Notification of Ecological Monitoring of Birds Exceedance

Incident Report on Action/ Limit Level Exceedance

<table>
<tr><td>Reference No.:</td><td colspan="4">IR20220613&17_Species Diversity</td></tr>
<tr><td>Project:</td><td colspan="4">Contract No. SPW 07/2020 Environmental Team for Construction of Yuen Long Effluent Polishing Plant Stage 1</td></tr>
<tr><td>Survey Dates:</td><td colspan="4">2022/06/13 (daytime) and 2022/06/17 (night-time)</td></tr>
<tr><td rowspan="11">Action level / Limit level: (For Avifauna Communities)</td><td>Method</td><td>Parameters</td><td>Action Level</td><td>Limit Level</td></tr>
<tr><td rowspan="4">Transect</td><td>Abundance of all avifauna species (including but not limited to overwintering waterbirds) in the community</td><td rowspan="9">Significant decline[1,2] in any of these parameters during the current monitoring month relative to the corresponding month during the baseline survey</td><td rowspan="9">Significant decline in any of these parameters for three consecutive months</td></tr>
<tr><td>Species diversity of all avifauna species (including but not limited to overwintering waterbirds) in the community</td></tr>
<tr><td>Abundance of species with conservation importance only</td></tr>
<tr><td>Species diversity of species with conservation importance only</td></tr>
<tr><td rowspan="4">Point Count</td><td>Abundance of all avifauna species (including but not limited to overwintering waterbirds) in the community</td></tr>
<tr><td>Species diversity of all avifauna species (including but not limited to overwintering waterbirds) in the community</td></tr>
<tr><td>Abundance of species with conservation importance only</td></tr>
<tr><td>Species diversity of species with conservation importance only</td></tr>
<tr><td rowspan="8">Measured significant decline in abundance and/or species diversity (fill in as appropriate)</td><td rowspan="4">Transect</td><td>Abundance of all avifauna species (including but not limited to overwintering waterbirds) in the community</td><td>☐</td><td>☐</td></tr>
<tr><td>Species diversity of all avifauna species (including but not limited to overwintering waterbirds) in the community</td><td>☐</td><td>☐</td></tr>
<tr><td>Abundance of species with conservation importance only</td><td>☐</td><td>☐</td></tr>
<tr><td>Species diversity of species with conservation importance only</td><td>☐</td><td>☐</td></tr>
<tr><td rowspan="4">Point Count</td><td>Abundance of all avifauna species (including but not limited to overwintering waterbirds) in the community</td><td>☐</td><td>☐</td></tr>
<tr><td>Species diversity of all avifauna species (including but not limited to overwintering waterbirds) in the community</td><td>☑</td><td>☐</td></tr>
<tr><td>Abundance of species with conservation importance only</td><td>☐</td><td>☐</td></tr>
<tr><td>Species diversity of species with conservation importance only</td><td>☑</td><td>☐</td></tr>
<tr><td>Action taken / to be taken[3]: (tick / circle / fill in as appropriate)</td><td colspan="4">Responses:
☑ Informed IEC, ER, and Contractor.
☑ Reviewed monitoring data.
☑ Investigated possible causes of decline and identified possible source (s) of impact. Recorded in notification.
☑ Check Contractor’s working methods.</td></tr>
</table>

	☐ Other
Possible reason/s[4] for action or limit level Non-compliance: (tick / fill in as appropriate)	**Findings / Evidences** ☐ Construction noise disturbance ☐ Vibration disturbance from potential percussive piling works ☐ Construction lighting/glare disturbance ☐ Increased human activities ☐ Construction dust disturbance ☑ Others: The lower diversity during this period with respect to the baseline data could be due to the current dominance of Chinese Pond Heron in the community. The current dominance of this species was due to its concurrent breeding period. This dominant species could have decreased the performance of co-occurring species (Gilbert et al. 2009)[5] and forced them to utilize other areas outside the survey area, thus, made the area less diverse. Furthermore, low diversity index usually results from high dominance in the community as these are inversely related (Shaukat et al., 1978) [6].
Observations	☑ Noise levels during the daytime survey (48.2 to 60.3 dB(A)); and night-time survey (49.3 to 64.5 dB(A)) recorded from the different point count locations during the ecological bird monitoring are low. These low noise levels are unlikely to cause significant impact to birds as behavioural response of some kind are more likely to occur at above 65.5 dBA only (Wright et al. 2010)[6]. ☑ Environmental site audits indicated that the recommended environmental protection measures/mitigation measures to mitigate ecological impacts have been implemented. ☑ Increase in abundance of all avifauna species (including but not limited to overwintering waterbirds) in the community was observed for Transect/Point Count survey. ☑ Insignificant decrease in species diversity of all avifauna species (including but not limited to overwintering waterbirds) in the community was observed for Transect/~~Point Count~~ survey. ☑ Increase in abundance of species with conservation importance only was observed for Transect/Point Count survey. ☑ Insignificant decrease in species diversity of species with conservation importance only was observed for Transect/~~Point Count~~ survey.
Conclusion	☑ Due to influences of external factors/ other threats, not Project related ☐ Due to influences of construction activities under this project in the vicinity, considered to be Project related
Mitigation measures	☑ Avoidance of recognized site of conservation importance ☑ Restriction of construction hours ☑ Minimizing construction noise disturbance impacts through the use of noise barriers ☑ Establishment of bird curtain
Attachment	Annex A – Ecological Monitoring of Birds Transect Routes and Point Count Locations Annex B – Ecological Monitoring of Birds Results the Different Transect Routes and Point Count Locations (June 2022) Annex C – Shannon Diversity Index Values in the Different Transect Routes and Point Count Locations (June 2022) Annex D – Summary of Hutcheson T-test Analyses (June 2022) Annex E – Abundance Data per Point Count Location Annex F – Noise Monitoring Results in Point Count Locations during the Ecological Monitoring of Birds (June 2022) Annex G – Site Photos showing no project-related disturbance during the Ecological Monitoring of Birds (June 2022)

Notes:

1. Significant decline in abundance determined using two-tailed t-test, $\alpha = 0.05$
2. Significant decline in species diversity determined using the Hutcheson t-test, two-tailed
3. In accordance with Table 4.2 "Responses to Alert and Action Level for Avifauna Communities" of the Baseline Bird Survey Report
4. With reference to Table 8.34 "Summary of Potential Impacts and Mitigation Measures Requirements of the Construction of the Project" of the approved EIA Report
5. Sung, Y-H, Chun-chiu Pang, Tom Chung-hoi Li, Paulina Pui Yun Wong and Yat-tung Yu. 2021. Ecological Correlates of 20-Year Population Trends of Wintering Waterbirds in Deep Bay, South China. Front. Ecol. Evol. https://doi.org/10.3389/fevo.2021.658084

6. Wright, M.D., Goodman, P. and Cameron, T. 2010. Exploring behavioural responses of shorebirds to impulsive noise. Wildfowl. 60:150-167

The box is checked ☑ to represent the statement is applicable, and vice versa

Abbreviation: ER – Engineer's Representative, IEC – Independent Checker

Prepared by: Fenelyn Nabuab
Designation: Ecologist

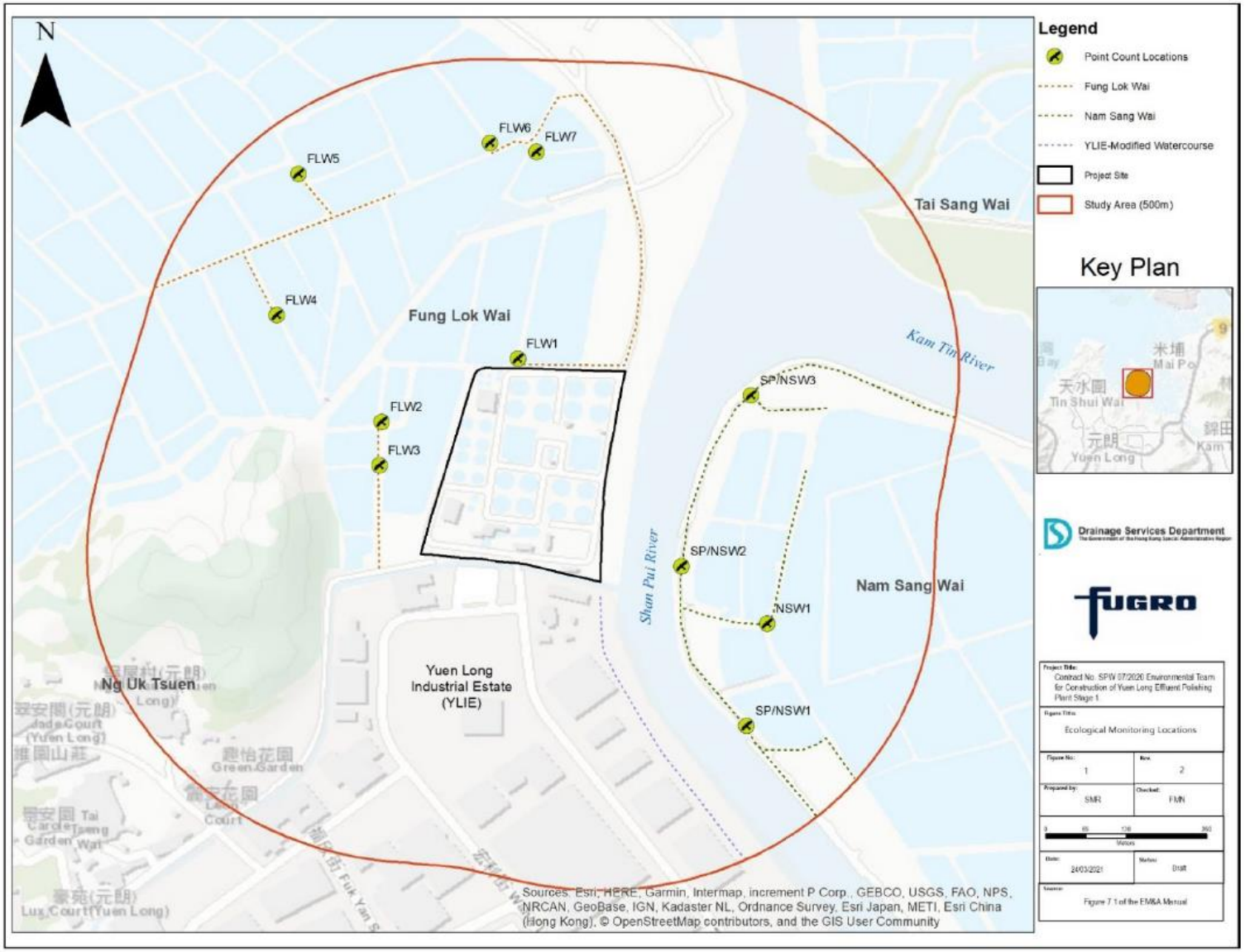
Signature: 
Date (dd/mm/yyyy): 11/07/2022

Certified by: Alvin L.B. Yu

Designation: Environmental Team Leader

Signature: 
Date (dd/mm/yyyy): 11/07/2022

Annex A – Ecological Monitoring of Birds Transect Routes and Point Count Locations


N
FLW6
FLW7
FLW5
FLW4
Fung Lok Wai
FLW1
FLW2
FLW3
Tai Sang Wai
Kam Tin River
SP/NSW3
SP/NSW2
NSW1
SP/NSW1
Shan Pui River
Nam Sang Wai
Yuen Long Industrial Estate (YLIE)
Ng Uk Tsuen
Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), © OpenStreetMap contributors, and the GIS User Community
Legend
Point Count Locations
Fung Lok Wai
Nam Sang Wai
YLIE-Modified Watercourse
Project Site
Study Area (500m)
Key Plan
Drainage Services Department
FUGRO
Contract No. SPW 07/2020 Environmental Team for Construction of Yuen Long Effluent Polishing Plant Stage 1
Ecological Monitoring Locations
1
2
SMR
FMN
24/03/2021
Draft
Figure 7.1 of the EM&A Manual

FUGRO

Annex B – Ecological Monitoring of Birds Results the Different Transect Routes and Point Count Locations (June 2022)

Date (dd/mm/yyyy)	Daytime/ Night time	Season	Area	Transect/ Point Count	Point Count (Location)/ Transect Impact	Habitat	Common Name	Scientific Name	Abundance	Distribution in Hong Kong[2]	Principal Status[3]	Level of Concern[4]	Protection Status in China[5]	China Red Data Book [6]	Red List of China's Vertebrates [10]	IUCN Red List [7] (v.2020-3)	Species of Conservation Importance	Wetland Dependent
13/06/2022	Daytime	Wet Season	FLW	Transect	FLW	Pond-FLW	Crested Myna	*Acridotheres cristatellus*	4	Common	R	-	-	-	LC	LC	N	N
13/06/2022	Daytime	Wet Season	FLW	Transect	FLW	In flight	House Swift	*Apus nipalensis*	2	Abundant, Common	SpM,R	-	-	-	LC	LC	N	N
13/06/2022	Daytime	Wet Season	FLW	Transect	FLW	Pond-FLW	Great Egret	*Ardea alba*	4	Common	R,WV	PRC (RC)	-	-	LC	LC	Y	Y
13/06/2022	Daytime	Wet Season	FLW	Transect	FLW	Pond-FLW	Chinese Pond Heron	*Ardeola bacchus*	11	Common	R	PRC (RC)	-	-	LC	LC	Y	Y
13/06/2022	Daytime	Wet Season	FLW	Transect	FLW	Pond-FLW	Little Egret	*Egretta garzetta*	7	Common	R	PRC (RC)	-	-	LC	LC	Y	Y
13/06/2022	Daytime	Wet Season	FLW	Transect	FLW	Pond-FLW	Black-collared Starling	*Gracupica nigricollis*	1	Common	R	-	-	-	LC	LC	N	N
13/06/2022	Daytime	Wet Season	FLW	Transect	FLW	Pond-FLW	White Wagtail	*Motacilla alba*	2	Common	PM,WV	-	-	-	LC	LC	N	N
13/06/2022	Daytime	Wet Season	FLW	Transect	FLW	Pond-FLW	Chinese Bulbul	*Pycnonotus sinensis*	4	Abundant	R	-	-	-	LC	LC	N	N
13/06/2022	Daytime	Wet Season	FLW	Transect	FLW	Pond-FLW	Spotted Dove	*Spilopelia chinensis*	1	Abundant	R	-	-	-	LC	LC	N	N
13/06/2022	Daytime	Wet Season	FLW	Point Count	FLW1	Pond-FLW	Chinese Pond Heron	*Ardeola bacchus*	15	Common	R	PRC (RC)	-	-	LC	LC	Y	Y
13/06/2022	Daytime	Wet Season	FLW	Point Count	FLW1	Pond-FLW	Pied Kingfisher	*Ceryle rudis*	1	Uncommon	R	-	-	-	LC	LC	N	Y
13/06/2022	Daytime	Wet Season	FLW	Point Count	FLW1	Pond-FLW	Chinese Bulbul	*Pycnonotus sinensis*	1	Abundant	R	-	-	-	LC	LC	N	N
13/06/2022	Daytime	Wet Season	FLW	Point Count	FLW1	Pond-FLW	Spotted Dove	*Spilopelia chinensis*	2	Abundant	R	-	-	-	LC	LC	N	N
13/06/2022	Daytime	Wet Season	FLW	Point Count	FLW2	Pond-FLW	Black-collared Starling	*Gracupica nigricollis*	1	Common	R	-	-	-	LC	LC	N	N
13/06/2022	Daytime	Wet Season	FLW	Point Count	FLW2	Pond-FLW	White Wagtail	*Motacilla alba*	2	Common	PM,WV	-	-	-	LC	LC	N	N
13/06/2022	Daytime	Wet Season	FLW	Point Count	FLW2	Pond-FLW	Yellow-bellied Prinia	*Prinia flaviventris*	1	Common	R	-	-	-	LC	LC	N	N
13/06/2022	Daytime	Wet Season	FLW	Point Count	FLW2	Pond-FLW	Plain Prinia	*Prinia inornata*	3	Common	R	-	-	-	LC	LC	N	N
13/06/2022	Daytime	Wet Season	FLW	Point Count	FLW2	Pond-FLW	Chinese Bulbul	*Pycnonotus sinensis*	3	Abundant	R	-	-	-	LC	LC	N	N
13/06/2022	Daytime	Wet Season	FLW	Point Count	FLW3	Pond-FLW	Crested Myna	*Acridotheres cristatellus*	2	Common	R	-	-	-	LC	LC	N	N
13/06/2022	Daytime	Wet Season	FLW	Point Count	FLW3	Pond-FLW	House Swift	*Apus nipalensis*	1	Abundant, Common	SpM,R	-	-	-	LC	LC	N	N
13/06/2022	Daytime	Wet Season	FLW	Point Count	FLW3	Pond-FLW	Black Drongo	*Dicrurus macrocercus*	1	Common	SV	-	-		LC	LC	N	N
13/06/2022	Daytime	Wet Season	FLW	Point Count	FLW3	Pond-FLW	Yellow-bellied Prinia	*Prinia flaviventris*	1	Common	R	-	-	-	LC	LC	N	N
13/06/2022	Daytime	Wet Season	FLW	Point Count	FLW3	Pond-FLW	Plain Prinia	*Prinia inornata*	1	Common	R	-	-	-	LC	LC	N	N
13/06/2022	Daytime	Wet Season	FLW	Point Count	FLW3	Pond-FLW	Chinese Bulbul	*Pycnonotus sinensis*	1	Abundant	R	-	-	-	LC	LC	N	N
13/06/2022	Daytime	Wet Season	FLW	Point Count	FLW4	Pond-FLW	Chinese Pond Heron	*Ardeola bacchus*	3	Common	R	PRC (RC)	-	-	LC	LC	Y	Y
13/06/2022	Daytime	Wet Season	FLW	Point Count	FLW4	Pond-FLW	Black-collared Starling	*Gracupica nigricollis*	1	Common	R	-	-	-	LC	LC	N	N

13/06/2022	Daytime	Wet Season	FLW	Point Count	FLW4	Pond-FLW	Plain Prinia	*Prinia inornata*	3	Common	R	-	-	-	LC	LC	N	N
13/06/2022	Daytime	Wet Season	FLW	Point Count	FLW4	Pond-FLW	Little Grebe	*Tachybaptus ruficollis*	1	Common	R	LC	-	-	LC	LC	Y	Y
13/06/2022	Daytime	Wet Season	FLW	Point Count	FLW5	Pond-FLW	Crested Myna	*Acridotheres cristatellus*	7	Common	R	-	-	-	LC	LC	N	N
13/06/2022	Daytime	Wet Season	FLW	Point Count	FLW5	Pond-FLW	Chinese Pond Heron	*Ardeola bacchus*	2	Common	R	PRC (RC)	-	-	LC	LC	Y	Y
13/06/2022	Daytime	Wet Season	FLW	Point Count	FLW5	Pond-FLW	Black-collared Starling	*Gracupica nigricollis*	1	Common	R	-	-	-	LC	LC	N	N
13/06/2022	Daytime	Wet Season	FLW	Point Count	FLW5	Pond-FLW	White Wagtail	*Motacilla alba*	1	Common	PM,WV	-	-	-	LC	LC	N	N
13/06/2022	Daytime	Wet Season	FLW	Point Count	FLW5	Pond-FLW	Eurasian Tree Sparrow	*Passer montanus*	9	Abundant	R	-	-	-	LC	LC	N	N
13/06/2022	Daytime	Wet Season	FLW	Point Count	FLW5	Pond-FLW	Yellow-bellied Prinia	*Prinia flaviventris*	2	Common	R	-	-	-	LC	LC	N	N
13/06/2022	Daytime	Wet Season	FLW	Point Count	FLW5	Pond-FLW	Spotted Dove	*Spilopelia chinensis*	1	Abundant	R	-	-	-	LC	LC	N	N
13/06/2022	Daytime	Wet Season	FLW	Point Count	FLW5	Pond-FLW	Eurasian Collared Dove	*Streptopelia decaocto*	1	Found in Mai Po, Tsim Bei Tsui, Fung Lok Wai	-	-	-	-	LC	LC	N	N
13/06/2022	Daytime	Wet Season	FLW	Point Count	FLW5	Pond-FLW	White-shouldered Starling	*Sturnia sinensis*	2	Common	PM	-	-	-	LC	LC	N	N
13/06/2022	Daytime	Wet Season	FLW	Point Count	FLW6	Pond-FLW	Great Egret	*Ardea alba*	2	Common	R,WV	PRC (RC)	-	-	LC	LC	Y	Y
13/06/2022	Daytime	Wet Season	FLW	Point Count	FLW6	Pond-FLW	Chinese Pond Heron	*Ardeola bacchus*	8	Common	R	PRC (RC)	-	-	LC	LC	Y	Y
13/06/2022	Daytime	Wet Season	FLW	Point Count	FLW6	Pond-FLW	Little Egret	*Egretta garzetta*	2	Common	R	PRC (RC)	-	-	LC	LC	Y	Y
13/06/2022	Daytime	Wet Season	FLW	Point Count	FLW7	Pond-FLW	Crested Myna	*Acridotheres cristatellus*	2	Common	R	-	-	-	LC	LC	N	N
13/06/2022	Daytime	Wet Season	FLW	Point Count	FLW7	Pond-FLW	Great Egret	*Ardea alba*	1	Common	R,WV	PRC (RC)	-	-	LC	LC	Y	Y
13/06/2022	Daytime	Wet Season	FLW	Point Count	FLW7	Pond-FLW	Chinese Pond Heron	*Ardeola bacchus*	6	Common	R	PRC (RC)	-	-	LC	LC	Y	Y
13/06/2022	Daytime	Wet Season	FLW	Point Count	FLW7	Pond-FLW	Yellow-bellied Prinia	*Prinia flaviventris*	1	Common	R	-	-	-	LC	LC	N	N
13/06/2022	Daytime	Wet Season	FLW	Point Count	FLW7	Pond-FLW	Eurasian Collared Dove	*Streptopelia decaocto*	1	Found in Mai Po, Tsim Bei Tsui, Fung Lok Wai	-	-	-	-	LC	LC	N	N
13/06/2022	Daytime	Wet Season	NSW	Transect	NSW	In flight	Crested Myna	*Acridotheres cristatellus*	4	Common	R	-	-	-	LC	LC	N	N
13/06/2022	Daytime	Wet Season	NSW	Transect	NSW	In flight	House Swift	*Apus nipalensis*	2	Abundant, Common	SpM,R	-	-	-	LC	LC	N	N
13/06/2022	Daytime	Wet Season	NSW	Transect	NSW	Mangrove	Chinese Pond Heron	*Ardeola bacchus*	8	Common	R	PRC (RC)	-	-	LC	LC	Y	Y
13/06/2022	Daytime	Wet Season	NSW	Transect	NSW	Mangrove	Little Egret	*Egretta garzetta*	5	Common	R	PRC (RC)	-	-	LC	LC	Y	Y
13/06/2022	Daytime	Wet Season	NSW	Transect	NSW	Modified Watercourse	Little Egret	*Egretta garzetta*	7	Common	R	PRC (RC)	-	-	LC	LC	Y	Y
13/06/2022	Daytime	Wet Season	NSW	Transect	NSW	Modified Watercourse	Plain Prinia	*Prinia inornata*	2	Common	R	-	-	-	LC	LC	N	N
13/06/2022	Daytime	Wet Season	NSW	Point Count	NSW1	Pond-NSW	Great Egret	*Ardea alba*	1	Common	R,WV	PRC (RC)	-	-	LC	LC	Y	Y
13/06/2022	Daytime	Wet Season	NSW	Point Count	NSW1	Pond-NSW	Eurasian Tree Sparrow	*Passer montanus*	3	Abundant	R	-	-	-	LC	LC	N	N

13/06/2022	Daytime	Wet Season	NSW	Point Count	NSW1	Pond-NSW	Spotted Dove	*Spilopelia chinensis*	1	Abundant	R	-	-	-	LC	LC	N	N
13/06/2022	Daytime	Wet Season	NSW	Point Count	NSW1	Pond-NSW	Eurasian Collared Dove	*Streptopelia decaocto*	1	Found in Mai Po, Tsim Bei Tsui, Fung Lok Wai	-	-	-	-	LC	LC	N	N
13/06/2022	Daytime	Wet Season	NSW	Point Count	SP/NSW1	Modified Watercourse	Oriental Magpie Robin	*Copsychus saularis*	1	Abundant	R	-	-	-	LC	LC	N	N
13/06/2022	Daytime	Wet Season	NSW	Point Count	SP/NSW1	Modified Watercourse	White Wagtail	*Motacilla alba*	2	Common	PM,WV	-	-	-	LC	LC	N	N
13/06/2022	Daytime	Wet Season	NSW	Point Count	SP/NSW1	Modified Watercourse	Eurasian Tree Sparrow	*Passer montanus*	2	Abundant	R	-	-	-	LC	LC	N	N
13/06/2022	Daytime	Wet Season	NSW	Point Count	SP/NSW1	Modified Watercourse	Plain Prinia	*Prinia inornata*	2	Common	R	-	-	-	LC	LC	N	N
13/06/2022	Daytime	Wet Season	NSW	Point Count	SP/NSW2	Modified Watercourse	Crested Myna	*Acridotheres cristatellus*	1	Common	R	-	-	-	LC	LC	N	N
13/06/2022	Daytime	Wet Season	NSW	Point Count	SP/NSW2	In flight	House Swift	*Apus nipalensis*	1	Abundant, Common	SpM,R	-	-	-	LC	LC	N	N
13/06/2022	Daytime	Wet Season	NSW	Point Count	SP/NSW2	Modified Watercourse	Great Egret	*Ardea alba*	1	Common	R,WV	PRC (RC)	-	-	LC	LC	Y	Y
13/06/2022	Daytime	Wet Season	NSW	Point Count	SP/NSW2	Modified Watercourse	Chinese Pond Heron	*Ardeola bacchus*	4	Common	R	PRC (RC)	-	-	LC	LC	Y	Y
13/06/2022	Daytime	Wet Season	NSW	Point Count	SP/NSW2	Modified Watercourse	Little Egret	*Egretta garzetta*	1	Common	R	PRC (RC)	-	-	LC	LC	Y	Y
13/06/2022	Daytime	Wet Season	NSW	Point Count	SP/NSW3	Modified Watercourse	Crested Myna	*Acridotheres cristatellus*	2	Common	R	-	-	-	LC	LC	N	N
13/06/2022	Daytime	Wet Season	NSW	Point Count	SP/NSW3	In flight	House Swift	*Apus nipalensis*	6	Abundant, Common	SpM,R	-	-	-	LC	LC	N	N
13/06/2022	Daytime	Wet Season	NSW	Point Count	SP/NSW3	Modified Watercourse	Great Egret	*Ardea alba*	3	Common	R,WV	PRC (RC)	-	-	LC	LC	Y	Y
13/06/2022	Daytime	Wet Season	NSW	Point Count	SP/NSW3	Modified Watercourse	Plain Prinia	*Prinia inornata*	3	Common	R	-	-	-	LC	LC	N	N
17/06/2022	Night-time	Wet Season	NSW	Transect	NSW	Plantation-NSW	Masked Laughingthrush	*Garrulax perspicillatus*	10	Abundant	R	-	-	-	LC	LC	N	N

Notes:
(1) All wild birds are Protected under Wild Animals Protection Ordinance (Cap. 170).
(2) AFCD (2021). Hong Kong Biodiversity Database.
(3) Carey et al. (2001): R=resident; WV=winter visitor; SV=summer visitor; PM=passage migrant; Sp=spring; A=autumn;
(4) Fellowes et al. (2002): GC=Global Concern; LC=Local Concern; RC=Regional Concern; PRC=Potential Regional Concern; PGC: Potential Global Concern. Letters in parentheses indicate that the assessment is on the basis of restrictedness in nesting and/or roosting sites rather than in general occurrence.
(5) List of Wild Animals Under State Protection (promulgated by State Forestry Administration and Ministry of Agriculture on 14 January, 1989).
(6) Zheng, G. M. and Wang, Q. S. (1998). China Red Data Book
(7) IUCN 2021. The IUCN Red List of Threatened Species. Version 2020-3.
(9) Wetland-dependent species (including wetland-dependent species and waterbirds).
(10) Jiang et al. (2016). Red List of China's Vertebrates

Annex C – Shannon Diversity Index Values in the Different Transect Routes and Point Count Locations (June 2022)

Annex C.1. Shannon Diversity Index Values of All Avifauna Species in the Different Transect Routes and Point Count Locations

Shannon Diversity Index Value of all Avifauna Species				
Point Count Method				
EIA Report ID	EM&A Manual ID	June-17	June-22	Remarks
P1	FLW1	1.04	0.73	-
P2	FLW2	0.64	1.50	+
P3	FLW3	1.28	1.75	+
P4	FLW4	2.20	1.26	-
P5	FLW5	2.39	1.81	-
P6	FLW6	0.87	0.87	=
P7	FLW7	1.89	1.29	-
P9	SP/NSW3	1.09	1.30	+
P10	SP/NSW2	1.17	1.39	+
P11	NSW1	1.85	1.24	-
P12	SP/NSW1	1.49	1.35	-
Transect Walk Method				
EIA Report ID	EM&A Manual ID	June -17	June-22	Remarks
Fung Lok Wai	FLW	1.99	1.93	-
Nam Sang Wai	NSW	0.69	1.59	+
YLIE-CW	YLIE-CW	**	**	=

Notes:

0 = only one species recorded; ** no species recorded; - decreased; + increased; = no change

Annex C.2. Shannon Diversity Index Values of Avifauna Species with Conservation Importance in the Different Transect Routes and Point Count Locations

Shannon Diversity Index Value of Species with Conservation Importance				
Point Count Method				
EIA Report ID	EM&A Manual ID	June-17	June-22	Remarks
P1	FLW1	0.69	0	-
P2	FLW2	**	**	=
P3	FLW3	**	**	=
P4	FLW4	0.64	0.56	-
P5	FLW5	0.95	0	-
P6	FLW6	0.50	0.87	+

Shannon Diversity Index Value of Species with Conservation Importance				
P7	FLW7	0	0.41	+
P9	SP/NSW3	0.68	0	-
P10	SP/NSW2	0.95	0.87	-
P11	NSW1	0	0	=
P12	SP/NSW1	1.01	**	-
Transect Walk Method				
EIA Report ID	EM&A Manual ID	June -17	June-22	Remarks
Fung Lok Wai	FLW	1.04	1.02	-
Nam Sang Wai	NSW	**	0.67	+
YLIE-CW	YLIE-CW	**	**	=

Notes:

0 = only one species recorded; ** no species recorded; - decreased; + increased; = no change

Annex D – Summary of Hutcheson T-test Analyses (June 2022)

Hutcheson T-test formula:

$$t = \frac{H_a - H_b}{\sqrt{s^2_{H_a} + s^2_{H_b}}}$$

Annex D.1 Species Diversity of All Avifauna Species – Point Count Method

Months	June 2017	June 2022
Total	121	128
Richness	25	18
H	2.87	2.38
S^2_H	0.006	0.008
t	4.11	
df	247.13	
Crit	1.97	
p	0.00	
CI	0.16	0.18

Annex D.2 Species Diversity of Avifauna Species with Conservation Importance – Point Count Method

Months	June 2017	June 2022
Total	45	50
Richness	5	4
H	1.43	0.75
S^2_H	0.007	0.017
t	4.36	
df	85.28	
Crit	1.99	
p	0.00	
CI	0.17	0.26

Annex E – Abundance Data per Point Count Location

Annex E.1. Baseline (June 2017) abundance data (all avifauna species) per point count location

Point count location	Common Name	Abundance
FLW1	*Ardea alba*	1
	Egretta garzetta	1
	Prinia flaviventris	2
FLW2	*Pycnonotus sinensis*	2
	Spilopelia chinensis	1
FLW3	*Prinia flaviventris*	1
	Prinia inornata	1
	Pycnonotus sinensis	3
	Spilopelia chinensis	2
FLW4	*Caprimulgus affinis*	1
	Copsychus saularis	1
	Dicrurus macrocercus	1
	Hirundo rustica	3
	Milvus migrans	1
	Prinia flaviventris	2
	Prinia inornata	1
	Spilopelia chinensis	3
	Streptopelia decaocto	2
	Tachybaptus ruficollis	2
FLW5	*Acridotheres cristatellus*	2
	Amaurornis phoenicurus	1
	Ardea alba	3
	Ardeola bacchus	1
	Copsychus saularis	1
	Dicrurus macrocercus	2
	Hirundo rustica	1
	Nycticorax nycticorax	1
	Passer montanus	3
	Pycnonotus sinensis	1
	Spilopelia chinensis	5
	Sturnia sinensis	3
	Tachybaptus ruficollis	1

Point count location	Common Name	Abundance
FLW6	*Lanius schach*	1
	Milvus migrans	1
	Tachybaptus ruficollis	4
FLW7	*Acridotheres cristatellus*	1
	Bubulcus coromandus	2
	Dicrurus macrocercus	1
	Egretta garzetta	1
	Gracupica nigricollis	1
	Lanius schach	2
	Streptopelia decaocto	1
SP/NSW3	*Ardeola bacchus*	5
	Egretta garzetta	7
	Prinia flaviventris	1
	Pycnonotus sinensis	1
SP/NSW2	*Ardea alba*	2
	Ardeola bacchus	2
	Egretta garzetta	6
	Motacilla alba	1
NSW1	*Alcedo atthis*	1
	Amaurornis phoenicurus	1
	Ardeola bacchus	1
	Motacilla alba	1
	Nycticorax nycticorax	1
	Parus cinereus	1
	Passer montanus	1
	Prinia flaviventris	8
	Spilopelia chinensis	1
	Sturnia sinensis	1
SP/NSW1	*Ardea alba*	1
	Ardeola bacchus	2
	Egretta garzetta	3
	Prinia flaviventris	1
	Prinia inornata	1
Total		**121**

Annex E.2. Impact monitoring (June 2022) abundance data (all avifauna species) per point count location

Point count location	Common Name	Abundance
FLW1	*Ardeola bacchus*	15
	Ceryle rudis	1
	Pycnonotus sinensis	1
	Spilopelia chinensis	2
FLW2	*Gracupica nigricollis*	1
	Motacilla alba	2
	Prinia flaviventris	1
	Prinia inornata	3
	Pycnonotus sinensis	3
FLW3	*Acridotheres cristatellus*	2
	Apus nipalensis	1
	Dicrurus macrocercus	1
	Prinia flaviventris	1
	Prinia inornata	1
	Pycnonotus sinensis	1
FLW4	*Ardeola bacchus*	3
	Gracupica nigricollis	1
	Prinia inornata	3
	Tachybaptus ruficollis	1
FLW5	*Acridotheres cristatellus*	7
	Ardeola bacchus	2
	Gracupica nigricollis	1
	Motacilla alba	1
	Passer montanus	9
	Prinia flaviventris	2
	Spilopelia chinensis	1
	Streptopelia decaocto	1
	Sturnia sinensis	2
FLW6	*Ardea alba*	2
	Ardeola bacchus	8
	Egretta garzetta	2
FLW7	*Acridotheres cristatellus*	2
	Ardea alba	1
	Ardeola bacchus	6
	Prinia flaviventris	1
	Streptopelia decaocto	1
SP/NSW3	*Acridotheres cristatellus*	2
	Apus nipalensis	6
	Ardea alba	3

Point count location	Common Name	Abundance
	Prinia inornata	3
SP/NSW2	*Acridotheres cristatellus*	1
	Apus nipalensis	1
	Ardea alba	1
	Ardeola bacchus	4
	Egretta garzetta	1
NSW1	*Ardea alba*	1
	Passer montanus	3
	Spilopelia chinensis	1
	Streptopelia decaocto	1
SP/NSW1	*Copsychus saularis*	1
	Motacilla alba	2
	Passer montanus	2
	Prinia inornata	2
Total		**128**

Annex F – Noise Monitoring Results in Point Count Locations during the Ecological Monitoring of Birds (June 2022)

Frequency and Period	Location	Day time (13/07/2022)		Night-time (17/07/2022)	
		Start Time	L_{Aeq} (30 min) dB(A)	Start Time	L_{Aeq} (30 min) dB(A)
Monthly in concurrence with the ecological monitoring of birds	FLW1	09:26	52.3	23:06	50.4
	FLW2	08:59	53.4	22:35	52.2
	FLW3	08:55	58.4	22:40	53.9
	FLW4	07:45	52.5	20:50	51.5
	FLW5	07:50	48.2	21:28	55.4
	FLW6	08:20	49.8	21:25	49.3
	FLW7	08:28	53.8	22:01	49.7
	SP/NSW3	13:05	57.6	19:10	55.3
	SP/NSW2	13:09	57.7	19:14	64.5
	NSW1	13:40	55.6	19:43	51.8
	SP/NSW1	13:45	60.3	19:50	53.4

Annex G – Site Photos showing no project-related disturbance during the Ecological Monitoring of Birds (June 2022)

Annex G.1. Active Pond at Fung Lok Wai, west of the Project Site

Annex G.2. Active Pond and Ficus microcarpa Chinese Pond Heron nesting site at Fung Lok Wai, north of the Project Site

Annex G.3. Mangrove habitat at Nam Sang Wai, east of the Project Site

Annex G.4. Active Pond at Nam Sang Wai, far east of the Project Site