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軒尼詩道
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17 May 2024

By Registered Post & Fax:

Civil Engineering and Development Department,

Environmental Impact Assessment (EIA) Ordinance, Cap.499
Application for Approval of EIA Report

Project Title: San Tin / Lok Ma Chau Development Node
(Application No. EIA-302/2023)

I refer to your above application received on 6 December 2023 for approval of an EIA report under Section 6(2) of the EIA Ordinance and our previous letter of 30 January 2024 advising you to exhibit the EIA report for public inspection in accordance with Section 6(4) of the EIA Ordinance.

Having considered the public comments received during the public inspection period and the comments from the Advisory Council on the Environment (ACE) given to us on 29 April 2024, I now advise you under Section 8(3) of the EIA Ordinance that the above EIA report as exhibited under Section 7(1) of the EIA Ordinance is approved subject to the conditions at **Annex 1**. These conditions may also be imposed, where appropriate, in the relevant Environmental Permits, if granted, for carrying out designated projects under Schedule 2 of the EIAO covered under the EIA Report. In addition, recommendations from the ACE are contained in **Annex 2** for your onward action.

It should be noted that the approval of the EIA report shall not relieve you of the responsibility to comply with other legislation or Government requirements for implementing the Project.

Under Section 15 of the EIA Ordinance, the approved EIA report (Register No. : AEIAR - 261/2024) will be placed on the EIA Ordinance Register. The approved EIA report and the conditions of approval will also be placed on the EIA Ordinance website (<http://www.epd.gov.hk/eia/>).

Should you have any queries concerning the above, please contact my colleague Ms. Hyde MAK at 2835 1123.

Yours sincerely,

A handwritten signature in blue ink, appearing to be 'Terence Tsang', written over a horizontal line.

(TSANG Sai Wing, Terence)
Assistant Director (Environmental Assessment)
for Director of Environmental Protection

Encl.

c.c. (w/o encl.)

ACE EIA Subcommittee Secretariat

(Attn : Executive Officer (Cross-Boundary & International Division) 1)

Fax: 2872 0603

Environmental Impact Assessment (EIA) Ordinance, Cap.499
Application for Approval of EIA Report

Project Title: San Tin / Lok Ma Chau Development Node

Reference of the Approved EIA Report in the Register: AEIAR-261/2024

Conditions of Approval under Section 8(3) of the EIA Ordinance

- (1) The project proponent shall submit a detailed Habitat Creation and Management Plan (HCMP) as recommended in the Environmental Impact Assessment (EIA) Report to the Director of Environmental Protection (DEP) for approval no less than nine months before commencement of pond filling works of the Project. The project proponent shall consult the Advisory Council on the Environment (ACE) in finalising the HCMP prior to submission. The HCMP should provide details on ecological impacts, specifications for the target habitats and species, mitigation and compensation measures including provision of birds' flight paths, wildlife corridors for non-flying mammals, wetlands compensation, protection of existing egrettries, design and implementation methods, management strategy, monitoring requirements (e.g. location, frequency and parameters) and reporting requirements, Action / Limit Levels and Event / Action Plan, as well as overall implementation programme, with a view to ensuring no net loss in ecological function and capacity of the wetlands concerned under the Project.
- (2) The project proponent shall submit a Detailed Design Plan for Establishment of Wildlife Corridors (DDP) for non-flying mammals and related measures to the DEP for approval three months before commencement of construction of relevant parts of the Project affecting the existing wildlife corridor(s). Aboveground wildlife corridors with water features and dimension of no less than 10m wide, and underpass wildlife corridors with cross-sectional area of no less than 6m² (2m high and 3m wide, subject to detailed design) with water features and natural lighting shall be provided. To facilitate movement of Eurasian Otters across Lok Ma Chau, Sam Po Shue and the Inner Deep Bay area, the DDP shall devise measures such as widening of the gaps in the grille of the water channel connecting the Shenzhen River, and modifying the inflatable dam at San Tin Main Eastern Drainage Channel and the flap valve at Lok Ma Chau Meander with provision of passages (e.g. ladder) across the flap valve and the inflatable dam.
- (3) The project proponent shall, in consultation with the Agriculture, Fisheries and Conservation Department (AFCD), submit an Implementation Plan for Wetland Enhancement Measures at Mai Po (IPM) as set out in the approved EIA Report to the DEP for approval one month before commencement of construction of the Project.
- (4) The project proponent shall, in consultation with the AFCD, submit an Interim Wetland Enhancement Plan (IWEP) to the DEP for approval no less than nine months before commencement of pond filling works of the Project. The IWEP shall provide the implementation details of the interim wetland enhancement measures for the identified ponds, including active management such as trash fish stocking, as set out in the approved EIA Report.

- (5) The project proponent shall set up an Environmental Committee (EC) no less than three months before commencement of construction of the Project. The EC shall advise on the preparation of the IWEP, IPM, DDP and HCMP, and monitor the effectiveness of implementation of the proposed ecological mitigation / enhancement measures of the Project according to the EIA Report and the approved IWEP, IPM, DDP and HCMP. The EC should have a wide representation such as representatives of relevant government departments as well as green groups and academics. The list of members and terms of reference of the EC shall be submitted to the DEP for approval.
- (6) The project proponent shall report biannually, or as instructed by DEP, to the ACE after commencement of construction of the Project on the progress of implementation of the approved IWEP, IPM, HCMP and DDP, the environmental monitoring results and effectiveness of ecological mitigation / enhancement measures.
- (7) The project proponent shall, in consultation with the AFCD, submit a Bird-friendly Design Guideline for buildings within the Project area to the DEP for approval within 12 months from commencement of construction of the Project. The Guideline should provide measures to minimise the risk of bird collisions and the impacts on birds.
- (8) The project proponent shall confirm the land contamination potential within the Project area and if remediation was necessary, submit a Remediation Action Plan (RAP) to the DEP for approval. The latest international practice and proven environmentally friendly methods / technologies should be considered in the RAP for devising the remediation strategies that best suit the site conditions and remediation requirements. The project proponent should conduct the remediation in accordance with the approved RAP. No construction works of the relevant parts of the Project shall be commenced before completion of the remediation works.
- (9) The project proponent shall set up a working group with the AFCD no less than 3 months before commencement of construction of the Project to coordinate the programme and progress of pond filling of the Project and the implementation of the proposed Sam Po Shue Wetland Conservation Park (SPS WCP) to ensure that potential adverse impacts to the wetlands due to construction activities of the Project can be minimized. No pond filling works of the Project shall be allowed prior to commencement of construction of the ecologically enhanced fish ponds at the proposed SPS WCP.
- (10) The project proponent shall conduct pre-construction survey(s) with engagement of qualified ecologist(s) to search for any otter holts/dens and otters in works sites before the commencement of construction of relevant parts of the Project and devise appropriate measures if necessary in consultation with the AFCD. Details of the pre-construction survey methodology shall be agreed with the AFCD prior to the commencement of the pre-construction survey.
- (11) The project proponent shall, in consultation with the AFCD, submit a Woodland Compensation Plan (WCP) to the DEP for approval no less than three months before commencement of construction of relevant parts of the Project. The WCP shall provide the implementation details of compensatory works for the identified woodland compensation area; as well as maintenance and monitoring programmes.

- (12) The project proponent shall prepare a Tree Compensatory Planting Implementation Plan (TCPP) covering the compensatory planting of trees of the Project as well as maintenance and monitoring programme to ensure tree survival rate of compensatory trees. The TCPP shall be deposited with the DEP no less than three months before commencement of construction of relevant parts of the Project involving tree felling works.
- (13) The project proponent shall incorporate the amendments as detailed in Enclosure A into the EIA Report and submit a set of the approved EIA Report to the DEP.

- END -

Environmental Protection Department
May 2024

**Environmental Impact Assessment (EIA) Ordinance, Cap.499
Application for Approval of EIA Report**

Project Title: San Tin / Lok Ma Chau Development Node

Reference of the Approved EIA Report in the Register: AEIAR-261/2024

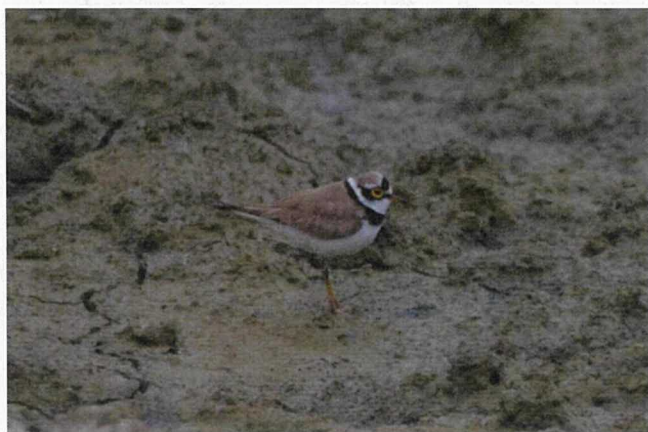
**Recommendations from the Advisory Council on the Environment
for Carrying Out of the Project**

The project proponent is recommended to –

- (1) adopt sponge city measures with a modern stormwater management approach to enhance climate resilience and minimise flooding risk of the Project area during heavy rain storms and extreme weather conditions;
- (2) explore the feasibility of implementation of automatic refuse collection systems;
- (3) explore the feasibility of biomass management by reusing and upcycling of the felled trees from the Project area;
- (4) explore ways to achieve carbon neutrality in the Project during both construction and operation phases, such as the use of low-carbon construction materials / equipment, green fuel (e.g. hydrogen), electric vehicles, and the adoption of microgrid;
- (5) explore the feasibility to adopt green design in the Project area by incorporating green roof / wall and passive design in buildings, tree planning along pedestrian pathways, and designating areas for establishment of urban farms;
- (6) devise specific and effective measures, such as prohibiting the use of flood lights, directing outdoor lightings away from sensitive receivers and avoidance of setting up of sizeable outdoor light-emitting display panels, to minimise disturbance to wildlife during construction and operation phases of the Project; and
- (7) encourage plantation of food crops which may attract insects and birds to enrich the urban biodiversity in the open space zoning within the Project area.

- END -

**Environmental Protection Department
May 2024**

					
Little Ringed Plover (<i>Charadrius dubius</i>)		Little Stint (<i>Calidris minuta</i>)			
					
Long-toed Stint (<i>Calidris subminuta</i>)		Malayan Night Heron (<i>Gorsachius melanolophus</i>)			
					
Marsh Sandpiper (<i>Tringa stagnatilis</i>)		Northern Lapwing (<i>Vanellus vanellus</i>)			
	Agreement No. CE 20/2021 (CE) First Phase Development of the New Territories North – San Tin / Lok Ma Chau Development Node – Investigation	SCALE	N.T.S.	DATE	Dec-22
	Representative Photographs of the Species of Conservation Importance Recorded within the Assessment Area	CHECK	LAMCCG	DRAWN	YIMKBA
		JOB NO.	60670882	Appendix No. 10.2	Rev -

NO.	DATE	DESCRIPTION	CONC. BY

Indicator Species with High Sensitivity to Disturbances adopted in the EIA Report

Black-faced Spoonbill
黑臉琵鷺



High

Great Egret
大白鷺



High

Grey Heron
蒼鷺



High

Great Cormorant
普通鸕鶿



High

- If mitigation targets can be achieved for these **larger disturbance sensitive indicator species**, **similar or higher levels of enhancement for other less sensitive wildlife species can be achieved.**

Other Species of Conservation Importance for Additional Calculations

- Additional calculations for the following species, including species **regularly occurring at / using fishpond habitats** ^[1] and other **non-fish-eating avifauna species** ^[2]:



Little Egret ^[1]
小白鷺



Chinese Pond Heron ^[1]
池鷺



Cattle Egret ^[2]
牛背鷺



Eurasian Teal ^{[1] [2]}
綠翅鴨

Note:

[1] Regularly occurring species in Lok Ma Chau / San Tin area, according to survey data and analysis undertaken in the LMC Spurline EIA

[2] Non-fish-eating avifauna species refers to species that does not primarily feed on fish

Sample Calculations on Change in Functional Value

Existing functional value in SPS WCP

Land Status [1]	Peak Density (birds/ha) [2]	Area (ha)	Functional Value*
Active/inactive pond (to be converted to Ecologically Enhanced Fishpond)	0.423	148.6	62.9
Abandoned / filled / wired ponds (to be converted to Ecologically Enhanced Fishpond)	0	100.0	
Existing brownfield / filled ponds in RDZ (to be converted to Ecologically Enhanced Fishpond) [3]	0	5.1	

* Any discrepancies between total and sums of individual numbers listed therein are due to rounding.
[1] The type of ponds made reference to AFCD data.
[2] Peak monthly bird count data during dry season over 2021-22 from HKBWS, or EIA Survey Data for ponds with no data available from HKBWS.
[3] Existing brownfield / filled ponds in RDZ of the Project (50% reduction in bird density) to be converted to Ecologically Enhanced Fishponds.



Functional value in SPS WCP after Enhancement

Pond Status	Peak Density* (birds/ha)	Area (ha)	Functional Value*	Total Functional Value*
Ecologically Enhanced Fishponds [1]	0.613	248.6	152.5	153.6
Ecologically Enhanced Fishponds in RDZ [2]	0.212	5.1	1.1	

* Any discrepancies between total and sums of individual numbers listed therein are due to rounding.
[1] Restoring all ponds to active pond (i.e. density = 0.423);
45% enhancement for active pond: 0.423 x 1.45 = 0.613
[2] Existing brownfield / fish ponds in RDZ to be converted to Ecologically Enhanced Fishponds.
(density of active fishpond is adopted, i.e. 0.423);
50% reduction in bird density for active pond within RDZ: 0.423 x 0.5 = 0.212



Black-faced
Spoonbill
黑臉琵鷺

Gain in functional value
+90.7

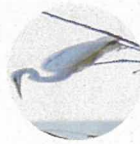
Positive Overall Changes
in Functional Value
+ 76.2

Loss in Functional Value
in Impacted Area
- 14.5

Existing functional value in SPS WCP

* Any discrepancies between total and sums of individual numbers listed therein are due to rounding.

- [1] The type of ponds made reference to AFCD data.
- [2] Peak monthly bird count data during dry season over 2021-22 from HKBWS, or EIA Survey Data for ponds with no data available from HKBWS.
- [3] Existing brownfield / filled ponds in RDZ of the Project (50% reduction in bird density) to be converted to Ecologically Enhanced Fishponds.



Great Egret
大白鹭

Loss in Functional Value
in Impacted Area
- 44.0

Gain in functional value

+44.9

Positive Overall Changes in Functional Value

Functional value in SPS WCP after Enhancement

* Any discrepancies between total and sums of individual numbers listed therein are due to rounding.

- [1] Restoring all ponds to active pond (i.e. density = 0.292);
45% enhancement for active pond: $0.292 \times 1.45 = 0.424$

NO.	DATE	DESCRIPTION	CHK.	APP.

Sample Calculations on Change in Functional Value

Existing functional value in SPS WCP

Land Status [1]	Peak Density (birds/ha) [2]	Area (ha)	Functional Value*
Active/inactive pond (to be converted to Ecologically Enhanced Fishpond)	0.723	x 148.6	114.4
Abandoned / filled / wired ponds (to be converted to Ecologically Enhanced Fishpond)	0.070	x 100.0	
Existing brownfield / filled ponds in RDZ (to be converted to Ecologically Enhanced Fishpond) [3]	0	x 5.1	

* Any discrepancies between total and sums of individual numbers listed therein are due to rounding.

- [1] The type of ponds made reference to AFCD data.
[2] Peak monthly bird count data during dry season over 2021-22 from HKBWS, or EIA Survey Data for ponds with no data available from HKBWS.
[3] Existing brownfield / filled ponds in RDZ of the Project (50% reduction in bird density) to be converted to Ecologically Enhanced Fishponds.



Grey Heron
蒼鷺

Functional value in SPS WCP after Enhancement

Pond Status	Peak Density* (birds/ha)	Area (ha)	Functional Value*	Total Functional Value*
Ecologically Enhanced Fishponds [1]	1.048	x 248.6	260.7	262.5
Ecologically Enhanced Fishponds in RDZ [2]	0.362	x 5.1	1.8	

* Any discrepancies between total and sums of individual numbers listed therein are due to rounding.

- [1] Restoring all ponds to active pond (i.e. density = 0.723);
45% enhancement for active pond: $0.723 \times 1.45 = 1.048$
[2] Existing brownfield / fish ponds in RDZ to be converted to Ecologically Enhanced Fishponds.
(density of active fishpond is adopted, i.e. 0.723);
50% reduction in bird density for active pond within RDZ: $0.723 \times 0.5 = 0.362$

Gain in functional value

+148

Positive Overall Changes
in Functional Value

+2

Loss in Functional Value
in Impacted Area

-146

NO.	DATE	DESCRIPTION	CHK.
1			
2			
3			
4			
5			
6			
7			
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10			

Sample Calculations on Change in Functional Value

Existing functional value in SPS WCP

Land Status [1]	Peak Density (birds/ha) [2]	Area (ha)	Functional Value*
Active/inactive pond (to be converted to Ecologically Enhanced Fishpond)	1.869	x 148.6	
Abandoned / filled / wired ponds (to be converted to Ecologically Enhanced Fishpond)	0.150	x 100.0	292.8
Existing brownfield / filled ponds in RDZ (to be converted to Ecologically Enhanced Fishpond) [3]	0	x 5.1	

* Any discrepancies between total and sums of individual numbers listed therein are due to rounding.

- [1] The type of ponds made reference to AFCD data.
[2] Peak monthly bird count data during dry season over 2021-22 from HKBWS, or EIA Survey Data for ponds with no data available from HKBWS.
[3] Existing brownfield / filled ponds in RDZ of the Project (50% reduction in bird density) to be converted to Ecologically Enhanced Fishponds.



Great
Cormorant
普通鸕鶿

Functional value in SPS WCP after Enhancement

Pond Status	Peak Density* (birds/ha)	Area (ha)	Functional Value*	Total Functional Value*
Ecologically Enhanced Fishponds [1]	2.710	x 248.6	673.8	678.6
Ecologically Enhanced Fishponds in RDZ [2]	0.935	x 5.1	4.8	

* Any discrepancies between total and sums of individual numbers listed therein are due to rounding.

- [1] Restoring all ponds to active pond (i.e. density = 1.869);
45% enhancement for active pond: $1.869 \times 1.45 = 2.710$
[2] Existing brownfield / fish ponds in RDZ to be converted to Ecologically Enhanced Fishponds.
(density of active fishpond is adopted, i.e. 1.869);
50% reduction in bird density for active pond within RDZ: $1.869 \times 0.5 = 0.935$

Gain in functional value
in Impacted Area

+385.8

Positive Overall Changes
in Functional Value

+198.1

Changes in Functional Value Other Species of Conservation Importance within Impacted Area

Changes in Bird Density within Impacted Areas to be Compensated by SPS WCP

Waterbird Species	Direct Impact (ha)*	Indirect Impact (ha)*	Impacted Area (ha) to be Compensated by SPS WCP	Peak Bird Density# (birds/ha)		Loss in Functional Value in Impacted Area ^
				Existing	After Project Development	
小白鷺 Little Egret	89.0	45.0 ^[1]	134.0	0.853	0.157	-93.2
池鷺 Chinese Pond Heron	89.0	25.8 ^[2]	114.8	0.571	0.035	-61.6
牛背鷺 Cattle Egret	89.0	11.5 ^[3]	100.5	0.290	0.006	-28.6
綠翅鴨 Eurasian Teal	89.0	37.1 ^[4]	126.1	0.230	0.013	-27.3

*Direct Impact: Total loss in functional value: 100% (in EZ) and 50% (in RDZ) loss in functional value

Monthly waterbird count data from Mai Po Inner Deep Bay Ramsar Site Waterbird Monitoring Programme submitted by HKBWS to AFCD were reviewed to determine the bird densities of impacted/compensation area. The type of ponds made reference to AFCD data. For areas without data from AFCD, IFA ecological survey data was used.

^ Any discrepancies between total and sums of individual numbers listed therein are due to rounding.

Note:

indirect impact zones for the species were determined based on field survey data and analysis undertaken for the approved EIA reports (e.g. LMC Spurline, LMC Loop and FLW Development)

[1] Indirect impact zones for low-rise development: 0-20m (EZ) and 20-100m (RDZ); mid-to high-rise development (tall buildings/other elevated structures > +35mPD): 0-100m (EZ) and 100-400m (RDZ)

[22] Indirect impact zones for low-rise development: 0-20m (EZ) and 20-30m (RDZ); mid-to high-rise development (tall buildings/other elevated structures > +35mPD): 0-100m (EZ) and 100-300m (RDZ)

[3] Indirect impact zones for low-rise development: 0-20m (EZ) and 20-30m (RDZ); mid-to high-rise development (tall buildings/other elevated structures > +35mPD): 0-50m (EZ) and 50-100m (RDZ)

[4] Indirect impact zones for low-rise development: 0-50m (EZ) and 50-100m (RDZ); mid-to high-rise development (tall buildings/other elevated structures > +35mPD): 0-100m (EZ) and 100-300m (RDZ)

Sample Calculations on Change in Functional Value

Existing functional value in SPS WCP

Land Status [1]	Peak Density (birds/ha) [2]	Area (ha)	Peak Abundance*	Functional Value*
Active/inactive/wired pond (to be converted to Ecologically Enhanced Fishpond) [3]	1.788	195.6	349.7	351.6
Abandoned / filled ponds (to be converted to Ecologically Enhanced Fishpond)	0.036	53.0	1.9	
Existing brownfield / filled ponds in RDZ (to be converted to Ecologically Enhanced Fishpond) [4]	0	5.1	0	

- * Any discrepancies between total and sums of individual numbers listed therein are due to rounding.
[1] The type of ponds made reference to AFCD data.
[2] Peak monthly bird count data during dry season over 2021-22 from HKBWS, or EIA Survey Data for ponds with no data available from HKBWS.
[3] The bird scaring devices at wired ponds have no impact on the usage of this less disturbance sensitive species, therefore wired ponds are grouped as the same category of active/inactive ponds.
[4] Existing brownfield / filled ponds in RDZ of the Project (50% reduction in bird density) to be converted to Ecologically Enhanced Fishponds.



Little Egret
小白鷺

Loss in Functional Value
in Impacted Area
- 93.2

Gain in functional value

+297.6

Positive Overall Changes
in Functional Value
+ 204.4

Functional value in SPS WCP after Enhancement

Pond Status	Peak Density (birds/ha)*	Area (ha)	Projected Peak Abundance*	Total Functional Value*
Ecologically Enhanced Fishponds [1]	2.593	248.6	644.6	649.2
Ecologically Enhanced Fishponds in RDZ [2]	0.894	5.1	4.6	

- * Any discrepancies between total and sums of individual numbers listed therein are due to rounding.
[1] Restoring all ponds to active pond (i.e. density = 1.788); with 45% enhancement by conversion into ecologically enhanced fishpond (1.788 x 1.45 = 2.593).
[2] Existing brownfield / filled ponds in RDZ to be converted to Ecologically Enhanced Fishponds. (density of active fishpond is adopted, i.e. 1.788); with 50% reduction in bird density for active pond within RDZ (1.788 x 0.5 = 0.894).

ISSUE/REVISION

NO.	DATE	DESCRIPTION	CHK.

STATUS

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SCALE

--

KEY PLAN

--

PROJECT NO.

--

AGREEMENT NO.

--

SHEET TITLE

--

SAMPLE CALCULATIONS OF FUNCTIONAL VALUE

--

SHEET NUMBER

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Appendix 10.6

NO.	DATE	DESCRIPTION	CHK.

Sample Calculations on Change in Functional Value

Existing functional value in SPS WCP

Land Status [1]	Peak Density (birds/ha) [2]	Area (ha)	Peak Abundance*	Functional Value*
Active/inactive/wired pond (to be converted to Ecologically Enhanced Fishpond) [3]	0.742	195.6	145.1	158.4
Abandoned / filled ponds (to be converted to Ecologically Enhanced Fishpond)	0.250	53.0	13.3	
Existing brownfield / filled ponds in RDZ (to be converted to Ecologically Enhanced Fishpond) [4]	0	5.1	0	

- * Any discrepancies between total and sums of individual numbers listed therein are due to rounding.
- [1] The type of ponds made reference to AFCD data.
- [2] Peak monthly bird count data during dry season over 2021-22 from HKBWS, or EIA Survey Data for ponds with no data available from HKBWS.
- [3] The bird scaring devices at wired ponds have no impact on the usage of this less disturbance sensitive species, therefore wired ponds are grouped as the same category of active/inactive ponds.
- [4] Existing brownfield / filled ponds in RDZ of the Project (50% reduction in bird density) to be converted to Ecologically Enhanced Fishponds.



Chinese
Pond Heron
池鷺

Loss in Functional Value
in Impacted Area
- 61.6

Gain in functional value
+111.0

Positive Overall Changes
in Functional Value
+ 49.4

Functional value in SPS WCP after Enhancement

Pond Status	Peak Density (birds/ha)*	Area (ha)	Projected Peak Abundance*	Total Functional Value*
Ecologically Enhanced Fishponds [1]	1.076	248.6	267.5	269.4
Ecologically Enhanced Fishponds in RDZ [2]	0.371	5.1	1.9	

- * Any discrepancies between total and sums of individual numbers listed therein are due to rounding.
- [1] Restoring all ponds to active pond (i.e. density = 0.742); with 45% enhancement by conversion into ecologically enhanced fishpond (0.742 x 1.45 = 1.076).
- [2] Existing brownfield / filled ponds in RDZ to be converted to Ecologically Enhanced Fishponds (density of active fishpond is adopted, i.e. 0.742); with 50% reduction in bird density for active pond within RDZ (0.742 x 0.5 = 0.371)

Sample Calculations on Change in Functional Value

Existing functional value in SPS WCP

Land Status [1]	Peak Density (birds/ha) [2]	Area (ha)	Peak Abundance*	Functional Value*
Active/inactive pond (to be converted to Ecologically Enhanced Fishpond)	0.146	148.6	21.7	21.7
Abandoned / filled / wired ponds (to be converted to Ecologically Enhanced Fishpond)	0	100.0	0	
Existing brownfield / filled ponds in RDZ (to be converted to Ecologically Enhanced Fishpond) [3]	0	5.1	0	

- * Any discrepancies between total and sums of individual numbers listed therein are due to rounding.
[1] The type of ponds made reference to AFCD data.
[2] Peak monthly bird count data during dry season over 2021-22 from HKBWS, or EIA Survey Data for ponds with no data available from HKBWS.
[3] Existing brownfield / filled ponds in RDZ of the Project (50% reduction in bird density) to be converted to Ecologically Enhanced Fishponds.

Loss in Functional Value
in Impacted Area
-28.6



Cattle Egret
牛背鷺

Gain in functional value
+ 31.3

Positive Overall Changes
in Functional Value
+ 2.7

Non-fish-eating avifauna species will also be benefited by the 35ha Enhanced Freshwater Wetland Habitats

Functional value in SPS WCP after Enhancement

Pond Status	Peak Density (birds/ha)*	Area (ha)	Projected Peak Abundance*	Total Functional Value*
Ecologically Enhanced Fishponds [1]	0.212	248.6	52.7	53.1
Ecologically Enhanced Fishponds in RDZ [2]	0.073	5.1	0.4	

- * Any discrepancies between total and sums of individual numbers listed therein are due to rounding.
[1] Restoring all ponds to active pond (i.e. density = 0.146); with 45% enhancement by conversion into ecologically enhanced fishpond (0.146 x 1.45 = 0.212).
[2] Existing brownfield / filled ponds in RDZ to be converted to Ecologically Enhanced Fishponds (density of active fishpond is adopted, i.e. 0.146); with 50% reduction in bird density for active pond within RDZ (0.146 x 0.5 = 0.073)

NO.	DATE	DESCRIPTION	CHK.

NO.	DATE	DESCRIPTION	CHKD.

Sample Calculations on Change in Functional Value

Existing functional value in SPS WCP

Land Status [1]	Peak Density (birds/ha) [2]	Area (ha)	Peak Abundance*	Functional Value*
Active/inactive pond (to be converted to Ecologically Enhanced Fishpond)	0.362	148.6	53.7	53.7
Abandoned / filled / wired ponds (to be converted to Ecologically Enhanced Fishpond)	0	100.0	0	
Existing brownfield / filled ponds in RDZ (to be converted to Ecologically Enhanced Fishpond) [3]	0	5.1	0	

* Any discrepancies between total and sums of individual numbers listed therein are due to rounding.

[1] The type of ponds made reference to AFCD data.

[2] Peak monthly bird count data during dry season-over 2021-22 from HKBWS, or EIA Survey Data for ponds with no data available from HKBWS.

[3] Existing brownfield / filled ponds in RDZ of the Project (50% reduction in bird density) to be converted to Ecologically Enhanced Fishponds.



Eurasian Teal

綠翅鴨

Gain in functional value

+77.5

Positive Overall Changes
in Functional Value

+50.2

Loss in Functional Value
in Impacted Area

-27.3

Non-fish-eating avifauna species will also be benefited by the 35ha Enhanced Freshwater Wetland Habitats

Sensitivity Analysis for Black-faced Spoonbill



Black-faced
Spoonbill
黑臉琵鷺

- No Black-faced Spoonbill recorded in **abandoned ponds** with reference to monthly waterbird count data during dry season 2021-2022 (submitted by HKBWS to AFCD, under Mai Po Inner Deep Bay Ramsar Site Waterbird Monitoring Programme)
- Based on review of 5-year bird count data (2017/18 – 2021/22), peak count of only **2 Black-faced Spoonbill** had been recorded in the abandoned ponds

Sensitivity Analysis to include 2 Black-faced Spoonbill in abandoned ponds :

Existing functional value in SPS WCP

Land Status ⁽¹⁾	Area (ha)	Peak Density (birds/ha)	Functional Value*
Active/inactive pond (to be converted to EEF)	148.6	0.423 ⁽²⁾	64.9
Abandoned / filled / wired ponds (to be converted to EEF)	100.0	0.020 [#]	
Existing brownfield / filled ponds in RDZ (to be converted to EEF) ⁽³⁾	5.1	0	

Assessment in EIA Report Sensitivity Analysis	Loss in Functional Value in Impacted Area	Enhancement Area in the SPS WCP		Overall Changes in Functional Value
	Existing Functional Value	Functional Value after Enhancement	Gain in Functional Value After Enhancement	
	62.9	153.6	↑ 90.7	+ 76.2
	64.9		↑ 88.7	+ 74.2

Peak density of Black-faced Spoonbill recorded in the ponds classified as abandoned ponds by AFCD (2021) in the past 5 years (2017/18 – 2021/22) adopted for sensitivity analysis.

* Any discrepancies between total and sums of individual numbers listed therein are due to rounding.

(1) The type of ponds made reference to AFCD data.

(2) Peak monthly bird count data during dry season over 2021-22 from HKBWS, or EIA Survey Data for ponds with no data available from HKBWS.

(3) Existing brownfield / filled ponds in RDZ of the Project (50% reduction in bird density) to be converted to Ecologically Enhanced Fishponds.

已荒置魚塘
Abandoned Pond



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1. PROJECT BACKGROUND

1.1 Project Background and Summary of Ecological Impacts and Mitigation Requirements

1.1.1 San Tin/Lok Ma Chau Development Node (hereafter referred to as the Project) has taken forward the San Tin Technopole initiative and conducted the statutory Environmental Impact Assessment (EIA).

1.1.2 As detailed in Section 10.11 of the EIA Report, about 89 ha of the largely contiguous area of ponds in the northern portion, which support particularly high density and abundance of avifauna species, would be permanently lost under the development. Outside the Project boundary, a further 32.39 ha and 30.25 ha of pond habitats along the Exclusion Zone (EZ) and the Reduced Density Zone (RDZ) respectively would be indirectly impacted by the development. To compensate for the direct loss of the contiguous pond habitat and indirect disturbance impact to the associated wildlife especially the disturbance sensitive avifauna species in the northern portion, enhanced wetlands in the form of ecologically enhanced fishponds (EEF) at the proposed Sam Po Shue Wetland Conservation Park (SPS WCP) described in **Section 1.2** shall be established. Enhancing the ecological function and capacity of these ponds would compensate for the loss or reduction of functional value (i.e., the abundance of wildlife species that the ponds are able to support) resulting from the Project. These EEF would comprise existing pond habitats, and ponds converted from existing brownfield or wasteland areas. The ponds shall be enhanced with various features to increase abundance of wildlife they are able to support, thereby compensating for the loss of the functional value by accommodating a higher abundance of wildlife.

1.1.3 Aside from the contiguous pond habitat as described in **Section 1.1.2**, other wetland habitats (including scattered ponds in the southern portion, mitigation wetland, marsh/reed, watercourse, seasonally wet grassland, and wet agricultural land) were recorded within the Project site that would be subject to direct loss (including permanent loss upon site formation, and temporary loss that would be reinstated/revitalised). Some of these wetland habitats were also recorded along the EZ and RDZ under the Project which would be subject to indirect impact from the Project. Ecological values of these wetland habitats range from “low” to “moderate”. Under the current wetland compensation strategy, “enhanced freshwater wetland (EFW) habitats” shall be established to compensate for impacts on these other wetland habitats.

1.2 Sam Po Shue Wetland Conservation Park

1.2.1 As areas within the Project site will be mostly taken up for development, it would be infeasible to include compensation areas on-site (within Project site) due to the large area requirement for habitat compensation. Compensation areas are recommended to be as close to the Project Site as possible, at strategic areas to enhance connectivity and environmental capacity of the proposed compensation areas.

1.2.2 The Government will develop the SPS WCP with a proposed area of approximately 338 ha, serving dual purposes. First, it allows the Government to enhance the overall ecological value, biodiversity and connectivity in the Deep Bay area through proactive conservation and management. Secondly, it will enhance the ecological function and capacity of 288 ha of wetlands with active conservation management and enhance the fisheries resources of 40 ha of fishponds with modernised aquaculture, to compensate for the loss in wetland habitats and fisheries resources arising from the development of San Tin Technopole and to achieve no-net-loss in ecological function and capacity of the wetlands concerned. The approximate location for wetland and fisheries enhancement within the SPS WCP is shown in **Figure 1.1**. Subject to the design of SPS WCP, the enhancement location will be supplemented in the later version of this Habitat Creation and Management Plan (HCMP).

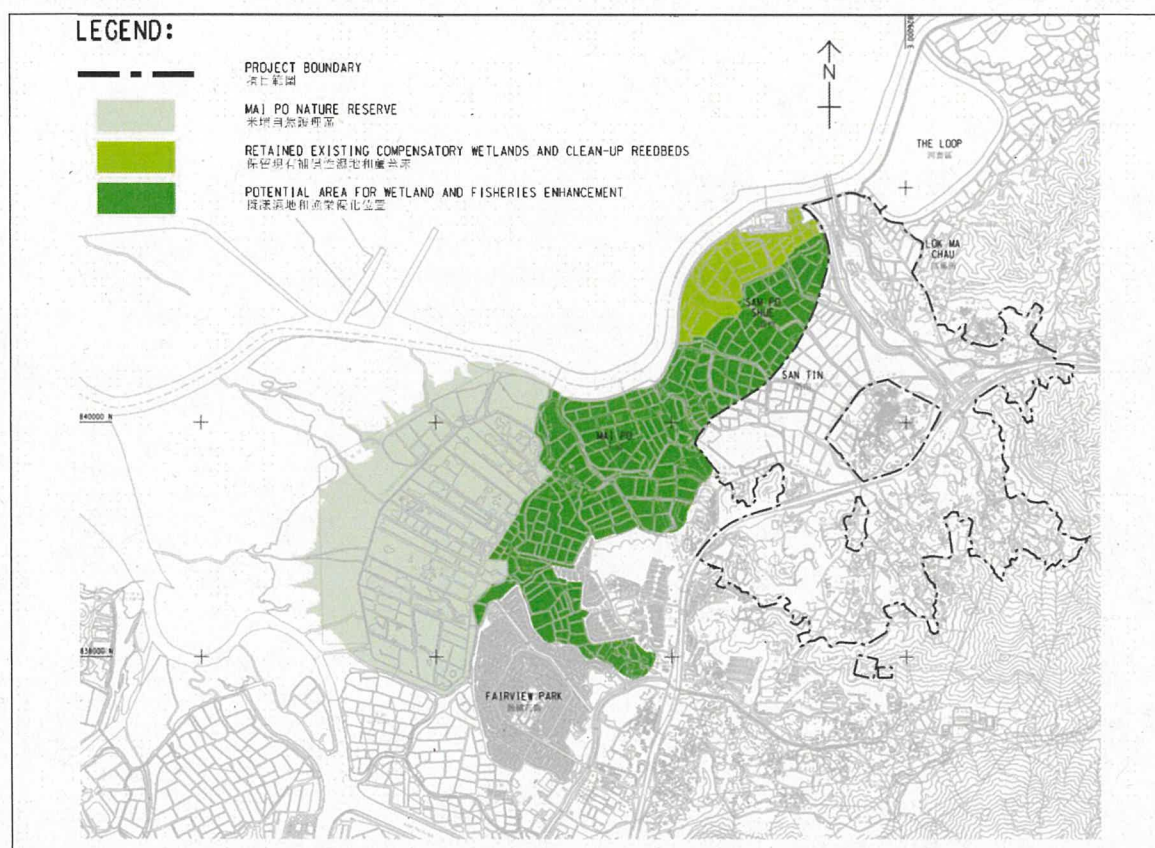


Figure 1.1 Approximate Location for Wetland and Fisheries Enhancement within the SPS WCP

1.3 Site Location

- 1.3.1 The area to be delineated as the SPS WCP is bounded by Shenzhen River and the Lok Ma Chau (LMC) Spur Line Ecological Enhancement Area (LMC EEA) to the north, Mai Po Nature Reserve to the west and various urban developments to the southwest.
- 1.3.2 The San Tin Technopole will be located to the east and southeast of the SPS WCP. An “eco-interface” of approximately 35 m wide is proposed along the northwest boundary of the San Tin Technopole, between the Project area and the wider pond habitats in Sam Po Shue. The “eco-interface” would be established in the form of a landscape buffer via landscape planting, comprising native tree species, shrub mix and riparian vegetation, and incorporating a gentle slope interface, with an aim to minimise disturbance from Project area by providing a buffer between the development and the adjacent wetland habitats and associated fauna.
- 1.3.3 The eastern boundary of the SPS WCP would run adjacent to the San Tin Eastern Main Drainage Channel (STEMDC), which would be revitalised under the Project. Another “eco-interface” with a width of about 20m is also proposed along the east of STEMDC, creating a buffer between the “OU(I&T)” land use and the revitalised STEMDC.

1.4 General Site Description

- 1.4.1 The area to be delineated as the SPS WCP is currently dominated by fishponds. Within this larger area, there are patches of inactive and abandoned ponds, particularly in the southwest of SPS WCP between Fairview Park and Palm Springs. Other land uses in the delineated area include patches of filled ponds/brownfield type development, rivers/nullahs (including the San Tin Western Main Drainage Channel (STWMDC)) and village-type developments.

1.5 Habitat Evaluation

- 1.5.1 In addition to that covered in the EIA Report, the habitat evaluations will be reviewed and supplemented in later version of the HCMP based on the latest available information.

1.6 Species of Conservation Importance

- 1.6.1 In addition to that covered in the EIA Report, the species of conservation importance will be reviewed and supplemented in later version of the HCMP based on the latest available information.

1.7 Wetland Enhancement Measures

- 1.7.1 The EIA Report has recommended implementation of wetland enhancement measures with a view to enhancing the overall ecological value of wetland habitats in the Deep Bay area, as detailed in Section 10.11.3.39 to 10.11.3.47 of the EIA Report, prior to the commencement of pond filling works under the Project.
- 1.7.2 The proposed wetland enhancement measures include wetland enhancement measures at Mai Po (desilting of tidal channel and clearance of exotic mangrove (*Sonneratia* spp.)), and interim wetland enhancement measures for identified ponds in the Inner Deep Bay area (restoration of abandoned ponds and arrangement of active management including fish stocking for suitable ponds).
- 1.7.3 In respect of the wetland enhancement measures at Mai Po (desilting of tidal channel and clearance of exotic mangrove (*Sonneratia* spp.)), a work plan, setting out the details, timeframe and requirement/frequency of repetition for the enhancement works, will be prepared in consultation with AFCD and submitted to EPD for approval at least 3 months before the commencement of the proposed wetland enhancement works.
- 1.7.4 In respect of the interim wetland enhancement measures (restoration of abandoned ponds and arrangement of active management including fish stocking for suitable ponds), an Interim Wetland Enhancement Plan, setting out the implementation details will be prepared in consultation with AFCD and submitted to EPD for approval at least 3 months before the commencement of the interim wetland enhancement works.

2. OBJECTIVES OF THE HABITAT CREATION AND MANAGEMENT PLAN

2.1 Objectives of the Habitat Creation and Management Plan

- 2.1.1 This HCMP aims to provide specifications on the management and monitoring requirements for the enhanced wetland habitats within the SPS WCP and to define the long-term management and monitoring requirements for these habitats in respect of wetland compensation for the Project, in order to achieve no-net-loss in ecological function and capacity of the wetlands (including fishponds) concerned under the Project. The recommendations and specifications given in this document will be incorporated as appropriate into the scope of works for forthcoming contracts for implementation of the SPS WCP. The wetland enhancement measures which fall outside SPS WCP are not under the scope of this HCMP.
- 2.1.2 The implementation details of the enhanced wetland, the associated management and monitoring requirements (e.g. monitoring location, frequency and parameters) shall be provided in the later version of the HCMP. The ecological monitoring shall include monitoring of the abundance of the target indicator waterbird species (i.e., Black-faced Spoonbill, Great Cormorant, Great Egret, Grey Heron) at representative locations within the enhancement area, as well as other target species, habitat conditions and relevant environmental data (Section 3 refers). The ecological monitoring shall be conducted before construction phase to reconfirm the baseline conditions in impacted and enhancement areas; and regularly during and upon the establishment of the enhanced wetland habitats within the SPS WCP.

3. TARGET HABITATS / SPECIES

3.1 Mitigation Strategy under the EIA Report

- 3.1.1 The Government will enhance the ecological function and capacity of 288 ha of wetlands by establishing the SPS WCP with active conservation management to compensate for the loss in wetland habitats arising from the development of San Tin Technopole and to achieve no-net-loss in ecological function and capacity of the wetlands (including fishponds) concerned.
- 3.1.2 Among the 288 ha, there will be 253 ha of ecologically enhanced fishponds (EEF) compensating for pond habitat loss, and 35 ha of enhanced freshwater wetland (EFW) habitat

compensating for other freshwater wetland habitat loss. The layout of the habitats, management zoning, and supporting infrastructure will be supplemented in the later version of the HCMP.

3.2 Key Target Species

- 3.2.1 To estimate the compensation requirement for pond habitats, four larger wetland avifauna species (Black-faced Spoonbill (*Platalea minor*), Great Cormorant (*Phalacrocorax carbo*), Great Egret (*Ardea alba*), Grey Heron (*Ardea cinerea*)) were used as indicators in the EIA Report, as they are relatively disturbance sensitive and are considered as key species using the pond habitats (e.g., KCRC, 2002). It is assumed that if mitigation targets can be achieved for these larger and disturbance sensitive species, similar or higher levels of enhancement can be achieved for other less sensitive wildlife species.
- 3.2.2 In addition to the four indicator species, other target species for habitat enhancement within the SPS WCP shall also include other fish-eating/non-fish-eating avifauna and non-avifaunal species of conservation interest, which are relatively common in and/or restricted to the affected wetland habitats, impacted by the Project.
- 3.2.3 Target species for habitat enhancement shall include the four indicator species and other ardeids, ducks and grebes (e.g. Eurasian Teal and Little Grebe), shorebirds and gulls (e.g. Little Ringed Plover and Black-headed Gull), freshwater wetland and other wetland-associated avifauna (e.g. Black-winged Stilt and Red-billed Starling), raptors (e.g. Greater Spotted Eagle), Eurasian Otter and other non-avifaunal species of conservation importance such as herpetofauna (e.g. Chinese Bullfrog) and odonate (e.g. Scarlet Basker). The list of target species and the associated mitigation performance target will be supplemented in the later version of the HCMP.

3.3 Habitat Requirements for Target Species

- 3.3.1 An outline of habitat enhancement features for target species is given below:
- **Piscivorous Avifauna (including Indicator Species and other Ardeids):** EEF would provide larger pond sizes, shallower pond margins and generally lower levels of disturbance that would benefit larger piscivorous avifauna (e.g., Ardeids, Black-faced Spoonbill and Great Cormorant).
 - **Ducks and Grebes:** Areas of open water with shallow margins and deeper central areas (up to 1.5m) would be maintained in part of the EFW habitats area, providing suitable foraging habitat for wading birds, as well as attracting ducks (e.g., Eurasian Teal), grebes and other open water species (e.g., Little Grebe). The functional value of EEF for duck species would also increase due to larger pond sizes, shallower pond margins and more emergent/riparian vegetation, extended pond drain-downs and greater area of ponds drain-down at any one time, and generally lower levels of disturbance.
 - **Shorebirds and Gulls:** The functional value of EEF for shorebirds (e.g., Little Ringed Plover, Red-necked Stint) and gulls (e.g., Black-headed Gull) would increase due to larger pond sizes, shallower pond margins, extended pond drain-downs and greater area of ponds drain-down at any one time, and generally lower levels of disturbance.
 - **Freshwater Wetland Avifauna:** Shallow (100-300mm deep), permanently inundated areas within the EFW habitats would provide suitable habitat for Black-winged Stilt, rails, bitterns and wetland associated passerines. The EFW habitats would also include seasonal wetlands that become drier, open vegetated habitats in the dry season, providing suitable habitat for species such as Red-throated Pipit. The functional value of EEF for avifaunal species commonly associated with freshwater wetlands would also increase due to larger pond sizes, shallower pond margins and more emergent/riparian vegetation, and generally lower levels of disturbance.
 - **Other Wetland-associated Avifauna Species:** The functional value of EEF for other wetland-associated avifauna species (e.g., Collared Crow, Red-billed Starling) would increase due to larger pond sizes, shallower pond margins and more emergent/riparian vegetation, extended pond drain-downs and greater area of ponds drain-down at any one time, removal of bird-scaring devices, and generally lower levels of disturbance. These species would also be expected to make use of the 35ha of EFW habitats to be established in the proposed SPS WCP.

- **Raptors.** Greater Spotted Eagle and Imperial Eagle are both scarce winter visitors to Hong Kong. They would primarily benefit from habitat measures that would attract prey species (e.g., ducks), as well as generally lower levels of disturbance.
- **Eurasian Otters:** Although no Eurasian Otters were recorded from the Assessment Area during ecological surveys conducted for this Project, a recent publication (McMillan *et al.*, 2023) recorded spraints (otter scats) within the Assessment Area in 2018 and 2019, suggesting that the wetland habitats support a small population of Eurasian Otters. The functional value of EEF would increase for otters due to shallower pond margins, extended pond drain-downs and greater area of ponds drawn-down at any one time, and generally lower levels of disturbance. Otters would also utilise EFW habitats, including open waters, permanent and temporary wetlands and drainage channels. In particular patches of dense emergent vegetation and well vegetated channels would provide potential refuge areas for these species. Otters would also benefit from the better control of feral dogs in the enhancement area, with such dogs known to cause mortality of otters in the Deep Bay area (e.g., KFBG, 2018). Specific enhancement measures for otters (e.g., provision of artificial holts and floating platforms) can also be considered as part of the detailed planning of the proposed SPS WCP.
- **Other Non-Avifaunal Species of Conservation Interest:** Similar to Eurasian Otter, other terrestrial fauna would benefit from lower levels of disturbance and improved habitat quality. In particular, dragonflies (e.g., Scarlet Basker) and amphibians (e.g., Chinese Bullfrog) would benefit from improved water quality (resulting from better water quality monitoring and feeding regime that could minimise biodegradation of excess feed in EEF), shallower margins and increased riparian/emergent vegetation. These species would also be expected to make use of EFW.

3.4 Habitat Condition Targets

Ecologically Enhanced Fishponds (EEF)

3.4.1 To compensate for the direct loss of the contiguous pond habitat and indirect disturbance impact to the associated wildlife especially the disturbance sensitive bird species in the northern portion of San Tin Technopole, 253ha of enhanced wetland in the form of EEF shall be established. Enhancing the ecological function and capacity of these ponds would compensate for the loss or reduction of functional value (i.e., the abundance of wildlife species that the ponds are able to support) resulting from the Project. These EEF would comprise existing pond habitats, and ponds converted from existing brownfield or wasteland areas. The ponds shall be enhanced with various features to increase abundance of wildlife they are able to support, thereby compensating for the loss of the functional value by accommodating a higher abundance of wildlife.

3.4.2 Enhancement measures for EEF will include:

- Creating larger ponds with enhanced connectivity through consolidation;
- Physical modification of pond habitats to increase environmental carrying capacity;
- Managing and sequencing pond drain down across multiple ponds in the dry season to maximize feeding opportunities for avifauna and other wildlife;
- Removal of existing bird scaring devices at actively managed ponds; and
- Stocking ponds with suitable prey items (i.e., trash-fish) for target wildlife species (may be considered as an enhancement measure to achieve higher enhancement value).

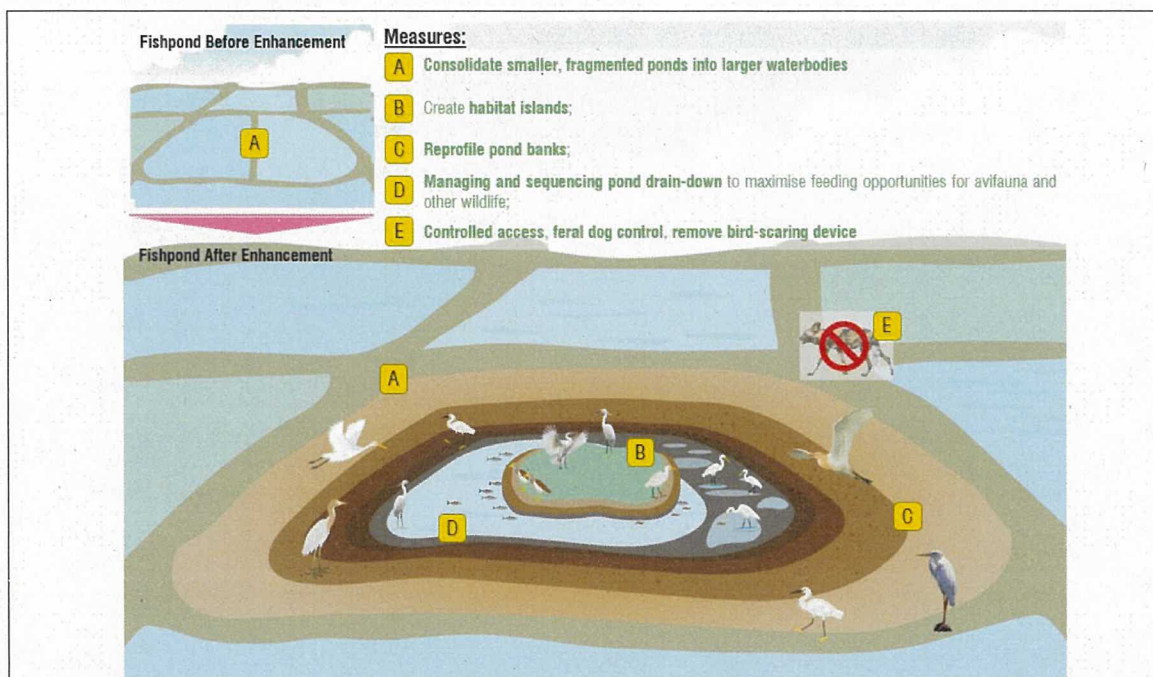


Figure 3.1 Recommended Measures for Ecologically Enhanced Fishponds

3.4.3 The details of the enhancement measures in EEF would be subject to detailed design of the SPS WCP.

Enhanced Freshwater Wetlands (EFW)

3.4.4 To compensate for direct and indirect impacts to other freshwater wetland habitats, about 35 ha of EFW habitats shall be provided within the proposed SPS WCP. The EFW habitats would comprise a mix of open water, marshes/reedbeds, seasonal wetlands and drainage channels.

3.4.5 The indirect impact arisen from the development of San Tin Technopole will result in lower densities of disturbance sensitive of wildlife, in particular avifauna species, in the Exclusion Zones (EZ) and Reduced Density Zones (RDZ) along the Project. As the species recorded in marsh/reed habitats tend to be less disturbance-sensitive than species utilizing more open wetland habitats, the proposed EFW habitats would be built along these EZ and RDZ, where the remaining areas of the proposed SPS WCP (outside the EZ and RDZ) can be maximised for EEF.

3.4.6 The EFW habitat will include:

- Shallow (100-300mm deep), permanently inundated areas (including areas with dense vegetation) that would provide habitat for rails, bitterns and wetland associated passerines, as well as dragonflies and herpetofauna. The dense vegetation will also provide additional screening and buffer for more open wetland habitats to the north.
- Areas of open water with shallow margins and deeper central areas (up to 1.5m) would be maintained to provide suitable foraging habitat for wading birds, as well as attract ducks, grebes and other open water species.
- Existing channels can be enhanced as well as additional channels and ditches provided to compensate for impacts to watercourses.
- Some areas could be maintained as seasonal wetlands, which would be inundated only during the wet season.

3.4.7 Native wetland plants species (such as *Phragmites* spp. and *Fimbristylis* spp.) could be used in vegetated areas of the enhanced freshwater wetland habitats.

- 3.4.8 Public access to enhanced habitats in the SPS WCP shall be controlled to reduce disturbance from human activities.
- 3.4.9 Aside from fishponds, Eurasian Otters would potentially utilise various freshwater wetland habitats created within the SPS WCP including open waters, permanent and temporary wetlands and drainage channels. In particular, patches of dense emergent vegetation and well vegetated channels would provide potential refuge areas for these species. Specific enhancement measures for otters (e.g., provision of artificial holts and floating platforms) can also be considered as part of the detailed planning of the SPS WCP.
- 3.4.10 The details of the enhancement measures in EFW would be subject to detailed design of the SPS WCP.
- 3.4.11 The specific habitat targets and the associated mitigation performance target will be supplemented in the later version of the HCMP.

Wildlife Corridors for non-flying mammals including Eurasian Otters

- 3.4.12 Wildlife corridors have been proposed in both the northern and southern portions of the Project area as detailed in Section 10.11.11 and Figures 10.10A to 10.10C of the EIA report to facilitate movement of non-flying mammals such as Eurasian Otters.
- 3.4.13 For the northern portion, the wildlife corridors will be provided in the form of underpasses (across Ha Wan Tsuen East Road and San Sham Road) and aboveground corridors within the AFCD Fisheries Research Centre adjacent to the Lok Ma Chau Meander, as well as adjacent to the STEMDC to facilitate free movement of Eurasian Otters across Lok Ma Chau, Sam Po Shue and the Inner Deep Bay area. The actual configuration (i.e. detailed alignment), design (e.g. water features and planting) and physical parameters (e.g. width) of the wildlife corridors will be subject to detailed design.
- 3.4.14 A detailed Design Plan for Establishment of Wildlife Corridor and related measures will be prepared in consultation with AFCD and submitted to EPD for approval before commencement of construction of the Project.

Bird Flight Corridor

- 3.4.15 A 300m-wide bird flight corridor between the Lok Ma Chau Meander and Sam Po Shue in east-west direction will be preserved (covering majority of the existing surveyed and recorded flight paths) by designation of non-building areas (NBA) at I&T sites and imposing building height control of +15 mPD for Government facilities. The building height adjacent to the 300m-wide bird flight corridor would also be restricted to +35 mPD to further minimise disturbance impact and encourage flight usage (Sections 2.9 and 10.11.6, Figures 10.6C and 10.6D of the EIA report refer).
- 3.4.16 The width of the proposed flight corridor has made reference to the flight corridor at further eastern direction, the surrounding topography and building structures (e.g. the Lok Ma Chau Spurline viaduct). As a reference, the flight corridor at south of the Loop (the combined width of the Ecological Area within the Loop, LMC Meander, and the adjacent fishponds) is about 300 m wide.
- 3.4.17 A 70m-wide NBA along the flight path connecting the Mai Po Lung Village (MPLV) Egretty to the wetland habitats on the north as well as a 35m-wide NBA as “eco-interface” along the northwest of the Project boundary will be provided to preserve flight paths recorded at the MPLV Egretty and Mai Po Village (MPV) Egretty respectively. A landscaped area with planting of trees and native/suitable vegetation will be provided along the NBA to minimise disturbance from the development.
- 3.4.18 Bird-friendly design (e.g. use of low reflective materials and appropriate architectural features) will be adopted for buildings adjacent to the 300m-wide bird flight corridor, the 70 m-wide flight path and the MPLV Egretty to minimise bird collision.

Egrettries and Night Roosts

- 3.4.19 An “Open Space” zoning is proposed in the Revised Recommended Outline Development Plan to retain and protect the core area of the MPLV Egretty; and the development will not encroach onto the MPV Egretty which is located to the west of the Project. Enhancement measures such as preservation of trees currently within the core area of the MPLV Egretty,

provision of water bodies for wetland creation and planting of mature trees (with native species that are currently used as egretty substratum) adjacent to the water bodies will be incorporated in the detailed design of the “Open Space” to enhance usage and connectivity of the MPLV Egretty.

3.4.20 During the construction stage, stringent seasonal control of construction activities during breeding period within 100 m buffer area of the egrettries will be implemented to minimise construction disturbance on the MPLV and MPV Egrettries.

3.4.21 To minimise impact due to direct loss of two overwintering night roosts (Ha Wan Tsuen Night Roost and San Tin Open Storage Area Night Roost), roosting areas comprising mature individuals of native tree species that are currently used as a roosting substratum would be re-provisioned at suitable locations for both night roosts before their removal, and during the construction stage, the construction activities and tree felling for both roosting sites would only be allowed in wet season (April - September).

4. DESIGN AND IMPLEMENTATION TO ENHANCE ECOLOGICAL FUNCTIONS

4.1 Design Consideration

4.1.1 The HCMP will address various constraints posed by the location, existing environment and future management requirements of the proposed enhanced wetlands. The outline of design consideration is given below and the details will be supplemented in the later version of the HCMP.

- **Engineering** – the key engineering consideration for habitat creation would be enabling the close control of water levels across different wetland habitat types.
- **Hydrology/Drainage** – it is expected that water at wetlands in the SPS WCP will largely be supplied by rainfall. Given the seasonality of rainfall in Hong Kong, consideration of water supply in the dry season, as well as flood resilience in the wet season will be evaluated in the HCMP. The HCMP shall also need to consider drainage inflows to the SPS WCP from the south, in particular in relation to the STWMDC, as well as outflows to Shenzhen River/Shan Pui River to the North/West.
- **Soils** – While soils in the SPS WCP are generally impermeable clays suitable for wetland creation, the requirement for any additional soil lining should be reviewed and recommended in the HCMP. In addition, the influence of soils on wetland water pH shall need to be addressed.
- **Vegetation** – Emergent vegetation would be allowed to be established within the pond areas of EEF, while different microhabitats (such as reedbed, permanent marsh, seasonal marsh and open water) would be established within the EFW habitats and planted with appropriate species. These microhabitats will be further reviewed and recommended in the later version of the HCMP.
- **Access** – The SPS WCP area is currently accessible largely by dirt roads constructed directly on pond bunds. The preliminary access planning and control for the SPS WCP during construction and operational phase should be recommended in the later version of the HCMP.
- **Utilities** – Much of the SPS WCP area currently has no infrastructure for potable water, electricity, wastewater, or telecommunication. The requirements for utilities in different parts of the SPS WCP to support habitat creation and management will be reviewed in the later version of the HCMP.

4.2 Implementation Methods

4.2.1 The Government aims to start the development of SPS WCP in around 2026/2027 for completion by 2039 or earlier to tie in with the full operation of San Tin Technopole.

4.2.2 The implementation methods will be formulated in the later version of the HCMP for the proposed enhanced wetlands based on the design considerations outlined in **Section 4.1.1** and the specific enhancement measures set out in **Section 3.4**, subject to the design of the SPS WCP.

5. ACTIVE MANAGEMENT STRATEGY

5.1 Inter-departmental Working Group on Wetland Enhancement

5.1.1 A working group will be formed between CEDD (as San Tin Technopole's works agent) and AFCD (as SPS WCP's sponsoring department) to monitor the effectiveness of the enhancement measures and coordinate the progress of pond filling under the Project and SPS WCP implementation amongst others.

5.1.2 The working group shall consult and regularly report to the EPD on the environmental monitoring results and the implementation of mitigation measures set out in the later version of the HCMP. Relevant stakeholders such as the Advisory Council on the Environment will be involved as appropriate. Further enhancement measures shall be implemented under the coordination of the working group, where necessary, such as when the proposed ecological function enhancement measures bring lower abundance and/or density of target species than the mitigation performance targets proposed in **Section 3** of the HCMP. The intended follow-up actions associated with the ecological monitoring shall be provided in detail in the later version of the HCMP (see **Section 7** below).

5.2 Environmental Committee

5.2.1 An Environmental Committee will also be established to advise the working group on the implementation and monitoring of the proposed ecological mitigation/enhancement measures of the Project, including wetland enhancement and monitoring works at the SPS WCP, according to the EIA Report and the approved HCMP. The Committee shall have wide representation, including representatives of government departments as well as green groups and academics.

5.3 Management Actions

5.3.1 The primary management actions related to habitat compensation in the SPS WCP will relate to water management, trash-fish stocking (if adopted), vegetation control and general maintenance activities. Detailed management actions will be formulated in the later version of the HCMP.

6. MONITORING AND REPORTING REQUIREMENTS

6.1 Introduction

6.1.1 The primary focus of the monitoring works is to ensure habitats receive sufficient mitigation for impacts resulting from the Project. The later version of the HCMP shall provide details of the ecological monitoring arrangements.

6.2 Monitoring Parameters

6.2.1 Monitoring shall focus on the target species outlined in **Section 3**. The monitoring approach would depend on the numbers of species present in the EEf/EFW. Species occurring in significant numbers shall be monitored, whereas presence/absence data shall be collected for species with scarce abundance (**Table 6.1** refers). Monitoring parameters will be further reviewed and detailed in the later version of the HCMP.

6.3 Baseline Monitoring

6.3.1 As suggested in **Section 2.1.2** above, 12-month target species surveys covering representative locations within the entire impacted and enhancement area shall be undertaken prior to commencement of pond filling under the Project to collect up-to-date baseline data that can be used as a reference for subsequent monitoring works.

6.3.2 Additional review of data across the entire Inner Deep Bay area will be conducted when necessary to understand broader changes in target species abundance that may result from external factors (i.e., changes to the habitats of migratory species outside Hong Kong).

6.4 Monitoring Programme

6.4.1 **Table 6.1** provides an outline monitoring programme for enhanced habitats (both EEf and EFW habitats) within the SPS WCP. The monitoring programme will be further reviewed and detailed in the later version of the HCMP.

Table 6.1 Outline Monitoring Programme

Parameter	Frequency	Methodology
Target Species	To be confirmed	Line-transect (avifauna, herpetofauna, odonate/insects) Visual inspection/deployment of camera traps (otters)
General avifauna abundance and distribution		Line-transect
Herpetofauna, mammals and odonate / insects		Line-transect
Freshwater invertebrate communities		Kick-sampling
Fish communities		Netting/direct observation
Habitats and Vegetation		Line-transect
Water quality and water levels		Laboratory analysis/water level gauge
Performance of specific habitat enhancement features (e.g., floating platforms, nestboxes).		Visual inspection/deployment of camera traps

6.5 Reporting

6.5.1 Regular reports will be prepared, detailing the results of monitoring data, management activities as well as any measures implemented in response to action or limit levels being triggered during the reporting period.

6.6 Staffing

6.6.1 Monitoring surveys should be conducted by qualified ecologists with at least 5 years relevant experience.

7. ACTION / LIMIT LEVELS AND EVENT / ACTION PLAN

7.1.1 The results of the ecological monitoring shall be compared with the baseline data (**Section 6.3** refers) and the following action level and limit level indicated in

7.1.2 **Table 7.1** on each reporting occasion as mentioned in **Section 6.5** above. Action and limit levels will be finalised in the later version of the HCMP with reference to the baseline ecological conditions. The triggering of action and limit levels will take into account the change in abundance of target species, including their natural fluctuation, and the triggering criteria will be formulated in later version of the HCMP.

Table 7.1 Event and Action Plan for Target Species

Event	Action
Action Level	- Check monitoring data; - Repeat data analysis to confirm findings; - Audit of habitat enhancement measures to ensure they are being implemented according to HCMP specifications; - Review relevant available local (e.g., AFCD/Hong Kong Bird Watching Society (HKBWS) Waterbird Counts) and overseas/Mainland data to understand if exceedance is due to natural variation or project related; - Identify potential source(s) of on-site/off-site impacts; - Prepare contingency plan for additional enhancement; - Notify EPD and AFCD for persistent exceedance of Action Level.
Limit Level	- Review the need to implement additional short-term (i.e., trash-fish stocking, pond drain-down regime) and/or long-term enhancement measures; - Implement contingency plan for additional enhancement as appropriate;

Event	Action
	- Actions to be undertaken in the event of exceedance of Action Level set out above; - Notify EPD and AFCD for exceedance of Limit Level.

8. OVERALL IMPLEMENTATION PROGRAMME

8.1 Interface Between San Tin Technopole and Sam Po Shue Wetland Conservation Park

8.1.1 The Government aims to start the development of SPS WCP in around 2026/2027 for completion by 2039 or earlier to tie in with the full operation of San Tin Technopole. A strategic feasibility study of the entire Wetland Conservation Parks System, which covers the proposed SPS WCP, is currently in progress under AFCD/CON/01/22 (Strategic Feasibility Study on the Development of Wetland Conservation Parks System under the Northern Metropolis Development Strategy). Upon completion of the aforesaid study, the Government will proceed with the investigation and design stages of the proposed SPS WCP.

8.1.2 As mentioned in **Section 3.4.2** above, a series of ecological enhancement measures for wetlands at the proposed SPS WCP will be implemented, such as increase in pond area and enhanced connectivity, managing and sequencing pond drain-down, controlling access to reduce disturbance from human activities and feral dogs, providing artificial holts and floating platforms as specific enhancement measures for Eurasian Otters, and stocking ponds with suitable prey items (i.e. trash-fish) for target wildlife species where necessary.

8.1.3 The tentative development programme of San Tin Technopole and the proposed SPS WCP is shown in **Figure 8.1**.

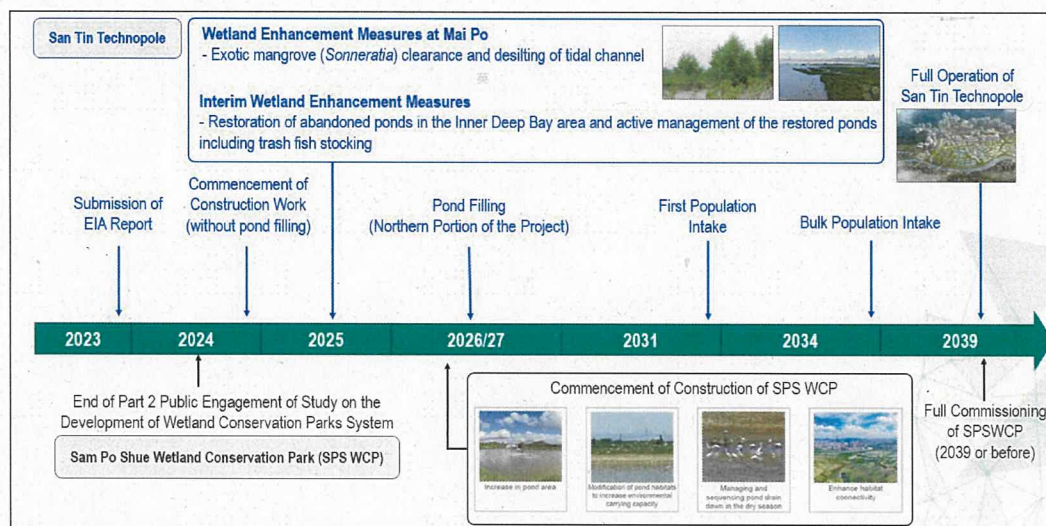


Figure 8.1 Tentative Development Programme of San Tin Technopole and Sam Po Shue Wetland Conservation Park

8.2 Financial Arrangement

8.2.1 Funding for the wetland enhancement works will be provided by the Government. It is planned that funding applications for pond filling works of San Tin Technopole and the development of the SPS WCP will be bundled together.

8.3 Overall Management

8.3.1 As detailed in **Sections 5.1** and **5.2**, an inter-departmental working group will be formed between CEDD (as San Tin Technopole's works agent) and AFCD (as SPS WCP's sponsoring department) to monitor the effectiveness of the enhancement measures and coordinate the progress of pond filling under the Project and SPS WCP implementation amongst others. An Environmental Committee will also be established to advise the working group on the implementation and monitoring of the proposed ecological

- mitigation/enhancement measures, including wetland enhancement measures and monitoring works at the SPS WCP, according to the EIA Report and HCMP approved by EPD.
- 8.3.2 CEDD will be responsible for the implementation and management of SPS WCP until the completion of works and establishment of the enhanced wetland habitats within SPS WCP. Future operation and maintenance of the established enhanced wetland habitats that are handed over to AFCD will be undertaken by AFCD.

-END-

10.11.3.24 Furthermore, removal of existing bird scaring devices were also proposed under the current wetland compensation strategy. It should be noted that the increase in functional value for abandoned ponds and wired ponds would be even higher, taking into consideration the lower existing functional value of these ponds as compared to typical active/inactive ponds.

10.11.3.25 With the assumed increase in functional value of 45% compared to typical active/inactive fishponds upon the implementation of ecological enhancement measures at the pond areas, the total compensation requirement for pond habitats is estimated to be 253 ha which would also achieve no-net-loss in ecological function and capacity of the wetlands concerned. The estimated compensation requirements are summarised in **Table 10.43** below.

Table 10.43 Estimated Overall Functional Value Change across Impacted Area and Potential Enhancement Area

Species	Impacted Area (151.7 ha)	Enhancement Area (253ha)			Overall change in functional value
	Decrease in functional value ⁽¹⁾	Existing functional value ⁽²⁾	Post-Project functional value ⁽³⁾	Increase in functional value	
Black-faced Spoonbill	-14.5	62.9	153.6	+90.7	+76.2
Grey Heron	-146.0	114.4	262.5	+148.0	+2.0
Great Egret	-44.0	61.2	106.1	+44.9 ⁽⁴⁾	+0.9
Great Cormorant	-187.7	292.8	678.6	+385.8	+198.1

Note:

(1) As estimated in **Table 10.42**.

(2) Based on 2021-22 peak dry-season survey data. Sample calculations of function value are presented in **Appendix 10.6**. Sensitivity analysis on usage of abandoned pond by Black-faced Spoonbill is provided in **Appendix 10.7**.

(3) Actual increase in functional value is higher than 45%, as the enhancement area includes pond with existing functional value lower than typical commercial ponds (i.e., abandoned ponds, ponds wired with bird-scaring devices, as well as some areas of brownfield/filled ponds that would be converted back to pond habitat).

(4) Great Egret is the determining factor for enhancement area requirement, as this species would have the smallest proportional increase in overall functional value.

10.11.3.26 Based on these estimated changes in functional values for indicator species, compensation could be provided through the provision of 253 ha of ecologically enhanced fishpond habitat within the proposed SPS WCP (**Figure 10.12A**). Additional enhancement measures, such as trash-fish stocking, will be derived as needed to further enhance the functional value of the ponds.

10.11.3.27 As stated in **Section 10.11.3.17**, the four indicator species used for estimating fishpond compensation requirements are key sensitive receivers that would be most affected by the Project due to their generally high usage of fishpond habitats as well as high disturbance sensitivity. It should also be noted that the ecological enhancement of fishpond habitats would also increase the ecological function and capacity of the enhancement area for other wildlife species of conservation importance recorded from fishpond habitats in the Project area (**Appendix 10.6** refers), as summarized below:

- **Ducks and Grebes:** The functional value of enhanced fishponds for duck species (e.g., Tufted Duck, Northern Pintail and Northern Shoveler) as well as Little Grebe would increase due to larger pond sizes, shallower pond margins and more emergent/riparian vegetation, and generally lower levels of disturbance. These species would also be expected to make use of the 35 ha of enhanced freshwater wetland habitats to be established in the proposed SPS WCP (as described in the following section).
- **Shorebirds:** The functional value of enhanced fishponds for shorebirds (e.g., Pacific Golden Plover, Kentish Plover, Little Ringed Plover, Little Stint, Long-toed Stint, Greater Sand Plover, Grey Plover, Eurasian Coot, Common Greenshank, Red-necked Stint, Sharp-tailed Sandpiper, Temminck's Stint, and Pied Avocet) would increase due to larger pond sizes, shallower pond margins, extended pond drain-downs and greater area of ponds drain-down at any one time, and generally lower levels of disturbance.

- **Other Non-Avifaunal Species of Conservation Interest:** Bats would benefit from lower levels of disturbance and increased potential roosting sites in the other freshwater wetland habitats through provision of natural (e.g., appropriate vegetation) and artificial (e.g., bat boxes) roosts. Similar to Eurasian Otter, other terrestrial mammals (e.g., Small Indian Civet) would benefit from lower levels of disturbance and reduced predation risk from feral dogs. Dragonflies (e.g., Scarlet Basker), amphibians (e.g., Spotted Narrow-mouthed Frog) and other aquatic organisms (e.g., Rose Bitterling) would benefit from good water quality (resulting from better water quality management in created freshwater wetland habitats as compared to existing marsh/reeds and water courses), shallower waters and increased riparian / emergent vegetation in the other freshwater wetland habitats. Dragonflies and some amphibian species would also benefit from the availability of seasonal wetlands due to reduced predation by fish.

10.11.3.32 Native wetland plants species could be used in vegetated areas of the enhanced freshwater wetland habitats, including the following species:

Table 10.45 Species to be Considered for Enhanced Freshwater Wetland Habitat

Open Water	
<i>Nymphaea spp.</i>	<i>Nelumbo nucifera</i>
Permanent Wetland	
<i>Vallisneria spiralis</i>	<i>Cyperus malaccensis</i>
<i>Ottelia alismoides</i>	<i>Sagittaria trifolia</i>
<i>Hydrilla verticillata</i>	<i>Ludwigia ascendens</i>
<i>Eleocharis dulcis</i>	
Reed bed	
<i>Phragmites australis</i>	
Seasonal Wetland	
<i>Bacopa monnieri</i>	<i>Sagittaria guyanensis</i>
<i>Sagittaria trifolia</i>	<i>Saururus chinensis</i>
<i>Polygonum barbatum</i>	<i>Eleocharis tetraquetra</i>
<i>Eleocharis equisetina</i>	<i>Polygonum hydropiper</i>
<i>Polygonum glabrum</i>	<i>Polygonum juncundum</i>
<i>Schoenoplectus mucronatus</i>	

10.11.3.33 The disturbance impact from the Project is anticipated to result in EZ and RDZ along the Project boundary, which is expected to support lower densities of disturbance sensitive of wildlife, in particular avifauna species. As the species recorded in marsh / reed habitats tend to be less disturbance-sensitive than species utilizing more open wetland habitats, the proposed “enhanced freshwater wetland habitats” could be considered along these EZ and RDZ, where the remaining areas of the proposed SPS WCP (outside the EZ and RDZ) can be maximised for ecologically enhanced fishponds.

10.11.3.34 Upon the establishment of the proposed SPS WCP, it could be able to accommodate the aforementioned enhanced wetland of about 288 ha (253 ha of “ecologically enhanced fishponds” and 35 ha of “enhanced freshwater wetland habitats”). The Government will enhance the ecological function and capacity of 288 ha of wetlands in the proposed SPS WCP with active conservation management to compensate for the loss in wetland habitats arising from the development of San Tin Technopole, which would create sufficient environmental capacity to support the compensation requirement of the Project.

Habitat Creation and Management Plan (HCMP)

10.11.3.35 A draft HCMP is set out in **Appendix 10.8**. The implementation details of the enhanced wetland, the associated management and monitoring requirements (e.g. monitoring location, frequency and parameters) will be provided in the subsequent HCMP. The HCMP should be submitted for approval from relevant Government departments (including AFCD and EPD), at least three months before the commencement of pond filling works.