Notification of Ecological Monitoring of Birds Exceedance

Incident Report on Action/ Limit Level Exceedance

Reference No.:	IR20221110_Species Diversity			
Project:	Contract No. SPW 07/2020 Environmental Team for Construction of Yuen Long Effluent Polishing Plant Stage 1			
Survey Dates:	2022/11/10 (daytime)			
	Method	Parameters	Action Level	Limit Level
Action level / Limit level: (For Avifauna Communities**)**	Transect	Abundance of all avifauna species (including but not limited to overwintering waterbirds) in the community	Significant decline[1,2] in any of these parameters during the current monitoring month relative to the corresponding month during the baseline survey	Significant decline in any of these parameters for three consecutive months
		Species diversity of all avifauna species (including but not limited to overwintering waterbirds) in the community		
		Abundance of species with conservation importance only		
		Species diversity of species with conservation importance only		
	Point Count	Abundance of all avifauna species (including but not limited to overwintering waterbirds) in the community		
		Species diversity of all avifauna species (including but not limited to overwintering waterbirds) in the community		
		Abundance of species with conservation importance only		
		Species diversity of species with conservation importance only		
Measured significant decline in abundance and/or species diversity (fill in as appropriate)	Transect	Abundance of all avifauna species (including but not limited to overwintering waterbirds) in the community	☐	☐
		Species diversity of all avifauna species (including but not limited to overwintering waterbirds) in the community	☐	☐
		Abundance of species with conservation importance only	☐	☐
		Species diversity of species with conservation importance only	☐	☐
	Point Count	Abundance of all avifauna species (including but not limited to overwintering waterbirds) in the community	☐	☐
		Species diversity of all avifauna species (including but not limited to overwintering waterbirds) in the community	☑	☐
		Abundance of species with conservation importance only	☐	☐
		Species diversity of species with conservation importance only	☑	☐
Action taken / to be taken[3]: (tick / circle / fill in as appropriate)	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.			

	☐ Other
Possible reason/s[4] for action or limit level Non-compliance: (tick / fill in as appropriate)	**Findings / Evidence** ☐ 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 the Great Cormorants in the community. The current dominance of this species was due to its concurrent migratory season. 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 (45.0 to 56.6 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 behavioral 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. ☑ Insignificant decrease 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 abundance of species with conservation importance only was observed for Transect/Point Count survey. ☑ Significant increase in species diversity of all avifauna species (including but not limited to overwintering waterbirds) in the community was observed for Transect/~~Point Count~~ survey. ☑ Insignificant increase 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 (November 2022) Annex C – Shannon Diversity Index Values in the Different Transect Routes and Point Count Locations (November 2022) Annex D – Summary of Hutcheson T-test Analyses (November 2022) Annex E – Abundance Data per Point Count Location Annex F – Noise Monitoring Results in Point Count Locations during the Ecological Monitoring of Birds (November 2022) Annex G – Site Photos showing no project-related disturbance during the Ecological Monitoring of Birds (November 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

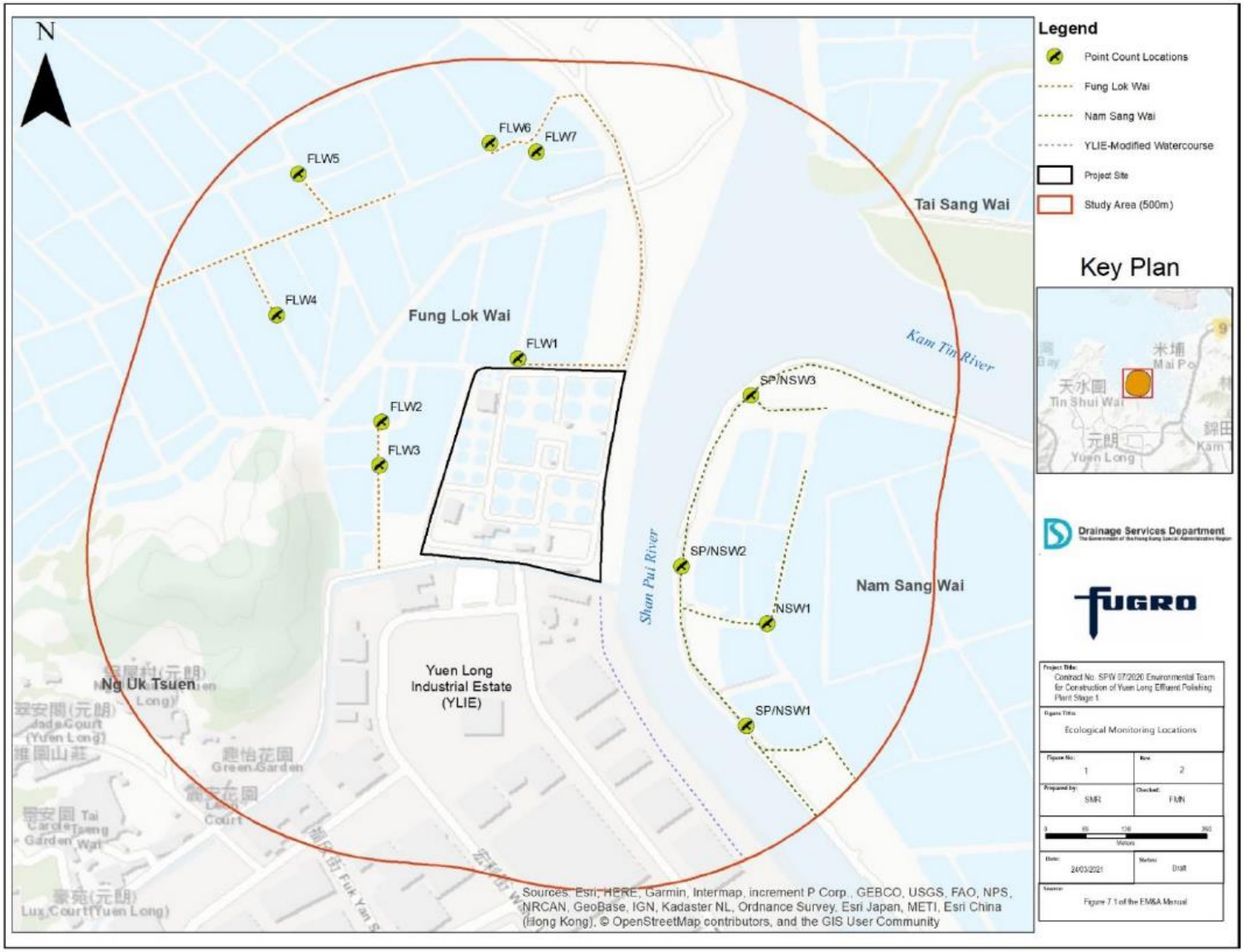
Signature: 
Date (dd/mm/yyyy): 28/11/2022

Certified by: Alvin L.B. Yu

Designation: Environmental Team Leader

Signature: 
Date (dd/mm/yyyy): 28/11/2022

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 (November 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
10/11/2022	Daytime	Dry Season	FLW	Transect	FLW	Pond-FLW	Black-collared Starling	*Gracupica nigricollis*	2	Common	R	-	-	-	LC	LC	N	N
10/11/2022	Daytime	Dry Season	FLW	Transect	FLW	Pond-FLW	Black-faced Bunting	*Emberiza spodocephala*	3	Common	PM,WV	-	-	-	LC	LC	N	N
10/11/2022	Daytime	Dry Season	FLW	Transect	FLW	Plantation-FLW	Common Tailorbird	*Orthotomus sutorius*	2	Common	R	-	-	-	LC	LC	N	N
10/11/2022	Daytime	Dry Season	FLW	Transect	FLW	Pond-FLW	Eastern Yellow Wagtail	*Motacilla tschutschensis*	1	Common	PM,WV	-	-	-	LC	LC	N	N
10/11/2022	Daytime	Dry Season	FLW	Transect	FLW	Pond-FLW	Great Egret	*Ardea alba*	1	Common	R,WV	PRC (RC)	-	-	LC	LC	Y	Y
10/11/2022	Daytime	Dry Season	FLW	Transect	FLW	Pond-FLW	Grey Heron	*Ardea cinerea*	1	Common	WV	PRC	-	-	LC	LC	Y	Y
10/11/2022	Daytime	Dry Season	FLW	Transect	FLW	Plantation-FLW	Masked Laughingthrush	*Garrulax perspicillatus*	2	Abundant	R	-	-	-	LC	LC	N	N
10/11/2022	Daytime	Dry Season	FLW	Transect	FLW	Pond-FLW	Spotted Dove	*Spilopelia chinensis*	3	Abundant	R	-	-	-	LC	LC	N	N
10/11/2022	Daytime	Dry Season	FLW	Point Count	FLW1	Pond-FLW	Crested Myna	*Acridotheres cristatellus*	3	Common	R	-	-	-	LC	LC	N	N
10/11/2022	Daytime	Dry Season	FLW	Point Count	FLW1	Pond-FLW	Great Cormorant	*Phalacrocorax carbo*	2	Common	WV	PRC	-	-	LC	LC	Y	Y
10/11/2022	Daytime	Dry Season	NSW	Point Count	FLW1	Pond-FLW	Plain Prinia	*Prinia inornata*	3	Common	R	-	-	-	LC	LC	N	N
10/11/2022	Daytime	Dry Season	FLW	Point Count	FLW1	Pond-FLW	Spotted Dove	*Spilopelia chinensis*	2	Abundant	R	-	-	-	LC	LC	N	N
10/11/2022	Daytime	Dry Season	FLW	Point Count	FLW1	Pond-FLW	White Wagtail	*Motacilla alba*	1	Common	PM,WV	-	-	-	LC	LC	N	N
10/11/2022	Daytime	Dry Season	FLW	Point Count	FLW2	Pond-FLW	Eurasian Collared Dove	*Streptopelia decaocto*	3	Common	-	-	-	-	LC	LC	N	N
10/11/2022	Daytime	Dry Season	FLW	Point Count	FLW2	Pond-FLW	Plain Prinia	*Prinia inornata*	2	Common	R	-	-	-	LC	LC	N	N
10/11/2022	Daytime	Dry Season	FLW	Point Count	FLW2	Pond-FLW	Spotted Dove	*Spilopelia chinensis*	1	Abundant	R	-	-	-	LC	LC	N	N
10/11/2022	Daytime	Dry Season	FLW	Point Count	FLW3	Pond-FLW	Crested Myna	*Acridotheres cristatellus*	3	Common	R	-	-	-	LC	LC	N	N
10/11/2022	Daytime	Dry Season	FLW	Point Count	FLW3	Pond-FLW	Eurasian Collared Dove	*Streptopelia decaocto*	1	Common	-	-	-	-	LC	LC	N	N
10/11/2022	Daytime	Dry Season	FLW	Point Count	FLW4	Pond-FLW	Great Cormorant	*Phalacrocorax carbo*	1	Common	WV	PRC	-	-	LC	LC	Y	Y
10/11/2022	Daytime	Dry Season	FLW	Point Count	FLW4	Pond-FLW	Plain Prinia	*Prinia inornata*	3	Common	R	-	-	-	LC	LC	N	N
10/11/2022	Daytime	Dry Season	FLW	Point Count	FLW4	Pond-FLW	Red-whiskered Bulbul	*Pycnonotus jocosus*	1	Abundant	R	-	-	-	LC	LC	N	N
10/11/2022	Daytime	Dry Season	FLW	Point Count	FLW5	Pond-FLW	Common Tailorbird	*Orthotomus sutorius*	3	Common	R	-	-	-	LC	LC	N	N
10/11/2022	Daytime	Dry Season	FLW	Point Count	FLW5	Pond-FLW	Crested Myna	*Acridotheres cristatellus*	2	Common	R	-	-	-	LC	LC	N	N
10/11/2022	Daytime	Dry Season	FLW	Point Count	FLW5	Pond-FLW	Daurian Redstart	*Phoenicurus auroreus*	1	Common	WV	-	-	-	LC	LC	N	N
10/11/2022	Daytime	Dry Season	FLW	Point Count	FLW5	Pond-FLW	Eurasian Collared Dove	*Streptopelia decaocto*	2	Common	-	-	-	-	LC	LC	N	N
10/11/2022	Daytime	Dry Season	FLW	Point Count	FLW5	Pond-FLW	Great Cormorant	*Phalacrocorax carbo*	4	Common	WV	PRC	-	-	LC	LC	Y	Y

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
10/11/2022	Daytime	Dry Season	FLW	Point Count	FLW5	Pond-FLW	Little Grebe	*Tachybaptus ruficollis*	2	Common	R	LC	-	-	LC	LC	Y	Y
10/11/2022	Daytime	Dry Season	FLW	Point Count	FLW5	Pond-FLW	Oriental Magpie Robin	*Copsychus saularis*	2	Abundant	R	-	-	-	LC	LC	N	N
10/11/2022	Daytime	Dry Season	FLW	Point Count	FLW5	Pond-FLW	Red-whiskered Bulbul	*Pycnonotus jocosus*	2	Abundant	R	-	-	-	LC	LC	N	N
10/11/2022	Daytime	Dry Season	FLW	Point Count	FLW5	Pond-FLW	Spotted Dove	*Spilopelia chinensis*	1	Abundant	R	-	-	-	LC	LC	N	N
10/11/2022	Daytime	Dry Season	FLW	Point Count	FLW6	Pond-FLW	Crested Myna	*Acridotheres cristatellus*	2	Common	R	-	-	-	LC	LC	N	N
10/11/2022	Daytime	Dry Season	FLW	Point Count	FLW6	Pond-FLW	Eurasian Wigeon	*Anas penelope*	1	Common	WV	RC	-	-	LC	LC	Y	Y
10/11/2022	Daytime	Dry Season	FLW	Point Count	FLW6	Pond-FLW	Great Cormorant	*Phalacrocorax carbo*	3	Common	WV	PRC	-	-	LC	LC	Y	Y
10/11/2022	Daytime	Dry Season	FLW	Point Count	FLW6	Pond-FLW	Great Egret	*Ardea alba*	1	Common	R,WV	PRC (RC)	-	-	LC	LC	Y	Y
10/11/2022	Daytime	Dry Season	FLW	Point Count	FLW6	Pond-FLW	Little Egret	*Egretta garzetta*	2	Common	R	PRC (RC)	-	-	LC	LC	Y	Y
10/11/2022	Daytime	Dry Season	FLW	Point Count	FLW6	Pond-FLW	Little Grebe	*Tachybaptus ruficollis*	1	Common	R	LC	-	-	LC	LC	Y	Y
10/11/2022	Daytime	Dry Season	FLW	Point Count	FLW6	Pond-FLW	Red-whiskered Bulbul	*Pycnonotus jocosus*	2	Abundant	R	-	-	-	LC	LC	N	N
10/11/2022	Daytime	Dry Season	FLW	Point Count	FLW6	Pond-FLW	White Wagtail	*Motacilla alba*	1	Common	PM,WV	-	-	-	LC	LC	N	N
10/11/2022	Daytime	Dry Season	FLW	Point Count	FLW7	Pond-FLW	Black-collared Starling	*Gracupica nigricollis*	2	Common	R	-	-	-	LC	LC	N	N
10/11/2022	Daytime	Dry Season	FLW	Point Count	FLW7	Pond-FLW	Great Cormorant	*Phalacrocorax carbo*	10	Common	WV	PRC	-	-	LC	LC	Y	Y
10/11/2022	Daytime	Dry Season	FLW	Point Count	FLW7	Pond-FLW	Little Egret	*Egretta garzetta*	1	Common	R	PRC (RC)	-	-	LC	LC	Y	Y
10/11/2022	Daytime	Dry Season	FLW	Point Count	FLW7	Pond-FLW	White Wagtail	*Motacilla alba*	2	Common	PM,WV	-	-	-	LC	LC	N	N
10/11/2022	Daytime	Dry Season	NSW	Transect	NSW	Modified Watercourse	Cinereous Tit	*Parus cinereus*	1	Common	R	-	-	-	LC	LC	N	N
10/11/2022	Daytime	Dry Season	NSW	Transect	NSW	Modified Watercourse	Daurian Redstart	*Phoenicurus auroreus*	1	Common	WV	-	-	-	LC	LC	N	N
10/11/2022	Daytime	Dry Season	NSW	Transect	NSW	Modified Watercourse	Dusky Warbler	*Phylloscopus fuscatus*	2	Common	PM,WV	-	-	-	LC	LC	N	N
10/11/2022	Daytime	Dry Season	NSW	Transect	NSW	Modified Watercourse	Eastern Yellow Wagtail	*Motacilla tschutschensis*	2	Common	PM,WV	-	-	-	LC	LC	N	N
10/11/2022	Daytime	Dry Season	NSW	Transect	NSW	Plantation-NSW	Eurasian Tree Sparrow	*Passer montanus*	3	Abundant	R	-	-	-	LC	LC	N	N
10/11/2022	Daytime	Dry Season	NSW	Transect	NSW	Plantation-NSW	Masked Laughingthrush	*Garrulax perspicillatus*	3	Abundant	R	-	-	-	LC	LC	N	N
10/11/2022	Daytime	Dry Season	NSW	Transect	NSW	Modified Watercourse	Red-whiskered Bulbul	*Pycnonotus jocosus*	4	Abundant	R	-	-	-	LC	LC	N	N
10/11/2022	Daytime	Dry Season	NSW	Transect	NSW	Modified Watercourse	Spotted Dove	*Spilopelia chinensis*	1	Abundant	R	-	-	-	LC	LC	N	N
10/11/2022	Daytime	Dry Season	NSW	Point Count	NSW1	Pond-NSW	Daurian Redstart	*Phoenicurus auroreus*	1	Common	WV	-	-	-	LC	LC	N	N

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
10/11/2022	Daytime	Dry Season	NSW	Point Count	NSW1	Pond-NSW	Great Cormorant	*Phalacrocorax carbo*	62	Common	WV	PRC	-	-	LC	LC	Y	Y
10/11/2022	Daytime	Dry Season	NSW	Point Count	NSW1	Pond-NSW	Greater Coucal	*Centropus sinensis*	1	Common	R	-	Class II	Vulnerable	LC	LC	Y	N
10/11/2022	Daytime	Dry Season	NSW	Point Count	NSW1	Pond-NSW	Grey Heron	*Ardea cinerea*	1	Common	WV	PRC	-	-	LC	LC	Y	Y
10/11/2022	Daytime	Dry Season	NSW	Point Count	NSW1	Pond-NSW	Plain Prinia	*Prinia inornata*	7	Common	R	-	-	-	LC	LC	N	N
10/11/2022	Daytime	Dry Season	NSW	Point Count	NSW1	Pond-NSW	Spotted Dove	*Spilopelia chinensis*	2	Abundant	R	-	-	-	LC	LC	N	N
10/11/2022	Daytime	Dry Season	NSW	Point Count	SP/NSW1	Modified Watercourse	Black-winged Stilt	*Himantopus himantopus*	2	Common	PM	RC	-	-	LC	LC	Y	Y
10/11/2022	Daytime	Dry Season	NSW	Point Count	SP/NSW1	Modified Watercourse	Chinese Pond Heron	*Ardeola bacchus*	3	Common	R	PRC (RC)	-	-	LC	LC	Y	Y
10/11/2022	Daytime	Dry Season	NSW	Point Count	SP/NSW1	Modified Watercourse	Eurasian Wigeon	*Anas penelope*	3	Common	WV	RC	-	-	LC	LC	Y	Y
10/11/2022	Daytime	Dry Season	NSW	Point Count	SP/NSW1	Modified Watercourse	Great Cormorant	*Phalacrocorax carbo*	1	Common	WV	PRC	-	-	LC	LC	Y	Y
10/11/2022	Daytime	Dry Season	NSW	Point Count	SP/NSW1	Modified Watercourse	Great Egret	*Ardea alba*	1	Common	R,WV	PRC (RC)	-	-	LC	LC	Y	Y
10/11/2022	Daytime	Dry Season	NSW	Point Count	SP/NSW1	Modified Watercourse	Grey Heron	*Ardea cinerea*	2	Common	WV	PRC	-	-	LC	LC	Y	Y
10/11/2022	Daytime	Dry Season	NSW	Point Count	SP/NSW1	Modified Watercourse	Little Egret	*Egretta garzetta*	3	Common	R	PRC (RC)	-	-	LC	LC	Y	Y
10/11/2022	Daytime	Dry Season	NSW	Point Count	SP/NSW1	Modified Watercourse	Little Grebe	*Tachybaptus ruficollis*	1	Common	R	LC	-	-	LC	LC	Y	Y
10/11/2022	Daytime	Dry Season	NSW	Point Count	SP/NSW1	Modified Watercourse	Northern Shoveler	*Anas clypeata*	2	Abundant	WV	RC	-	-	LC	LC	Y	Y
10/11/2022	Daytime	Dry Season	NSW	Point Count	SP/NSW1	Modified Watercourse	Plain Prinia	*Prinia inornata*	3	Common	R	-	-	-	LC	LC	N	N
10/11/2022	Daytime	Dry Season	NSW	Point Count	SP/NSW2	Modified Watercourse	Black-winged Stilt	*Himantopus himantopus*	3	Common	PM	RC	-	-	LC	LC	Y	Y
10/11/2022	Daytime	Dry Season	NSW	Point Count	SP/NSW2	Modified Watercourse	Chinese Pond Heron	*Ardeola bacchus*	1	Common	R	PRC (RC)	-	-	LC	LC	Y	Y
10/11/2022	Daytime	Dry Season	NSW	Point Count	SP/NSW2	Modified Watercourse	Common Sandpiper	*Actitis hypoleucos*	2	Common	PM,WV	-	-	-	LC	LC	N	Y
10/11/2022	Daytime	Dry Season	NSW	Point Count	SP/NSW2	Modified Watercourse	Eastern Yellow Wagtail	*Motacilla tschutschensis*	1	Common	PM,WV	-	-	-	LC	LC	N	N
10/11/2022	Daytime	Dry Season	NSW	Point Count	SP/NSW2	Modified Watercourse	Eurasian Collared Dove	*Streptopelia decaocto*	1	Common	-	-	-	-	LC	LC	N	N
10/11/2022	Daytime	Dry Season	NSW	Point Count	SP/NSW2	Modified Watercourse	Eurasian Wigeon	*Anas penelope*	1	Common	WV	RC	-	-	LC	LC	Y	Y
10/11/2022	Daytime	Dry Season	NSW	Point Count	SP/NSW2	Modified Watercourse	Great Cormorant	*Phalacrocorax carbo*	12	Common	WV	PRC	-	-	LC	LC	Y	Y
10/11/2022	Daytime	Dry Season	NSW	Point Count	SP/NSW2	Modified Watercourse	Little Egret	*Egretta garzetta*	1	Common	R	PRC (RC)	-	-	LC	LC	Y	Y
10/11/2022	Daytime	Dry Season	NSW	Point Count	SP/NSW2	Modified Watercourse	Masked Laughingthrush	*Garrulax perspicillatus*	1	Abundant	R	-	-	-	LC	LC	N	N
10/11/2022	Daytime	Dry Season	NSW	Point Count	SP/NSW2	Modified Watercourse	Plain Prinia	*Prinia inornata*	1	Common	R	-	-	-	LC	LC	N	N
10/11/2022	Daytime	Dry Season	NSW	Point Count	SP/NSW2	Modified Watercourse	Red-whiskered Bulbul	*Pycnonotus jocosus*	2	Abundant	R	-	-	-	LC	LC	N	N

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
10/11/2022	Daytime	Dry Season	NSW	Point Count	SP/NSW3	Modified Watercourse	Black-winged Stilt	*Himantopus himantopus*	5	Common	PM	RC	-	-	LC	LC	Y	Y
10/11/2022	Daytime	Dry Season	NSW	Point Count	SP/NSW3	Modified Watercourse	Chinese Pond Heron	*Ardeola bacchus*	1	Common	R	PRC (RC)	-	-	LC	LC	Y	Y
10/11/2022	Daytime	Dry Season	NSW	Point Count	SP/NSW3	Modified Watercourse	Common Kingfisher	*Alcedo atthis*	1	Common	PM,WV	-	-	-	LC	LC	N	Y
10/11/2022	Daytime	Dry Season	NSW	Point Count	SP/NSW3	Modified Watercourse	Common Moorhen	*Gallinula chloropus*	3	Common	R	-	-	-	LC	LC	N	Y
10/11/2022	Daytime	Dry Season	NSW	Point Count	SP/NSW3	Modified Watercourse	Common Sandpiper	*Actitis hypoleucos*	1	Common	PM,WV	-	-	-	LC	LC	N	Y
10/11/2022	Daytime	Dry Season	NSW	Point Count	SP/NSW3	Modified Watercourse	Great Cormorant	*Phalacrocorax carbo*	1	Common	WV	PRC	-	-	LC	LC	Y	Y
10/11/2022	Daytime	Dry Season	NSW	Point Count	SP/NSW3	Modified Watercourse	Grey Heron	*Ardea cinerea*	3	Common	WV	PRC	-	-	LC	LC	Y	Y
10/11/2022	Daytime	Dry Season	NSW	Point Count	SP/NSW3	Modified Watercourse	Little Egret	*Egretta garzetta*	3	Common	R	PRC (RC)	-	-	LC	LC	Y	Y
10/11/2022	Daytime	Dry Season	NSW	Point Count	SP/NSW3	Modified Watercourse	Little Grebe	*Tachybaptus ruficollis*	4	Common	R	LC	-	-	LC	LC	Y	Y
10/11/2022	Daytime	Dry Season	NSW	Point Count	SP/NSW3	Modified Watercourse	Marsh Sandpiper	*Tringa stagnatilis*	2	Common	PM,WV	RC	-	-	LC	LC	Y	Y
10/11/2022	Daytime	Dry Season	NSW	Point Count	SP/NSW3	Modified Watercourse	Northern Shoveler	*Anas clypeata*	2	Abundant	WV	RC	-	-	LC	LC	Y	Y
10/11/2022	Daytime	Dry Season	NSW	Point Count	SP/NSW3	Modified Watercourse	Plain Prinia	*Prinia inornata*	2	Common	R	-	-	-	LC	LC	N	N
10/11/2022	Daytime	Dry Season	NSW	Point Count	SP/NSW3	Modified Watercourse	White-breasted Waterhen	*Amaurornis phoenicurus*	1	Common	R	-	-	-	LC	LC	N	Y
10/11/2022	Daytime	Dry Season	YLIE	Transect	YLIE-CW	Modified Watercourse	Black-winged Stilt	*Himantopus himantopus*	2	Common	PM	RC	-	-	LC	LC	Y	Y
10/11/2022	Daytime	Dry Season	YLIE	Transect	YLIE-CW	Modified Watercourse	Common Kingfisher	*Alcedo atthis*	1	Common	PM,WV	-	-	-	LC	LC	N	Y
10/11/2022	Daytime	Dry Season	YLIE	Transect	YLIE-CW	Modified Watercourse	Common Moorhen	*Gallinula chloropus*	2	Common	R	-	-	-	LC	LC	N	Y
10/11/2022	Daytime	Dry Season	YLIE	Transect	YLIE-CW	Modified Watercourse	Eastern Cattle Egret	*Bubulcus coromandus*	2	Common	R.PM	-	-	-	LC	LC	N	Y
10/11/2022	Daytime	Dry Season	YLIE	Transect	YLIE-CW	Modified Watercourse	Little Egret	*Egretta garzetta*	2	Common	R	PRC (RC)	-	-	LC	LC	Y	Y
10/11/2022	Daytime	Dry Season	YLIE	Transect	YLIE-CW	Modified Watercourse	Little Grebe	*Tachybaptus ruficollis*	2	Common	R	LC	-	-	LC	LC	Y	Y
10/11/2022	Daytime	Dry Season	YLIE	Transect	YLIE-CW	Modified Watercourse	White Wagtail	*Motacilla alba*	1	Common	PM,WV	-	-	-	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 (November 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	Nov-16	Nov-22	Remarks
P1	FLW1	1.32	1.55	+
P2	FLW2	1.59	1.01	-
P3	FLW3	1.68	0.56	-
P4	FLW4	0.78	0.95	+
P5	FLW5	1.34	2.11	+
P6	FLW6	1.49	1.99	+
P7	FLW7	1.95	0.99	-
P9	SP/NSW3	2.43	2.32	-
P10	SP/NSW2	2.22	1.88	-
P11	NSW1	1.91	0.64	-
P12	SP/NSW1	2.62	2.22	-
Transect Walk Method				
EIA Report ID	EM&A Manual ID	Nov-16	Nov-22	Remarks
Fung Lok Wai	FLW	2.12	1.99	-
Nam Sang Wai	NSW	1.77	1.96	+
YLIE-CW	YLIE-CW	**	1.91	+

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	Nov-16	Nov-22	Remarks
P1	FLW1	0.69	0	-
P2	FLW2	0	**	-
P3	FLW3	0.35	**	-
P4	FLW4	0.72	0	-
P5	FLW5	1.01	0.64	-
P6	FLW6	0.92	1.49	+
P7	FLW7	1.33	0.30	-

Shannon Diversity Index Value of Species with Conservation Importance				
P9	SP/NSW3	1.97	1.95	-
P10	SP/NSW2	1.26	1.05	-
P11	NSW1	1.19	0.16	-
P12	SP/NSW1	2.35	2.11	-
Transect Walk Method				
EIA Report ID	EM&A Manual ID	Nov-16	Nov-22	Remarks
Fung Lok Wai	FLW	1.10	0.69	-
Nam Sang Wai	NSW	0	**	-
YLIE-CW	YLIE-CW	**	1.10	+

Notes:

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

Annex D – Summary of Hutcheson T-test Analyses (November 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	November 2016	November 2022
Total	608	223
Richness	48	27
H	2.81	2.39
S^2_H	0.003	0.009
t	3.79	
df	401.58	
Crit	1.97	
p	0.00	
CI	0.12	0.19

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

Months	November 2016	November 2022
Total	394	149
Richness	20	11
H	1.91	1.41
S^2_H	0.005	0.012
t	3.86	
df	273.05	
Crit	1.97	
p	0.00	
CI	0.14	0.22

Annex E – Abundance Data per Point Count Location

Annex E.1. Baseline (November 2016) abundance data (all avifauna species) per point count location

Point Count Location	Common Name	Abundance
FLW1/ P1	*Anthus hodgsoni*	3
	Phalacrocorax carbo	2
	Prinia inornata	1
	Tachybaptus ruficollis	2
FLW2/ P2	*Lanius schach*	1
	Phalacrocorax carbo	3
	Prinia inornata	1
	Pycnonotus jocosus	2
	Saxicola stejnegeri	1
	Spilopelia chinensis	5
FLW3/ P3	*Actitis hypoleucos*	1
	Ardea cinerea	1
	Garrulax perspicillatus	3
	Phalacrocorax carbo	1
	Phylloscopus inornatus	1
	Zosterops japonicus	2
FLW4/ P4	*Ardea alba*	3
	Ardeola bacchus	2
	Egretta garzetta	1
	Ardea cinerea	2
	Phalacrocorax carbo	54
	Phoenicurus auroreus	1
	Tachybaptus ruficollis	3
FLW5/ P5	*Acridotheres cristatellus*	12
	Alcedo atthis	1
	Ardeola bacchus	1
	Gracupica nigricollis	2
	Phalacrocorax carbo	2
	Tachybaptus ruficollis	3
FLW6/ P6	*Acridotheres cristatellus*	9
	Amaurornis phoenicurus	1
	Ardea alba	1
	Ardeola bacchus	1

Point Count Location	Common Name	Abundance
	Bubulcus coromandus	2
	Ceryle rudis	1
	Corvus torquatus	2
	Egretta garzetta	1
	Ardea cinerea	1
	Milvus migrans	1
	Phalacrocorax carbo	39
	Saxicola stejnegeri	1
	Tachybaptus ruficollis	4
FLW7/ P7	*Ardea alba*	2
	Buteo japonicus	1
	Cyanopica cyanus	5
	Ardea cinerea	3
	Gracupica nigricollis	5
	Halcyon smyrnensis	1
	Milvus migrans	2
	Phalacrocorax carbo	17
	Spilopelia chinensis	7
	Tachybaptus ruficollis	5
SP/NSW3/ P9	*Amaurornis phoenicurus*	3
	Anas crecca	5
	Anthus hodgsoni	2
	Ardea alba	5
	Ardeola bacchus	21
	Buteo japonicus	1
	Ceryle rudis	2
	Dicrurus macrocercus	1
	Egretta garzetta	18
	Ficedula albicilla	1
	Gallinula chloropus	1
	Ardea cinerea	15
	Gracupica nigricollis	30
	Halcyon smyrnensis	1
	Himantopus himantopus	10

Point Count Location	Common Name	Abundance
	Lanius schach	1
	Motacilla alba	2
	Phalacrocorax carbo	60
	Phylloscopus fuscatus	4
	Phylloscopus inornatus	3
	Platalea minor	3
	Recurvirostra avosetta	20
	Tringa nebularia	2
	Tringa stagnatilis	3
SP/NSW2/ P10	*Amaurornis phoenicurus*	3
	Anthus hodgsoni	2
	Ardeola bacchus	4
	Cyanopica cyanus	10
	Ardea cinerea	2
	Halcyon smyrnensis	1
	Himantopus himantopus	4
	Nycticorax nycticorax	1
	Orthotomus sutorius	1
	Phylloscopus fuscatus	1
	Phylloscopus inornatus	2
	Pycnonotus jocosus	15
	Tringa stagnatilis	1
	Zosterops japonicus	5
NSW1/ P11	*Anthus hodgsoni*	1
	Ardea alba	1
	Ardeola bacchus	7
	Centropus sinensis	1
	Egretta garzetta	1
	Ardea cinerea	1
	Gracupica nigricollis	10
	Halcyon smyrnensis	1
	Phalacrocorax carbo	19
	Phoenicurus auroreus	1
	Phylloscopus fuscatus	1

Point Count Location	Common Name	Abundance
	Prinia inornata	1
	Spilopelia chinensis	2
	Tringa nebularia	1
SP/NSW1/ P12	*Acridotheres cristatellus*	14
	Actitis hypoleucos	1
	Anas clypeata	5
	Anas crecca	3
	Ardea alba	2
	Ardeola bacchus	2
	Copsychus saularis	1
	Egretta intermedia	1
	Falco amurensis	1
	Gallinago gallinago	10
	Ardea cinerea	2
	Gracupica nigricollis	5
	Himantopus himantopus	5
	Lanius schach	1
	Phalacrocorax carbo	2
	Phylloscopus fuscatus	1
	Platalea minor	1
	Pycnonotus jocosus	3
	Recurvirostra avosetta	2
	Tringa totanus	3
Total		**608**

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

Location	Common Name	Abundance
FLW1/ P1	*Acridotheres cristatellus*	3
	Motacilla alba	1
	Phalacrocorax carbo	2
	Prinia inornata	3
	Spilopelia chinensis	2
FLW2/ P2	*Prinia inornata*	2

Location	Common Name	Abundance
	Spilopelia chinensis	1
	Streptopelia decaocto	3
FLW3/ P3	*Acridotheres cristatellus*	3
	Streptopelia decaocto	1
FLW4/ P4	*Phalacrocorax carbo*	1
	Prinia inornata	3
	Pycnonotus jocosus	1
FLW5/ P5	*Acridotheres cristatellus*	2
	Copsychus saularis	2
	Orthotomus sutorius	3
	Phalacrocorax carbo	4
	Phoenicurus auroreus	1
	Pycnonotus jocosus	2
	Spilopelia chinensis	1
	Streptopelia decaocto	2
	Tachybaptus ruficollis	2
FLW6/ P6	*Acridotheres cristatellus*	2
	Anas penelope	1
	Ardea alba	1
	Egretta garzetta	2
	Motacilla alba	1
	Phalacrocorax carbo	3
	Pycnonotus jocosus	2
	Tachybaptus ruficollis	1
FLW7/ P7	*Egretta garzetta*	1
	Gracupica nigricollis	2
	Motacilla alba	2
	Phalacrocorax carbo	10
SP/NSW3/ P9	*Actitis hypoleucos*	1
	Alcedo atthis	1
	Amaurornis phoenicurus	1
	Anas clypeata	2
	Ardea cinerea	3
	Ardeola bacchus	1
	Egretta garzetta	3
	Gallinula chloropus	3

Location	Common Name	Abundance
	Himantopus himantopus	5
	Phalacrocorax carbo	1
	Prinia inornata	2
	Tachybaptus ruficollis	4
	Tringa stagnatilis	2
SP/NSW2/ P10	*Actitis hypoleucos*	2
	Anas penelope	1
	Ardeola bacchus	1
	Egretta garzetta	1
	Garrulax perspicillatus	1
	Himantopus himantopus	3
	Motacilla tschutschensis	1
	Phalacrocorax carbo	12
	Prinia inornata	1
	Pycnonotus jocosus	2
	Streptopelia decaocto	1
NSW1/ P11	*Ardea cinerea*	1
	Centropus sinensis	1
	Phalacrocorax carbo	62
	Phoenicurus auroreus	1
	Prinia inornata	7
	Spilopelia chinensis	2
SP/NSW1/ P12	*Anas clypeata*	2
	Anas penelope	3
	Ardea alba	1
	Ardea cinerea	2
	Ardeola bacchus	3
	Egretta garzetta	3
	Himantopus himantopus	2
	Phalacrocorax carbo	1
	Prinia inornata	3
	Tachybaptus ruficollis	1
Total		**220**

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

Frequency and Period	Location	Day time (10/11/2022)	
		Start Time	L_{Aeq} (30 min) dB(A)
Monthly in concurrence with the ecological monitoring of birds	FLW1/ P1	10:35	56.6
	FLW2/ P2	10:04	45.5
	FLW3/ P3	10:07	50.2
	FLW4/ P4	09:02	45.0
	FLW5/ P5	09:05	45.6
	FLW6/ P6	09:34	46.1
	FLW7/ P7	09:40	46.3
	SP/NSW3/ P9	07:47	56.1
	SP/NSW2/ P10	08:20	51.0
	NSW1/ P11	07:51	47.4
	SP/NSW1/ P12	08:23	53.6

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

Annex G.1. Flock of Great Cormorants in Nam Sang Wai, far east of the Project Site.

Annex G.2. Flock of Great Cormorants in Nam Sang Wai, far east of the Project Site.