



Proposed Comprehensive Development at Wo Shang Wai, Yuen Long

Biannual EM&A Summary Report on Ecology for
November 2016 – April 2017 (Rev A)

June 2017

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Pursuant to Condition 4.6 of Environmental Permit No. EP-311/2008/D, this Biannual EM&A Report on ecological aspects for November 2016 to April 2017 has been reviewed, certified by Environmental Team Leader (ETL) and verified by the Independent Environmental Checker (IEC).

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1 Introduction

1.1 Background

In March 2005, the Project Proponent, Profit Point Enterprises Limited, acquired the development site in Yuen Long at Wo Shang Wai. An Environmental Impact Assessment (EIA) was then carried out under the EIA Ordinance (EIAO), and the Environmental Permit (EP-311/2008) for construction of the comprehensive development in Wo Shang Wai was first granted by EPD on 9 September 2008 and has been subsequently varied, with the current version (EP-311/2008/D) issued by EPD on 20 March 2013.

The Project involves the residential development and associated infrastructure and wetland restoration area and linear landscape area. The construction works under the Environmental Permit commenced on 12 May 2010. The site formation construction works of the Wetland Restoration Area (hereafter WRA) were completed on 15 November 2010, while the 30-month establishment period of the WRA was concluded in October 2012 – this indicated that planting works as scheduled in the approved Wetland Restoration and Creation Scheme (WRCS; November 2009) was completed, except along the western and southern boundary where the planting is affected by the existing site boundary and noise barrier, and for which a Variation to Environmental Permit (EP-311/2008/C) to defer planting at the location was approved. The current valid EP (EP-311/2008/D) includes specific mitigation measures to minimise certain identified noise impacts during the operation phase of the Project.

Mott MacDonald Hong Kong Ltd. (“MMHK”) has been commissioned by the Contractor, Heng Shung Construction Co. Ltd., to undertake the Environmental Team (ET) services to carry out environmental monitoring and audit (EM&A) for both pre-construction and construction phases of the Proposed Comprehensive Development at Wo Shang Wai, Yuen Long. From August 2016, the Project Proponent, Profit Point Enterprises Limited, commissioned MMHK to continue the ET services.

According to the EP Condition 4.6, the EM&A results on ecological aspects during the construction phase should be reported to the EIA Subcommittee of the Advisory Council on the Environment (ACE), EPD and Agriculture, Fisheries and Conservation Department (AFCD) on a biannual basis. This is the 14th Biannual EM&A report and it summarises the findings on EM&A results of ecological aspects during the period from 1 November 2016 to 30 April 2017. This report documents surveys and management activities conducted in the Survey Area and WRA from 1 November 2016 to 30 April 2017, which is based on ecological surveys and advices on management which were undertaken by the appointed Non-government Organisations (Green Power / Eco-Education & Resources Centre) during the reporting period.

1.2 Survey Area

Surveys were conducted within 500m of the Project area. The WRA was surveyed since early September 2010. The survey area and transect are provided in **Figure 1.1**.

1.3 EM&A Requirement on Ecological Impact

The EM&A programme requires environmental monitoring of ecology as specified in the approved EM&A Manual. A summary of ecological impact EM&A requirements is presented in **Table 1.1**:

Table 1.1: Summary of Ecological Impact EM&A Requirements

Descriptions	Locations	Frequencies
Birds	Within the Project Area and Assessment Area of 500m	Weekly
Dragonflies and Butterflies	Within the Project Area and Assessment Area of 500m	Once per month during Mar and Sep to Nov, and twice per month during Apr to Aug
Herpetofauna	Within the Project Area and Assessment Area of 500m	Daytime: Once per month during Apr to Nov
Water quality of Wetland Restoration Area (WRA)	WRA	After filling of WRA with water, monthly for in situ water quality and every six months (end of wet season and end of dry season) for laboratory testing
Site Inspections	Within the Project Area and Assessment Area of 500m	Weekly

2 Ecological Monitoring

2.1 Ecological Monitoring

In accordance with the EM&A requirements, monitoring of birds, dragonflies and butterflies, and herpetofauna were carried out during the reporting period. In addition, monitoring of mammals was also conducted concurrently with other surveys and the results were reported although it is not required by the EM&A Manual. The dates of surveys are summarised in **Appendix A**.

2.2 Monitoring of Birds

Monitoring was undertaken following the survey methodology in the EM&A Manual (Table 7-1). Since September 2010, monitoring included the newly formed cells to monitor faunal usage of this area. All bird species of conservation importance and/or wetland dependent were identified and enumerated. Flying birds were not recorded unless they were foraging and/or associated with the habitat (such as swifts). Further, notable bird observations during other surveys were also recorded.

Bird surveys were conducted on a weekly basis throughout the period. A total of 64 bird species were recorded in the Survey Area (excluding the WRA) in November 2016 to April 2017, 34 of which were species of conservation importance and/or wetland-dependence. A summary of survey data is provided in **Appendix B**.

A total of 77 species were recorded in the WRA in the survey periods, 41 of which were species of conservation importance and/or wetland-dependent species. Of all three target species, two of them (i.e. Little Egret, *Egretta garzetta*, and Chinese Pond Heron, *Ardeola bacchus*) were recorded in the WRA during regular survey. The WRA continues to attract a number of species of conservation importance, including Great Cormorant, *Phalacrocorax carbo*, Grey Heron, *Ardea cinerea*, Black-crowned Night Heron, *Nycticorax nycticorax*, Yellow Bittern, *Ixobrychus sinensis*, Cinnamon Bittern, *Ixobrychus cinnamomeus*, Black-faced Spoonbill, *Platalea minor*, Black Kite, *Milvus migrans*, Black-winged Stilt, *Himantopus himantopus*, Oriental Pratincole, *Glareola maldivarum*, Little Ringed Plover, *Charadrius dubius*, Kentish Plover, *Charadrius alexandrinus*, Wood Sandpiper, *Tringa glareola*, Pied Kingfisher, *Ceryle rudis*, White-throated Kingfisher, *Halcyon smyrnensis* and White-cheeked Starling, *Spodiopsar cineraceus*. Black-crowned Night Heron, Yellow Bittern, Cinnamon Bittern, Oriental Pratincole, Little Ringed Plover, Wood Sandpiper, Pied Kingfisher, White-throated Kingfisher are listed by Fellowes *et al.* as of “Local Concern” in 2002. Black Kite, Black-winged Stilt and Kentish Plover are listed by Fellowes *et al.* as of “Regional Concern” in 2002. Great Cormorant, Grey Heron, White-cheeked Starling are listed by Fellowes *et al.* as of “Potential Regional Concern” in 2002. Black-faced Spoonbill is listed by Fellowes *et al.* as of “Potential Global Concern” in 2002, and is also listed as “endangered” species on the International Union for Conservation of Nature (IUCN) red list.

In addition to wetland dependent birds, the WRA also attracts a number of terrestrial birds including Greater Coucal, *Centropus sinensis* which are listed as vulnerable (VU) in the China Red Data Book and it is protected under terrestrial wildlife state protection (category II). Survey findings indicate that the WRA not only provides important habitat for wetland-dependence birds but also the terrestrial birds.

The fish ponds to the north of the WRA are at a greater distance from the residential portion and any disturbance impact(s) from the construction works would have first affected the WRA. Further, 41 bird species of conservation importance and /or wetland dependence, were observed using the site during survey period, including some bird species which are highly sensitive to disturbance and three target species (i.e. Little Egret, Eastern Cattle Egret and Chinese Pond Heron). Thus, the WRA is considered to be effective both in acting as a buffer against potential disturbance impacts from the construction site, and in providing suitable wetland habitats at the fringe of the Deep Bay system.

2.3 Monitoring of Herpetofauna

Monitoring was undertaken following the survey methodology in the EM&A Manual. Day-time herpetofauna surveys were conducted once per month in November 2016 and April 2017. Further, notable herpetofauna observations during other surveys were also recorded.

Gunther's Frog, *Hylarana guentheri*, was recorded in the survey area (excluding WRA) in the survey period. No reptile species were recorded in the survey area within the survey period.

No amphibian species were recorded in the WRA within the survey period. Red-necked Keelback, *Rhabdophis subminiatus helleri*, was recorded in the WRA within the survey period. A summary of survey data is provided in **Appendix C**.

2.4 Monitoring of Dragonfly and Butterflies

Monitoring of dragonflies and butterflies was conducted once per month in November 2016 and March 2017 and twice per month in April 2017. Further, notable dragonfly and butterfly observations during other surveys were recorded.

A total of 1 dragonfly species and no butterfly species were recorded using the ponds in the Survey Area (excluding WRA) in the reporting period. At the WRA, a higher diversity of dragonfly species (6 species) and butterfly species (7 species) were recorded. A summary of the survey findings is provided in **Appendix C**.

2.5 Monitoring of Mammals

Monitoring of mammals was conducted concurrently with other surveys. No mammal species was recorded in the Survey Area (excluding WRA) within the reporting period.

Two unidentified bat species, Small Asian Mongoose, *Herpestes javanicus*, Leopard Cat, *Prionailurus bengalensis* and Small Indian Civet, *Viverricula indica*, were recorded in the WRA during the reporting period. A summary of the survey findings is provided in **Appendix C**.

2.6 Monitoring of Water Quality

Monthly water quality monitoring continued during the reporting period. Monitoring parameters followed that in the EM&A Manual. In February 2017, Water level of Cell 4 reached action level; In March 2017, Water level of Cell 1, Cell 2, Cell 3, Cell 4 reached action level and the pH of Cell 1 and Cell 2 reached action level; In April 2017, Water level of Cell 2, Cell 3, Cell 4 reached action level. According to the ecological monitoring data, the low water level in the WRA attracted wetland-dependent species including Great Cormorant, Grey Heron, Black-crowned Night Heron, Yellow Bittern, Cinnamon Bittern, Black-faced Spoonbill, Black Kite, Black-winged Stilt, Oriental Pratincole, Little Ringed Plover, Kentish Plover, Wood Sandpiper, Pied Kingfisher, White-throated Kingfisher and White-cheeked Starling. As the low water level attracts wetland-

dependent birds, the existing water level will be maintained and monitored regularly. Monitoring data are presented in **Appendix D**. Locations for the monitoring of water quality for the ecological monitoring are shown in **Figure 1.2**.

3 Ecological Issues

3.1 Vegetation Management

Removal of exotic vegetation in all cells was undertaken; these included but not limited to *Ipomoea* sp., *Mikania* sp., *Mimosa* sp., *Pennisetum* sp. and *Typha* sp..

Vegetation management activities undertaken at the site primarily involved watering of plants, weeding and grass cutting.

3.2 Wildlife Management

Golden Apple Snails were removed on an “as-seen” basis.

All red fire ant nests were treated with approved pesticide and covered with overturn baskets for a week. All pesticide used was in powder form and the pesticide usage was confined to Fire Ants’ nest found on terrestrial area which were further away from the Cells to prevent the contamination of water. All treated fire ant nests were inactive within one week of treatment.

Preliminary actions have been taken to increase the WRA utilization by birds. The mitigation actions are:

1. Lowering the water level of Cell 3 and Cell 4;
2. Controlling the vegetation at Cell 1 and Cell 4.

These two mitigation actions aim to increase the foraging area and maintain suitable habitat for target species.

4 Summary of Wetland Restoration Area Performance

4.1 Summary of Findings

Ecological monitoring between 1 November 2016 and 30 April 2017 was carried out following the survey methodology and frequency outlined in the EM&A Manual.

Summary of ecological monitoring in the Survey Area and WRA between November 2016 and April 2017 (**Table 4.1**):

Table 4.1: Summary of Ecological Monitoring in WRA and Survey Area

Species	Number of species recorded in Survey Area (excluding WRA)	Number of species recorded in WRA
Birds (total)	64	77
Birds (of conservation importance and/or wetland-dependence)	34	41
Amphibians	1	0
Reptiles	0	1
Mammals	0	5
Dragonflies	1	6
Butterflies	0	7

A total of 77 bird species, 1 reptile species, 5 mammal species, 6 dragonfly species and 7 butterfly species were recorded in the WRA, including 41 bird species of conservation importance and/or wetland-dependence, while all dragonfly species are wetland-dependent. These findings indicate that the WRA is supporting wetland-dependent birds and other species of conservation importance.

Survey findings indicate that the WRA is attracting the three target species to varying degrees. During the survey period (i.e. November 2016 to April 2017), the site was particularly attractive to Little Egret. Little Egret was recorded on weekly basis, with monthly means ranging from 4.0 to 9.3 birds per survey; while Chinese Pond Heron was also recorded on nearly-weekly basis in regular survey period (November 2016 to April 2017) with monthly means ranging from 1.0 to 6.5 bird per survey. Eastern Cattle Egret was least attracted to the site. No Eastern Cattle Egret was recorded within the WRA during the survey period (November 2016 to April 2017). A list of the bird species recorded at the WRA since completion of site formation is provided in **Appendix B (Table B4 to B6)**.

With the completion of planting as scheduled in the approved Habitat Creation and Management Plan (HCMP) in August 2012, establishment work at the WRA is considered complete (except along the western and southern boundary where the planting is affected by the existing site boundary and noise barrier, and for which an approved Variation to Environmental Permit (EP-311/2008/D) to defer planting at the location applies), and the 30 month establishment period concluded in October 2012. A review of the performance of the WRA during the review period in terms of target species attraction is provided in Section 4.2 below.

It should be noted that the high planting density was intended to ensure a rapid establishment of the site prior to occupation intake, and not intended to be maintained as a long-term tree density at the WRA. It is a standard arboricultural practice to apply appropriate horticultural/ arboricultural maintenance methods in the subsequent five or six years after initial planting to remove less desired specimens to facilitate the successful growth of those which are of higher landscape and/or ecological value. Further, some fine tuning of planting locations and tree/shrub mix is required in order to fulfill the design intent of the habitat structure at WRA after reviewing the site configuration following site formation. Vegetation management hereafter should largely consist of maintenance of planted trees and shrubs for the creation of suitable habitats for target species and long-term habitat structure of the site.

4.2 WRA Performance for the Bird Target Species

The provision, maintenance and operation of a WRA are a requirement under the Environmental Permit for compensation for predicted ecological impacts to species of conservation importance. Three bird target species were identified during the EIA process; they are Little Egret, Eastern Cattle Egret and Chinese Pond Heron. Target levels of these species are the annual mean number recorded during the Baseline Ecological Monitoring (i.e. a mean of 5.5 Little Egret, 1.3 Eastern Cattle Egret and 1.3 Chinese Pond Heron over a 12 month period) thus, the ecological impact of the project to the species concerned is considered to have been fully compensated when the target level for each of the three species is achieved. Whilst further discussion and agreement regarding the target level is yet to be undertaken with the relevant Government departments prior to the operation of the WRA, the proposed level offers a clear reference to the effectiveness of the mitigation measures. According to the approved Wetland Creation and Restoration Scheme (November 2009, hereafter WCRS), the WRA is anticipated to be fully operational after an establishment period of 2.5 years (30 months).

Of the three target species, two of them (i.e. Little Egret and Chinese Pond Heron) were recorded using the site under survey period (November 2016 – April 2017). Among all target species, Little Egret and Chinese Pond Heron were recorded in all six months and No Eastern Cattle Egret was recorded during the six month survey period.

Table 4.2: Annual Mean of the three Bird Target Species Recorded at the WRA between May 2010 and April 2017 (including Biannual Mean between May 2016 and April 2017)

Common Name	Scientific Name	Conservation Status (2)	Baseline Annual Mean (3)	Annual Mean							Biannual Mean	
				May 10-Apr 11	May 11-Apr 12	May 12-Apr 13	May 13-Apr 14	May 14-Apr 15	May 15-Apr 16	May 16-Apr 17	May 16-Oct 16	Nov 16-Apr 17
Chinese Pond Heron	<i>Ardeola bacchus</i>	PRC, (RC)	1.3	0.2	2.7	1.3	1.9	2.0	2.7	4.2	3.8	4.6
Little Egret	<i>Egretta garzetta</i>	PRC, (RC)	5.5	1.6	1.0	0.9	2.3	2.0	2.6	4.7	3.5	5.9
Eastern Cattle Egret	<i>Bubulcus coromandus</i>	(LC)	1.3	0.0	1.2	0.0	0.1	0.0	0.1	0.1	0.1	0.0

Note:

- (1) Value in **bold** indicated the Target Level was achieved.
- (2) Conservation Status follows that of Fellow *et. al.* (2002). See Appendix B (Table B3).
- (3) Annual mean number recorded during Baseline Ecological Monitoring.

Based on **Table 4.2** above, the target level of the Chinese Pond Heron was achieved between November 2016 and April 2017 while the target levels for Eastern Cattle Egret was not achieved.

As the Proposed Comprehensive Development at Wo Shang Wai is still under construction phase, it is considered acceptable. According to the ecological monitoring data of the survey area (excluding the WRA), Eastern Cattle Egret was observed only in 7 of the regular ecological survey (i.e. 7 out of 28) and the annual mean of the Eastern Cattle Egret of survey area(excluding the WRA) is 2.8 bird per survey (November 2016 – April 2017), the results indicated that the number of Eastern Cattle Egret in the whole area is low and the low number of Eastern Cattle Egret in the WRA is considered acceptable. However, should this situation continue, a review of the management of the WRA and adaptive management steps will be required.

The mitigation actions including: 1) Lowering the water level; 2) Restocking the Cell in the WRA; 3) Installing flooding platform; and 4) Controlling the vegetation; have been taken in the WRA since November 2014 to increase the WRA utilization by birds, especially for the three target species of the WRA. Since the implementation of the mitigation actions, the annual means of two (Little Egret and Chinese Pond Heron) out of three target species increased gradually from 2.7 to 4.2 and 2.6 to 4.7 for Chinese Pond Heron and Little Egret respectively (**Table 4.2**). This may indicate the mitigation actions taken in the WRA are effective. The mitigation actions will be continued in the WRA and monitorings will be continued to investigate the effectiveness of the mitigation actions.

In addition, though the target levels for Eastern Cattle Egret have not been achieved between November 2016 and April 2017, the WRA continuous to attract wetland dependent species. Black-crowned Night Heron, Yellow Bittern, Cinnamon Bittern, Oriental Pratincole, Little Ringed Plover, Wood Sandpiper, Pied Kingfisher, White-throated Kingfisher are listed by Fellowes *et al.* as of “Local Concern” in 2002. Black Kite, Black-winged Stilt and Kentish Plover are listed by Fellowes *et al.* as of “Regional Concern” in 2002. Great Cormorant, Grey Heron, White-cheeked Starling are listed by Fellowes *et al.* as of “Potential Regional Concern” in 2002. Black-faced Spoonbill is listed by Fellowes *et al.* as of “Potential Global Concern” in 2002, and is also listed as “endangered” species on the International Union for Conservation of Nature (IUCN) red list.

Among all 21 species of conservation importance and/or wetland-dependence recorded in previous baseline ecological monitoring, 15 of them were recorded during the ecological monitoring between November 2016 and April 2017. A summary of the annual mean of bird species of conservation importance and/or wetland-dependence recorded in the WRA from November 2016 to April 2017 is shown in **Table 4.3**.

The increase of the number of the species of conservation interest indicates the WRA is providing suitable habitat for them.

Table 4.3: Mean number of bird species of conservation importance and/or wetland-dependence in the WRA during reporting period

Common Name	Scientific Name (3)	Wetland Dependence	Conservation Status (1)	Annual mean number recorded during the Baseline Ecological Monitoring	Mean number recorded between Nov 2016 & Apr 2017 (2)
Little Grebe	<i>Tachybaptus ruficollis</i>	Y	LC	-	3.0

Common Name	Scientific Name (3)	Wetland Dependence	Conservation Status (1)	Annual mean number recorded during the Baseline Ecological Monitoring	Mean number recorded between Nov 2016 & Apr 2017 (2)
Great Cormorant	<i>Phalacrocorax carbo</i>	Y	PRC	0.5	0.6
Grey Heron	<i>Ardea cinerea</i>	Y	PRC	0.1	2.3
Great Egret	<i>Ardea alba</i>	Y	PRC, (RC)	V	1.6
Little Egret	<i>Egretta garzetta</i>	Y	PRC, (RC)	5.5	5.9
Chinese Pond Heron	<i>Ardeola bacchus</i>	Y	PRC, (RC)	1.3	4.6
Black-crowned Night Heron	<i>Nycticorax nycticorax</i>	Y	LC	0.2	V
Yellow Bittern	<i>Ixobrychus sinensis</i>	Y	(LC)	-	0.4
Cinnamon Bittern	<i>Ixobrychus cinnamomeus</i>	Y	LC	-	V
Black-faced Spoonbill	<i>Platalea minor</i>	Y	PGC, EN	-	0.1
Eurasian Teal	<i>Anas crecca</i>	Y	RC	-	V
Northern Pintail	<i>Anas acuta</i>	Y	RC	-	V
Western Osprey	<i>Pandion haliaetus</i>	Y	RC	-	V
Black Kite	<i>Milvus migrans</i>	Y	(RC)	1.2	0.4
Eastern Buzzard	<i>Buteo japonicus</i>	Y	-	-	0.1
Peregrine Falcon	<i>Falco peregrinus</i>	N	(LC)	-	<0.1
White-breasted Waterhen	<i>Amaurornis phoenicurus</i>	Y	-	0.2	0.4
Common Moorhen	<i>Gallinula chloropus</i>	Y	-	-	0.3
Black-winged Stilt	<i>Himantopus himantopus</i>	Y	RC	-	0.1
Pied Avocet	<i>Recurvirostra avosetta</i>	Y	RC	-	V
Oriental Pratincole	<i>Glareola maldivarum</i>	Y	LC	V	V
Little Ringed Plover	<i>Charadrius dubius</i>	Y	LC	0.1	0.6
Kentish Plover	<i>Charadrius alexandrinus</i>	Y	RC	-	0.1
Spotted Redshank	<i>Tringa erythropus</i>	Y	RC	-	V
Common Redshank	<i>Tringa totanus</i>	Y	RC	-	V
Common Greenshank	<i>Tringa nebularia</i>	Y	RC	-	V
Marsh Sandpiper	<i>Tringa stagnatilis</i>	Y	RC	-	0.4

Common Name	Scientific Name (3)	Wetland Dependence	Conservation Status (1)	Annual mean number recorded during the Baseline Ecological Monitoring	Mean number recorded between Nov 2016 & Apr 2017 (2)
Green Sandpiper	<i>Tringa ochropus</i>	Y	-	-	0.9
Wood Sandpiper	<i>Tringa glareola</i>	Y	LC	-	0.2
Common Sandpiper	<i>Actitis hypoleucos</i>	Y	-	0.2	0.9
Black-headed Gull	<i>Chroicocephalus ridibundus</i>	Y	PRC	-	V
Pied Kingfisher	<i>Ceryle rudis</i>	Y	(LC)	-	0.3
White-throated Kingfisher	<i>Halcyon smyrnensis</i>	Y	(LC)	-	0.2
Black-capped Kingfisher	<i>Halcyon pileata</i>	Y	LC	-	V
Common Kingfisher	<i>Alcedo atthis</i>	Y	-	-	1.7
Eastern Yellow Wagtail	<i>Motacilla tschutschensis</i>	Y	-	10.0	0.3
Grey Wagtail	<i>Motacilla cinerea</i>	Y	-	2.2	V
White Wagtail	<i>Motacilla alba</i>	Y	-	2.2	1.1
Black-browed Reed Warbler	<i>Acrocephalus bistrigiceps</i>	Y	-	-	V
Red-billed Starling	<i>Spodiopsar sericeus</i>	N	(GC)	0.9	0.1
White-cheeked Starling	<i>Spodiopsar cineraceus</i>	Y	PRC	-	0.1

Note:

(1) Conservation status follows that of Fellowes *et al.* (2002) and BirdLife International listing (2010).

(2) Refers to the mean number of individuals recorded between May 2016 – Oct 2016 in the WRA

(3) Follows HK bird list (dated 2015-1-12)

V indicates the species is recorded outside regular surveys

*Red billed Starling is considered by Fellowes *et al.* (2002) to be of Global Concern. Since publication, however, the global population estimate has been revised and the species is not now considered globally threatened, it is evaluated as a “Least Concern” species (IUCN, 2013)

4.3 Conclusions

A total of 130 bird species have been recorded within the WRA since completion of site formation. Of the 130 species, 85 were species of conservation importance and/or wetland dependence – indicating that the WRA provides suitable habitats for these species despite the construction work within the residential portion of the Project Site.

The site is also considered achieving the no net loss of wetland in terms of area and function because it continuously attracts bird species of conservation importance, indicating that the WRA not only provides a buffer for potential disturbance during construction phase, but also a valuable habitat for wetland dependent species and species of conservation importance.

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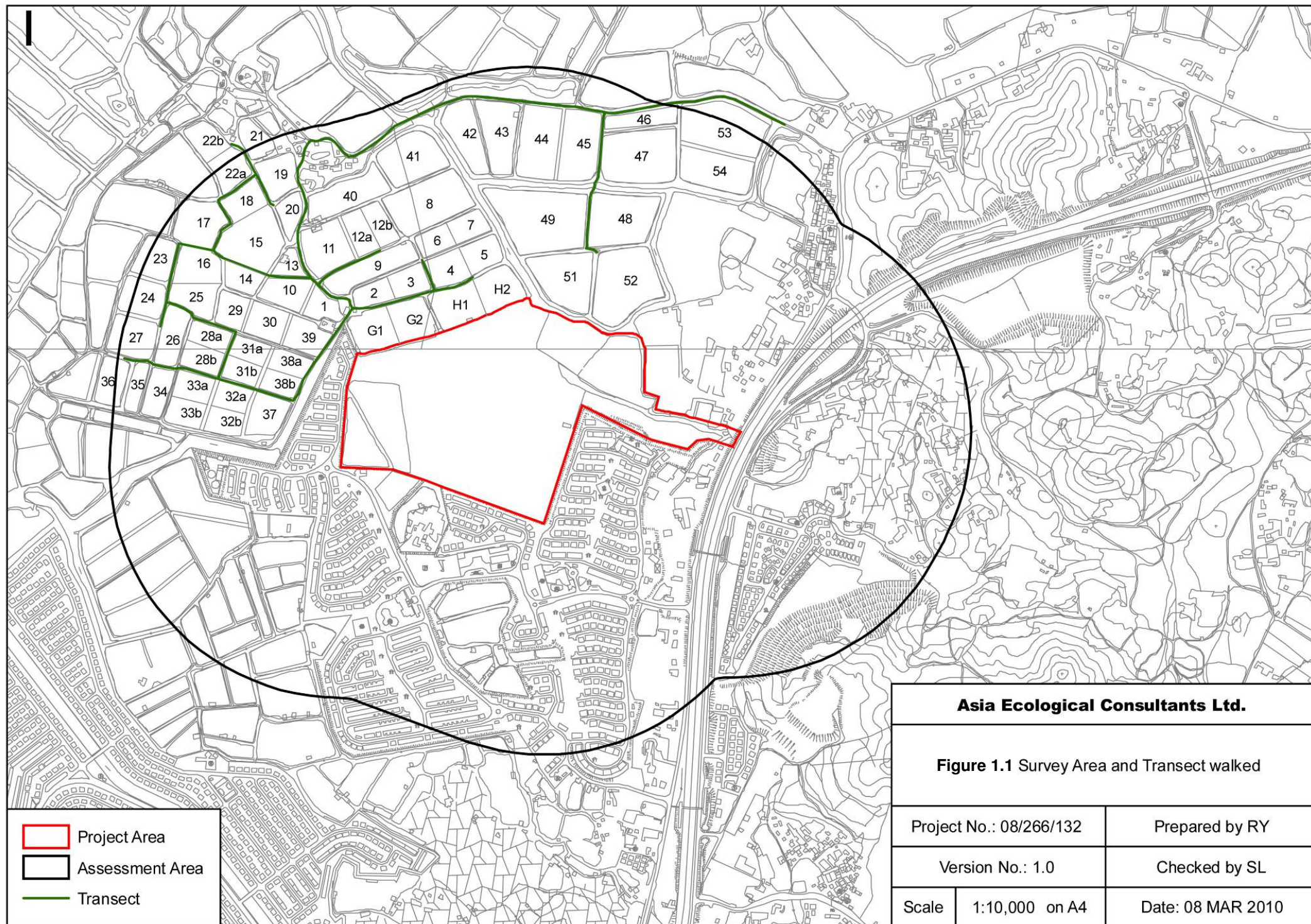
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Asia Ecological Consultants Ltd.

Figure 1.1 Survey Area and Transect walked

Project No.: 08/266/132

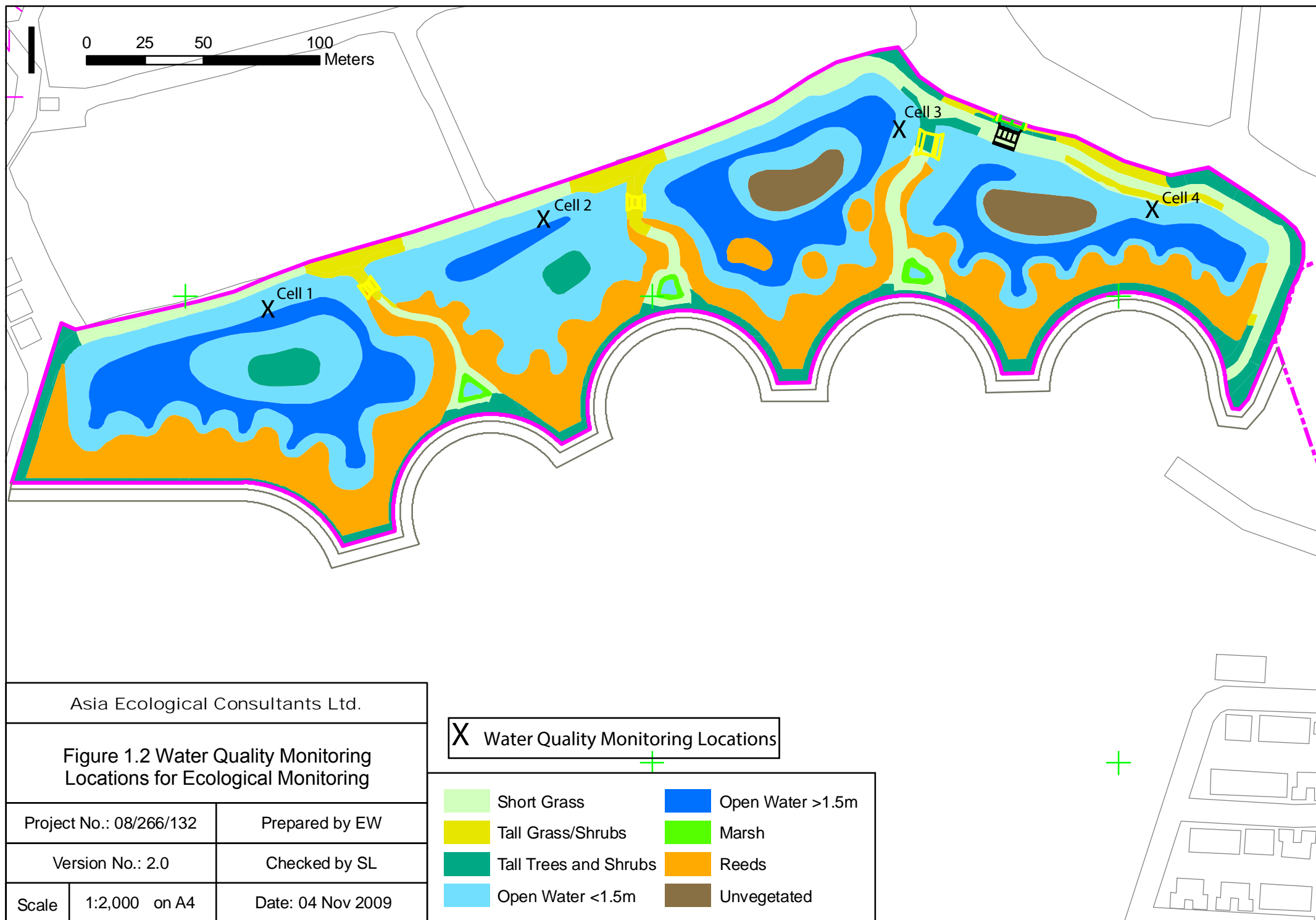
Prepared by RY

Version No.: 1.0

Checked by SL

Scale 1:10,000 on A4

Date: 08 MAR 2010



Appendix A. Schedule of Ecological Monitoring

Nov 2016	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	
Mammals	✓							✓							✓							✓							✓	✓	
Birds	✓							✓							✓							✓							✓	✓	
Herpetofauna								✓																							
Dragonflies & butterflies								✓																							
Water Quality																						✓									
Inspection Visits	✓			✓				✓			✓				✓			✓				✓			✓				✓	✓	
Dec 2016	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
Mammals		✓				✓							✓							✓								✓			
Birds		✓				✓							✓							✓								✓			
Herpetofauna																															
Dragonflies & butterflies																															
Water Quality														✓																	
Inspection Visits		✓				✓			✓				✓			✓				✓			✓					✓		✓	
Jan 2017	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
Mammals			✓							✓							✓							✓							
Birds			✓							✓							✓							✓							
Herpetofauna																															
Dragonflies & butterflies																															
Water Quality																									✓						
Inspection Visits			✓			✓				✓			✓				✓			✓				✓			✓				

Note: 1. Light grey cells indicate public holidays, Saturdays or Sundays.

Feb 2017	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28			
Mammals			✓				✓							✓							✓							✓			
Birds			✓				✓							✓							✓							✓			
Herpetofauna																															
Dragonflies & butterflies																															
Water Quality																											✓				
Inspection Visits			✓				✓			✓				✓			✓				✓			✓				✓			
Mar 2017	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
Mammals			✓				✓							✓							✓							✓			
Birds			✓				✓							✓							✓							✓			
Herpetofauna																															
Dragonflies & butterflies																					✓										
Water Quality																	✓														
Inspection Visits			✓				✓			✓				✓			✓				✓			✓				✓		✓#	
Apr 2017	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	
Mammals			✓								✓							✓							✓						
Birds			✓								✓							✓							✓						
Herpetofauna																									✓						
Dragonflies & butterflies											✓														✓						
Water Quality																										✓					
Inspection Visits			✓				✓				✓		✓				✓#				✓				✓		✓		✓		

Note: Light grey cells indicate public holidays, Saturdays or Sundays.

Additional water level monitoring.

Appendix B. Summary of Bird Surveys

Table B1: Summary of bird monitoring (for species of conservation importance and/or wetland-dependence) within the Survey Area (excluding the WRA)

Common Name	Scientific Name (3)	Wetland Dependent	Conservation Status (1)	Nov Mean (2)	Dec Mean (2)	Jan Mean (2)	Feb Mean (2)	Mar Mean (2)	Apr Mean (2)
Little Grebe	<i>Tachybaptus ruficollis</i>	Y	LC	12.4	11.6	13.8	12.8	5.8	4.8
Great Cormorant	<i>Phalacrocorax carbo</i>	Y	PRC	4.6	4.4	4.3	24.8	18.4	
Grey Heron	<i>Ardea cinerea</i>	Y	PRC	2.8	1.0	2.3	5.4	3.6	
Purple Heron	<i>Ardea purpurea</i>	Y	RC, LC						0.3
Great Egret	<i>Ardea alba</i>	Y	PRC, (RC)	3.0	1.4	15.3	2.4	2.0	2.3
Little Egret	<i>Egretta garzetta</i>	Y	PRC, (RC)	5.4	5.2	9.5	6.0	4.2	8.5
Eastern Cattle Egret	<i>Bubulcus coromandus</i>	Y	(LC)	1.6		V	1.0	1.0	13.3
Chinese Pond Heron	<i>Ardeola bacchus</i>	Y	PRC, (RC)	10.0	5.2	6.3	4.8	4.0	4.0
Black-crowned Night Heron	<i>Nycticorax nycticorax</i>	Y	LC	0.2					0.3
Yellow Bittern	<i>Ixobrychus sinensis</i>	Y	(LC)		0.4				
Tufted Duck	<i>Aythya fuligula</i>	Y	LC	1.4	10.6	18.8	13.0	3.6	
Western Osprey	<i>Pandion haliaetus</i>	Y	RC					0.2	
Black Kite	<i>Milvus migrans</i>	Y	(RC)		0.6		V		V

Common Name	Scientific Name (3)	Wetland Dependent	Conservation Status (1)	Nov Mean (2)	Dec Mean (2)	Jan Mean (2)	Feb Mean (2)	Mar Mean (2)	Apr Mean (2)
Greater Spotted Eagle	<i>Clanga clanga</i>	Y	GC				0.2		
Eastern Buzzard	<i>Buteo japonicus</i>	Y	-	0.2	0.2			0.2	
Peregrine Falcon	<i>Falco peregrinus</i>	N	(LC)		0.2				
White-breasted Waterhen	<i>Amaurornis phoenicurus</i>	Y	-	0.2	0.6	0.5	1.4	V	V
Common Moorhen	<i>Gallinula chloropus</i>	Y	-		V				
Black-winged Stilt	<i>Himantopus himantopus</i>	Y	RC		0.4		V		
Little Ringed Plover	<i>Charadrius dubius</i>	Y	LC				0.6		
Green Sandpiper	<i>Tringa ochropus</i>	Y	-	0.4	0.4				
Wood Sandpiper	<i>Tringa glareola</i>	Y	LC		V	0.3			
Common Sandpiper	<i>Actitis hypoleucos</i>	Y	-	1.0	2.2	1.5	1.4	1.8	2.0
Pied Kingfisher	<i>Ceryle rudis</i>	Y	(LC)	V		V		0.4	
White-throated Kingfisher	<i>Halcyon smyrnensis</i>	Y	(LC)		1.0	0.3	0.8	V	V
Common Kingfisher	<i>Alcedo atthis</i>	Y	-	0.8	0.8	0.8	0.2	0.4	0.5
Eastern Yellow Wagtail	<i>Motacilla tschutschensis</i>	Y	-	1.6	1.2	1.0	0.6	0.6	0.3
Grey Wagtail	<i>Motacilla cinerea</i>	Y	-		V				
White Wagtail	<i>Motacilla alba</i>	Y	-	3.8	4.4	2.5	2.0	0.6	0.5

Common Name	Scientific Name (3)	Wetland Dependent	Conservation Status (1)	Nov Mean (2)	Dec Mean (2)	Jan Mean (2)	Feb Mean (2)	Mar Mean (2)	Apr Mean (2)
Zitting Cisticola	<i>Cisticola juncidis</i>	Y	LC				0.4		
Red-billed Starling	<i>Spodiopsar sericeus</i>	N	(GC)	2.0	19.0	11.8	19.0	8.2	V
White-cheeked Starling	<i>Spodiopsar cineraceus</i>	Y	PRC				1.0		
White-shouldered Starling	<i>Sturnia sinensis</i>	N	(LC)						2.8
Collared Crow	<i>Corvus torquatus</i>	Y	LC, NT	0.4	0.4	0.3	0.2	0.4	0.5
No. of Species Recorded				19	24	18	22	19	17

(1) Conservation status follows that of Fellowes *et al.* (2002) and BirdLife International listing (2010). Letters in parentheses indicate that the assessment is on the basis of restrictedness in breeding and/or roosting sites rather than in general occurrence. (Fellowes *et al.* 2002)

(2) Refers to the mean number of individuals recorded in each survey in the Survey Area (excluding the WRA)

(3) Follows HK bird list (dated 2015-1-12)

V indicates the species is recorded outside regular surveys

Table B2: Summary of bird monitoring (for species of conservation importance and/or wetland-dependence) in the WRA

Common Name	Scientific Name (3)	Wetland Dependent	Conservation Status (1)	May Mean (2)	Jun Mean (2)	Jul Mean (2)	Aug Mean (2)	Sep Mean (2)	Oct Mean (2)
Little Grebe	<i>Tachybaptus ruficollis</i>	Y	LC	1.8	3.4	2.3	4.0	5.0	1.3
Great Cormorant	<i>Phalacrocorax carbo</i>	Y	PRC	0.8	1.8	0.3	0.4	0.2	
Grey Heron	<i>Ardea cinerea</i>	Y	PRC	1.4	3.4	2.3	4.2	2.2	
Great Egret	<i>Ardea alba</i>	Y	PRC, (RC)	0.8	2.2	1.5	2.4	1.2	1.3
Little Egret	<i>Egretta garzetta</i>	Y	PRC, (RC)	5.8	5.6	9.3	4.2	6.4	4.0

Common Name	Scientific Name (3)	Wetland Dependent	Conservation Status (1)	May Mean (2)	Jun Mean (2)	Jul Mean (2)	Aug Mean (2)	Sep Mean (2)	Oct Mean (2)
Chinese Pond Heron	<i>Ardeola bacchus</i>	Y	PRC, (RC)	5.6	4.4	6.5	6.2	3.6	1.0
Black-crowned Night Heron	<i>Nycticorax nycticorax</i>	Y	LC	V		V	V		V
Yellow Bittern	<i>Ixobrychus sinensis</i>	Y	(LC)	0.2	0.8		0.2	0.4	0.5
Cinnamon Bittern	<i>Ixobrychus cinnamomeus</i>	Y	LC					V	
Black-faced Spoonbill	<i>Platalea minor</i>	Y	PGC, EN		0.2				
Eurasian Teal	<i>Anas crecca</i>	Y	RC			V			
Northern Pintail	<i>Anas acuta</i>	Y	RC			V			
Western Osprey	<i>Pandion haliaetus</i>	Y	RC	V					
Black Kite	<i>Milvus migrans</i>	Y	(RC)	V	0.4	0.3	1.0	0.4	0.3
Eastern Buzzard	<i>Buteo japonicus</i>	Y	-				0.4	0.2	
Peregrine Falcon	<i>Falco peregrinus</i>	N	(LC)		V		0.2		
White-breasted Waterhen	<i>Amaurornis phoenicurus</i>	Y	-		0.4	0.3	0.2	0.6	1.0
Common Moorhen	<i>Gallinula chloropus</i>	Y	-	V	V	0.3	0.6	V	0.8
Black-winged Stilt	<i>Himantopus himantopus</i>	Y	RC	0.6	V				
Pied Avocet	<i>Recurvirostra avosetta</i>	Y	RC	V					
Oriental Pratincole	<i>Glareola maldivarum</i>	Y	LC				V		

Common Name	Scientific Name (3)	Wetland Dependent	Conservation Status (1)	May Mean (2)	Jun Mean (2)	Jul Mean (2)	Aug Mean (2)	Sep Mean (2)	Oct Mean (2)
Little Ringed Plover	<i>Charadrius dubius</i>	Y	LC		1.4	V	0.8	0.8	0.3
Kentish Plover	<i>Charadrius alexandrinus</i>	Y	RC	0.6					
Spotted Redshank	<i>Tringa erythropus</i>	Y	RC			V			
Common Redshank	<i>Tringa totanus</i>	Y	RC	V					
Common Greenshank	<i>Tringa nebularia</i>	Y	RC	V	V	V	V	V	
Marsh Sandpiper	<i>Tringa stagnatilis</i>	Y	RC						2.3
Green Sandpiper	<i>Tringa ochropus</i>	Y	-	0.6	2.0	0.8	0.8	0.4	0.8
Wood Sandpiper	<i>Tringa glareola</i>	Y	LC	0.6	0.2	V	0.2	0.2	
Common Sandpiper	<i>Actitis hypoleucos</i>	Y	-	0.4	0.4	0.8	2.2	0.6	1.0
Black-headed Gull	<i>Chroicocephalus ridibundus</i>	Y	PRC						V
Pied Kingfisher	<i>Ceryle rudis</i>	Y	(LC)	0.2	0.6	0.5	V		0.3
White-throated Kingfisher	<i>Halcyon smyrnensis</i>	Y	(LC)	0.2	0.4	V	0.4	0.2	V
Black-capped Kingfisher	<i>Halcyon pileata</i>	Y	LC	V					
Common Kingfisher	<i>Alcedo atthis</i>	Y	-	2.2	1.4	1.8	2.6	2.0	0.3
Eastern Yellow Wagtail	<i>Motacilla tschutschensis</i>	Y	-	0.6	0.4	V	V	0.4	0.5
Grey Wagtail	<i>Motacilla cinerea</i>	Y	-		V	V		V	

Common Name	Scientific Name (3)	Wetland Dependent	Conservation Status (1)	May Mean (2)	Jun Mean (2)	Jul Mean (2)	Aug Mean (2)	Sep Mean (2)	Oct Mean (2)
White Wagtail	<i>Motacilla alba</i>	Y	-	1.6	2.2	V	1.0	1.0	1.0
Black-browed Reed Warbler	<i>Acrocephalus bistrigiceps</i>	Y	-						V
Red-billed Starling	<i>Spodiopsar sericeus</i>	N	(GC)	V	V	0.5			
White-cheeked Starling	<i>Spodiopsar cineraceus</i>	Y	PRC			V	0.6		
No. of Species Recorded				26	25	26	25	22	20

(1) Conservation status follows that of Fellows et al. (2002) and BirdLife international listing (2010). Letters in parentheses indicate that the assessment is on the basis of restrictedness in breeding and/or roosting sites rather than in general occurrence. (Fellowes et al. 2002).

(2) Refers to mean number of individuals recorded in each survey in the Survey Area (excluding the WRA).

(3) Follows HK bird list (dated 2015-1-12).

V indicates the species is recorded outside regular surveys

Table B3: Conservation Status Categories of Bird Species

Code	Category	Brief Description	Source
GC	Global Concern	Habitat loss/ damage in Hong Kong would pose significant threat to global survival.	Fellowes <i>et al.</i> (2002)
RC	Regional Concern	Habitat loss/ damage in Hong Kong would pose significant threat to regional survival.	
LC	Local Concern	Habitat loss/ damage in Hong Kong would pose significant threat to local survival.	
PGC	Potential Global Concern	Large, secure population in Hong Kong is of global significance.	
PRC	Potential Regional Concern	Large, secure population in Hong Kong is of regional significance.	
CR	Critically Endangered	Best available evidence indicates that it meets any of the criteria A to E for Critically Endangered, and it is therefore considered to be facing an extremely high risk of extinction in the wild.	BirdLife International (2010)
EN	Endangered	Best available evidence indicates that it meets any of the criteria A to E for Endangered, and it is therefore considered to be facing a high risk of extinction in the wild.	
VU	Vulnerable	Best available evidence indicates that it meets any of the criteria A to E for Vulnerable, and it is therefore considered to be facing a high risk of extinction in the wild.	
NT	Near Threatened	Does not qualify for Critically Endangered or Vulnerable now, but is close to qualifying for or is likely to qualify for a threatened category in the near future.	

Table B4: Summary of Bird Species Recorded at WRA and their Respective Monthly Mean between September 2010 and October 2012

Common name	Scientific name	Wetland Dependence	Conservation status	Sep- 10	Oct- 10	Nov- 10	Dec- 10	Jan- 11	Feb- 11	Mar- 11	Apr- 11	May- 11	Jun- 11	Jul- 11	Aug- 11	Sep- 11	Oct- 11	Nov- 11	Dec- 11	Jan- 12	Feb- 12	Mar- 12	Apr- 12	May- 12	Jun- 12	Jul- 12	Aug- 12	Sep- 12	Oct- 12	
Little Grebe	<i>Tachybaptus ruficollis</i>	Y	LC				0.5							1.0	3.8	0.8	0.5	0.5		0.6		1.4	1.6	0.8	1.0	1.3	0.2		0.2	
Great Cormorant	<i>Phalacrocorax carbo</i>	Y	PRC				0.8										0.3	0.3	0.4	1.2	0.7	0.2								
Grey Heron	<i>Ardea cinerea</i>	Y	PRC			1.0	1.6	2.0	2.0	0.4							1.0	2.5	1.8	0.8	2.3	0.8				0.3			0.4	
Purple Heron	<i>Ardea purpurea</i>	Y	RC														0.3	0.3												
Great Egret	<i>Ardea alba</i>	Y	PRC				0.4	14.0	2.0	0.2	0.5	0.3	0.5	0.3			1.5	1.8	0.8	1.2	0.6	0.7	0.6	0.6	1.0	0.3		0.4	0.5	1.5
Intermediate Egret	<i>Egretta intermedia</i>	Y	RC				1.7	0.8	0.2								1.5	1.5	1.5	1.0	0.6	0.7	0.6	0.6				0.3	0.9	
Little Egret	<i>Egretta garzetta</i>	Y	PRC			1.8	8.0	2.0	0.4	0.5	0.8	0.3	0.3	1.0	1.0	0.5	1.5	1.6	1.4	2.0	1.6					0.8	0.3	1.2		
Eastern Cattle Egret	<i>Bubulcus coromandus</i>	Y	(LC)										0.3	11.8		1.3	0.3		0.4					0.3		0.2				
Chinese Pond Heron	<i>Ardeola bacchus</i>	Y	PRC			1.0	0.2				0.3	0.3	0.3	1.5	4.2	7.8	4.5	5.3	2.4	0.3	2.3	2.6	1.4	0.8	1.0	0.8	2.0	1.8	2.2	
Yellow Bittern	<i>Ixobrychus sinensis</i>	Y	(LC)														0.3	0.3												
Cinnamon Bittern	<i>Ixobrychus cinnamomeus</i>	Y	LC																											
Black-crowned Night Heron	<i>Nycticorax nycticorax</i>	Y	LC																											
Eurasian Spoonbill	<i>Platalea leucorodia</i>	Y	LC																											
Black-faced Spoonbill	<i>Platalea minor</i>	Y	PGC, EN					0.3	10.3											0.4										
Mandarin Duck	<i>Aix galericulata</i>	Y	-														0.3													
Eurasian Wigeon	<i>Anas penelope</i>	Y	RC				1.6	2.5																						
Eurasian Teal	<i>Anas crecca</i>	Y	RC				1.0																							
Northern Pintail	<i>Anas acuta</i>	Y	RC				0.2	7.0																						

Common name	Scientific name	Wetland Dependence	Conservation status	Sep- 10	Oct- 10	Nov- 10	Dec- 10	Jan- 11	Feb- 11	Mar- 11	Apr- 11	May- 11	Jun- 11	Jul- 11	Aug- 11	Sep- 11	Oct- 11	Nov- 11	Dec- 11	Jan- 12	Feb- 12	Mar- 12	Apr- 12	May- 12	Jun- 12	Jul- 12	Aug- 12	Sep- 12	Oct- 12
Northern Shoveler	<i>Anas clypeata</i>	Y	RC																										
Tufted Duck	<i>Aythya fuligula</i>	Y	LC																										
Garganey	<i>Anas querquedula</i>	Y	-																										
Western Osprey	<i>Pandion haliaetus</i>	Y	RC				0.2																						
Black-winged Kite	<i>Elanus caeruleus</i>	Y	LC																										
Black Kite	<i>Milvus migrans</i>	N	(RC)					0.8	0.3	0.2		0.3				0.3				0.2			0.2	0.5					0.4
Crested Serpent Eagle	<i>Spilornis cheela</i>	N	(LC)																										
Eastern Buzzard	<i>Buteo japonicus</i>	N	-							0.2																			
Common Kestrel	<i>Falco tinnunculus</i>	N	-			1.0	0.4	1.0	0.3	0.4																			
Eurasian Hobby	<i>Falco subbuteo</i>	Y	(LC)																										
Peregrine Falcon	<i>Falco peregrinus</i>	N	-																										
Greater Spotted Eagle	<i>Clanga clanga</i>	N	GC																										
Eastern Imperial Eagle	<i>Aquila heliaca</i>	N	-																										
Japanese Quail	<i>Coturnix japonica</i>	Y	LC																										
Baillon's Crake	<i>Porzana pusilla</i>	Y	LC																										
White-breasted Waterhen	<i>Amauornis phoenicurus</i>	Y	-								0.5	0.8	1.3	2.6	1.3	1.5	0.3				0.4				0.5	1.0	0.5		
Watercock	<i>Gallicrex cinerea</i>	Y	RC																										
Common Moorhen	<i>Gallinula chloropus</i>	Y	-																								0.2		

Common name	Scientific name	Wetland Dependence	Conservation status	Sep- 10	Oct- 10	Nov- 10	Dec- 10	Jan- 11	Feb- 11	Mar- 11	Apr- 11	May- 11	Jun- 11	Jul- 11	Aug- 11	Sep- 11	Oct- 11	Nov- 11	Dec- 11	Jan- 12	Feb- 12	Mar- 12	Apr- 12	May- 12	Jun- 12	Jul- 12	Aug- 12	Sep- 12	Oct- 12
Pheasant-tailed Jacana	<i>Hydrophasianus chirurgus</i>	Y	LC															0.3											
Greater Painted-snipe	<i>Rostratula benghalensis</i>	Y	LC								0.5																		
Black-winged Stilt	<i>Himantopus himantopus</i>	Y	RC	8.0													1.0												
Pied Avocet	<i>Recurvirostra avosetta</i>	Y	RC				0.2															0.2							
Oriental Pratincole	<i>Glareola maldivarum</i>	Y	LC								2.5																		
Little Ringed Plover	<i>Charadrius dubius</i>	Y	LC	3.0		24.5	7.4	3.8	9.0	6.8	10.5	5.5	0.5		0.2						1.0	0.6							
Kentish Plover	<i>Charadrius alexandrinus</i>	Y	RC																										
Spotted Redshank	<i>Tringa erythropus</i>	Y	RC																										
Common Redshank	<i>Tringa totanus</i>	Y	RC																										
Marsh Sandpiper	<i>Tringa stagnatilis</i>	Y	RC																										
Common Greenshank	<i>Tringa nebularia</i>	Y	RC			0.5											0.3	0.8	0.2										
Green Sandpiper	<i>Tringa ochropus</i>	Y	-			1.0	0.4	0.5	0.5	0.4				0.3							0.2		0.2	0.4			0.2		
Wood Sandpiper	<i>Tringa glareola</i>	Y	LC						0.5	1.2											0.8	0.3					0.6		
Common Sandpiper	<i>Actitis hypoleucos</i>	Y	-	1.0		0.5	1.0		0.5	0.6	1.0	0.3			0.2							0.4	0.2					0.9	
Eurasian Woodcock	<i>Scolopax rusticola</i>	Y	-																										
Pintail/ Swinhoe's Snipe*	<i>Gallinago stenura/ G. megala</i>	Y	LC*			0.5											0.3												
Common Snipe	<i>Gallinago gallinago</i>	Y	-						0.3	0.2																			

Common name	Scientific name	Wetland Dependence	Conservation status	Sep- 10	Oct- 10	Nov- 10	Dec- 10	Jan- 11	Feb- 11	Mar- 11	Apr- 11	May- 11	Jun- 11	Jul- 11	Aug- 11	Sep- 11	Oct- 11	Nov- 11	Dec- 11	Jan- 12	Feb- 12	Mar- 12	Apr- 12	May- 12	Jun- 12	Jul- 12	Aug- 12	Sep- 12	Oct- 12
Red-necked Stint	<i>Calidris ruficollis</i>	Y	LC	3.0																									
Temminck's Stint	<i>Calidris temminckii</i>	Y	LC			0.5			2.5	0.4	1.3																		
Long-toed Stint	<i>Calidris subminuta</i>	Y	LC																		0.3								
Whiskered Tern	<i>Chlidonias hybrida</i>	Y	-																					1.3					
Domestic Pigeon	<i>Columba livia</i>	N	-																	DS									
Eurasian Collared Dove	<i>Streptopelia decaocto</i>	N	-																										
Oriental Turtle Dove	<i>Streptopelia orientalis</i>	N	-																	0.2									
Red Turtle Dove	<i>Streptopelia tranquebarica</i>	N	-																										
Spotted Dove	<i>Spilopelia chinensis</i>	N	-																	DS		DS	DS		DS			DS	0.6
Asian Koel	<i>Eudynamys scolopaceus</i>	N	-																										
Greater Coucal#	<i>Centropus sinensis</i>	N																											
Eurasian Eagle Owl	<i>Bubo bubo</i>	N	RC																										
Savanna Nightjar	<i>Caprimulgus affinis</i>	N	-																										
Pacific Swift	<i>Apus pacificus</i>	N	(LC)								0.3																		
House Swift	<i>Apus nipalensis</i>	N	-	10.0					0.2												DS	DS							
Pied Kingfisher	<i>Ceryle rudis</i>	Y	(LC)				0.2	0.3	0.5	0.2			0.3									0.2					0.5		
Common Kingfisher	<i>Alcedo atthis</i>	Y	-				0.4	0.5	0.3		0.3	0.5	1.0	0.3	1.0	0.8	0.5	0.8	1.0	0.4		0.8					0.6		0.4
White-throated Kingfisher	<i>Halcyon smyrnensis</i>	N	(LC)															0.3									0.3		

Common name	Scientific name	Wetland Dependence	Conservation status	Sep- 10	Oct- 10	Nov- 10	Dec- 10	Jan- 11	Feb- 11	Mar- 11	Apr- 11	May- 11	Jun- 11	Jul- 11	Aug- 11	Sep- 11	Oct- 11	Nov- 11	Dec- 11	Jan- 12	Feb- 12	Mar- 12	Apr- 12	May- 12	Jun- 12	Jul- 12	Aug- 12	Sep- 12	Oct- 12
Eurasian Hoopoe	<i>Upupa epops</i>	N	-																										
Barn Swallow	<i>Hirundo rustica</i>	N	-	25.0					1.5												DS	DS		DS		DS	DS	3.0	
Red-rumped Swallow	<i>Hirundo daurica</i>	N	-																										
Eastern Yellow Wagtail	<i>Motacilla tschutschensis</i>	Y	-			14.5	10.2	15.0	23.5	8.2	11.8	1.8			0.2	0.8	1.5	2.0	1.2	0.6		4.0	1.0						
Grey Wagtail	<i>Motacilla cinerea</i>	Y	-				0.2		0.3	0.2						0.3													
White Wagtail	<i>Motacilla alba</i>	Y	-	3.0			1.8												DS	DS	DS	DS	DS				DS	1.8	3.2
Richard's Pipit	<i>Anthus richardi</i>	Y	-			1.5	0.8	0.5	1.0	1.0	1.8	0.5					0.3		DS		DS	DS	DS						
Olive-backed Pipit	<i>Anthus hodgsoni</i>	N	-			0.5												DS											
Red-throated Pipit	<i>Anthus cervinus</i>	N	LC		2.0	2.5	1.2	0.5	0.5	0.2													0.4						0.7
Buff-bellied Pipit	<i>Anthus rubescens</i>	N	LC		1.0	1.5																							
Red-whiskered Bulbul	<i>Pycnonotus jocosus</i>	N	-																										
Chinese Bulbul	<i>Pycnonotus sinensis</i>	N	-																			DS		DS		DS			
Bull-headed Shrike	<i>Lanius bucephalus</i>	N	-																										
Brown Shrike	<i>Lanius cristatus</i>	N	-																										
Long-tailed Shrike	<i>Lanius schach</i>	N	-																	DS	DS					DS	DS		
Oriental Magpie Robin	<i>Copsychus saularis</i>	N	-																		DS								
Daurian Redstart	<i>Phoenicurus aureus</i>	N	-																										
Stejneger's Stonechat	<i>Saxicola stejnegeri</i>	N	-		3.0	0.5	1.0	1.0	0.8	0.2	0.3						1.0		DS	DS		DS							
Masked Laughingthrush	<i>Garrulax perspicillatus</i>	N	-																							DS			

Common name	Scientific name	Wetland Dependence	Conservation status	Sep- 10	Oct- 10	Nov- 10	Dec- 10	Jan- 11	Feb- 11	Mar- 11	Apr- 11	May- 11	Jun- 11	Jul- 11	Aug- 11	Sep- 11	Oct- 11	Nov- 11	Dec- 11	Jan- 12	Feb- 12	Mar- 12	Apr- 12	May- 12	Jun- 12	Jul- 12	Aug- 12	Sep- 12	Oct- 12
Lanceolated Warbler	<i>Locustella lanceolata</i>	Y	-														0.3												
Pallas's Grasshopper Warbler	<i>Locustella certhiola</i>	Y	LC														0.3												
Oriental Reed Warbler	<i>Acrocephalus orientalis</i>	Y	-																										
Thick-billed Warbler	<i>Acrocephalus aedon</i>	Y	LC																										
Black-browed Reed Warbler	<i>Acrocephalus bistrigiceps</i>	Y	-														0.3												
Common Tailorbird	<i>Orthotomus sutorius</i>	N	-																										
Zitting Cisticola	<i>Cisticola juncidis</i>	Y	LC							0.2	1.5	2.5	2.5	1.0	0.4		0.3	0.8	1.8	0.2	0.3	0.6					0.2		
Yellow-bellied Prinia	<i>Prinia flaviventris</i>	N	-																	DS		DS		DS		DS	DS	0.8	0.4
Plain Prinia	<i>Prinia inornata</i>	N	-																		DS		DS		DS	DS			
Dusky Warbler	<i>Phylloscopus fuscatus</i>	N	-														0.5		DS										
Pallas's Leaf Warbler	<i>Phylloscopus proregulus</i>	N	-																										
Yellow-browed warbler	<i>Phylloscopus inornatus</i>	N	-																										1.4
Chinese Penduline-Tit	<i>Remiz consobrinus</i>	Y	RC																		1.2	0.2							
Japanese White-eye	<i>Zosterops japonica</i>	N	-																										
Little Bunting	<i>Emberiza pusilla</i>	N	-			0.5																							
Black-faced Bunting	<i>Emberiza spodocephala</i>	N	-								0.5																		
Chinese Grosbeak	<i>Eophona migratoria</i>	N	LC														0.3												

Common name	Scientific name	Wetland Dependence	Conservation status	Sep- 10	Oct- 10	Nov- 10	Dec- 10	Jan- 11	Feb- 11	Mar- 11	Apr- 11	May- 11	Jun- 11	Jul- 11	Aug- 11	Sep- 11	Oct- 11	Nov- 11	Dec- 11	Jan- 12	Feb- 12	Mar- 12	Apr- 12	May- 12	Jun- 12	Jul- 12	Aug- 12	Sep- 12	Oct- 12
Scaly-breasted Munia	<i>Lonchura punctulata</i>	N	-	20.0				2.5		15.0	7.5													DS		DS	DS	1.5	
Eurasian Tree Sparrow	<i>Passer montanus</i>	N	-																			DS		DS		DS			
Red-billed Starling	<i>Spodiopsar sericeus</i>	N	GC													0.3		0.8	1.6	6.6	39.0	17.4							
White-cheeked Starling	<i>Spodiopsar cineraceus</i>	N	PRC													6.6													
Black-collared Starling	<i>Gracupica nigricollis</i>	N	-																DS	DS	DS	DS					DS		
White-shouldered Starling	<i>Sturnia sinensis</i>	N	(LC)									0.3		0.5	2.4														
Common Myna	<i>Acridotheres tristis</i>	N	-																		DS								
Crested Myna	<i>Acridotheres cristatellus</i>	N	–	3.0															DS					DS		DS			V
Black-napped Oriole	<i>Oriolus chinensis</i>	N	LC													1.0													
Black Drongo	<i>Dicrurus macrocercus</i>	N	-																							DS	DS		
Azure-winged Magpie	<i>Cyanopica cyanus</i>	N	-																										
Eurasian Magpie	<i>Pica pica</i>	N	-																			DS				DS	0.3		
Large-billed Crow	<i>Corvus macrorhynchos</i>	N	-				0.4			0.2																			
Collared Crow	<i>Corvus torquatus</i>	N	LC, NT				0.2	0.3			0.5		0.3		0.8	0.8	0.8	0.5							0.8				

Note: Conservation Status follows that of Fellows et. al. (2002)

* Pintail Snipe and Swinhoe's Snipe cannot be distinguished in field, conservation status refers to Swinhoe's Snipe.

V Indicates the species is recorded outside regular surveys.

DS Indicates species recorded during survey.

Greater Coucal is listed as vulnerable (VU) in China Red Data Book and it is protected terrestrial wildlife state protection (category II).

Table B5: Summary of Bird Species Recorded at the WRA and their Respective Monthly Mean between November 2012 and October 2014

Common name	Scientific name	Wetland Dependence	Conservation status	Nov- 12	Dec- 12	Jan- 13	Feb- 13	Mar- 13	Apr- 13	May- 13	Jun- 13	Jul- 13	Aug- 13	Sep- 13	Oct- 13	Nov- 13	Dec- 13	Jan- 14	Feb- 14	Mar- 14	Apr- 14	May- 14	Jun- 14	Jul- 14	Aug- 14	Sep- 14	Oct- 14
Little Grebe	<i>Tachybaptus ruficollis</i>	Y	LC	1.0	1.0	1.2	0.4	0.6	0.4	1.5	0.5		0.6	0.5	1.2	0.6	2.2	1.8	5.3	4.5	2.4	0.8	2.0	3.2	1.8	1.6	1.4
Great Cormorant	<i>Phalacrocorax carbo</i>	Y	PRC	0.8	3.2	0.8	1.0	0.0	0.0						0.2	V	0.4	0.6	0.5								V
Grey Heron	<i>Ardea cinerea</i>	Y	PRC	0.8	1.4	0.8	1.4	0.0	0.0					V	1.0	2.8	2.6	1.6	2.5							1.0	1.6
Purple Heron	<i>Ardea purpurea</i>	Y	RC																								
Great Egret	<i>Ardea alba</i>	Y	PRC	1.4	0.6	1.0	0.8	0.2	0.6		0.8	0.6			0.6	0.6	2.4	1.2	1.8	0.8	0.2	V	0.5	V	V	0.2	V
Intermediate Egret	<i>Egretta intermedia</i>	Y	RC	0.2	0.0	0.0	0.0	0.0	0.0										V								V
Little Egret	<i>Egretta garzetta</i>	Y	PRC	0.8	2.0	2.2	1.4	0.6	1.2	0.6	1.8	0.4	3.4	0.5	2.2	1.4	2.4	4.4	4.0	3.8	3.2	1.2	3.3	1.8	1.3	2.6	1.6
Eastern Cattle Egret	<i>Bubulcus coromandus</i>	Y	(LC)																	1.6	V						
Chinese Pond Heron	<i>Ardeola bacchus</i>	Y	PRC	1.6	2.2	2.4	0.4	0.0	0.0			0.8	2.0	0.5	1.4	1.4	2.6	6.8	3.5	2.5	1.0	1.6	1.0	1.4	1.5	4.2	1.4
Yellow Bittern	<i>Ixobrychus sinensis</i>	Y	(LC)						V	1.0	2.5	0.2	1.4	1.3	0.8	0.4	0.2			V	V	0.4	1.3	1.0	0.8	0.2	0.2
Cinnamon Bittern	<i>Ixobrychus cinnamomeus</i>	Y	LC																								
Black-crowned Night Heron	<i>Nycticorax nycticorax</i>	Y	LC	V		0.2					0.3				V					V		V					V
Eurasian Spoonbill	<i>Platalea leucorodia</i>	Y	LC																								
Black-faced Spoonbill	<i>Platalea minor</i>	Y	PGC, EN																V	V							
Mandarin Duck	<i>Aix galericulata</i>	Y	-																								
Eurasian Wigeon	<i>Anas penelope</i>	Y	RC																								
Eurasian Teal	<i>Anas crecca</i>	Y	RC																								
Northern Pintail	<i>Anas acuta</i>	Y	RC																								

Common name	Scientific name	Wetland Dependence	Conservation status	Nov- 12	Dec- 12	Jan- 13	Feb- 13	Mar- 13	Apr- 13	May- 13	Jun- 13	Jul- 13	Aug- 13	Sep- 13	Oct- 13	Nov- 13	Dec- 13	Jan- 14	Feb- 14	Mar- 14	Apr- 14	May- 14	Jun- 14	Jul- 14	Aug- 14	Sep- 14	Oct- 14
Northern Shoveler	<i>Anas clypeata</i>	Y	RC			V											1.2	7.0	5.5	V							
Tufted Duck	<i>Aythya fuligula</i>	Y	LC			V																					
Garganey	<i>Anas querquedula</i>	Y	-																								
Western Osprey	<i>Pandion haliaetus</i>	Y	RC																								
Black-winged Kite	<i>Elanus caeruleus</i>	Y	LC																								
Black Kite	<i>Milvus migrans</i>	N	(RC)	0.0	0.2	0.0	0.0	0.6	0.0	0.2	0.3		1.2	0.8	0.2	0.2		V	0.5	0.8	0.4	0.6	0.3	0.6			0.4
Crested Serpent Eagle	<i>Spilornis cheela</i>	N	(LC)																V								
Eastern Buzzard	<i>Buteo japonicus</i>	N	-																								V
Common Kestrel	<i>Falco tinnunculus</i>	N	-																								
Eurasian Hobby	<i>Falco subbuteo</i>	Y	(LC)																						V		
Peregrine Falcon	<i>Falco peregrinus</i>	N	-		V												V										
Greater Spotted Eagle	<i>Clanga clanga</i>	N	GC																								
Imperial Eagle	<i>Aquila heliaca</i>	N	-			V																					
Japanese Quail	<i>Coturnix japonica</i>	Y	LC													V											
Baillon's Crake	<i>Porzana pusilla</i>	Y	LC																								
White-breasted Waterhen	<i>Amauornis phoenicurus</i>	Y	-	0.2		0.2	0.0	0.4	0.2	V	1.8	0.2	0.2	V	0.8	0.4			V	0.2	0.2		V	1.4	0.5	0.5	0.2
Watercock	<i>Gallicrex cinerea</i>	Y	RC																								

Common name	Scientific name	Wetland Dependence	Conservation status	Nov- 12	Dec- 12	Jan- 13	Feb- 13	Mar- 13	Apr- 13	May- 13	Jun- 13	Jul- 13	Aug- 13	Sep- 13	Oct- 13	Nov- 13	Dec- 13	Jan- 14	Feb- 14	Mar- 14	Apr- 14	May- 14	Jun- 14	Jul- 14	Aug- 14	Sep- 14	Oct- 14
Common Moorhen	<i>Gallinula chloropus</i>	Y	-																V	0.2							
Pheasant-tailed Jacana	<i>Hydrophasianus chirurgus</i>	Y	LC																								
Greater Painted-snipe	<i>Rostratula benghalensis</i>	Y	LC	0.2	0.0	0.0	0.0	0.0	0.0																		
Black-winged Stilt	<i>Himantopus himantopus</i>	Y	RC									0.2	0.6	V	0.2	V									V	V	
Pied Avocet	<i>Recurvirostra avosetta</i>	Y	RC	0.0	0.2	0.0	0.0	0.0	0.0																		
Oriental Pratincole	<i>Glareola maldivarum</i>	Y	LC																								
Little Ringed Plover	<i>Charadrius dubius</i>	Y	LC	0.0	0.0	0.4	1.0	0.2	0.0						V	0.4		V	0.5	0.8			0.3				1.2
Kentish Plover	<i>Charadrius alexandrinus</i>	Y	RC									0.8				V											
Spotted Redshank	<i>Tringa erythropus</i>	Y	RC												V												
Common Redshank	<i>Tringa totanus</i>	Y	RC																								
Marsh Sandpiper	<i>Tringa stagnatilis</i>	Y	RC																								
Common Greenshank	<i>Tringa nebularia</i>	Y	RC	V	V	V		V									V	V		V							V
Green Sandpiper	<i>Tringa ochropus</i>	Y	-						0.2						1.0	0.6	V		0.5					V			V
Wood Sandpiper	<i>Tringa glareola</i>	Y	LC		V		V	V							V	V	V	V	V	V				0.4	0.3		0.2
Common Sandpiper	<i>Actitis hypoleucos</i>	Y	-	0.2					0.2	0.2		V	0.6	V	0.8	1.6	0.2	V	0.3	1.3	0.2	0.4	V	V	0.3	2.6	4.4
Eurasian Woodcock	<i>Scolopax rusticola</i>	Y	-																								
Pintail/Swinhoe's Snipe*	<i>Gallinago stenura/ G. megala</i>	Y	LC*, -													V											

Common name	Scientific name	Wetland Dependence	Conservation status	Nov- 12	Dec- 12	Jan- 13	Feb- 13	Mar- 13	Apr- 13	May- 13	Jun- 13	Jul- 13	Aug- 13	Sep- 13	Oct- 13	Nov- 13	Dec- 13	Jan- 14	Feb- 14	Mar- 14	Apr- 14	May- 14	Jun- 14	Jul- 14	Aug- 14	Sep- 14	Oct- 14
Common Snipe	<i>Gallinago gallinago</i>	Y	-		V				V																		
Red-necked Stint	<i>Calidris ruficollis</i>	Y	LC																								
Temminck's Stint	<i>Calidris temminckii</i>	Y	LC																								0.6
Long-toed Stint	<i>Calidris subminuta</i>	Y	LC																								
Whiskered Tern	<i>Chlidonias hybrida</i>	Y	-																								
Domestic Pigeon	<i>Columba livia</i>	N	-																								
Eurasian Collared Dove	<i>Streptopelia decaocto</i>	N	-																								V
Oriental Turtle Dove	<i>Streptopelia orientalis</i>	N	-																								
Red Turtle Dove	<i>Streptopelia tranquebarica</i>	N	-																								
Spotted Dove	<i>Spilopelia chinensis</i>	N	-	0.4	1.2	0.4		0.2	0.2	0.4	0.5	0.8	2.8	2.0	2.6	2.6	3.0	6.2	2.3	2.0	1.0	0.6	1.6	1.2	1.3	2.2	3.6
Asian Koel	<i>Eudynamys scolopaceus</i>	N	-																	V							
Greater Coucal#	<i>Centropus sinensis</i>	N								0.2	0.3	0.2	0.2		0.2	0.2				0.4	0.8	0.3	0.8	0.5	0.2	0.2	
Eurasian Eagle Owl	<i>Bubo bubo</i>	N	RC											V		V			V								
Savanna Nightjar	<i>Caprimulgus affinis</i>	N	-				V				V								V								
Pacific Swift	<i>Apus pacificus</i>	N	(LC)																								
House Swift	<i>Apus nipalensis</i>	N	-	0.4		V												V	0.5								
Pied Kingfisher	<i>Ceryle rudis</i>	Y	(LC)						V				V			0.4	V	0.3	V					V			
Common Kingfisher	<i>Alcedo atthis</i>	Y	-	0.2	0.2	0.5	0.4	0.2	0.2	0.6	0.3	0.4	0.4	0.8	1.0	2.0	1.6	1.2	2.3	0.8	1.0			V			

Common name	Scientific name	Wetland Dependence	Conservation status	Nov- 12	Dec- 12	Jan- 13	Feb- 13	Mar- 13	Apr- 13	May- 13	Jun- 13	Jul- 13	Aug- 13	Sep- 13	Oct- 13	Nov- 13	Dec- 13	Jan- 14	Feb- 14	Mar- 14	Apr- 14	May- 14	Jun- 14	Jul- 14	Aug- 14	Sep- 14	Oct- 14
White-throated Kingfisher	<i>Halcyon smyrnensis</i>	N	(LC)													V	0.2					1.2	1.8	0.6	1.3	1.4	1.8
Eurasian Hoopoe	<i>Upupa epops</i>	N	-																								
Barn Swallow	<i>Hirundo rustica</i>	N	-	0.2	1.0		0.2	9.2	23.0	11.2		1.4	1.8	1.0		V			0.5	7.8	15.4	18.0	1.5	1.0	1.5	0.4	V
Red-rumped Swallow	<i>Hirundo daurica</i>	N	-	1.2	1.2													0.6									
Eastern Yellow Wagtail	<i>Motacilla tschutschensis</i>	Y	-	0.2	0.2	1.4	2.8	2.2	2.2	0.2					0.4	0.2	0.6	0.6	1.0	0.3	0.2					0.6	0.2
Eurasian Hoopoe	<i>Upupa epops</i>	N	-																								
Grey Wagtail	<i>Motacilla cinerea</i>	Y	-	0.6	0.0	0.0	0.0	0.0																			
White Wagtail	<i>Motacilla alba</i>	Y	-	2.6	1.0	1.0	3.0	4.8	2.0	1.0		1.2	0.4	3.5	2.8	3.6	2.6	1.2	1.3	2.5	1.6	0.6	1.2	0.8	1.8	1.8	3.2
Richard's Pipit	<i>Anthus richardi</i>	Y	-	0.2	0.4	1.2	0.4	0.4									0.4	0.8	2.0	2.3	3.0	V					V
Olive-backed Pipit	<i>Anthus hodgsoni</i>	N	-				0.6	1.2	1.4											0.2							
Red-throated Pipit	<i>Anthus cervinus</i>	N	LC																								
Buff-bellied Pipit	<i>Anthus rubescens</i>	N	LC																								
Red-whiskered Bulbul	<i>Pycnonotus jocosus</i>	N	-						0.2		0.3		0.2			V		0.8	1.3	0.3	0.2			0.2	0.3	1.2	
Chinese Bulbul	<i>Pycnonotus sinensis</i>	N	-		0.2	2.0	0.2	0.2	3.2	2.0	3.8		2.4	3.5	0.2	1.8	4.0	3.8	0.5	0.8	1.6	1.8	2.3	2.2	2.3	0.4	4.6
Bull-headed Shrike	<i>Lanius bucephalus</i>	N	-																								V
Brown Shrike	<i>Lanius cristatus</i>	N	-																								
Long-tailed Shrike	<i>Lanius schach</i>	N	-	0.2		0.4			0.2		V	0.4	0.2	0.3	0.2		0.2	V	0.3			0.2	0.3	0.4	0.5	V	

Common name	Scientific name	Wetland Dependence	Conservation status	Nov- 12	Dec- 12	Jan- 13	Feb- 13	Mar- 13	Apr- 13	May- 13	Jun- 13	Jul- 13	Aug- 13	Sep- 13	Oct- 13	Nov- 13	Dec- 13	Jan- 14	Feb- 14	Mar- 14	Apr- 14	May- 14	Jun- 14	Jul- 14	Aug- 14	Sep- 14	Oct- 14
Oriental Magpie Robin	<i>Copsychus saularis</i>	N	-		0.2					0.2	0.5		0.2	0.3	V	0.2	0.2	0.4			0.2		0.3	V	V	V	
Daurian Redstart	<i>Phoenicurus aureus</i>	N	-			0.2										0.2	0.2	0.4									V
Stejneger's Stonechat	<i>Saxicola stejnegeri</i>	N	-	0.4	0.4	0.8			0.6						V	0.2	0.2	0.4	0.5	0.3	V	0.2					0.4
Masked Laughingthrush	<i>Garrulax perspicillatus</i>	N	-					0.6	1.2					1.0			0.4	0.8	V	0.5	0.2	0.2	0.5	V	1.5	0.8	
Lanceolated Warbler	<i>Locustella lanceolata</i>	Y	-																								
Pallas's Grasshopper Warbler	<i>Locustella certhiola</i>	Y	LC																								
Oriental Reed Warbler	<i>Acrocephalus orientalis</i>	Y	-																							V	
Thick-billed Warbler	<i>Acrocephalus aedon</i>	Y	LC																								
Black-browed Reed Warbler	<i>Acrocephalus bistrigiceps</i>	Y	-	0.2	0.0	0.0	0.0	0.0	0.0																		
Common Tailorbird	<i>Orthotomus sutorius</i>	N	-																								0.2
Zitting Cisticola	<i>Cisticola juncidis</i>	Y	LC		0.2				V									0.4		0.3	0.2						
Yellow-bellied Prinia	<i>Prinia flaviventris</i>	N	-		0.8	0.6	0.8	1.4	4.6	4.4	5.0	2.4	1.8	3.0	2.4	0.8	1.0	0.8	1.3	2.8	0.8	0.8	0.4			0.4	
Plain Prinia	<i>Prinia inornata</i>	N	-	1.2	0.4	V	1.4	0.2	0.2	0.2	0.5	0.8	0.4	0.3		0.4		0.2	V	0.8	2.0	1.0		2.6	4.3	3.4	
Dusky Warbler	<i>Phylloscopus fuscatus</i>	N	-												V	0.4		0.4	0.8	1.5	V					V	V
Pallas's Leaf Warbler	<i>Phylloscopus proregulus</i>	N																									
Yellow- browed warbler	<i>Phylloscopus inornatus</i>	N	-	0.8	0.6																			0.8	0.5		V
Chinese Penduline-Tit	<i>Remiz consobrinus</i>	Y	RC														V		4.5	V							

Common name	Scientific name	Wetland Dependence	Conservation status	Nov- 12	Dec- 12	Jan- 13	Feb- 13	Mar- 13	Apr- 13	May- 13	Jun- 13	Jul- 13	Aug- 13	Sep- 13	Oct- 13	Nov- 13	Dec- 13	Jan- 14	Feb- 14	Mar- 14	Apr- 14	May- 14	Jun- 14	Jul- 14	Aug- 14	Sep- 14	Oct- 14
Japanese White-eye	<i>Zosterops japonica</i>	N	-															0.2		0.6				V			
Little Bunting	<i>Emberiza pusilla</i>	N	-																								
Black-faced Bunting	<i>Emberiza spodocephala</i>	N	-																	V							
Chinese Grosbeak	<i>Eophona migratoria</i>	N	LC																								
Scaly-breasted Munia	<i>Lonchura punctulata</i>	N	-				1.0	2.2	1.0			2.0	0.4	0.3			1.8	1.8	V	1.8	V	3.2	5.8	0.8	1.5	1.3	
Eurasian Tree Sparrow	<i>Passer montanus</i>	N	-												0.8	V									V	8.8	3.6
Red-billed Starling	<i>Spodiopsar sericeus</i>	N	GC																V			V				V	
White-cheeked Starling	<i>Spodiopsar cineraceus</i>	N	PRC																								
Black-collared Starling	<i>Gracupica nigricollis</i>	N	-			0.8	0.4	0.2	0.2	0.2				0.8		0.8	1.6	0.8	0.5	1.8	0.2	0.2	V	1.0	1.0	1.2	1.4
White-shouldered Starling	<i>Sturnia sinensis</i>	N	(LC)									0.2											V		V		V
Common Myna	<i>Acridotheres tristis</i>	N	-																						V		
Crested Myna	<i>Acridotheres cristatellus</i>	N	–	0.6						0.2	0.3	0.8	0.2			2.0	1.8	1.4	0.5	1.3	1.0	0.6	1.0	1.2	3.5	0.2	1.8
Black-naped Oriole	<i>Oriolus chinensis</i>	N	LC																								
Black Drongo	<i>Dicrurus macrocercus</i>	N	-											0.3	0.4	V				V					1.5		0.2
Azure-winged Magpie	<i>Cyanopica cyanus</i>	N	-													V											
Eurasian Magpie	<i>Pica pica</i>	N	-								0.3					V		0.8	V	0.3	0.2						

Common name	Scientific name	Wetland Dependence	Conservation status	Nov- 12	Dec- 12	Jan- 13	Feb- 13	Mar- 13	Apr- 13	May- 13	Jun- 13	Jul- 13	Aug- 13	Sep- 13	Oct- 13	Nov- 13	Dec- 13	Jan- 14	Feb- 14	Mar- 14	Apr- 14	May- 14	Jun- 14	Jul- 14	Aug- 14	Sep- 14	Oct- 14
Large-billed Crow	<i>Corvus macrorhynchos</i>	N	-								1.0												0.3				
Collared Crow	<i>Corvus torquatus</i>	N	LC, NT						V						0.2	0.2			V	0.5	0.8	0.4		0.6		0.4	V

Note: Conservation Status follows that of Fellows et. al. (2002)

* Pintail Snip and Swinhoe's Snipe cannot be distinguished in field, conservation status refers to Swinhoe's Snipe.

V Indicates the species is recorded outside regular surveys.

DS Indicates species recorded during survey.

Greater Coucal is listed as vulnerable (VU) in China Red Data Book and it is protected terrestrial wildlife state protection (category II).

Table B6: Summary of Bird Species Recorded at the WRA and their Respective Monthly Mean between November 2014 and October 2016

Common name	Scientific name	Wetland Dependence	Conservation status	Nov-14	Dec-14	Jan-15	Feb-15	Mar-15	Apr-15	May-15	Jun-15	Jul-15	Aug-15	Sep-15	Oct-15	Nov-15	Dec-15	Jan-16	Feb-16	Mar-16	Apr-16	May-16	Jun-16	Jul-16	Aug-16	Sep-16	Oct-16
Little Grebe	<i>Tachybaptus ruficollis</i>	Y	LC	2.5	1.2	2.0	2.0	2.0	0.8	1.2	2.8	1.6	1.8	1.0	2.0	2.3	2.4	3.2	3.3	3.8	2.4	1.4	0.8	1.5	1.4	0.8	V
Great Cormorant	<i>Phalacrocorax carbo</i>	Y	PRC	0.5	1.8	2.0	0.8	0.6							0.2		0.6	0.2	V	V							0.5
Grey Heron	<i>Ardea cinerea</i>	Y	PRC	2.3	2.6	5.3	4.8	0.8	V					0.4	1.8	1.3	2.0	1.2	2.0							0.8	0.8
Purple Heron	<i>Ardea purpurea</i>	Y	RC												0.2												
Great Egret	<i>Ardea alba</i>	Y	PRC	0.5	1.6	0.8	0.3	V	0.3	V		0.2	0.3	1.8	1.0	0.3	0.4	0.8	0.3	0.6	0.2	0.2	0.2	0.3	0.6	1.0	0.8
Intermediate Egret	<i>Egretta intermedia</i>	Y	RC											V				V	V								
Little Egret	<i>Egretta garzetta</i>	Y	PRC	3.0	3.6	5.3	3.5	4.6	6.3	1.4	0.6	0.2	1.8	2.0	1.8	2.3	4.8	8.2	3.0	1.6	2.6	1.2	2.4	2.8	4.6	3.6	6.3
Eastern Cattle Egret	<i>Bubulcus coromandus</i>	Y	(LC)			V									0.8						V		V	0.3		V	V
Chinese Pond Heron	<i>Ardeola bacchus</i>	Y	PRC	2.0	2.8	2.3	2.8	1.2	1.8	0.6	0.8	1.8	1.3	2.8	5.4	3.3	8.2	3.6	2.0	1.8	0.6	1.2	1.6	5.3	2.6	5.6	6.3
Yellow Bittern	<i>Ixobrychus sinensis</i>	Y	(LC)	0.3	0.2			0.2	0.5	0.4	1.6	0.6	1.0	0.6	2.6	0.3	0.8	0.4	0.5	0.2	0.6	0.6	1.4	4.8	2.0	0.8	0.8
Cinnamon Bittern	<i>Ixobrychus cinnamomus</i>	Y	LC						V																		
Black-crowned Night Heron	<i>Nycticorax nycticorax</i>	Y	LC								V	V	V		V				V			0.2	V	1.8	0.4	V	
Eurasian Spoonbill^	<i>Platalea leucorodia</i>	Y	LC																								
Black-faced Spoonbill	<i>Platalea minor</i>	Y	PGC, EN		V	V		V											V								

Common name	Scientific name	Wetland Dependence	Conservation status	Nov-14	Dec-14	Jan-15	Feb-15	Mar-15	Apr-15	May-15	Jun-15	Jul-15	Aug-15	Sep-15	Oct-15	Nov-15	Dec-15	Jan-16	Feb-16	Mar-16	Apr-16	May-16	Jun-16	Jul-16	Aug-16	Sep-16	Oct-16
Mandarin Duck	<i>Aix galericulata</i>	Y	-																								
Eurasian Wigeon	<i>Anas penelope</i>	Y	RC																								
Eurasian Teal	<i>Anas crecca</i>	Y	RC																								
Northern Pintail	<i>Anas acuta</i>	Y	RC																								
Northern Shoveler	<i>Anas clypeata</i>	Y	RC	0.2															1.8	0.2							
Tufted Duck	<i>Aythya fuligula</i>	Y	LC																								
Garganey^	<i>Anas querquedula</i>	Y	-																								
Western Osprey	<i>Pandion haliaetus</i>	Y	RC														0.4										
Black-winged Kite	<i>Elanus caeruleus</i>	Y	LC												V												
Black Kite	<i>Milvus migrans</i>	Y	(RC)	0.4		0.3	0.4	0.5	0.2	0.2				0.2	0.4	0.3	0.8	0.2	0.5	1.0	0.2	V	0.2	V	0.4		
Crested Serpent Eagle	<i>Spilornis cheela</i>	N	(LC)						0.4										0.6								
Crested Goshawk	<i>Accipiter trivirgatus</i>	N	-																								V
Greater Spotted Eagle	<i>Clanga clanga</i>	Y	GC	0.3												0.3											
Eastern Imperial Eagle	<i>Aquila heliaca</i>	Y	-			0.3																					
Eastern Buzzard	<i>Buteo japonicus</i>	Y	-			V	0.2								0.2	0.3											

Common name	Scientific name	Wetland Dependence	Conservation status	Nov-14	Dec-14	Jan-15	Feb-15	Mar-15	Apr-15	May-15	Jun-15	Jul-15	Aug-15	Sep-15	Oct-15	Nov-15	Dec-15	Jan-16	Feb-16	Mar-16	Apr-16	May-16	Jun-16	Jul-16	Aug-16	Sep-16	Oct-16
Common Kestrel	<i>Falco tinnunculus</i>	N	-												V	0.3											
Peregrine Falcon	<i>Falco peregrinus</i>	Y	-									V					V										
Eurasian Hobby^	<i>Falco subbuteo</i>	Y	(LC)													0.3											V
Japanese Quail	<i>Coturnix japonica</i>	N	LC																								
Baillon's Crake	<i>Porzana pusilla</i>	Y	LC												0.2												
White-breasted Waterhen	<i>Amauornis phoenicurus</i>	Y	-	0.5	V	0.8	1.0	0.8	0.3	V	V	0.2	V	0.2	0.6		0.8	0.4	V	0.4	0.4	0.8	0.2	0.3	0.4	0.6	0.3
Watercock	<i>Gallicrex cinerea</i>	Y	RC								0.2																
Common Moorhen	<i>Gallinula chloropus</i>	Y	-	V		V		0.2							V			V		0.2		V		V			
Pheasant-tailed Jacana	<i>Hydrophasianus chirurgus</i>	Y	LC												0.2	V											
Greater Painted-snipe	<i>Rostratula benghalensis</i>	Y	LC																								
Black-winged Stilt	<i>Himantopus himantopus</i>	Y	RC				0.3	0.2						V		0.8		V	V		1.6				1.0	0.3	
Pied Avocet	<i>Recurvirostra avosetta</i>	Y	RC																								
Oriental Pratincole	<i>Glareola maldivarum</i>	Y	LC																								V
Pacific Golden Plover	<i>Pluvialis fulva</i>	Y	LC																	0.4							
Little Ringed Plover	<i>Charadrius dubius</i>	Y	LC	1.8	0.2	0.8	0.5	1.6	1.8	2.0								V	V		V		V				

Common name	Scientific name	Wetland Dependence	Conservation status	Nov-14	Dec-14	Jan-15	Feb-15	Mar-15	Apr-15	May-15	Jun-15	Jul-15	Aug-15	Sep-15	Oct-15	Nov-15	Dec-15	Jan-16	Feb-16	Mar-16	Apr-16	May-16	Jun-16	Jul-16	Aug-16	Sep-16	Oct-16
Kentish Plover^	<i>Charadrius alexandrinus</i>	Y	RC																								
Spotted Redshank^	<i>Tringa erythropus</i>	Y	RC																		0.2						
Common Redshank^	<i>Tringa totanus</i>	Y	RC																								
Marsh Sandpiper ^	<i>Tringa stagnatilis</i>	Y	RC																								
Common Greenshank	<i>Tringa nebularia</i>	Y	RC	V	V	V											V	V	V		V						0.3
Green Sandpiper	<i>Tringa ochropus</i>	Y	-	0.3	0.2		0.3	0.2							V	0.8	0.4	0.2	V	V	V					2.4	0.8
Wood Sandpiper	<i>Tringa glareola</i>	Y	LC		2.2	V	V	V	1.0								1.0	V	0.5		0.4			V	V	0.6	V
Common Sandpiper	<i>Actitis hypoleucos</i>	Y	-	0.8	1.2	3.0	2.0	2.2	0.5				0.3	1.2	0.6	0.3	1.2	1.4	0.5	0.6	1.0	1.0		0.5	V	0.2	1.5
Eurasian Woodcock ^	<i>Scolopax rusticola</i>	Y	-		V																						
Pintail/ Swinhoe's Snipe*	<i>Gallinago stenura/G. megala</i>	Y	LC*																								
Common Snipe	<i>Gallinago gallinago</i>	Y	-					V									0.2	V	V							0.2	
Red-necked Stint	<i>Calidris ruficollis</i>	Y	LC																								
Temminck's Stint	<i>Calidris temminckii</i>	Y	LC																								
Long-toed Stint	<i>Calidris subminuta</i>	Y	LC																								
Whiskered Tern	<i>Chlidonias hybrida</i>	Y	-																								

Common name	Scientific name	Wetland Dependence	Conservation status	Nov-14	Dec-14	Jan-15	Feb-15	Mar-15	Apr-15	May-15	Jun-15	Jul-15	Aug-15	Sep-15	Oct-15	Nov-15	Dec-15	Jan-16	Feb-16	Mar-16	Apr-16	May-16	Jun-16	Jul-16	Aug-16	Sep-16	Oct-16
Domestic Pigeon	<i>Columba livia</i>	N	-																								
Oriental Turtle Dove	<i>Streptopelia orientalis</i>	N	-														0.2	V		V							
Red Turtle Dove^	<i>Streptopelia tranquebarica</i>	N	-							0.4																	
Spotted Dove	<i>Spilopelia chinensis</i>	N	-	1.5	4.2	3.8	1.3	2.2	6.0	3.6	1.6	2.2	2.0	3.0	3.4	1.3	4.8	6.0	3.5	3.4	2.2	2.2	1.8	3.0	3.4	2.2	2.5
Eurasian Collared Dove	<i>Streptopelia decaocto</i>	N	-						0.5	0.4							1.2	4.6	11.0	0.2		0.4			0.6	0.4	0.5
Asian Koel	<i>Eudynamis scolopacea</i>	N	-					V		0.2	0.2		0.3	V							0.2	0.2	0.2	0.3	0.2	V	
Greater Coucal#	<i>Centropus sinensis</i>	N	-	V	0.2	0.3	0.3	0.6	1.0	0.4	0.2	0.2	V	V		0.5	1.0		0.8	V	0.2	0.6	0.6	0.8	0.4	0.2	0.3
Eurasian Eagle Owl*	<i>Bubo bubo</i>	N	RC				V																				
Savanna Nightjar^	<i>Caprimulgus affinis</i>	N	-				V												V			V	V				
Pacific Swift	<i>Apus pacificus</i>	N	(LC)																							0.2	
House Swift	<i>Apus nipalensis</i>	N	-			14.5	105.8	14.4	0.8		0.2								V								
Pied Kingfisher	<i>Ceryle rudis</i>	Y	(LC)		0.4	0.5	0.3	0.2		0.2			0.8			0.3		0.2	0.3		V	0.2				V	
White-throated Kingfisher	<i>Halcyon smyrnensis</i>	Y	(LC)		0.2				0.3					0.2	0.4	0.3	0.4	0.4	0.3		0.2	V	V	0.5	0.2	0.4	V
Common Kingfisher	<i>Alcedo atthis</i>	Y	-	1.3	0.8	1.8	2.8	1.4	1.5	0.8	0.8	0.2	0.5	0.6	2.2	1.5	3.0	3.0	1.3	1.6	1.4	2.0	0.6	2.0	0.2	0.6	0.8
Eurasian Hoopoe	<i>Upupa epops</i>	N	-				0.3																				

Common name	Scientific name	Wetland Dependence	Conservation status	Nov-14	Dec-14	Jan-15	Feb-15	Mar-15	Apr-15	May-15	Jun-15	Jul-15	Aug-15	Sep-15	Oct-15	Nov-15	Dec-15	Jan-16	Feb-16	Mar-16	Apr-16	May-16	Jun-16	Jul-16	Aug-16	Sep-16	Oct-16
Barn Swallow	<i>Hirundo rustica</i>	N	-	0.5		13.0	15.3	14.4	9.8	0.2	2.2	0.8	V	0.8	V	2.0	V		V	1.6	1.6	V	1.4	V	V	0.2	
Red-rumped Swallow	<i>Hirundo daurica</i>	N	-														2.4		V								
Eastern Yellow Wagtail	<i>Motacilla tschutschensis</i>	Y	-	1.8	0.4	2.0	4.3	2.0	1.0							V	1.8	1.4	2.0	1.2	1.0						0.3
Grey Wagtail	<i>Motacilla cinerea</i>	Y	-														V	0.2	0.3								
White Wagtail	<i>Motacilla alba</i>	Y	-	4.0	5.6	6.3	9.5	4.8	3.3	1.4	V		0.3	0.4	0.4	0.8	3.8	4.0	2.0	1.0	1.2	0.2	V	0.3	0.4	0.6	1.0
Richard's Pipit	<i>Anthus richardi</i>	Y	-	0.3		0.5	V											0.2	0.3	0.4	0.2						
Olive-backed Pipit	<i>Anthus hodgsoni</i>	N	-	0.3	2.2	0.3	1.5	0.4									0.2		2.8	0.2	V						
Red-throated Pipit	<i>Anthus cervinus</i>	N	LC																								
Buff-bellied Pipit	<i>Anthus rubescens</i>	N	LC																								
Red-whiskered Bulbul	<i>Pycnonotus jocosus</i>	N	-	0.8	3.4	7.3	1.3	0.6	0.8	1.0	2.6	5.8	4.5	1.4	1.0	5.3	11.0	20.0	6.5	1.6	4.6	2.6	4.6	1.8	4.0	4.4	8.0
Chinese Bulbul	<i>Pycnonotus sinensis</i>	N	-	5.3	3.0	24.8	10.0	4.8	6.3	5.6	4.6	2.6	1.8	2.6	1.4	3.0	10.2	9.0	5.8	1.0	1.8	2.2	3.0	7.8	7.8	0.4	1.5
Sooty-headed Bulbul	<i>Pycnonotus aurigaster</i>	N	-															V			V	0.4	2.0				
Bull-headed Shrike	<i>Lanius bucephalus</i>	N	-																								
Brown Shrike	<i>Lanius cristatus</i>	N	-						0.3																		

Common name	Scientific name	Wetland Dependence	Conservation status	Nov-14	Dec-14	Jan-15	Feb-15	Mar-15	Apr-15	May-15	Jun-15	Jul-15	Aug-15	Sep-15	Oct-15	Nov-15	Dec-15	Jan-16	Feb-16	Mar-16	Apr-16	May-16	Jun-16	Jul-16	Aug-16	Sep-16	Oct-16
Long-tailed Shrike	<i>Lanius schach</i>	N	-		0.2	0.8	0.5	0.4					0.3	0.4	0.4	0.3	0.6	0.2	0.3	V	0.6	0.4	V	0.5	0.4	0.4	
Oriental Magpie Robin	<i>Copsychus saularis</i>	N	-		0.2	0.5	0.8	0.6	0.5	0.2	1.2	0.2			0.2	0.5	0.2	0.4	0.5	1.0	0.6	V	V	1.3	1.2	0.2	
Daurian Redstart	<i>Phoenicurus aureus</i>	N	-	0.3	1.6	0.8	0.5	0.6								0.3	1.0	0.8	0.8	V							
Stejneger's Stonechat	<i>Saxicola stejnegeri</i>	N	-	0.3	0.2	0.3	0.8	0.8	0.3						2.2	0.5	1.0	0.6	0.5	V	V				0.4	V	
Grey-backed thrush	<i>Turdus hortulorum</i>	N	-																0.3								
Masked Laughingthrush	<i>Garrulax perspicillatus</i>	N	-		1.2		1.5	1.0	1.3	1.2	0.4	2.4	3.0	1.2	V	V	2.6	2.0	2.5	2.6	1.6	2.8	1.6	0.8	1.4	0.4	
Lanceolated Warbler	<i>Locustella lanceolata</i>	Y	-																								
Pallas's Grasshopper Warbler	<i>Locustella certhiola</i>	Y	LC																								
Oriental Reed Warbler	<i>Acrocephalus orientalis</i>	Y	-																					V	0.4		
Thick-billed Warbler	<i>Acrocephalus aedon</i>	Y	LC											V													
Black-browed Reed Warbler	<i>Acrocephalus bistrigiceps</i>	Y	-		V										V												
Common Tailorbird	<i>Orthotomus sutorius</i>	N	-	0.5	1.2	1.0	1.5	0.4					0.8				V					0.2			0.2	0.3	
Dusky Warbler	<i>Phylloscopus fuscatus</i>	N	-				V	V								0.3		0.2	V		V						

Common name	Scientific name	Wetland Dependence	Conservation status	Nov-14	Dec-14	Jan-15	Feb-15	Mar-15	Apr-15	May-15	Jun-15	Jul-15	Aug-15	Sep-15	Oct-15	Nov-15	Dec-15	Jan-16	Feb-16	Mar-16	Apr-16	May-16	Jun-16	Jul-16	Aug-16	Sep-16	Oct-16
Pallas's Leaf Warbler	<i>Phylloscopus proregulus</i>	N	-		V												0.4	0.2									
Yellow-browed warbler	<i>Phylloscopus inornatus</i>	N	-	0.3	0.2	0.3										0.3			0.8			V		V			
Zitting Cisticola	<i>Cisticola juncidis</i>	Y	LC														0.6			0.2							
Yellow-bellied Prinia	<i>Prinia flaviventris</i>	N	-	0.5		0.3	0.3	2.6	0.8	2.0	1.5							0.2	0.8	0.6	0.8		0.2	1.3	0.2	V	V
Plain Prinia	<i>Prinia inornata</i>	N	-	2.8	0.2	1.3	3.5	1.6	2.8	1.2	1.0	1.6	1.5	0.6	0.6	2.3	1.0	0.6	0.8	1.0	0.6	2.8	1.8	0.8	1.0	0.2	0.5
Asian Brown Flycatcher	<i>Muscicapa dauurica</i>	N	-														0.2										
Chinese Penduline-Tit	<i>Remiz consobrinus</i>	Y	RC		0.4	1.5	4.5	3.2	V									0.2	V	0.2							
Great Tit	<i>Parus major</i>	N	-																0.5	0.2							
Japanese White-eye	<i>Zosterops japonica</i>	N	-		1.0	V	V	0.2		0.2	V	3.8	4.3				0.4	3.2	V	V		1.4	0.4	V	0.8	0.8	V
Little Bunting	<i>Emberiza pusilla</i>	N	-																								
Black-faced Bunting	<i>Emberiza spodocephala</i>	N	-					V											V								
Chinese Grosbeak	<i>Eophona migratoria</i>	Y	LC																								
Scaly-breasted Munia	<i>Lonchura punctulata</i>	N	-	3.3	0.6	V	V	4.0	11.3	0.6	V	V	3.3	1.6	0.4	2.3	2.2	1.4		0.2	V				2.2	V	
Eurasian Tree Sparrow	<i>Passer montanus</i>	N	-		V	4.5	4.0	1.4		0.2		0.4		0.6	0.4	V					1.4	1.4		V	V		

Common name	Scientific name	Wetland Dependence	Conservation status	Nov-14	Dec-14	Jan-15	Feb-15	Mar-15	Apr-15	May-15	Jun-15	Jul-15	Aug-15	Sep-15	Oct-15	Nov-15	Dec-15	Jan-16	Feb-16	Mar-16	Apr-16	May-16	Jun-16	Jul-16	Aug-16	Sep-16	Oct-16
Red-billed Starling	<i>Spodiopsar sericeus</i>	Y	GC				24.5	V		V	0.4							2.0	8.0								
White-cheeked Starling	<i>Spodiopsar cineraceus</i>	Y	PRC		V									0.2			V		V		0.8	V	1.0				
Black-collared Starling	<i>Gracupica nigricollis</i>	N	-	0.3	3.0	1.3	2.0	4.2	2.3	2.0	1.0	1.6	1.8	0.4	1.6	V	2.2	1.0	3.5	0.4	1.0	1.0	0.8	0.8	2.2	0.6	1.8
White-shouldered Starling	<i>Sturnia sinensis</i>	Y	(LC)								0.8	V	V							V	0.2	V		V		V	V
Common Myna	<i>Acridotheres tristis</i>	N	-											0.4					V				0.5	V			
Crested Myna	<i>Acridotheres cristatellus</i>	N	–	2.8	4.0		0.5	2.2	2.3	2.8	6.8	0.4	1.8	0.2	0.6	V	4.8	1.2	3.8	1.2	4.6	0.6	1.8	0.3	4.4	1.0	
Black-naped Oriole	<i>Oriolus chinensis</i>	Y	LC																								
Black Drongo	<i>Dicrurus macrocercus</i>	N	-		V								2.3	1.6	0.6		V	0.2	0.3					1.0	1.2	1.5	
Azure-winged Magpie	<i>Cyanopica cyanus</i>	N	-																								
Eurasian Magpie	<i>Pica pica</i>	N	-			0.3	0.8	V	0.5			V						0.2	1.0	0.2	0.2	V		V			V
Large-billed Crow	<i>Corvus macrorhynchos</i>	N	-										0.5						0.2	0.8	0.6						
Collared Crow	<i>Corvus torquatus</i>	Y	LC, NT						V	0.2				V	0.4		V	0.4		V	0.2		V	V	V	0.4	

(1) Conservation Status follows that of Fellowes et. al. (2002)). Letters in parentheses indicate that the assessment is on the basis of restrictedness in breeding and/or roosting sites rather than in general occurrence. (Fellowes et al. 2002)

*Pintail Snipe and Swinhoe's Snipe cannot be distinguished in field, conservation status refers to Swinhoe's Snipe

V indicates the species is recorded outside regular surveys

DS indicates species recorded during surveys

Greater Coucal is listed as vulnerable (VU) in China Red Data Book and it is protected under terrestrial wildlife state protection (category II).

Table B7: Summary of Bird Species Recorded at the WRA and their Respective Monthly Mean between November 2016 and April 2017

Common name	Scientific name	Wetland Dependence	Conservation status	Nov-16	Dec-16	Jan-17	Feb-17	Mar-17	Apr-17
Little Grebe	<i>Tachybaptus ruficollis</i>	Y	LC	1.8	3.4	2.3	4.0	5.0	1.3
Great Cormorant	<i>Phalacrocorax carbo</i>	Y	PRC	0.8	1.8	0.3	0.4	0.2	
Grey Heron	<i>Ardea cinerea</i>	Y	PRC	1.4	3.4	2.3	4.2	2.2	
Purple Heron	<i>Ardea purpurea</i>	Y	RC						
Great Egret	<i>Ardea alba</i>	Y	PRC, (RC)	0.8	2.2	1.5	2.4	1.2	1.3
Intermediate Egret	<i>Egretta intermedia</i>	Y	RC						
Little Egret	<i>Egretta garzetta</i>	Y	PRC, (RC)	5.8	5.6	9.3	4.2	6.4	4.0
Eastern Cattle Egret	<i>Bubulcus coromandus</i>	Y	(LC)						
Chinese Pond Heron	<i>Ardeola bacchus</i>	Y	PRC, (RC)	5.6	4.4	6.5	6.2	3.6	1.0
Yellow Bittern	<i>Ixobrychus sinensis</i>	Y	(LC)	0.2	0.8		0.2	0.4	0.5
Cinnamon Bittern	<i>Ixobrychus cinnamomeus</i>	Y	LC					V	
Black-crowned Night Heron	<i>Nycticorax nycticorax</i>	Y	LC	V		V	V		V
Eurasian Spoonbill	<i>Platalea leucorodia</i>	Y	LC						
Black-faced Spoonbill	<i>Platalea minor</i>	Y	PGC, EN		0.2				
Mandarin Duck	<i>Aix galericulata</i>	Y	-						
Eurasian Wigeon	<i>Anas penelope</i>	Y	RC						
Eurasian Teal	<i>Anas crecca</i>	Y	RC			V			
Northern Pintail	<i>Anas acuta</i>	Y	RC			V			
Northern Shoveler	<i>Anas clypeata</i>	Y	RC						
Tufted Duck	<i>Aythya fuligula</i>	Y	LC						

Common name	Scientific name	Wetland Dependence	Conservation status	Nov-16	Dec-16	Jan-17	Feb-17	Mar-17	Apr-17
Garganey	<i>Anas querquedula</i>	Y	-						
Western Osprey	<i>Pandion haliaetus</i>	Y	RC	V					
Black-winged Kite	<i>Elanus caeruleus</i>	Y	LC						
Black Kite	<i>Milvus migrans</i>	Y	(RC)	V	0.4	0.3	1.0	0.4	0.3
Crested Serpent Eagle	<i>Spilornis cheela</i>	N	(LC)						
Crested Goshawk	<i>Accipiter trivirgatus</i>	N	-						
Greater Spotted Eagle	<i>Clanga clanga</i>	Y	GC						
Eastern Imperial Eagle	<i>Aquila heliaca</i>	Y	-						
Eastern Buzzard	<i>Buteo japonicus</i>	Y	-				0.4	0.2	
Common Kestrel	<i>Falco tinnunculus</i>	N	-	0.2					
Peregrine Falcon	<i>Falco peregrinus</i>	Y	(LC)		V		0.2		
Eurasian Hobby	<i>Falco subbuteo</i>	Y	(LC)						
Japanese Quail	<i>Coturnix japonica</i>	N	LC						
Baillon's Crake	<i>Porzana pusilla</i>	Y	LC						
White-breasted Waterhen	<i>Amaurornis phoenicurus</i>	Y	-		0.4	0.3	0.2	0.6	1.0
Watercock	<i>Gallicrex cinerea</i>	Y	RC						
Common Moorhen	<i>Gallinula chloropus</i>	Y	-	V	V	0.3	0.6	V	0.8
Pheasant-tailed Jacana	<i>Hydrophasianus chirurgus</i>	Y	LC						

Common name	Scientific name	Wetland Dependence	Conservation status	Nov-16	Dec-16	Jan-17	Feb-17	Mar-17	Apr-17
Greater Painted-snipe	<i>Rostratula benghalensis</i>	Y	LC						
Black-winged Stilt	<i>Himantopus himantopus</i>	Y	RC	0.6	V				
Pied Avocet	<i>Recurvirostra avosetta</i>	Y	RC	V					
Oriental Pratincole	<i>Glareola maldivarum</i>	Y	LC				V		
Pacific Golden Plover	<i>Pluvialis fulva</i>	Y	LC						
Little Ringed Plover	<i>Charadrius dubius</i>	Y	LC		1.4	V	0.8	0.8	0.3
Kentish Plover	<i>Charadrius alexandrinus</i>	Y	RC	0.6					
Spotted Redshank	<i>Tringa erythropus</i>	Y	RC			V			
Common Redshank	<i>Tringa totanus</i>	Y	RC	V					
Common Greenshank	<i>Tringa nebularia</i>	Y	RC	V	V	V	V	V	
Marsh Sandpiper	<i>Tringa stagnatilis</i>	Y	RC						2.3
Green Sandpiper	<i>Tringa ochropus</i>	Y	-	0.6	2.0	0.8	0.8	0.4	0.8
Wood Sandpiper	<i>Tringa glareola</i>	Y	LC	0.6	0.2	V	0.2	0.2	
Common Sandpiper	<i>Actitis hypoleucos</i>	Y	-	0.4	0.4	0.8	2.2	0.6	1.0
Eurasian Woodcock	<i>Scolopax rusticola</i>	Y	-						
Pintail/Swinhoe 's Snipe*	<i>Gallinago stenura/G. megala</i>	Y	LC*						
Common Snipe	<i>Gallinago gallinago</i>	Y	-						

Common name	Scientific name	Wetland Dependence	Conservation status	Nov-16	Dec-16	Jan-17	Feb-17	Mar-17	Apr-17
Red-necked Stint	<i>Calidris ruficollis</i>	Y	LC						
Temminck's Stint	<i>Calidris temminckii</i>	Y	LC						
Long-toed Stint	<i>Calidris subminuta</i>	Y	LC						
Black-headed Gull	<i>Chroicocephalus ridibundus</i>	Y	PRC						V
Whiskered Tern	<i>Chlidonias hybrida</i>	Y	-						
Domestic Pigeon	<i>Columba livia</i>	N	-						
Oriental Turtle Dove	<i>Streptopelia orientalis</i>	N	-						
Red Turtle Dove	<i>Streptopelia tranquebarica</i>	N	-						
Spotted Dove	<i>Spilopelia chinensis</i>	N	-	2.6	3.8	7.0	4.2	4.4	2.0
Eurasian Collared Dove	<i>Streptopelia decaocto</i>	N	-	0.2	0.6	2.8	0.8	0.2	0.3
Asian Koel	<i>Eudynamys scolopaceus</i>	N	-						
Greater Coucal#	<i>Centropus sinensis</i>	N	-	V	0.6	0.3	0.6	0.8	0.5
Eurasian Eagle Owl	<i>Bubo bubo</i>	N	RC						
Savanna Nightjar	<i>Caprimulgus affinis</i>	N	-			V		V	V
Pacific Swift	<i>Apus pacificus</i>	N	(LC)						
House Swift	<i>Apus nipalensis</i>	N	-	V	V			V	V
Pied Kingfisher	<i>Ceryle rudis</i>	Y	(LC)	0.2	0.6	0.5	V		0.3
Black-capped Kingfisher	<i>Halcyon pileata</i>	Y	(LC)	V					

Common name	Scientific name	Wetland Dependence	Conservation status	Nov-16	Dec-16	Jan-17	Feb-17	Mar-17	Apr-17
White-throated Kingfisher	<i>Halcyon smyrnensis</i>	Y	(LC)	0.2	0.4	V	0.4	0.2	V
Common Kingfisher	<i>Alcedo atthis</i>	Y	-	2.2	1.4	1.8	2.6	2.0	0.3
Eurasian Hoopoe	<i>Upupa epops</i>	N	-						
Barn Swallow	<i>Hirundo rustica</i>	N	-				1.4	1.2	1.5
Red-rumped Swallow	<i>Hirundo daurica</i>	N	-						
Eastern Yellow Wagtail	<i>Motacilla tschutschensis</i>	Y	-	0.6	0.4	V	V	0.4	0.5
Grey Wagtail	<i>Motacilla cinerea</i>	Y	-		V	V		V	
White Wagtail	<i>Motacilla alba</i>	Y	-	1.6	2.2	V	1.0	1.0	1.0
Richard's Pipit	<i>Anthus richardi</i>	Y	-						V
Olive-backed Pipit	<i>Anthus hodgsoni</i>	N	-		0.2	0.3			
Red-throated Pipit	<i>Anthus cervinus</i>	N	LC						
Buff-bellied Pipit	<i>Anthus rubescens</i>	N	LC						
Red-whiskered Bulbul	<i>Pycnonotus jocosus</i>	N	-	1.8	3.2	4.3	1.8	1.8	2.0
Chinese Bulbul	<i>Pycnonotus sinensis</i>	N	-	0.4	1.4	10.8	4.0	1.6	2.8
Sooty-headed Bulbul	<i>Pycnonotus aurigaster</i>	N	-					0.2	
Bull-headed Shrike	<i>Lanius bucephalus</i>	N	-						
Brown Shrike	<i>Lanius cristatus</i>	N	-						0.3
Long-tailed Shrike	<i>Lanius schach</i>	N	-	0.6	0.2	V	0.2	0.4	
Oriental Magpie Robin	<i>Copsychus saularis</i>	N	-	0.6				V	0.8

Common name	Scientific name	Wetland Dependence	Conservation status	Nov-16	Dec-16	Jan-17	Feb-17	Mar-17	Apr-17
Daurian Redstart	<i>Phoenicurus aureus</i>	N	-	0.2	0.4	V	0.4	0.2	
Stejneger's Stonechat	<i>Saxicola stejnegeri</i>	N	-	0.2	0.6	0.3	0.4	0.4	0.5
Chinese Blackbird	<i>Turdus mandarinus</i>	N	-					V	
Grey-backed thrush	<i>Turdus hortulorum</i>	N	-						
Masked Laughingthrush	<i>Garrulax perspicillatus</i>	N	-	0.2	0.6	1.5	0.8	V	0.8
Lanceolated Warbler	<i>Locustella lanceolata</i>	Y	-						
Pallas's Grasshopper Warbler	<i>Locustella certhiola</i>	Y	LC						
Oriental Reed Warbler	<i>Acrocephalus orientalis</i>	Y	-						
Thick-billed Warbler	<i>Acrocephalus aedon</i>	Y	LC						
Black-browed Reed Warbler	<i>Acrocephalus bistrigiceps</i>	Y	-						V
Common Tailorbird	<i>Orthotomus sutorius</i>	N	-	V		0.3	0.2	0.6	0.5
Dusky Warbler	<i>Phylloscopus fuscatus</i>	N	-	V	V	V	V	V	
Pallas's Leaf Warbler	<i>Phylloscopus proregulus</i>	N	-				0.4		
Yellow-browed warbler	<i>Phylloscopus inornatus</i>	N	-	0.6	V	0.3			
Zitting Cisticola	<i>Cisticola juncidis</i>	Y	LC						
Yellow-bellied Prinia	<i>Prinia flaviventris</i>	N	-				1.4	1.0	1.0
Plain Prinia	<i>Prinia inornata</i>	N	-	0.4	0.2	1.0	0.8	0.2	0.5

Common name	Scientific name	Wetland Dependence	Conservation status	Nov-16	Dec-16	Jan-17	Feb-17	Mar-17	Apr-17
Asian Brown Flycatcher	<i>Muscicapa dauurica</i>	N	-						
Chinese Penduline-Tit	<i>Remiz consobrinus</i>	Y	RC						
Cinereous Tit	<i>Parus cinereus</i>	N	-					0.4	
Japanese White-eye	<i>Zosterops japonica</i>	N	-		1.6	V		0.4	
Little Bunting	<i>Emberiza pusilla</i>	N	-						
Black-faced Bunting	<i>Emberiza spodocephala</i>	N	-						
Chinese Grosbeak	<i>Eophona migratoria</i>	Y	LC						
Scaly-breasted Munia	<i>Lonchura punctulata</i>	N	-	0.8		V			2.8
Eurasian Tree Sparrow	<i>Passer montanus</i>	N	-	0.2					
Red-billed Starling	<i>Spodiopsar sericeus</i>	Y	(GC)	V	V	0.5			
White-cheeked Starling	<i>Spodiopsar cineraceus</i>	Y	PRC			V	0.6		
Black-collared Starling	<i>Gracupica nigricollis</i>	N	-	0.2	0.2	0.3	0.6	0.4	0.5
White-shouldered Starling	<i>Sturnia sinensis</i>	Y	(LC)						
Common Myna	<i>Acridotheres tristis</i>	N	-		V		V	V	
Crested Myna	<i>Acridotheres cristatellus</i>	N	-	6.2	1.8	5.8	0.4	0.6	1.5
Black-naped Oriole	<i>Oriolus chinensis</i>	Y	LC						
Black Drongo	<i>Dicrurus macrocercus</i>	N	-	0.2					V

Common name	Scientific name	Wetland Dependence	Conservation status	Nov-16	Dec-16	Jan-17	Feb-17	Mar-17	Apr-17
Azure-winged Magpie	<i>Cyanopica cyanus</i>	N	-			0.5			

Note: Conservation Status follows that of Fellows et. al. (2002) Letters in parentheses indicate that the assessment is on the basis of restrictedness in breeding and/or roosting sites rather than in general occurrence. (Fellowes et al. 2002)

* Pintail Snip and Swinhoe's Snipe cannot be distinguished in field, conservation status refers to Swinhoe's Snipe.

V Indicates the species is recorded outside regular surveys.

DS Indicates species recorded during survey.

Greater Coucal is listed as vulnerable (VU) in China Red Data Book and it is protected terrestrial wildlife state protection (category II).

Appendix C. Summary of Herpetofauna Monitoring, Mammals and Insect Surveys

Table C1: Summary of herpetofauna monitoring within the Survey Area (excluding the WRA)

Common Name	Scientific Name	Conservation Status(1)	Mean(2)	
Amphibians			Nov	Apr
Gunther's Frog	<i>Hylarana guentheri</i>	-		1.0
No. of Species Recorded			0	1
Reptiles			Nov	Apr
(No reptile was recorded during the survey period)				
No. of Species Recorded			0	0

(1) Conservation status follows that of Fellows that of Fellowes et al. (2002), Chan et al. (2005) and Karsen et al. (1998).

(2) Refers to the mean number of individuals recorded in the reporting period (excluding the WRA)

V Indicates the species is recorded outside regular surveys.

Table C2: Summary of herpetofauna monitoring in the WRA

Common Name	Scientific Name	Conservation Status	Mean	
Amphibians			Nov	Apr
(No amphibian was recorded during the survey period)				
No. of Species Recorded			0	0
Reptiles			Nov	Apr
Red-necked Keelback	<i>Rhabdophis subminiatus helleri</i>	-	V	
No. of Species Recorded			1	0

- (1) Conservation status follows that of Fellows that of Fellowes et al. (2002), Chan et al. (2005) and Karsen et al. (1998).
(2) Refers to the mean number of individuals recorded in the reporting period at WRA.
V Indicates the species is recorded outside regular surveys.

Table C3: Summary of mammal monitoring in the Survey Area (excluding the WRA)

Common Name	Scientific Name	Conservation Status (1)						Max (2)
Mammal			Nov	Dec	Jan	Feb	Mar	Apr
(No mammal was record during the survey period)								

- (1) Conservation status follows that of Fellows et al. (2002) and Shek (2006).
(2) Refers to the maximum number of individuals recorded in each month in the survey area (excluding WRA).
V Indicates the species is recorded outside regular surveys.

Table C4: Summary of mammal monitoring in the WRA

Common Name	Scientific Name	Conservation Status (1)	Max (2)					
Mammal			Nov	Dec	Jan	Feb	Mar	Apr
Bat	<i>indet. sp. 1</i>	-	V	V	V		V	V
Bat	<i>indet. sp. 2</i>	-	V	V				
Leopard Cat	<i>Prionailurus bengalensis</i>	-		V		V	V	V
Small Asian Mongoose	<i>Herpestes javanicus</i>	-					V	V
Small Indian Civet	<i>Viverricula indica</i>	-		V		V	V	
No. of Species Recorded			1	2	2	0	0	1

(1) Conservation status follows that of Fellows et al. (2002) and Shek (2006).

(2) Refers to the maximum number of individuals recorded in each month at WRA.

V Indicates the species is recorded outside regular surveys.

(3) #Leopard Cat is listed on CITES Appendix II and vulnerable (VU) in China Red Data Book and it is protected under the Wild Animals Protection Ordinance (Cap. 170)

Table C5: Summary of dragonfly and butterfly monitoring in the Survey Area (excluding the WRA)

Common Name	Scientific Name	Conservation Status(1)	Mean(2)		
Odonate			Nov	Mar	Apr
Variegated Flutterer	<i>Rhyothemis variegata arria</i>	-			0.5
No. of Species Recorded			0	0	1
Butterfly			Nov	Mar	Apr
(No butterfly was recorded during the survey period)					
No. of Species Recorded			0	0	0

(1) Conservation status follows that of Fellows et al. (2002) and Shek (2006), Lo & Hui (2004), Wilson (2004) and Young & Yiu (2002).

(2) Refers to the mean number of individuals recorded in each month in the survey area (excluding the WRA)

Table C6: Summary of dragonfly and butterfly monitoring in the WRA

Common Name	Scientific Name	Conservation Status(1)	Mean (2)		
Odonate			Nov	Mar	Apr
Asian Amberwing	<i>Brachythemis contaminata</i>	-		1.0	1.5
Common Bluetail	<i>Ischnura senegalensis</i>	-		3.0	
Common Flangetail	<i>Ictinogomphus pertinax</i>	-		1.0	0.5
Evening Skimmer	<i>Tholymis tillarga</i>	-	1.0		
Green Skimmer	<i>Orthetrum sabina</i>	-	1.0		
Variegated Flutterer	<i>Rhyothemis variegata arria</i>	-			0.5
No. of Species Recorded			2	3	3
Butterfly			Nov	Mar	Apr
Common Mormon	<i>Papilio polytes polytes</i>	-	1.0		V
Great Egg-fly	<i>Hypolimnastis bolina kezia</i>	-	1.0	1.0	
Great Mormon	<i>Papilio memnon agenor</i>	-		1.0	
Indian Cabbage White	<i>Pieris canidia canidia</i>	-		2.0	0.5
Pale Grass Blue	<i>Pseudozizeeria maha serica</i>	-		1.0	
Red Ring Skirt	<i>Hestina assimilis assimilis</i>	-			0.5

Common Name	Scientific Name	Conservation Status(1)	Mean (2)
Red-base Jezebel	<i>Delias pasithoe pasithoe</i>	-	0.5
No. of Species Recorded		2	4

(1) Conservation status follows that of Fellowes et al. (2002), Lo & Hui (2004), Wilson (2004) and Young & Yiu (2002).
(2) Refers to the mean number of individuals recorded in each month in the survey area at WRA

Appendix D. Summary of Water Quality Monitoring

Table D1. Water quality at WRA

November 2016

Cell No.	Temp. (°C)	pH	Salinity (ppt)	Turbidity (NTU)	DO (mg/L)	Water Level (cm)
1	24.1	7.76	0.15	10.4	5.5	180
2	24.1	7.56	0.17	12.8	5.4	170
3	24.8	7.52	0.16	5.0	6.9	170
4	25.3	7.45	0.19	7.3	6.5	160

December 2016

Cell No.	Temp. (°C)	pH	Salinity (ppt)	Turbidity (NTU)	DO (mg/L)	Water Level (cm)
1	22.1	7.49	0.13	8.7	7.4	170
2	22.0	7.52	0.15	11.3	7.6	160
3	21.6	7.63	0.17	6.6	7.1	160
4	21.9	7.44	0.20	8.2	6.8	150

January 2017

Cell No.	Temp. (°C)	pH	Salinity (ppt)	Turbidity (NTU)	DO (mg/L)	Water Level (cm)
1	20.7	7.71	0.23	7.7	5.6	160
2	20.7	7.51	0.26	12.0	5.6	150
3	21.4	7.47	0.25	8.0	6.4	150
4	21.9	7.40	0.28	8.6	6.0	150

Action Level	-	<6.5 or >8.0	>2	-	<2	<150 or >250
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Limit Level	-	<6.0 or >8.5	>5	-	<1	-
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Note: Values highlighted in **bold** indicate that action level is reached; whereas values in **bold and underline** indicate that limit level is reached.

February 2017

Cell No.	Temp. (°C)	pH	Salinity (ppt)	Turbidity (NTU)	DO (mg/L)	Water Level (cm)
1	17.3	7.82	0.27	9.2	8.3	160
2	16.8	7.77	0.25	7.8	8.2	150
3	16.5	7.53	0.25	11.3	8.9	150
4	16.9	7.68	0.28	6.7	8.6	130

March 2017

Cell No.	Temp. (°C)	pH	Salinity (ppt)	Turbidity (NTU)	DO (mg/L)	Water Level (cm)	Additional water level monitoring (cm)
1	21.1	8.11	0.30	6.1	8.2	150	130
2	21.4	8.05	0.34	7.7	7.3	140	120
3	21.3	7.86	0.35	10.1	7.1	140	130
4	22.8	7.79	0.33	13.3	6.9	140	120

April 2017

Cell No.	Temp. (°C)	pH	Salinity (ppt)	Turbidity (NTU)	DO (mg/L)	Water Level (cm)	Additional water level monitoring (cm)
1	24.2	7.99	0.32	5.7	7.7	150	150
2	24.5	7.93	0.36	7.3	6.8	140	140
3	24.4	7.74	0.37	9.7	6.6	140	140
4	25.9	7.67	0.35	12.9	6.4	130	140
Action Level	-	<6.5 or >8.0	>2	-	<2	<150 or >250	
Limit Level	-	<6.0 or >8.5	>5	-	<1	-	

Note: Values highlighted in **bold** indicate that action level is reached; whereas values in **bold and underline** indicate that limit level is reached.