Preliminary Biodiversity Action Plan

ESIA Addendum

PREPARED FOR

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東埔寨機場投資有限公司
Cambodia Airport Investment Co., Ltd

Cambodia Airport Investment Co., Ltd.

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Preliminary Biodiversity Action Plan

EIA Addendum

0730380

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ACRONYMS AND ABBREVIATIONS

Acronyms	Description
BAP	Biodiversity Action Plan
BMEP	Biodiversity Monitoring and Evaluation Plan
BOMP	Biodiversity Offset Management Plans
CAIC	The Cambodia Airport Investment Co., Ltd
CHA	Critical Habitat Assessment
CR	Critically Endangered
EAAA	Ecologically Appropriate Area of Analyses
EIA	Environmental Impact Assessment
EN	Endangered
EOO	Extent of Occurrence
ESIA	Environmental and Social Impact Assessment
HH	Habitat Hectare
HSE	Health, Safety, and Environment
IBA	Important Bird Area
IFC	The International Finance Corporation
IUCN	The International Union for Conservation of Nature
NG	Net Gain
NGO	Non-Governmental Organizations
NNL	No Net Loss

Acronyms	Description
NT	Near Threatened
OCIC	The Overseas Cambodia Investment Corporation
PS	Performance Standard
SSCA	The State Secretariat of Civil Aviation

1 INTRODUCTION

1.1 BACKGROUND

The Cambodia Airport Investment Co., Ltd ("CAIC" and/or "the Client") is a 90/10 joint venture between the Overseas Cambodia Investment Corporation ("OCIC" and/or "the Sponsor") and the Royal Government of Cambodia represented by the State Secretariat of Civil Aviation ("SSCA") which was formed to co-develop the new international airport in Phnom Penh, Cambodia. The Techo International Airport ("Project") is a $1.5 billion USD Project which is 64.1% completed as of January 2024 with an expected delivery of Q1 2025.

ERM Siam Company Limited (ERM) (referred to as "ERM" and/or "the Consultant") was commissioned by the Client to conduct an Environmental and Social Impact Assessment (ESIA) addendum on the Project area to comply with International Finance Corporation (IFC) standards. To comply with the IFC guideline, a Critical Habitat Assessment was undertaken, and critical habitat-triggered species were identified. IFC Performance Standards 6 (PS6) additionally request a Biodiversity Action Plan (BAP) for Projects that trigger critical habitat criteria 1–5. This report is a preliminary BAP because it does not thoroughly assess the feasibility of offset measuring strategies.

1.2 OBJECTIVES

Natural wetland habitat was identified as impacted habitat through the Project's activities at both the construction and operational phases. Furthermore, the Critical Habitat Assessment identified the Cambodian Tailorbird (*Orthotomus cambodianus*) as a restricted-range species that meets Criterion 2 of IFC PS 6. According to IFC PS6 paragraph 15, Projects that have an impact on natural habitat must achieve no net loss; additionally, if the Project triggers critical habitat 1 of 5 criteria, the Project is required to achieve net gain to offset for the impact on triggered species (IFC PS6 paragraph 18). This preliminary BAP outlines strategies to achieve no net loss for impact on natural habitat and achieve net gain for impact on critical habitat triggered species.

Offset strategies to achieve no net loss (NNL) and net gain (NG) were identified through desktop research and expert consultations without field survey to verify the feasibility of recommended location. Therefore, this preliminary BAP requires further feasibility studies to develop full BAP.

1.3 PROJECT LOCATION

The Project is located in Kandal Stung, Sa'ang District, Kandal Province and Bati District. Cambodia, approximately 20 km South of Phnom Penh City. The Project's EAAA is approximately 580.9 km^2. The Project site is a lowland area, ranging from 1.3 meters to 8 meters above sea level. During the wet season, the area floods. Villagers cultivate rice and fish during the dry season.

The Project's area (26.01 km^2) and main components are presented in ***Figure 1.1***.

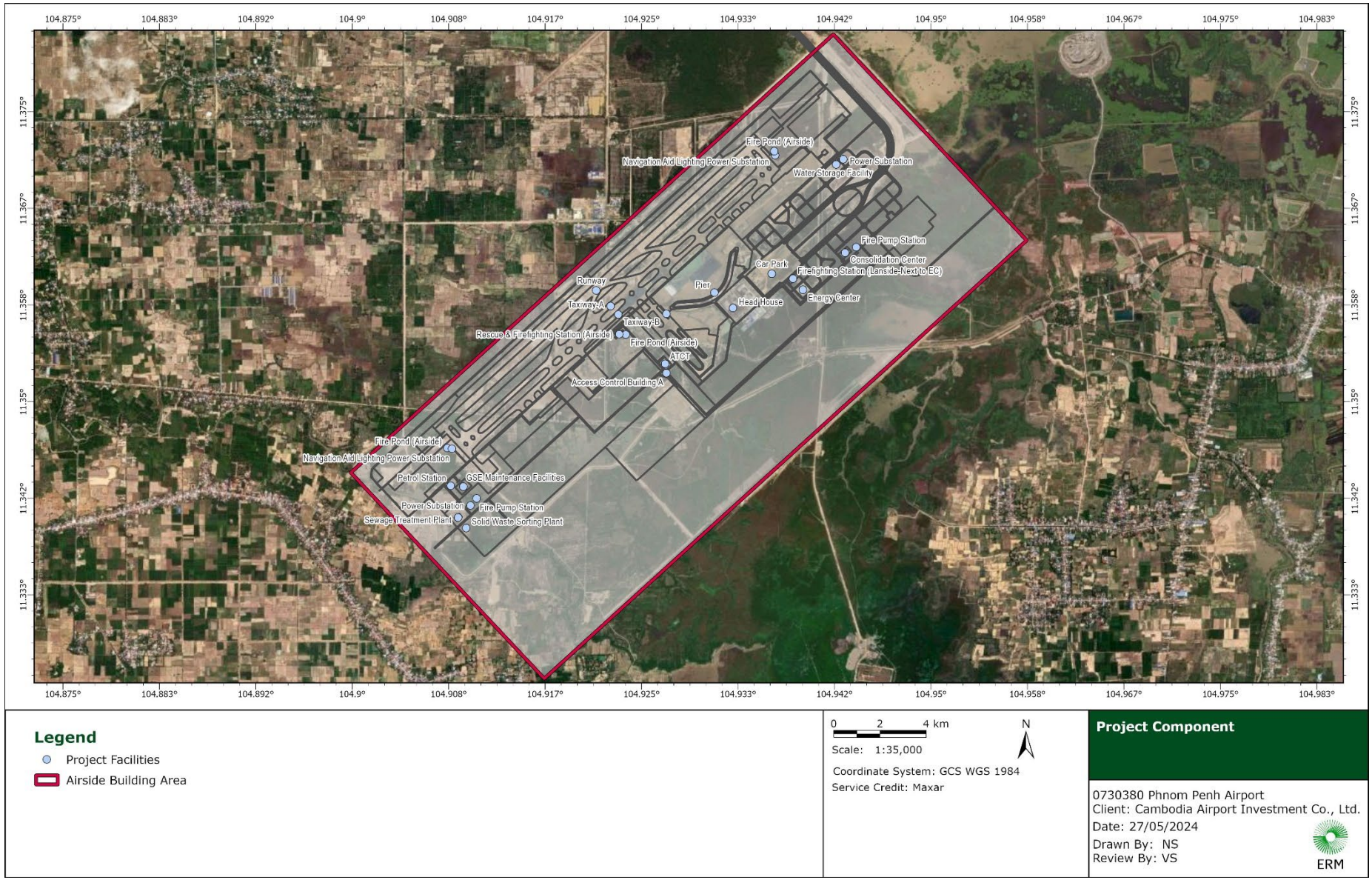


FIGURE 1.1 THE PROJECT'S AREA AND COMPONENTS

2 REGULATORY FRAMEWORK

The BAP has been undertaken with reference to the provisions of the requirements, standards, policies, laws, rules, guidelines, manuals, and international conventions and treaties as outlined in ***Chapter 3 of the EIA*** and the IFC Performance Standards.

2.1 IFC PERFORMANCE STANDARDS

IFC PS6 (Biodiversity Conservation and Sustainable Management of Living Natural Resources) states that in areas of natural habitat, mitigation measures will be designed to achieve no net loss of biodiversity where feasible. Appropriate actions include:

i. Avoiding impacts on biodiversity through the identification and protection of set-asides;

ii. Implementing measures to minimize habitat fragmentation, such as biological corridors;

iii. Restoring habitats during operations and/or after operations; and

iv. Implementing biodiversity offsets

In areas of critical habitat, the client will not implement any Project activities unless all of the following are demonstrated:

i. No other viable alternatives within the region exist for development of the Project on modified or natural habitats that are not critical;

ii. The Project does not lead to measurable adverse impacts on those biodiversity values for which the critical habitat was designated, and on the ecological processes supporting those biodiversity values;

iii. The Project does not lead to a net reduction in the global and/or national/regional population of any Critically Endangered or Endangered species over a reasonable period of time;

iv. A robust, appropriately designed, and long-term biodiversity monitoring and evaluation program is integrated into the client's management program.

PS6 states that if the Project is able to meet the abovementioned requirements, the Project's mitigation strategy will be described in a BAP and will be designed to achieve net gains of those biodiversity values for which the critical habitat was designated.

3 STAKEHOLDER CONSULTATION

Since the determination of mitigation approach and offset strategies requires professional expertise and judgment, expert stakeholders with relevant experience or knowledge on the region and/or its biodiversity values were consulted to support the mitigation approach and strategy evaluation.

The consultation activities aimed to understand priority mitigation and identify recommended offset location. Such activities included consultation meetings with local authorities of Kandal province (July 2019), result of this consultation stated in the EIA. Additionally, expert consultation mail with Cambodian Bird Guide Association (22nd June 2024) and online meetings with NatureLife Cambodia (1st July 2024) were conducted to understand wetland habitat of Lower Mekong region and ecology of Cambodian tailorbird.

The stakeholders (NGOs and experts) consulted are listed ***Table 3.1*** below, and details of the consultation provided can be found in Appendix A.

TABLE 3.1 LIST OF IDENTIFIED STAKEHOLDERS

No.	Name	Designation	Expertise	Contribution
1	Vorsak Bou	CEO of NatureLife Cambodia	Bird expertise	Zoom Meeting on 1 July 2024
2	Ding Li Yong	Regional Coordinator of BirdLife International	Bird expertise	Zoom Meeting on 1 July 2024
3	Orn (Johnny) Sambovannak	President & Co-founder of Cambodian Bird Guide Association	Bird expertise	Email consultation on 22 June 2024

Discussions with Vorsak and Ding Li Yong on offset location for Cambodian Tailorbird have been finalized, however the feasibility study focusing on suitable habitat is required to develop the final BAP and Biodiversity Offset Management Plans (BOMP). This study must be held as early in the process as possible.

4 BIODIVERSITY CONTEXT

4.1 ECOLOGICALLY APPROPRIATE AREA OF ANALYSES

A preliminary review of information on the region's ecology was carried out to define the Project's Ecologically Appropriate Area(s) of Analyses ("EAAA"), to determine the presence of each species or ecosystem that may qualify as critical habitat.

Delineating an EAAA requires consideration of: (i) the likely geographic area or extent of anticipated Project activities and impacts; (ii) the full extent of ecosystems that might be affected in any way; and (iii) any additional areas that have a functional role in supporting those ecosystems or their associated biodiversity (for example the limits of relevant river catchments or watersheds needed to support a wetland).

The presence of potentially critical habitat trigger species in the Project's EAAA were verified by baseline surveys. As a result, the wetland area has been taken into account when drawing the Project's EAAA. Furthermore, in order to account for the connection between two wetland areas, the EAAA limit is extended to encompass the southern wetland part. The EAAA boundary encompasses those two wetland areas by following the city's major route. The

boundaries to the north, south, and west were considered to serve as a physical barrier to prevent land mammals from moving along the road. In the meantime, the eastern boundary, which is close to the Bassac River, was considered to utilize the river as the boundary because the physical road does not serve as a barrier that would restrict the migration of fish and bird species. The Project's EAAA is illustrated in ***Figure 4.1***.

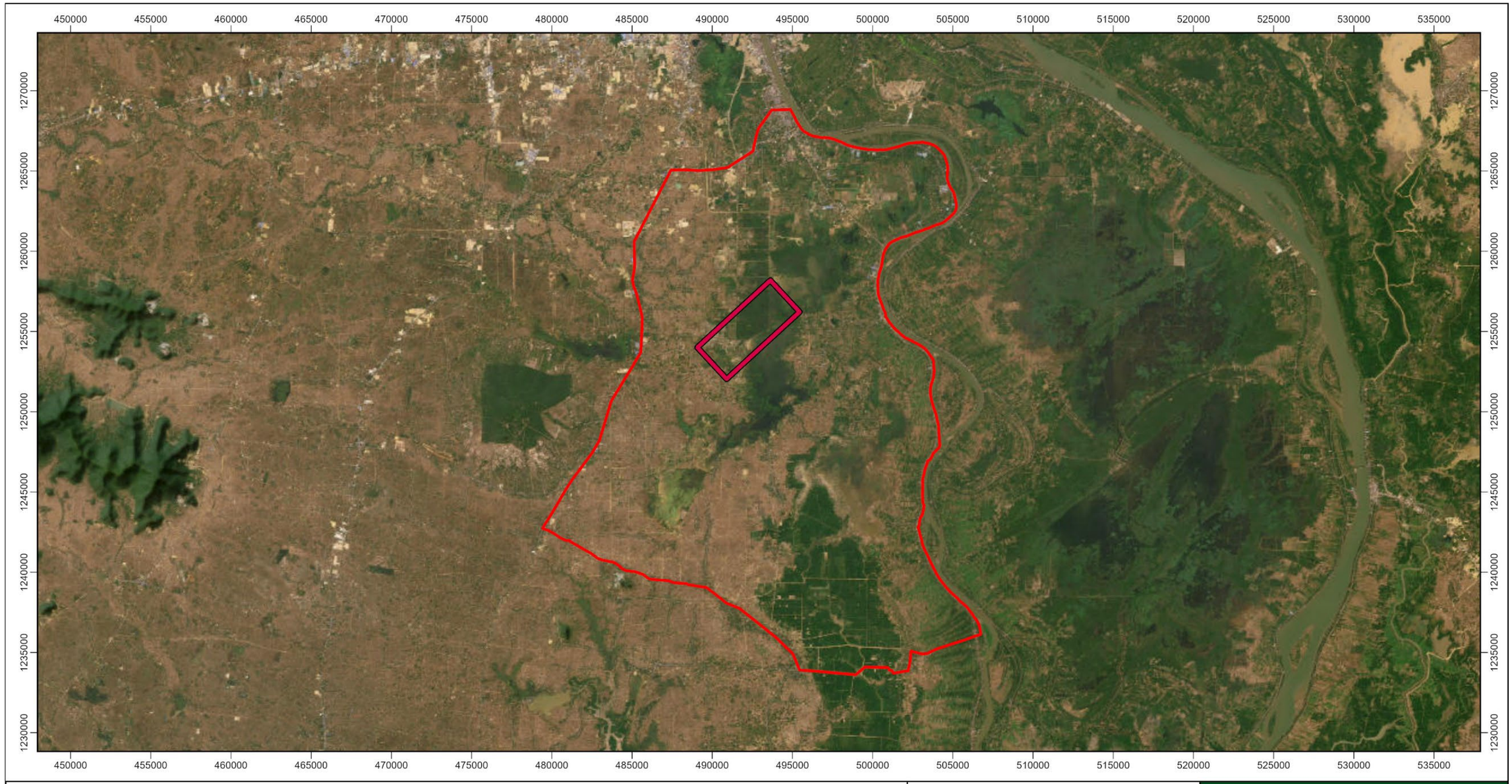


FIGURE 4.1 EAAA AND PROJECT BOUNDARY

4.2 SUMMARY OF THE CRITICAL HABITAT ASSESSMENT

In support of the Project's alignment with the applicable international standards, which is follow IFC's Performance Standards, a CHA was completed for the Project. The complete CHA is contained in ***ESIA addendum Critical Habitat Assessment Report***.

Biodiversity features identified as present within the EAAA were assessed against the five qualifying criteria for 'critical habitat' provided in the IFC PS6. Cambodian Tailorbird (*Orthotomus chaktomuk*) (NT) was assessed and identifies as trigger species for Critical habitat Criterion 2: habitat of significant importance to endemic and restricted-range species. The term "endemic or restricted-range species" refers to species with a limited extent of occurrence (EOO). Restricted-range species are defined as those with an EOO less than 50,000 km². This threshold has been set as the area that regularly supports ≥ 10% of the global population and ≥ 10 reproductive units of a species.

It is important to note that the requirements/thresholds for criteria 1, 3, 4 and 5 were not met.

4.3 SUMMARY OF IMPACTS

Impacts generated by the Project were classified as direct and indirect, considering both construction and operation phases. The details of the activities during the construction and operational phases are provided in the ***EIA Chapter 7.5***. In the Environmental Impact Assessment section of the ESIA Addendum provides a detailed discussion on conceptualized biodiversity impacts, related activities, and infrastructure. The majority of the Project footprint and area subject to earthwork within EAAA is modified habitat. ***Table 4.2*** below is presented the summary of natural and modified habitat surface. In total, 522.5 ha of natural habitat will be converted into modified habitat.

Apart from impact on habitat, ***Table 4.1*** below summarizes the potential impacts that could affect the Cambodian Tailorbird. The main direct impact is identified as habitat loss and disturbance. This is because the Cambodian Tailorbird relies heavily on the floodplain habitat, which is facing threats of loss.

TABLE 4.1 SUMMARY OF THE POTENTIAL IMPACTS ON CAMBODIAN TAILORBIRD

Project Phase	Potential Impacts
Construction phase	▪ Disturbance or loss of habitat ▪ Species disturbance and displacement
Operation phase	▪ Fauna disturbance by noise and light from the airport and other related human activity

TABLE 4.2 IMPACTED HABITAT (2016) FROM PROJECT FACILITIES

Project Components	Total Area of Disturbance (km²)	Natural Habitat				Modified Habitat	
		Wetland		Surface water		Agricultural land	
		Area (km²)	Percentage	Area (km²)	Percentage	Area (km²)	Percentage
Airport Area	20.62	5.19	25.15	0.92	4.48	14.51	70.37
Other Facilities	2.86	1.10	38.55	-	-	1.76	61.45
Runway and Taxi Way	2.41	1.37	56.85	-	-	1.04	43.15
Terminal	0.12	0.12	100.00	-	-	-	-
Total	26.01	7.78		0.92		17.31	

5 MITIGATION APPROACH FOR BIODIVERSITY MANAGEMENT

The protection of natural ecosystems and biodiversity is founded on the application of the mitigation hierarchy, which is intended to firstly avoid disturbance and/or loss of ecosystems, and where this cannot be avoided, to minimize, rehabilitate, or offset any remaining significant residual impacts.

Existing mitigation measures and controls (from the local EIA) are designed to reduce construction and operational phase impacts. These proposed measures will be supplemented with the additional mitigation measures contained in ***EIA Chapter 7.4.1.2***, in order to minimize and remediate/rehabilitate impacts, reduce wetland habitat loss significantly as well as avoiding impacts to Cambodian Tailorbird as far as possible. A dedicated Biodiversity Monitoring and Evaluation Plan (BMEP) was prepared to consolidate the biodiversity and ecosystem service mitigation actions as outlined in this BAP. IFC PS6 paragraph 15 and guidance note 43 both state that in the event of a loss of natural habitat, mitigation measures to ensure NNL are required. In addition, the client must attain the net gain in biodiversity value for which the critical habitat was designated in the area that was defined as critical habitat, as per IFC PS6 paragraphs 17–18 and guidance note 90.

The biodiversity mitigation strategies were described in the ***EIA Chapter 7.5*** have not been revisited in detail in order to avoid duplication; instead, only those approaches that are necessary for development are listed below, separately, with timeframes indicated, for critical habitat triggered species and natural habitat loss in the following chapter. Relevant stakeholders are primarily listed in the following chapters. However, sufficient stakeholder identification related to the measurement's detail and locations is recommended.

Residual impacts (as per habitat loss calculations for critical habitat: natural wetland which is main habitat for Cambodian Tailorbird) have been quantified and this loss is considered significant to warrant a biodiversity offset to compensate for these habitat losses. As the Project is located within critical habitat, the requirement is to achieve a net gain of biodiversity.

5.1 MITIGATION APPROACH FOR NATURAL HABITAT LOSS

During the construction phase of the Project, vegetation clearing, and soil filling and compaction will be necessary to prepare areas for vehicle, machinery, and equipment movement. These activities will result in a loss of natural habitat in total of 8.7 km2. The mitigation measures will be implemented to reduce the impacts from the construction activities.

The mitigation measures in ***Table 5.1*** aim to minimize the loss of natural habitat. These measures are based on the mitigation hierarchy, a framework for managing risks and potential impacts of development Projects on biodiversity and ecosystem services.[1] The mitigation hierarchy is not a standard, but rather a flexible approach to mitigation planning. It can be used independently or as part of a broader implementation plan for biodiversity and ecosystem conservation.

The construction of the airport has been planned to avoid protected areas and any internationally recognized areas. Based on the land cover information, the Project situated in mostly modified area to minimize the impact to natural habitats as much as possible. The impacts from construction activities on natural habitat loss will be further minimized by implementing these mitigation measures.

[1] CSBI (2015). A cross-sector guide for implementing the mitigation hierarchy. Prepared by the Biodiversity Consultancy on behalf of IPIECA, ICMM and the Equator Principles Association: Cambridge UK.

TABLE 5.1 MITIGATION APPROACHES FOR NATURAL HABITAT LOSS

Mitigation Approach	Actions Required	Timeframe	Responsibility	Recommended Stakeholder
Where the aquatic vegetation has been removed, replant aquatic vegetation to the nearby aquatic habitat.	The Project may disturb some areas of surface water containing aquatic vegetation. Where feasible, this vegetation should be replanted in nearby compatible aquatic habitats.	The end of construction phase	Engineering, Procurement and Construction Contractor and CAIC Senior Biodiversity Specialist	NatureLife Cambodia
Support native flora species within the Project reserved area	A habitat restoration program (i.e., mentioned action above) will be select only native flora species for restoration.	The end of construction phase	Engineering, Procurement and Construction Contractor and CAIC Senior Biodiversity Specialist	-
Maintain the remnant of habitat quality	The natural habitats that haven't been heavily disturbed should be maintained the quality to support remnant biodiversity within EAAA.	Throughout the operation phase	CAIC Senior Biodiversity Specialist	-
Control invasive plant species near the boundary of the disturbance area.	The vegetation near the boundary of the disturbance area will be monitored for the presence of invasive species. If invasive species are found, they will be removed when applicable, or their distribution will be controlled.	Throughout the operation phase	CAIC Senior Biodiversity Specialist	-

5.2 MITIGATION APPROACH FOR CRITICAL HABITAT TRIGGERED SPECIES

The Cambodian Tailorbird (*Orthotomus chaktomuk*) is classified as Near Threatened (NT) by the IUCN Red List. it is also known as a restricted-range species, it can be found in a small area of dense scrubland within the floodplain of the Mekong River near Phnom Penh. According to the study on Cambodian Tailorbird since 2013, all records of the species were found on ground level in dense humid scrub, some observations found in the area with long grasses or trees. the species can be observed in the area with scrub located within floodplain and experiences permanent or seasonal flooding. The distribution of this species is unwell known, it is expected that the species occurs along seasonally floodplain of the Tonle Sap, Mekong and Bassac Rivers in Cambodia.[2] The species is at risk because its habitat has been decreasing in size and undergoing modifications for other purposes.

Table 5.2 presents the mitigation measures required to reduce the impacts to the triggered species.

[2] Mahood, Simon & John, Ashish & Eames, Jonathan & Oliveros, Carl & Moyle, Robert & Chamnan, Hong & Poole, C. & Nielsen, H. & Sheldon, Frederick. (2013). A new species of lowland tailorbird (Passeriformes: Cisticolidae: Orthotomus) from the Mekong floodplain of Cambodia. *Forktail*. 29. 1-14.

TABLE 5.2 MITIGATION APPROACHES FOR CRITICAL HABITAT TRIGGERED SPECIES

Action Approach	Actions Required	Timeframe	Responsibility	Recommended Stakeholder
Establish an **offset protected area** for the Cambodian Tailorbird, ensuring its habitat is protected from wetland habitat clearance and development to achieve NNL/NG.	The Project sponsor will coordinate with the national government to identify a suitable conservation area for the Cambodian Tailorbird. Recommended offset locations are described in the ***Chapter 6***.	Within one year	CAIC Biodiversity specialist team	▪ BirdLife International ▪ Fauna and Flora International ▪ Wildfowl and Wetland Trust ▪ Cambodian Bird Guide Association ▪ Wildlife Conservation Society Cambodia
Establish ecological studies and a species monitoring program for the Cambodian Tailorbird to track both its population size and ecological requirements.	Ecological studies and a species monitoring program will be conducted to track the population size, distribution, and ecological requirements of the target species. This measure is to focus on its habitat within EAAA and finalized offset location.	Conducted annually throughout the Project for 15 - 20 years to document net gain	CAIC Biodiversity specialist team	▪ NatureLife Cambodia
Conduct community engagement and education programs in order to raise awareness about the sensitive species and promote sustainable livelihood that can provide alternative income to reduce the pressure on natural habitats.	The community nearby the floodplain of the Mekong River will be engaged in educational and sustainability programs. These programs will provide raise awareness about the Cambodian tailorbird and the importance of conserving its habitat, and information on alternative income sources, aiming to reduce pressure on natural habitats.	Conducted annually throughout the Project.	CAIC Biodiversity specialist team	▪ NatureLife Cambodia

6 OFFSET STRATEGY

As the Project affects both natural and critical habitat, the requirement of IFC PS is to achieve NNL and NG, respectively (see also ***Chapter 1*** and ***Chapter 5***).

In this context, biodiversity offsets are measurable conservation outcomes designed to compensate for significant residual adverse biodiversity impacts arising from Project development after appropriate prevention and mitigation measures have been taken (BBOP, 2012[3]). According to IFC PS6 Paragraph 10, The design of a biodiversity offset must adhere to the "like-for-like or better" principle. The principle of "like-for-like or better" indicates that biodiversity offsets must be designed to conserve the same biodiversity values that are being impacted by the Project or company's activities.

As indicated by the Critical Habitat Assessment, the Cambodian Tailorbird will need a biodiversity offset in order to achieve a net gain in biodiversity. The species is a specialized bird for wetlands, thus it can benefit from the natural offset of wetland habitat to attain NNL as well. 10% increase in biodiversity value over the pre-development biodiversity value of the on-site ecosystem is applied to achieve net gain in biodiversity.[4] Gains in onsite biodiversity (i.e., mitigation measures) as well as registered offsite biodiversity may contribute to achieve this increase in biodiversity.

6.1 KEY OFFSET DESIGN PRINCIPLES

The following biodiversity offset design principles and rules are relevant for the Project (BBOP, 2012):

- Offsets should be 'like-for-like' with trading only permitted within the same land class type;
- If 'like-for-like' is not possible, offsets should address the same features and habitats within the broader landscape area;
- Environmental contributions for specific programs can be used to substitute for the direct management of biodiversity;
- Incremental loss and fragmentation of biodiversity values is to be avoided;
- Management of offset sites can be used to improve biodiversity values however this may not replace actions that are already funded;
- Areas with existing or potential land uses that are likely to be in conflict with the objectives of biodiversity offsets will need to be avoided (mining, forestry leases);
- Offsets to be located in close proximity to the impacted area as possible, such that the gains of offset mitigation are retained in the local area impacted and not transferred to elsewhere;
- Location of offsets in the landscape that facilitate connectivity with adjacent habitats are considered preferable;
- Large offset sites that are connected to existing protected areas are also seen as preferable;
- Also, sites similarly used by comparable ethnic groups sharing similar cultural values will be of preference;
- Fairness and equity should be ensured for affected stakeholders; and
- Offsets chosen should be permanent and ongoing in perpetuity.

[3] https://www.cbd.int/doc/meetings/cop/cop-09/information/cop-09-inf-29-en.pdf
[4] https://www.gov.uk/guidance/biodiversity-net-gain

6.2 HABITAT TARGETS FOR ACHIEVING NO NET LOSS OUTCOMES

The 'habitat hectares' metric is adapted to quantify the residual value of the impacted habitats.[5]. The Habitat Hectare model relies on scores to define 'vegetation quality', being the degree to which the current vegetation differs from a 'benchmark' representing characteristics of a mature and apparently long-undisturbed stand of the same vegetation community. These scores are used to set a baseline condition of the impact site against a habitat condition benchmark (set at a value of 1). The baseline condition score definitions used in this assessment for the offsetting are outlined in ***Table 6.1*.**

TABLE 6.1 HABITAT CONDITION CLASS

Land class condition	Land class condition value	Land class condition definition	Notes
Benchmark	1.0	Pristine habitat; the best quality of the type in the region.	Unlikely except in the most remote areas.
Good	0.8	Natural habitat which has been degraded in some way – e.g., selective logging, hunting, some clearings, and/or some invasive species.	This can include natural wetland areas where they occur.
Moderate	0.6	More degraded natural habitat – e.g., with heavy logging, hunting, frequent clearings, and/or widespread invasive species.	This can include natural wet land areas where they occur.
Poor	0.4	Heavily degraded habitat, with major loss of native species.	Likely much of the agricultural land in the Project area.
Very poor	0.2	Habitat that has been substantially damaged by human factors.	Most likely areas of intensive cultivation, but possibly also some grasslands.
Habitat lost	0.0	Habitat has been completely lost.	Only likely in already built-up areas (villages, roads, etc.)

Given that Cambodia does not presently have a national offset policy to guide the development of biodiversity offsets in the country, ERM decided to align the offset approach and strategy with good international practice as far as possible, particularly the guidelines and methodology contained in the 'Biodiversity Offset Design Handbook'.[6] This approach considered habitat type (based on 2016 data), extent and condition for both the impacted areas and candidate offset receiving sites with the residual habitat hectare loss calculated by multiplying loss extent by land condition value (see ***Table 6.2***).

[5] Parkes, David & Newell, Graeme & Cheal, David. (2003). Assessing the Quality of Native Vegetation: The 'Habitat Hectares' Approach. *Ecological Management and Restoration*. 4.
[6] Business and Biodiversity Offsets Programme. (2012). Biodiversity Offset Design Handbook. BBOP, Washington, D.C.

TABLE 6.2 CALCULATION OF HABITAT LOSS AND HABITAT TARGETS

Habitat Type (2016)	Estimated Permanent Habitat Loss (A)(ha)	Land Class Condition, Value (B)	Residual Impact expressed as Habitat Hectares (HH) (C = A x B)(Ha)
Natural Habitat			
Wetlands	778	0.8	622.4
Surface water	92	0.8	73.6
Totals	**870 ha**	**-**	**696 ha**

To achieve NNL of biodiversity, approximately 696 habitat hectares of wetlands and surface water will be rehabilitated and managed as part of the offset program. Literature on wetland restoration suggests that significant changes can be achieved within relevant time periods of 5 years.[7,8] However, the target area should be monitored for at least 15-20 years to evaluate the program's success.[9]

6.3 SPECIES TARGETS FOR ACHIEVING NET GAIN OUT COMES

The Critical Habitat Assessment found that only the Cambodian Tailorbird (*Orthotomus Cambodianus*) meets the critical habitat requirements per Criterion 2, because the area may be significant habitat for this restricted-range species. As this species is wetland specialized bird, **the use of habitat, and habitat quality as a proxy for species targets is generally considered acceptable**.

The residual impact expressed as habitat hectares for wetland (622.4 ha, see detail in ***Table 6.2***) will apply 10% more[10] to achieve the net gain target since Cambodia Tailorbirds are dependent on wetland habitat. In total, 684.64 ha of wetland habitat (with land class condition of 1.0) need to be compensated to achieve net gain.

6.4 OFFSET AREAS

To achieve NNL for natural habitat and NG for the Cambodian Tailorbird, offset programs may require incorporating areas associated with available wetland habitat outside Project area which is preferred habitats of Cambodian Tailorbird. The following sections present findings from consultations with bird conservation NGOs. These consultations aimed to identify recommended sites for the offset program that could benefit the target species. However, these identified locations require feasibility study to understand how suitable for the bird and the challenging issues for offset implementation. Develop full BAP and BOMP is the following steps after the study. In Full BAP, offset locations should be finalized according to the feasibility study together with more precise estimated cost and stakeholders that related to the locations.

[7] Ho, M., & Richardson, C. J. (2013). A five year study of floristic succession in a restored urban wetland. *Ecological engineering*, 61, 511-518.
[8] Stelk, M. (2017). Wetland Restoration: Contemporary Issues & Lessons Learned.
[9] Mitsch, W. J., & Wilson, R. F. (1996). Improving the success of wetland creation and restoration with know-how, time, and self-design. Ecological applications, 6(1), 77-83
[10] https://www.gov.uk/guidance/biodiversity-net-gain

BOMP is an outline of management actions and monitoring plan that will be taken to fulfill the offset measures both short-term and long-term.

Recommend locations for offset NNL/NG include:

- Boeung Veal Samnap IBA (21 km northeast of Project area)
- Tonle Bet (87 km northeast of Project area)

As these locations have record of Cambodian tailorbird, promoting conservation level in these areas is most benefit to area and convenient for management and monitoring plan. **Protected area establishment cover finalized offset location** is recommended. However, establish the protected area may need to engage with several parties not only to support target species but also compromise the impact to social aspects.

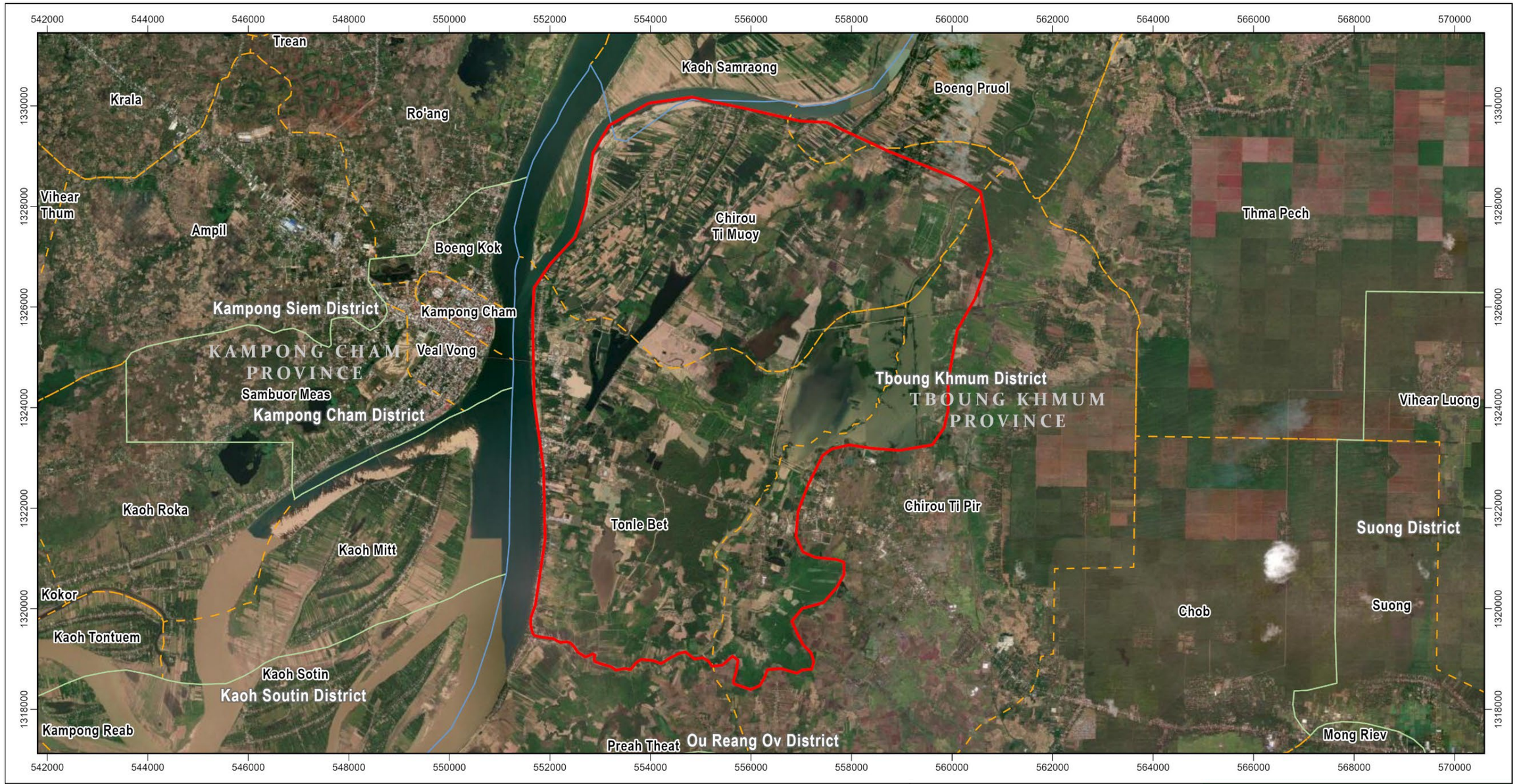
6.4.1 SITE AT TONLE BET

The potential offset sites under this option were identified by the discussion with NatureLife Cambodia and BirdLife International Cambodia. The potential offset site is located within Tonle Bet, Tbong Khmum, Cambodia. Located along the Mekong River northwest of Phnom Penh, this area is shown in ***Figure 6.1***. Similar to the land use characteristic in EAAA, the area has mostly been modified, certain portions of it remain serve as wetland habitats for certain species associated to wetland ecosystems. It is recommended that preservation offsets be established through acquisition of land in order to protect the wetland habitat and Cambodian Tailorbird and achieve NNL/NG.

BirdLife International Cambodia also advises that the area around Phnom Penh may support suitable habitat for the Yellow-breasted Bunting (*Emberiza aureola*, CR). The offset program may need to include additional monitoring for this species due to the major threat it faces from hunting by humans.

NatureLife Cambodia recommends further study of the specific habitats and required vegetation for the Cambodian Tailorbird to identify suitable offset locations. Habitat restoration initiatives in the Phnom Penh area face a significant challenge due to land rights issues. Educational programs and agricultural supportive programs aimed at raising awareness of biodiversity and ecosystem conservation would be applicable for area around Phnom Penh. To address wetland conservation challenges, local authorities should designate important wetland areas for protection, collaborating with wetland conservation NGOs.

According to habitat hectares approach, the habitat quality in this location can be scored as 0.8. To establish a protected area in this location, compensation in the form of land equal to 622.4 ha and 684.64 ha is needed in order to achieve NNL and NG, respectively. The proposed area is 7,510 which can cover the area requirement of NNL/NG.



Legend

- The potential offset site at Tonle Bet
- Province Boundary
- District Boundary
- Community Boundary

0 2 4 km

Scale: 1:80,000

N

Coordinate System: WGS 1984 UTM Zone 48N

Service Credit: Earthstar Geographics

The potential offset site at Tonle Bet

0730380 Phnom Penh Airport
Client: Cambodia Airport Investment Co., Ltd.
Date: 02/07/2024
Drawn By: NS
Review By: KS

ERM

FIGURE 6.1 THE POTENTIAL OFFSET SITE AT TONLE BET

6.4.2 EXISTING IMPORTANT BIRD AREAS

Near Phnom Penh, there are two (2) designated Important Bird Areas (IBA) where the Cambodian Tailorbird can be found. These are Basset Marsh and Boeung Veal Samnap as shown in ***Figure 6.2***. Neither of these sites are legally protected areas. The offset strategy would be to work with the government to establish legal protection of at least a portion of the IBA, with CAIC providing funding to support ongoing monitoring, protection, and enforcement.

Based on the desktop review, Basset Marsh IBA is not recommended to establish the protected area because the land use characteristic. The wetland area was heavily disturbed by human activities and surround by dense settlement areas (***Figure 6.3***).

The relevant IBA to establish protected area is Boeung Veal Samnap, which is a lake located to the east of Phnom Penh. The areas surrounding the lake become inundated when the Mekong River floods during the wet season, thus supporting extensive marshes bordered by rice cultivation (***Figure 6.4***). Many large waterbirds can be found within this IBA during the wet season. The area also supports a population of Spot-billed Pelicans (*Pelecanus philippensis*, NT), which this meets IBA criteria. According to eBird information, the Cambodian Tailorbird can be observed in this area. This observation suggests that the area may have suitable habitats that can support the species. The marsh now has not been well managed and only little conservation action applied to this area.

This IBA faces pressure from human activities in the surrounding areas. It is recommended that preservation offsets be established through acquisition of land in order to protect the wetland habitat and Cambodian Tailorbird and achieve NNL/NG.

According to habitat hectares approach, the habitat quality in this location can be scored as 0.8. To establish a protected area in this location, compensation in the form of land equal to 622.4 ha and 684.64 ha, respectively, is needed in order to achieve NNL and NG. The proposed area is 12,312 which can cover the area requirement of NNL/NG.

FIGURE 6.2 THE POTENTIAL AREAS FOR ESTABLISHING BIODIVERSITY CONSERVATION LANDS

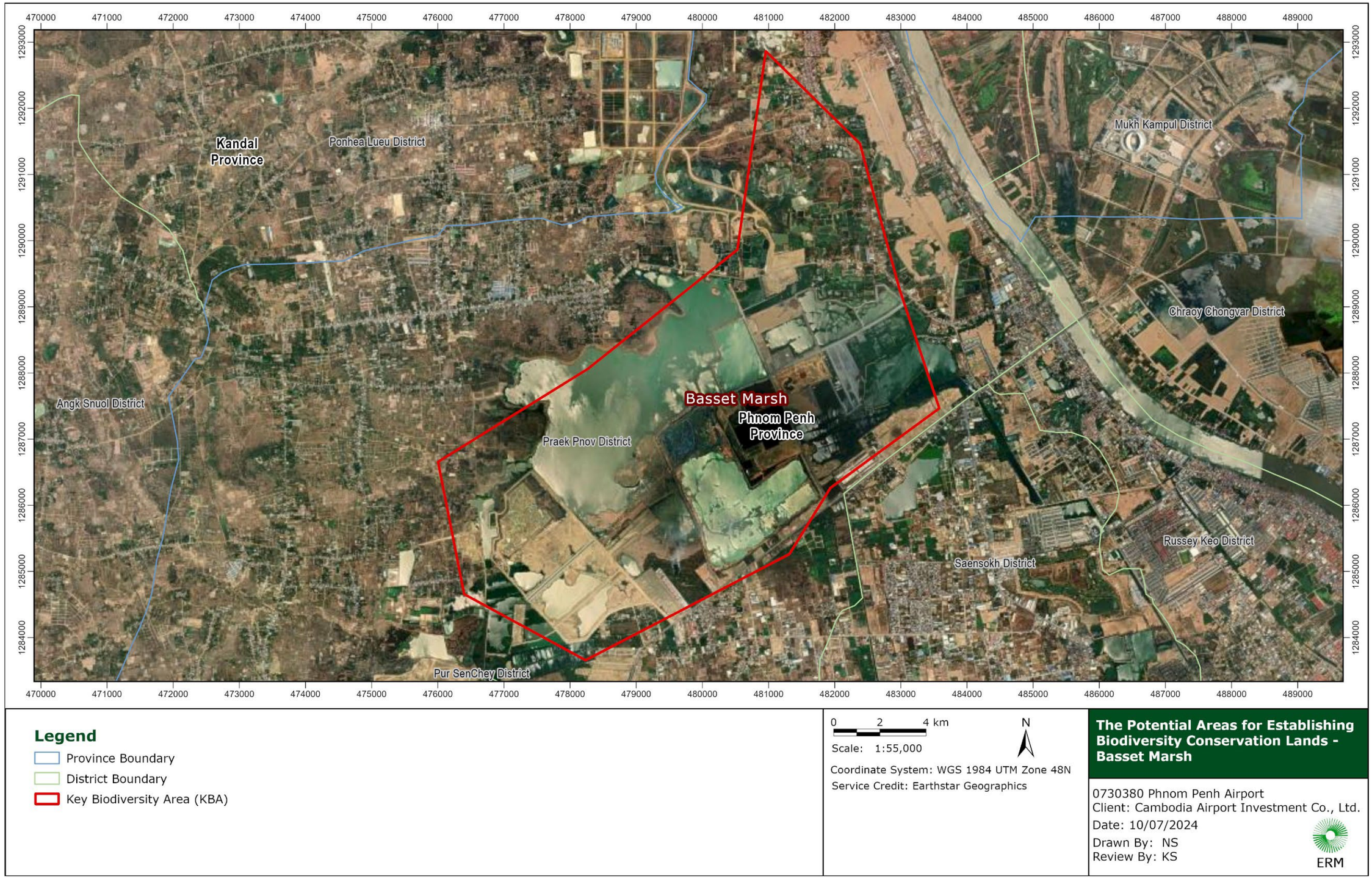


FIGURE 6.3 BASSET MARSH IBA

FIGURE 6.4 BOEUNG VEAL SAMNAP IBA

7 BIODIVERSITY MONITORING AND EVALUATION PLAN

7.1 BIODIVERSITY INDICATORS AND METRICS

The monitoring of offset implementation success and progress towards meeting NNL/NG objectives require reporting on two separates but closely linked areas:

- The progress of actions required to deliver NNL/NG; and
- Program outcomes relevant to NNL/NG.

The monitoring program will also aim to identify any unexpected impacts on notable species and habitats caused by the Project (including associated cumulative or induced impacts). This would trigger the implementation of an "adaptive management" approach to address these impacts. The monitoring program should prioritize tracking biodiversity NNL/NG and avoid redundancy with construction mitigation monitoring, which is addressed in the ESIA (Environmental and Social Management Plan) and this Biodiversity Monitoring and Evaluation Plan (BMEP).

Wetland habitat monitoring will be the primary focus of the Biodiversity Monitoring and Evaluation Plan (BMEP). Because the Project's impact does not directly result in the mortality of the Cambodian tailorbird population, the NG target for this species is limited to supporting the species' population through habitat improvement. As a result, the compensation of this habitat type not only achieves NNL as the target to offset natural habitat but also NG.

The follows monitoring targets include;

- **Wetland Habitat**: To monitor changes in the extent and area of wetland habitat types within offset sites. The biodiversity and wetland components will then be used to assess the overall functioning of the wetlands.
- **Species Population**: To provides additional details on species distribution, population size, and demographics for both the BAP target species and other notable species.

7.2 MONITORING METHODOLOGIES

To monitor biodiversity indicators, the Project will employ methodologies focusing on wetland habitat quality and target species population. Details on these methodologies are provided below.

- **Quality of Wetland Habitat**: Field surveys at offset sites will record dominant plant species, along with species listed on the IUCN Red List and endemic species. Additionally, the presence of non-native and invasive species will be documented. Plant identification will be conducted in the field whenever possible. The detailed photographs or samples collected in the field will be used for identification. Habitat types and their boundaries will be verified or measured in the field, with reference to the preliminary classification prepared through the interpretation of satellite imagery. Following the completion of field surveys, the actual areas of each habitat type will be calculated using Geographic Information System software.
- **Population of the species**: Monitoring methodologies will be developed in collaboration with key specialists. Due to the difficulty of sighting the Cambodian Tailorbird in the wild, secondary indicators, such as field signs will be used where appropriate.

- **The disturbance on environment**: Data on artificial barriers, pollution, burning, and land modification will be collected within the EAAA to identify potential unexpected risks to the target species and habitats.

8 TIMELINE OF BIODIVERSITY ACTION PLAN

A biodiversity action plan timeline is a strategic roadmap designed to guide the systematic conservation efforts for a particular species or ecosystem over a defined period. This timeline outlines specific, time-bound actions aimed at protecting and enhancing biodiversity, ensuring the effective implementation of conservation measures. For the Cambodian tailorbird, a newly discovered and vulnerable species, the timeline prioritizes habitat protection and restoration. By setting clear milestones and measurable goals, this timeline facilitates coordinated efforts among stakeholders, ensuring the species survival and the function of the wetland sites. The BAP outline with timeframe is given in ***Table 8.1.***

TABLE 8.1 BIODIVERSITY ACTION PLAN WITH TIMEFRAMES

Actions	Responsibilities	Timeframe									
		2024	2025	2026	2027	2028	2029	2030	2031	2032	2033 – onward
Monitoring Actions											
1 Conduct feasibility study to identify final location for offset plan	Ecologist										
2 Determine Baseline Biodiversity Values associated with Offset Receiving Area(s)	Ecologist										
3 Establish Permanent BOMP including detailed timelines, updated roles/responsibilities, and long-term funding mechanism)	CAIC / Ecologist										
4 Determine Conservation Priorities	Ecologist										
5 Confirm Habitat Specific Management Actions offset activities, including habitat restoration and complimentary species-specific measures)	Ecologist										
6 Implement Habitat-specific Management Actions (offset activities, including habitat restoration and complimentary species-specific measures)	CAIC / Implementer	Annually									

Actions	Responsibilities	Timeframe									
		2024	2025	2026	2027	2028	2029	2030	2031	2032	2033 – onward
7 Report of Performance	Ecologist	Annually									
8 Review Monitoring Results	CAIC / Ecologist	Every year[11]									
9 Review BOMP	CAIC / Ecologist	Every five years									
10 Review Habitat Specific Management Actions (offset activities, including habitat restoration and complimentary species-specific measures)	CAIC / Ecologist	Every five years									
Enabling Actions											
11 Securing areas for offset	CAIC										
12 Interact with local communities	CAIC / Social Specialist										

[11] An annual review is required initially. Over the course of the Project's lifetime, fewer surveys could be necessary as the project matures.

Actions	Responsibilities	Timeframe									
		2024	2025	2026	2027	2028	2029	2030	2031	2032	2033 – onward
Habitat Restoration Actions[12]											
13 Implement BOMP	CAIC / Ecologist	Throughout Project Lifetime / until Net Gain is achieved									
14 Recovery of wetland areas	-	Throughout Project Lifetime / until Net Gain is achieved									

[12] The listed actions are based on the evaluation plan framework of section 9. Since the final offsets are yet to be agreed on, the restoration actions are also still preliminary.

9 SUMMARY

This preliminary Biodiversity Action Plan (BAP) serves as a foundational framework that requires a comprehensive feasibility study to finalize the offset location and reach an agreement on the offset strategy. The primary objective of this plan is to recommend necessary measures to mitigate the environmental impacts of the Project, particularly concerning the conservation of natural habitat within EAAA and the Cambodian Tailorbird's habitat.

The feasibility study should focus on three (3) main issues: stakeholder identification and engagement, land acquisition assessment, and suitable habitat assessment for the Cambodian Tailorbird. First, the study will identify and engage with relevant stakeholders, including local communities, governmental bodies, NGOs, conservation experts, and other interested parties.

Land acquisition assessment will include evaluating factors such as land ownership, legal constraints, current land use and market value. The feasibility of acquiring these lands will be analyzed, considering costs, negotiations with landowners, and securing necessary approvals from relevant authorities.

The study will also assess the current and potential habitats for the Cambodian Tailorbird within the proposed offset locations. This will involve mapping the distribution of suitable habitats and identifying key areas distribution area for conservation to ensure the long-term survival of the species. Collaboration with ornithologists and wildlife ecologists will be essential to validate habitat suitability and develop effective habitat management plans.

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