

Notification of Ecological Monitoring of Birds Exceedance

Incident Report on Action/ Limit Level Exceedance

Reference No.:	IR20221214_Species Diversity			
Project:	Contract No. SPW 07/2020 Environmental Team for Construction of Yuen Long Effluent Polishing Plant Stage 1			
Survey Dates:	2022/12/14 (daytime); 2022/12/15 (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"/>
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 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 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 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 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 .
Observations	<input checked="" type="checkbox"/> Noise levels during the daytime survey (46.2 to 59.1 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"/> Insignificant decrease in abundance 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"/> Insignificant decrease in abundance of species with conservation importance only was observed for <u>Transect/Point Count</u> survey. <input checked="" type="checkbox"/> Insignificant increase in abundance 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"/> Insignificant increase in abundance of species with conservation importance only was observed for <u>Transect/Point Count</u> survey. <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.
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 (December 2022) Annex C – Shannon Diversity Index Values in the Different Transect Routes and Point Count Locations (December 2022) Annex D – Summary of Hutcheson T-test Analyses (December 2022) Annex E – Abundance Data per Point Count Location Annex F – Noise Monitoring Results in Point Count Locations during the Ecological Monitoring of Birds (December 2022) Annex G – Site Photos showing no project-related disturbance during the Ecological Monitoring of Birds (December 2022)
Notes:	
<ol style="list-style-type: none"> 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



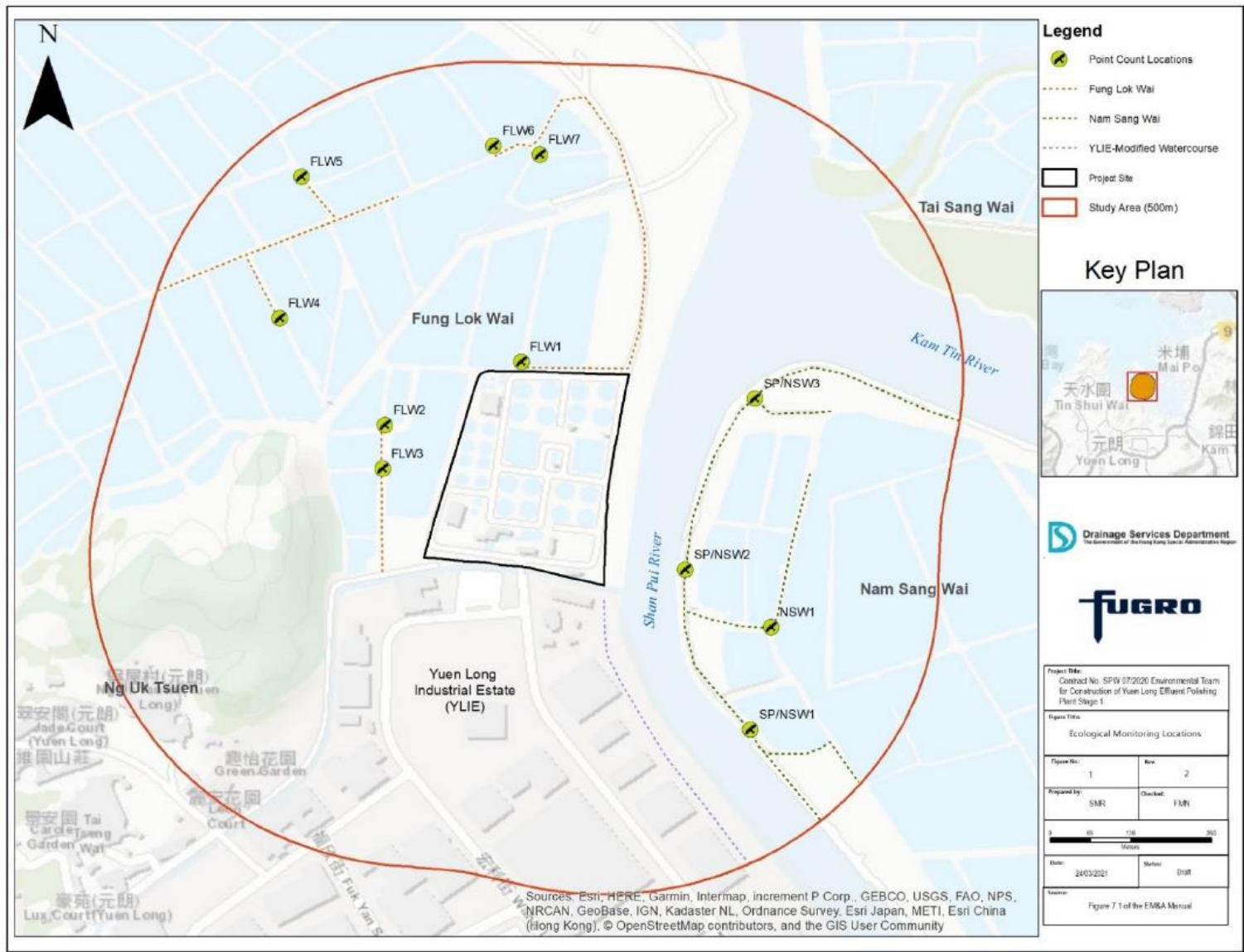
Signature:
Date (dd/mm/yyyy): 28/12/2022

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



Signature:
Date (dd/mm/yyyy): 28/12/2022

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
(December 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
14/12/2022	Daytime	Dry Season	FLW	Transect	FLW	Pond-FLW	Chinese Pond Heron	<i>Ardeola bacchus</i>	3	Common	R	PRC (RC)	-	-	LC	LC	Y	Y
14/12/2022	Daytime	Dry Season	FLW	Transect	FLW	Plantation-FLW	Crested Myna	<i>Acridotheres cristatellus</i>	33	Common	R	-	-	-	LC	LC	N	N
14/12/2022	Daytime	Dry Season	FLW	Transect	FLW	Pond-FLW	Eurasian Tree Sparrow	<i>Passer montanus</i>	24	Abundant	R	-	-	-	LC	LC	N	N
14/12/2022	Daytime	Dry Season	FLW	Transect	FLW	Pond-FLW	Great Cormorant	<i>Phalacrocorax carbo</i>	9	Common	WV	PRC	-	-	LC	LC	Y	Y
14/12/2022	Daytime	Dry Season	FLW	Transect	FLW	Pond-FLW	Great Egret	<i>Ardea alba</i>	1	Common	R,WV	PRC (RC)	-	-	LC	LC	Y	Y
14/12/2022	Daytime	Dry Season	FLW	Transect	FLW	Pond-FLW	Plain Prinia	<i>Prinia inornata</i>	1	Common	R	-	-	-	LC	LC	N	N
14/12/2022	Daytime	Dry Season	FLW	Transect	FLW	Pond-FLW	Spotted Dove	<i>Spilopelia chinensis</i>	5	Abundant	R	-	-	-	LC	LC	N	N
14/12/2022	Daytime	Dry Season	FLW	Transect	FLW	Pond-FLW	White-breasted Waterhen	<i>Amaurornis phoenicurus</i>	1	Common	R	-	-	-	LC	LC	N	Y
14/12/2022	Daytime	Dry Season	FLW	Point Count	FLW1	Pond-FLW	Chinese Pond Heron	<i>Ardeola bacchus</i>	4	Common	R	PRC (RC)	-	-	LC	LC	Y	Y
14/12/2022	Daytime	Dry Season	FLW	Point Count	FLW1	Pond-FLW	Great Cormorant	<i>Phalacrocorax carbo</i>	1	Common	WV	PRC	-	-	LC	LC	Y	Y
14/12/2022	Daytime	Dry Season	FLW	Point Count	FLW1	Pond-FLW	Great Egret	<i>Ardea alba</i>	18	Common	R,WV	PRC (RC)	-	-	LC	LC	Y	Y
14/12/2022	Daytime	Dry Season	FLW	Point Count	FLW1	Pond-FLW	Grey Heron	<i>Ardea cinerea</i>	1	Common	WV	PRC	-	-	LC	LC	Y	Y
14/12/2022	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
14/12/2022	Daytime	Dry Season	FLW	Point Count	FLW2	Pond-FLW	Great Cormorant	<i>Phalacrocorax carbo</i>	1	Common	WV	PRC	-	-	LC	LC	Y	Y
14/12/2022	Daytime	Dry Season	FLW	Point Count	FLW2	Pond-FLW	Great Egret	<i>Ardea alba</i>	1	Common	R,WV	PRC (RC)	-	-	LC	LC	Y	Y
14/12/2022	Daytime	Dry Season	FLW	Point Count	FLW2	Pond-FLW	Grey Heron	<i>Ardea cinerea</i>	2	Common	WV	PRC	-	-	LC	LC	Y	Y
14/12/2022	Daytime	Dry Season	FLW	Point Count	FLW3	Pond-FLW	Chinese Bulbul	<i>Pycnonotus sinensis</i>	2	Abundant	R	-	-	-	LC	LC	N	N
14/12/2022	Daytime	Dry Season	FLW	Point Count	FLW3	Pond-FLW	Common Moorhen	<i>Gallinula chloropus</i>	4	Common	R	-	-	-	LC	LC	N	Y
14/12/2022	Daytime	Dry Season	FLW	Point Count	FLW3	Pond-FLW	Common Tailorbird	<i>Orthotomus sutorius</i>	1	Common	R	-	-	-	LC	LC	N	N
14/12/2022	Daytime	Dry Season	FLW	Point Count	FLW3	Pond-FLW	Crested Myna	<i>Acridotheres cristatellus</i>	6	Common	R	-	-	-	LC	LC	N	N
14/12/2022	Daytime	Dry Season	FLW	Point Count	FLW4	Pond-FLW	Great Cormorant	<i>Phalacrocorax carbo</i>	10	Common	WV	PRC	-	-	LC	LC	Y	Y
14/12/2022	Daytime	Dry Season	FLW	Point Count	FLW4	Pond-FLW	Grey Heron	<i>Ardea cinerea</i>	1	Common	WV	PRC	-	-	LC	LC	Y	Y
14/12/2022	Daytime	Dry Season	FLW	Point Count	FLW4	Pond-FLW	Northern Shoveler	<i>Anas clypeata</i>	4	Abundant	WV	RC	-	-	LC	LC	Y	Y
14/12/2022	Daytime	Dry Season	FLW	Point Count	FLW4	Pond-FLW	Plain Prinia	<i>Prinia inornata</i>	1	Common	R	-	-	-	LC	LC	N	N
14/12/2022	Daytime	Dry Season	FLW	Point Count	FLW4	Pond-FLW	Spotted Dove	<i>Spilopelia chinensis</i>	2	Abundant	R	-	-	-	LC	LC	N	N
14/12/2022	Daytime	Dry Season	FLW	Point Count	FLW5	Pond-FLW	Crested Myna	<i>Acridotheres cristatellus</i>	5	Common	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
14/12/2022	Daytime	Dry Season	FLW	Point Count	FLW5	Pond-FLW	Great Cormorant	<i>Phalacrocorax carbo</i>	4	Common	WV	PRC	-	-	LC	LC	Y	Y
14/12/2022	Daytime	Dry Season	FLW	Point Count	FLW5	Pond-FLW	Great Egret	<i>Ardea alba</i>	13	Common	R,WV	PRC (RC)	-	-	LC	LC	Y	Y
14/12/2022	Daytime	Dry Season	FLW	Point Count	FLW5	Pond-FLW	Grey Heron	<i>Ardea cinerea</i>	2	Common	WV	PRC	-	-	LC	LC	Y	Y
14/12/2022	Daytime	Dry Season	FLW	Point Count	FLW5	Pond-FLW	Little Egret	<i>Egretta garzetta</i>	1	Common	R	PRC (RC)	-	-	LC	LC	Y	Y
14/12/2022	Daytime	Dry Season	FLW	Point Count	FLW5	Pond-FLW	Spotted Dove	<i>Spilopelia chinensis</i>	9	Abundant	R	-	-	-	LC	LC	N	N
14/12/2022	Daytime	Dry Season	FLW	Point Count	FLW5	Pond-FLW	White Wagtail	<i>Motacilla alba</i>	6	Common	PM,WV	-	-	-	LC	LC	N	N
14/12/2022	Daytime	Dry Season	FLW	Point Count	FLW6	Pond-FLW	Black-collared Starling	<i>Gracupica nigricollis</i>	3	Common	R	-	-	-	LC	LC	N	N
14/12/2022	Daytime	Dry Season	FLW	Point Count	FLW6	Pond-FLW	Black-winged Stilt	<i>Himantopus himantopus</i>	1	Common	PM	RC	-	-	LC	LC	Y	Y
14/12/2022	Daytime	Dry Season	FLW	Point Count	FLW6	Pond-FLW	Crested Myna	<i>Acridotheres cristatellus</i>	3	Common	R	-	-	-	LC	LC	N	N
14/12/2022	Daytime	Dry Season	FLW	Point Count	FLW6	Pond-FLW	Eurasian Wigeon	<i>Anas penelope</i>	1	Common	WV	RC	-	-	LC	LC	Y	Y
14/12/2022	Daytime	Dry Season	FLW	Point Count	FLW6	Pond-FLW	Great Cormorant	<i>Phalacrocorax carbo</i>	34	Common	WV	PRC	-	-	LC	LC	Y	Y
14/12/2022	Daytime	Dry Season	FLW	Point Count	FLW6	Pond-FLW	Great Egret	<i>Ardea alba</i>	3	Common	R,WV	PRC (RC)	-	-	LC	LC	Y	Y
14/12/2022	Daytime	Dry Season	FLW	Point Count	FLW6	Pond-FLW	Grey Heron	<i>Ardea cinerea</i>	1	Common	WV	PRC	-	-	LC	LC	Y	Y
14/12/2022	Daytime	Dry Season	FLW	Point Count	FLW6	Pond-FLW	Little Egret	<i>Egretta garzetta</i>	2	Common	R	PRC (RC)	-	-	LC	LC	Y	Y
14/12/2022	Daytime	Dry Season	FLW	Point Count	FLW6	Pond-FLW	White Wagtail	<i>Motacilla alba</i>	1	Common	PM,WV	-	-	-	LC	LC	N	N
14/12/2022	Daytime	Dry Season	FLW	Point Count	FLW7	Pond-FLW	Black-collared Starling	<i>Gracupica nigricollis</i>	4	Common	R	-	-	-	LC	LC	N	N
14/12/2022	Daytime	Dry Season	FLW	Point Count	FLW7	Pond-FLW	Crested Myna	<i>Acridotheres cristatellus</i>	2	Common	R	-	-	-	LC	LC	N	N
14/12/2022	Daytime	Dry Season	FLW	Point Count	FLW7	Pond-FLW	Great Cormorant	<i>Phalacrocorax carbo</i>	5	Common	WV	PRC	-	-	LC	LC	Y	Y
14/12/2022	Daytime	Dry Season	FLW	Point Count	FLW7	Pond-FLW	Great Egret	<i>Ardea alba</i>	32	Common	R,WV	PRC (RC)	-	-	LC	LC	Y	Y
14/12/2022	Daytime	Dry Season	FLW	Point Count	FLW7	Pond-FLW	Grey Heron	<i>Ardea cinerea</i>	34	Common	WV	PRC	-	-	LC	LC	Y	Y
14/12/2022	Daytime	Dry Season	FLW	Point Count	FLW7	Pond-FLW	Little Egret	<i>Egretta garzetta</i>	1	Common	R	PRC (RC)	-	-	LC	LC	Y	Y
14/12/2022	Daytime	Dry Season	NSW	Transect	NSW	Modified Watercourse	Black Kite	<i>Milvus migrans</i>	2	Common	R,WV	(RC)	Class II	-	LC	LC	Y	Y
14/12/2022	Daytime	Dry Season	NSW	Transect	NSW	Modified Watercourse	Eurasian Collared Dove	<i>Streptopelia decaocto</i>	2	Common	-	-	-	-	LC	LC	N	N
14/12/2022	Daytime	Dry Season	NSW	Transect	NSW	Modified Watercourse	Great Cormorant	<i>Phalacrocorax carbo</i>	1	Common	WV	PRC	-	-	LC	LC	Y	Y
14/12/2022	Daytime	Dry Season	NSW	Transect	NSW	Plantation-NSW	Great Egret	<i>Ardea alba</i>	1	Common	R,WV	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
14/12/2022	Daytime	Dry Season	NSW	Transect	NSW	Modified Watercourse	Spotted Dove	<i>Spilopelia chinensis</i>	2	Abundant	R	-	-	-	LC	LC	N	N
14/12/2022	Daytime	Dry Season	NSW	Transect	NSW	Plantation-NSW	White Wagtail	<i>Motacilla alba</i>	7	Common	PM,WV	-	-	-	LC	LC	N	N
14/12/2022	Daytime	Dry Season	NSW	Point Count	NSW1	Pond-NSW	Black-collared Starling	<i>Gracupica nigricollis</i>	2	Common	R	-	-	-	LC	LC	N	N
14/12/2022	Daytime	Dry Season	NSW	Point Count	NSW1	Pond-NSW	Crested Myna	<i>Acridotheres cristatellus</i>	5	Common	R	-	-	-	LC	LC	N	N
14/12/2022	Daytime	Dry Season	NSW	Point Count	NSW1	Pond-NSW	Daurian Redstart	<i>Phoenicurus aureus</i>	9	Common	WV	-	-	-	LC	LC	N	N
14/12/2022	Daytime	Dry Season	NSW	Point Count	NSW1	Pond-NSW	Great Cormorant	<i>Phalacrocorax carbo</i>	57	Common	WV	PRC	-	-	LC	LC	Y	Y
14/12/2022	Daytime	Dry Season	NSW	Point Count	NSW1	Pond-NSW	Oriental Magpie Robin	<i>Copsychus saularis</i>	1	Abundant	R	-	-	-	LC	LC	N	N
14/12/2022	Daytime	Dry Season	NSW	Point Count	NSW1	Pond-NSW	Pied Kingfisher	<i>Ceryle rudis</i>	1	Uncommon	R	-	-	-	LC	LC	N	Y
14/12/2022	Daytime	Dry Season	NSW	Point Count	NSW1	Pond-NSW	Spotted Dove	<i>Spilopelia chinensis</i>	2	Abundant	R	-	-	-	LC	LC	N	N
14/12/2022	Daytime	Dry Season	NSW	Point Count	NSW1	Pond-NSW	White Wagtail	<i>Motacilla alba</i>	3	Common	PM,WV	-	-	-	LC	LC	N	N
14/12/2022	Daytime	Dry Season	NSW	Point Count	SP/NSW1	Modified Watercourse	Chinese Bulbul	<i>Pycnonotus sinensis</i>	7	Abundant	R	-	-	-	LC	LC	N	N
14/12/2022	Daytime	Dry Season	NSW	Point Count	SP/NSW1	Modified Watercourse	Common Tailorbird	<i>Orthotomus sutorius</i>	3	Common	R	-	-	-	LC	LC	N	N
14/12/2022	Daytime	Dry Season	NSW	Point Count	SP/NSW1	Modified Watercourse	Crested Myna	<i>Acridotheres cristatellus</i>	2	Common	R	-	-	-	LC	LC	N	N
14/12/2022	Daytime	Dry Season	NSW	Point Count	SP/NSW1	Modified Watercourse	Great Cormorant	<i>Phalacrocorax carbo</i>	1	Common	WV	PRC	-	-	LC	LC	Y	Y
14/12/2022	Daytime	Dry Season	NSW	Point Count	SP/NSW1	Modified Watercourse	Great Egret	<i>Ardea alba</i>	1	Common	R,WV	PRC (RC)	-	-	LC	LC	Y	Y
14/12/2022	Daytime	Dry Season	NSW	Point Count	SP/NSW1	Modified Watercourse	Japanese White-eye	<i>Zosterops japonicus</i>	1	Abundant	R	-	-	-	LC	LC	N	N
14/12/2022	Daytime	Dry Season	NSW	Point Count	SP/NSW1	Modified Watercourse	Little Grebe	<i>Tachybaptus ruficollis</i>	1	Common	R	LC	-	-	LC	LC	Y	Y
14/12/2022	Daytime	Dry Season	NSW	Point Count	SP/NSW1	Modified Watercourse	Masked Laughingthrush	<i>Garrulax perspicillatus</i>	3	Abundant	R	-	-	-	LC	LC	N	N
14/12/2022	Daytime	Dry Season	NSW	Point Count	SP/NSW1	Modified Watercourse	Plain Prinia	<i>Prinia inornata</i>	2	Common	R	-	-	-	LC	LC	N	N
14/12/2022	Daytime	Dry Season	NSW	Point Count	SP/NSW1	Modified Watercourse	Red-whiskered Bulbul	<i>Pycnonotus jocosus</i>	7	Abundant	R	-	-	-	LC	LC	N	N
14/12/2022	Daytime	Dry Season	NSW	Point Count	SP/NSW1	Modified Watercourse	White Wagtail	<i>Motacilla alba</i>	6	Common	PM,WV	-	-	-	LC	LC	N	N
14/12/2022	Daytime	Dry Season	NSW	Point Count	SP/NSW2	Modified Watercourse	Black-winged Stilt	<i>Himantopus himantopus</i>	3	Common	PM	RC	-	-	LC	LC	Y	Y
14/12/2022	Daytime	Dry Season	NSW	Point Count	SP/NSW2	Modified Watercourse	Chinese Pond Heron	<i>Ardeola bacchus</i>	1	Common	R	PRC (RC)	-	-	LC	LC	Y	Y
14/12/2022	Daytime	Dry Season	NSW	Point Count	SP/NSW2	Modified Watercourse	Great Cormorant	<i>Phalacrocorax carbo</i>	3	Common	WV	PRC	-	-	LC	LC	Y	Y
14/12/2022	Daytime	Dry Season	NSW	Point Count	SP/NSW2	Modified Watercourse	Great Egret	<i>Ardea alba</i>	1	Common	R,WV	PRC (RC)	-	-	LC	LC	Y	Y
14/12/2022	Daytime	Dry Season	NSW	Point Count	SP/NSW2	Modified Watercourse	Little Egret	<i>Egretta garzetta</i>	1	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
14/12/2022	Daytime	Dry Season	NSW	Point Count	SP/NSW2	Modified Watercourse	Masked Laughingthrush	<i>Garrulax perspicillatus</i>	2	Abundant	R	-	-	-	LC	LC	N	N
14/12/2022	Daytime	Dry Season	NSW	Point Count	SP/NSW2	Modified Watercourse	Oriental Magpie Robin	<i>Copsychus saularis</i>	1	Abundant	R	-	-	-	LC	LC	N	N
14/12/2022	Daytime	Dry Season	NSW	Point Count	SP/NSW2	Modified Watercourse	White Wagtail	<i>Motacilla alba</i>	3	Common	PM,WV	-	-	-	LC	LC	N	N
14/12/2022	Daytime	Dry Season	NSW	Point Count	SP/NSW3	Modified Watercourse	Black Drongo	<i>Dicrurus macrocercus</i>	1	Common	SV	-	-	-	LC	LC	N	N
14/12/2022	Daytime	Dry Season	NSW	Point Count	SP/NSW3	Modified Watercourse	Black-faced Spoonbill	<i>Platalea minor</i>	4	Common	WV	PGC	Class II	EN	EN	EN	Y	Y
14/12/2022	Daytime	Dry Season	NSW	Point Count	SP/NSW3	Modified Watercourse	Black-winged Stilt	<i>Himantopus himantopus</i>	2	Common	PM	RC	-	-	LC	LC	Y	Y
14/12/2022	Daytime	Dry Season	NSW	Point Count	SP/NSW3	Modified Watercourse	Chinese Bulbul	<i>Pycnonotus sinensis</i>	8	Abundant	R	-	-	-	LC	LC	N	N
14/12/2022	Daytime	Dry Season	NSW	Point Count	SP/NSW3	Modified Watercourse	Chinese Pond Heron	<i>Ardeola bacchus</i>	3	Common	R	PRC (RC)	-	-	LC	LC	Y	Y
14/12/2022	Daytime	Dry Season	NSW	Point Count	SP/NSW3	Modified Watercourse	Common Snipe	<i>Gallinago gallinago</i>	4	Common	PM,WV	-	-	-	LC	LC	N	Y
14/12/2022	Daytime	Dry Season	NSW	Point Count	SP/NSW3	Modified Watercourse	Eurasian Wigeon	<i>Anas penelope</i>	9	Common	WV	RC	-	-	LC	LC	Y	Y
14/12/2022	Daytime	Dry Season	NSW	Point Count	SP/NSW3	Modified Watercourse	Great Cormorant	<i>Phalacrocorax carbo</i>	7	Common	WV	PRC	-	-	LC	LC	Y	Y
14/12/2022	Daytime	Dry Season	NSW	Point Count	SP/NSW3	Modified Watercourse	Great Egret	<i>Ardea alba</i>	6	Common	R,WV	PRC (RC)	-	-	LC	LC	Y	Y
14/12/2022	Daytime	Dry Season	NSW	Point Count	SP/NSW3	Modified Watercourse	Grey Heron	<i>Ardea cinerea</i>	4	Common	WV	PRC	-	-	LC	LC	Y	Y
14/12/2022	Daytime	Dry Season	NSW	Point Count	SP/NSW3	Modified Watercourse	Little Grebe	<i>Tachybaptus ruficollis</i>	24	Common	R	LC	-	-	LC	LC	Y	Y
14/12/2022	Daytime	Dry Season	NSW	Point Count	SP/NSW3	Modified Watercourse	Marsh Sandpiper	<i>Tringa stagnatilis</i>	5	Common	PM,WV	RC	-	-	LC	LC	Y	Y
14/12/2022	Daytime	Dry Season	NSW	Point Count	SP/NSW3	Modified Watercourse	Northern Shoveler	<i>Anas clypeata</i>	16	Abundant	WV	RC	-	-	LC	LC	Y	Y
14/12/2022	Daytime	Dry Season	NSW	Point Count	SP/NSW3	Modified Watercourse	White Wagtail	<i>Motacilla alba</i>	1	Common	PM,WV	-	-	-	LC	LC	N	N
14/12/2022	Daytime	Dry Season	YLIE	Transect	YLIE-CW	Modified Watercourse	Chinese Pond Heron	<i>Ardeola bacchus</i>	3	Common	R	PRC (RC)	-	-	LC	LC	Y	Y
14/12/2022	Daytime	Dry Season	YLIE	Transect	YLIE-CW	Modified Watercourse	Great Cormorant	<i>Phalacrocorax carbo</i>	4	Common	WV	PRC	-	-	LC	LC	Y	Y
14/12/2022	Daytime	Dry Season	YLIE	Transect	YLIE-CW	Modified Watercourse	Grey Heron	<i>Ardea cinerea</i>	2	Common	WV	PRC	-	-	LC	LC	Y	Y
14/12/2022	Daytime	Dry Season	YLIE	Transect	YLIE-CW	Modified Watercourse	Little Egret	<i>Egretta garzetta</i>	2	Common	R	PRC (RC)	-	-	LC	LC	Y	Y
15/12/2022	Night- time	Dry Season	NSW	Transect	NSW	Pond-NSW	Great Cormorant	<i>Phalacrocorax carbo</i>	17	Common	WV	PRC	-	-	LC	LC	Y	Y
15/12/2022	Night- time	Dry Season	NSW	Point Count	SP/NSW1	Modified Watercourse	Grey Heron	<i>Ardea cinerea</i>	3	Common	WV	PRC	-	-	LC	LC	Y	Y
15/12/2022	Night- time	Dry Season	YLIE	Transect	YLIE-CW	Modified Watercourse	Chinese Pond Heron	<i>Ardeola bacchus</i>	2	Common	R	PRC (RC)	-	-	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
(December 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	Dec-16	Dec-22	Remarks
P1	FLW1	0.92	0.78	-
P2	FLW2	0.37	1.33	+
P3	FLW3	1.63	1.20	-
P4	FLW4	1.64	1.23	-
P5	FLW5	0.72	1.72	+
P6	FLW6	1.07	1.21	+
P7	FLW7	0.74	1.21	+
P9	SP/NSW3	2.07	2.23	+
P10	SP/NSW2	2.06	1.96	-
P11	NSW1	1.64	1.08	-
P12	SP/NSW1	2.33	2.24	-
Transect Walk Method				
EIA Report ID	EM&A Manual ID	Dec-16	Dec-22	Remarks
Fung Lok Wai	FLW	2.48	1.45	-
Nam Sang Wai	NSW	1.83	1.28	-
YLIE-CW	YLIE-CW	**	1.31	+

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	Dec-16	Dec-22	Remarks
P1	FLW1	0	0.78	+
P2	FLW2	0.19	1.33	+
P3	FLW3	**	**	=
P4	FLW4	0.99	0.80	-
P5	FLW5	0.44	0.98	+
P6	FLW6	1.10	0.77	-
P7	FLW7	0.41	0.96	+

Shannon Diversity Index Value of Species with Conservation Importance				
P9	SP/NSW3	1.91	2.02	+
P10	SP/NSW2	1.99	1.46	-
P11	NSW1	0.30	0	-
P12	SP/NSW1	2.16	2.14	-
Transect Walk Method				
EIA Report ID	EM&A Manual ID	Dec-16	Dec-22	Remarks
Fung Lok Wai	FLW	1.12	0.79	-
Nam Sang Wai	NSW	0.64	0.50	-
YLIE-CW	YLIE-CW	**	1.31	+

Notes:

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

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

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	December 2016	December 2022
Total	530	453
Richness	35	28
H	2.46	2.56
S ² _H	0.003	0.003
t	1.294	
df	982.613	
Crit	1.962	
p	0.196	
CI	0.116	0.110

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

Months	December 2016	December 2022
Total	85	112
Richness	22	13
H	2.67	1.94
S ² _H	0.011	0.008
t	5.416	
df	184	
Crit	1.973	
p	0.000	
CI	0.205	0.173

Annex E – Abundance Data per Point Count Location

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

Point Count Location	Common Name	Abundance
FLW1/ P1	<i>Gracupica nigricollis</i>	5
	<i>Phalacrocorax carbo</i>	6
	<i>Saxicola stejnegeri</i>	1
FLW2/ P2	<i>Milvus migrans</i>	1
	<i>Phalacrocorax carbo</i>	20
	<i>Saxicola stejnegeri</i>	1
FLW3/ P3	<i>Garrulax perspicillatus</i>	2
	<i>Gracupica nigricollis</i>	4
	<i>Orthotomus sutorius</i>	1
	<i>Pycnonotus jocosus</i>	5
	<i>Saxicola stejnegeri</i>	1
	<i>Spilopelia chinensis</i>	3
FLW4/ P4	<i>Ardeola bacchus</i>	6
	<i>Emberiza pusilla</i>	1
	<i>Gracupica nigricollis</i>	2
	<i>Phalacrocorax carbo</i>	2
	<i>Pycnonotus jocosus</i>	5
	<i>Tachybaptus ruficollis</i>	3
FLW5/ P5	<i>Acridotheres cristatellus</i>	5
	<i>Ardea alba</i>	2
	<i>Ardea cinerea</i>	3
	<i>Egretta garzetta</i>	2
	<i>Lanius schach</i>	1
	<i>Phalacrocorax carbo</i>	62
FLW6/ P6	<i>Ardea cinerea</i>	1
	<i>Buteo japonicus</i>	1
	<i>Gracupica nigricollis</i>	5
	<i>Milvus migrans</i>	1
FLW7/ P7	<i>Ardea alba</i>	1
	<i>Phalacrocorax carbo</i>	6
	<i>Saxicola stejnegeri</i>	1
SP/NSW3/ P9	<i>Actitis hypoleucos</i>	1

Point Count Location	Common Name	Abundance
	<i>Anas crecca</i>	7
	<i>Ardea alba</i>	13
	<i>Ardea cinerea</i>	10
	<i>Ardeola bacchus</i>	37
	<i>Egretta garzetta</i>	8
	<i>Garrulax perspicillatus</i>	6
	<i>Himantopus himantopus</i>	4
	<i>Motacilla alba</i>	1
	<i>Phalacrocorax carbo</i>	61
	<i>Phylloscopus inornatus</i>	2
	<i>Platalea minor</i>	8
	<i>Recurvirostra avosetta</i>	43
	<i>Tringa erythropus</i>	2
	<i>Tringa nebularia</i>	3
SP/NSW2/ P10	<i>Ardea alba</i>	1
	<i>Ardea cinerea</i>	6
	<i>Ardeola bacchus</i>	14
	<i>Cyanopica cyanus</i>	2
	<i>Egretta garzetta</i>	12
	<i>Himantopus himantopus</i>	17
	<i>Phalacrocorax carbo</i>	9
	<i>Recurvirostra avosetta</i>	19
	<i>Tringa erythropus</i>	3
	<i>Tringa glareola</i>	1
	<i>Tringa nebularia</i>	1
<i>Tringa stagnatilis</i>	1	
NSW1/ P11	<i>Alcedo atthis</i>	1
	<i>Gracupica nigricollis</i>	2
	<i>Motacilla alba</i>	1
	<i>Phalacrocorax carbo</i>	10
	<i>Phylloscopus inornatus</i>	2
	<i>Spilopelia chinensis</i>	2
	<i>Tachybaptus ruficollis</i>	1
<i>Zosterops japonicus</i>	1	

Point Count Location	Common Name	Abundance
SP/NSW1/ P12	<i>Anas clypeata</i>	7
	<i>Anas crecca</i>	3
	<i>Ardea alba</i>	5
	<i>Ardea cinerea</i>	3
	<i>Ardeola bacchus</i>	3
	<i>Ceryle rudis</i>	1
	<i>Egretta garzetta</i>	2
	<i>Gracupica nigricollis</i>	2
	<i>Himantopus himantopus</i>	18
	<i>Phalacrocorax carbo</i>	4
	<i>Platalea minor</i>	1
	<i>Recurvirostra avosetta</i>	2
	<i>Tringa ochropus</i>	1
	<i>Tringa stagnatilis</i>	4
<i>Tringa totanus</i>	2	
Total		530

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

Location	Common Name	Abundance
FLW1/ P1	<i>Ardea alba</i>	18
	<i>Ardea cinerea</i>	1
	<i>Ardeola bacchus</i>	4
	<i>Phalacrocorax carbo</i>	1
FLW2/ P2	<i>Ardea alba</i>	1
	<i>Ardea cinerea</i>	2
	<i>Milvus migrans</i>	1
	<i>Phalacrocorax carbo</i>	1
FLW3/ P3	<i>Acridotheres cristatellus</i>	6
	<i>Gallinula chloropus</i>	4
	<i>Orthotomus sutorius</i>	1
	<i>Pycnonotus sinensis</i>	2
FLW4/ P4	<i>Anas clypeata</i>	4
	<i>Ardea cinerea</i>	1

Location	Common Name	Abundance
	<i>Phalacrocorax carbo</i>	10
	<i>Prinia inornata</i>	1
	<i>Spilopelia chinensis</i>	2
FLW5/ P5	<i>Acridotheres cristatellus</i>	5
	<i>Ardea alba</i>	13
	<i>Ardea cinerea</i>	2
	<i>Egretta garzetta</i>	1
	<i>Motacilla alba</i>	6
	<i>Phalacrocorax carbo</i>	4
	<i>Spilopelia chinensis</i>	9
FLW6/ P6	<i>Acridotheres cristatellus</i>	3
	<i>Anas penelope</i>	1
	<i>Ardea alba</i>	3
	<i>Ardea cinerea</i>	1
	<i>Egretta garzetta</i>	2
	<i>Gracupica nigricollis</i>	3
	<i>Himantopus himantopus</i>	1
	<i>Motacilla alba</i>	1
	<i>Phalacrocorax carbo</i>	34
FLW7/ P7	<i>Acridotheres cristatellus</i>	2
	<i>Ardea alba</i>	32
	<i>Ardea cinerea</i>	34
	<i>Egretta garzetta</i>	1
	<i>Gracupica nigricollis</i>	4
	<i>Phalacrocorax carbo</i>	5
SP/NSW3/ P9	<i>Anas clypeata</i>	16
	<i>Anas penelope</i>	9
	<i>Ardea alba</i>	6
	<i>Ardea cinerea</i>	4
	<i>Ardeola bacchus</i>	3
	<i>Dicrurus macrocercus</i>	1
	<i>Gallinago gallinago</i>	4
	<i>Himantopus himantopus</i>	2

Location	Common Name	Abundance
	<i>Motacilla alba</i>	1
	<i>Phalacrocorax carbo</i>	7
	<i>Platalea minor</i>	4
	<i>Pycnonotus sinensis</i>	8
	<i>Tachybaptus ruficollis</i>	24
	<i>Tringa stagnatilis</i>	5
SP/NSW2/ P10	<i>Ardea alba</i>	1
	<i>Ardeola bacchus</i>	1
	<i>Copsychus saularis</i>	1
	<i>Egretta garzetta</i>	1
	<i>Garrulax perspicillatus</i>	2
	<i>Himantopus himantopus</i>	3
	<i>Motacilla alba</i>	3
	<i>Phalacrocorax carbo</i>	3
NSW1/ P11	<i>Acridotheres cristatellus</i>	5
	<i>Ceryle rudis</i>	1
	<i>Copsychus saularis</i>	1
	<i>Gracupica nigricollis</i>	2
	<i>Motacilla alba</i>	3
	<i>Phalacrocorax carbo</i>	57
	<i>Phoenicurus aureus</i>	9
	<i>Spilopelia chinensis</i>	2
SP/NSW1/ P12	<i>Acridotheres cristatellus</i>	2
	<i>Ardea alba</i>	1
	<i>Ardea cinerea</i>	3
	<i>Garrulax perspicillatus</i>	3
	<i>Motacilla alba</i>	6
	<i>Orthotomus sutorius</i>	3
	<i>Phalacrocorax carbo</i>	1
	<i>Prinia inornata</i>	2
	<i>Pycnonotus jocosus</i>	7
	<i>Pycnonotus sinensis</i>	7
	<i>Tachybaptus ruficollis</i>	1

Location	Common Name	Abundance
	<i>Zosterops japonicus</i>	1
	Total	453

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

Frequency and Period	Location	Day time (14/12/2022)		Night-time (15/12/2022)	
		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/ P1	11:16	51.5	21:34	49.4
	FLW2/ P2	10:44	49.2	20:59	49.3
	FLW3/ P3	10:42	50.5	20:51	48.8
	FLW4/ P4	09:25	47.0	19:40	47.2
	FLW5/ P5	09:27	46.2	19:48	46.5
	FLW6/ P6	10:06	47.8	20:13	47.0
	FLW7/ P7	10:10	47.1	20:19	47.4
	SP/NSW3/ P9	08:28	52.1	18:22	59.1
	SP/NSW2/ P10	08:23	50.2	18:19	56.0
	NSW1/ P11	07:53	48.1	17:47	52.3
	SP/NSW1/ P12	07:47	49.3	17:45	55.7

Annex G – Site Photos showing no project-related disturbance during the Ecological Monitoring of Birds
(December 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 Fung Lok Wai, far north of the Project Site.