

SHEUNG SHUI TO LOK MA CHAU SPUR LINE**Environmental Committee**

Minutes of Meeting No. 16 held at 10:00am
On Monday, 15 December 2008,
at Fo Tan Railway House, Room 707

Present:		
Ms. Karen Barretto	Friends of the Earth (Hong Kong)	Member (NGO)
Mr. Michael Kilburn	The Hong Kong Bird Watching Society	Member (NGO)
Dr. Janet Lee	WWF Hong Kong	Member (NGO)
Dr. Michael Leven	Ecological Consultant	Member (consultant)
Mr. Paul Leader	Ecological Consultant	Member (consultant)
Mr. Richard Kwan	Manager - Environmental	Member (MTR) (Chairman)
In Attendance:		
Mr. Clarence Tze	Environmental Engineer I	Member (MTR)
Mr. Peter Choi	Environmental Engineer II	Member (MTR)
Absent with apology:		
Dr. Ng Cho-nam	The University of Hong Kong	Member (NGO)
Dr. Chan Kam-foon	Environmental Engineering Manager	Member (MTR)

	<u>Action By</u>
<p>1. The <i>Chairman</i> welcomed Members to the No.16 EC meeting.</p> <p>Item 1 - <u>Confirmation of minutes of Meeting No. 15</u></p> <p>2. The minutes of Meeting No. 15 were confirmed without further comments.</p> <p>3. The Chairman informed Members that the Government escalated the influenza pandemic response level from “Alert” to “Serious” last week. In response to the increase in the avian flu risk, the Corporation also stepped up its pandemic response level to “Serious” on the same day as per the established protocols and procedures. No abnormalities with regards to the migratory birds are encountered at the LMC ecological enhancement area so far.</p>	
<p>Item 2 - <u>Ecological Enhancement Works and Monitoring – an Update on Management Works and Look Ahead</u></p> <p>4. <i>A Member (consultant)</i> reported the ecological monitoring and management work undertaken in 2008 at LMC wetland (detailed in Annex A). It has continuously been performing very well during the reporting period together with the well functioning of the infrastructure works. Operational stage monitoring of 26 target bird species continued since year 2006.</p> <p>5. <i>A Member (consultant)</i> informed the Members on details of the avian botulism outbreak in April 2008. A total of 85 nos. sick/dead ducks were observed at Pond 2 and 3 after Easter Holiday on 25 April 2008 and Pond 2 is often used for roosting by large number of ducks at night after feeding in Shenzhen River. All dead ducks were collected by AFCD and the sick ducks were sent to Kadoorie Farm. All sick and dead ducks were removed off site immediately once found.</p>	

	<u>Action By</u>
<p>6. <u>A Member (consultant)</u> further added that AEC and the maintenance contractor (Yee Sun Garden) are closely monitoring the situation, especially during long holidays. YSG's site staff will contact AEC immediately of any dead bird incidents found on site.</p> <p>7. Following the discussion from the last meeting regarding the use of herbicide to control phragmites on site, similar to Mai Po, <u>A Member (NGO)</u> raised for deliberation on the ecological environment of chemical spraying. <u>A Member (NGO)</u> replied that WWF had also carried out a study with the Chinese University with the use of herbicide and the finding indicated that the quantity of fish did not decline. <u>A Member (consultant)</u> provided further information on ecological impacts as attached in Annex B. It was agreed that trials of herbicide treatment would be conducted at LMC wetland by YSG and be closely monitored by AEC. Results of the application will be reported in the next meeting.</p> <p>8. <u>A Member (consultant)</u> reported that the reprofiling works for pond bund between Ponds 7 and 13 was completed. The reprofiled area has been very beneficial in attracting target birds of <i>Snipe</i> and <i>Chinese Pond Heron</i> while the shadow water area could also attract the large water birds.</p>	
<p>Item 3 - <u>Any Other Business</u></p> <p>9. <u>Chairman</u> would like to thank all the members for their contributions in the LMC Project which has been smoothly running into the operational stage for more than a year. As such it is also the time to hand over his duties to the Operations Team from January 2009 whilst Clarence Tze will continuously be the prime contact point on behalf of the Operations with support of the Environmental Engineering Manager, Kam Chan.</p> <p>10. <u>Chairman</u> is happy to keep the Members informed of the development of new Projects in future, if so needed.</p> <p>11. A site visit will be arranged in February 2009, details of arrangement will be followed after the Chinese New Year.</p>	

	<u>Action By</u>
Item 4 - <u>Date of Next Meeting</u> 12. The date of next meeting to be advised (tentatively in June 2009).	

(Version 0)
23 December 2008

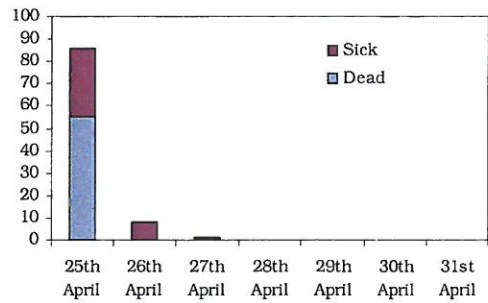
Annex A

**Lok Ma Chau Spur Line
No. 16 Environmental Committee Meeting
15 December 2008**

**Report on Ecological Monitoring
& Management & Works Programme
June – December 2008**

Asia Ecological Consultants Limited

Avian botulism outbreak – April 2008



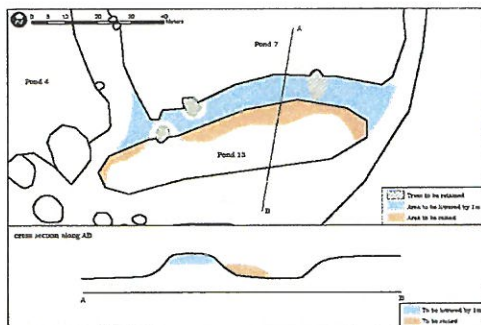
Management Works June - December 2008

- Pond drain down
- Trash fish stocking
- Routine grass cutting
- *Typha* removal and control of spread of *Phragmites*
- Modifications to profile of Ponds 7 & 13
- Formation of sluice at Pond 15
- Apple snail removal at Ponds 14 - 22 (1,140 kg removed)
- *Polygonum* transplanting and establishment monitoring; *Phragmites* transplanting

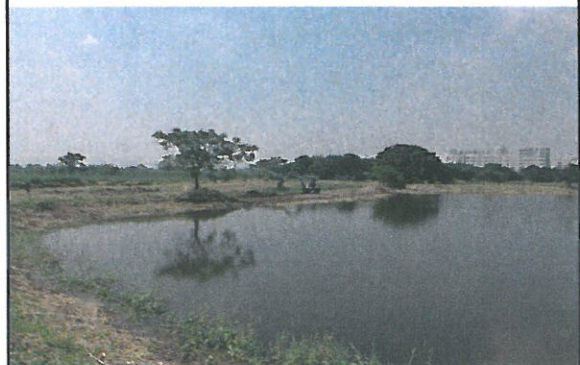
Pond 7 & 13 reprofiling

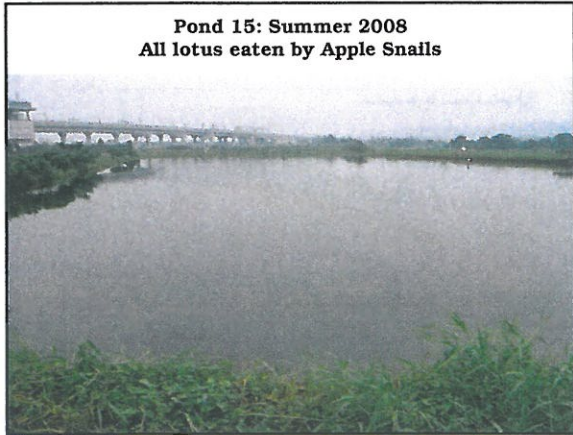
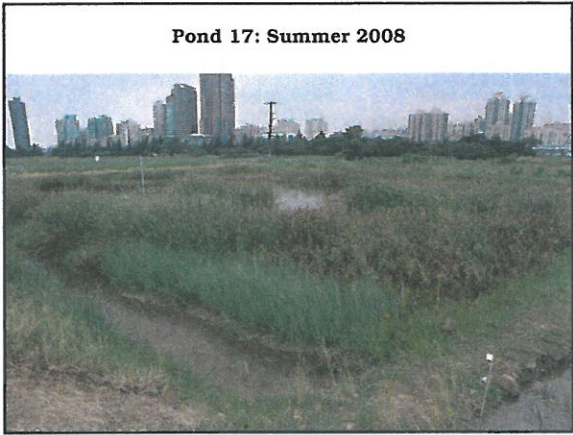
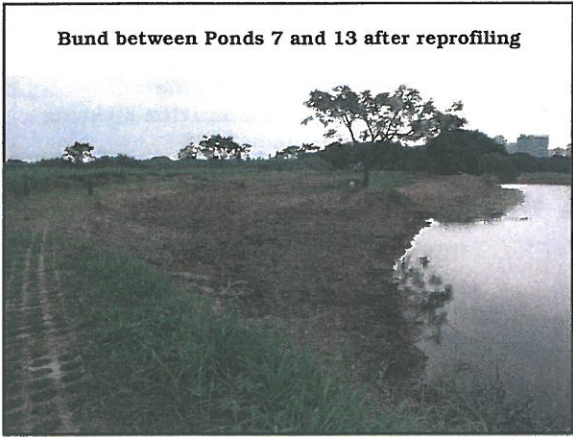
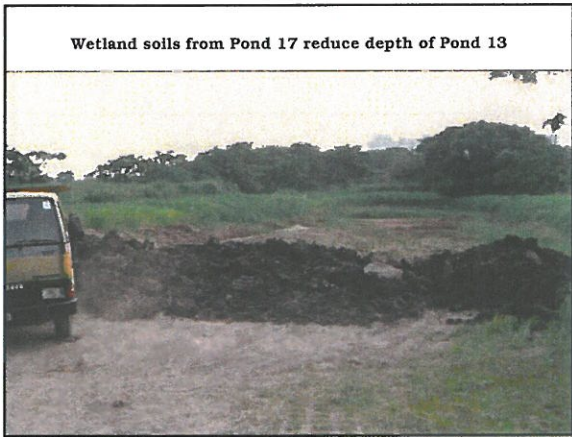
- Small marsh area at Pond 13 did not prove very successful due to difficulty of controlling water levels, small size and remoteness from other marsh areas
- Solution was to recontour, link to Pond 7 and form reedbed
- This can be cut in autumn to provide a roost site for snipe (effective in Pond 22 in autumn 2007)
- Will provide habitat for ardeids (incl. Chinese Pond Heron) as will have more fish (due to new connectivity with Pond 7)

Bund between Ponds 7 and 13: reprofiling



Bund between Ponds 7 and 13 at start of reprofiling





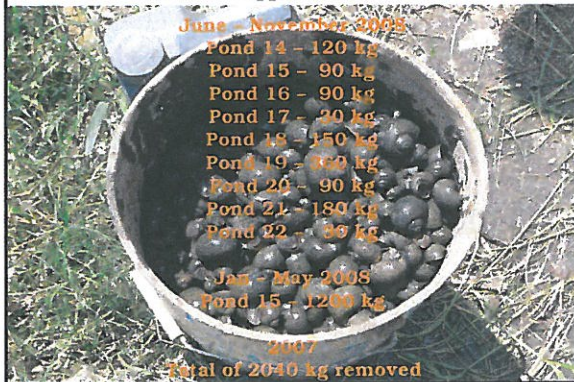
Solution to the Apple Snail problem

- Installation of a sluice in Pond 15 to permit rapid drain down and removal of adult snails
- Regular removal or drowning of Apple Snail egg masses

Pond 19: Drained for removal of Apple Snails



Control of Apple Snails - adults



Scheduled Management Works for 2008 -09 Dry Season

- Continue with routine grass cutting and vegetation management
- Seedling tree control
- Fish stocking: 1000 kg per week
- Control of water quality

Wetland plant management issues

Weeding protocol for wetland plants

Polygonum transplanting and weeding trials, initial findings:

- planting density relatively unimportant;
- *Polygonum* out competed by grasses unless planted in water

Report on use of 'Roundup' to control Phragmites spread

Egrets using freshly cut bunds



Pond 11: drained for large waterbirds



Pond 4: drained for large waterbirds



Operational Stage Monitoring

- Required as of August 2007 when Spurline commenced operation (although operational stage monitoring started in January 2006)
- Wildlife targets extended to cover species of conservation importance detailed in the Environmental Impact Assessment:
 - Eurasian Otter
 - 26 bird species (c.f. Table 2.3 of the HCMP)
 - Burmese Python, Chinese Soft-shelled Turtle, Chinese Bullfrog
 - Dragonflies (increased numbers and species diversity)

Monitoring of Target Waterbird Species: protocol

- Counts from towers at LMC at Mai Po San Tsuen (MPST) for large waterbirds and raptors.
- Transect survey for smaller target species at LMC and MPST and for all species at San Tin.
- Methodology for calculation of targets reviewed in early 2007 (included in HCMP)



Mammal & Herpetofauna Targets

Eurasian Otter
- 2 at Pond 2 on
15th August

Frequent signs
of Chinese Soft-
shelled Turtle

Single
sightings of
Burmese Python
& Chinese
Bullfrog



Bird Targets 12 months up to 30th Nov 2008

Density (mean/ha)	LMC	Control Area	Ratio	Density (mean/ha)	LMC	Control Area	Ratio
Great Cormorant	3.28	0.36	13.28	Greater Painted Snipe	0.022	0.0000	LM
Grey Heron	3.20	0.15	21.74	Black-winged Stilt	0.048	0.024	2.00
Great Egret	1.15	0.54	2.15	Pintail/Swedish's Snipe	0.0004	0.0000	NR
Little Egret	1.18	0.75	1.58	Common Snipe	0.000	0.011	NR
Red-throated Diver	0.000	0.000	NR	Richard's Pipit	0.060	0.041	1.48
Black-faced Spoonbill	0.48	0.02	27.61	Black-throat	0.002	0.000	NR
Common Teal	1.33	0.000	41.40	Common Stonechat	0.110	0.000	NR
Greater Spotted Eagle	0.002	0.000	LM	Pallas's Grasshopper Warbler	0.010	0.001	10.00
Imperial Eagle	0.000	0.000	LM	Zitting Cisticola	0.172	0.104	1.64
Eurasian Osprey	0.000	0.000	NR	Nepal Yellow Bunting	0.000	0.000	NR
Nepal Yellow Bunting	0.000	0.000	NR	Red-billed Staring	2.008	1.544	1.30
Black-necked Stilt	0.000	0.000	LM	Black-necked Oriole	0.000	0.000	NR
Black-necked Stilt	0.000	0.000	LM				

Key: NR - Not recorded within W. or Control Area during the period
 BL - Target met B.C. density in W. A. at least twice that in Control Area
 Yellow - Target not met, although density higher than in Control Area
 Red - Target not met and density lower than in Control Area
 * Casual observation only

Bird Targets 12 months up to 28th Apr 2008

Density (mean/ha)	LMC	Control Area	Ratio	Density (mean/ha)	LMC	Control Area	Ratio
Great Cormorant	0.052	0.344	18.92	Greater Painted-snipe	0.019	0.000	LMC
Grey Heron	3.422	0.152	21.00	Black-winged Stilt (lower)	0.185	0.020	9.25
Great Egret	1.147	0.759	1.51	Black-winged Stilt (masses)	0.188	0.020	9.42
Little Egret	1.116	1.060	1.04	Small Swinhoe Snipe	0.000	0.020	2.51
Black-billed Spoonbill	0.000	0.027	0.00	Common Snipe	0.250	0.020	12.03
Black-billed Spoonbill	0.470	0.027	17.31	Richard's Pipit	0.079	0.040	1.96
Common Fan (lower)	1.642	0.040	36.35	Bluish-tit	0.002	0.003	0.37
Common Teal (masses)	1.812	0.040	44.90	Common Stonechat	0.189	0.032	5.46
Greater Spotted Eagle	0.024	0.090	LMC	Pallas's Grasshopper Warbler	0.025	0.004	26.45
Imperial Eagle	0.001	0.000	LMC	Zitting Cisticola	0.193	0.113	1.72
Iranian Kestrel	0.005	0.000	LMC	Japanese Yellow Bunting	0.000	0.000	nr
Lesser Spotted Eagle	0.000	0.000	LMC	Red-billed Starling	2.349	1.424	1.65
Lesser Spotted Eagle	0.000	0.000	LMC	Black-rumped Crane	0.012	0.001	12.37
Lesser Spotted Eagle	0.007	0.000	LMC				
Pied-billed Grebe	0.020	0.000	LMC				
Red-billed Grebe	0.018	0.000	LMC				

Key: NR - Not recorded within WMA or Control Area during the period
 Blue - Target met (i.e. density in WMA at least twice that in Control Area)
 Yellow - Target not met, although density higher than in Control Area
 Red - Target not met and density lower than in Control Area

Endangered Birds May - Nov 08

Species name	Status	May	Jun	Jul	Aug	Sep	Oct	Nov
Black-faced Spoonbill	Endangered						1	149
Greater Spotted Eagle	Vulnerable						1	2
Imperial Eagle	Vulnerable							2
Yellow-breasted Bunting	Near Threatened						20	
Collared Crow	Near Threatened	2	1	1	1			

Annex B

Ecological impacts of Roundup

Roundup is a systemic, broad-spectrum herbicide chemical manufactured by Monsanto. The major active ingredient is the isopropylamine salt of glyphosate, which is absorbed through the leaves and inhibits the production of an enzyme used in the manufacture of amino acids.

Toxic effects

Acute toxicity of glyphosate is relatively low; the lethal dose (LC₅₀) in rats is more than 5000 mg/kg of body weight. It has been classed in Toxicity Category III (on a scale from Category I as the highest to Category IV as the lowest) by US Environmental Protection Agency. Some studies show minor impacts in mammals (including skin irritation and decrease in weight gain) at sublethal doses.

There are no reported carcinogenic impacts of glyphosate.

Ecotoxicology

The US EPA has determined that the effects of glyphosate in birds, mammals, fish and invertebrates are minimal. The product is slightly toxic to amphibians, fish and molluscs but not acutely toxic to other groups. Some of the other ingredients of Roundup (surfactants) may have toxic effects on fish and for this reason it is not recommended that the product is applied directly to aquatic systems or to surface water.

Lethal doses (LC₅₀) for Roundup are:

- Amphibians: >31,100 µg/l for adults, 1687 µg/l for tadpoles
- Freshwater fish: 1,700 µg/l (Nile Tilapia), 1,700 µg/l (common carp), >13,000 µg/l (grass carp)
- Birds: > 5000 mg/kg of diet (mallard)
- Earthworms: > 1250 mg/kg of soil
- Water fleas (*Daphnia*): >2,600 µg/l
- Honey bees: >254 µg/bee (oral), >330 µg/bee (contact)
- Insects: >7,100 µg/l (Chironomus midge)

Bioaccumulation

There is no significant bioaccumulation effect from glyphosate. Most is excreted by animals in the urine or faeces.

Dissipation

Glyphosate is strongly adsorbed to soil. For this reason it does not easily dissipate through soil but can be carried in surface runoff water. In soil it is degraded by microorganisms to carbon dioxide.

The half-life in soil varies from two to 174 days. The half-life in water is less than seven days.

Recommendations for use

US EPA recommends that products containing glyphosate are not applied directly to water, to areas where surface water is present or to areas below the high water mark.

Relevant website links:

Monsanto Safety data sheet for Roundup.

[http://lscgw1.monsanto.com/esh/msdplib.nsf/2B20DAEB04E8631C0625689700650B45/\\$file/Roundup%20Ultra%203000-5059en-gb.pdf](http://lscgw1.monsanto.com/esh/msdplib.nsf/2B20DAEB04E8631C0625689700650B45/$file/Roundup%20Ultra%203000-5059en-gb.pdf)

US EPA fact sheet for Glyphosate

<http://www.epa.gov/oppsrrd1/REDs/factsheets/0178fact.pdf>

PAN pesticides database

http://pesticideinfo.org/Detail_Product.jsp?REG_NR=00052400445&DIST_NR=000524