

Notification of Ecological Monitoring of Birds Exceedance

Incident Report on Action/ Limit Level Exceedance

Reference No.:	IR20230213_Species Diversity			
Project:	Contract No. SPW 07/2020 Environmental Team for Construction of Yuen Long Effluent Polishing Plant Stage 1			
Survey Dates:	2023/02/13 (daytime) 2023/02/16 (night-time)			
Action level / Limit level: (For Avifauna Communities)	Method	Parameters	Action Level	Limit Level
	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	<input type="checkbox"/>	<input type="checkbox"/>
		Species diversity of all avifauna species (including but not limited to overwintering waterbirds) in the community	<input type="checkbox"/>	<input type="checkbox"/>
		Abundance of species with conservation importance only	<input type="checkbox"/>	<input type="checkbox"/>
		Species diversity of species with conservation importance only	<input type="checkbox"/>	<input type="checkbox"/>
	Point Count	Abundance of all avifauna species (including but not limited to overwintering waterbirds) in the community	<input type="checkbox"/>	<input type="checkbox"/>
		Species diversity of all avifauna species (including but not limited to overwintering waterbirds) in the community	<input checked="" type="checkbox"/>	<input type="checkbox"/>
		Abundance of species with conservation importance only	<input type="checkbox"/>	<input type="checkbox"/>
		Species diversity of species with conservation importance only	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Action taken / to be taken ³ : (tick / circle / fill in as appropriate)	Responses: <input checked="" type="checkbox"/> Informed IEC, ER, and Contractor. <input checked="" type="checkbox"/> Reviewed monitoring data. <input checked="" type="checkbox"/> Investigated possible causes of decline and identified possible source (s) of impact. Recorded in notification. <input checked="" type="checkbox"/> Check plant, equipment, and Contractor's working methods.			

	<input type="checkbox"/> Other
Possible reason/s ⁴ for action or limit level Non-compliance: (tick / fill in as appropriate)	Findings / Evidence <input type="checkbox"/> Construction noise disturbance <input type="checkbox"/> Vibration disturbance from potential percussive piling works <input type="checkbox"/> Construction lighting/glare disturbance <input type="checkbox"/> Increased human activities <input type="checkbox"/> Construction dust disturbance <input checked="" type="checkbox"/> 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 . Species diversity of species with conservation importance only for point count method has reached the limit level. However, as the exceedances were not project related, not all additional actions need to be taken. Moreover, the Action Level and Limit Level exceedances were recorded on 13 February 2023 (daytime) only.
Observations	<input checked="" type="checkbox"/> Noise levels during the daytime survey (48.7 to 60.9 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 . <input checked="" type="checkbox"/> Environmental site audits indicated that the recommended environmental protection measures/mitigation measures to mitigate ecological impacts have been implemented. <input checked="" type="checkbox"/> Significant decrease in species diversity of all avifauna species (including but not limited to overwintering waterbirds) in the community was observed for <u>Transect/Point Count</u> survey. <input checked="" type="checkbox"/> Significant decrease in species diversity of species with conservation importance only was observed for <u>Transect/Point Count</u> survey. <input checked="" type="checkbox"/> Significant increase in species diversity of species with conservation importance only was observed for <u>Transect/Point Count</u> survey. <input checked="" type="checkbox"/> Significant increase in species diversity of all avifauna species (including but not limited to overwintering waterbirds) in the community was observed for <u>Transect/Point Count</u> survey.
Conclusion	<input checked="" type="checkbox"/> Due to influences of external factors/ other threats, not Project related <input type="checkbox"/> Due to influences of construction activities under this project in the vicinity, considered to be Project related
Mitigation measures	<input checked="" type="checkbox"/> Avoidance of recognized site of conservation importance <input checked="" type="checkbox"/> Restriction of construction hours <input checked="" type="checkbox"/> Minimizing construction noise disturbance impacts through the use of noise barriers <input checked="" type="checkbox"/> 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 (February 2023) Annex C – Shannon Diversity Index Values in the Different Transect Routes and Point Count Locations (February 2023) Annex D – Summary of Hutcheson T-test Analyses (February 2023) Annex E – Abundance Data per Point Count Location Annex F – Noise Monitoring Results in Point Count Locations during the Ecological Monitoring of Birds (February 2023) Annex G – Site Photos showing no project-related disturbance during the Ecological Monitoring of Birds (February 2023)
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. Wright, M.D., Goodman, P. and Cameron, T. 2010. Exploring behavioural responses of shorebirds to impulsive noise. Wildfowl. 60:150-167
6. Shaukat, S.S., Khairi, M.A. and Khan, M.A., 1978. The relationship amongst dominance, diversity and community maturity in a desert vegetation. Pakistan Journal of Botany, 10(2), pp.183-196.
7. Gilbert, S.F. and Epel, D., 2009. Ecological developmental biology: integrating epigenetics, medicine, and evolution.

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



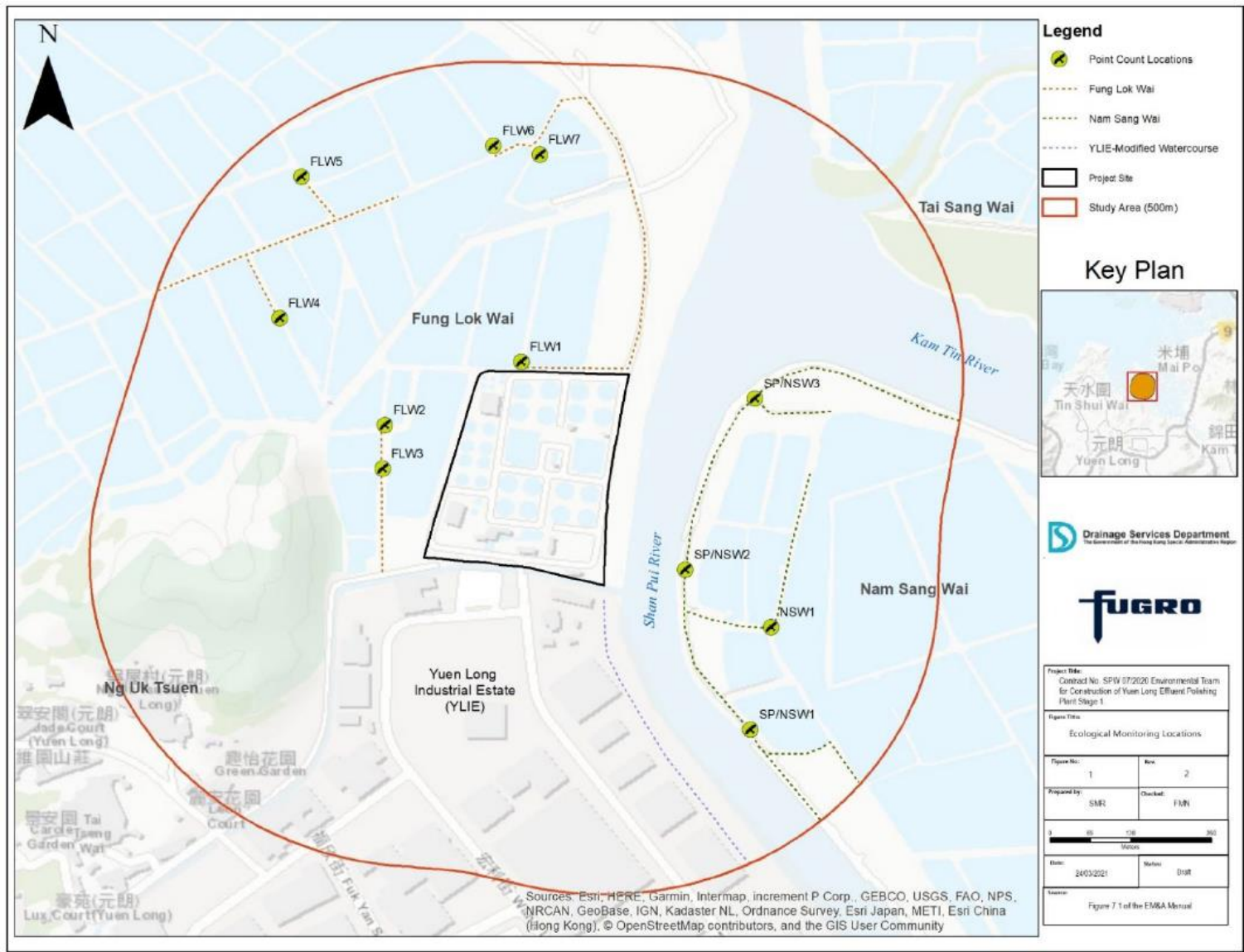
Signature:
Date (dd/mm/yyyy): 23/2/2023

Certified by: Alvin L.B. Yu
Designation: Environmental Team Leader



Signature:
Date (dd/mm/yyyy): 23/2/2023

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
(February 2023)

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
13/02/2023	Daytime	Dry Season	FLW	Transect	FLW	Pond-FLW	Chinese Bulbul	<i>Pycnonotus sinensis</i>	2	Abundant	R	-	-	-	LC	LC	N	N
13/02/2023	Daytime	Dry Season	FLW	Transect	FLW	Pond-FLW	Crested Myna	<i>Acridotheres cristatellus</i>	6	Common	R	-	-	-	LC	LC	N	N
13/02/2023	Daytime	Dry Season	FLW	Transect	FLW	Pond-FLW	Eurasian Tree Sparrow	<i>Passer montanus</i>	3	Abundant	R	-	-	-	LC	LC	N	N
13/02/2023	Daytime	Dry Season	FLW	Transect	FLW	In flight	Plain Prinia	<i>Prinia inornata</i>	2	Common	R	-	-	-	LC	LC	N	N
13/02/2023	Daytime	Dry Season	FLW	Transect	FLW	Pond-FLW	Spotted Dove	<i>Spilopelia chinensis</i>	1	Abundant	R	-	-	-	LC	LC	N	N
13/02/2023	Daytime	Dry Season	FLW	Point Count	FLW1	Pond-FLW	Chinese Bulbul	<i>Pycnonotus sinensis</i>	2	Abundant	R	-	-	-	LC	LC	N	N
13/02/2023	Daytime	Dry Season	FLW	Point Count	FLW1	Pond-FLW	Great Cormorant	<i>Phalacrocorax carbo</i>	1	Common	WV	PRC	-	-	LC	LC	Y	Y
13/02/2023	Daytime	Dry Season	FLW	Point Count	FLW1	Pond-FLW	Plain Prinia	<i>Prinia inornata</i>	1	Common	R	-	-	-	LC	LC	N	N
13/02/2023	Daytime	Dry Season	FLW	Point Count	FLW1	Pond-FLW	Red-whiskered Bulbul	<i>Pycnonotus jocosus</i>	2	Abundant	R	-	-	-	LC	LC	N	N
13/02/2023	Daytime	Dry Season	FLW	Point Count	FLW2	Pond-FLW	Black Kite	<i>Milvus migrans</i>	1	Common	R,WV	(RC)	Class II	-	LC	LC	Y	Y
13/02/2023	Daytime	Dry Season	FLW	Point Count	FLW2	Pond-FLW	Japanese White-eye	<i>Zosterops japonicus</i>	1	Abundant	R	-	-	-	LC	LC	N	N
13/02/2023	Daytime	Dry Season	FLW	Point Count	FLW2	Pond-FLW	Masked Laughingthrush	<i>Garrulax perspicillatus</i>	1	Abundant	R	-	-	-	LC	LC	N	N
13/02/2023	Daytime	Dry Season	FLW	Point Count	FLW2	Pond-FLW	White Wagtail	<i>Motacilla alba</i>	1	Common	PM,WV	-	-	-	LC	LC	N	N
13/02/2023	Daytime	Dry Season	FLW	Point Count	FLW3	Pond-FLW	Black Kite	<i>Milvus migrans</i>	2	Common	R,WV	(RC)	Class II	-	LC	LC	Y	Y
13/02/2023	Daytime	Dry Season	FLW	Point Count	FLW3	Pond-FLW	Crested Myna	<i>Acridotheres cristatellus</i>	1	Common	R	-	-	-	LC	LC	N	N
13/02/2023	Daytime	Dry Season	FLW	Point Count	FLW3	Pond-FLW	Great Egret	<i>Ardea alba</i>	1	Common	R,WV	PRC (RC)	-	-	LC	LC	Y	Y
13/02/2023	Daytime	Dry Season	FLW	Point Count	FLW3	Pond-FLW	Grey Heron	<i>Ardea cinerea</i>	1	Common	WV	PRC	-	-	LC	LC	Y	Y
13/02/2023	Daytime	Dry Season	FLW	Point Count	FLW4	Pond-FLW	Black Kite	<i>Milvus migrans</i>	1	Common	R,WV	(RC)	Class II	-	LC	LC	Y	Y
13/02/2023	Daytime	Dry Season	FLW	Point Count	FLW4	Pond-FLW	Common Moorhen	<i>Gallinula chloropus</i>	1	Common	R	-	-	-	LC	LC	N	Y
13/02/2023	Daytime	Dry Season	FLW	Point Count	FLW4	Pond-FLW	Crested Myna	<i>Acridotheres cristatellus</i>	2	Common	R	-	-	-	LC	LC	N	N
13/02/2023	Daytime	Dry Season	FLW	Point Count	FLW4	Pond-FLW	Great Cormorant	<i>Phalacrocorax carbo</i>	5	Common	WV	PRC	-	-	LC	LC	Y	Y
13/02/2023	Daytime	Dry Season	FLW	Point Count	FLW4	Pond-FLW	Plain Prinia	<i>Prinia inornata</i>	2	Common	R	-	-	-	LC	LC	N	N
13/02/2023	Daytime	Dry Season	FLW	Point Count	FLW5	Pond-FLW	Black-headed Gull	<i>Chroicocephalus ridibundus</i>	30	Common	WV	PRC	-	-	LC	LC	Y	Y
13/02/2023	Daytime	Dry Season	FLW	Point Count	FLW5	Pond-FLW	Black-winged Stilt	<i>Himantopus himantopus</i>	3	Common	PM	RC	-	-	LC	LC	Y	Y
13/02/2023	Daytime	Dry Season	FLW	Point Count	FLW5	Pond-FLW	Common Kingfisher	<i>Alcedo atthis</i>	1	Common	PM,WV	-	-	-	LC	LC	N	Y
13/02/2023	Daytime	Dry Season	FLW	Point Count	FLW5	Pond-FLW	Great Cormorant	<i>Phalacrocorax carbo</i>	11	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
13/02/2023	Daytime	Dry Season	FLW	Point Count	FLW5	Pond-FLW	Great Egret	<i>Ardea alba</i>	15	Common	R,WV	PRC (RC)	-	-	LC	LC	Y	Y
13/02/2023	Daytime	Dry Season	FLW	Point Count	FLW5	Pond-FLW	Grey Heron	<i>Ardea cinerea</i>	1	Common	WV	PRC	-	-	LC	LC	Y	Y
13/02/2023	Daytime	Dry Season	FLW	Point Count	FLW5	Pond-FLW	Plain Prinia	<i>Prinia inornata</i>	1	Common	R	-	-	-	LC	LC	N	N
13/02/2023	Daytime	Dry Season	FLW	Point Count	FLW5	Pond-FLW	Spotted Dove	<i>Spilopelia chinensis</i>	1	Abundant	R	-	-	-	LC	LC	N	N
13/02/2023	Daytime	Dry Season	FLW	Point Count	FLW5	Pond-FLW	White Wagtail	<i>Motacilla alba</i>	1	Common	PM,WV	-	-	-	LC	LC	N	N
13/02/2023	Daytime	Dry Season	FLW	Point Count	FLW5	Pond-FLW	White-breasted Waterhen	<i>Amaurornis phoenicurus</i>	2	Common	R	-	-	-	LC	LC	N	Y
13/02/2023	Daytime	Dry Season	FLW	Point Count	FLW6	Pond-FLW	Great Egret	<i>Ardea alba</i>	1	Common	R,WV	PRC (RC)	-	-	LC	LC	Y	Y
13/02/2023	Daytime	Dry Season	FLW	Point Count	FLW6	Pond-FLW	Grey Heron	<i>Ardea cinerea</i>	1	Common	WV	PRC	-	-	LC	LC	Y	Y
13/02/2023	Daytime	Dry Season	FLW	Point Count	FLW6	Pond-FLW	Little Egret	<i>Egretta garzetta</i>	1	Common	R	PRC (RC)	-	-	LC	LC	Y	Y
13/02/2023	Daytime	Dry Season	FLW	Point Count	FLW6	Pond-FLW	Little Grebe	<i>Tachybaptus ruficollis</i>	2	Common	R	LC	-	-	LC	LC	Y	Y
13/02/2023	Daytime	Dry Season	FLW	Point Count	FLW6	Pond-FLW	Red-whiskered Bulbul	<i>Pycnonotus jocosus</i>	2	Abundant	R	-	-	-	LC	LC	N	N
13/02/2023	Daytime	Dry Season	FLW	Point Count	FLW6	Pond-FLW	White Wagtail	<i>Motacilla alba</i>	2	Common	PM,WV	-	-	-	LC	LC	N	N
13/02/2023	Daytime	Dry Season	FLW	Point Count	FLW7	Pond-FLW	Chinese Pond Heron	<i>Ardeola bacchus</i>	1	Common	R	PRC (RC)	-	-	LC	LC	Y	Y
13/02/2023	Daytime	Dry Season	FLW	Point Count	FLW7	Pond-FLW	Crested Myna	<i>Acridotheres cristatellus</i>	3	Common	R	-	-	-	LC	LC	N	N
13/02/2023	Daytime	Dry Season	FLW	Point Count	FLW7	Pond-FLW	Grey Heron	<i>Ardea cinerea</i>	1	Common	WV	PRC	-	-	LC	LC	Y	Y
13/02/2023	Daytime	Dry Season	FLW	Point Count	FLW7	Pond-FLW	Oriental Magpie Robin	<i>Copsychus saularis</i>	1	Abundant	R	-	-	-	LC	LC	N	N
13/02/2023	Daytime	Dry Season	FLW	Point Count	FLW7	Pond-FLW	White Wagtail	<i>Motacilla alba</i>	2	Common	PM,WV	-	-	-	LC	LC	N	N
13/02/2023	Daytime	Dry Season	NSW	Transect	NSW	Modified Watercourse	Asian Koel	<i>Eudynamis scolopaceus</i>	1	Common	R	-	-	-	LC	LC	N	N
13/02/2023	Daytime	Dry Season	NSW	Transect	NSW	Modified Watercourse	Black-headed Gull	<i>Chroicocephalus ridibundus</i>	3	Common	WV	PRC	-	-	LC	LC	Y	Y
13/02/2023	Daytime	Dry Season	NSW	Transect	NSW	Modified Watercourse	Chinese Bulbul	<i>Pycnonotus sinensis</i>	2	Abundant	R	-	-	-	LC	LC	N	N
13/02/2023	Daytime	Dry Season	NSW	Transect	NSW	Modified Watercourse	Great Cormorant	<i>Phalacrocorax carbo</i>	12	Common	WV	PRC	-	-	LC	LC	Y	Y
13/02/2023	Daytime	Dry Season	NSW	Transect	NSW	Modified Watercourse	Greater Coucal	<i>Centropus sinensis</i>	1	Common	R	-	Class II	Vulnerable	LC	LC	Y	N
13/02/2023	Daytime	Dry Season	NSW	Transect	NSW	Modified Watercourse	White Wagtail	<i>Motacilla alba</i>	2	Common	PM,WV	-	-	-	LC	LC	N	N
13/02/2023	Daytime	Dry Season	NSW	Point Count	NSW1	Pond-NSW	Black Kite	<i>Milvus migrans</i>	1	Common	R,WV	(RC)	Class II	-	LC	LC	Y	Y
13/02/2023	Daytime	Dry Season	NSW	Point Count	NSW1	Pond-NSW	Chinese Pond Heron	<i>Ardeola bacchus</i>	4	Common	R	PRC (RC)	-	-	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
13/02/2023	Daytime	Dry Season	NSW	Point Count	NSW1	Pond-NSW	Daurian Redstart	<i>Phoenicurus aureoreus</i>	2	Common	WV	-	-	-	LC	LC	N	N
13/02/2023	Daytime	Dry Season	NSW	Point Count	NSW1	Pond-NSW	Great Cormorant	<i>Phalacrocorax carbo</i>	56	Common	WV	PRC	-	-	LC	LC	Y	Y
13/02/2023	Daytime	Dry Season	NSW	Point Count	NSW1	Pond-NSW	Grey Heron	<i>Ardea cinerea</i>	1	Common	WV	PRC	-	-	LC	LC	Y	Y
13/02/2023	Daytime	Dry Season	NSW	Point Count	NSW1	Pond-NSW	Little Egret	<i>Egretta garzetta</i>	1	Common	R	PRC (RC)	-	-	LC	LC	Y	Y
13/02/2023	Daytime	Dry Season	NSW	Point Count	SP/NSW1	Modified Watercourse	Black-headed Gull	<i>Chroicocephalus ridibundus</i>	50	Common	WV	PRC	-	-	LC	LC	Y	Y
13/02/2023	Daytime	Dry Season	NSW	Point Count	SP/NSW1	Modified Watercourse	Black-winged Stilt	<i>Himantopus himantopus</i>	7	Common	PM	RC	-	-	LC	LC	Y	Y
13/02/2023	Daytime	Dry Season	NSW	Point Count	SP/NSW1	Modified Watercourse	Common Moorhen	<i>Gallinula chloropus</i>	6	Common	R	-	-	-	LC	LC	N	Y
13/02/2023	Daytime	Dry Season	NSW	Point Count	SP/NSW1	Modified Watercourse	Great Cormorant	<i>Phalacrocorax carbo</i>	1200	Common	WV	PRC	-	-	LC	LC	Y	Y
13/02/2023	Daytime	Dry Season	NSW	Point Count	SP/NSW1	Modified Watercourse	Grey Heron	<i>Ardea cinerea</i>	1	Common	WV	PRC	-	-	LC	LC	Y	Y
13/02/2023	Daytime	Dry Season	NSW	Point Count	SP/NSW1	Modified Watercourse	Marsh Sandpiper	<i>Tringa stagnatilis</i>	4	Common	PM,WV	RC	-	-	LC	LC	Y	Y
13/02/2023	Daytime	Dry Season	NSW	Point Count	SP/NSW1	Modified Watercourse	Pied Avocet	<i>Recurvirostra avosetta</i>	2	Abundant	WV	RC	-	-	LC	LC	Y	Y
13/02/2023	Daytime	Dry Season	NSW	Point Count	SP/NSW1	Modified Watercourse	Plain Prinia	<i>Prinia inornata</i>	1	Common	R	-	-	-	LC	LC	N	N
13/02/2023	Daytime	Dry Season	NSW	Point Count	SP/NSW2	Modified Watercourse	Black-headed Gull	<i>Chroicocephalus ridibundus</i>	4	Common	WV	PRC	-	-	LC	LC	Y	Y
13/02/2023	Daytime	Dry Season	NSW	Point Count	SP/NSW2	Modified Watercourse	Chinese Bulbul	<i>Pycnonotus sinensis</i>	2	Abundant	R	-	-	-	LC	LC	N	N
13/02/2023	Daytime	Dry Season	NSW	Point Count	SP/NSW2	Modified Watercourse	Crested Myna	<i>Acridotheres cristatellus</i>	2	Common	R	-	-	-	LC	LC	N	N
13/02/2023	Daytime	Dry Season	NSW	Point Count	SP/NSW2	Modified Watercourse	Great Cormorant	<i>Phalacrocorax carbo</i>	4	Common	WV	PRC	-	-	LC	LC	Y	Y
13/02/2023	Daytime	Dry Season	NSW	Point Count	SP/NSW2	Modified Watercourse	Greater Coucal	<i>Centropus sinensis</i>	1	Common	R	-	Class II	Vulnerable	LC	LC	Y	N
13/02/2023	Daytime	Dry Season	NSW	Point Count	SP/NSW2	Modified Watercourse	Grey Heron	<i>Ardea cinerea</i>	1	Common	WV	PRC	-	-	LC	LC	Y	Y
13/02/2023	Daytime	Dry Season	NSW	Point Count	SP/NSW2	Modified Watercourse	Plain Prinia	<i>Prinia inornata</i>	2	Common	R	-	-	-	LC	LC	N	N
13/02/2023	Daytime	Dry Season	NSW	Point Count	SP/NSW2	Modified Watercourse	Red-whiskered Bulbul	<i>Pycnonotus jocosus</i>	2	Abundant	R	-	-	-	LC	LC	N	N
13/02/2023	Daytime	Dry Season	NSW	Point Count	SP/NSW3	Modified Watercourse	Black-headed Gull	<i>Chroicocephalus ridibundus</i>	27	Common	WV	PRC	-	-	LC	LC	Y	Y
13/02/2023	Daytime	Dry Season	NSW	Point Count	SP/NSW3	Modified Watercourse	Black-winged Stilt	<i>Himantopus himantopus</i>	9	Common	PM	RC	-	-	LC	LC	Y	Y
13/02/2023	Daytime	Dry Season	NSW	Point Count	SP/NSW3	Modified Watercourse	Common Moorhen	<i>Gallinula chloropus</i>	6	Common	R	-	-	-	LC	LC	N	Y
13/02/2023	Daytime	Dry Season	NSW	Point Count	SP/NSW3	Mangrove	Great Cormorant	<i>Phalacrocorax carbo</i>	8	Common	WV	PRC	-	-	LC	LC	Y	Y
13/02/2023	Daytime	Dry Season	NSW	Point Count	SP/NSW3	Modified Watercourse	Grey Heron	<i>Ardea cinerea</i>	6	Common	WV	PRC	-	-	LC	LC	Y	Y
13/02/2023	Daytime	Dry Season	NSW	Point Count	SP/NSW3	Modified Watercourse	Marsh Sandpiper	<i>Tringa stagnatilis</i>	7	Common	PM,WV	RC	-	-	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
13/02/2023	Daytime	Dry Season	NSW	Point Count	SP/NSW3	Modified Watercourse	White-breasted Waterhen	<i>Amaurornis phoenicurus</i>	4	Common	R	-	-	-	LC	LC	N	Y
13/02/2023	Daytime	Dry Season	YLIE	Transect	YLIE-CW	Modified Watercourse	Chinese Pond Heron	<i>Ardeola bacchus</i>	2	Common	R	PRC (RC)	-	-	LC	LC	Y	Y
13/02/2023	Daytime	Dry Season	YLIE	Transect	YLIE-CW	Modified Watercourse	Great Cormorant	<i>Phalacrocorax carbo</i>	6	Common	WV	PRC	-	-	LC	LC	Y	Y
13/02/2023	Daytime	Dry Season	YLIE	Transect	YLIE-CW	Modified Watercourse	Great Egret	<i>Ardea alba</i>	2	Common	R,WV	PRC (RC)	-	-	LC	LC	Y	Y
13/02/2023	Daytime	Dry Season	YLIE	Transect	YLIE-CW	Modified Watercourse	Grey Heron	<i>Ardea cinerea</i>	4	Common	WV	PRC	-	-	LC	LC	Y	Y
16/02/2023	Nighttime	Dry Season	FLW	Point Count	FLW7	Pond-FLW	Chinese Pond Heron	<i>Ardeola bacchus</i>	1	Common	R	PRC (RC)	-	-	LC	LC	Y	Y
16/02/2023	Nighttime	Dry Season	NSW	Transect	NSW	Modified Watercourse	Great Egret	<i>Ardea alba</i>	2	Common	R,WV	PRC (RC)	-	-	LC	LC	Y	Y
16/02/2023	Nighttime	Dry Season	NSW	Point Count	SP/NSW3	Modified Watercourse	Grey Heron	<i>Ardea cinerea</i>	2	Common	WV	PRC	-	-	LC	LC	Y	Y
16/02/2023	Nighttime	Dry Season	YLIE	Transect	YLIE-CW	Mangrove	Great Cormorant	<i>Phalacrocorax carbo</i>	9	Common	WV	PRC	-	-	LC	LC	Y	Y

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
(February 2023)

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	Feb-17	Feb-23	Remarks
P1	FLW1	**	1.33	+
P2	FLW2	0	1.39	+
P3	FLW3	1.75	1.33	-
P4	FLW4	1.72	1.41	-
P5	FLW5	1.28	1.56	+
P6	FLW6	1.52	1.74	+
P7	FLW7	2.21	1.68	-
P9	SP/NSW3	2.76	1.81	-
P10	SP/NSW2	2.14	1.97	-
P11	NSW1	1.89	0.60	-
P12	SP/NSW1	2.71	0.28	-
Transect Walk Method				
EIA Report ID	EM&A Manual ID	Feb-17	Feb-23	Remarks
Fung Lok Wai	FLW	0	1.44	+
Nam Sang Wai	NSW	**	1.51	+
YLIE-CW	YLIE-CW	**	1.45	+

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	Feb-17	Feb-23	Remarks
P1	FLW1	**	0	+
P2	FLW2	**	0	+
P3	FLW3	0.69	1.04	+
P4	FLW4	1.21	0.45	-
P5	FLW5	0.66	1.22	+
P6	FLW6	1.09	1.33	+
P7	FLW7	1.76	1.10	-

Shannon Diversity Index Value of Species with Conservation Importance				
P9	SP/NSW3	2.42	1.52	-
P10	SP/NSW2	2.04	1.19	-
P11	NSW1	1.04	0.48	-
P12	SP/NSW1	2.16	0.24	-
Transect Walk Method				
EIA Report ID	EM&A Manual ID	Feb-17	Feb-23	Remarks
Fung Lok Wai	FLW	0	**	-
Nam Sang Wai	NSW	**	0.97	+
YLIE-CW	YLIE-CW	**	1.45	+

Notes:

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

Annex D – Summary of Hutcheson T-test Analyses (February 2023)

Hutcheson T-test formula:

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

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

Months	February 2017	February 2023
Total	642	1533
Richness	58	25
H	3.32	0.80
S ² _H	0.002	0.002
t	42.942	
df	1627.496	
Crit	1.961	
p	0.000	
CI	0.088	0.078

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

Months	February 2017	February 2023
Total	447	1476
Richness	26	12
H	2.68	0.58
S ² _H	0.002	0.001
t	38.435	
df	951.509	
Crit	1.962	
p	0.000	
CI	0.089	0.064

Annex E – Abundance Data per Point Count Location

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

Point Count Location	Common Name	Abundance
FLW2/ P2	<i>Actitis hypoleucos</i>	1
FLW3/ P3	<i>Ardea cinerea</i>	1
	<i>Gracupica nigricollis</i>	1
	<i>Phalacrocorax carbo</i>	1
	<i>Prinia flaviventris</i>	1
	<i>Prinia inornata</i>	1
	<i>Spilopelia chinensis</i>	2
	FLW4/ P4	<i>Acridotheres cristatellus</i>
<i>Alcedo atthis</i>		1
<i>Amaurornis phoenicurus</i>		2
<i>Caprimulgus affinis</i>		2
<i>Centropus sinensis</i>		1
<i>Emberiza pusilla</i>		4
<i>Gracupica nigricollis</i>		2
<i>Milvus migrans</i>		1
<i>Phalacrocorax carbo</i>		3
<i>Prinia flaviventris</i>		5
<i>Prinia inornata</i>		1
<i>Pycnonotus sinensis</i>		1
<i>Saxicola stejnegeri</i>		2
<i>Spilopelia chinensis</i>		2
<i>Streptopelia decaocto</i>		3
<i>Streptopelia tranquebarica</i>		2
<i>Tachybaptus ruficollis</i>	4	
FLW5/ P5	<i>Acridotheres cristatellus</i>	50
	<i>Alcedo atthis</i>	1
	<i>Amaurornis phoenicurus</i>	1
	<i>Ardeola bacchus</i>	3
	<i>Bubulcus coromandus</i>	2
	<i>Buteo japonicus</i>	1
	<i>Egretta garzetta</i>	1
	<i>Emberiza pusilla</i>	1

Point Count Location	Common Name	Abundance
	<i>Halcyon smyrnensis</i>	1
	<i>Milvus migrans</i>	1
	<i>Saxicola stejnegeri</i>	1
	<i>Spodiopsar sericeus</i>	30
FLW6/ P6	<i>Anthus richardi</i>	1
	<i>Ardea alba</i>	2
	<i>Ardea cinerea</i>	2
	<i>Ardeola bacchus</i>	1
	<i>Bubulcus coromandus</i>	3
	<i>Egretta garzetta</i>	2
	<i>Motacilla tschutschensis</i>	2
	<i>Phalacrocorax carbo</i>	21
	<i>Platalea minor</i>	2
FLW7/ P7	<i>Alcedo atthis</i>	1
	<i>Anas clypeata</i>	1
	<i>Ardea cinerea</i>	4
	<i>Ardeola bacchus</i>	2
	<i>Circus spilonotus</i>	1
	<i>Cyanopica cyanus</i>	20
	<i>Egretta garzetta</i>	1
	<i>Garrulax perspicillatus</i>	5
	<i>Gracupica nigricollis</i>	10
	<i>Lanius schach</i>	1
	<i>Motacilla alba</i>	1
	<i>Phalacrocorax carbo</i>	5
	<i>Prinia flaviventris</i>	5
	<i>Spilopelia chinensis</i>	2
<i>Tachybaptus ruficollis</i>	3	
SP/NSW3/ P9	<i>Actitis hypoleucos</i>	2
	<i>Amaurornis phoenicurus</i>	2
	<i>Anas acuta</i>	2
	<i>Anas clypeata</i>	20
	<i>Anas crecca</i>	30
	<i>Anas penelope</i>	13

Point Count Location	Common Name	Abundance
	<i>Ardea alba</i>	4
	<i>Ardea cinerea</i>	2
	<i>Ardeola bacchus</i>	13
	<i>Aythya fuligula</i>	8
	<i>Buteo japonicus</i>	1
	<i>Centropus sinensis</i>	2
	<i>Copsychus saularis</i>	2
	<i>Corvus macrorhynchos</i>	1
	<i>Egretta garzetta</i>	10
	<i>Egretta intermedia</i>	1
	<i>Garrulax perspicillatus</i>	1
	<i>Gracupica nigricollis</i>	2
	<i>Himantopus himantopus</i>	12
	<i>Milvus migrans</i>	3
	<i>Motacilla alba</i>	3
	<i>Numenius arquata</i>	2
	<i>Parus cinereus</i>	2
	<i>Phalacrocorax carbo</i>	5
	<i>Phylloscopus inornatus</i>	2
	<i>Pycnonotus sinensis</i>	2
	<i>Recurvirostra avosetta</i>	57
	<i>Spilopelia chinensis</i>	2
	<i>Streptopelia decaocto</i>	1
	<i>Tringa erythropus</i>	3
	<i>Tringa nebularia</i>	10
	<i>Tringa stagnatilis</i>	1
	<i>Tringa totanus</i>	2
	<i>Zosterops japonicus</i>	1
SP/NSW2/ P10	<i>Anas clypeata</i>	14
	<i>Anas crecca</i>	1
	<i>Anas penelope</i>	5
	<i>Ardea cinerea</i>	2
	<i>Ardeola bacchus</i>	5
	<i>Charadrius dubius</i>	2

Point Count Location	Common Name	Abundance
	<i>Chroicocephalus ridibundus</i>	3
	<i>Egretta garzetta</i>	1
	<i>Halcyon smyrnensis</i>	1
	<i>Himantopus himantopus</i>	22
	<i>Platalea minor</i>	1
	<i>Recurvirostra avosetta</i>	21
	<i>Tringa nebularia</i>	3
	<i>Tringa stagnatilis</i>	2
	<i>Tringa totanus</i>	3
NSW1/ P11	<i>Ardea cinerea</i>	1
	<i>Egretta garzetta</i>	2
	<i>Motacilla alba</i>	1
	<i>Phalacrocorax carbo</i>	1
	<i>Phoenicurus aureus</i>	1
	<i>Phylloscopus inornatus</i>	1
	<i>Prinia flaviventris</i>	2
SP/NSW1/ P12	<i>Actitis hypoleucos</i>	1
	<i>Amaurornis phoenicurus</i>	2
	<i>Anas clypeata</i>	15
	<i>Anas crecca</i>	3
	<i>Ardea alba</i>	1
	<i>Ardea cinerea</i>	2
	<i>Ardeola bacchus</i>	4
	<i>Copsychus saularis</i>	2
	<i>Egretta garzetta</i>	1
	<i>Gracupica nigricollis</i>	4
	<i>Himantopus himantopus</i>	3
	<i>Motacilla alba</i>	1
	<i>Motacilla tschutschensis</i>	1
	<i>Orthotomus sutorius</i>	1
	<i>Phalacrocorax carbo</i>	2
	<i>Phylloscopus fuscatus</i>	1
	<i>Pica pica</i>	1
<i>Platalea minor</i>	2	

Point Count Location	Common Name	Abundance
	<i>Prinia flaviventris</i>	1
	<i>Pycnonotus sinensis</i>	5
	<i>Recurvirostra avosetta</i>	12
	<i>Spodiopsar sericeus</i>	15
	<i>Tringa nebularia</i>	1
	<i>Tringa stagnatilis</i>	3
	<i>Tringa totanus</i>	1
Total		642

Annex E.2. Impact monitoring (February 2023) abundance data (all avifauna species) per point count location

Location	Common Name	Abundance
FLW1/ P1	<i>Phalacrocorax carbo</i>	1
	<i>Prinia inornata</i>	1
	<i>Pycnonotus jocosus</i>	2
	<i>Pycnonotus sinensis</i>	2
FLW2/ P2	<i>Garrulax perspicillatus</i>	1
	<i>Milvus migrans</i>	1
	<i>Motacilla alba</i>	1
	<i>Zosterops japonicus</i>	1
FLW3/ P3	<i>Acridotheres cristatellus</i>	1
	<i>Ardea alba</i>	1
	<i>Ardea cinerea</i>	1
	<i>Milvus migrans</i>	2
FLW4/ P4	<i>Acridotheres cristatellus</i>	2
	<i>Gallinula chloropus</i>	1
	<i>Milvus migrans</i>	1
	<i>Phalacrocorax carbo</i>	5
	<i>Prinia inornata</i>	2
FLW5/ P5	<i>Alcedo atthis</i>	1
	<i>Amaurornis phoenicurus</i>	2
	<i>Ardea alba</i>	15
	<i>Ardea cinerea</i>	1
	<i>Chroicocephalus ridibundus</i>	30

Location	Common Name	Abundance
	<i>Himantopus himantopus</i>	3
	<i>Motacilla alba</i>	1
	<i>Phalacrocorax carbo</i>	11
	<i>Prinia inornata</i>	1
	<i>Spilopelia chinensis</i>	1
FLW6/ P6	<i>Ardea alba</i>	1
	<i>Ardea cinerea</i>	1
	<i>Egretta garzetta</i>	1
	<i>Motacilla alba</i>	2
	<i>Pycnonotus jocosus</i>	2
	<i>Tachybaptus ruficollis</i>	2
FLW7/ P7	<i>Acridotheres cristatellus</i>	3
	<i>Ardea cinerea</i>	1
	<i>Ardeola bacchus</i>	2
	<i>Copsychus saularis</i>	1
	<i>Motacilla alba</i>	2
SP/NSW3/ P9	<i>Amaurornis phoenicurus</i>	4
	<i>Ardea cinerea</i>	8
	<i>Chroicocephalus ridibundus</i>	27
	<i>Gallinula chloropus</i>	6
	<i>Himantopus himantopus</i>	9
	<i>Phalacrocorax carbo</i>	8
	<i>Tringa stagnatilis</i>	7
SP/NSW2/ P10	<i>Acridotheres cristatellus</i>	2
	<i>Ardea cinerea</i>	1
	<i>Centropus sinensis</i>	1
	<i>Chroicocephalus ridibundus</i>	4
	<i>Phalacrocorax carbo</i>	4
	<i>Prinia inornata</i>	2
	<i>Pycnonotus jocosus</i>	2
	<i>Pycnonotus sinensis</i>	2
NSW1/ P11	<i>Ardea cinerea</i>	1
	<i>Ardeola bacchus</i>	4

Location	Common Name	Abundance
	<i>Egretta garzetta</i>	1
	<i>Milvus migrans</i>	1
	<i>Phalacrocorax carbo</i>	56
	<i>Phoenicurus aureus</i>	2
SP/NSW1/ P12	<i>Ardea cinerea</i>	1
	<i>Chroicocephalus ridibundus</i>	50
	<i>Gallinula chloropus</i>	6
	<i>Himantopus himantopus</i>	7
	<i>Phalacrocorax carbo</i>	1200
	<i>Prinia inornata</i>	1
	<i>Recurvirostra avosetta</i>	2
	<i>Tringa stagnatilis</i>	4
Total		1533

Annex F – Noise Monitoring Results in Point Count Locations during the Ecological Monitoring of Birds
(February 2023)

Frequency and Period	Location	Day time (13/2/2023)		Night-time (16/2/2023)	
		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/ P1	10:48	56.9	21:34	49.1
	FLW2/ P2	10:11	52.8	21:09	49.2
	FLW3/ P3	10:24	52.6	20:49	47.9
	FLW4/ P4	09:11	48.8	19:30	46.1
	FLW5/ P5	09:17	54.7	19:45	45.5
	FLW6/ P6	09:41	56.0	20:03	46.2
	FLW7/ P7	09:30	56.1	20:19	48.1
	SP/NSW3/ P9	08:27	55.8	19:05	48.1
	SP/NSW2/ P10	08:12	48.7	18:50	47.4
	NSW1/ P11	07:52	60.9	18:35	44.1
	SP/NSW1/ P12	07:45	53.9	18:20	46.2

Annex G – Site Photos showing no project-related disturbance during the Ecological Monitoring of Birds
(February 2023)



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.