consultant)</u> explained that it was the wildlife refuge made from damaged pipes of the pumping system. He added that this refuge had been used regularly by rats and Small Asian Mongoose.	Noted
3.18 <u>A Member (consultant)</u> presented the results of the reptile species recorded since 2006. Copperhead Racer and Taiwan Kukri Snake were recorded for the first time this year. Both target species, Burmese Python and Chinese Soft-shelled Turtle, were recorded in this year. <u>A Member (NGO)</u> enquired if any reptiles were recorded by the installed infra-red cameras. <u>A Member (consultant)</u> explained that, as being ectotherms, they would only be captured when the cameras were triggered by other animals. <u>A Member (NGO)</u> suggested to provide some concrete blocks or stones in the water for Chinese Soft-shelled Turtle tobasking. <u>A Member (consultant)</u> was worried that they might be occupied by the Red-eared Turtle instead.	Noted

<u>Item/Description</u>	<u>Action By</u>
<p>3.19 <u>A Member (consultant)</u> reported that there were increased records of Reeves' Turtle in 2016, following the first records in 2015. This species was recorded in Pond 22 in 2015; this pond was drained for reprofiling in 2016 – the pond was drained slowly to allow time for reptiles and amphibians to leave the pond. <u>A Member (NGO)</u> suggested if Red-eared Slider can be removed by traps. <u>A Member (consultant)</u> agreed that this would be possible and would like to include this in the coming five-yearly review. AEC would review the data and investigate the possibility of this. <u>A Member (NGO)</u> questioned on how to distinguishing between the Reeves' Turtle and an old Red-eared Slider in the photos shown on Slide 23. <u>A Member (consultant)</u> explained that the neck stripes and the shape of the carapace and head showed that it is Reeves' Turtle.</p>	AEC
<p>3.20 <u>A Member (consultant)</u> presented the results of the amphibian species recorded since 2006. Chinese Bullfrog, a target species, was not recorded during the year. This may be because it is a low density species, or the LMC EEA did not provide the optimum habitat for this species. He suggested that the management approach for this species should be reviewed in the coming five-yearly review.</p>	AEC
<p>3.21 <u>A Member (consultant)</u> presented the results of the amphibian species recorded since 2006. Two new species were recorded in 2016 – Elusive Adjutant and Dingy Dusk-darter. <u>A Member (NGO)</u> enquired the conservation status of these species.</p> <p>[post-meeting note: Elusive Adjutant and Dingy Dusk-darter are not listed in Fellowes <i>et al.</i> (2002) and are considered as Uncommon and Common respectively in Tam <i>et al.</i> (2011).</p>	Noted
<p>3.22 <u>A Member (consultant)</u> presented the results of the mammal trapping conducted in the beginning of the year. Two species, Chestnut Spiny Rat and Ryukyu Mouse, were recorded.</p>	Noted
<p>3.23 <u>A Member (consultant)</u> reported that the reprofiling of Ponds 20 – 22 was finished this year and was in response to the suggestion made in the last five-yearly review. <u>A Member (consultant)</u> added that these ponds were reprofiled for a number of target species, including Pheasant-tailed Jacana, Chinese Pond Heron, Cinnamon Bittern and Bluethroat. Pond 8 served as the temporary lily pond during this period. It was planned to transplant the lilies from Pond 8 to Ponds 20 – 22; however, <u>A Member (consultant)</u> reported that as there were already lilies regrowing in Ponds 20 – 22, and that transplantation from Pond 8 might not be required.</p>	Noted
<p>3.24 <u>A Member (consultant)</u> further explained the need for reprofiling Ponds 20 – 22: Pond 21 was covered with previously lotus and few birds utilised this area. <u>A Member (NGO)</u> enquired that the shallow lotus pond in the Long Valley attracted waterbirds such as Wood Sandpiper. <u>A Member (consultant)</u> explained that Pond 21 was too deep compared to those in Long Valley. The major vegetation management to be carried out in these reprofiled ponds would be prevention of the re-establishment of lotus and reed, and to encourage the establishment of lily. <u>A Member (NGO)</u> enquired if the trees shown on the photos on Slide 29 were <i>Sonneratia</i> spp.</p>	Noted

<u>Item/Description</u>	<u>Action By</u>
<p><i>A Member (consultant)</i> replied that they were not <i>Sonneratia</i> spp., and this species was not found in the watercourses within the LMC EEA neither, which could be related to the flow in the watercourses and could not bring in their seeds.</p> <p>3.25 <i>A Member (consultant)</i> suggested some topics to be covered in the coming five-yearly review, including reviewing the grass cutting protocol, treatment of pests and reviewing survey methodologies. He also added that the list of target species would not be reviewed, as it would not be beneficial to change the target species and management approaches in every five years. However, the successfulness of achieving the target would be reviewed. <i>A Member (NGO)</i> suggested keeping buffalos or goats to control grasses <i>A Member (MTR)</i> replied that they had considered this option before, but there were safety concerns. <i>A Member (NGO)</i> suggested to learn from the experience of WWFHK for keeping the buffalos. <i>A Member (consultant)</i> replied that this could be investigated in the coming five-yearly review.</p>	AEC
<p>Item 3 – <u>Any Other Business</u></p> <p>4. <i>A Member (NGO)</i> suggested to collaborate with the fishpond operators in the Control Areas, government departments or the academics as the management activities in the Control Areas would affect the successfulness of achieving the targets. <i>A Member (NGO)</i> added that the coming five-yearly review should also take into account of the possible impact from the Management Agreement on the fishpond drain down programme in the Deep Bay (namely Fishpond Conservation Scheme in Ramsar Site 2015 – 2017) and planned development around the LMC EEA. <i>A Member (NGO)</i> noted that whilst management activities within the Control Areas were not under the control of the MTR Corporation, it is the responsibility of the Corporation to achieve the targets. <i>A Member (consultant)</i> agreed that the increasing number of Chinese Pond Heron and Little Egret in the Control Areas, may be due to the Management Agreement.</p> <p>5. <i>A Member (NGO)</i> enquired if the <i>in situ</i> water quality checking had been carrying out in the LMC EEA and if this monitoring was suggested to be terminated in the last five-yearly review. <i>A Member (consultant)</i> confirmed that this monitoring work was still undergoing and it was not suggested to be terminated. <i>A Member (NGO)</i> suggested to review this in the coming five-yearly review. <i>A Member (consultant)</i> noted that pH was the most used parameter to inform water quality management.</p> <p>6. <i>A Member (NGO)</i> enquired if there was any Avian Flu outbreak in 2016, and if AFCD collected all of the sick/dead birds found. <i>A Member (consultant)</i> replied that some of the sick/dead birds found were collected as not all of the birds were accessible, and none of the collected birds tested positive. The sick/dead birds found were ardeids or Great Cormorant, with less than 10 birds found.</p> <p>[Post-meeting note: a total of seven sick/dead birds were found in 2016, and three of which were collected by AFCD.]</p> <p>7. <i>A Member (NGO)</i> expressed that the management of the LMC EEA was a good example of the Environmental Monitoring and Auditing, and suggested some promotion on the management practice of the LMC EEA to show the partnership</p>	<p>AEC</p> <p>AEC</p> <p>Noted</p> <p>MTR</p>

<u>Item/Description</u>	<u>Action By</u>
<p>of the green groups and development projects. <i>A Member (NGO)</i> added that an introduction to the wetland management in the LMC EEA could be added in a coming photo exhibition to be conducted by the Hong Kong Bird Watching Society. <i>A Member (NGO)</i> enquired if any education would be conducted. <i>A Member (NGO)</i> added that the Corporation could consider installing webcams or CCTVs within the LMC EEA and play these videos on trains. <i>A Member (MTR)</i> stated that the Corporation is going to enhance the publicity of LMC wetland and she would inform EC members of the publicity events in due course.</p> <p>8. <i>A Member (MTR)</i> concluded that 2016 was a good year for the management of LMC EEA with some new species recorded to the wetland. <i>A Member (NGO)</i> suggested that this was the result of the good collaboration of the MTR Corporation, the wetland management consultant and the wetland maintenance contractor.</p>	Noted
<p>Item 4 – <u>Date of Next Meeting</u></p> <p>9. The date of the next meeting is to be advised.</p>	MTR

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Report on Ecological Monitoring and Management, and Works Programme
January – December 2016

19th January 2017



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Overview of Management Works in 2016: Water Level Adjustment

Water Level Adjustment

- To provide foraging areas for waterbirds in the autumn/winter: Ponds 7, 9 and 19 in February, Pond 10 in March, Pond 19 in September, Pond 4 in October, Pond 3 in November, Pond 5 in December;
- To facilitate reprofiling: Ponds 20, 21 and 22 during January to November, Pond 19 in November to December;
- To control vegetation: Pond 17 in July and September, Pond 14 in September – November.



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Overview of Management Works in 2016: Fish Stocking

Winter Fish Stocking

- Fish stocked during January to March and October to December.



Overview of Management Works in 2016: Fish Stocking

Spring/ Summer Fish Stocking

- To replenish the fish stock after reprofiling/ winter drain-down and to maintain water quality;
- Fish stocked was of breeding size (> 15 cm) to produce fingerlings to be consumed by the waterbirds in the winter;
- Fish was fed to encourage breeding and avoid eating the young.

Grass Carp Stocking

- 50 individuals were stocked to control emergent vegetation in Pond 2.



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Overview of Management Works in 2016: Vegetation Management

Vegetation Management

- Routine pond bund grass cutting and weeding of climbers;
- Routine removal of unwanted species (e.g. *Typha angustifolia*);
- Transplanting more lilies from Pond 15 to Pond 8.



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Overview of Management Works in 2016: Pest Management and Dog Trapping

Pest Management

- 939 Red Fire Ant nests were treated with the approved pesticide;
- 61kg of Apple Snails were removed (by hand-picking) from Compartment C;
- 130kg of Apple Snails were removed (by hand-picking) from Pond 6;
- Dog trapping – 0 dog was trapped and collected.

Number of Dates when Dogs were Captured by Auto-trigger Cameras

	2014	2015	2016
Number of Dates	233	226	186



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Overview of Management Works in 2016: Pond Reprofilling

Pond Reprofilling

- Pond 19 (starts in late November 2016);
- Ponds 20, 21 and 22 (early July – early December).



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Numerical Bird Target Performance in the Past 5 Years

Species/Density (mean/ha)	2012			2013			2014			2015			2016		
	LMC	CA	Ratio	LMC	CA	Ratio	LMC	CA	Ratio	LMC	CA	Ratio	LMC	CA	Ratio
Great Cormorant	5.5	0.6	9.0	2.8	0.5	5.2	6.8	1.5	13.3	5.8	0.4	13.6	6.2	0.5	12.7
Grey Heron	1.6	0.2	8.0	1.0	0.2	5.8	2.1	0.2	11.7	1.8	0.2	12.2	2.1	0.1	19.6
Great Egret	1.1	0.5	2.5	0.6	0.5	1.2	1.8	0.3	4.9	1.5	0.4	4.0	1.5	0.6	2.3
Little Egret	0.6	0.6	1.1	0.3	0.5	0.5	0.9	0.4	1.9	0.9	0.5	2.0	0.4	1.0	0.5
Chinese Pond Heron	1.0	0.4	2.4	0.7	0.4	2.1	0.9	0.3	3.0	0.5	0.5	1.9	0.4	0.5	1.3
Black-faced Spoonbill	1.2	<0.1	84.3	0.4	<0.1	13.5	0.4	0.1	5.8	0.3	<0.1	14.2	0.5	<0.1	17.2
Eurasian Teal	1.8	<0.1	80.5	1.0	<0.1	22.6	1.2	0.1	10.6	1.6	<0.1	170.6	2.2	<0.1	374.5
Greater Spotted Eagle	<0.1	0.0	LMC	<0.1	0.0	40.4	<0.1	<0.1	50.2	<0.1	0.0	LMC	<0.1	0.0	LMC
Eastern Imperial Eagle	<0.1	<0.1	30.4	<0.1	<0.1	5.3	<0.1	<0.1	24.5	<0.1	0.0	LMC	<0.1	0.0	LMC
Japanese Quail	<0.1	<0.1	0.0	<0.1	0.0	LMC	<0.1	0.0	LMC	0.0	0.0	nr	0.0	0.0	nr
Eurasian Coot	<0.1	<0.1	60.0	<0.1	0.0	LMC	<0.1	<0.1	51.1	<0.1	0.0	LMC	0.1	<0.1	255.9
Pheasant-tailed Jacana	<0.1	<0.1	65.2	<0.1	0.0	LMC	<0.1	0.0	LMC	<0.1	<0.1	11.3	<0.1	<0.1	15.7
Greater Painted-snipe	<0.1	0.0	LMC	<0.2	0.0	LMC	<0.1	0.0	LMC	<0.1	<0.1	2.9	<0.1	0.0	LMC
Black-winged Stilt	0.4	<0.1	10.0	0.5	0.1	5.2	0.5	0.1	5.1	0.3	0.1	5.6	0.1	0.1	0.1
Pintail/Swinhoe's Snipe ¹	<0.1	<0.1	4.3	0.1	<0.1	36.3	<0.1	<0.1	11.0	<0.1	<0.1	55.1	<0.1	<0.1	47.7
Common Snipe	0.1	<0.1	6.6	<0.1	0.1	3.8	0.1	0.1	17.9	0.1	<0.1	9.0	0.1	<0.1	11.4
Bluetit	<0.1	0.0	LMC	<0.1	0.0	LMC	<0.1	0.0	LMC	<0.1	0.1	<0.1	22.1	0.0	0.0
Pallid's Grasshopper Warbler	<0.1	<0.1	16.3	<0.1	<0.1	10.2	<0.1	0.0	4.9	<0.1	<0.1	13.1	<0.1	<0.1	2.3
Song Sparrow	0.1	<0.1	1.3	0.1	0.1	1.1	0.1	0.1	0.3	0.1	1.0	<0.1	<0.1	0.1	0.8
Japanese Yellow Bunting	0.0	0.0	nr	0.0	<0.1	CA	0.0	0.0	nr	0.0	<0.1	CA	0.0	0.0	nr
Red-billed Starling	1.6	1.0	1.7	0.5	0.1	1.0	0.2	0.2	0.8	1.2	0.6	2.0	3.0	0.4	7.2

nr = Not recorded within LMC/EEA or Control Areas during the period
 Blue = Target met i.e. density in EEA at least twice that in Control Areas
 Yellow = Target not met, although density higher than in Control Areas
 Red = Target not met and density lower than in Control Areas
 1. Species names follow the latest List of Hong Kong Bird from The Hong Kong Bird Watching Society
 2. Includes one species pair, Pintail/Swinhoe's Snipe, not distinguishable in the field



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Non-numerical Bird Target Performance from 2014 to 2015

Species/Density (mean/ha)	2014			2015			2016		
	LMC	CA	Ratio	LMC	CA	Ratio	LMC	CA	Ratio
Eurasian Wigeon	0.4	<0.1	13.7	1.2	<0.1	100.9	1.5	0.0	LMC
Little Grebe	0.9	0.5	1.8	1.1	0.9	1.3	1.3	0.7	1.7
Cinnamon Bittern	<0.1	0.0	LMC	<0.1	<0.1	20.8	<0.1	0.0	LMC
Black-crowned Night Heron	0.2	<0.1	9.4	0.1	<0.1	2.6	0.1	<0.1	10.1
Intermediate Egret	<0.1	<0.1	12.5	<0.1	<0.1	1.4	0.1	<0.1	10.6
White-cheeked Starling	0.1	0.1	1.1	0.4	<0.1	20.3	0.6	<0.1	17.9
White-shouldered Starling	0.7	0.1	11.5	1.2	0.1	15.8	1.2	0.1	15.5
Yellow-breasted Bunting	0.0	0.0	nr	0.0	<0.1	CA	<0.1	<0.1	9.9

The above species became target species from October 2014.
 Species names follow the latest List of Hong Kong Bird from The Hong Kong Bird Watching Society.
 nr = Not recorded within LMC/EEA or Control Areas during the period.
 Blue = Density in LMC/EEA at least twice that in Control Areas
 Yellow = Density higher in LMC/EEA than in Control Areas
 Red = Density in LMC/EEA lower than in Control Areas



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Egret Decoys Installation

- A total of 30 decoys were installed on the island of Pond 2 and a tree at Pond 4 since late February 2016;
- 29 decoys were taken down (and 1 is missing) in June 2016 to avoid the peak period of typhoon;
- These 29 decoys were installed in late December (19 on Pond 2 island and 10 on a tree at Pond 4).



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Report on Ecological Monitoring and Management, and
Works Programme (Jan – Dec 2016)

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Nest Boxes Occupation in April to July 2016 and Bird Breeding

- 108 out of 119 bird nest boxes are accessible for survey (the others are too high, outside the boundary fence etc.);
- All of these surveyed nest boxes were occupied by Starlings (mainly by White shouldered Starling, and suspected to be occupied by Red-billed Starling – a single recently fledged juvenile was observed in early July); 106 with eggs and/or chicks recorded and 2 with nesting materials only.



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Nest Boxes Occupation in April to July 2016 and Bird Breeding

- Chicks of Little Grebe were recorded in 10 ponds (Ponds 2, 3, 4, 5, 6, 7, 8, 10, 11 and 12), with a maximum of 27 chicks recorded on one date;
- 2 juvenile Cinnamon Bittern were recorded in Ponds 4 and 9 on 28th July;
- Chicks of White-breasted Waterhen were recorded in 2 ponds (Ponds 5 and 22), with a maximum of 5 chicks recorded on one date;
- A pair of Common Moorhen was recorded.

New/ Unusual Bird Species Recorded in 2016

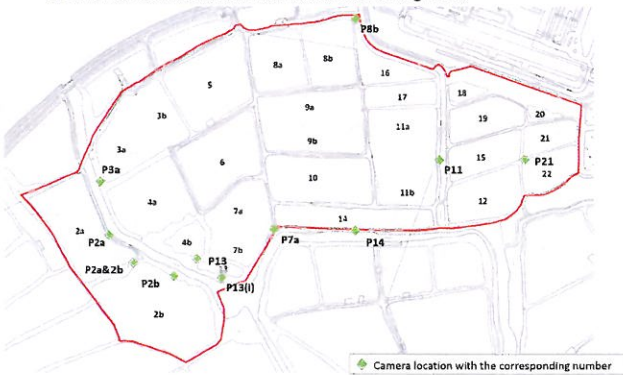
- A total of 263 bird species have now been recorded;
- New to LMC EEA this year:
 - Cotton Pygmy Goose
 - Common Emerald Dove
 - Red-breasted Flycatcher



Cotton Pygmy Goose (24th Oct 2016)

Mammal Findings in LMC EEA in 2016

- 10 infra-red cameras in use most of the time during 2016.



Mammal Findings in LMC EEA in 2016

- Eurasian Otter was captured once in 2016;
- Cameras captured mostly 'brown rat', followed by, Small Asian Mongoose, Leopard Cat, Eurasian Wild Pig and Small Indian Civet.

Species	Number of Photographs per 100 Camera Working Days													
	AFCD*	Total	P2a	P2a & 2b	P2b	P3a	P7a	P8b	P11	P13	P13 (I)	P14	P21	
'brown rat'	?	156.5	0.6	0.8	3.3	0.6	1.0	0.3	0.0	147.7	0.6	1.7	0.0	
Eurasian Otter	0.6	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	
Small Indian Civet	216.0	9.2	3.9	0.0	1.9	0.8	0.0	1.1	0.0	0.6	0.3	0.6	0.0	
Small Asian Mongoose	53.2	43.9	3.1	6.4	5.8	0.8	0.0	0.0	0.0	26.1	0.9	0.8	0.0	
Leopard Cat	54.2	25.2	12.8	1.4	3.6	3.1	1.0	1.1	0.0	0.3	0.0	1.4	0.6	
Eurasian Wild Pig	171.4	9.7	0.0	0.0	0.3	3.3	1.9	3.1	0.7	0.0	0.0	0.6	0.6	

* Occurrence index extracted from AFCD newsletter "Hong Kong Biodiversity" Issue no. 15 (December 2007) and adjusted by the proportion of area of LMC EEA in relation to the 1 km² grid used in the newsletter.
Key:
Red – new camera locations (i.e. not installed at the beginning of the year but still installed at the end of the year)
Blue – old camera locations (i.e. removed during the course of the year)

Mammal Targets Recorded since 2006

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Eurasian Otter <i>Lutra lutra</i>											
Maximum Count	1	1	2	1	3*	0	1	1	2	0	1
No. of Records ¹	2	2	2	1	2	0	1	13 [#]	5 [^]	0	1
Leopard Cat <i>Prionailurus bengalensis</i>											
No. of Records ¹ /OI ²	2 ¹	14 ¹	5 ¹	9 ¹	20 ¹	12 ¹	1 ¹	11 ¹	87 ¹	114 ^{1,@}	65 ¹ / 25.2 ²

Note:
1. Number of dates recorded by all installed cameras plus direct observations.
2. Occurrence index.
Key:
* Up to 3 individuals recorded between Ponds 1 and 2 by AFCD
Including one dead individual found at LMC EEA
^ Including direct observation of one individual at Pond 12
@ Footprints were recorded.

Mammal Findings in LMC EEA in 2016

Eurasian Otter (P14, 16th March)



Leopard Cat (P2a, 28th June)



Mammal Findings in LMC EEA in 2016



Reptile Findings since 2006

- Copperhead Racer and Taiwan Kukri Snake were newly recorded in 2016.

Species/ Maximum Total Number of Individuals Recorded in All Ponds in LMC EEA	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Red-eared Slider <i>Trachemys scripta</i>	-	-	-	-	1	2	-	2	4	7	2*
Turtle sp.	-	-	-	-	-	-	-	-	-	1*	-
Reeves' Turtle <i>Mauremys reevesii</i>	-	-	-	-	-	-	-	-	-	1	2
Chinese Soft-shelled Turtle <i>Pelodiscus sinensis</i>	1	1	1	1	1	1	1	1	1	1	1
Malayan Snail-eating Turtle <i>Malayemys macrocephala</i>	-	-	-	1	-	-	-	-	-	-	-
Four-clawed Gecko <i>Gehyra mutilata</i>	-	-	-	-	1	-	-	-	-	-	-
Chinese Gecko <i>Gekko chinensis</i>	-	-	-	1	-	-	-	-	-	-	-
Bourne's Gecko <i>Hemidactylus bournei</i>	4	3	1	2	2	1	5	1	2	3	-
Chinese Skink <i>Eumeces chinensis</i>	-	-	-	-	1	-	-	-	-	-	-
Reeves' Smooth Skink <i>Scincella reevesii</i>	-	-	-	-	1	-	-	-	-	1	-
Common Blind Snake <i>Blomphophanes braminus</i>	-	-	-	-	1	-	-	-	-	-	-
Burmese Python <i>Python bivittatus</i>	1	1	1	-	-	-	-	1	1	1	1
Chinese Water Snake <i>Erythraeus chinensis</i>	1	1	-	-	1	-	-	1	-	-	-
Plumbeous Water Snake <i>Erythraeus plumbeus</i>	-	-	-	1	1	-	-	-	-	-	-
Copperhead Racer <i>Colobodactylus radiatus</i>	-	-	-	-	-	-	-	-	-	-	1
Taiwan Kukri Snake <i>Oligodon formosensis</i>	-	-	-	-	-	-	-	-	-	-	1
Indo-Chinese Rat Snake <i>Ptyas korros</i>	1	1	-	-	-	-	-	-	-	-	-
Common Rat Snake <i>Ptyas mucrosaur</i>	1	1	1	-	1	1	1	1	1	1	1
Bull-striped Keelback <i>Amphispemna holotum</i>	-	-	-	-	-	-	-	1	-	-	-
Checkered Keelback <i>Xenochophis piscator</i>	1	2	1	2	6	3	1	2	-	1	2
Many-banded Krait <i>Bungarus multicinctus</i>	-	1	-	-	-	-	1	1	-	-	1
Chinese Cobra <i>Naja atra</i>	-	-	-	-	1	-	1	1	-	-	1
Number of species recorded	7	8	6	7	10	6	6	11	4	9	11
Total number of species recorded	22										

Key:
* unknown, probably ex-captive species.
sighting made by the contractor responsible for reprofiling works.

* one individual was recorded laying eggs
* only footprints were recorded

Reptile Targets Recorded since 2006

- A sighting of Burmese Python was made on 11th November 2016 at Pond 11.
- Footprints of Chinese Soft-shelled Turtle were recorded in Pond 9 in February 2016.



Species	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Burmese Python <i>Python bivittatus</i>	2 (1)	0 (0)	1 (1)	0 (0)	0 (0)	0 (0)	0 (0)	1 (1)	3 (1)	1* (1)	1 (1)
Chinese Soft-shelled Turtle <i>Pelodiscus sinensis</i>	2 (1)	1 (1)	1* (1)	2* (1)	1 (1)	1 (1)	1 (1)	2 (1)	2 (1)	2* (1)	*

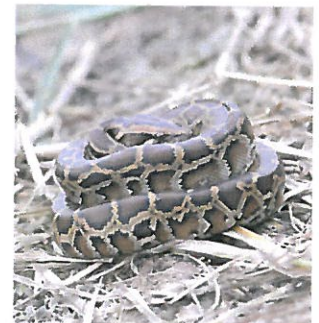
Total count is indicated in the table, whereas the numbers in brackets are the maximum count per survey.
Key:
% Sighting reported by the reprofiling contractor
* Include one track record

Selected Photographic Record of Reptile Species Recorded in 2016

Copperhead Racer (Pond 7, 11th Nov)



Burmese Python (Pond 11, 11th Nov)



Selected Photographic Record of Reptile Species Recorded in 2016

Reeves' Turtle (Pond 12, 14th Feb)



All recorded in Pond 12 in 2016

- 2 on 14th February
- 1 on 2nd March
- 1 on 18th September
- 1 on 1st November

All recorded in Pond 22 in 2015

- 1 on 29th October
- 1 on 20th November

Amphibian Findings since 2006

- No record of Chinese Bullfrog was made in 2016.

Species/ Maximum Total Number of Individuals Recorded in All Ponds in LMC EEA	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Asian Common Toad <i>Bufo melanostictus</i>	0	3	3	1	2	4	3	1	2	?	1
Asatic Painted Frog <i>Kaloula pulchra</i>	0	0	0	0	0	2	2	1	0	0	0
Butler's Pigmy Frog <i>Microhyla butleri</i>	0	0	0	1	2	0	0	2	0	0	0
Ornate Pigmy Frog <i>Microhyla ornata</i>	0	9	13	46	128	25	5	7	4	0	0
Marbled Pigmy Frog <i>Microhyla pulchra</i>	0	0	0	0	0	0	0	0	1	0	0
Paddy Frog <i>Fejervarya limnocera</i>	35	25	23	14	12	7	20	6	1	10	35
Chinese Bullfrog <i>Hoplobatrachus chinensis</i>	0	1	1	2 (2)	4 (9)	2 (5)	2 (8)	1 (2)	1 (2)	0 (0)	0 (0)
Günther's Frog <i>Rana guentheri</i>	130	157	145	74	137	86	132	108	293	115	82
Two-striped Grass Frog <i>Rana taipehensis</i>	0	0	0	0	2	1	1	1	0	2	0
Brown Tree Frog <i>Polydactylus megalcephalus</i>	12	16	32	33	27	33	12	14	7	3	6
No. of species recorded	3	6	6	7	8	8	8	9	7	5	4

Maximum count (per survey) is indicated in the table; for Chinese Bullfrog, from 2009, the numbers in brackets are the total number recorded in the year.

Dragonfly Findings since 2006

- Elusive Adjutant and Dingy Dusk-darter were newly recorded in 2016.

Dragonfly recorded as adults or exuviae at LMC EEA	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016*
Orange-tailed Midget											
Wandering Midget											
Orange-tailed Sprite											
Common Bluet											
Blue Sprite											
Pale-spotted Emperor											
Lesser Emperor											
Common Flangetail											
Golden Flangetail											
Regal Pond Cruiser											
Elusive Adjutant											
Asian Pintail											
Blue Dasher											
Asian Amberwing											
Common Darter											
Blue Percher											
Amber-winged Glider											
Coastal Glider											
Russet Percher											
Pied Percher											
Common Red Skimmer											
Green Skimmer											
Wandering Glider											

Key: * A Midget species is also recorded

Dragonfly Findings since 2006

- Elusive Adjutant and Dingy Dusk-darter were newly recorded in 2016.

Dragonfly recorded as adults or exuviae at LMC EEA	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016*										
Pied Skimmer																					
Ruby Darter																					
Sapphire Flutterer																					
Variegated Flutterer																					
Evening Skimmer																					
Saddlebag Glider																					
Crimson Drovers																					
Dancing Drovers																					
Scarlet Basker																					
Dingy Dusk-darter																					
Number of Species Recorded											22	23	23	22	24	21	25	22	21	17	21
Total Number of Species Recorded											33										

Key: * A Midget species is also recorded



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Small Mammal Trapping in 2016 (monitoring suggested in the last 5-yearly review)

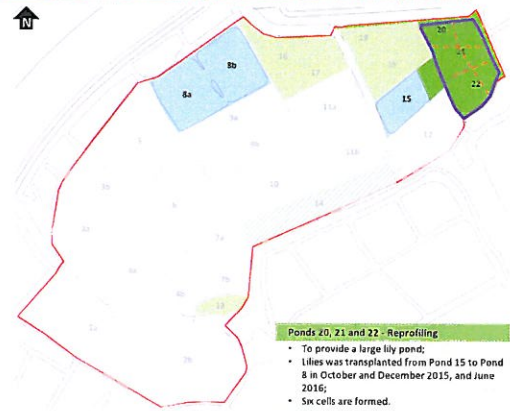
- 6 traps were set in January and February;
- 2 Chestnut Spiny Rats (*Niviventer fulvescens*) and 4 Ryukyu Mouse (*Mus caroli*) were trapped in January and February respectively.



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Reprofiling of Ponds 20 – 22 (suggested in the last 5-yearly review)



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Reprofiling of Ponds 20 – 22 (suggested in the last 5-yearly review)



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Five-yearly Review for 2012 – 2016

- Review the effort put on the grass cutting – grass cutting is sometimes behind schedule or the grass is growing too fast that it grows to so tall before the next cutting
- Removal of unwanted species – e.g. Red-eared Slider, Apple Snail
- Survey methodology review on
 - e.g. small mammal trapping - not expected to be carried out for a long term
 - e.g. tree monitoring - comprehensive surveys may not be required every year, however, identifying hazard trees or those required trimming is still required every year



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The End



10th Mid-Group Spine
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