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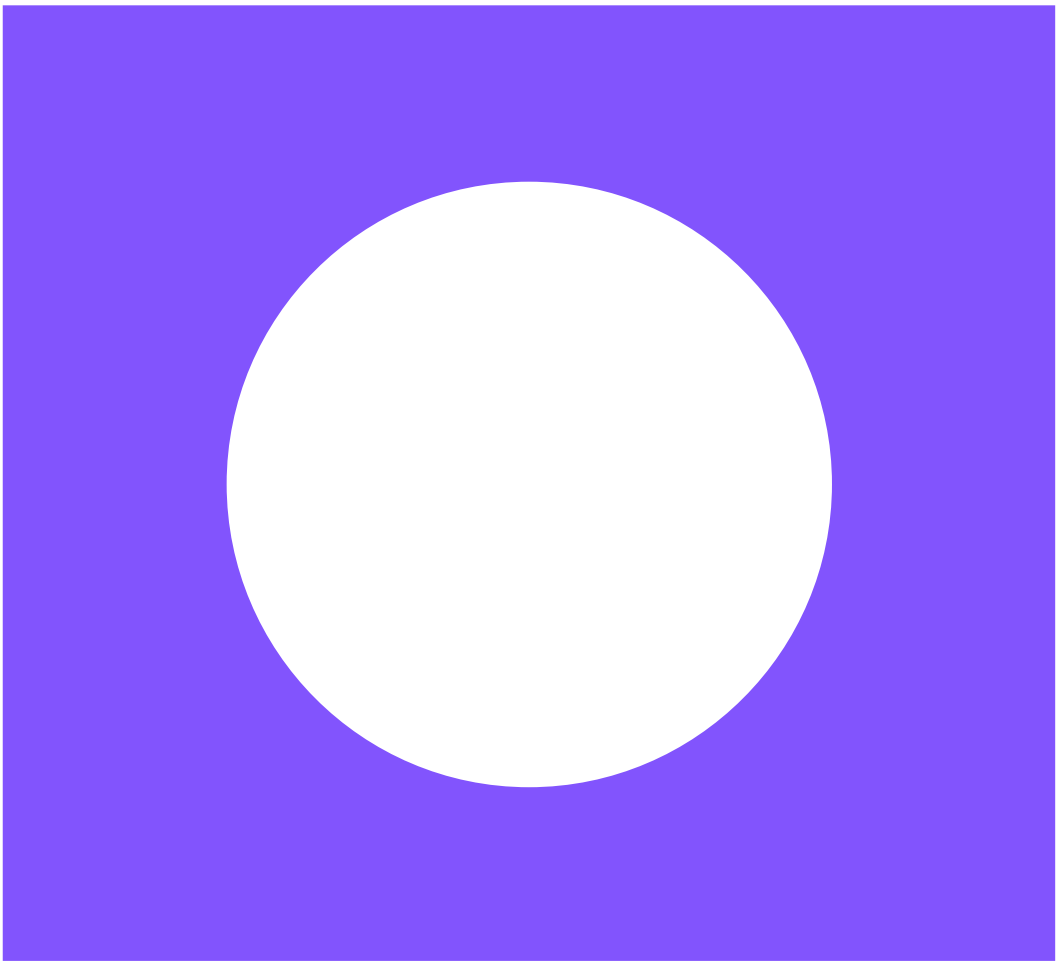

Greater Changhua Southwest Offshore Wind Farm in Taiwan

Critical Habitat Assessment

16 May 2025

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Critical Habitat Assessment

16 May 2025

Issue and Revision Record

Revision	Date	Originator	Checker	Approver	Description
A	9 Sep 2024	S Toh SC See WX Chai	J Tham	B Lim	First draft for Ørsted review
B	2 October 2024	S Toh SC See	J Tham	B Lim	Revised draft report
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E	16 May 2025	D Wu	K Cheung	B Lim	Revised final report for disclosure

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Executive summary

The Greater Changhua Offshore Wind Farm SW Ltd. is a special purpose vehicle established by Ørsted Wind Power TW Holdings A/S (Ørsted) to develop the proposed Greater Changhua Southwest (SW) Offshore Wind Farm in Taiwan (herein referred to as the "Project"). The Project is located approximately 50km offshore from the coast of Changhua County, Taiwan.

The Project is located in Taiwan, off the coast of Changhua County. The offshore wind farm area selected was zone #14 of the list of proposed offshore wind farm sites in Taiwan, defined by the Bureau of Energy (BOE). the Project comprises of two phases, namely:

- Phase 2a consists of 36 wind turbine generators (WTGs), each of 8MW capacity. All Phase 2a WTGs are in operational phase, having received an updated EBL for all its WTGs on 6 February 2024. The EBL expires on 9 May 2043.
- Phase 2b is currently under planning to commence the construction phase for its OWF components. The offshore construction is expected to commence in Q1 of 2025, alongside Greater Changhua 4. This phase will comprise of 24 WTGs, each of 14MW capacity.

As part of the transaction process undertaken for obtaining project financing from an Equator Principle Financial Institute (EPFI), the Project potentially needs Equator Principles (EP) compliance. Therefore, Mott MacDonald have been commissioned by Ørsted to undertake the Critical Habitat Assessment (CHA), alongside other environmental and social services.

This report presents a CHA which has been undertaken to determine whether the Project footprint and its relevant ecological appropriate area of analysis (EAAAs) is located in 'critical habitat' as defined by IFC PS6 with elaborations provided in the corresponding guidance note, IFC Guidance Note (GN) 6, updated as of 27 June 2019. The EAAAs established for this CHA are delineated based on the habitats of relevant species/groups.

Integrated Biodiversity Assessment Tool (IBAT) was applied to obtain potential biodiversity-related features (ie species, protected areas and Key Biodiversity Areas) in the EAAAs. Project documentation including the approved environmental impact assessment (EIA) of this Project was reviewed as part of this CHA. Various international and national checklists (eg IUCN Red List of Threatened Species, Taiwan protected species lists (保育類野生動物名錄)), Important Bird Areas in Taiwan and Map of Taiwan's Wetlands as well as research papers were also reviewed to inform the critical habitat determination process.

The CHA determined that the Project is located in critical habitat for the following biodiversity values:

- Criterion 1 (C1) (a), (b) and (c): the presence of critically endangered, endangered and vulnerable (global range overlapping with >0.5% of the EAAAs) species, namely:
  - Marine flora and fauna:
    - Taiwanese humpback dolphin (*Sousa chinensis ssp. Taiwanensis*) (C1a)
    - Taiwanese Wedgefish (*Rhynchobatus immaculatus*) (C1a)
  - Migratory birds (including seabirds at sea):
    - Black-faced spoonbill (*Platalea minor*) (C1a)
    - Saunders's Gull (*Saundersilarus saundersi*) (C1c)
    - Oriental stork (*Ciconia boyciana*) (C1a and C1c)
    - Chinese crested tern (*Thalasseus bernsteini*) (C1a and C1c)
- Criterion 2 (C2): the presence of restricted-range species:

  - Marine flora and fauna:
    - Taiwanese humpback dolphin (*Sousa chinensis ssp. Taiwanensis*)
    - Taiwan Picnic Seabream (*Acanthopagrus taiwanensis*)
- Criterion 3 (a) and (b): the presence of migratory and congregatory species:
  - Migratory birds (including seabirds at sea)
    - Black-faced spoonbill (*Platalea minor*)
    - Saunders's Gull (*Saundersilarus saundersi*)
    - Oriental stork (*Ciconia boyciana*)
    - Chinese crested tern (*Thalasseus bernsteini*)
    - Kentish Plover (*Charadrius alexandrinus*)
- Criterion 5 (C5): the presence of key evolutionary processes
  - EAAA for marine fauna and flora - coral reef ecosystems

The Project's offshore and onshore impacts during construction and operation phases, as described in the Project EIA, were assessed against the critical habitat features. Mitigation measures proposed in the Project EIA and Coastal Zone Management Assessment (CZMA) were also evaluated against the critical habitat triggers to determine if adequate measures are established to prevent measurable adverse impacts to the critical habitat triggers and prevent a net reduction in the global and/or national/regional population of any Critically Endangered or Endangered species.

The proposed mitigation measures contained within the Project EIA must be implemented to prevent significant impacts to the biodiversity values for which critical habitat has been designated and the supporting habitat, as well as prevention of a net reduction in the global, national and/or regional population of any Critically Endangered or Endangered species. To address residual impacts that were deemed to be significant, a biodiversity action plan (BAP) containing additional recommendations and further details on the actions required to achieve net gains for critical habitats and species is recommended for the Project.

1 Introduction

1.1 Overview

The Greater Changhua Offshore Wind Farm SW Ltd. (herein referred to as “Project Company”) is a special purpose vehicle established by Ørsted Wind Power TW Holdings A/S (Ørsted) to develop the proposed Greater Changhua Southwest (SW) Offshore Wind Farm in Taiwan (herein referred to as the “Project” or “Greater Changhua 2”). The Project is located approximately 50km offshore from the coast of Changhua County, Taiwan.

The Project is planned in compliance with the “Offshore Wind Farm Site Application Regulation”, stipulated by the Energy Administration[1], Ministry of Economic Affair (EA, MoEA) on 2 July 2015. The regulation gives endorsement to offshore wind energy development for developers to promote nuclear-free homeland by the year of 2025.

In 2022, the National Development Council (NDC) published Taiwan’s Pathway to Net-Zero Emissions by 2050. The plan is to decarbonise the electrical sector and targeted 60% renewable energy come 2050[2]. As of 2023, the electricity generation comprised of 42.2% coal-fired, 39.5% liquefied natural gas (LNG)-fired, 6.3% nuclear, 9.5% renewable energy and 2.4% of other types of energy.

As part of the Project’s project financing approach, the Project potentially needs Equator Principles (EP) compliance. Therefore, Mott MacDonald have been commissioned by Ørsted to undertake the Critical Habitat Assessment (CHA), alongside other environmental and social services.

1.2 Aims and objectives

Taiwan is a highly biodiverse country, and as such there is a high probability that some of the species and ecosystems present in the Project area and its EAAAs here will trigger Critical Habitat, hence the need for this CHA. The Project is located near to the nationally protected and internationally recognised Dadu Estuary Wildlife Refuge and Hanbao Wetlands, which is an internationally recognised Important Bird and Biodiversity Area (IBA) as well as a Key Biodiversity Area (KBA). In addition, the local EIA has identified a number of habitats and species that could trigger Critical Habitat in the relevant ecologically appropriate areas of analysis (EAAAs). This includes globally threatened, restricted range, and migratory species.

The outlined CHA process is defined in IFC PS6 (IFC, 2012) and IFC Guidance Note 6 (GN6) (IFC, 2019). The aim of the CHA is to:

- Determine whether the Project is located in critical habitat
- Assess whether the Project is likely to 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
- Assess whether the Project is likely to 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

[1] Formerly known as Bureau of Energy (能源署); renamed the Energy Administration on 26 September 2023.

[2] Lau, Hon Chung and Steve C. Tsai (9 July 2022). A Decarbonization Roadmap for Taiwan and Its Energy Policy Implications. *Sustainability*. Sustainability | A Decarbonization Roadmap for Taiwan and Its Energy Policy Implications (mdpi.com). Retrieved 30 July 2024.

The aims of the CHA are achieved by completing the following objectives:

- Defining one or several ecological appropriate areas of analysis (EAAAs) relevant to the biodiversity values regularly occurring the Project footprint and the ecological processes supporting them as identified in the baseline data and published literature
- Undertaking a comparative analysis of the biodiversity values against the critical habitat criteria and thresholds of IFC PS6
- Undertaking a preliminary assessment of the likely impacts of the Project on the critical habitat values
- Reviewing the magnitude, temporal scale and significance of the Projects impacts on the biodiversity values for which critical habitat is designated, identifying those impacts that are likely to result in a measurable adverse impact and a net reduction in the population
- Defining the mitigation strategy for the critical habitat values

The definition of critical habitat and the assessment principles used in this CHA are set out in the following guidance documents:

- IFC Performance Standard 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources (IFC, 2012)
- IFC Guidance Note 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources (IFC, 2019)

The CHA is based upon information received from the client, publicly available data sources (detailed in Section 2.2.2) and the CHA undertaken for the neighbouring development, Greater Changhua Offshore Wind Farm Southeast (Greater Changhua 1) and Greater Changhua Offshore Wind Farm Northwest (Greater Changhua 4), also being developed by Ørsted (Mott MacDonald, 2020).

1.3 Project background

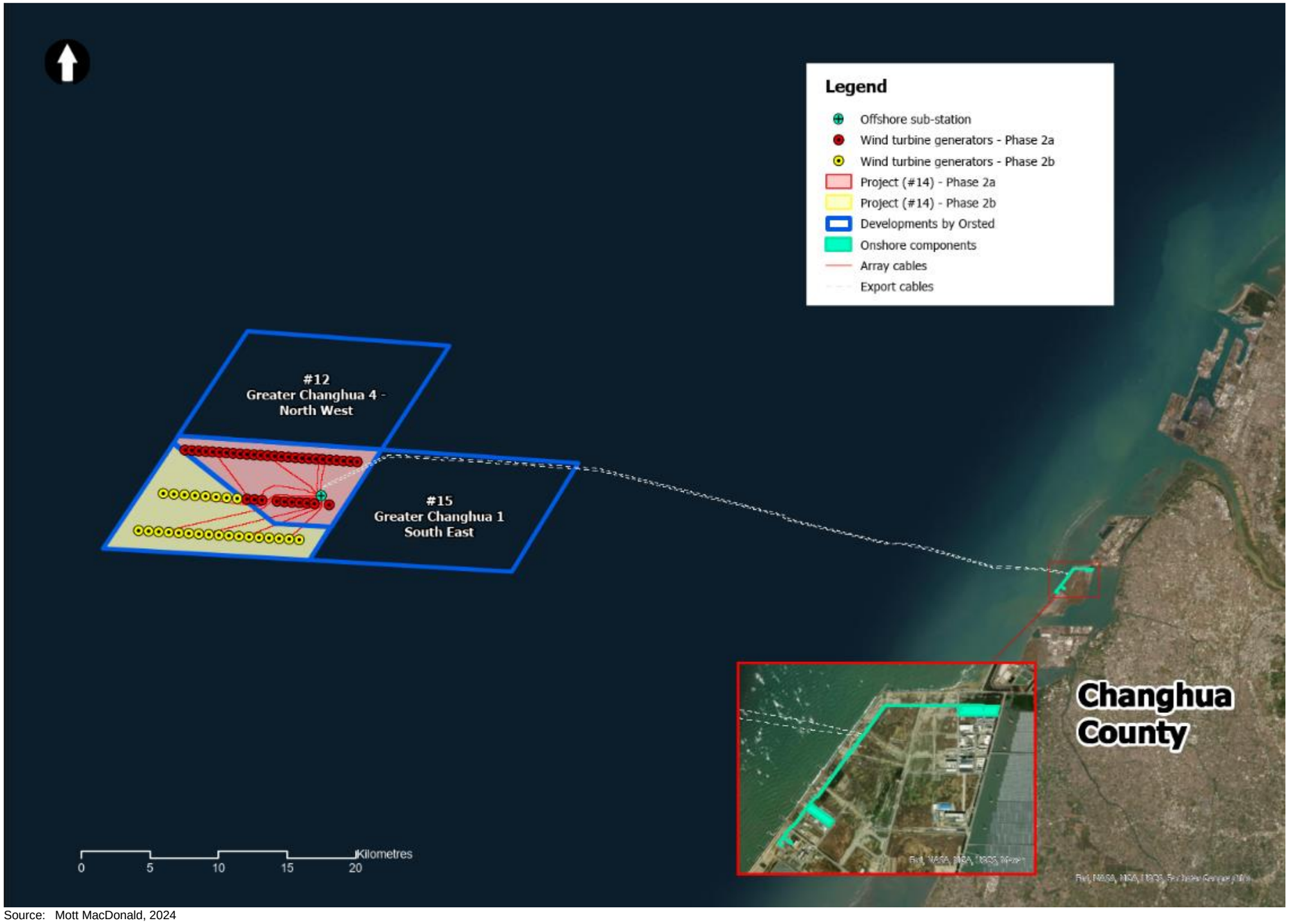
The Project is being developed on the 14th Zone of Potential in Changhua County (彰化縣) according to the Offshore Wind Farm Site Application Regulations announced by the Bureau of Energy, Ministry of Economic Affairs (MOEA) on 2 July 2015[3]. The Project's offshore windfarm area will be approximately 126.3km^2 in size and located 50km offshore from Xianxi Township (線西鄉), Changhua County, on the western coast of Taiwan (see Figure 1.1).

The Project is adjacent to other OWF developments which are also owned by Ørsted. These OWFs are namely:

- East of the Project – Greater Changhua South East, comprising of 75 WTGs, with a capacity of 605.2MW. This OWF development is known as "Greater Changhua 1". Greater Changhua 1 is currently operational, having obtained its electricity business license (EBL) covering all WTGs with the last batch obtained in Q3 2024.
- North of the Project – Greater Changhua North West, comprising of around 42 WTGs, with a capacity of 582.9MW. This OWF development is known as "Greater Changhua 4". Greater Changhua 4 is currently planning construction of its OWF components. The offshore construction is expected to commence in Q1 of 2025

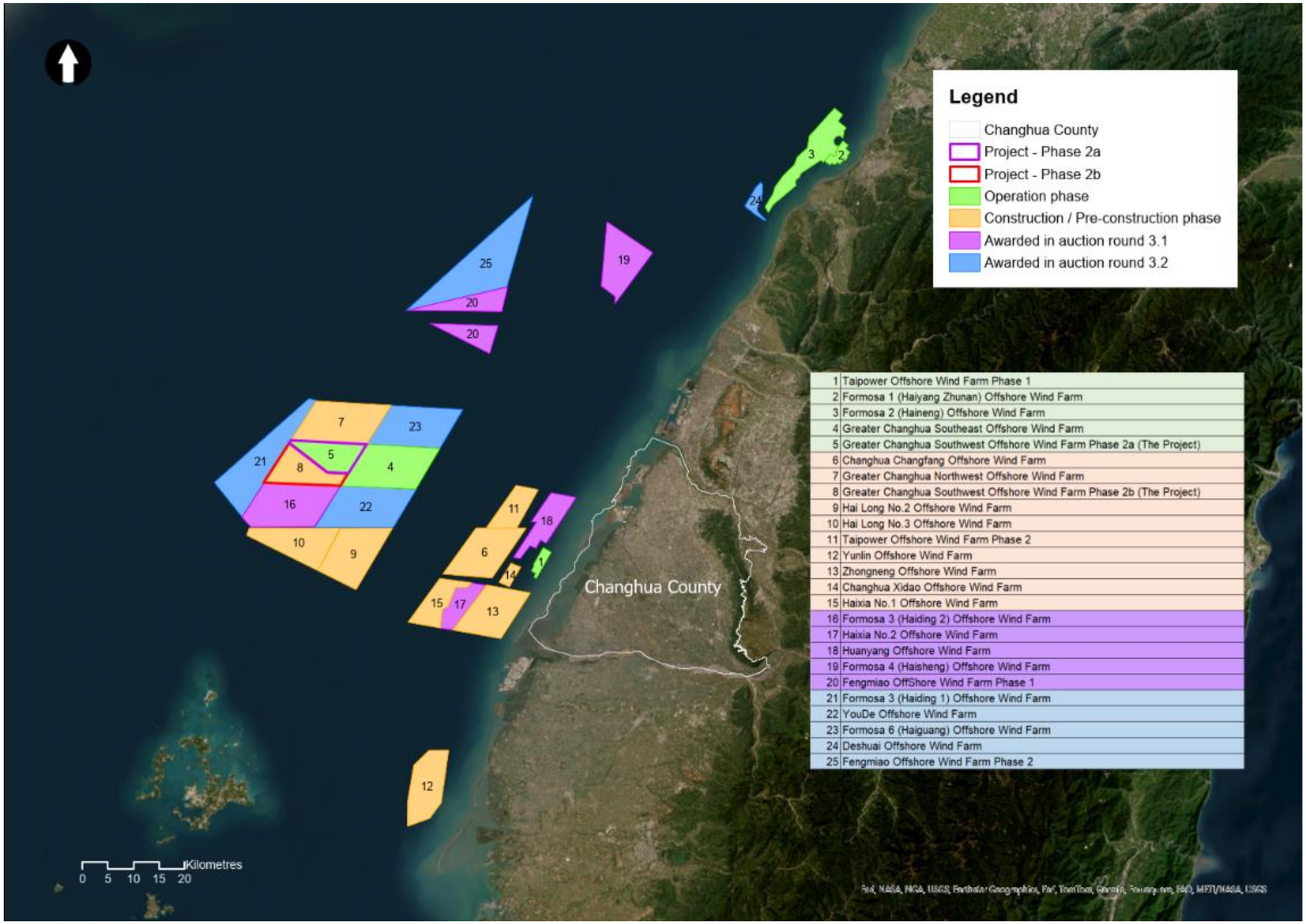
[3] Energy Administration, Ministry of Economic Affairs (2 July 2015). Offshore Wind Farm Site Application Regulations (離岸風力發電規劃場址申請作業要點). Retrieved 30 July 2024.

Figure 1.1: Location of Greater Changhua 2 and proximity to Greater Changhua 1 and Greater Changhua 4



Source: Mott MacDonald, 2024

Figure 1.2: Proximity of Greater Changhua Offshore Wind Farm Southwest and surrounding windfarms



Source: Mott MacDonald, 2024

As seen in Figure 1.1, the Project comprises of two phases, namely:

- Phase 2a consists of 36 wind turbine generators (WTGs), each of 8MW capacity. All Phase 2a WTGs are in operational phase, having received an updated EBL for all its WTGs on 6 February 2024. The EBL expires on 9 May 2043.
- Phase 2b is currently under planning to commence the construction phase for its OWF components. The offshore construction is expected to commence in Q1 of 2025, alongside Greater Changhua 4. This phase will comprise of 24 WTGs, each of 14MW capacity.

The Project had successfully obtained regulatory approval for its EIA report (ie covering both phases) on 23 March 2018.

The planned aggregated capacity for the Project is 632MW (ie from a total of 60 WTGs), with Phase 2a generating 294.8MW and Phase 2b aiming to generate 337.1MW. The WTGs will be located at water depths approximately 23.8m to 42.2m below mean sea water level (MSWL). Each phase has its own grid connection point, connecting to two different OnSS then two different Taiwan Power Company (TPC) onshore substations (OnSS).

Other project components include inter-array and export transmission cabling to connect to TPC's electrical grid, as well as various operational support vessels and ancillary facilities. The operation period is planned for 35 years, based on the asset life.

1.4 Project components

The details of each Phase are presented in Table 1.1 below:

Table 1.1: Summary of Greater Changhua 2 Phases' components and schedule

Aspect	Greater Changhua 2 Phase	
	Phase 2a – operation phase	Phase 2b – construction phase
Project components		
Windfarm capacity	294.8MW	337.1MW
Windfarm area	126.3km^2	
Number of WTGs (and capacity)	36 WTGs (8MW each)	24 WTGs (14MW each)
Offshore substation (OSS)	600MW high voltage alternating current (HVAC) offshore substation shared between the two Phases.	
Onshore substation (OnSS)	294.8MW HVAC OnSS, located in Lukang Township, Changhua County.	920MW OnSS shared with Greater Changhua 4, located in Lukang Township, Changhua County.
Transmission	66kV / 230kV / 161kV HVAC	66kV / 230kV / 345kV HVAC
Export cables	Offshore: One (1) 230kV export cable with approximate length of 57km to the landing point Onshore: One (1) 161kV export cable with approximate length of 3.5km from OnSS to grid connection point	Offshore: One (1) 230kV export cable with approximate length of 57km to the landing point Onshore: One (1) 345kV export cable with approximate length of 1.85km from OnSS to grid connection point
Grid connection point	Chang One A (TPC), located in Lukang Township, Changhua County.	ChangKong (TPC), located in Lukang Township, Changhua County.
Project schedule		
Construction commencement	Onshore: Q3 2019 Offshore: Q1 2021	Onshore: Q2 2023 Offshore: Q1 2025
Construction completion	Onshore and offshore: Q2 2023	Onshore: Q2 2025 (targeted) Offshore: Q2 2025 (targeted)

Aspect	**Greater Changhua 2 Phase**	
	Phase 2a – operation phase	Phase 2b – construction phase
Commercial operation date (COD)	13 September 2023	Targeting Q3 2025

Source: Ørsted and Mott MacDonald, 2024

1.5 Implementation schedule

The key milestones for the Project's implementation, with current assumptions for Phase 2b, are summarised in Table 1.2 below. Phase 2a's construction schedule is not shown as it has been operational since 13 September 2023.

Table 1.2: Greater Changhua 2 Phase 2b implementation schedule

Project milestone	**2023**			**2024**				**2025**		
	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3
Phase 2b										
Onshore construction										
Offshore construction										
COD										

Source: Ørsted and Mott MacDonald, 2024

1.6 Document structure

The CHA is structured as follows:

- Section 1 (ie this section) outlines the aims and objectives of the CHA and Project.
- Section 2 of this document describes the methodology for undertaking this CHA, including the definition of the EAAA, the collection of baseline data through desktop study, field surveys, and consultation with experts.
- Section 3 presents a summary of the biodiversity baseline, including internationally recognised and legally protected areas, natural/modified habitats, and flora and fauna species of conservation importance.
- Section 4 presents the actual assessment of Critical Habitat against the criteria and thresholds in IFC PS6 and GN6.
- Section 5 provides a high-level assessment of the likely project impacts on the features that meet Critical Habitat thresholds.
- Section 6 provides a high-level assessment of ecosystem services present which are likely affected by the Project.
- Section 7 includes a series of recommendations for mitigation and further studies.

2 Approach and methodology

2.1 IFC critical habitat definition and assessment overview

This CHA follows the methodology in IFC GN6 of June 2019 (IFC, 2019). Critical habitat is defined in Paragraph 16 of IFC Performance Standard 6 (PS6) (IFC, 2012) and Note 53 of IFC GN6 (IFC, 2019) as an area of high biodiversity value that includes at least one or more of the five values specified in Paragraph 16 of PS6 and/or other recognized high biodiversity values. These values are referred to as critical habitat criteria and include:

- Criterion 1 (C1): Habitat of significant importance to Critically Endangered (CR) and/or Endangered (EN) species
- Criterion 2 (C2): Habitat of significant importance to endemic and/or restricted range species
- Criterion 3 (C3): Habitat supporting globally significant concentrations of migratory and/or congregatory species
- Criterion 4 (C4): Highly threatened and/or unique ecosystems
- Criterion 5 (C5): Areas associated with key evolutionary processes

Criteria C1 to C3 apply to the species regularly present within the EAAA, while C4 and C5 apply to the characteristics of the EAAA. Criteria C1-C4 have defined thresholds which enable the determination of critical habitat to be made. Criteria are further explained in Section 2.1.1 below.

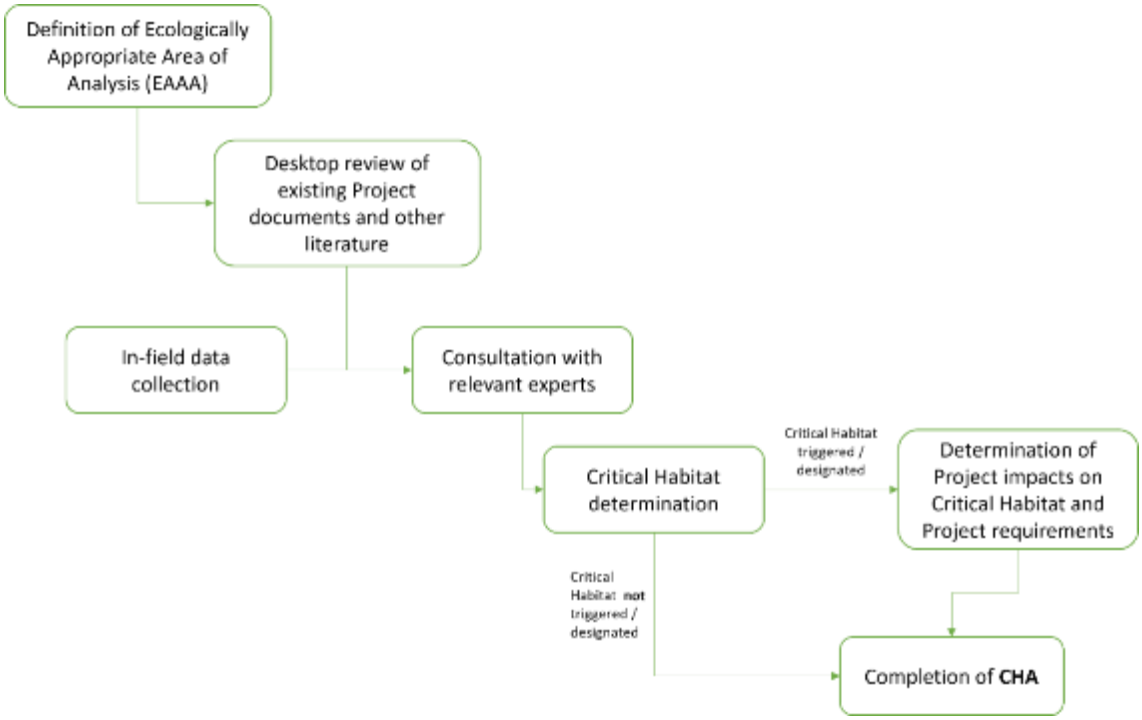
A stepwise process based on guidelines provided by IFC GN6 has been followed for this assessment (Figure 2.1). This CHA uses results from a literature review, and previous baseline biodiversity surveys to determine whether the Project is likely to be located within critical habitat.

In accordance with IFC PS6, the determination of critical habitat is based on the IUCN Red List assessment. Taiwan's National Red Lists[4] (which lists nationally protected flora and fauna species) following IUCN Red List criteria guidance (IUCN, 2012) has been used for context. This will hence be referred to National Red List.

To conduct a CHA, one or several Ecologically Appropriate Area of Analysis (EAAA) (ie the geographic area which is being investigated) must be defined for species with regular occurrence in the Project's area of influence (AoI), or ecosystem, covered by Criteria C1-C4 (see IFC Guidance Note 6, Paragraph GN59). The EAAA is usually larger than the area affected by the Project directly or indirectly and should take into account the distribution of species or ecosystems and the ecological patterns, processes, features, and functions that are necessary for maintaining them. Refer to Section 2.1.1 for the EAAA descriptions for this project.

[4] 紅皮書名錄 - 特有生物研究保育中心 (tesri.gov.tw)

Figure 2.1: Summary of CHA Approach and Methodology



Source: Mott MacDonald, 2024, based on steps outlined in IFC GN6 (IFC, 2019) and applied to this project

This CHA contributes, alongside other relevant documentations, to achieving the Project's aim to deliver the following objectives described in paragraph 17 of IFC PS6 (ie as quoted below).

No project activities can take place in critical habitat unless it can be demonstrated that:

1. There are no viable alternatives within the region for the development of the project on modified or natural habitats that are not critical.
2. 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.
3. 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.
4. A robust, appropriately designed, and long-term biodiversity monitoring and evaluation program is integrated into the project's management program.

Where all of the above can be demonstrated, the project's mitigation strategy will be described in a Biodiversity Action Plan (BAP). The BAP will be designed to achieve a biodiversity net gain for those biodiversity values for which the critical habitat was designated. Where biodiversity offsets are proposed as part of the mitigation strategy, it must be assessed and demonstrated that the project's significant residual impacts on biodiversity will be adequately mitigated as discussed in detail in Section 7.

2.1.1 IFC PS6 critical habitat criteria

Criteria C1-C3 apply to the species regularly present within the EAAA, while Criteria C4 and C5 apply to the characteristics of the EAAA. Each criterion has defined thresholds which enable the determination of critical habitat to be made. Numerical thresholds have been defined as per IFC GN6 for the first four critical habitat criteria. The quantitative thresholds for triggering Critical Habitat for criteria C1-C4 are described in Table 2.1.

In accordance with IFC PS6 paragraph 16, footnote 11, the determination of critical habitat will be based on the National Red List assessment for the species listed as critically endangered or endangered in the country. Where no national Red List assessment following IUCN criteria is published, the determination of critical habitat will be based on IUCN Red List assessment.

Table 2.1: Quantitative Thresholds for Critical Habitat for Criteria 1, 2, 3 and 4

Criteria	Quantitative thresholds
Critically Endangered (CR) / Endangered (EN) Species (IUCN, 2012)	Areas that support globally important concentrations of an IUCN Red-listed EN or CR species (⩾0.5% of the global population AND ⩾5 reproductive units[5] of a CR or EN species). Areas that support globally important concentrations of an IUCN Red-listed Vulnerable (VU) species, the loss of which would result in the change of the IUCN Red List status to EN or CR and meet the thresholds in GN72(a). As appropriate, areas containing important concentrations of a nationally or regionally listed EN or CR species.
Endemic/Restricted Range Species[6]	Areas that regularly hold ⩾10% of the global population size AND ⩾10 reproductive units of a species
Migratory / Congregatory Species	Areas known to sustain, on a cyclical or otherwise regular basis, ⩾1% of the global population of a migratory or congregatory species at any point of the species' lifecycle. Areas that predictably support ⩾10% of the global population of a species during periods of environmental stress.
Highly Threatened / Unique Ecosystems	Areas representing ⩾5% of the global extent of an ecosystem type meeting the criteria for IUCN status of CR or EN. Other areas not yet assessed by the IUCN but determined to be of high priority for conservation by regional or national systematic conservation planning.

Source: IFC, 2019

2.2 Critical habitat assessment methodology

The method of determining 'critical habitat' within this CHA is based upon the approach described in IFC PS6 (IFC, 2012) and IFC GN6 (IFC, 2019). The steps undertaken are as follows:

- Define an EAAA based on the distribution of species or ecosystems, and the ecological processes necessary for maintaining them (refer to Section for details)
- Review and summarise the published data including Project specific biodiversity survey results, public literature, international data and modelling tools such as the Integrated Biodiversity Assessment Tool (IBAT) to establish the biodiversity values with regular occurrence within the EAAA (refer to Section 3 for details)
- Assess the biodiversity values within the EAAA against the 'critical habitat criteria' as defined in IFC GN6) to identify 'critical habitat' (refer to Section 5 for details)
- Assess the residual Project impacts on the biodiversity values for which critical habitat is designated by considering the mitigation measures that have been proposed as part of the local EIA reports (ie refer to Section 6 for details).

[5] The minimum number and combination of mature individuals necessary to trigger a successful reproductive event at a site (IFC GN6 2019)

[6] In accordance with IFC GN6 Paragraph 74, restricted range for terrestrial vertebrates and plants are defined as those species that have an EOO less than 50,000km^2. For marine systems, restricted range species are provisionally being considered those with an extent of occurrence (EOO) of less than 100,000km^2. For coastal, riverine, and other aquatic species in habitats that do not exceed 200 km width at any point (for example, rivers), restricted range is defined as having a global range of less than or equal to 500 km linear geographic

2.2.1 Ecologically appropriate area of analysis

The species with regular occurrence in the project's area of influence typically occur within relatively broad landscape and seascape units and fall into several distinct ecological groups. As per IFC GN6 (Paragraph GN59), the EAAAs have been defined taking into consideration the distribution of species or ecosystems (within and sometimes extending beyond the Project's area of influence) and the ecological patterns, processes, features, and functions that are necessary for maintaining them (IFC, 2019).

The ecological patterns, processes, features, and functions that are necessary for maintaining these groups is however largely limited and little known in the Project area, particularly in relation to species in the marine environment. A separate EAAA has been defined for each of the main ecological groups of species: terrestrial flora and fauna, migratory birds (including seabirds at sea), and marine flora and fauna.

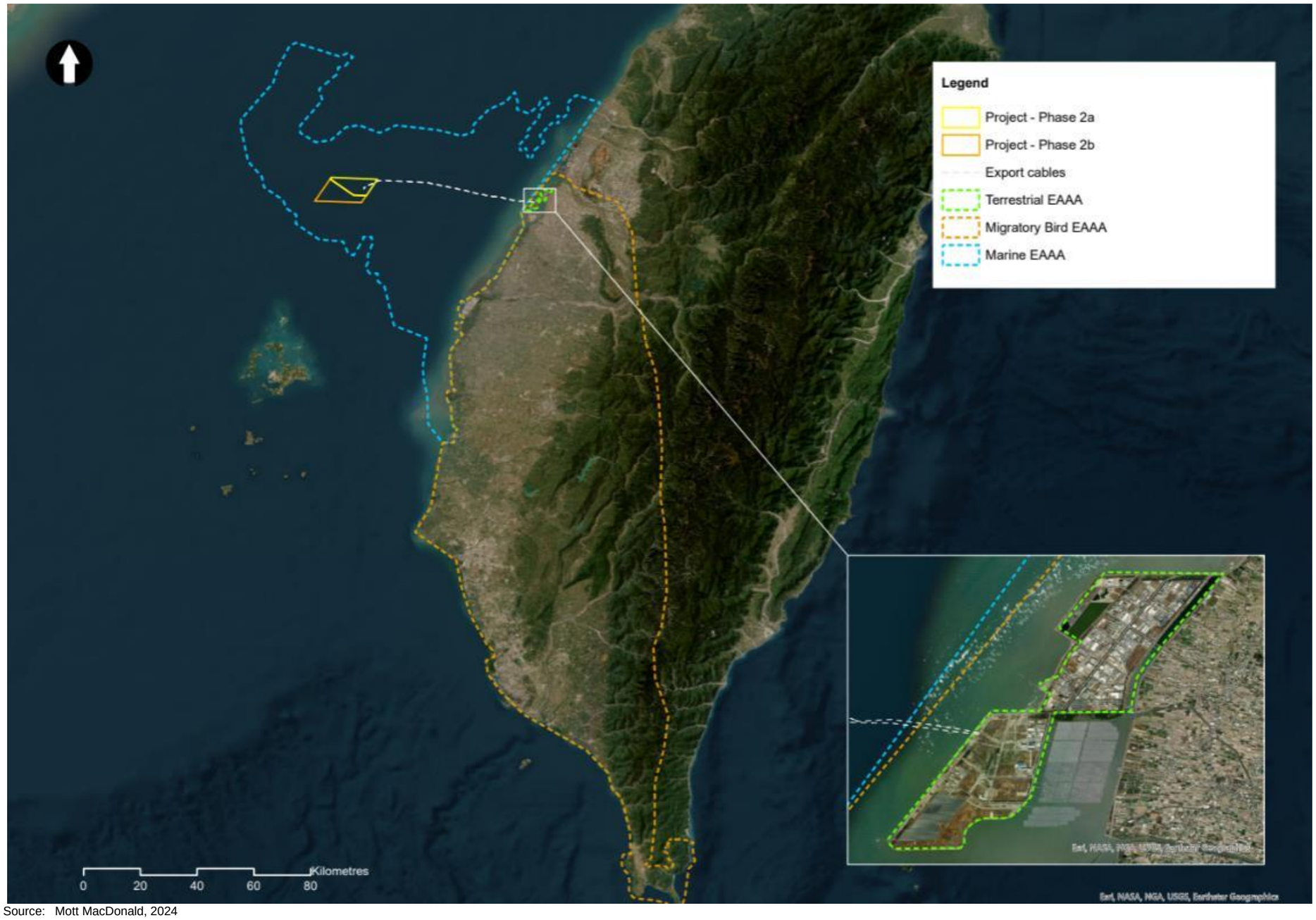
For this CHA, the three EAAAs are summarised below:

- **Terrestrial flora and fauna, including bats and resident terrestrial birds** (Figure 2.2):
  - The terrestrial flora and fauna EAAA includes Xianxi area (線西區) and Lunwei area (崙尾區) of Changhua Binhai Industrial Park (彰濱工業區) in the coast of Changhua County of Taiwan. The Changhua Binhai Industrial Park is located on reclaimed land and separated from Xianxi Township (線西鄉) by Qingan water channel (慶安水道) and Xianxi water channel (線西水道). In light of the artificial and recent nature of the landform creation (c. 1995) and the limited connectivity with the natural landform of Taiwan, it was considered that the land area defined above forms a discrete ecologically significant unit of space within the wider landscape. Furthermore, this area is equivalent in scale to areas mapped for practical site-based conservation such as Important Bird and Biodiversity Areas (IBAs). As the terrestrial flora and fauna EAAA is within a reclaimed industrial land, this area is considered as a modified habitat.
- **Marine flora and fauna** (Figure 2.2):
  - The marine EAAA is delineated based on the biophysical characteristics of the western marine waters of Taiwan, where regularly occurring species within the project site is likely to occur. It takes into account the bathymetry of the Chang-Yuen Ridge, bottom marine water temperature gradient, and the Marine Ecoregions of the World (MEOW) obtained from ArcGIS Hub (The Nature Conservancy, 2019). The species range of threatened species off the west coast of Taiwan, potential underwater noise impacts generated during pilling and the operation phase (ie approximately 5km from the Project site) were also considered. Figure A.1 within Appendix A illustrates the key components as relevant to the abovementioned.
    - The delineation of the marine EAAA also took into consideration the feedback of delineating the EAAA from an impact point of view, with the inclusion of a clear explanation of the footprint/ components of the marine EAAA.
  - Using data from the Marine Ecoregions of the World (MEOW) obtained from ArcGIS Hub (The Nature Conservancy, 2019), the western coast of Taiwan was divided into two parts according to the two marine ecoregions – East China Sea and South China Sea.
    - The Project's lies within the South China Sea ecoregion. The northern boundary of the marine EAAA is thus defined by the South China Sea marine ecoregion. Refer to Figure A.1 for details.
  - The Chang-Yuen Ridge is a shelf sand ridge that lies within a depth of 50 meters below the sea surface (Liao & Yu, 2005). It is prominently situated in the middle of the Taiwan Strait, extending westward from Taiwan's west coast to the centre of the Taiwan Strait (Li et al., 2018).

    - In parallel, there are three primary water masses with different characteristics within the Taiwan Strait: Kuroshio Branch Current, Mixed China Coastal Current and South China Sea Current (Tseng, et al., 2020).
    - Jan et al. (2002) indicates that the Chang-Yuen Ridge distinctly divides the Kuroshio Branch Current and South China Sea Current into bottom and surface water flow. This leads to the formation of bottom water flow along the Chang-Yuen Ridge and surface water flow over the Chang-Yuen Ridge, which in turn establishes a distinct ecological demarcation within the marine ecosystem of the Taiwan Strait.
    - Thus, the western boundary of the marine EAAA is defined by the Chang-Yuen Ridge. Refer to Figure A.1 for details.
  - Furthermore, the varying mixing ratios of the three primary water masses in the Taiwan Strait can lead to diverse chemical and hydrographic conditions.
    - One notable outcome of the interactions between the Kuroshio Branch Current and Mixed China Coastal Current is a 2°C difference in the temperature of the bottom water.
    - This temperature variation has a significant impact on the spatial and temporal distribution of fish assemblages along the western coast of Taiwan (Chen et al., 2023). This phenomenon is most prominently observed between the coastal areas of Taixi and Qigu.
    - Thus, the southern boundary of the marine EAAA is determined by the temperature gradient of bottom marine water along the western coast of Taiwan. Refer to Figure A.1 for details.
  - As the marine EAAA consists of open water habitats, this area is considered to be a natural habitat.
- **Migratory birds, including seabirds at sea** (Figure 2.2):
  - The migratory bird EAAA was delineated based on regularly occurring bird species within the project boundary and factoring the current available information relevant to their spatial distribution and likely flight paths. In addition, this EAAA includes the Important Bird Areas (IBAs) in the south-western region of Taiwan (Figure 2.3) and the corresponding areas of connectivity between the IBAs. Figure A.2 within Appendix A illustrates the key information (ie distribution and flight paths) as relevant to the abovementioned.
  - An initial comparison was done between IBAs and the EIA survey data (Unitech, 2018a; Unitech, 2021) in order to find overlaps between qualifying species of IBAs along the western coast of Taiwan and bird species identified in the EIA surveys.
  - Further analysis also took into consideration bird migratory route maps that were developed from observations from radar surveys in the EIA (Unitech, 2018a).
  - In consideration of the analysis done above, the migratory bird EAAA was determined to include the south-western region of Taiwan.
  - The IBAs within the migratory bird EAAA include the following:
    - Dadu River Estuary Wetland (TW013)
    - Hanbao Wetland, Changhua County (TW014)
    - North Section of Baguashan, Changhua County (TW015)
    - Zhuoshui River Estuary Wetland (TW016)
    - Huben, Yunlin County (TW017)
    - Aogu Wetland, Chiayi County (TW021)
    - Puzi River Estuary, Chiayi County (TW022)
    - Budai Wetland, Chiayi County (TW023)

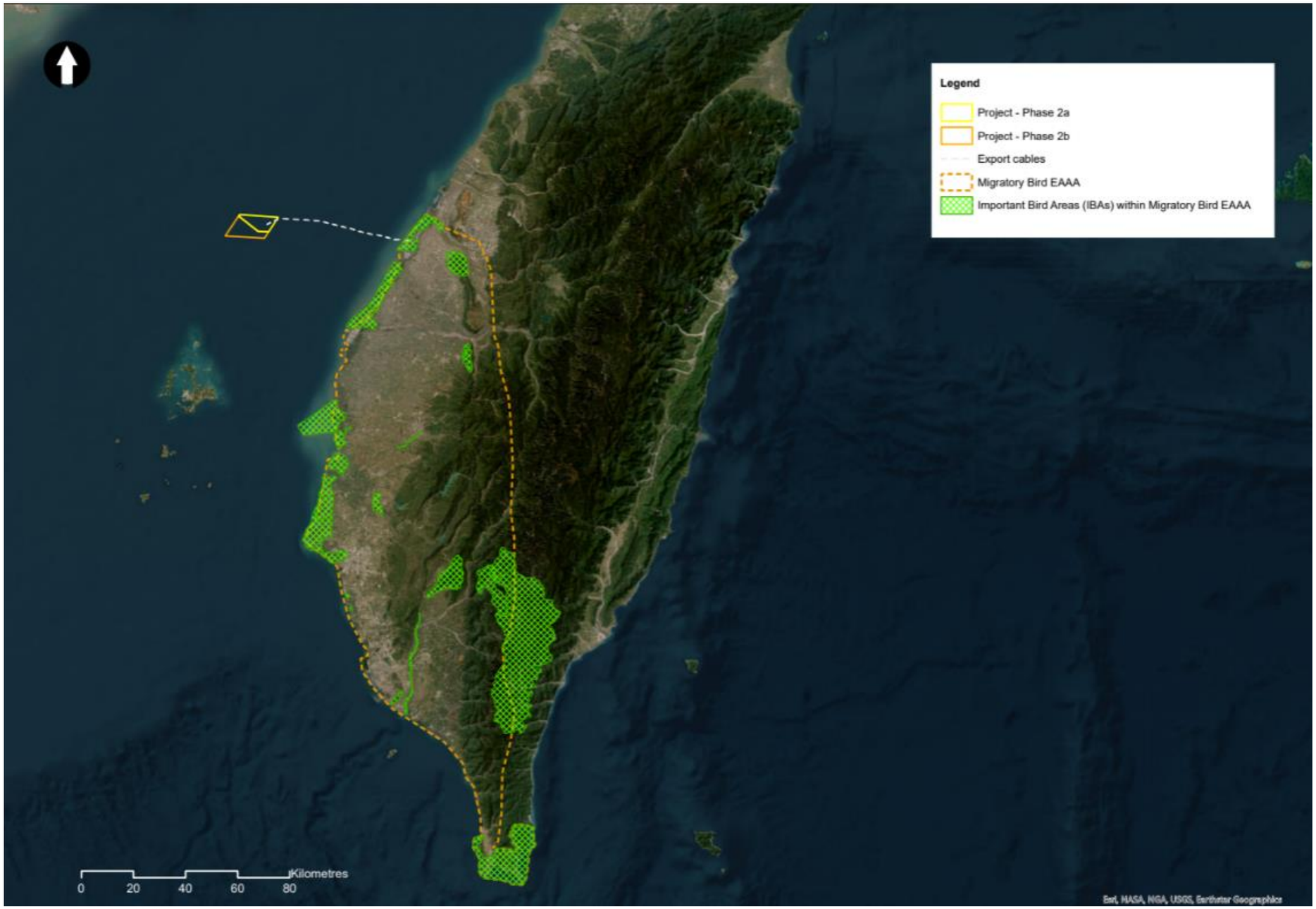
  - Middle Section of Bazhang River, Chiayi County (TW024)
  - Beimen, Tainan City (TW025)
  - Qingkunshen, Tainan City (TW026)
  - Qigu, Tainan City (TW027)
  - Hulupi, Tainan City (TW028)
  - Sicao Wildlife Refuge, Tainan City (TW029)
  - Yong'an, Kaohsiung City (TW030)
  - Yellow Butterfly Valley, Kaohsiung City (TW031)
  - Shanping, Kaohsiung City (TW032)
  - Chuyunshan Nature Reserve (TW033)
  - Fengshan Reservoir, Kaoshiung City (TW035)
  - Dawushan Nature Reserve and Shuang-guei Lake Major Wildlife Habitat (TW036)
  - Gaoping River, Pingtung County (TW037)
  - Kenting National Park (TW038)
  - Qieding Wetland, Kaohsiung City (TW054)
  - Fangyuan Wetland, Changhua County (TW056) (prospective)
- As the migratory bird EAAA encompasses built-up areas along the inland and coastal regions of Taiwan, as well as IBAs and natural areas, this area is considered to be a mix of natural and modified habitat.

Figure 2.2: Ecologically Appropriate Areas of Analysis (EAAAs) of marine flora and fauna, migratory birds (including seabirds at sea) and terrestrial flora and fauna



Source: Mott MacDonald, 2024

Figure 2.3: Important Bird Areas (IBAs) within the migratory birds (including seabirds at sea) EAAA



Source: Mott MacDonald, 2024

2.2.2 Data sources referenced for CHA

2.2.2.1 Overview

This CHA was undertaken with reference to the ecological baseline, consisting of the habitats and species, identified by the Project EIA (Unitech, 2018a; Unitech, 2021) as well as those in published literature.

The following sources were used to establish the baseline for this CHA:

- Greater Changhua SW Offshore Wind Farm environmental impact statement (EIA) and its appendices (大彰化西南離岸風力發電計畫 環境影響說明書) (Unitech, 2018a)
- Greater Changhua SW Offshore Wind Farm EIA addendum and its appendices (大彰化西南離岸風力發電計畫 環境影響差異分析報告) (Unitech, 2021)
- Greater Changhua SW Offshore Wind Farm construction monitoring reports (大彰化西南離岸風力發電計畫環境監測工作) (Unitech, 2022 - 2024)
- Greater Changhua NW Offshore Wind Farm environmental impact assessment (EIA) and its appendices (大彰化西北離岸風力發電計畫 環境影響說明書) (Unitech, 2018b)
- Greater Changhua NW Offshore Wind Farm EIA addendum and its appendices (大彰化西北離岸風力發電計畫 環境影響差異分析報告) (Unitech, 2022a)
- Greater Changhua SE Offshore Wind Farm environmental impact assessment (EIA) and its appendices (大彰化東南離岸風力發電計畫 環境影響說明書) (Unitech, 2018c)

To identify critical habitat within each EAAA, a desk-based review of available information from international and national sources was undertaken. The information sources used in the assessment include those listed below.

- International and national databases
  - Integrated Biodiversity Assessment Tool (IBAT) (https://www.ibat-alliance.org/)
  - International Union for Conservation of Nature (IUCN) Red List of Threatened Species (http://www.iucnredlist.org)
  - BirdLife International Data Zone (https://datazone.birdlife.org/home)
  - Biodiversity A-Z org (https://biodiversitya-z.org)
  - Catalogue of Life in Taiwan (https://taibnet.sinica.edu.tw/home_eng.php)
  - Convention on Biological Diversity (CBD) website (https://www.cbd.int/)
  - eBird (https://ebird.org/)
  - Fishbase (https://www.fishbase.se)
  - The Amphibia Web
  - World Wildlife Foundation (WWF) Ecoregions (https://worldwildlife.org)
- Additional information on the legally protected and internationally recognised areas (existing or proposed) within the EAAA has also been collected and reviewed from online sources:
  - Important Bird and Biodiversity Areas (IBA) (http://datazone.birdlife.org/home)
  - Key Biodiversity Areas (KBA) (www.keybiodiversityareas.org/)
  - World Heritage Sites (WHS) (https://whc.unesco.org/en/list/)
  - UNESCO Biosphere Reserves (http://whc.unesco.org/en/statesparties/id)

- Published literature on various species
  - National Red Lists following IUCN Red List criteria guidance (IUCN, 2012), including Taiwan Red List of Amphibians (Lin *et al*., 2017), Birds (Lin *et al*., 2016), Terrestrial Mammals (Cheng *et al.*, 2017), Terrestrial Reptiles (Chen *et al*., 2017), Vascular Plants (IUCN, 2017) and Freshwater Fishes (Yang *et al*., 2017)
  - Taiwan protected species lists (Forestry Bureau, 2016)
  - Important Bird Areas in Taiwan (Second Edition) (Forestry Bureau COA, 2015)
  - Map of Taiwan's Wetlands (Ramsar Citizen, 2020)
  - Population Ecology and Estuary Habitat Monitoring for Chinese White Dolphin (*Sousa chinensis*) (Zhuo *et al.*, 2018)
  - Status Review Report of the Taiwanese Humpback Dolphin (*Sousa chinensis taiwanensis*) (Whittaker & Young, 2018)
  - Progress report of cetacean research and conservation in Taiwan (Chou L. , 2002)
  - Unsustainable human-induced injuries to the Critically Endangered Taiwanese humpback dolphins (*Sousa chinensis taiwanensis*) (Wang *et al*., 2017)
  - Evidence for year-round occurrence of the eastern Taiwan Strait Indo-Pacific humpback dolphins (Sousa chinensis) in the waters off western Taiwan (Wang & Yang, 2011)
  - Tropical and subtropical moist broadleaf forests, Southeastern Asia: Taiwan (Brooks, 2018)

2.2.2.2 Landcover and habitat mapping

Habitat types were determined for the EAAAs using information obtained from Copernicus Global Land Service (CGLS, 2019) and consolidated via ground-truthing during baseline studies carried out by Unitech in 2018 for the Greater Changhua SW Offshore Wind Farm EIA (Unitech, 2018a). The EIA (Unitech, 2018a) also provided information on the habitats found on site and plant species that were observed (see Section 2.2.2.3 for a summary of the field surveys).

2.2.2.3 Field survey methodology summary

Baseline studies were conducted between February 2016 to July 2017 as part of the approved EIA conducted for the Project (Unitech, 2018a). Subsequently, an EIA addendum was prepared, and supplementary baseline surveys were conducted between Q1 2019 – Q3 2021 (Unitech, 2021). In addition to the local EIA for this Project, environmental monitoring reports of the Project (ie Greater Changhua SW Offshore Wind Farm) also presented additional biodiversity monitoring studies conducted between March 2022 to March 2024.

Surveys conducted as part of the EIA included terrestrial, intertidal and marine biodiversity. The field surveys undertaken are summarised in Table 2.2. These surveys were conducted in accordance with following guidelines by the Executive Yuan, Environmental Protection Agency (EPA):

- Technical Specifications for Animal Ecological Assessment (動物生態評估技術規範)
- Technical Specifications for Plant Ecological Assessment (植物生態評估技術規範)
- Technical Specifications for Marine Ecological Assessment (海洋生態評估技術規範)

Table 2.2: Baseline and monitoring survey summary

Survey type	Timeframe	Methodology
Terrestrial		
Habitat and flora		Site walkover and aerial photography

Survey type	Timeframe	Methodology
	August 2017 (Baseline survey[7])	Quadrat sampling in major habitats identified
Mammals (including bats)	November 2017 (Baseline survey) Q1 2019 – Q3 2021 (Supplementary survey[8]) April 2022 (Monitoring survey[9])	Day and night transect surveys Trapping (ie rodent and Sherman traps) Bat acoustic detector surveys (AnaBat II Bat Detector)
Herpetofauna	August 2022 (Monitoring survey) October 2022 (Monitoring survey) January 2023 (Monitoring survey)	Visual detection at dawn and dusk Active searching at dawn Opportunistic sightings
Butterflies and Dragonflies	April 2023 (Monitoring survey) July 2023 (Monitoring survey) October 2023 (Monitoring survey) January 2024 (Monitoring survey)	Visual detection Net capturing
Birds	August 2017 (Baseline survey) November 2017 (Baseline survey) Q1 2019 – Q3 2021 (Supplementary survey) April – June 2022 (Monitoring survey) July – September 2022 (Monitoring survey) October – December 2022 (Monitoring survey) March 2023 (Monitoring survey) April – June 2023 (Monitoring survey) July – September 2023 (Monitoring survey) October – December 2023 (Monitoring survey) January – March 2024 (Monitoring survey)	Point counts at dawn Transect survey at dusk, sights and calls Opportunistic recording between sampling points
Marine		
Birds	March – May 2016 (Baseline survey; Spring) July 2016 (Baseline survey; Summer) September – November 2016 (Baseline survey; Autum) December 2016 (Baseline survey; Winter) August 2017 – May 2018 (Baseline survey) March – December 2019 (Supplementary survey) March – December 2020 (Supplementary survey) March – May 2022 (Monitoring survey) July – September 2022 (Monitoring survey) October – December 2022 (Monitoring survey) January – March 2023 (Monitoring survey) April – June 2023 (Monitoring survey) July – September 2023 (Monitoring survey) October – December 2023 (Monitoring survey) January – March 2024 (Monitoring survey)	Visual counts by boat-based transect (marine) Visual counts by transect (intertidal) Weather and meteorological radar (raptor) Night radar survey (raptor)
Zooplankton	February 2016 (Baseline survey)	NORPAC net and laboratory test

[7] Baseline surveys refer to ecological surveys undertaken during the pre-construction phase of the Project as part of the EIA. In which, the purpose is to establish baseline flora and fauna of the project area

[8] Supplementary surveys refer to ecological surveys under during the pre-construction phase of the Project as part of the EIA addendum. In which, the purpose is to re-establish baseline flora and fauna of the project area due to amendments in the original EIA.

[9] Monitoring surveys refers to ecological monitoring surveys undertaken during the construction phase of the Project

Survey type	Timeframe	Methodology
	June 2016 (Baseline survey) August 2016 (Baseline survey)	
Phytoplankton	November 2016 (Baseline survey) March 2017 (Baseline survey) July 2017 (Baseline survey) June 2022 (Monitoring survey) August 2022 (Monitoring survey) January 2023 (Monitoring survey) April 2023 (Monitoring survey) May 2023 (Monitoring survey) September 2023 (Monitoring survey) November 2023 (Monitoring survey) February 2024 (Monitoring survey)	Water sampler and laboratory test
Marine fauna and flora (excluding marine mammals)	February 2016 (Baseline survey) March 2016 (Baseline survey) May – June 2016 (Baseline survey) August 2016 (Baseline survey) November 2016 (Baseline survey) February 2017 (Baseline survey) March 2017 (Baseline survey) July 2017 (Baseline survey) January – July 2020 (Supplementary survey) June 2022 (Monitoring survey) August 2022 (Monitoring survey) November 2022 (Monitoring survey) February – March 2023 (Monitoring survey) March – May 2023 (Monitoring survey) August 2023 (Monitoring survey) November 2023 (Monitoring survey) February – March 2024 (Monitoring survey)	Transect sampling in the intertidal zone Quadrat sampling in the intertidal zone Trawl survey Fishery resource local catch statistics NORPAC net (fish eggs and juvenile fish)
Cetaceans (marine mammals)	April 2016 – March 2017 (Baseline survey) April – June 2022 (Monitoring survey) July – September 2022 (Monitoring survey) October – December 2022 (Monitoring survey) January – March 2023 (Monitoring survey) April – June 2023 (Monitoring survey) July – September 2023 (Monitoring survey) October – December 2023 (Monitoring survey) January – March 2024 (Monitoring survey)	Visual monitoring by boat-based transect

Source: Unitech, 2018a

Details of the baseline survey methods can be found in Section 6.3 of the EIA (Unitech, 2018a) and Section 6.3 of the EIA addendum (Unitech, 2021). Baseline survey data have been supplemented by additional literature review and spatial analysis using IBAT species range data relevant to each EAAA.

2.2.2.4 Stakeholder consultations

A series of stakeholder and public consultations as well as EIA appraisals and reviews were conducted during the preparation and review of the local EIA reports. Details are provided in Table 2.3. Ecology and biodiversity were one of the main topics included in these consultations. Specific feedback on marine mammals, migratory birds and seabirds was received from

relevant stakeholders including concerns on flight corridors, underwater noise level and monitoring of cetaceans, fishes and birds during construction. These comments were incorporated into the final EIA (Unitech, 2021).

In addition, the Project has continued engagements and consultations in compliance with international standards between 2018 to Q1 2024, which are be found in Table 5.3 of the Project's SEP. Since the EIA stages, various stakeholders have engaged, which comprises of individuals and representatives from government authorities, local government and community from Changhua County, as well as non-governmental organisations (NGOs) and academia. More engagements with a wider range of stakeholders will be planned as the Project develops.

Table 2.3: Stakeholder and public consultation meetings undertaken for the Project's EIA

Activities	Date
Online publication of Project information on the Environmental Protection Administration (EPA) website for 15 days	9 January 2016
Four (4) meetings/visits with the Changhua Fishermen Association	10 February – 6 April 2017
Online publication of project development information and EIA survey aspects on the EPA website for 20 days	21 September – 12 October 2016
Public seminar (open meeting) for EIA report at drafting stage	21 & 24 October 2016
Public opinion survey of the Project (750 local community members, 209 fishermen and 67 local leaders)	19 November – 11 December 2016
Online publication of major EIA chapters on the EPA website for 20 days	24 January – 14 February 2017
Opinion Presentation Meeting	20 June 2017
The 1st EIA Review Meeting	30 June 2017
The 2nd EIA Review Meeting	11 September 2017
The 3rd EIA Review Meeting	27 November 2017
EPA EIA Vetting Committee Meeting on the Project (the 327th meeting)	9 February 2018
Eight (8) meetings with the Changhua Fishermen Association	17 July 2018 – 16 October 2018
Review meeting on EIA report deviation comparison	20 November 2018
CZMA Public Hearing	22 May 2019
EPA On-site Audit Meeting	29 October 2019
1st EPA Review Meeting	21 October 2021
2nd EPA Review Meeting	22 December 2021
EPA Vetting Committee (414th meeting)	2 March 2022
Pre-construction EIA Public Hearing Greater Changhua 4	26 September 2022
Pre-CP Application Public Hearing of Greater Changhua 4	16 December 2022
1st EIA Supervisory Committee Meeting	23 December 2022
2nd EIA Supervisory Committee Meeting	1 June 2020
3rd EIA Supervisory Committee Meeting	14 December 2020
4th EIA Supervisory Committee Meeting	29 July 2021
5th EIA Supervisory Committee Meeting	17 January 2022
6th EIA Supervisory Committee Meeting	14 July 2022
7th EIA Supervisory Committee Meeting	23 December 2022
8th EIA Supervisory Committee Meeting	30 June 2023
9th EIA Supervisory Committee Meeting	15 December 2023
10th EIA Supervisory Committee Meeting	12 June 2024

Source: Unitech, 2024

3 Biodiversity baseline

3.1 General biodiversity description

3.1.1 Ecoregion

The World Wildlife Fund (WWF) has published the Terrestrial Ecoregions of the World (TEOW) and Marine Ecoregions of the World as a biogeographic regionalisation of the Earth's terrestrial and marine biodiversity ecoregions (WWF, 2012). Ecoregions are defined as relatively large units of land or water containing a distinct assemblage of natural ecological communities sharing a large majority of species, dynamics, and environmental conditions.

Three WWF ecoregions overlap with the terrestrial, marine and migratory birds EAAAs, as follows:

- Taiwan subtropical evergreen forests (eco-code IM0172); and
- South Taiwan monsoon rain forests (eco-code IM0171)
- Southern China Marine Ecoregion (eco-code 113)

The South Taiwan monsoon rain forests also overlap with some of the onshore Project components. Both ecoregions are described in the below sub-sections.

3.1.1.1 Taiwan subtropical evergreen forests (IM0172)

The Taiwan subtropical evergreen forests ecoregion represents most of the forests of Taiwan, except for the southernmost section that is covered by the South Taiwan monsoon rain forests ecoregion. A north-south mountain range runs along the length of the island, with about 200 peaks of over 3000m in height.

Taiwan is on the boundary between the Holarctic and Paleotropical floristic kingdoms and include floristic elements of both. The broadleaf forests can be divided into vegetation zones based on elevation:

- the Ficus-Machilus zone in the lower elevations dominated by *Machilus japonica*, *Ficus irisana* and *Ficus benjamina*;
- the Machilus-Castanopsis zone dominated by *Castanopsis cuspidata*, *Cyclobalanopsis longinux* and *Beilschmiedia erythrophloia*; and
- the lower and upper Cyclobalanopsis zones dominated by *Castanopsis cuspidata*, *Cyclobalanopsis longinux* and *Trochodendron aralioides*.
- Above 3000m the forests are mixed broadleaf, dominated by *Alnus formosana*, species of Acer, and *Tsuga chinensis*. The highest elevations have pure stands of conifer forests with *Tsuga chinensis*, species of Picea (spruce) and Abies (fir).

The larger fauna has been extirpated from the island, including predators such as the clouded leopard, and the Eurasian otter. The Asiatic black bear is extremely rare. The Sika deer, Taiwan's largest ungulate, was once extirpated, but has now been reintroduced into the wild through a species recovery programme. Other species of conservation importance include smaller predators such as the leopard cat, gem-faced palm civet, crab-eating mongoose, Formosan ferret badger, Siberian weasel, and yellow-throated marten and larger herbivores and omnivores such as the Sambar deer, Formosan serow, Reeves' muntjac, Formosan macaque, and Chinese pangolin. Several of Taiwan's restricted-range bird species overwinter here, including the Japanese night-heron, Nordmann's greenshank, and spoon-billed sandpiper.

About 68% of the forests in this ecoregion remain, and 20% of the ecoregion is protected, mostly along the central mountains (Wikramanayake, One Earth, n.d.). Most of the lowland forests have been cleared for agriculture and industry, while the remaining forest cover estimates likely includes monoculture plantations of non-native species (Wikramanayake, One Earth, n.d.).

3.1.1.2 South Taiwan Monsoon Rain Forests (IM0171)

The South Taiwan Monsoon Rain Forests ecoregion covers the low elevation forests in the southern-most part of the island. The topography of the island is comprised of granitic mountains that rise steeply on the eastern slope from a deep oceanic trench to nearly 3952 m in elevation at the summit of Mount Yushan, while the western and northern sides slope gently into coastal plains that extend to the south.

The forest vegetation is very similar to the coastal forests of southeastern mainland China. Common tree species include *Illicium arborescens*, *Ilex cochinchinensis*, *Castanopsis cuspidate*, *Daphniphyllum glaucescens*, *Microtropis japonica*, and *Lasianthus obliquinervis*. The montane forests in the more seasonally variable climate include evergreen tree species such as *Ficus microcarpa*, *Cryptocarya chinensis*, and *Schefflera octophylla*, as well as some deciduous species such as *Bombax malabaricum* and *Albizia procera*.

Fauna on the island is largely similar to the species described in the Taiwan subtropical evergreen forests subsection above, including the lack of large predators, presence of smaller carnivores, large mammals and several of Taiwan's restricted-range bird species. In addition, two giant flying squirrels – the red and white giant flying squirrel and the Indian giant flying squirrel – live in sympatry in these forests, while the rare black-faced spoonbill and endemic Styan's bulbul are also easily spotted here (Wikramanayake, One Earth, n.d.).

Although close to 70% of the forests in this ecoregion still remain, only a small area is formally protected. The remaining forest cover estimates also likely include monoculture plantations of non-native species. In the meantime, growing industrialisation and urbanisation are taking a toll on Taiwan's natural forests. Even the Kenting National Park is threatened by anthropogenic activities (Wikramanayake, One Earth, n.d.)

3.1.1.3 Southern China Marine Ecoregion

The Southern China Marine Ecoregion is a vital component of the Marine Ecoregions of the World (MEOW) classification system, covering the coastal and shelf areas in southern China, including significant portions of the South China Sea. This ecoregion is distinguished by its diverse marine habitats, such as coral reefs, mangroves, and seagrass beds, which collectively support an extraordinary variety of marine life. The coral reefs in this region are among the most diverse globally, hosting over 570 species of reef corals. These reefs provide essential habitats for numerous marine species, contributing to the region's high biodiversity and ecological balance.

Mangrove forests within this ecoregion play a crucial role in coastal protection by preventing erosion and providing nursery grounds for many marine species. They also act as significant carbon sinks, helping to mitigate the impacts of climate change. Similarly, seagrass beds support a variety of marine life, including fish, invertebrates, and marine mammals, and contribute to water quality by stabilizing sediments and cycling nutrients.

Taiwan, located within this ecoregion, plays a significant role in its conservation. The waters around Taiwan are rich in marine biodiversity, and the island has been proactive in various conservation initiatives. These include establishing MPAs, restoring coral reefs, and promoting sustainable fishing practices to ensure the long-term health of its marine ecosystems.

3.1.2 Biodiversity hotspot

Biodiversity hotspots are defined as regions that have at least 1500 endemic plant species and/or with 30% or less of its original natural vegetation remaining (Conservation International, n.d.). They are important areas that are used to establish priorities in conservation.

There presently exist 36 defined hotspots around the world (CEPF, n.d.). The Project components (and in fact the whole island of Taiwan) are not located within any of these hotspots. A hotspot analysis study done by Wu *et al*. (2013) showed that the mountainous regions of Taiwan fulfilled various hotspot criteria from a local conservation perspective, including total species richness, endemic species richness, threatened species richness and other conservation-dependent species richness, as they hold most of Taiwan's avian biodiversity. However, these are not located within the Project footprint or EAAAs.

3.2 Legally protected and internationally recognised areas within 10km of the Project

The following subsections detail legally protected and internationally recognised areas within 10km of the Project.

3.2.1 Legally protected areas

Legally protected areas in Taiwan are categorised into the following:

- Taiwanese Humpback Dolphin Major Wildlife Habitat (MWH) (中華白海豚野生動物重要棲息)[10]
- Important wetlands (重要濕地)[11]
- National parks (國家公園及國家自然公園)[12]
- Major wildlife habitats (野生動物重要棲息環境)[13]
- Wildlife refuges (野生動物保護區)[14]
- Nature reserves (自然保留區)[15]
- Forest reserves (自然保護區)[16]
- Coastal natural protected areas (台灣沿海自然保護區)[17]
- Exclusive fishery rights (專用漁業權)[18]
- Fixed net fishing rights (定置網漁業)[19]
- Artificial reef areas (人工魚礁)[20]
- Protection reefs (保護礁)[21]
- KBAs and IBAs

[10] Formally gazetted with effect from 1 September 2020, as follows: https://gazette.nat.gov.tw/egFront/e_detail.do?metaid=118079

[11] Presently 60 wetlands of which 2 are of international level. List of wetlands: https://wetland-tw.tcd.gov.tw/tw/index.php

[12] Presently 10 sites, as follows: https://conservation.forest.gov.tw/nationalpark

[13] Presently 38 locations, as follows: https://conservation.forest.gov.tw/wildlife_habitats

[14] Presently 20 locations, as follows: https://conservation.forest.gov.tw/protectarea

[15] Presently 23 locations, as follows: https://conservation.forest.gov.tw/reserve

[16] Presently 6 locations, as follows: https://conservation.forest.gov.tw/nature_protect

[17] Split into nature conservation zones and normal conservation zones. It is forbidden to change existing ecological characteristics and natural landscape in nature conservation zones. More information: https://www.cpami.gov.tw/最新消息/業務新訊/18327-「臺灣沿海地區自然環境保護計畫」專區.html

[18] Zones with designated exclusive rights to be used by fishery associations, who will need to be compensated for use of these areas. More information: https://www.fa.gov.tw/view.php?theme=web_structure&id=108

[19] Zones which are licensed to individual fishermen. Licensees will have to be compensated if their respectively fishing area is affected. More information: http://140.121.160.124/fi/images/5_075.pdf

[20] Man-made structures dropped into the seabed to help recruit and encourage coral reef and fishery resources. Presently 89 artificial reef zones: https://www.fa.gov.tw/view.php?theme=Info_on_AF_and_PF&subtheme=&id=1

[21] Areas established to protect and conserve fisheries resources. Presently 62 protection reefs: https://www.fa.gov.tw/view.php?theme=Info_on_AF_and_PF&subtheme=&id=2

The Project footprint has avoided most of the above legally protected areas. However, the export cable (ie connecting the WTG area to the landing point) of the Project is located within the Taiwanese Humpback Dolphin MWH (ie for a length of approximately 4km). The Project's export cables, landing point and Changkong grid connection point are also within 10km of the Dadu Estuary Important Wetland /, Shengang mud shrimp breeding conservation areas, and five protection reefs (ie Dadu, Shengang, Xianxi, Lunwei and Lukang). This is summarised in Table 3.1 below, and the locations of each legally protected area are shown in Figure 3.1. Further details of each legally protected area are also provided in the following subsections.

Table 3.1: Legally protected areas (and other areas/zoning of note) within 10km of Project

Site name	Distance from the Project	Description	Competent authority	Relevant regulations and agencies	Exclusion for offshore wind farm development
Taiwanese Humpback Dolphin Major Wildlife Habitat (MWH)	0km (overlaps with export cables)	• Covers approximately 694.35km^2 north and south of the Project footprint • Taiwanese humpback dolphin is listed as Critically Endangered internationally[22] and Endangered nationally[23] • MWH has been formally gazetted with effect from 1 September 2020[7] • Inhabits a narrow strip of waters of the western coast of Taiwan, between Miaoli County and Jiangjun fishing port of southern Taiwan. The species distribution comprises shallow coastal waters at depths up to 30m, between 2 and 2.5km from the coast (Wang et al., 2017).	Ocean Affairs Council (OAC)	Regulation: Wildlife Conservation Act Relevant agencies: Local governments Fisheries Agency, Council of Agriculture	WTGs are prohibited within the MWH, although cables are allowed Underwater noise from offshore foundation installation, most notably for WTG foundations, is recognised to affect the dolphins Due to the potential underwater noise propagation, the WTG area should be at a minimum 2km away – being more than 20km away is ideal
Dadu Estuary Important Wetland(大肚溪口野生動物保護區)	0km (overlaps with export cables)	• Covers approximately 69.45km^2, largest waterbird habitat in Central Taiwan • Over 200 bird species, including 22 protected species, have been recorded (Ramsar Citizen, 2019) • Designated as Wetland of National Importance, Wildlife Refuge, Major Wildlife Habitat, IBA and KBA • The area is designated as an IBA and KBA due to the presence of significant populations of globally threatened species (Black-faced Spoonbill and Saunders's Gull) and significant congregations of Saunders's Gull.	Construction and Planning Agency, Ministry of the Interior	Regulation: Wetland Conservation Act Wildlife Conservation Act Relevant agencies: Local governments Forestry Bureau, Council of Agriculture	Wetlands are riverine, coastal or terrestrial. The offshore WTG will not be located within these areas directly. The presence (and its level of designation – eg international, national) of wetland sites is an indicator of the likely abundance and protected status of bird species presented. There is no straightforward general definition on appropriate distance or placement for windfarms relative to wetlands. It is broadly taken that the further the distance the better, as this reduces likely impact
Shengang mud shrimp breeding conservation area (伸港保護礁禁漁區)	Approximately 7 km north of the export cables of the Project	• Covers approximately 0.38 km^2 • Established in 2006 • To maintain biodiversity and protect the coastal and marine ecology and environment, the government of Taiwan established aquatic organisms' propagation and conservation zones in areas containing important ecology or species. • The area is a completely no-fishing area, and no one is allowed to enter to collect protected species or damage the habitat of aquatic organisms in any way	Fisheries Agency, Ministry of Agriculture/Changhua County Government	Regulation: Fisheries Act Relevant agencies: Local governments Fisheries Agency, Ministry of Agriculture	The offshore WTG will not be directly located within these areas. There is no straightforward general definition on appropriate distance or placement for windfarms relative to conservation areas. It is broadly taken that the further the distance the better, as this reduces likely impact
Shengang (2) mud shrimp breeding conservation area (伸港(二)螻蛄蝦繁殖保育區)	Approximately 7.93 km north of the export cables of the Project	• Covers approximately 0.22 km^2 • Established in 2006 • In the "core area" of this conservation area, except for academic research approved by the competent authority, harvesting of mole crickets, clams, clams, and other aquatic animals and plants is prohibited throughout the year. • The remaining "Conservation Area" can only be used for ecological teaching, fishery ecological experience activities and academic research, and is subjected to the approval of the government. This area is open to demonstrations of harvesting mole cricket shrimps. After completion, they will be released in situ and are not allowed to be taken out of the conservation area.	Fisheries Agency, Ministry of Agriculture/Changhua County Government	Regulation: Fisheries Act Relevant agencies: Local governments Fisheries Agency, Ministry of Agriculture	The offshore WTG will not be directly located within these areas. There is no straightforward general definition on appropriate distance or placement for windfarms relative to conservation areas. It is broadly taken that the further the distance the better, as this reduces likely impact
Dadu estuary protection reef (大肚溪口保護礁禁漁區)	Approximately 6.96 km north of the export cables of the Project	• Covers approximately 9.22km^2 • All fishing vessels using nets and fishing gear are not allowed to operate within this prohibited area.	Fisheries Agency, Ministry of Agriculture	Regulation: Fisheries Act Relevant agencies: Local governments Fisheries Agency, Ministry of Agriculture	The offshore WTG will not be directly located within these areas. There is no straightforward general definition on appropriate distance or placement for windfarms relative to protection reefs. It is broadly taken that the further the distance the better, as this reduces likely impact
Shengang protection reef (伸港保護礁禁漁區)	Approximately 4.35 km north of the export cables of the Project	• Covers approximately 5.43km^2	Fisheries Agency, Ministry of Agriculture	Regulation: Fisheries Act	The offshore WTG will not be directly located within these areas.

[22] IUCN Red list. https://www.iucnredlist.org/species/133710/122515524

[23] Ocean Affairs Council Notice, Schedule of Protected Marine Species (June 2020), https://gazette.nat.gov.tw/egFront/e_detail.do?metaid=115080

Site name	Distance from the Project	Description	Competent authority	Relevant regulations and agencies	Exclusion for offshore wind farm development
		• All fishing vessels using nets and fishing gear are not allowed to operate within this prohibited area.		Relevant agencies: Local governments Fisheries Agency, Ministry of Agriculture	There is no straightforward general definition on appropriate distance or placement for windfarms relative to protection reefs. It is broadly taken that the further the distance the better, as this reduces likely impact
Xianxi protection reef (線西保護礁禁漁區)	Approximately 0.33 km north of the export cables of the Project	• Covers approximately 5.84km^2 • All fishing vessels using nets and fishing gear are not allowed to operate within this prohibited area.	Fisheries Agency, Ministry of Agriculture	Regulation: Fisheries Act Relevant agencies: Local governments Fisheries Agency, Ministry of Agriculture	The offshore WTG will not be directly located within these areas. There is no straightforward general definition on appropriate distance or placement for windfarms relative to protection reefs. It is broadly taken that the further the distance the better, as this reduces likely impact
Lunwei protection reef (崙尾保護礁禁漁區)	Approximately 1 km north of the export cables of the Project	• Covers approximately 4.43km^2 • All fishing vessels using nets and fishing gear are not allowed to operate within this prohibited area.	Fisheries Agency, Ministry of Agriculture	Regulation: Fisheries Act Relevant agencies: Local governments Fisheries Agency, Ministry of Agriculture	The offshore WTG will not be directly located within these areas. There is no straightforward general definition on appropriate distance or placement for windfarms relative to protection reefs. It is broadly taken that the further the distance the better, as this reduces likely impact
Lukang protection reef (鹿港保護礁禁漁區)	Approximately 3.94 km north of the export cables of the Project	• Covers approximately 6.31km^2 • All fishing vessels using nets and fishing gear are not allowed to operate within this prohibited area.	Fisheries Agency, Ministry of Agriculture	Regulation: Fisheries Act Relevant agencies: Local governments Fisheries Agency, Ministry of Agriculture	The offshore WTG will not be directly located within these areas. There is no straightforward general definition on appropriate distance or placement for windfarms relative to protection reefs. It is broadly taken that the further the distance the better, as this reduces likely impact
Changhua District Fisheries Association's exclusive fishery rights waters (彰化區漁會專用漁業權水域)	0km (overlaps with export cables)	• Holds exclusive fishing rights in designated waters, granting them the privilege to utilize specific areas for various fishing activities. These rights allow them to: ○ Catch or harvest aquatic organisms. ○ Engage in aquaculture. ○ Catch or harvest aquatic animals using anchored fishing gears in waters up to 25 meters deep. • Only fishermen's associations or fisheries production cooperatives can qualify for these exclusive fishing rights, ensuring that the management and use of these waters are regulated and sustainable.	Fisheries Agency, Ministry of Agriculture	Regulation: Fisheries Act Relevant agencies: Local governments Fisheries Agency, Ministry of Agriculture	The offshore WTG will not be directly located within these areas, however, the export cables will overlap with this area. There is no straightforward general definition on appropriate distance or placement for windfarms relative to protection reefs. It is broadly taken that the further the distance the better, as this reduces likely impact

Source: Mott MacDonald, 2024

3.2.2 Internationally recognised areas

The IFC GN6 exclusively defines internationally recognised areas as UNESCO Natural and Mixed WHS, UNESCO Man and the Biosphere (MAB) Reserves, Key Biodiversity Areas (KBAs), and wetlands designated under the Convention on Wetlands of International Importance ie the Ramsar Convention (IFC, 2019).

KBAs are defined as sites that contribute significantly to the global persistence of biodiversity, in terrestrial, freshwater and marine ecosystems that meet one or more of 11 KBA criteria set out by IUCN (IUCN, 2016). KBAs include IBAs, Important Plant Areas (IPAs) and Alliance for Zero Extinction (AZE) sites.

The Project footprint has avoided most of the above internationally recognised areas. However, the Project is located within 10km of the Dadu River Estuary Wetland IBA, as well as the Hanbao Wetlands IBA. In addition, the 24 IBAs are noted to occur in the migratory bird EAAA. This is summarised in Table 3.2 below, and the locations of each are shown in Figure 3.1. Further details of each legally protected area are also provided in the following subsections.

Table 3.2: Internationally recognised areas within the Project's EAAAs

Site name	Designation	Distance from the Project	Significant Biodiversity Values
Dadu River Estuary Wetland IBA (TW013)	Wetland of National Importance, Wildlife Refuge, Major Wildlife Habitat, IBA and KBA	Adjacent export cables of the Project	• Covers approximately 27km^2, largest waterbird habitat in Central Taiwan • Over 200 bird species, including 22 protected species, have been recorded (Ramsar Citizen, 2019) • Designated as Wetland of National Importance, Wildlife Refuge, Major Wildlife Habitat, IBA and KBA • The area is designated as an IBA and KBA due to the presence of significant populations of globally threatened species (Black-faced Spoonbill and Saunders's Gull) and significant congregations of Saunders's Gull.
Hanbao Wetlands IBA (TW014)	IBA / KBA	Approximately 9km south of the export cables of the Project	• Covers approximately 24km^2, serves as gathering spot for migratory birds • Many different types of habitats creating excellent bird roosting environments (Key Biodiversity Areas, 2023) • This area has been identified as an IBA based on the presence of significant populations of Black-faced Spoonbill *Platalea minor* (IUCN Endangered) and significant congregations of Saunders's gull *Saundersilarus saundersi* (IUCN Vulnerable and National Red List Critically Endangered).
North Section of Baguashan, Changhua County (TW015)	IBA / KBA	Approximately 17km east of the export cables of the Project	• Covers 6316 ha • The Baguashan Plateau consists of red clay; both the eastern and western slopes are incised with erosion gullies, but the terrain is generally flat. The forest cover at the Baguashan area is low-elevation secondary growth. • This area has records of at least 100 bird species. • Triggered as IBA site based on presence of Gray-faced buzzard (LC)
Zhuoshui River Estuary Wetland (TW016)	IBA / KBA	Approximately 29km south of the export cables of the Project	• Covers 767ha. • Coastal mud flat wetland, with the bird community comprised mainly of the Scolopacidae, Charadriidae, and Laridae. • Total of 89 species bird species recorded. • Triggered as IBA site based on presence of Saunders's gull (VU)
Huben, Yunlin County (TW017)	Major Wildlife Habitat, IBA and KBA	Approximately 47km south of the export cables of the Project	• Covers 2355ha. • Primarily comprises the upstream section of the Huwei River, including part of the mountain area at Linnei, Douliu, and Gukeng. • Important breeding site for the fairy pitta (*Pitta nympha*).

Site name	Designation	Distance from the Project	Significant Biodiversity Values
			• 97 bird species in 33 families have been recorded, among which are 5 endemic species, 32 sub-endemic species, and 25 protected species. • Various species of mammals, amphibians and reptiles have also been recorded. • Triggered as IBA site based on presence of fairy pitta (*Pitta nympha*) listed as VU in the IUCN Red List
Aogu Wetland, Chiayi County (TW021)	Wetland of National Importance, Major Wildlife Habitat, IBA and KBA	Approximately 66km south of the export cables of the Project	• Covers 13,880ha. • Consists of sand flats, estuary, cultivated land, marshland, saltwater lake, freshwater ponds and mangroves. • 223 bird species have been recorded here, including 22 protected species. 290 species of plants have also been identified. • Triggered as an IBA site due to presence of black-faced spoonbill (EN), great cormorant (*Phalacrocorax carbo*) (LC) and Saunders's gull (VU). • Holds congregations of ⩾1% of the global population of the Great cormorant, Saunders's gull and waterbirds
Puzi River Estuary, Chiayi County (TW022)	Wetland of National Importance, IBA and KBA	Approximately 74km south of the export cables of the Project	• Covers 2317ha. • Main environments are the estuary, mangrove forests, protection forests, and aquaculture ponds. • Abundance of crabs create excellent feeding grounds for shorebirds and waterfowl.179 species of birds have been recorded in the area. • Triggered as IBA site based on presence of Saunders's gull (*Saundersilarus saundersi*) listed as VU in the IUCN Red List
Budai Wetland, Chiayi County (TW023)	Wetland of National Importance, IBA and KBA	Approximately 85km south of the export cables of the Project	• Covers 4207ha. • Main environments are the estuary, river systems, mud flats, salt fields, aquaculture ponds and human-cultivated wetlands. • Attracts shorebirds and sea birds which pass through during migration or stay over during winter. • Triggered as IBA site based on the presence of Saunders's gull (VU), black-faced spoonbill (*Platea minor*) (EN) and Caspian tern (*Hydroprogne caspia*) (LC). • Holds congregations of ⩾1% of the global population of the Caspian tern
Middle Section of Bazhang River, Chiayi County (TW024)	Wetland of National Importance, IBA and KBA	Approximately 73.5km south of the export cables of the Project	• Covers 317ha. • Excellent environment for bloodworms to grow and multiply, serving as natural food sources for birds.

Site name	Designation	Distance from the Project	Significant Biodiversity Values
			• Different species of trees and shrubs growing along the riverbank support excellent refuge for the birds. • 82 species of birds recorded here, including protected species such as Painted Snipe and Eastern Collared Pratincole. • Triggered as IBA site based on presence of black-winged stilt (*Himantopus himantopus*) (LC). • Holds congregations of ⩾1% of the global population of the black-winged stilt.
Beimen, Tainan City (TW025)	Wetland of National Importance, IBA and KBA	Approximately 94km south of the export cables of the Project	• Covers 3302ha. • Includes sand flats, salt fields, aquaculture ponds, mud swamp and mangroves. • 121 bird species have been recorded, including migratory birds • Triggered as IBA site based on the presence of Saunders's gull (VU) and black-faced spoonbill (EN)
Qingkunshen, Tainan City (TW026)	Wetland of National Importance, IBA and KBA	Approximately 102km south of the export cables of the Project	• Covers 5146ha, adjacent to the Taiwan coastline. • Largest salt evaporation area on Taiwan's southeast coast (1,800 ha). • 51 birds recorded in this area. Important breeding site for black-winged stilt (LC). • Triggered as IBA site based on presence of black-winged stilt (LC)and long-toed stint (*Calidris subminuta*) (LC). • Holds congregations of ⩾1% of the global population of the black-winged stilt and long-toed stint
Qigu, Tainan City (TW027)	Wetland of National Importance, Major Wildlife Habitat, National Park, IBA and KBA	Approximately 108km south of the export cables of the Project	• Covers 9468ha. • Habitats at this site can be classified as estuarine wetlands, lagoons, fishponds, grassy marshes, and salt fields. • Globally important wintering site for the black-faced spoonbill. • 220 species of birds have been recorded, including 23 protected species. 30 species of crabs and nearly 200 species of molluscs. • Triggered as IBA site based on presence of black-faced spoonbill (EN).
Hulupi, Tainan City (TW028)	Wetland of National Importance, IBA and KBA	Approximately 97km south of the export cables of the Project	• Covers 2280ha. • Large reservoir administered by the Chianan Farm Water Conservation. • Board, with orchards and other forest growth. • Last remaining natural habitat where the Pheasant-tailed jacana (*Hydrophasianus chirurgus*) congregate in Taiwan.

Site name	Designation	Distance from the Project	Significant Biodiversity Values
			• Triggered as IBA site based on presence of black-winged stilt (LC) and pheasant-tailed jacana (LC). • Holds congregations of ⩾1% of the global population of the black-winged stilt and pheasant-tailed jacana
Sicao Wildlife Refuge, Tainan City (TW029)	Wetland of National Importance, Wildlife Refuge, Major Wildlife Habitat, National Park, IBA and KBA	Approximately 118km south of the export cables of the Project	• Covers 4057ha, one of Taiwan's four biggest wetlands. • Consists of tidal flats that are an important stop for passage migrants and winter visitors. A portion of the salt fields and aquaculture ponds has been designated as a wildlife refuge. • Breeding population of the black-winged stilt at this site is the largest stilt group in Taiwan. • 171 species of birds have been recorded, including 23 protected species • Largest habitat in Taiwan of white-flowered black mangrove (*Lumnitzera racemosa*). • Triggered as IBA site based on presence of black-faced spoonbill (EN) and black-winged stilt (LC). • Holds congregations of ⩾1% of the global population of the black-winged stilt
Yong'an, Kaohsiung City (TW030)	Wetland of National Importance, IBA and KBA	Approximately 142km south of the export cables of the Project	• Covers 124ha. • Situated on the border between Qieding and Yong'an Districts in Xingda Port's inland sea, which once covered over 500 ha, this area has the most extensive mangrove forest in southern Taiwan. • The former saline beaches, their irrigation canals and natural lakes, and the dense growth of Avicennia marina and Lumnitzera racemosa mangroves attract large numbers of waterbirds • Triggered as IBA site based on presence of black-faced spoonbill (EN) and Kentish plover (LC).
Yellow Butterfly Valley, Kaohsiung City (TW031)	IBA / KBA	Approximately 128km south of the export cables of the Project	• Covers 10,291ha. • The habitat consists mainly of subtropical evergreen hill forests, rivers, and fruit orchards. In recent years, many fruit orchards have been abandoned and were beginning to resemble second-growth forests with greater wildlife and bird diversity. • This is a key site for Fairy Pitta in southern Taiwan. At least 130 bird species have been recorded at this site, including 8 endemic species • Triggered as IBA site based on presence of fairy pitta (VU)
Shanping, Kaohsiung City (TW032)	IBA / KBA	Approximately 130km south of the export cables of the Project	• Covers 9572 ha. • Located 6.5 km southeast of Liugui on a ridge extending from the southern tip of the Central Mountain Range in the low- to mid-elevation broadleaf forest zone of the Laonung

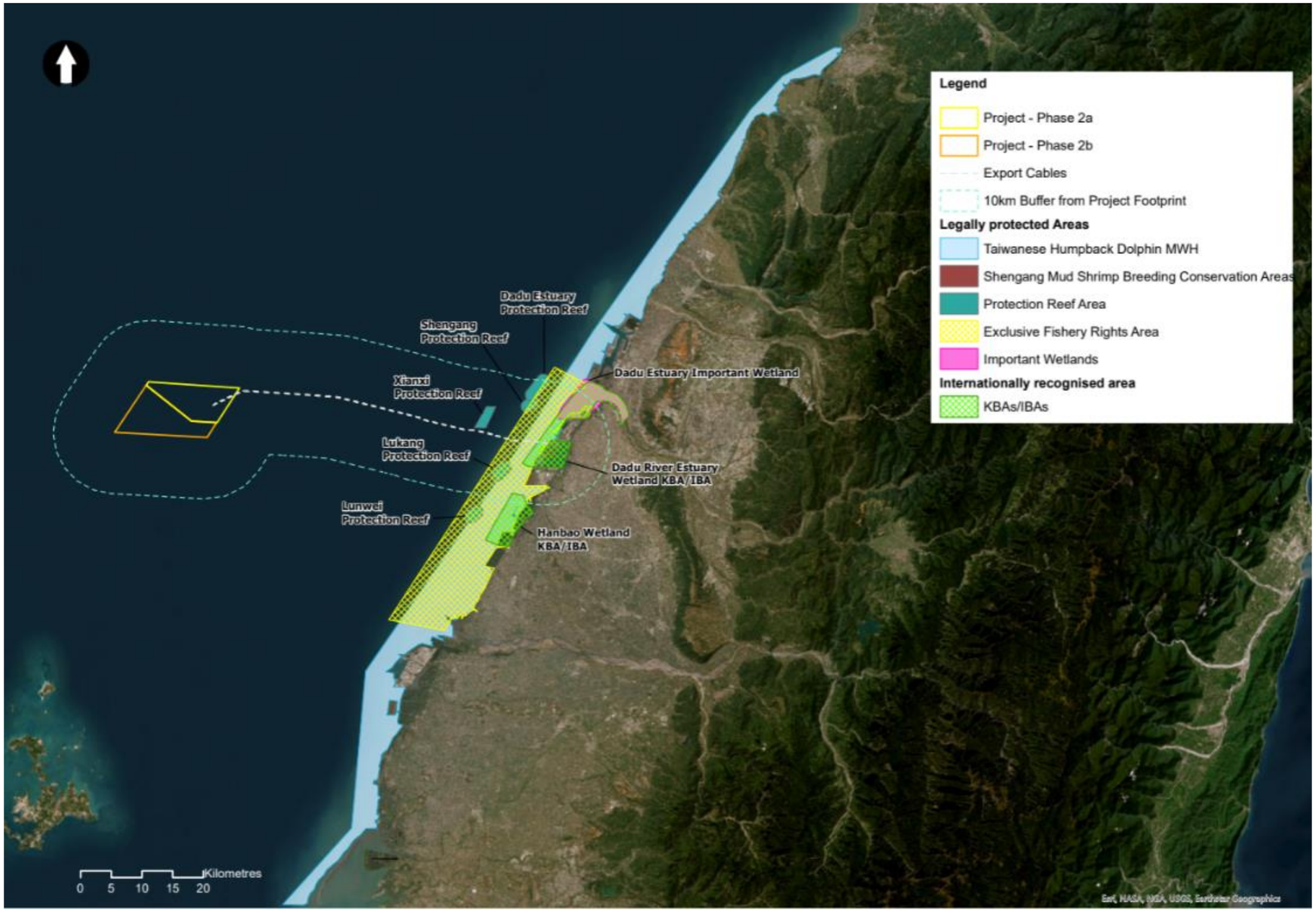
Site name	Designation	Distance from the Project	Significant Biodiversity Values
			River watershed. This area was formed by erosion of the river systems creating flat land in the shape of a fan. • The vegetation is mostly primary low- to mid-elevation broadleaf forests dominated by families Lauraceae and Fagaceae. • Triggered as IBA site based on presence of numerous endemic bird species
Chuyunshan Nature Reserve (TW033)	Nature Reserve, IBA and KBA	Approximately 124km south of the export cables of the Project	• Covers 6248 ha. • The Malishan and Wanshan Streams flow through this area, an important watershed system of the Laonung River. • The Council of Agriculture declared the Chuyunshan Nature Reserve to conserve broadleaf and coniferous natural forests, rare animals and plants, forest streams, and freshwater fish. This site is an important middle elevation nature reserve in southern Taiwan. • Triggered as IBA site based on presence of numerous endemic bird species
Fengshan Reservoir, Kaoshiung City (TW035)	Wetland of National Importance, IBA and KBA	Approximately 173km south of the export cables of the Project	• Covers 813 ha. • The Fengshan Reservoir is located at the southern foothill of Fengshan at Linyuan District, Kaohsiung City, southeast of Xiaogang District about 22 km from Kaohsiung City. • Aside from water processing facilities and the reservoir area, the surrounding watershed is mostly secondary forest dominated by trees such as *Delonix regia, Acacia confusa, Ficus microcarpa*, which provides habitat for migrating raptors as well as passage and overwintering habitat for birds. • Triggered as IBA site based on presence of the Great cormorant (LC) and Chinese sparrowhawk (LC)
Dawushan Nature Reserve and Shuang-guei Lake Major Wildlife Habitat (TW036)	Wetland of National Importance, Wildlife Refuge, Major Wildlife Habitat, Nature Reserve, IBA and KBA	Approximately 133km south of the export cables of the Project	• Covers 94,723 ha. • Situated on the eastern slope of the southern section of the Central Mountain Range and includes the watersheds of five major rivers: Zhiben, Taimali, Jinlun, Dazhu, and Lijia Rivers. • Most of this area consists of national forests, of which much remains in natural state. Over 90% of the area is forested, most of which is natural forest. This is the largest and most intact area of natural mixed broadleaf and coniferous forests in Taiwan. • Triggered as IBA site based on presence of the Styan's Bulbul (VU) and numerous endemic bird species
Gaoping River, Pingtung County (TW037)	Wetland of National Importance, IBA and KBA	Approximately 143km south of the export cables of the Project	• Covers 2371 ha.

Site name	Designation	Distance from the Project	Significant Biodiversity Values
			• The Gaoping River, also called the Lower Danshui River or Danshui River, flows from Qishan District, Kaohsiung City to the Linyuan Industrial Park where it empties into the sea. It forms the border between Kaohsiung City and Pingtung County. • Rich ecosystems can be found along the river, from lofty peaks and ridges of mountains and precipitous stream valleys of the upstream sections where high-elevation birds reside, to the middle reaches where the river valleys broaden, forming alluvial valleys that support many mid-elevation birds, to the agricultural fields along the lower reaches, where dense growths of grasses along the banks are important habitats for migratory and resident bird species. • Triggered as IBA site based on presence of the Great cormorant (LC), black-faced spoonbill (EN) and Chinese Egret (VU).
Kenting National Park (TW038)	Wetland of National Importance, National Park, Nature Reserve, IBA and KBA	Approximately 228km south of the export cables of the Project	• Covers terrestrial area 18,083.5 ha and marine area 15,206.09 ha. • Encompassing both terrestrial and marine components, Kenting National Park is located in the southernmost part of the Hengchun Peninsula and is surrounded by the sea. • On land are five Ecological Protected Areas: Siangjiao Bay, Mt. Nanren, Shadao, Longkeng, and Sheding Tableland, with a total area of 6,248.81 ha and occupying 34.56% of the terrestrial area of the park. Four Marine Ecological Protected Areas total 476.38 ha and occupy 3.13% of the marine area within the park. • Triggered as IBA site based on presence of the Styan's Bulbul (VU), Chinese sparrowhawk (LC), Gray-faced buzzard (LC) and numerous endemic bird species
Qieding Wetland, Kaohsiung City (TW054)	Wetland of National Importance, IBA and KBA	Approximately 137km south of the export cables of the Project	• Covers 171 ha. • There are a variety of wetland habitats at this site, including mudflats, mangrove forests, abandoned salt pans, and sandy areas. • Qieding Wetland currently still has the greatest species richness and abundance of waterbirds in Kaohsiung City, the wintering habitat of up to 15,000 waterbirds. This area is closely linked to Yong'an Wetland, and waterbirds move between the sites when agitated, particularly evident in Kentish Plovers. • Triggered as IBA site based on presence of black-faced spoonbill (EN) and Kentish plover (LC).
Fangyuan Wetland, Changhua County (TW056) (prospective)	IBA / KBA	Approximately 17.5km south of the export cables of the Project	• Covers 3633 ha. • The habitat is predominantly intertidal beaches and aquaculture ponds, followed by fallow farmlands, grasslands, and intertidal mudflats where oyster is cultivated. • Potential IBA trigger species include Greater Sand-Plover about 800 individuals), Ruddy Turnstone (about 800 individuals), Gray-tailed Tattler (about 600 individuals) during

Site name	Designation	Distance from the Project	Significant Biodiversity Values
			migration and Kentish Plover (about 700-1,400 individuals) in the winter, each reaching 1% of the migratory population in recent years.

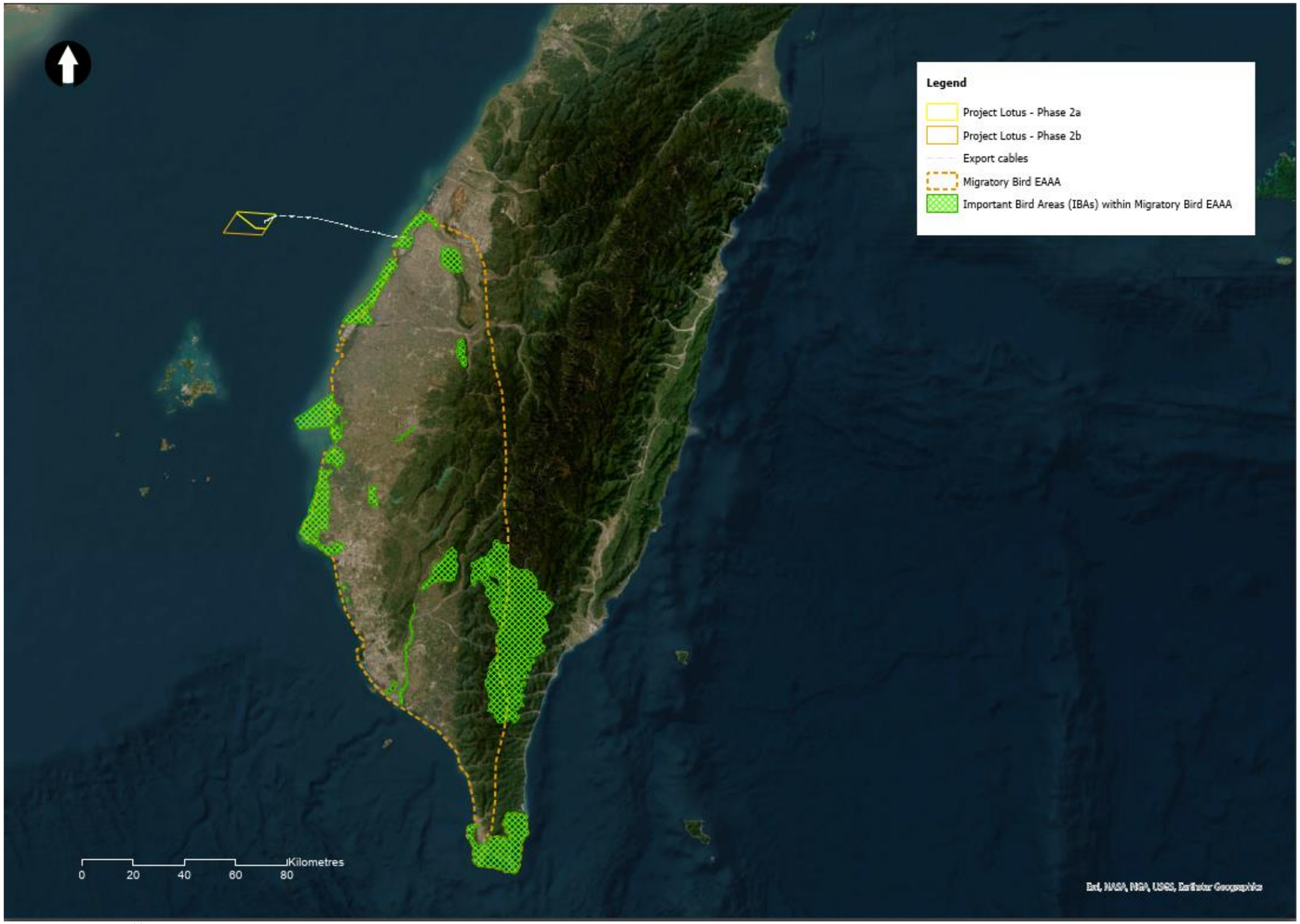
Source: Important Bird Areas in Taiwan (second edition),2015; Mott MacDonald, 2024

Figure 3.1: Legally protected and internationally recognised areas within 10km of the Project



Source: Mott MacDonald, 2024

Figure 3.2: Important Bird Areas (IBAs) within the migratory birds (including seabirds at sea) EAAA



Source: Mott MacDonald, 2024

3.3 Natural and modified habitats

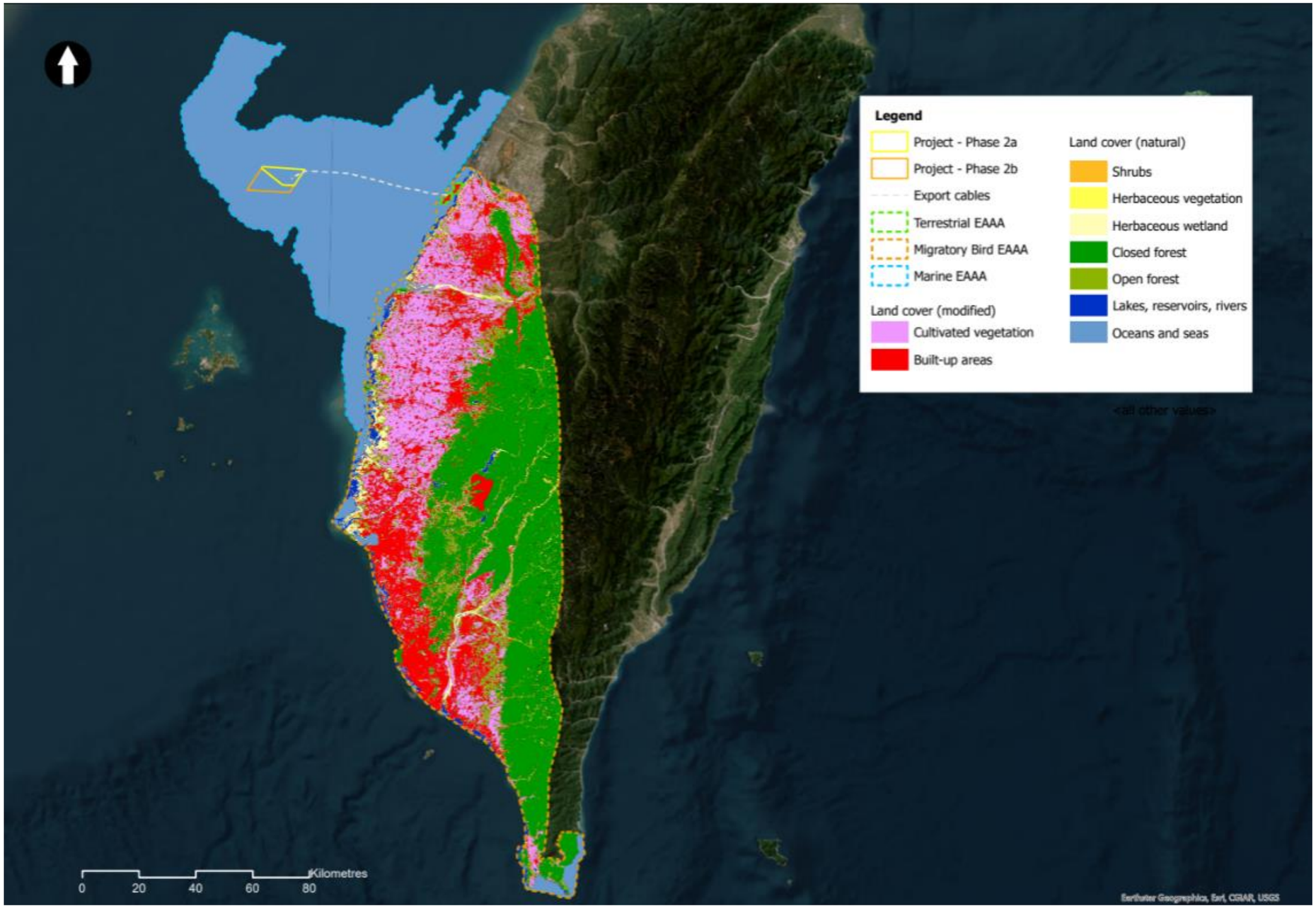
The habitats present in the EAAAs are described in the following sections using Copernicus Global Land Service (CGLS, 2019) and consolidated via ground truthing, literature and survey data from the Greater Changhua SW Offshore Wind Farm EIA (Unitech, 2018a). Habitats found within the EAAAs have also been further categorised into modified or natural habitat as per IFC PS6 where:

- Modified habitats are areas that may contain a large proportion of plant and/or animal species of non-native origin, and/or where human activity has substantially modified an area's primary ecological functions and species composition. Modified habitats may include areas managed for agriculture, forest plantations, reclaimed coastal zones and reclaimed wetlands.
- Natural habitats are areas composed of viable assemblages of plant and/or animal species of largely native origin, and/or where human activity has not essentially modified an area's primary ecological functions and species composition.

Figure 3.3 below shows the delineation of the natural and modified habitats within the three EAAAs. As based on the land cover types in the Copernicus Global Land Service (100m global resolution), natural habitats include shrubs, herbaceous vegetation, closed forest, open forest, herbaceous wetland, lakes, rivers, reservoirs, oceans, and seas. Modified habitats include cultivated vegetation and built-up areas.

Table 3.3 provides a quantified breakdown of land cover area within each EAAA, while further descriptions of the dominant habitats are presented in Sections 3.3.1 to 3.3.3. It is noted that the entire terrestrial and coastal EAAA has not been ground-truthed.

Figure 3.3: Land cover map within the EAAAs of the Project



Source: Mott MacDonald, 2024

Table 3.3: Breakdown of land cover area within each EAAA

Land cover type	Coverage within Terrestrial EAAA (km^2)	Percentage coverage of Terrestrial EAAA (%)	Coverage within Marine EAAA (km^2)	Percentage coverage of Marine EAAA (%)	Coverage within Migratory Bird EAAA (km^2)	Percentage coverage of Migratory Bird EAAA (%)
Natural habitat						
Shrubs	0.00	0.00	0.00	0.00	16.78	0.14
Herbaceous vegetation	0.00	0.00	0.02	<0.0001	64.62	0.53
Closed forest	0.00	0.00	0.00	0.00	4453.92	36.49
Open forest	0.00	0.00	0.24	<0.0001	1,636.53	13.41
Herbaceous wetland	0.00	0.00	1.21	0.02	284.94	2.33
Lakes, rivers, reservoirs	0.00	0.00	15.82	0.29	252.50	2.07
Oceans and seas	0.63	9.24	5518.10	99.69	387.80	3.18
Modified habitat						
Cultivated vegetation	0.00	0.00	0.00	0.00	2,619.52	21.46
Built-up areas	16.19	96.3	0.00	0.00	2489.51	20.40
Total area / % coverage						
Total	**16.82**	**100.00**	**5535.38**	**100.00**	**12,206.13**	**100.00**

Source: CGLS, 2019

3.3.1 Habitats within the terrestrial EAAA

The terrestrial flora and fauna EAAA is located in Changhua Binhai industrial park, which is a reclaimed land separated from Xianxi Township by Qingan water channel and Xianxi water channel. According to CGLS (2019), the EAAA consists of 9.24% natural habitat and 96.3% modified habitat. The dominant natural habitats within this area include oceans and seas (9.24% of EAAA), while dominant modified habitat is built-up areas (96.3%). As the terrestrial flora and fauna EAAA is within a reclaimed industrial land, this area is considered as a modified habitat.

3.3.2 Habitats within the marine EAAA

The marine EAAA is situated in the western to south-western marine waters of Taiwan, as mentioned in Section 2.2.1. According to CGLS land cover data (CGLS, 2019), the EAAA consists of 100% natural habitat. The dominant natural habitat within this area is oceans and seas (99.69% of EAAA). As the marine EAAA consists of mostly open water habitats, this area is considered to be a natural habitat.

3.3.3 Habitats within the migratory bird EAAA

The migratory bird EAAA includes the IBAs in the south-western region of Taiwan and the corresponding areas of connectivity between the IBAs, largely based upon the migratory route maps detected during radar surveys (Section 2.2.1). According to land cover data from the Copernicus Global Land Service (CGLS, 2019), the migratory bird EAAA consists of 58.14% natural habitat and 41.86% modified habitat. The dominant natural habitats within this area include closed forest (36.49% of EAAA) and open forest (13.41% of EAAA), while dominant modified habitat is cultivated vegetation (21.46% of EAAA) and built-up areas (20.40% of EAAA). As the migratory bird EAAA encompasses built-up areas along the inland and coastal regions of Taiwan, as well as IBAs and natural areas, this area is considered to be a mix of natural and modified habitat.

3.4 Flora and fauna within the EAAAs

Species that are likely to be regularly occurring within the Project's EAAA were identified from the sources listed in Section 2.2.2, including data taken from the EIA report baseline[24]. Further details regarding the locations and abundance of species encountered can be found in Section 6.3 of the EIA baseline chapter (Unitech, 2018a).The section below highlights the number of species identified through primary and secondary data collection in the EAAA and their IUCN conservation status.

3.4.1 Terrestrial flora and fauna

The EIA reports (Unitech, 2018a; Unitech, 2021) baseline identified approximately up to 270 terrestrial species. In addition to the Project's baseline surveys it was considered that a total of 479 species of terrestrial flora and fauna were likely to be present within the EAAA. Terrestrial flora and fauna within the EAAA are assigned to the following IUCN conservation status categories:

- Critically Endangered: 4
- Endangered: 6
- Vulnerable: 17

[24] Note that numbers from the EIA baseline is based on the survey season with the highest number and does not include numbers from the Lunwei District Supplementary Survey and EIA addendum.

- Near Threatened: 15
- Least Concern: 434
- Data Deficient: 3

3.4.2 Marine flora and fauna

A total of 334 species were recorded during baseline surveys for the EIA reports (Unitech, 2018a; Unitech, 2021). Given the relatively broad seascape and the wide-ranging behaviour of many marine species it was considered that 2483 species of marine fauna and flora were likely to be present within the EAAA. Marine flora and fauna within the EAAA are assigned to the following IUCN conservation status categories:

- Critically Endangered: 20
- Endangered: 54
- Vulnerable: 81
- Near Threatened: 81
- Least Concern: 2082
- Data Deficient: 165

3.4.3 Migratory birds (including seabirds at sea)

A total of 65 species were recorded during baseline surveys for the EIA reports (Unitech, 2018a; Unitech, 2021). Given the wide-ranging behaviour of migratory birds and seabirds at sea, it was considered that 17 internationally threatened (ie CR, EN and VU) species and a total of 229 species were likely to be present within the migratory bird EAAA. Migratory birds and seabirds at sea within the EAAA are assigned to the following IUCN conservation status categories:

- Critically Endangered: 3
- Endangered: 5
- Vulnerable: 10
- Near Threatened: 11
- Least Concern: 200

4 Critical habitat determination

4.1 Overview

Species were screened against the relevant criteria in Section 2.1.1 to determine if they are considered to be significant biodiversity values that may cause critical habitat requirements to be applied. Species that met the criteria were further assessed in this chapter against the thresholds specified in Section 2.1.1. The results of the assessment against C4 and C5 are also presented in this chapter. A summary of biodiversity values that meet critical habitat thresholds is presented in Section 4.7.

4.2 Criterion 1: Critically endangered and/or endangered species

A total of 174 species were found to be listed as Critically Endangered, Endangered on the IUCN Red List or National Red List, or Vulnerable on the IUCN Red List that possess an overlap of its species range with the EAAA. This consists of 23 marine invertebrates, 18 birds, 25 fish, 85 sharks and rays, 10 mammals, 10 reptiles, 2 plants and 2 horseshoe crab. Of these, six (6) species (one marine mammal, four birds, and one fish) are Critical Habitat species as per Criterion 1. These species are presented in Table 4.1 below.

Table 4.1: Criterion 1 Assessment Outcomes for Significant Biodiversity Values in the EAAAs

Scientific Name	Common Name	IUCN Status	Relevant EAAA	Relevant criterion
Mammal				
Sousa chinensis ssp. Taiwanensis	Taiwanese Humpback Dolphin	CR	Marine EAAA	C1 (a)
Fish				
Rhynchobatus immaculatus	Taiwanese Wedgefish	CR	Marine EAAA	C1 (a)
Bird				
Platalea minor	Black-faced Spoonbill	EN	Migratory bird EAAA	C1 (a)
Saundersilarus saundersi	Saunders's Gull	VU [1]	Migratory bird EAAA	C1 (c)
Ciconia boyciana	Oriental Stork	EN	Migratory bird EAAA	C1 (a) and C1 (c)
Thalasseus bernsteini	Chinese Crested Tern	CR	Migratory bird EAAA	C1 (a) and C1 (c)

Note: [1] CR on National Red List

Source: Mott MacDonald, 2024

4.2.1 Marine flora and fauna

It is determined that two marine species are critical habitat species under C1 (a) (Table 4.1). The first species is the Taiwanese Humpback Dolphin (*Sousa chinensis ssp. taiwanesis*) which is Critically Endangered and has over 0.5% of its global population within the EAAA. Taiwanese Humpback Dolphin (*Sousa chinensis ssp. taiwanesis*) is listed as Critically Endangered under the IUCN Red List and was recognised by Taiwan's Coast Guard Administration, Executive Yuan via public notice No. 10800000721, dated 9 January 2019, as a Category I Endangered species (ie the most critical species). The population of the subspecies is considered to be 37–

44 mature individuals (IUCN, 2022) and its known range is largely within the EAAA. The population in the EAAA therefore exceeds the threshold for C1(a) in respect of the Taiwanese Humpback Dolphin.

The second species is the Taiwanese Wedgefish (*Rhynchobatus immaculatus*) which is also Critically Endangered. It is a poorly known shark-like ray with a restricted distribution around northern Taiwan in the Northwest Pacific. There is a high level of fisheries resource use and increasing fishing pressure across the range of wedgefishes, and as a result, targeted and incidental fishing effort is placing significant pressure on the wedgefish species in the Indo-West Pacific. While there is no specific population data available, its known range has a significant 4.21% overlap with the marine EAAA. Given these conditions, the Taiwanese wedgefish is considered likely to be a critical habitat species under C1(a).

4.2.2 Migratory birds (including seabirds at sea)

4.2.2.1 Overview

The coastal plain of Taiwan is an important area for migratory wetland birds. The wetland areas that support these species are almost entirely located within the coastal plain. Considering the mobility of migratory wetland birds, these wetlands are considered to be interconnected. Due to this connectivity, the EAAA encompasses the entire south-western region coast of Taiwan including the IBAs and connectivity between them.

A list of migratory and seabird species with ranges that overlap with the EAAA was produced using IBAT data. As the National Red List of Taiwan follows global IUCN assessment criteria, the National Red List criteria in addition to the IUCN Red List was applied to the species and used for assessment against C1 thresholds. As a precautionary approach, where threat status between National Red List and the IUCN Red List differs for a species, a precautionary approach was undertaken and the higher threat status was used.

4.2.2.2 Black-faced Spoonbill

Black-faced Spoonbill is listed as Endangered under the IUCN Red List, and Near Threatened under the National Red List. It is also listed in Appendix I of the CMS. This species currently breeds only on a few small rocky islands off the west coast of North Korea, with four wintering sites at Macau, Hong Kong, Taiwan and Vietnam, as well as other places where they have been observed in migration. In the 2024 global census, the black-faced spoonbill population was recorded at 6988 individuals, of which 4135 were recorded in Taiwan, accounting for 59.2% of the population worldwide. 61 individuals of Black-faced Spoonbill were recorded during the baseline surveys of the EIA report. This exceeds the threshold for Criterion 1a (ie. $\geqslant$0.5% of the global population AND $\geqslant$5 reproductive units of a CR or EN species), where 0.5% of the global population is equivalent to approximately 31 individuals.

4.2.2.3 Saunders's Gull

Saunders's Gull is listed as Vulnerable under the IUCN Red List and Critically Endangered under the National Red List. It is also listed in Appendix I of the Convention on the Conservation of Migratory Species of Wild Animals (CMS), which means it is a threatened migratory species. This species is found in Taiwan, China, Hong Kong, Macao, Korea, Japan, Vietnam and Russia. Its natural habitats are saltmarsh habitats and estuarine tidal flats (IUCN, 2023a). However, this species was not recorded during the baseline surveys of the EIA reports (Unitech, 2018a; Unitech, 2021). Taking a precautionary approach using spatial data, the global range of the Saunders's Gull overlaps with the EAAA by 1.62%. Thus, the migratory bird EAAA may support a globally important population of this species under Criterion 1c (ie areas containing important concentrations of a nationally or regionally listed CR/EN species).

4.2.2.4 Oriental Stork

Oriental Stork is listed as Endangered under both the IUCN Red List and National Red List. It is also listed in Appendix I of the CMS. It is an IBA trigger species (A1) for Zhuoshui River Estuary Wetland IBA (also known as Tacheng Wetland IBA), whereby the site is known or thought regularly to hold significant numbers of Oriental Storks. In recent years, the Oriental Stork has been recorded regularly, numbering approximately 1-2 individuals at the Zhuoshui River Estuary Wetland IBA. According to eBird, there was a peak sighting of 13 individuals at the Zhuoshui River estuary (within the migratory bird EAAA) in 2023. Considering that the number of mature individuals globally are estimated to be 1000-2499 individuals, it is likely to result in the migratory bird EAAA supporting a globally important concentration of this species. Thus, this meets critical habitat thresholds under C1(a) (ie 0.5% of the global population) and C1(c) (ie areas containing important concentrations of a nationally or regionally listed CR/EN species).

4.2.2.5 Chinese Crested Tern

The Chinese Crested Tern is listed as Critically Endangered under the IUCN Red List and National Red List. The global population of the Chinese Crested Tern is approximately 30 to 49 mature individuals. The IUCN does not present the Chinese crested tern global range. However, according to eBird, the species has been spotted several times in 2023 just south of Chiayi county (within the migratory bird EAAA), numbering between 1-2 individuals each time (eBird, 2024b). As this already constitutes >1% of the global population given its small population size (ie approximately 30 to 49 mature individuals), this species meets critical habitat thresholds under C1(a) and C1(c) (ie. 0.5% of the global population and areas containing important concentrations of a nationally or regionally listed CR/EN species).

4.2.2.6 Summary

The Black-faced Spoonbill, Saunders's Gull and Oriental Stork are designating species for 14 IBAs within the migratory birds (including seabirds at sea) EAAA, including:

- Dadu River Estuary Wetland (TW013) [a, b]
- Hanbao Wetlands (TW014) [a, b]
- Zhuoshui River Estuary Wetland (TW016) [a, b]
- Aogu Wetlands (TW021) [a, b]
- Puzi River Estuary (TW022) [a]
- Budai Wetland (TW023) [a, b]
- Beimen (TW025) [a, b]
- Qingkunshen (TW026) [a, b]
- Qigu (TW027) [a, b]
- Sitsao Wildlife Refuge (TW029) [a, b]
- Yungan (TW030) [a, b]
- Kaoping River (TW037) [a]
- Qieding Wetland (TW054) [a, b]
- Fangyuan Wetland, Changhua County (TW056) (prospective) [a]

[a] Sites which are designated as IBAs due to the presence of significant numbers of Saunders's Gull and/or Black-faced Spoonbill and/or Oriental Stork

[b] Sites which are designated as IBAs as they are known or thought to hold, on a regular basis, >1% of the biogeographic population of Saunders's Gull and/or Black-faced Spoonbill and/or Oriental Stork

The Chinese Crested Tern is not a designating species for any IBAs within the migratory birds (including seabirds at sea) EAAA.

Therefore, the following species have been identified as critical habitat species within the migratory bird EAAA (Figure 2.3) under the following criteria:

- Black-faced Spoonbill: C1(a)
- Saunders's Gull: C1(c)
- Oriental Stork: C1(a) and C1(c)
- Chinese Crested Tern: C1(a) and C1(c)

4.2.3 Terrestrial flora and fauna

A total of 28 terrestrial species are listed as CR or EN by National Red List or IUCN Red List, or VU on the IUCN Red List that possess an overlap of its species range with EAAA. This would potentially trigger C1 as the threshold is that the terrestrial EAAA contains important concentrations of a IUCN listed or nationally listed CR or EN or VU species. However, there are no exceedance of global population of more than 0.5%, so it is unlikely that the EAAA presents a large enough area of suitable habitat to exceed the threshold for regularly holding >0.5% of the global population AND >5% reproductive units of a CR or EN species. Thus, the terrestrial species, which are either widespread or upland habitat specialists, do not exceed the criterion threshold.

4.3 Criterion 2: Endemic and/or range-restricted species

Spatial information from IBAT and the IUCN was used to estimate the total geographical range of species. A total of 23 species were assessed against the relevant C2 thresholds to determine if they may exceed critical habitat thresholds. The majority of the species were screened out based on the extent of occurrence (EOO) or area of occurrence (AOO) which covers the whole or the majority of Taiwan's main island for terrestrial species and is not confined within the coastal waters of Taiwan for marine species. Of these, two species (one marine mammal and one fish) are considered critical habitat species under Critical Habitat Criterion 2. These species are presented in Table 4.2 below.

Table 4.2: Criterion 2 Assessment Outcomes for Significant Biodiversity Values in the EAAAs

Scientific Name	Common Name	IUCN Status	Relevant EAAA	Justification for Critical Habitat Determination (EOO/ AOO)	Relevant criterion
Mammal					
Sousa chinensis ssp. taiwanesis	Taiwanese Humpback Dolphin	CR	Marine EAAA	750km^2	C2
Fish					
Acanthopagrus taiwanensis	Taiwan Picnic Seabream	DD	Marine	40,288km^2	C2

Source: Mott MacDonald, 2024

4.3.1 Marine flora and fauna

Using the species distribution information from IBAT, geographical ranges of two marine fauna species (including one cetacean and one fish) are found to be within the threshold of 100,000km2 that defines a range-restricted species. The EAAA is considered to regularly hold ⩾10% of the global population size and ⩾10 reproductive units for each of the listed species.

As mentioned in Section 4.2.1, Taiwanese Humpback Dolphin (*Sousa chinensis ssp. taiwanesis*) is IUCN Critically Endangered and listed as a Category I Endangered species. This subspecies is only known from the coastal waters of western Taiwan and its known range is largely within the EAAA (IUCN, 2022).

The marine fish, ie Taiwan Picnic Seabream (*Acanthopagrus taiwanensis*), is listed as Data Deficient in the IUCN Red List. It is a demersal fish (Froese & Pauly, 2019) while there is little information on the depth range of the species. The known geographic ranges are restricted to the Taiwan waters and the whole EAAA overlaps with their geographic ranges. Taiwan Picnic Seabream was not collected during the EIA baseline surveys, however it was recorded in the Greater Changhua SE EIA (Unitech, 2018c).

The two species are therefore considered critical habitat species under C2 for the AOO of the species listed above (Table 4.3)

4.3.2 Terrestrial flora and fauna

A total of 13 species of terrestrial fauna and flora species are likely to be present within the EAAA that are considered to be 'range-restricted', in accordance with the definition presented in IFC PS6 (ie have an EOO <50,000km2). All species identified are largely confined to the island of Taiwan which has an area of approximately 36,000km2. The EAAA for terrestrial flora and fauna (shown in Figure 2.2) is 16.82 km^2 and largely modified habitat (industrial park). Therefore, it is unlikely that the EAAA presents a large enough area of suitable habitat for the species listed below to exceed the threshold for regularly holding $\geqslant$10% of the global population size AND $\geqslant$10 reproductive units of a species. No terrestrial species trigger critical habitat under C2.

4.4 Criterion 3: Migratory and/or congregatory species

A total of 347 species in the EAAAs were screened in as having the potential to qualify as critical habitat triggers under Criterion 3 as they are migratory or congregatory species. The screened in species includes 229 birds, 102 marine fish species, two shark species, five insects, one horseshoe crab, three mammals and five marine reptiles. None of the EAAAs are known to sustain 1% of the global population for the majority of the species, except for five species of birds that meets or exceeds the critical habitat thresholds (Table 4.3)

Table 4.3: Criterion 3 Assessment Outcomes for Significant Biodiversity Values in the EAAAs

Scientific Name	Common Name	IUCN Status	Relevant EAAA	Relevant criterion	Justification for Critical Habitat Determination
Platalea minor	Black-faced Spoonbill	Endangered	Migratory bird EAAA	C3 (a)	59.2% global population are found in Taiwan[25] of which 0.87% of global population are found within the EAAA. The Black-faced Spoonbill is a qualifying species for 11 IBAs within the EAAA. It is therefore likely that more than 1% of the population occurs within the EAAA.
Saundersilarus saundersi	Saunders's Gull	Vulnerable	Migratory bird EAAA	C3 (a)	The population estimate of Saunders's Gull in Taiwan is 700 individuals (Cao, Barter, & Wang, 2008), whereas the global population is 14,400 birds. The Saunders's Gull is a qualifying species for 8 IBAs within the EAAA. It is

[25] 2024 International Black-Faced Spoonbill Census

Scientific Name	Common Name	IUCN Status	Relevant EAAA	Relevant criterion	Justification for Critical Habitat Determination
					therefore likely that more than 1% of the population occurs within the EAAA
Charadrius alexandrinus	Kentish Plover	Least Concern	Migratory bird EAAA	C3 (a)	The Kentish Plover is an IBA qualifying species for multiple IBAs within the migratory bird EAAA. This includes the Pohtzi River Estuary IBA, Hsinchu City Coastal Area IBA, Kaomei Wetlands IBA, Dadu Rivermouth Wildlife Refuge IBA, Hanbao Wetlands IBA, Tacheng Wetlands IBA, Aogu Wetlands IBA, Budai Wetlands IBA, Chiku IBA, Sitsao Wildlife Refuge IBA, Yungan IBA and Qieding Wetland IBA. In addition, the Kentish Plover was observed (peak count 1535) during bird surveys conducted to inform the EIA. In 2014, 5752 Kentish Plovers were observed in Hanbao Wetlands and 1520 Kentish Plovers were observed in Dadu River Estuary Wetland Rivermouth Wildlife Refuge . Considering that the global poplulation of Kentish Plovers is 100,000-499,999 mature individuals, it is likely that >1% of global population of Kentish Plovers could be present within this area. Therefore, this species is considered a critical habitat species under C3.
Ciconia boyciana	Oriental Stork	Endangered	Migratory bird EAAA	C3 (a)	According to eBird, there was a sighting of 13 individuals at the Zhuoshui River estuary (within the migratory bird EAAA) in 2023. Considering that the number of mature individuals globally are estimated to be 1000-2499 individuals, it is likely that >1% of the global population of oriental storks could be present within this area. This species is therefore considered a critical habitat species under C3.
Thalasseus bernsteini	Chinese Crested Tern	Critically Endangered	Migratory bird EAAA	C3 (a)	There is no overlap between the Chinese Crested tern global range with the migratory bird EAAA. However, according to eBird, the species has been spotted several times in 2023 just south of Chiayi county (within the migratory bird EAAA), numbering between 1-2 individuals each time. As this already constitutes >1% of the global population (30-49 individuals), this species triggers critical habitat under C3.

Source: Mott MacDonald, 2024

4.4.1 Marine flora and fauna

A total of 134 marine fishes, two shark species, 21 crabs, one horseshoe crab, three marine mammals (cetaceans), and five marine turtles are likely to be present in the EAAA and considered to be migratory. Using IBAT spatial data, none of the species listed are found to have at least 1% of their global population within the EAAA at any stages of their lifecycle.

4.4.2 Migratory birds (including seabirds at sea)

The black-faced spoonbill is listed as Endangered under the IUCN Red List and Near Threatened under the National Red List. It is also listed in Appendix I of the Convention on the Conservation of Migratory Species of Wild Animals (CMS), indicating that it is a threatened migratory species. This species is found in eastern Asia including Taiwan. It feeds on intertidal mudflats and rests at a variety of sites (such as trees, man-made structures, shallow water) around the feeding areas (IUCN, 2023b). According to the 2024 International Black-Faced Spoonbill Census, the global population was recorded at 6988 individuals. This species was recorded along the coast during the baseline surveys of the EIA report.

Saunders's Gull is listed as Vulnerable under the IUCN Red List and Critically Endangered under the National Red List. It is also listed in Appendix I of the Convention on the Conservation of Migratory Species of Wild Animals (CMS), which means it is a threatened migratory species. This species is found in Taiwan, China, Hong Kong, Macao, Korea, Japan, Vietnam and Russia. Its natural habitats are saltmarsh habitats and estuarine tidal flats (IUCN, 2023a). Although this species was not recorded during the baseline surveys of the EIA, it would be appropriate to undertake a precautionary approach considering this species' overlap with the EAAA (1.63%) and conservation significance.

The Kentish Plover is listed as Least Concern under the IUCN Red List. Although the global range of the Kentish Plover overlaps with the EAAA by only 0.01%, count surveys conducted in qualifying IBAs of the Kentish Plover show that the area is known to sustain significant concentrations of the global population (Table 4.4). Considering that the global population of Kentish Plovers is 100,000-499,999 mature individuals, it is likely that >1% of global population of Kentish Plovers could be present within this area. In addition, this species was recorded along the coast during the baseline surveys of the EIA report.

The Oriental Stork is listed as Endangered under the IUCN Red List. In recent years, the Oriental Stork has been recorded regularly, numbering approximately 1-2 individuals at the Zhuoshui River Estuary Wetland IBA. According to eBird, there was a sighting of 13 individuals at the Zhuoshui River estuary (within the migratory bird EAAA) in 2023 (eBird, 2024a). Considering that the number of mature individuals globally are estimated to be 1000-2499 individuals, it is likely that >1% of the global population of oriental storks could be present within this area.

The Chinese Crested Tern is listed as Critically Endangered under the IUCN Red List. There is no overlap between the Chinese Crested tern global range with the migratory bird EAAA. However, according to eBird, the species has been spotted several times in 2023 just south of Chiayi County (within the migratory bird EAAA), numbering between 1-2 individuals each time (eBird, 2024b). As this already constitutes >1% of the global population given its small population number, this species triggers critical habitat under C3.

While the Fairy Pitta is identified within the migratory bird EAAA, it is a forest-dependent species that inhabits broadleaf forests in central Taiwan and therefore, it is unlikely to be found near coastal areas adjacent to the Project site. The Fairy Pitta (*Pitta nympha*) is classified as Vulnerable on both the IUCN Red List and the National Red List. The estimated total population is cautiously placed in the range of 2,500 to 9,999 individuals, which translates to approximately 1,500 to 7,000 mature individuals. This species qualifies as an IBA species for Huben IBA and Yellow Butterfly Valley IBA, both located within the migratory bird EAAA. In 2013/2014, 23 to 37 individuals were recorded at these two IBAs, suggesting that more than 1% of the global population of Fairy Pitta could be present in this area. Despite the 2013/2014 records indicating that 1% of the global population might be present, the outdated nature of the data and the species' forest dependency suggest that the migratory bird EAAA may not contain a significant concentration of this species (i.e areas known to sustain, on a cyclical or otherwise regular

basis, ⩾1% of the global population of a migratory or congregatory species at any point of the species' lifecycle.).

Table 4.4: Number of Black-faced Spoonbill, Saunders's Gull, Kentish Plovers and Oriental Storks recorded in IBAs within the migratory birds EAAA

IBAs within migratory birds EAAA	Number of Black-faced Spoonbill	Number of Saunders's Gull	Number of Kentish Plovers	Number of Oriental Storks
Dadu Rivermouth Wildlife Refuge	4 [a]	3 [a, b]	1520[a]	0
Hanbao Wetlands	0	20 [a, b]	5752[b]	0
Zhuoshui River Estuary Wetland	0	40 [a, b]	5071 [b]	2 [a]
Aogu Wetlands	134 [a, b]	3 [a]	2000 [b]	0
Puzi River Estuary	0	12 [a]	5182 *	0
Budai Wetlands	121 [a]	10 [a]	120 [b]	0
Beimen	228 [a]	2 [a, b]	0	0
Qingkunshen	174 [a, b]	0	0	0
Qigu	197 [a, b]	0	1850 [b]	0
Sitsao Wildlife Refuge	349 [a, b]	0	20000 [b]	0
Yungan	131 [a, b]	0	204 [b]	0
Kaoping River	18 [a]	0	0	0
Qieding Wetland	285 [a, b]	0	398[b]	0

Note: Maximum counts in 2001 – 2014
[a] Sites which are designated as IBAs due to the presence of significant numbers of Saunders's Gull and/or Black-faced Spoonbill and/or Oriental Stork
[b] Sites which are designated as IBAs as they are known or thought to hold, on a regular basis, >1% of the biogeographic population of Saunders's Gull and/or Black-faced Spoonbill and/or Oriental Stork
*Potential IBA trigger species
Source: Important Bird Areas in Taiwan (Second Edition)

4.5 Criterion 4: Highly threatened and/or unique ecosystems

The IUCN Red List of Ecosystems (RLE) categories and criteria are a global standard for assessing the status of ecosystems . It is applicable at the local, national, regional and global levels, and determines whether ecosystems are Vulnerable, Endangered, or Critically Endangered. This is measured by assessing losses in area, degradation or other major changes such as land conversion. There are no IUCN Red List assessed ecosystems in Taiwan and no national level assessments have been conducted using IUCN criteria. Therefore, the thresholds for C4 cannot be applied to the EAAAs.

4.6 Criterion 5: Key evolutionary processes

Critical habitat can be triggered through the qualitative identification of areas associated with key evolutionary processes. Various project documents and published literature reviewed as part of the assessment presented above highlighted that the marine flora and fauna EAAA (Section 3) is part of the Kuroshio Triangle, the coral ecosystems influenced by an ocean current from the tropical Philippines, subtropical Taiwan and Okinawa, and the high latitudinal coral communities off Shikoku Island, Japan (Chen & Shashank, 2009). Taiwan is a steppingstone situated in the midway corridor of the Kuroshio Triangle and provides connectivity between distant coral ecosystems. There is limited evidence as to the overall importance of Taiwanese reefs in terms of gene flow and climate change adaptation and further research is needed (Chen & Shashank, 2009). On a conservative approach it is considered that the marine flora and fauna EAAA meets the requirements of Criterion 5.

4.7 Summary of critical habitat findings

Based on the application of the thresholds for C1 to C3, critical habitat has been identified within the Terrestrial EAAA, Marine EAAA and the Migratory bird EAAA and are listed in Table 4.5.

- C1: Critically Endangered and/or Endangered species
- C2: Endemic and/or restricted range species
- C3: Concentrations of migratory and congregatory species

There is no IUCN Red List assessed ecosystems in Taiwan and no national assessment using IUCN criteria to support the determination of critical habitat in relation to C4 (highly threatened and/or unique ecosystems).

The EAAA for marine flora and fauna can be defined as a critical habitat based on the presence of key evolutionary processes (C5).

Table 4.5: Critical Habitat Assessment (Criteria C1 to C3)

Scientific Name	Common Name	IUCN Status	C1	C2	C3
Marine fauna and fauna					
Sousa chinensis ssp. taiwanesis	Taiwanese Humpback Dolphin	CR	✓	✓	-
Rhynchobatus immaculatus	Taiwanese Wedgefish	CR	✓	-	-
Acanthopagrus taiwanensis	Taiwan picnic seabream	DD	-	✓	-
Migratory birds					
Platalea minor	Black-faced Spoonbill	EN	✓	-	✓
Saundersilarus saundersi	Saunders's Gull	VU	✓	-	✓
Ciconia boyciana	Oriental Stork	EN	✓	-	✓
Thalasseus bernsteini	Chinese Crested Tern	CR	✓	-	✓
Charadrius alexandrinus	Kentish Plover	LC	-	-	✓

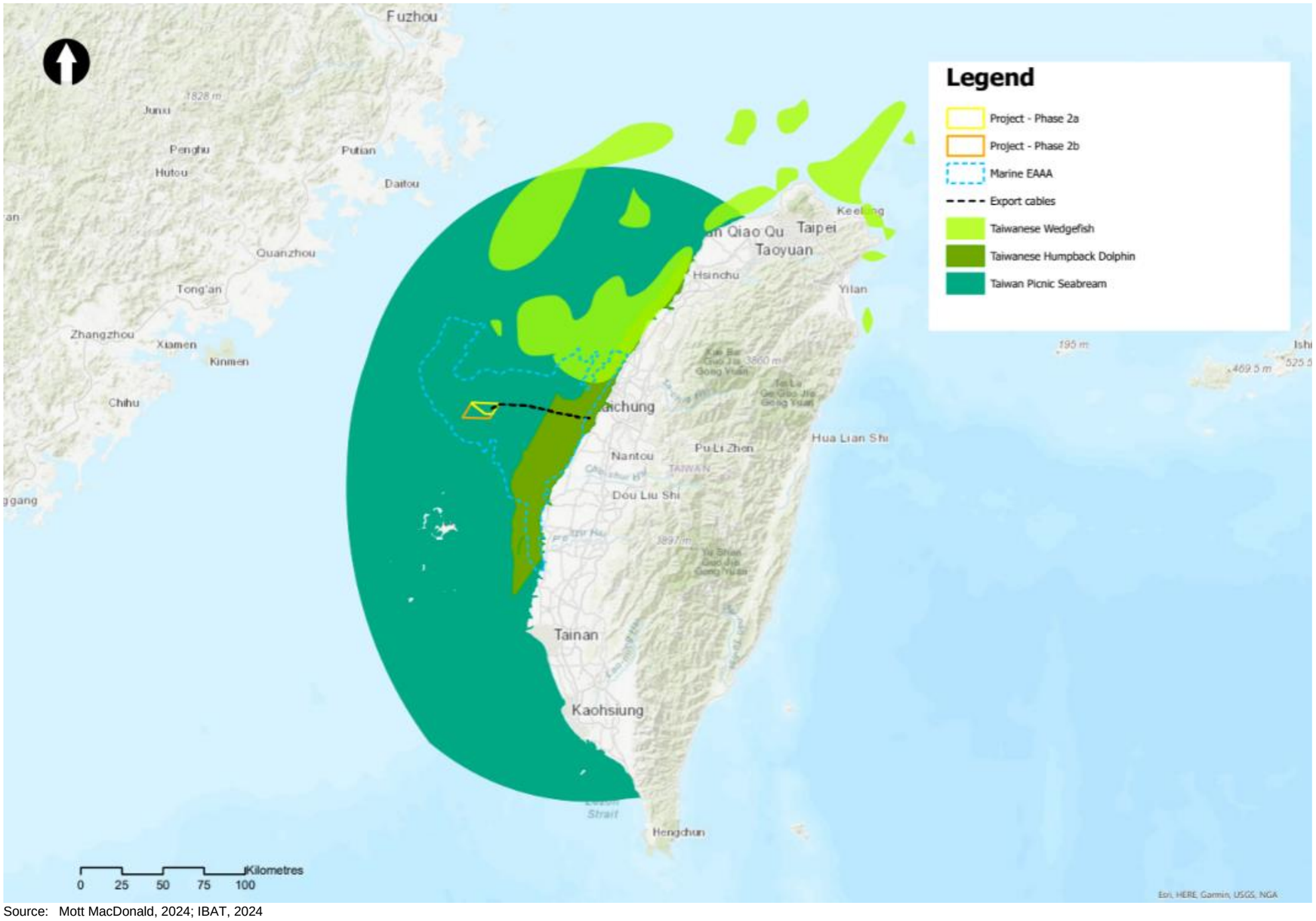
Source: Mott MacDonald, 2024

Critical habitat areas for marine fauna species and migratory birds (including seabirds) are shown in Figure 4.1 and Figure 4.2 respectively. These critical habitat maps delineate the critical habitats for each biodiversity feature identified in Table 4.5 above.

Figure 4.1 shows the critical habitats for marine fauna critical habitat features, which include the extent of the distribution of each marine fauna species off the west coast of Taiwan. Figure 4.2 shows the critical habitats for migratory bird critical habitat features, defined by the IBAs for which each of the migratory birds are qualifying species.

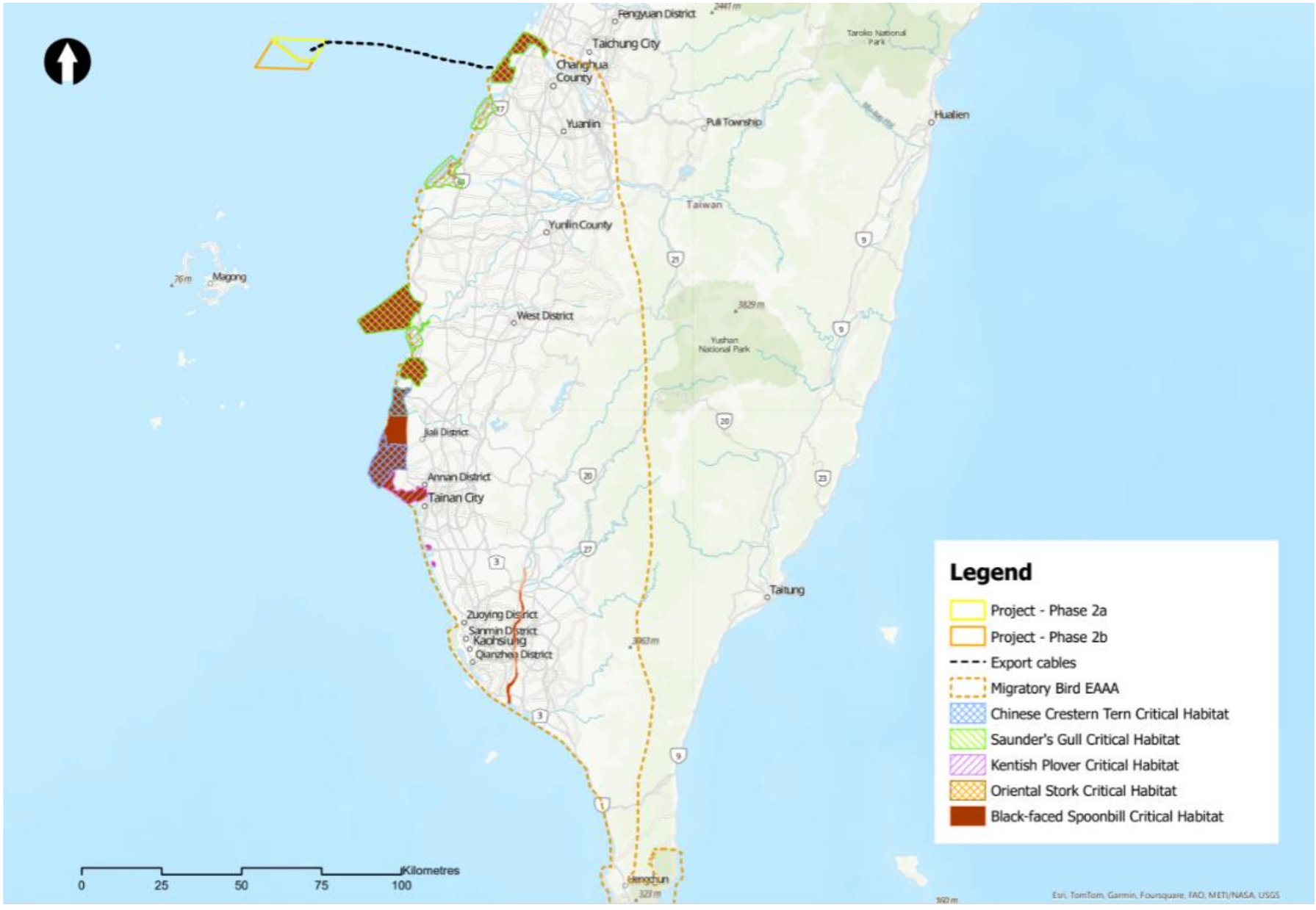
It is noted Figure 4.1 and Figure 4.2 differ from the EAAAs presented in Figure 2.2. Figure 2.2 presents the initial study area (ie the EAAAs) for the CHA, while Figure 4.1 and Figure 4.2 present the critical habitat areas for the critical habitat features that have been identified as a result of the CHA. For the purpose of developing the BAP, the initial study area used in the CHA (ie the EAAAs) has been refined to identify more specific critical habitat areas for the critical habitat features identified, with results presented in Figure 4.1 and Figure 4.2.

Figure 4.1: Critical habitat for marine fauna and flora



Source: Mott MacDonald, 2024; IBAT, 2024

Figure 4.2: Critical habitat for migratory birds (including seabirds at sea)



Source: Mott MacDonald, 2024

5 Likely Project impacts and mitigation

5.1 IFC PS6 requirements for developing in critical habitats

According to IFC PS6 Guidance Note 2019, in areas of critical habitat, project activities may be implemented provided that all of the following requirements are demonstrated:

- "*No other viable alternatives within the region exist for development of the project on modified or natural habitats that are not critical.*
- *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*
- *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; and*
- *A robust, appropriately designed, and long-term biodiversity monitoring and evaluation program is integrated into the client's management program."*

Where it can be demonstrated that the requirements defined above can be met by the project company, "*the project's mitigation strategy will be described in a Biodiversity Action Plan and will be designed to achieve net gains of those biodiversity values for which the critical habitat was designated*".

5.2 Impact significance definitions

With reference to the aforementioned Project requirements, the following subsections build on the biodiversity impact assessment which was conducted as part of the local EIA with a focus on the Project impacts on those biodiversity values for which the critical habitat was designated (see Section 4). Mitigation and monitoring measures proposed as part of the local EIA and Coastal Zone Management Assessment (CZMA) had been approved by the EPA, are in line with good international industry practice (GIIP) and are common across projects of similar nature across the globe, hence are deemed reasonably adequate. Mitigation and monitoring measures are evaluated in order to determine the residual Project impacts in the following section.

The definitions of impact significance used in this assessment are aligned with the requirements of IFC PS6 (Table 5.1)

Table 5.1: Impact significance definitions

Project impact significance	Definition of impact significance
Adverse significant	A measurable adverse impact on those biodiversity values for which the critical habitat was designated and on the ecological processes supporting those biodiversity values. A net reduction in the global and/or national/regional population of any Critically Endangered or Endangered species over a reasonable period of time
Adverse not significant	No measurable impact on those biodiversity values for which the critical habitat was designated, and on the ecological processes supporting those biodiversity values
Not significant	No adverse impact on those biodiversity values for which the critical habitat was designated, and on the ecological processes supporting those biodiversity values

Source: Mott MacDonald, 2024

5.3 Assessment of Project impacts on critical habitat

The impact of the Project from construction and operation is considered below in relation to the biodiversity values for which critical habitat has been designated. Decommissioning is considered to be the reverse process of construction where the magnitude of the impacts is similar. In the assessment below, the impacts of construction are considered to be the same for decommissioning.

The ecological mitigation for this project is included in the local EIA, and EIA addendum. Although the Project is unlikely to have significant or measurable impacts on the species that trigger Critical Habitat (see Section 4), mitigation is still required to comply with IFC PS6 and to follow good international industry practice (GIIP).

The Project will implement the mitigation hierarchy (avoid, minimise, restore and offset) as part of the EIA and associated plans. It is likely that standard and tested measures can be identified and implemented to achieve no net loss for Natural Habitat and net gain for Critical Habitat (as required under IFC PS6).

5.3.1 Terrestrial flora and fauna

A total of 22 species were found to be restricted-range but do not meet or exceed the thresholds of criterion C2 (as discussed in Section 4.3.2).

Project impacts to terrestrial fauna and flora, including the residual impacts after consideration of the proposed mitigation measures, are summarised in Table 5.2 below.

Impact to reptile and amphibian during construction phase may be significantly minimised with the implementation of the proposed measures described below. Additional measures such as clear demarcation of work areas and progressive construction works are also recommended to reduce disturbance to species.

Similar to reptiles and amphibians, vegetation clearance during the construction phase is expected to have a temporary impact on all terrestrial animals. The movement of construction vehicles may also cause disturbance to animals in the vicinity. No significant impacts on terrestrial fauna and flora are expected during the operational phase of the Project. Mitigation measures proposed for the reptiles and amphibians are also applicable to the mammals, ie demarcation of work areas, progressive construction works, use of low-noise construction machinery, training of Project staff and contractors on prohibition of capture, disturb or abuse of wildlife.

Project impacts to bats are likely to be limited to impacts related to the removal of trees that are potential roost sites. Impacts can be avoided and minimised through the implementation of the aforementioned mitigation measures. Specifically, the Project has committed to minimising excessive vegetation removal activities prior to the commencement of onshore construction. In addition, it is expected that invertebrate density diminishes with distance from the land and at 57km from the coast, the lower availability of prey will result in bats spending less time in high-speed chases and complex aerial manoeuvres that increase collision risks (Williams, et al., 2024). Therefore, it is not anticipated that the Project will have a significant collision impact on foraging bats in coastal or marine waters.

Onshore activities of the Project may have limited impact considering that the onshore components of the Project is located on a reclaimed land that is largely separated from the main island of Taiwan where most terrestrial bird species are not likely to occur as a result of poor connectivity with preferred habitat (temperate forests, bamboo forests and dense shrubland/grassland).

Vegetation clearance during the construction phase is expected to have a temporary impact on terrestrial animals. The movement of construction vehicles may also cause disturbance to animals in the vicinity. No significant impacts on terrestrial animals are expected during the operational phase of the Project. Mitigations measures proposed for the reptiles and amphibians are also applicable to terrestrial birds and bats, ie demarcation of work areas, progressive construction works, minimising vegetation removal, use of low-noise construction machinery, training of Project staff and contractors on prohibition of capture, disturb or abuse of wildlife.

Table 5.2: Impacts and mitigation measures for terrestrial fauna

Project impact	Impact duration	Impact significance	Mitigation and monitoring measures	Residual impact significance
Construction phase				
Habitat loss and disturbance Some vegetation clearance is expected during the construction of onshore Project components (ie land cables and sub-station)	**Permanent**	**Adverse not significant** The total length of the land cable is estimated at maximum 1.85 – 3.5 km. The substation is planned to have a footprint of 23,800m^2.	**Project design** Before the construction of substation and cables, comprehensive planning and control on land are needed to avoid extensive vegetation removal works. **Construction method/procedures** ● Low-noise construction machinery will be used to reduce disturbances to wildlife. ● Progressive construction methods will be adopted to minimize the impact on local wildlife. This approach will provide sufficient time and space for terrestrial fauna in the area to migrate. ● Training will be conducted for Project staff and contractors on habitats and enforcement of no poaching of wildlife. **Monitoring** Terrestrial fauna monitoring will be conducted quarterly throughout construction around the power transmission and distribution system (ie substations, land cables and their surroundings).	**No adverse impact** Project components will avoid unnecessary clearance of vegetation to minimize potential impacts to terrestrial fauna. Measures are also in place to reduce disturbances to terrestrial fauna
Accidental pollution events/ contaminant release Pollutants may be accidentally released into the environment as a result of accidents or natural disasters.	**Temporary**	**Adverse not significant** Accidental release of pollutants has the potential to affect the terrestrial habitat and may be difficult to remediate depending on the extent of pollution.	**Construction method/procedures** ● Wastewater and excavated material will not be discharged to the environment. Wastewater will be collected on-site and disposed of by a licensed third-party water waste disposal company. ● Avoid discharging polluted water and dumping soil during the construction period to protect the ecological functions of muddy intertidal shores. ● An emergency preparedness and response plan (EPRP) with overall procedure outline, communication channels and general team structure is in place to guide the Project Company in the event of an emergency (eg fires and natural disasters). **Construction monitoring**	**No adverse impact** ● Monitoring is in place to identify potential pollution/ contaminant release ● The EPRP will have to be updated with Project specific details (eg names of the EPRP team), and emergency preparedness drills will have to be conducted to ensure that the Project team is trained to react in the event of an emergency. Equipment to handle accidental pollution events (eg spill response kit)

Project impact	Impact duration	Impact significance	Mitigation and monitoring measures	Residual impact significance
			Environmental monitoring of air quality, noise and vibration will be carried out quarterly.	will also need to be provided as part of the EPRP.
Road traffic collisions Use of construction vehicles may result in collisions with terrestrial fauna and lead to injury or death	**Temporary**	**Adverse not significant** Construction vehicle fleet is estimated to have a traffic flow of 265PCU (one-way) per hour. The local EIA assessed that there will be minimal impacts to terrestrial animals in terms of roadkill.	**Construction method/procedures** Install appropriate signage and warnings for lane narrowing. Prohibit lane changing or speed reduction in front of the work area.	**No adverse impact** Limitation of vehicle speeds is expected to reduce the risk of collisions with terrestrial fauna.
Operation phase				
Road traffic collisions Use of maintenance vehicles may result in collisions with terrestrial fauna and lead to injury or death.	**Temporary**	**Adverse not significant** The number of vehicles required for operation maintenance is not expected to be significant	**None proposed.** It is recommended that: ● Maintenance vehicles are prohibited from honking when entering vegetated areas ● Maintenance vehicles should limit speeds when entering the project area	**No adverse impact** As described under construction phase, limitation of vehicle speeds expected to reduce the risk of collisions with terrestrial fauna.
Accidental pollution events/contaminant release Pollutants may be accidentally released into the environment as a result of accidents or natural disasters.	**Permanent**	**Adverse not significant** Impact to terrestrial environment is envisaged to be minor or negligible during operations of an offshore wind farm due to the nature of the development.	**Operation method/procedures** ● Waste generated (if any) will not be discharged to the environment. Wastewater will be collected on-site and disposed of by a licensed third-party water waste disposal company. ● An emergency preparedness and response plan (EPRP) with overall procedure outline, communication channels and general team structure is in place to guide the Project Company in the event of an emergency (eg fires and natural disasters).	**No adverse Impact** The EPRP will have to be updated with Project specific details (eg names of the EPRP team), and emergency preparedness drills will have to be conducted to ensure that the Project team is trained to react in the event of an emergency. Equipment to handle accidental pollution events (eg spill response kit) will also need to be provided as part of the EPRP.

Source: EIA, 2018 and EIA addendum, 2021

5.3.2 Marine flora and fauna

The Project impacts on the marine fauna and flora for which critical habitat was designated (ie three species; (Taiwan Picnic Seabream, Taiwanese Humpback Dolphin and Taiwanese wedgefish), as well as the residual impacts after consideration of the proposed mitigation measures, are summarised in Table 5.3 below.

Most residual impacts of the Project on the marine fauna and flora (especially marine mammals) for which critical habitat was designated are deemed adverse not significant. The Project will need to describe in full its marine mammal mitigation strategy in a BAP. This strategy will be designed to achieve net gains of those biodiversity values for which the critical habitat was designated.

Evidence of bats foraging at sea is limited and primarily pertains to bats on migration rather than from central place foragers (Bach, et al., 2022; Ahlen, Baagoe, & Bach, 2009). Studies on the collision risk of migratory bats have observed that the majority of these bats fly at lower altitudes, just above the surface of the sea (Brabant, Laurent, Poerink, & Degraer, 2020). This behaviour is hypothesised by Ahlen et al. (2009) to be a strategy for bats to use echolocation to detect the water surface and maintain their orientation during migration. In Taiwan, research on the vulnerability of bats at wind turbines has predominantly focused on onshore wind farms (Chou, et al., 2017), where the environmental conditions and landscapes are different to that of offshore windfarms. In addition, no migratory bat species were recorded during the baseline surveys of the EIA. It is therefore expected that the Project will not have a significant impact on migratory bats in marine waters.

Table 5.3: Project impacts and mitigation measures for marine fauna and flora

Project impact	Impact duration	Impact significance	Mitigation and monitoring measures	Residual impact significance
Construction phase				
Habitat loss Footprint of WTGs foundations underwater will result in the loss of benthic habitats.	Permanent	**Adverse not significant** The construction of offshore WTGs and submarine cables will avoid reefs and take up a small footprint offshore	**Construction monitoring** ● For Greater Changhua 2 Phase 2b, one turbine will be selected from each east-west row. During the installation of suction bucket jacket (SBJ) foundations, the underwater environment around the construction area will be monitored using a remotely operated vehicle (ROV). The ROV will transmit real-time underwater images to the work vessels. This monitoring aims to avoid reefs and detect any disturbances to the seabed.	**Adverse not significant** The total Project's seabed footprint is approximately 0.003% (0.14km^2) of the marine environment available within the EAAA.
Habitat change and loss Laying and burying of submarine cables will result in loss of habitat within the nearshore environment, which is within the proposed Taiwanese Humpback Dolphin MWH	Temporary	**Adverse significant** The total length of each of the two submarine cables is estimated at 57km. Around 6.5km of the cable will overlap with the MWH.	**Project design** ● Scour protection stone (海底防掏刷保護工塊石) used to protect the foundation of the WTG will result in a beneficial reef effect. ● The submarine cable route from the WTG to landfall will take the shortest distance feasible. ● The Project footprint avoids the Protected Reef Areas, Artificial Reef Areas, and Marine Protected Areas (including Fisheries Resources Conservation Areas). **Construction method/procedures** ● Use of horizontal directional drilling (HDD) for cable laying in the intertidal area to minimise impact to the natural coast. **Construction monitoring** ● Intertidal surveys will be conducted once every season (ie spring, summer, autumn, winter).	**Adverse not significant** Mitigation measures are proposed to avoid intertidal habitats and minimise the total and cumulative subtidal habitat footprint and recovery time. The total area affected is not considered to be a significant proportion of the total habitat available.
Underwater noise Offshore trenching, dredging, filling and foundation installation activities and the use of construction vessels would generate underwater noise and sound pressure which can impact	Temporary	**Adverse significant** Adoption of suction bucket jacket (SBJ) technology for foundation installation works to be used to reduce underwater noise. SBJ technology	**Construction method/procedures** ● No acoustic deterrent devices (ADD) will be utilised. ● All record of foundation installation works must be with date and time, and the recording must remain for at least five years. ● Soft start (ramp-up) foundation installation method for at least 30 minutes will be used.	**Adverse not significant** .Measures are in place to monitor underwater noise levels so that adaptive management strategies can be employed if required.

Project impact	Impact duration	Impact significance	Mitigation and monitoring measures	Residual impact significance
marine fauna (especially marine mammals) in the following ways: ● Temporary/ permanent hearing loss ● Behavioural change / reactions, eg temporary loss of feeding / breeding habitats resulting in habitat displacement Interference with communication between individuals due to masking effects (ie in terms of audibility and frequency).		uses suction which generates a pressure difference, allowing the structure to be installed without mechanical force, as opposed to percussive hammer piling which generates underwater noise via use of mechanical force	● Offshore construction activities will be coordinated between the windfarms of the Project Company to ensure pile driving of only one WTG will be conducted at any one time. **Construction monitoring** ● Four underwater microphones will be deployed 750m away from each WTG foundation location during installation works to monitor any cetacean presence. ● Cetacean monitoring will be conducted as boat survey with at least 20 times per year to monitor the cetacean activity and understand the impact significance. ● Fish and benthos surveys will be conducted once every season to understand the impact significance.	
Vessel strikes Use of construction vessels may increase potential collision risks with marine mammals leading to injury or death. In addition, marine species which are unable to swim, or crawl would be less able to escape collision from vessels, increasing risks of injury or death.	**Temporary**	**Adverse significant**	**Construction method/procedures** ● Vessel speeds will be limited to a maximum of 6 knots within 1.5km from the proposed Taiwanese Humpback Dolphin MWH. ● Construction vessels will avoid entering the Dolphin hot spots during their peak activity periods. ● The navigation route will be designed to avoid sensitive areas.	**Adverse not significant** Limitation of vessel speeds to 6 knots, proper design of navigation routes and minimising transit routes are expected to reduce the risk of collisions with marine mammals. Measures are also in place to monitor the presence of marine mammals during construction
Decreased water quality SBJ foundation installation works and laying of submarine cables will result in an increase of suspended solids, and as such increased turbidity levels in the water column. This will adversely affect water quality, thereby indirectly impacting the marine organisms. However, concentration of the suspended solids will not be high, and	**Temporary**	**Adverse not significant** As presented in the EIA addendum report, baseline levels of suspended solids (SS) for marine water quality were found to range from 1.8 to 18.1 mg/L. Foundation installation works and laying of submarine cables are conservatively estimated	**Construction method/procedures** ● Silt screens will be deployed around the intertidal area during the laying of submarine cables to minimize the dispersion of suspended sediments while preventing the access of marine organisms into the construction boundary. ● Wastewater and excavated material will not be discharged to the intertidal zone. Wastewater will be collected on-site and disposed of by a licensed third-party water waste disposal company. **Construction monitoring** ● Environmental monitoring of sea water quality (particularly turbidity) will be carried out during offshore works (ie WTG foundation, and submarine cable laying).	**Adverse not significant** Increase in turbidity levels are expected to be minimized with the implementation of good practice construction procedures. In any event, increased suspended sediment levels are likely to fall within natural variations due to waves and tides for shallow water sites (Cooper et al., 2008).

Project impact	Impact duration	Impact significance	Mitigation and monitoring measures	Residual impact significance
suspension will be of a short duration.		to increase suspended solid (SS) levels by 0.12mg/L and 0.5mg/L at 200m from the construction area[26].	● At least 12 monitoring stations around the Project's offshore WTG footprint will be set up quarterly. ● For turbines using SBJ, one turbine will be selected from each row (east-west direction) where its underwater environment around the foundation will be observed by using ROV. The ROV is capable of transmitting images to the installation vessels on real time basis during the installation of SBJ. This will allow the Project to monitor for any disturbances to the seabed during SBJ installation and how it may affect water quality in the surrounding areas.	
Physical processes from the presence of new structures The presence of new subsurface structures may affect local water movements which may in turn influence sediment transport and behaviour of some aquatic species.	**Temporary**	**Adverse not significant** While water currents may play a significant role in the dispersal of pelagic marine larvae (Wolanski & Kingsford, 2014) the direct impact on larger marine mammals are expected to be insignificant.	**Construction monitoring** ● Prior to construction, an underwater video recording at the designated turbine location will be conducted. Once the foundation installation is completed, the underwater video recording will be repeated at the same site where the initial recording was conducted.	**Adverse not significant** Measures are in place to monitor marine mammal activity during construction so that adaptive management strategies can be employed if required.
Accidental pollution events/ contaminant release Pollutants may be unintentionally released into the environment as a result accidents or natural disasters.	**Temporary**	**Adverse significant**	**Construction method/procedures** ● All vessels shall use the least sulfur containing oil (<0.5%) available in Taiwan at the time. ● The exhaust air emission of fossil-fuel-burning propulsion should install smoke filters or activated carbon filters or other state-of-the-art commercially available technologies. ● Wastewater and excavated material will not be discharged to the intertidal zone. Wastewater will be collected on-site and disposed of licensed third-party water waste disposal company. ● Silt screens which will be deployed around the intertidal area during laying of submarine cables to minimize the	**Adverse not significant** The EPRP will have to be developed with Project specific details. Emergency preparedness drills will have to be conducted to ensure that the Project team is trained to react in the event of an emergency. Equipment to handle accidental pollution events (eg spill response kit) will also need to be provided as part of the EPRP.

[26] Under rock dumping rate of 810m^3/hr

Project impact	Impact duration	Impact significance	Mitigation and monitoring measures	Residual impact significance
			spread of suspended sediments may also help to control the spread of other pollutants in the event of an accidental release. ● An emergency preparedness and response plan (EPRP) with overall procedure outline, communication channels and general team structure will be developed to guide the Project Company in the event of an emergency (eg vessel collision, fires and natural disasters). **Construction monitoring** ● Environmental monitoring of sea water quality will be carried out during offshore works (ie WTG foundation, and submarine cable laying).	
Operation phase				
Underwater noise Operational wind turbines will generate a constant, low, basal level of underwater noise which may affect the behaviour of marine fauna.	**Permanent**	**Adverse not significant**	**Operational monitoring** ● Two underwater microphones will be deployed quarterly to monitor underwater noise. ● 20 visual survey trips will be conducted each year to monitor the cetacean and marine reptile activity to understand the impact significance. ● Fish and benthos surveys will be conducted once every season to understand the impact significance.	**Adverse not significant** Measures are in place to monitor any potential underwater noise impacts to marine fauna and enable adaptive management strategies if required.
Vessel strikes Use of maintenance vessels may increase potential collision risks with marine mammals leading to injury or death. In addition, marine species which are unable to swim, or crawl would be less able to escape collision from vessels, increasing risks of injury or death.	**Temporary**	**Adverse not significant**	No specific measures on reducing vessel collision with marine mammals have been proposed. In order to reduce the impact, it is recommended that project vessels will be sourced and based on the nearest port to minimise transit routes.	**Adverse not significant** If recommendations for mitigation are applied, then the impact would be considered not significant.
Electromagnetic field (EMF) Electric currents in the inter-array submarine cables and submarine cables connecting the WTGs to	**Permanent**	**Adverse not significant**	**Operational monitoring** ● 20 visual survey trips will be conducted each year to monitor the cetacean and marine reptile activity to understand the impact significance.	**Adverse not significant** There have been no conclusive assessments to date to show that EMF affects marine fishes, and it

Project impact	Impact duration	Impact significance	Mitigation and monitoring measures	Residual impact significance
the cable landing point may induce electromagnetic fields, influencing the behaviour of marine ecology.				is unlikely that EMF would affect larger marine mammals. Measures are in place to monitor marine mammal activity during operation so that adaptive management strategies can be employed if required.
Barrier effect The presence of marine structure may initiate avoidance behaviour and result in marine mammals having to swim around the WTG area.	**Permanent**	**Adverse not significant** The Project's offshore WTG footprints have been located at least 30km outside the proposed Taiwanese Humpback Dolphin MWH. The added distance that marine mammals have to swim around the wind farm array and adjacent projects is relatively small compared to the total distance travelled by marine mammals.	**None proposed**	**Adverse not significant** The total Project's seabed footprint is approximately 0.003% (0.14km^2) of the marine environment available within the EAAA.
Accidental pollution events/ contaminant release Pollutants may be unintentionally released into the environment as a result accidents or natural disasters.	**Permanent**	**Adverse not significant**	An emergency preparedness and response plan (EPRP) with overall procedure outline, communication channels and general team structure will be developed to guide the Project Company in the event of an emergency (eg vessel collision, fires and natural disasters). In addition, it is recommended that: ● Waste generated (if any) will not be discharged to the sea. Waste will be collected on-site and disposed of by a licensed third-party water waste disposal company. ● Ensure that marine oil spill kits on board at all times in the event of boat collisions.	**No adverse impact** Impacts to sea water quality is envisaged to be minor or negligible during operations of a offshore wind farm due to the nature of the development. The EPRP will have to be updated with Project specific details (eg names of the EPRP team), and emergency preparedness drills will have to be conducted to ensure that the Project team is trained to react in the event of an

Project impact	Impact duration	Impact significance	Mitigation and monitoring measures	Residual impact significance
				emergency. Equipment to handle accidental pollution events (eg spill response kit) will also need to be provided as part of the EPRP.
Reef effect The presence of turbine foundations and rock armour in marine waters will result in the development of a reef community. This includes an increase of reef-dwelling fishes surrounding the Project.	**Permanent**	**No adverse impact** The effects of the development artificial reefs is not considered likely to have a significant adverse effect because the development would represent a positive contribution to biodiversity and ecosystem function	**Operational monitoring** ● Fish and benthos surveys will be conducted once every season to understand the impact significance.	**No adverse impact** The development of artificial reefs is considered to represent a positive contribution to biodiversity and ecosystem function.

Source: EIA, 2018 and EIA addendum, 2021

5.3.3 Migratory birds (including seabirds at sea)

Critical habitat is designated for five migratory birds and seabirds at sea (ie Black-faced Spoonbill, Saunders's Gull, Kentish Plover, Oriental Stork and Chinese Crested Tern) are likely to be present within the EAAA and the Project's area of influence.

Project impacts to these migratory birds, prior to and after the implementation of the proposed mitigation measures, are summarised in Table 5.4 below.

All of the residual impacts of the Project on the migratory birds and seabirds at sea for which critical habitat was designated are considered as adverse not significant. As described above, the project design itself will implement various WTG design considerations to minimize the risk of bird collisions.

Table 5.4: Impacts and mitigation measures for migratory birds and seabirds at sea

Project impact	Impact duration	Impact significance	Mitigation and monitoring measures	Residual impact significance
Construction phase				
Habitat loss, disturbance and displacement Laying of submarine cables and above-ground cables would result in the temporary loss of habitat within the nearshore environment and intertidal environment. This may potentially affect the behaviour of birds (eg daily movement and loss of feeding/foraging grounds).	**Temporary**	**Adverse significant** The density and abundance of seabirds at sea is considered to be low. Furthermore, the presence of seabirds such as divers (Gaviiformes) and sea ducks, typically the most sensitive species, are not recorded in the Project area of influence.	**Pre-construction monitoring** ● Radar and satellite survey will be conducted once in each season for a period of two years to monitor bird migratory flightpaths. **Construction method/procedures** ● Above-ground cable laying within intertidal area will avoid bird migratory season between November and March ● Proper disposal of wastewater and excavated material will be undertaken as per the waste management plan.	**Adverse not significant** Mitigation measures are in place to limit the temporary habitat loss during construction phase.
Operation phase				
Collision with wind turbine blades Bird injury and fatalities may result due to collision with rotating wind turbine. Frequency and likelihood of such event is dependent on the bird species, and their flight altitude. Migratory waterbirds and breeding seabirds are most likely to collide with the wind turbines.	**Permanent**	**Adverse significant** The number of bird collisions have been estimated at 57.8 birds/year[27], of which 1.6 birds/year are considered critical habitat triggers[28].	**Project design** ● According to European experience, if too many lights are installed on the turbine, it may have risk of attracting birds to fly close to it. The Project will follow Article 17 of the Aviation obstacle sign and obstacle light setting standard which the electric generator structure will use Type A obstructing light. Its implementing method will follow horizontal direction intervals not exceeding 900m and be implemented on the corners or most outer row. The number of warning lights installed on the turbines will hence be based on the wind farm layout configuration. ● At time of environment monitoring, if large flocks of protected species or large-sized birds are passing through wind farm, the operator will be required to conduct a feasible speed reduction mechanism.	**Adverse significant** Various design considerations have been incorporated to minimize risk of bird collusions. Measures are also in place to monitor any potential bird mortalities and enable adaptive management strategies if required. Through successful implementation of the BAP actions, a net gain in species populations is anticipated, with overall collision risk impact reduced to adverse not significant.

[27] Based on a worst-case scenario from the bird collision modelling which assumes an individual WTG capacity of 8.0MW and 98% avoidance rate of birds.

[28] Refer to BAP Table B.4 for further details.

Project impact	Impact duration	Impact significance	Mitigation and monitoring measures	Residual impact significance
			Operation phase monitoring ● Surveillance devices (ie thermal imaging, acoustic microphone, radar) will be installed within the windfarm to allow continuous monitoring of bird activities. ● Radar survey will be conducted to monitor bird migratory flightpaths. ● Visual surveys will be conducted monthly between March and November and once between December and February throughout operation in the vicinity of Project's offshore WTG footprint.	
Barrier effect The presence of WTG may initiate avoidance behaviour and result in birds having to fly around the array area.	**Permanent**	**Adverse not significant** The added distance to fly around the wind farm array and adjacent projects is relatively small compared to the total distance flown by migratory birds and seabirds at sea. Night radar surveys were conducted as part of the baseline studies, and the EIA suggested that there would be minimal impact to the flight path of migratory birds	**Project design** ● WTG placement will be designed to ensure sufficient distance (ie 500m) between WTGs to allow for birds flying through the Project's offshore WTG footprint. ● Eight "flight corridor" of at least 2 km wide within the Project's offshore WTG footprint and nearby offshore WTG footprint from other projects will be set aside for birds passing through. **Operation phase monitoring** ● Surveillance devices (ie thermal imaging, acoustic microphone, radar) will be installed within the windfarm to allow continuous monitoring of bird activities. ● Radar survey will be conducted to monitor bird migratory flightpaths. ● Visual surveys will be conducted monthly between March and November and once between December and February throughout operation in the vicinity of Project's offshore WTG footprint	**Adverse not significant** Project design and monitoring are in place to minimise avoidance behaviour and the distance required for birds to fly around the array area.

Source: EIA, 2018 and EIA addendum, 2021

5.4 Highly threatened and/or unique ecosystems

It is considered that the EAAAs are not critical habitat for highly threatened and/or unique ecosystems.

5.5 Key evolutionary processes

It was identified that the marine flora and fauna EAAA is critical habitat for key evolutionary processes in relation to coral reef ecosystems. The mitigation presented in Section 5.3.2 includes the relevant mitigation measures to avoid and minimize adverse impacts on coral reefs. Given the large spatial scale at which the ocean current operates within the Kuroshio Triangle it is not expected that the Project will influence the movement of genes or impede climate change adaption because the Project will not interfere with the main Kuroshio current located off the Pacific east coast of Taiwan and will likely have little measurable influence on the Kuroshio Branch current moving through the Taiwan Strait.

6 Ecosystem services assessment

IFC PS 6 (2019) defines ecosystem services as “the benefits that people, including businesses, obtain from ecosystems”, which accords with the definition provided by the Millennium Ecosystem Assessment (MEA). While there is no single system for categorising ecosystem services, the MEA framework is widely accepted and as acknowledged in IFC PS 6 (paragraph 2), provides a useful starting point.

The MEA identifies four broad categories of ecosystem services as follows:

- Provisioning services are the goods or products obtained from ecosystems, such as food, timber, medicines, fibre, and freshwater
- Regulating services are the benefits obtained from an ecosystem’s control of natural processes, such as climate regulation, disease control, erosion prevention, water flow regulation, and protection from natural hazards
- Cultural services are the nonmaterial benefits obtained from ecosystems, such as recreation, spiritual values, and aesthetic enjoyment
- Supporting services are the natural processes such as soil formation, nutrient cycling and primary productivity that maintain other ecosystem services

6.1 Ecosystems in the Project Area

As described in the EIA, the affected terrestrial area of the project was originally an intertidal zone mud flat, however, since 1970, this has been reclaimed and transformed into the Changhua Binhai Industrial Park. Within the EIA terrestrial study area, no natural forest or secondary forest was found. Some natural grass was found on the sandhills near Xianxi Dumpling Corner. Man-made coastal forest was planted along the coast, however, most have been damaged by the wind. Some roadside vegetation was also identified but were mostly composed of weeds. The area is pre-dominantly occupied by man-made structures, and hence, considered a modified habitat. The affected marine area of the project is open water habitat which is considered a natural habitat. Section 3.3 above describes the habitats that are found within the terrestrial, migratory birds and marine EAAA.

6.2 Key Project impacts likely to affect ecosystem services

The construction of offshore components such as the wind turbine foundations and export cables are likely to affect the existing marine and coastal habitats present, and in turn drive ecosystem change. This has the potential to lead to direct and indirect impacts on ecosystem services for communities reliant on marine and coastal resources.

The major potential impacts from the construction of the offshore components include:

- Increased sediment dispersal from the underwater construction works including suction bucket for foundation installation as well as the laying and burying of the export cables
- Increased shipping traffic for the transportation of materials and construction labour
- Limitations on access to fisheries due to the Project exclusion boundaries set up around working areas

It should be noted that waterborne noise disturbances from underwater construction activities such as foundation installation works is significantly reduced for this Project. This is because the Project will use suction bucket method for foundation installation.

During the operational phase, Project activities are likely to introduce new drivers of ecosystem change in addition to ongoing impacts from drivers that have been brought about during the construction phase as described above. The major potential impacts from the operation of the wind farm include:

- Waterborne acoustic disturbances and vibrations from operation of the turbines
- Underwater electromagnetic fields from the underwater transmission cables
- Limitations on access to vessels (ie fisher folks) as established around the operating turbines
- Bird collision with wind turbine blades
- New biodiversity habitat creation/gain from wind turbine bases

6.3 Ecosystem services present in the area

Based on the existing ecosystems present in the area and the key impacts identified above, a list of ecosystem services that are present within the Project area has been identified in Table 6.1 below. The importance of the ecosystem services to the local communities are highlighted and the likely impact of the Project on each ecosystem services are described. Mitigation measures were identified where possible; however, most impacts have been addressed through mitigation measures from other plans, especially those related to biodiversity, hydrology and communities and references to those plans have been added into Table 6.1 below where relevant.

Table 6.1: Ecosystem services present and likely impacts due to the Project

Service	Phase	Description of current provision	Importance of the ecosystem services to local area	Impacts to the ecosystem service due to the Project	Mitigation measures
Provisioning services					
Food: Fisheries catch	Construction	Marine open water habitats that are used by locals for fishing as a livelihood activity. The Changhua District Fisheries Association have exclusive fishery rights in designated area within the Changhua County.	The Project location is used by locals within the Changhua County for fishing, which provides a source of income for the fishermen.	The offshore windfarm site for this Project does not overlap with the fishing ground under the Changhua District Fisheries Association, however, the Changhua Northern Common Corridor for export cables installation will overlap with this area. However, as the construction of the cable trenches and laying of the export cables will only be limited to short periods, the impact is considered short term and localised and the area will be reinstated. Increased marine traffic, underwater noise from foundation installation and increased in sediment dispersal may cause disturbance to fish habitats and subsequent displacement of fish and interference with spawning activities, which may result in shift of productive fishing grounds and affect the livelihood of fishermen in the short term. Overall, the Project is expected to result in temporary loss of the marine open water habitat. However, as this is considered a short-term loss it is unlikely to significantly impact the provisioning service of this ecosystem.	Refer to relevant assessment and mitigation measures within associated documents such as the summary of biodiversity action plan (BAP) and cumulative impact assessment (CIA).
	Operation			During the operation phase of the Project, significant loss in fisheries resources or fish ground is not expected as the WTG locations are outside of the exclusive fishing right area (ie expected to be the main fishery area).The WTGs are located more than 57km from shore, which is outside the operating range of the fishing vessels registered with Changhua Fishermen Association. Where there are fishing vessels that could possibly operate at such offshore distance (ie 57km from coast), this would imply that the vessel would have correspondingly a very large operating range. The area of the fishing exclusion zone established around the operating WTGs would thus become a very minimal portion of the vessel's range. The foundations of the WTGs can serve the function as artificial reefs, providing substratum for colonisation of marine fauna.	

Service	Phase	Description of current provision	Importance of the ecosystem services to local area	Impacts to the ecosystem service due to the Project	Mitigation measures
				No adverse impact on marine open water habitat is identified during the operation phase of the Project and is therefore unlikely to significantly impact the provisioning service of this ecosystem.	
Regulating services					
Regulation of local, regional and/or global climate	Construction	Coastal habitat and seabeds can act as sources of carbon storage which can reduce the amount of atmospheric carbon.	Storage of carbon serves as a form of climate regulation which can reduce risks to local communities from extreme temperatures.	The laying of submarine cables requires construction of cable trenches in seabeds which may release stored carbon in the process. Laying of the cable on land to the grid may cause accidental damage to coastal vegetation which can also release stored carbon. However, a common corridor for submarine cable installation has been identified which can minimise disturbance and carbon release. The proposed alignment of the onshore cables is not expected to remove large amount of vegetation, and any removal is likely to be accidental. Affected areas will also be reinstated. The Project is expected to only result in temporary disturbance to coastal habitat and wetland habitat and is therefore unlikely to significantly impact the regulating service of this ecosystem.	Refer to mitigation measures in the EIA
Cultural services					
Aesthetic enjoyment	Construction/ operation	Coastline of Changhua county which can be used for aesthetic purposes	Local communities may use the coastline to enjoy the sunsets/sunrise and sea breeze and waves.	Construction machinery/ WTG structure will obstruct the natural landscape view along the coast of Changhua County, but will be temporary and demobilised once construction is completed. Positioning of machinery and storage of construction materials need to take into consideration the impact on landscape and will be neatly placed. As assessed by the EIA, during the operation stage, the WTGs are far from the coast (ie 57km) for the human eye to see and is of very limited visibility even during good weather. The Project is expected to only result in temporary disturbance to the natural landscape during construction and has no significant adverse impact on landscape during operation. Hence, it is unlikely to significantly impact the cultural service that are provided by this area.	Refer to mitigation measures in the EIA.
Recreational value	Construction/ operation	Wetland habitat serves as recreational sites.	The Project site is located near to the Dadu Wildlife Sanctuary which is used especially during peak migratory season for birds watching.	As mentioned above, the windfarm are of limited visibility from the coast. The construction/ operation of the windfarm is unlikely to result in any significant changes to the recreational value (ie bird watching) in the wildlife sanctuary.	Not applicable.

Service	Phase	Description of current provision	Importance of the ecosystem services to local area	Impacts to the ecosystem service due to the Project	Mitigation measures
				No adverse impact on the wildlife sanctuary is identified during the operation phase of the Project and is therefore unlikely to significantly impact the cultural services that are provided by this area.	
Supporting services			Supporting services are services that are necessary for the production of other ecosystem services, some examples include soil formation, nutrient cycling and primary productivity. These have not been assessed separately as they have been covered through the provisioning, regulating and cultural services that they support.		

Source: Mott MacDonald, 2024

Based on the assessment above, the Project is not expected to cause a significant loss of any natural capital stocks. The largest loss would be marine open water habitats, however, mitigation measures within the BAP, CIA and LRP are deemed sufficient to minimise these losses and/or impacts to the local communities. This applies also for other types of natural capital stock discussed above, where mitigation measures from existing plans are deemed sufficient. s While there is no significant impacts identified, the Project should aim to avoid causing adverse impacts to natural capital stocks and its corresponding ecosystem services throughout the Project duration.

7 Recommendations

7.1 On-site restoration

Habitats affected temporarily by construction should be restored to their status before the Project, as much as possible. If appropriate, plans or measures for habitat removal and restoration should be produced before the start of construction. These plans or measures will set out the minimum requirements in relation to the clearance and restoration of natural habitats (if any). Subsequently, these measures will form part of Construction Environmental and Social Management Plan (CESMP). The plan may include the following practices, as required:

- Manage vegetation removal within the project footprint
- Restore on-site temporary habitat loss

7.2 Offsetting and other forms of compensation

Biodiversity offset will be required to ensure overall net gain of Critical Habitat and no net loss for Natural Habitat, in line with IFC PS6. The guidance published by the Business and Biodiversity Offsets Programme (http://bbop.forest-trends.org/pages/guidelines) will be used to guide the biodiversity offset design steps.

There are various forms of biodiversity offset possible such as habitat compensation, stopping biodiversity degradation and loss in designated sites and 'like-for-like or better' habitat basis. However, the applicability, practicality and feasible of these options will have to be appropriate for a specific development and its associated biodiversity values. Additional conservation measures are also considered, and these can include provision of support to the conservation of biodiversity in the local area, or biodiversity awareness raising programme for the local population. It is recognised that these measures are very difficult to quantify to prove the no net loss or net gain. Offsetting recommendations are not presented in this report, instead, a project-specific Biodiversity Action Plan (BAP) containing offset options and additional conservation actions has been produced to show how the Project will achieve no net loss of natural habitats and net gain for critical habitat features.

7.3 Biodiversity management and action plans

Given that the Project is located in Critical Habitat (see Section 4), and irrespective of project impacts, a project-specific BAP has been developed. The aim of the BAP is to demonstrate net gain in Critical Habitats and no net loss in Natural Habitat, as required by IFC PS6.

It is advised that the BAP includes both onsite mitigation during construction and long-term conservation actions during project operation. The BAP uses the mitigation hierarchy and includes objectives, targets and indicators, responsibilities, programme, reporting and monitoring requirements. The scope of the BAP is commensurate with the biodiversity risks and impacts of the Project, as described in this CH.

The BAP is prepared using international guidance and good practice (IPIECA, 2005; IFC, 2019). The BAP includes the following aspects:

- Rationale and scope of the BAP: provide justification and state the aim and objectives of the BAP.
- Legal, regulatory, permitting and third-party requirements: summary of international biodiversity and nature conservation conventions and policies that apply to the Project and

which have been signed by Taiwan; relevant national legislation and policy; permitting requirements; ESMS requirements; lenders' requirements etc.

- Biodiversity baseline: provide updated summary of the biodiversity baseline in the Project area of influence.
- Current biodiversity threats and project impacts: summarise the current external threats sensitive habitats and species of conservation importance.
- Biodiversity priorities: include the species and ecosystems that trigger Critical Habitat, together with other species threatened globally/nationally, protected nationally, endemic/restricted range etc.
- BAP actions: identify and describe conservation actions for the BAP priorities to ensure the systematic implementation of the mitigation hierarchy; include targets, indicators, timescale and responsibilities for each action.
- BAP implementation: include a clear programme and responsibilities for the BAP implementation together with any training requirements.
- Monitoring, evaluation and improvement: include provisions for the objectives, actions and targets to be periodically reviewed; periodic inspection/monitoring of the biodiversity mitigation and monitoring during all project phases; actions to be taken (and by whom) if inspection/monitoring results show that the practices do not meet applicable requirements.
- Reporting, communication and verification of BAP performance: to verify the outcomes and progress of the BAP implementation, internal and external reporting should be specified.

The BAP actions provide detailed information on the measures listed in Section 7.1 above, as a minimum. The actions are grouped by the steps of the mitigation hierarchy. The BAP is considered the most up-to-date project design, ESMS documents and implementation. Stakeholder consultation is an integral component in the formulation of a BAP. It is essential to engage with stakeholders to gather opinions on the biodiversity baseline, project impacts, conservation priorities and implementation of actions.

A Biodiversity Monitoring and Evaluation Programme (BMEP), comprising a long-term biodiversity monitoring and evaluation programme as required under Paragraph 17 of IFC PS6, is also incorporated within the BAP or prepared separately. The BAP aims to be completed two months before the start of construction.

8 Conclusions

The CHA determined that the Project is located in critical habitat for the following biodiversity values:

- Criterion 1 (C1) (a), (b) and (c): the presence of critically endangered, endangered and vulnerable (a global range overlapping with >0.5% of the EAAAs) species, namely:
  - Marine flora and fauna:
    - Taiwanese humpback dolphin (*Sousa chinensis ssp. Taiwanensis*) (C1a)
    - Taiwanese Wedgefish (*Rhynchobatus immaculatus*) (C1a)
  - Migratory birds (including seabirds at sea):
    - Black-faced spoonbill (*Platalea minor*) (C1a)
    - Saunders's Gull (*Saundersilarus saundersi*) (C1c)
    - Oriental stork (*Ciconia boyciana*) (C1a and C1c)
    - Chinese crested tern (*Thalasseus bernsteini*) (C1a and C1c)
- Criterion 2 (C2): the presence of restricted-range species, namely:
  - Marine flora and fauna:
    - Taiwanese humpback dolphin (*Sousa chinensis ssp. Taiwanensis*)
    - Taiwan Picnic Seabream (*Acanthopagrus taiwanensis*)
- Criterion 3 (C3) (a) and (b): the presence of migratory and congregatory species:
  - Migratory birds (including seabirds at sea)
    - Black-faced spoonbill (*Platalea minor*)
    - Saunders's Gull (*Saundersilarus saundersi*)
    - Oriental stork (*Ciconia boyciana*)
    - Chinese crested tern (*Thalasseus bernsteini*)
    - Kentish Polver (*Charadrius alexandrinus*)
- Criterion 5 (C5): the presence of key evolutionary processes
  - EAAA for marine fauna and flora

Therefore, as relevant to this Project, the biodiversity values considered to be

Critical Habitat are:

- Marine species:
  - Taiwanese humpback dolphin (*Sousa chinensis ssp. Taiwanensis*) (C1a and C2)
  - Taiwanese Wedgefish (*Rhynchobatus immaculatus*) (C1a)
  - Taiwan Picnic Seabream (*Acanthopagrus taiwanensis)* (C2)
- Migratory birds:
  - Black-faced spoonbill (*Platalea minor*) (C1a and C3a)
  - Saunders's Gull (*Saundersilarus saundersi*) (C1c and C3a)
  - Oriental stork (*Ciconia boyciana*) (C1a, C1c, and C3a)
  - Chinese crested tern (*Thalasseus bernsteini*) (C1a, C1c, and C3a)
  - Kentish Polver (*Charadrius alexandrinus*) (C3a)
- EAAA for marine fauna and flora

The proposed mitigation measures contained within the EIA must be implemented to avoid and minimize significant impacts to the biodiversity values for which critical habitat was designated and the supporting habitat, as well as avoidance of a net reduction in the global and/or national population of any Critically Endangered or Endangered species.

The residual project impact significance for the species groups that triggered critical habitat (ie marine fauna and migratory birds (including seabirds at sea) are summarized in Table 8.1. To address residual impacts on critical habitat features, a BAP containing additional recommendations (ie. offset options and additional conservation actions) and further details on the actions required to achieve net gains for critical habitats and species is recommended for the Project.

Table 8.1: Residual impact significance for critical habitat features

Project impact	Residual impact significance
Marine fauna	
Construction phase	
Habitat loss	Adverse not significant
Underwater noise	Adverse not significant
Vessel strikes	Adverse not significant
Decreased water quality	Adverse not significant
Physical processes from the presence of new structure	Adverse not significant
Accidental pollution events/ contaminant release	Adverse not significant
Operation phase	
Underwater noise	Adverse not significant
Vessel strikes	Adverse not significant
Electromagnetic field (EMF)	Adverse not significant
Accidental pollution events/ contaminant release	No adverse impact
Barrier effect	Adverse not significant
Reef effect	No adverse impact
Migratory birds and seabirds at sea	
Construction phase	
Habitat loss, disturbance and displacement from cable laying	Adverse not significant
Operation phase	
Collision with wind turbine blades	Adverse significant
Barrier effect	Adverse not significant

Source: Mott MacDonald, 2024

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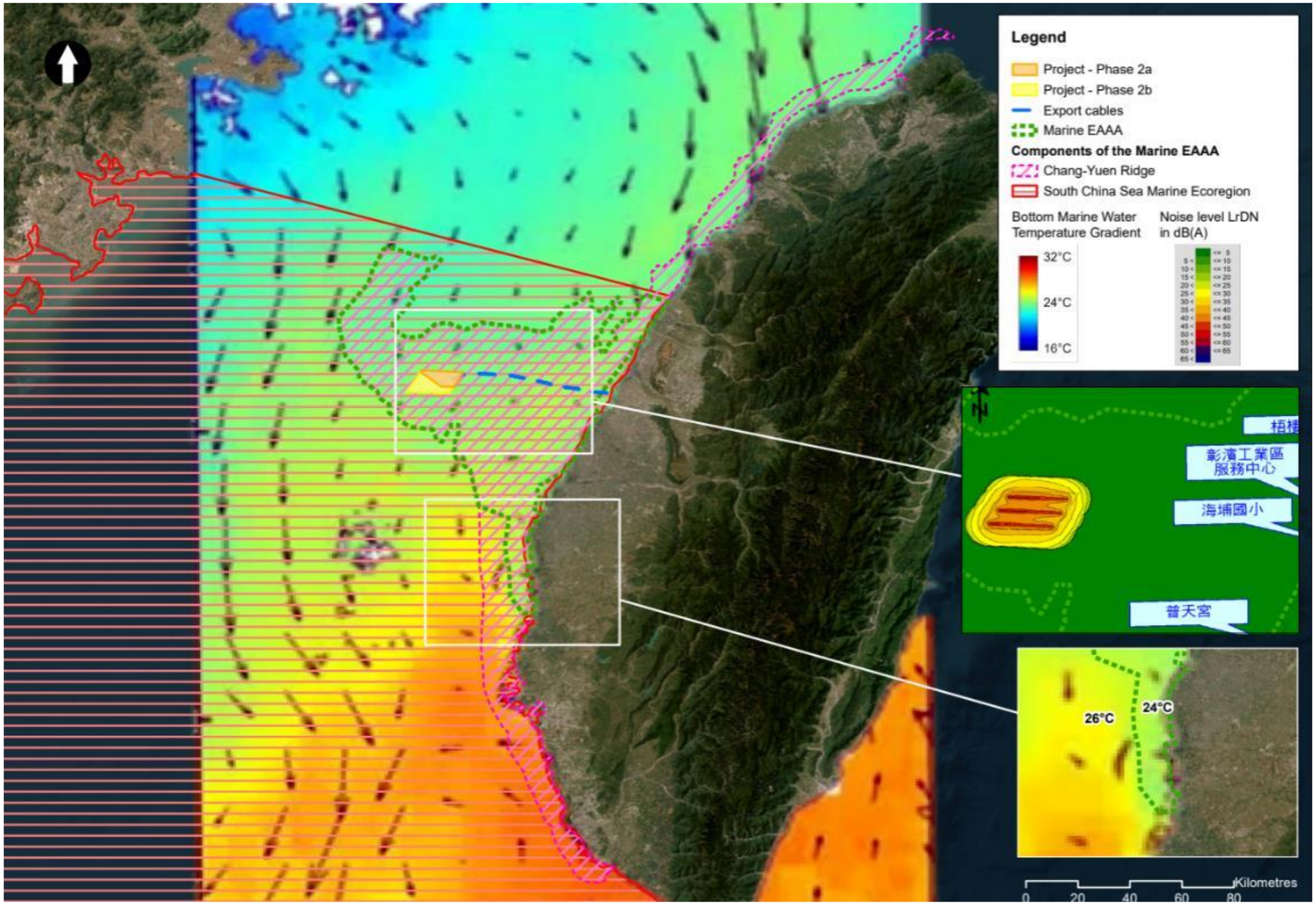
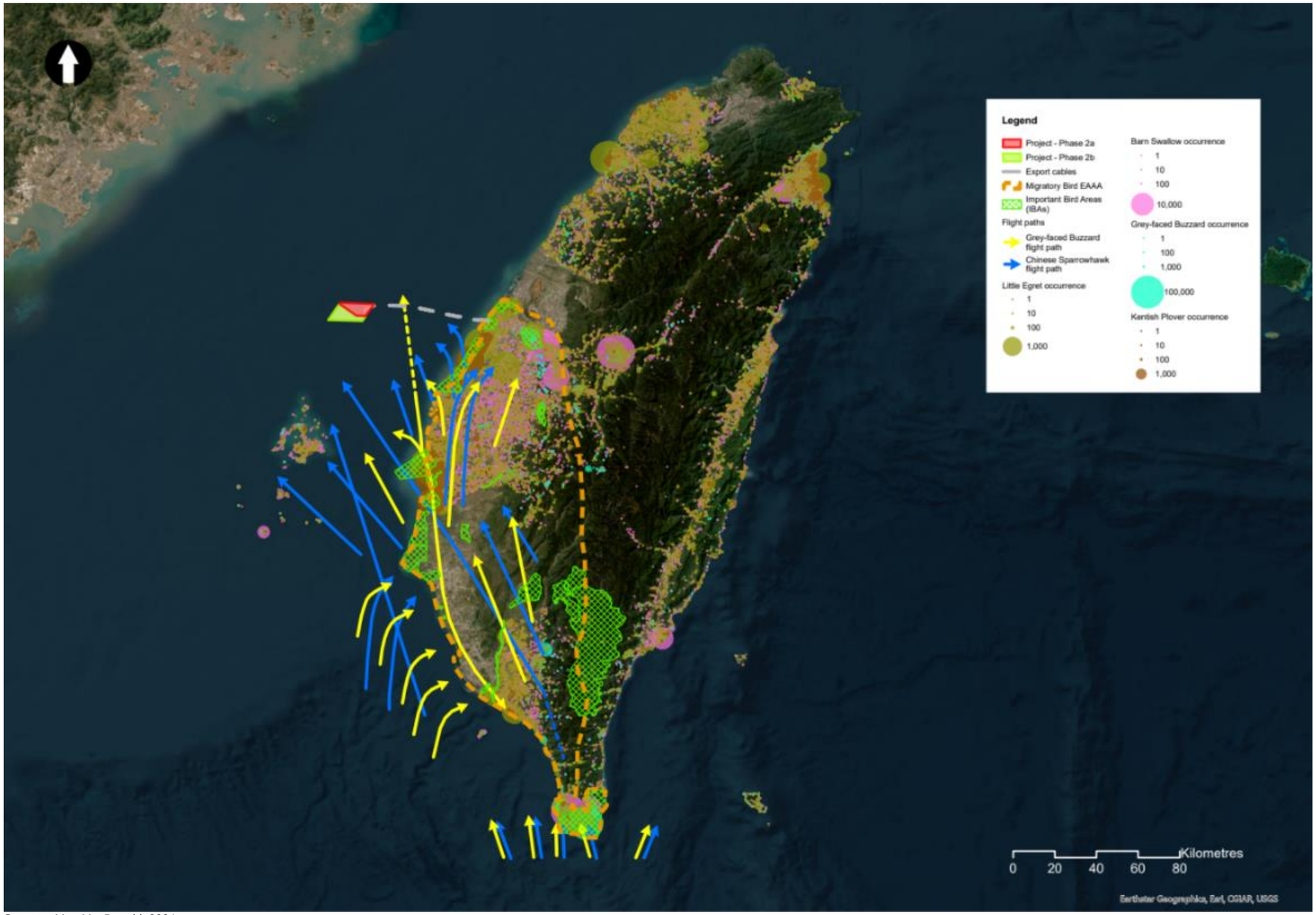
A. Maps of components of EAAAs

Figure A.1: Components of the marine EAAA



Source: Mott MacDonald, 2024

Figure A.2: Components of the migratory bird EAAA



Source: Mott MacDonald, 2024

B. Critical Habitat Species Assessment

Table B.1: Critical habitat species assessment for criteria 1 to 3

Class	Scientific name	Common name	IUCN status	National red list status	Restricted range (C2)	Migratory (C3)	Source
Actinopterygii	Acentrogobius caninus	Tropical Sand Goby	LC		No	Yes	IBAT
Actinopterygii	Acipenser sinensis	Chinese Sturgeon	CR		No	Yes	IBAT
Actinopterygii	Albula glossodonta	Shortjaw Bonefish	VU		No	No	IBAT
Actinopterygii	Alepisaurus ferox	Long Snouted Lancetfish	LC		No	Yes	IBAT
Actinopterygii	Anguilla bicolor	Shortfin Eel	NT		No	Yes	IBAT
Actinopterygii	Anguilla japonica	Japanese Eel	EN	CR	No	Yes	IBAT
Actinopterygii	Anguilla marmorata	Marbled Eel	LC		No	Yes	IBAT
Actinopterygii	Apogon semilineatus	Half-lined Cardinalfish	DD		No	Yes	IBAT Project monitoring reports
Actinopterygii	Argyropelecus hemigymnus	Half-naked Hatchetfish	LC		No	Yes	IBAT
Actinopterygii	Argyrosomus japonicus	Dusky Meagre	EN		No	Yes	IBAT
Actinopterygii	Atherinomorus lacunosus	Hardyhead Silverside	LC		No	Yes	IBAT
Actinopterygii	Auxis rochei	Bullet Tuna	LC		No	Yes	IBAT Project EIA
Actinopterygii	Auxis thazard	Frigate Tuna	LC		No	Yes	IBAT Project monitoring reports
Actinopterygii	Awaous grammepomus		LC		No	Yes	IBAT
Actinopterygii	Bahaba taipingensis	Chinese Bahaba	CR		No	No	IBAT
Actinopterygii	Benthosema pterotum	Skinnycheek Lanternfish	LC		No	Yes	IBAT Project EIA Project monitoring reports
Actinopterygii	Bolbometopon muricatum	Green Humphead Parrotfish	VU		No	Yes	IBAT
Actinopterygii	Bostrychus sinensis	Four-eyed Sleeper	LC		No	Yes	IBAT
Actinopterygii	Bothus assimilis		DD		Yes	No	IBAT
Actinopterygii	Bunaka gyrinoides	Green-backed Gudgeon	LC		No	Yes	IBAT
Actinopterygii	Butis amboinensis	Ambon Gudgeon	LC		No	Yes	IBAT
Actinopterygii	Butis butis	Crimson-tipped Gudgeon	LC		No	Yes	IBAT
Actinopterygii	Caragobius urolepis	Scaleless Worm Goby	LC		No	Yes	IBAT
Actinopterygii	Caranx sexfasciatus	Bigeye Trevally	LC		No	Yes	IBAT Project EIA Project monitoring reports
Actinopterygii	Coilia mystus	Osbeck's Grenadier Anchovy	EN		No	Yes	IBAT

Class	Scientific name	Common name	IUCN status	National red list status	Restricted range (C2)	Migratory (C3)	Source
Actinopterygii	Coilia nasus	Japanese Grenadier Anchovy	EN		No	Yes	IBAT
Actinopterygii	Collichthys lucidus	Big Head Croaker	LC		No	Yes	IBAT
Actinopterygii	Conger myriaster		LC		No	Yes	IBAT
Actinopterygii	Congresox talabon		LC		No	Yes	IBAT
Actinopterygii	Congresox talabonoides		LC		No	Yes	IBAT
Actinopterygii	Coryphaena equiselis	Pompano Dolphinfish	LC		No	Yes	IBAT
Actinopterygii	Coryphaena hippurus	Common Dolphinfish	LC		No	Yes	IBAT Project EIA Project monitoring reports
Actinopterygii	Cynoglossus gracilis	Narrow Tongue-sole	DD		No	Yes	IBAT
Actinopterygii	Decapterus russelli	Indian Scad	LC		No	Yes	IBAT Project EIA Project monitoring reports
Actinopterygii	Electrona risso	Electric Lantern Fish	LC		No	Yes	IBAT
Actinopterygii	Eleotris acanthopomus	Spine-cheek Gudgeon	LC		No	Yes	IBAT
Actinopterygii	Eleotris oxycephala		LC		No	Yes	IBAT
Actinopterygii	Engraulis japonicus	Japanese Anchovy	LC		No	Yes	IBAT
Actinopterygii	Epinephelus akaara	Hong Kong Grouper	EN		No	No	IBAT
Actinopterygii	Epinephelus bruneus	Longtooth Grouper	VU		No	No	IBAT
Actinopterygii	Epinephelus polyphekadion	Camouflage Grouper	VU		No	No	IBAT
Actinopterygii	Euthynnus affinis	Kawakawa	LC		No	Yes	IBAT
Actinopterygii	Evynnis cardinalis	Threadfin Porgy	EN		No	No	IBAT Project EIA Project monitoring reports
Actinopterygii	Favonigobius reichei	Indo-pacific Tropical Sand Goby	LC		No	Yes	IBAT
Actinopterygii	Giuris margaritaceus	Snakehead Gudgeon	LC		No	Yes	IBAT
Actinopterygii	Glossogobius aureus	Golden Flathead Goby	LC		No	Yes	IBAT
Actinopterygii	Glossogobius olivaceus		LC		Yes	No	IBAT
Actinopterygii	Grammatorcynus bilineatus	Double-lined Mackerel	LC		No	Yes	IBAT
Actinopterygii	Gymnosarda unicolor	Dogtooth Tuna	LC		No	Yes	IBAT
Actinopterygii	Hippocampus histrix	Thorny Seahorse	VU		No	No	IBAT
Actinopterygii	Hippocampus kelloggi	Great Seahorse	VU		No	No	IBAT
Actinopterygii	Hippocampus spinosissimus	Hedgehog Seahorse	VU		No	No	IBAT
Actinopterygii	Hippocampus trimaculatus	Three-spot Seahorse	VU		No	No	IBAT
Actinopterygii	Ilisha elongata		LC		No	Yes	IBAT Project EIA

Class	Scientific name	Common name	IUCN status	National red list status	Restricted range (C2)	Migratory (C3)	Source
							Project monitoring reports
Actinopterygii	Istiompax indica	Black Marlin	DD		No	Yes	IBAT
Actinopterygii	Istiophorus platypterus	Sailfish	VU		No	Yes	IBAT
Actinopterygii	Johnius belangerii	Belanger's Croaker	LC		No	Yes	IBAT Project EIA Project monitoring reports
Actinopterygii	Kajikia audax	Striped Marlin	LC		No	Yes	IBAT
Actinopterygii	Katsuwonus pelamis	Skipjack Tuna	LC		No	Yes	IBAT
Actinopterygii	Konosirus punctatus		LC		No	Yes	IBAT
Actinopterygii	Kuhlia mugil		LC		No	Yes	IBAT
Actinopterygii	Larimichthys crocea	Large Yellow Croaker	CR		No	Yes	IBAT
Actinopterygii	Lateolabrax japonicus	cá vược nhật	LC		No	Yes	IBAT
Actinopterygii	Lobianchia gemellarii	Cocco's Lantern Fish	LC		No	Yes	IBAT
Actinopterygii	Lutjanus argentimaculatus	Mangrove Red Snapper	LC		No	Yes	IBAT
Actinopterygii	Lutjanus johnii	John's Snapper	LC		No	Yes	IBAT
Actinopterygii	Makaira nigricans	Blue Marlin	VU		No	Yes	IBAT
Actinopterygii	Megalops cyprinoides	Indo-Pacific Tarpon	DD		No	Yes	IBAT
Actinopterygii	Mesopristes cancellatus	Tapiroid Grunter	LC		No	Yes	IBAT
Actinopterygii	Microphis brachyurus	Opossum Pipefish	LC		No	Yes	IBAT
Actinopterygii	Microphis leiaspis	Barhead Pipefish	LC		No	Yes	IBAT
Actinopterygii	Miichthys miiuy		DD		No	Yes	IBAT
Actinopterygii	Mola mola	Ocean Sunfish	VU		No	No	IBAT
Actinopterygii	Muraenesox bagio	Common Pike Conger	LC		No	Yes	IBAT
Actinopterygii	Myctophum spinosum		LC		No	Yes	IBAT
Actinopterygii	Nematalosa nasus	Bloch's Gizzard Shad	LC		No	Yes	IBAT
Actinopterygii	Nemichthys scolopaceus	Slender Snipe Eel	LC		No	Yes	IBAT
Actinopterygii	Nemipterus virgatus	Golden Threadfin Bream	VU		No	No	IBAT
Actinopterygii	Nibea chui		DD		No	Yes	IBAT
Actinopterygii	Ophiocara porocephala	Spangled Gudgeon	LC		No	Yes	IBAT
Actinopterygii	Oxymonacanthus longirostris	Harlequin Filefish	VU		No	No	IBAT
Actinopterygii	Pagrus major	Red Seabream	LC		No	Yes	IBAT
Actinopterygii	Parablennius yatabei		LC		No	Yes	IBAT
Actinopterygii	Pennahia argentata		LC		No	Yes	IBAT Project EIA Project monitoring reports

Class	Scientific name	Common name	IUCN status	National red list status	Restricted range (C2)	Migratory (C3)	Source
Actinopterygii	Petroscirtes breviceps	Short-head Sabretooth Blenny	LC		No	Yes	IBAT Project EIA
Actinopterygii	Planiliza subviridis	Greenback Mullet	LC		No	Yes	IBAT
Actinopterygii	Platichthys bicoloratus	Stone Flounder	VU		No	No	IBAT
Actinopterygii	Plectropomus areolatus	Squaretail Coralgrouper	VU		No	No	IBAT
Actinopterygii	Pomadasys maculatus	Saddle Grunt	LC		No	Yes	IBAT
Actinopterygii	Rastrelliger faughni	Island Mackerel	VU		No	No	IBAT Project monitoring reports
Actinopterygii	Rastrelliger kanagurta	Indian Mackerel	LC		No	Yes	IBAT
Actinopterygii	Remora brachyptera	Spearfish Remora	LC		No	Yes	IBAT
Actinopterygii	Rhabdosargus sarba	Goldlined Seabream	LC		No	Yes	IBAT
Actinopterygii	Roa modestus	Brown-banded Butterflyfish	LC		No	Yes	IBAT
Actinopterygii	Sarda orientalis	Oriental Bonito	LC		No	Yes	IBAT
Actinopterygii	Sardinella lemuru	Bali Sardinella	NT		No	Yes	IBAT
Actinopterygii	Sardinella zunasi		LC		No	Yes	IBAT
Actinopterygii	Sardinops sagax		LC		No	Yes	IBAT
Actinopterygii	Saurenchelys stylura		LC		No	Yes	IBAT
Actinopterygii	Scomber australasicus	Blue Mackerel	LC		No	Yes	IBAT Project EIA
Actinopterygii	Scomber japonicus	Pacific Chub Mackerel	LC		No	Yes	IBAT Project EIA Project monitoring reports
Actinopterygii	Scomberomorus commerson	Narrow-barred Spanish Mackerel	NT		No	Yes	IBAT
Actinopterygii	Scomberomorus guttatus	Indo-Pacific King Mackerel	DD		No	Yes	IBAT
Actinopterygii	Scomberomorus koreanus	Korean Seerfish	LC		No	Yes	IBAT
Actinopterygii	Scomberomorus niphonius	Japanese Spanish Mackerel	NT		No	Yes	IBAT
Actinopterygii	Sicyopus zosterophorus		LC		No	Yes	IBAT
Actinopterygii	Spratelloides gracilis	Blue Sprat	LC		No	Yes	IBAT
Actinopterygii	Stiphodon percnopterygionus		DD		No	Yes	IBAT
Actinopterygii	Stiphodon surrufus		LC		No	Yes	IBAT
Actinopterygii	Stolephorus indicus	Indian Anchovy	LC		No	Yes	IBAT
Actinopterygii	Strophidon sathete	Giant Estuarine Moray	LC		No	Yes	IBAT
Actinopterygii	Sufflamen fraenatum	Masked Triggerfish	LC		No	Yes	IBAT

Class	Scientific name	Common name	IUCN status	National red list status	Restricted range (C2)	Migratory (C3)	Source
Actinopterygii	Takifugu obscurus	Mefugu	LC		No	Yes	IBAT
Actinopterygii	Takifugu ocellatus	Ocellated Puffer	NT		No	Yes	IBAT
Actinopterygii	Tenualosa reevesii	Reeve's shad	DD		No	Yes	IBAT
Actinopterygii	Tetrapturus angustirostris	Shortbill Spearfish	DD		No	Yes	IBAT
Actinopterygii	Tetraroge nigra	Freshwater waspfish	LC		No	Yes	IBAT
Actinopterygii	Xiphias gladius	Swordfish	NT		No	Yes	IBAT
Actinopterygii	Yarica hyalosoma	Mangrove Cardinalfish	LC		No	Yes	IBAT
Actinopterygii	Zenarchopterus dunckeri		LC		No	Yes	IBAT
Actinopterygii	Acanthopagrus taiwanensis	Taiwan Picnic Seabream	DD		Yes	No	IBAT
Amphibia	Fejervarya multistriata	Hong Kong Rice Frog	LC		Yes	No	IBAT
Anthozoa	Acanthastrea hemprichii		VU		No	No	IBAT
Anthozoa	Acropora solitaryensis		VU		No	No	IBAT
Anthozoa	Alveopora fenestrata		VU		No	No	IBAT
Anthozoa	Anacropora puertogalerae		VU		No	No	IBAT
Anthozoa	Anacropora reticulata		VU		No	No	IBAT
Anthozoa	Astreopora cucullata		VU		No	No	IBAT
Anthozoa	Astreopora incrustans		VU		No	No	IBAT
Anthozoa	Caulastraea echinulata		VU		No	No	IBAT
Anthozoa	Galaxea astreata		VU		No	No	IBAT
Anthozoa	Goniopora polyformis		VU		No	No	IBAT
Anthozoa	Heliopora coerulea	Blue Coral	VU		No	No	IBAT
Anthozoa	Hydnophora bonsai		EN		No	No	IBAT
Anthozoa	Leptoria irregularis		VU		No	No	IBAT
Anthozoa	Lobophyllia flabelliformis		VU		No	No	IBAT
Anthozoa	Montipora mactanensis		VU		No	No	IBAT
Anthozoa	Montipora malampaya		VU		No	No	IBAT
Anthozoa	Paramontastraea salebrosa		VU		No	No	IBAT
Anthozoa	Porites cocosensis		VU		No	No	IBAT
Anthozoa	Stylocoeniella cocosensis		VU		No	No	IBAT
Anthozoa	Turbinaria mesenterina		VU		No	No	IBAT
Aves	Accipiter gularis	Japanese Sparrowhawk	LC		No	Yes	IBAT
Aves	Accipiter soloensis	Chinese Sparrowhawk	LC		No	Yes	IBAT Project EIA
Aves	Accipiter virgatus	Besra	LC		No	Yes	IBAT
Aves	Acridotheres cristatellus	Crested Myna	LC	EN	No	No	IBAT

Class	Scientific name	Common name	IUCN status	National red list status	Restricted range (C2)	Migratory (C3)	Source
Aves	Acrocephalus bistrigiceps	Black-browed Reed-warbler	LC		No	Yes	IBAT
Aves	Actitis hypoleucos	Common Sandpiper	LC		No	Yes	IBAT Project EIA Project monitoring reports
Aves	Agropsar philippensis	Chestnut-cheeked Starling	LC		No	Yes	IBAT
Aves	Agropsar sturninus	Purple-backed Starling	LC		No	Yes	IBAT
Aves	Aix galericulata	Mandarin Duck	LC	VU	No	Yes	IBAT
Aves	Alauda gulgula	Oriental Skylark	LC		No	Yes	IBAT Project EIA Project monitoring reports
Aves	Alcedo atthis	Common Kingfisher	LC		No	Yes	IBAT Project EIA Project monitoring reports
Aves	Amaurornis phoenicurus	White-breasted Waterhen	LC		No	Yes	IBAT Project monitoring reports
Aves	Anas acuta	Northern Pintail	LC		No	Yes	IBAT
Aves	Anas crecca	Common Teal	LC	VU	No	Yes	IBAT Project EIA
Aves	Anas platyrhynchos	Mallard	LC		No	Yes	IBAT
Aves	Anas zonorhyncha	Chinese Spot-billed Duck	LC		No	Yes	IBAT Project EIA Project monitoring reports
Aves	Anser anser	Greylag Goose	LC		No	Yes	IBAT
Aves	Anthus cervinus	Red-throated Pipit	LC		No	Yes	IBAT
Aves	Anthus gustavi	Pechora Pipit	LC		No	Yes	IBAT
Aves	Anthus hodgsoni	Olive-backed Pipit	LC		No	Yes	IBAT
Aves	Anthus richardi	Richard's Pipit	LC		No	Yes	IBAT Project EIA Project monitoring reports
Aves	Apus pacificus	Pacific Swift	LC		No	Yes	IBAT
Aves	Aquila heliaca	Eastern Imperial Eagle	VU		No	Yes	IBAT
Aves	Ardea cinerea	Grey Heron	LC		No	Yes	IBAT Project EIA Project monitoring reports
Aves	Ardea intermedia	Intermediate Egret	LC		No	Yes	IBAT Project monitoring reports
Aves	Ardea purpurea	Purple Heron	LC		No	Yes	IBAT

Class	Scientific name	Common name	IUCN status	National red list status	Restricted range (C2)	Migratory (C3)	Source
Aves	Ardenna pacifica	Wedge-tailed Shearwater	LC		No	Yes	IBAT Project EIA
Aves	Ardeola bacchus	Chinese Pond-heron	LC		No	Yes	IBAT
Aves	Arenaria interpres	Ruddy Turnstone	LC		No	Yes	IBAT Project EIA Project monitoring reports
Aves	Asio flammeus	Short-eared Owl	LC		No	Yes	IBAT Project monitoring reports
Aves	Asio otus	Northern Long-eared Owl	LC		No	Yes	IBAT
Aves	Aythya baeri	Baer's Pochard	CR	CR	No	Yes	IBAT
Aves	Aythya ferina	Common Pochard	VU		No	Yes	IBAT
Aves	Aythya fuligula	Tufted Duck	LC		No	Yes	IBAT Project EIA
Aves	Aythya marila	Greater Scaup	LC		No	Yes	IBAT
Aves	Bambusicola sonorivox	Taiwan Bamboo-partridge	LC		Yes	No	IBAT
Aves	Botaurus stellaris	Eurasian Bittern	LC		No	Yes	IBAT Project EIA
Aves	Brachypteryx goodfellowi	Taiwan Shortwing	LC		Yes	No	IBAT
Aves	Bubulcus ibis	Cattle Egret	LC		No	Yes	IBAT Project EIA Project monitoring reports
Aves	Bulweria bulwerii	Bulwer's Petrel	LC		No	Yes	IBAT Project EIA Project monitoring reports
Aves	Butastur indicus	Grey-faced Buzzard	LC		No	Yes	IBAT Project EIA Project monitoring reports
Aves	Buteo japonicus	Japanese Buzzard	LC		No	Yes	IBAT
Aves	Buteo lagopus	Rough-legged Buzzard	LC		No	Yes	IBAT
Aves	Butorides striata	Green-backed Heron	LC		No	Yes	IBAT
Aves	Calidris acuminata	Sharp-tailed Sandpiper	VU		No	Yes	IBAT Project EIA
Aves	Calidris alba	Sanderling	LC		No	Yes	IBAT Project monitoring reports
Aves	Calidris alpina	Dunlin	LC	VU	No	Yes	IBAT Project EIA Project monitoring reports
Aves	Calidris falcinellus	Broad-billed Sandpiper	LC		No	Yes	IBAT

Class	Scientific name	Common name	IUCN status	National red list status	Restricted range (C2)	Migratory (C3)	Source
Aves	Calidris ferruginea	Curlew Sandpiper	NT		No	Yes	IBAT
Aves	Calidris pugnax	Ruff	LC		No	Yes	IBAT
Aves	Calidris ruficollis	Red-necked Stint	NT	VU	No	Yes	IBAT Project EIA Project monitoring reports
Aves	Calidris subminuta	Long-toed Stint	LC		No	Yes	IBAT
Aves	Calidris temminckii	Temminck's Stint	LC	VU	No	Yes	IBAT
Aves	Calliope calliope	Siberian Rubythroat	LC		No	Yes	IBAT
Aves	Calonectris leucomelas	Streaked Shearwater	NT		No	Yes	IBAT Project EIA Project monitoring reports
Aves	Carpodacus formosanus	Taiwan Rosefinch	LC		Yes	Yes	IBAT
Aves	Cecropis daurica	Red-rumped Swallow	LC		No	Yes	IBAT
Aves	Charadrius alexandrinus	Kentish Plover	LC		No	Yes	IBAT Project EIA Project monitoring reports
Aves	Charadrius atrifrons	Tibetan Sandplover	LC		No	Yes	IBAT
Aves	Charadrius dubius	Little Ringed Plover	LC		No	Yes	IBAT Project EIA Project monitoring reports
Aves	Charadrius leschenaultii	Greater Sandplover	LC		No	Yes	IBAT Project EIA Project monitoring reports
Aves	Charadrius mongolus	Siberian Sandplover	EN		No	Yes	IBAT Project EIA Project monitoring reports
Aves	Chlidonias hybrida	Whiskered Tern	LC		No	Yes	IBAT Project monitoring reports
Aves	Chlidonias leucopterus	White-winged Tern	LC		No	Yes	IBAT Project monitoring reports
Aves	Chloris sinica	Oriental Greenfinch	LC		No	Yes	IBAT
Aves	Ciconia boyciana	Oriental Stork	EN	EN	No	Yes	IBAT
Aves	Ciconia nigra	Black Stork	LC		No	Yes	IBAT
Aves	Circus cyaneus	Hen Harrier	LC		No	Yes	IBAT
Aves	Circus melanoleucos	Pied Harrier	LC		No	Yes	IBAT
Aves	Circus spilonotus	Eastern Marsh-harrier	LC		No	Yes	IBAT Project monitoring reports
Aves	Clanga clanga	Greater Spotted Eagle	VU		No	Yes	IBAT

Class	Scientific name	Common name	IUCN status	National red list status	Restricted range (C2)	Migratory (C3)	Source
Aves	Cuculus optatus	Oriental Cuckoo	LC		No	Yes	IBAT
Aves	Cuculus poliocephalus	Lesser Cuckoo	LC		No	Yes	IBAT
Aves	Cyanoptila cyanomelana	Blue-and-white Flycatcher	LC		No	Yes	IBAT
Aves	Delichon dasypus	Asian House Martin	LC		No	Yes	IBAT
Aves	Dicrurus macrocercus	Black Drongo	LC		No	Yes	IBAT Project EIA Project monitoring reports
Aves	Egretta eulophotes	Chinese Egret	VU	EN	No	Yes	IBAT Project monitoring reports
Aves	Egretta garzetta	Little Egret	LC		No	Yes	IBAT Project EIA Project monitoring reports
Aves	Egretta sacra	Pacific Reef-egret	LC		No	Yes	IBAT
Aves	Emberiza aureola	Yellow-breasted Bunting	CR	EN	No	Yes	IBAT
Aves	Emberiza pusilla	Little Bunting	LC		No	Yes	IBAT
Aves	Emberiza spodocephala	Black-faced Bunting	LC		No	Yes	IBAT
Aves	Emberiza sulphurata	Yellow Bunting	LC	VU	No	Yes	IBAT
Aves	Eophona migratoria	Chinese Grosbeak	LC		No	Yes	IBAT
Aves	Falco peregrinus	Peregrine Falcon	LC		No	Yes	IBAT
Aves	Falco tinnunculus	Common Kestrel	LC		No	Yes	IBAT Project EIA Project monitoring reports
Aves	Ficedula albicilla	Red-throated Flycatcher	LC		No	Yes	IBAT
Aves	Fringilla montifringilla	Brambling	LC		No	Yes	IBAT
Aves	Fulica atra	Common Coot	LC		No	Yes	IBAT
Aves	Gallicrex cinerea	Watercock	LC	VU	No	Yes	IBAT
Aves	Gallinago gallinago	Common Snipe	LC		No	Yes	IBAT
Aves	Gallinago megala	Swinhoe's Snipe	LC		No	Yes	IBAT
Aves	Gallinago stenura	Pin-tailed Snipe	LC		No	Yes	IBAT
Aves	Gallinula chloropus	Common Moorhen	LC		No	Yes	IBAT Project EIA Project monitoring reports
Aves	Gavia arctica	Arctic Loon	LC		No	Yes	IBAT
Aves	Gavia stellata	Red-throated Loon	LC		No	Yes	IBAT
Aves	Gelochelidon nilotica	Common Gull-billed Tern	LC		No	Yes	IBAT
Aves	Glareola maldivarum	Oriental Pratincole	LC		No	Yes	IBAT Project EIA

Class	Scientific name	Common name	IUCN status	National red list status	Restricted range (C2)	Migratory (C3)	Source
							Project monitoring reports
Aves	Gorsachius goisagi	Japanese Night-heron	VU		No	Yes	IBAT
Aves	Gorsachius melanolophus	Malay Night-heron	LC		No	Yes	IBAT
Aves	Halcyon coromanda	Ruddy Kingfisher	LC		No	Yes	IBAT
Aves	Helopsaltes ochotensis	Middendorff's Grasshopper-warbler	LC		No	Yes	IBAT
Aves	Hierococcyx sparverioides	Large Hawk-cuckoo	LC		No	Yes	IBAT
Aves	Himantopus himantopus	Black-winged Stilt	LC		No	Yes	IBAT Project EIA Project monitoring reports
Aves	Hirundapus cochinchinensis	Silver-backed Needletail	LC		No	Yes	IBAT
Aves	Hirundo rustica	Barn Swallow	LC		No	Yes	IBAT Project EIA Project monitoring reports
Aves	Horornis acanthizoides	Yellowish-bellied Bush-warbler	LC		No	Yes	IBAT
Aves	Horornis canturians	Korean Bush-warbler	LC		No	Yes	IBAT
Aves	Horornis diphone	Japanese Bush-warbler	LC		No	Yes	IBAT
Aves	Horornis fortipes	Brownish-flanked Bush-warbler	LC		No	Yes	IBAT
Aves	Hydrobates monorhis	Swinhoe's Storm-petrel	NT		No	Yes	IBAT
Aves	Hydrophasianus chirurgus	Pheasant-tailed Jacana	LC	VU	No	Yes	IBAT
Aves	Hydroprogne caspia	Caspian Tern	LC		No	Yes	IBAT Project monitoring reports
Aves	Hypothymis azurea	Black-naped Monarch	LC		No	Yes	IBAT Project EIA
Aves	Hypsipetes leucocephalus	Black Bulbul	LC		No	Yes	IBAT
Aves	Ixobrychus cinnamomeus	Cinnamon Bittern	LC		No	Yes	IBAT
Aves	Ixobrychus eurhythmus	Schrenck's Bittern	LC		No	Yes	IBAT
Aves	Ixobrychus flavicollis	Black Bittern	LC		No	Yes	IBAT
Aves	Ixobrychus sinensis	Yellow Bittern	LC		No	Yes	IBAT
Aves	Ketupa flavipes	Tawny Fish-owl	LC	EN	No	No	IBAT
Aves	Lalage melaschistos	Black-winged Cuckooshrike	LC		No	Yes	IBAT
Aves	Lanius cristatus	Brown Shrike	LC		No	Yes	IBAT Project EIA Project monitoring reports

Class	Scientific name	Common name	IUCN status	National red list status	Restricted range (C2)	Migratory (C3)	Source
Aves	Lanius schach	Long-tailed Shrike	LC	VU	No	Yes	IBAT
Aves	Larus canus	Mew Gull	LC		No	Yes	IBAT
Aves	Larus crassirostris	Black-tailed Gull	LC		No	Yes	IBAT
Aves	Larus fuscus	Lesser Black-backed Gull	LC		No	Yes	IBAT
Aves	Larus smithsonianus	Arctic Herring Gull	LC		No	Yes	IBAT
Aves	Limnodromus scolopaceus	Long-billed Dowitcher	LC		No	Yes	IBAT
Aves	Limosa lapponica	Bar-tailed Godwit	NT	VU	No	Yes	IBAT
Aves	Limosa limosa	Black-tailed Godwit	NT	VU	No	Yes	IBAT
Aves	Luscinia svecica	Bluethroat	LC		No	Yes	IBAT
Aves	Mareca falcata	Falcated Duck	NT	VU	No	Yes	IBAT
Aves	Mareca penelope	Eurasian Wigeon	LC		No	Yes	IBAT
Aves	Melanitta stejnegeri	Siberian Scoter	LC		No	Yes	IBAT
Aves	Mergus serrator	Red-breasted Merganser	LC		No	Yes	IBAT
Aves	Mergus squamatus	Scaly-sided Merganser	EN		No	Yes	IBAT
Aves	Milvus migrans	Black Kite	LC	VU	No	Yes	IBAT
Aves	Monticola solitarius	Blue Rock-thrush	LC		No	Yes	IBAT Project EIA Project monitoring reports
Aves	Motacilla alba	White Wagtail	LC		No	Yes	IBAT Project EIA Project monitoring reports
Aves	Motacilla cinerea	Grey Wagtail	LC		No	Yes	IBAT Project EIA
Aves	Motacilla tschutschensis	Eastern Yellow Wagtail	LC		No	Yes	IBAT Project monitoring reports
Aves	Muscicapa dauurica	Asian Brown Flycatcher	LC		No	Yes	IBAT
Aves	Muscicapa ferruginea	Ferruginous Flycatcher	LC		No	Yes	IBAT
Aves	Muscicapa griseisticta	Grey-streaked Flycatcher	LC		No	Yes	IBAT
Aves	Muscicapa sibirica	Dark-sided Flycatcher	LC		No	Yes	IBAT
Aves	Ninox japonica	Northern Boobook	LC		No	Yes	IBAT
Aves	Nisaetus nipalensis	Mountain Hawk-eagle	NT	EN	No	Yes	IBAT
Aves	Numenius arquata	Eurasian Curlew	NT	VU	No	Yes	IBAT
Aves	Numenius madagascariensis	Far Eastern Curlew	EN	EN	No	Yes	IBAT Project EIA
Aves	Numenius phaeopus	Whimbrel	LC		No	Yes	IBAT Project EIA Project monitoring reports

Class	Scientific name	Common name	IUCN status	National red list status	Restricted range (C2)	Migratory (C3)	Source
Aves	Nycticorax nycticorax	Black-crowned Night-heron	LC		No	Yes	IBAT Project EIA Project monitoring reports
Aves	Onychoprion anaethetus	Bridled Tern	LC		No	Yes	IBAT Project EIA Project monitoring reports
Aves	Onychoprion fuscatus	Sooty Tern	LC		No	Yes	IBAT
Aves	Oriolus chinensis	Black-naped Oriole	LC	VU	No	Yes	IBAT
Aves	Oriolus traillii	Maroon Oriole	LC		No	Yes	IBAT
Aves	Otus lettia	Collared Scops-owl	LC		No	Yes	IBAT
Aves	Otus spilocephalus	Mountain Scops-owl	LC		No	Yes	IBAT
Aves	Otus sunia	Oriental Scops-owl	LC		No	Yes	IBAT
Aves	Pandion haliaetus	Osprey	LC		No	Yes	IBAT Project EIA
Aves	Parus monticolus	Green-backed Tit	LC		No	Yes	IBAT
Aves	Passer cinnamomeus	Russet Sparrow	LC	EN	No	Yes	IBAT
Aves	Pericrocotus divaricatus	Ashy Minivet	LC		No	Yes	IBAT
Aves	Pericrocotus solaris	Grey-chinned Minivet	LC		No	Yes	IBAT
Aves	Pernis ptilorhynchus	Oriental Honey-buzzard	LC		No	Yes	IBAT
Aves	Phaethon rubricauda	Red-tailed Tropicbird	LC		No	Yes	IBAT
Aves	Phasianus colchicus	Common Pheasant	LC	CR	No	No	IBAT
Aves	Phoebastria albatrus	Short-tailed Albatross	VU		No	Yes	IBAT
Aves	Phoenicurus auroreus	Daurian Redstart	LC		No	Yes	IBAT Project EIA Project monitoring reports
Aves	Phylloscopus borealoides	Sakhalin Leaf-warbler	LC		Yes	Yes	IBAT
Aves	Phylloscopus coronatus	Eastern Crowned Warbler	LC		No	Yes	IBAT
Aves	Phylloscopus fuscatus	Dusky Warbler	LC		No	Yes	IBAT
Aves	Phylloscopus ijimae	Ijima's Leaf-warbler	VU	VU	Yes	Yes	IBAT
Aves	Phylloscopus inornatus	Yellow-browed Warbler	LC		No	Yes	IBAT
Aves	Phylloscopus xanthodryas	Japanese Leaf-warbler	LC		No	Yes	IBAT
Aves	Pitta nympha	Fairy Pitta	VU	EN	No	Yes	IBAT
Aves	Platalea leucorodia	Eurasian Spoonbill	LC		No	Yes	IBAT
Aves	Platalea minor	Black-faced Spoonbill	EN		Yes	Yes	IBAT Project EIA Project monitoring reports

Class	Scientific name	Common name	IUCN status	National red list status	Restricted range (C2)	Migratory (C3)	Source
Aves	Pluvialis fulva	Pacific Golden Plover	LC		No	Yes	IBAT
Aves	Pluvialis squatarola	Grey Plover	LC		No	Yes	IBAT Project EIA
Aves	Podiceps cristatus	Great Crested Grebe	LC		No	Yes	IBAT
Aves	Podiceps nigricollis	Black-necked Grebe	LC		No	Yes	IBAT
Aves	Pomatorhinus musicus	Taiwan Scimitar-babbler	LC		Yes	No	IBAT
Aves	Prinia crinigera	Striated Prinia	LC		No	Yes	IBAT
Aves	Prinia inornata	Plain Prinia	LC		No	Yes	IBAT Project EIA Project monitoring reports
Aves	Prunella collaris	Alpine Accentor	LC	VU	No	Yes	IBAT
Aves	Psilopogon nuchalis	Taiwan Barbet	LC		Yes	Yes	IBAT
Aves	Pycnonotus sinensis	Light-vented Bulbul	LC		No	Yes	IBAT Project EIA Project monitoring reports
Aves	Pyrrhula erythaca	Grey-headed Bullfinch	LC	VU	No	Yes	IBAT
Aves	Rallina eurizonoides	Slaty-legged Crake	LC		No	Yes	IBAT
Aves	Rallus indicus	Eastern Water Rail	LC		No	Yes	IBAT
Aves	Regulus goodfellowi	Flamecrest	LC		Yes	Yes	IBAT
Aves	Regulus regulus	Goldcrest	LC		No	Yes	IBAT
Aves	Riparia chinensis	Asian Plain Martin	LC		No	Yes	IBAT
Aves	Saundersilarus saundersi	Saunders's Gull	VU	CR	No	Yes	IBAT
Aves	Saxicola torquatus	Common Stonechat	LC		No	Yes	IBAT
Aves	Scolopax rusticola	Eurasian Woodcock	LC		No	Yes	IBAT
Aves	Sibirionetta formosa	Baikal Teal	LC		No	Yes	IBAT
Aves	Sittiparus castaneoventris	Chestnut-bellied Tit	LC		Yes	No	IBAT
Aves	Spatula clypeata	Northern Shoveler	LC		No	Yes	IBAT
Aves	Spatula querquedula	Garganey	LC		No	Yes	IBAT
Aves	Spilopelia chinensis	Eastern Spotted Dove	LC		No	Yes	IBAT Project monitoring reports
Aves	Spinus spinus	Eurasian Siskin	LC		No	Yes	IBAT
Aves	Spodiopsar cineraceus	White-cheeked Starling	LC		No	Yes	IBAT
Aves	Spodiopsar sericeus	Red-billed Starling	LC		No	Yes	IBAT
Aves	Sterna dougallii	Roseate Tern	LC		No	Yes	IBAT Project EIA

Class	Scientific name	Common name	IUCN status	National red list status	Restricted range (C2)	Migratory (C3)	Source
Aves	Sterna sumatrana	Black-naped Tern	LC		No	Yes	IBAT
Aves	Streptopelia orientalis	Oriental Turtle-dove	LC		No	Yes	IBAT
Aves	Streptopelia tranquebarica	Red Collared-dove	LC		No	Yes	IBAT Project EIA Project monitoring reports
Aves	Sturnia sinensis	White-shouldered Starling	LC		No	Yes	IBAT
Aves	Tachybaptus ruficollis	Little Grebe	LC		No	Yes	IBAT Project EIA Project monitoring reports
Aves	Tarsiger cyanurus	Orange-flanked Bush-robin	LC		No	Yes	IBAT
Aves	Terpsiphone atrocaudata	Japanese Paradise-flycatcher	LC		No	Yes	IBAT
Aves	Thalasseus bergii	Greater Crested Tern	LC		No	Yes	IBAT Project EIA Project monitoring reports
Aves	Threskiornis melanocephalus	Black-headed Ibis	NT		No	Yes	IBAT
Aves	Treron formosae	Taiwan Green-pigeon	NT	VU	Yes	No	IBAT
Aves	Treron sieboldii	White-bellied Green-pigeon	LC		No	Yes	IBAT
Aves	Tringa brevipes	Grey-tailed Tattler	NT		No	Yes	IBAT Project EIA Project monitoring reports
Aves	Tringa erythropus	Spotted Redshank	LC		No	Yes	IBAT
Aves	Tringa glareola	Wood Sandpiper	LC		No	Yes	IBAT Project EIA
Aves	Tringa nebularia	Common Greenshank	LC		No	Yes	IBAT Project EIA Project monitoring reports
Aves	Tringa ochropus	Green Sandpiper	LC		No	Yes	IBAT
Aves	Tringa stagnatilis	Marsh Sandpiper	LC		No	Yes	IBAT Project EIA Project monitoring reports
Aves	Tringa totanus	Common Redshank	LC		No	Yes	IBAT Project EIA Project monitoring reports
Aves	Troglodytes troglodytes	Northern Wren	LC		No	Yes	IBAT
Aves	Turdus chrysolaus	Brown-headed Thrush	LC		No	Yes	IBAT

Class	Scientific name	Common name	IUCN status	National red list status	Restricted range (C2)	Migratory (C3)	Source
Aves	Turdus eunomus	Dusky Thrush	LC		No	Yes	IBAT
Aves	Turdus naumanni	Naumann's Thrush	LC		No	Yes	IBAT
Aves	Turdus obscurus	Eyebrowed Thrush	LC		No	Yes	IBAT
Aves	Turdus pallidus	Pale Thrush	LC		No	Yes	IBAT
Aves	Turnix sylvaticus	Common Buttonquail	LC	CR	No	No	IBAT
Aves	Tyto longimembris	Eastern Grass-owl	LC	EN	No	No	IBAT
Aves	Urile pelagicus	Pelagic Cormorant	LC		No	Yes	IBAT
Aves	Urosphena squameiceps	Asian Stubtail	LC		No	Yes	IBAT
Aves	Vanellus cinereus	Grey-headed Lapwing	LC		No	Yes	IBAT
Aves	Yuhina brunneiceps	Taiwan Yuhina	LC		Yes	Yes	IBAT
Aves	Zapornia fusca	Ruddy-breasted Crake	LC		No	Yes	IBAT
Aves	Zapornia pusilla	Baillon's Crake	LC		No	Yes	IBAT
Aves	Zoothera aurea	White's Thrush	LC		No	Yes	IBAT
Aves	Thalasseus bernsteini	Chinese Crested Tern	CR	CR	Yes	Yes	IBAT
Chondrichthyes	Aetobatus ocellatus	Spotted Eagle Ray	VU		No	No	IBAT
Chondrichthyes	Aetomylaeus maculatus	Mottled Eagle Ray	EN		No	No	IBAT
Chondrichthyes	Aetomylaeus nichofii	Banded Eagle Ray	VU		No	No	IBAT
Chondrichthyes	Aetomylaeus vespertilio	Ornate Eagle Ray	EN		No	No	IBAT
Chondrichthyes	Alopias pelagicus	Pelagic Thresher	EN		No	No	IBAT
Chondrichthyes	Alopias superciliosus	Bigeye Thresher	VU		No	No	IBAT
Chondrichthyes	Alopias vulpinus	Common Thresher	VU		No	No	IBAT
Chondrichthyes	Anoxypristis cuspidata	Narrow Sawfish	CR		No	No	IBAT
Chondrichthyes	Bathytoshia lata	Brown Stingray	VU		No	No	IBAT
Chondrichthyes	Carcharhinus albimarginatus	Silvertip Shark	VU		No	No	IBAT
Chondrichthyes	Carcharhinus brachyurus	Copper Shark	VU		No	No	IBAT
Chondrichthyes	Carcharhinus brevipinna	Spinner Shark	VU		No	No	IBAT
Chondrichthyes	Carcharhinus falciformis	Silky Shark	VU		No	Yes	IBAT
Chondrichthyes	Carcharhinus hemiodon	Pondicherry Shark	CR		No	No	IBAT
Chondrichthyes	Carcharhinus leucas	Bull Shark	VU		No	No	IBAT
Chondrichthyes	Carcharhinus limbatus	Blacktip Shark	VU		No	No	IBAT
Chondrichthyes	Carcharhinus longimanus	Oceanic Whitetip Shark	CR		No	No	IBAT
Chondrichthyes	Carcharhinus melanopterus	Blacktip Reef Shark	VU		No	No	IBAT
Chondrichthyes	Carcharhinus obscurus	Dusky Shark	EN		No	No	IBAT

Class	Scientific name	Common name	IUCN status	National red list status	Restricted range (C2)	Migratory (C3)	Source
Chondrichthyes	Carcharhinus plumbeus	Sandbar Shark	EN		No	No	IBAT
Chondrichthyes	Carcharhinus tjutjot	Indonesian Whaler Shark	VU		No	No	IBAT
Chondrichthyes	Carcharias taurus	Sand Tiger Shark	CR		No	No	IBAT
Chondrichthyes	Carcharodon carcharias	White Shark	VU		No	No	IBAT
Chondrichthyes	Centrophorus granulosus	Gulper Shark	EN		No	No	IBAT
Chondrichthyes	Cephaloscyllium sarawakensis	Sarawak Pygmy Swell Shark	CR		Yes	No	IBAT
Chondrichthyes	Cetorhinus maximus	Basking Shark	EN		No	No	IBAT
Chondrichthyes	Chaenogaleus macrostoma	Hooktooth Shark	VU		No	No	IBAT
Chondrichthyes	Eusphyra blochii	Winghead Shark	EN		No	No	IBAT
Chondrichthyes	Glaucostegus typus	Giant Guitarfish	CR		No	No	IBAT
Chondrichthyes	Gymnura japonica	Japanese Butterfly Ray	VU		No	No	IBAT
Chondrichthyes	Gymnura poecilura	Longtail Butterfly Ray	VU		No	No	IBAT
Chondrichthyes	Gymnura zonura	Zonetail Butterfly Ray	EN		No	No	IBAT
Chondrichthyes	Halaelurus buergeri	Blackspotted Catshark	EN		No	No	IBAT
Chondrichthyes	Hemigaleus microstoma	Sickelfin Weasel Shark	VU		No	No	IBAT
Chondrichthyes	Hemipristis elongata	Snaggletooth Shark	VU		No	No	IBAT
Chondrichthyes	Hemitriakis complicofasciata	Ocellate Topeshark	VU		Yes	No	IBAT
Chondrichthyes	Hemitriakis japanica	Japanese Topeshark	EN		No	No	IBAT
Chondrichthyes	Hemitrygon bennetti	Bennett's Stingray	VU		Yes	No	IBAT
Chondrichthyes	Himantura leoparda	Leopard Whipray	VU		No	No	IBAT
Chondrichthyes	Isurus oxyrinchus	Shortfin Mako	EN		No	No	IBAT
Chondrichthyes	Isurus paucus	Longfin Mako	EN		No	No	IBAT
Chondrichthyes	Maculabatis gerrardi	Whitespotted Whipray	EN		No	No	IBAT
Chondrichthyes	Maculabatis macrura	Sharpnose Whipray	EN		No	No	IBAT
Chondrichthyes	Mobula alfredi	Reef Manta Ray	VU		No	No	IBAT
Chondrichthyes	Mobula birostris	Oceanic Manta Ray	EN		No	No	IBAT
Chondrichthyes	Mobula eregoodoo	Longhorned Pygmy Devil Ray	EN		No	No	IBAT
Chondrichthyes	Mobula mobular	Spinetail Devil Ray	EN		No	No	IBAT
Chondrichthyes	Mobula tarapacana	Sicklefin Devil Ray	EN		No	No	IBAT
Chondrichthyes	Mobula thurstoni	Bentfin Devil Ray	EN		No	No	IBAT
Chondrichthyes	Mustelus griseus	Spotless Smooth-hound	EN		No	No	IBAT

Class	Scientific name	Common name	IUCN status	National red list status	Restricted range (C2)	Migratory (C3)	Source
Chondrichthyes	Mustelus manazo	Starspotted Smooth-hound	EN		No	No	IBAT
Chondrichthyes	Narcine lingula	Chinese Numbfish	VU		No	No	IBAT
Chondrichthyes	Narke dipterygia	Spottail Sleeper Ray	VU		No	No	IBAT
Chondrichthyes	Nebrius ferrugineus	Tawny Nurse Shark	VU		No	No	IBAT
Chondrichthyes	Negaprion acutidens	Sharptooth Lemon Shark	EN		No	No	IBAT
Chondrichthyes	Notorynchus cepedianus	Broadnose Sevengill Shark	VU		No	No	IBAT
Chondrichthyes	Odontaspis ferox	Smalltooth Sandtiger	VU		No	No	IBAT
Chondrichthyes	Paragaleus tengi	Straight-tooth Weasel Shark	EN		No	No	IBAT
Chondrichthyes	Pristis zijsron	Green Sawfish	CR		No	No	IBAT
Chondrichthyes	Rhina ancylostoma	Bowmouth Guitarfish	CR		No	No	IBAT
Chondrichthyes	Rhincodon typus	Whale Shark	EN		No	Yes	IBAT
Chondrichthyes	Rhinobatos hynnicephalus	Ringed Guitarfish	EN		No	No	IBAT
Chondrichthyes	Rhinobatos schlegelii	Brown Guitarfish	CR		No	No	IBAT
Chondrichthyes	Rhinoptera javanica	Javanese Cownose Ray	EN		No	No	IBAT
Chondrichthyes	Rhinoptera jayakari	Oman Cownose Ray	EN		No	No	IBAT
Chondrichthyes	Rhizoprionodon acutus	Milk Shark	VU		No	No	IBAT
Chondrichthyes	Rhynchobatus australiae	Bottlenose Wedgefish	CR		No	No	IBAT
Chondrichthyes	Rhynchobatus immaculatus	Taiwanese Wedgefish	CR		Yes	No	IBAT Project monitoring reports
Chondrichthyes	Rhynchobatus laevis	Smoothnose Wedgefish	CR		No	No	IBAT
Chondrichthyes	Sphyrna lewini	Scalloped Hammerhead	CR		No	No	IBAT
Chondrichthyes	Sphyrna mokarran	Great Hammerhead	CR		No	No	IBAT
Chondrichthyes	Sphyrna zygaena	Smooth Hammerhead	VU		No	No	IBAT
Chondrichthyes	Squalus brevirostris	Japanese Shortnose Spurdog	EN		No	No	IBAT
Chondrichthyes	Squalus japonicus	Japanese Spurdog	EN		No	No	IBAT
Chondrichthyes	Squalus mitsukurii	Shortspine Spurdog	EN		No	No	IBAT
Chondrichthyes	Squalus montalbani	Philippine Spurdog	VU		No	No	IBAT
Chondrichthyes	Squatina formosa	Taiwan Angelshark	EN		Yes	No	IBAT
Chondrichthyes	Squatina japonica	Japanese Angelshark	CR		No	No	IBAT

Class	Scientific name	Common name	IUCN status	National red list status	Restricted range (C2)	Migratory (C3)	Source
Chondrichthyes	Squatina nebulosa	Clouded Angelshark	EN		No	No	IBAT
Chondrichthyes	Squatina tergocellatoides	Ocellated Angelshark	EN		No	No	IBAT
Chondrichthyes	Stegostoma tigrinum	Indo-Pacific Leopard Shark	EN		No	No	IBAT
Chondrichthyes	Taeniurops meyeni	Blotched Fantail Ray	VU		No	No	IBAT
Chondrichthyes	Telatrygon zugei	Pale-edge Sharpnose Ray	VU		No	No	IBAT
Chondrichthyes	Triaenodon obesus	Whitetip Reef Shark	VU		No	No	IBAT
Chondrichthyes	Triakis scyllium	Banded Houndshark	EN		No	No	IBAT
Holothuroidea	Actinopyga miliaris		VU		No	No	IBAT
Holothuroidea	Holothuria scabra		EN		No	No	IBAT
Holothuroidea	Thelenota ananas	Pineapple Sea Cucumber	EN		No	No	IBAT
Insecta	Ischnura aurora	Gossamer Damselfly	LC		No	Yes	IBAT
Insecta	Pantala flavescens	Wandering Glider	LC		No	Yes	IBAT Project EIA
Insecta	Tholymis tillarga	Old World Twister	LC		No	Yes	IBAT
Insecta	Tramea transmarina	Red Glider Dragonfly	LC		No	Yes	IBAT
Insecta	Vanessa cardui	Painted Lady	LC		No	Yes	IBAT
Liliopsida	Paris polyphylla	Love Apple	VU		No	No	IBAT
Liliopsida	Trillium tschonoskii	Keun-yeon-yeong-cho	EN		No	No	IBAT
Magnoliopsida	Heritiera littoralis		LC	EN	No	No	IBAT
Magnoliopsida	Hydrolea zeylanica		LC	EN	No	No	IBAT
Magnoliopsida	Limnophila sessiliflora		LC	EN	No	No	IBAT
Mammalia	Balaenoptera borealis	Sei Whale	EN		No	No	IBAT
Mammalia	Balaenoptera edeni	Bryde's Whale	LC		No	Yes	IBAT
Mammalia	Balaenoptera musculus	Blue Whale	EN		No	No	IBAT
Mammalia	Balaenoptera physalus	Fin Whale	VU		No	No	IBAT
Mammalia	Eschrichtius robustus	Gray Whale	LC		No	Yes	IBAT
Mammalia	Megaptera novaeangliae	Humpback Whale	LC		No	Yes	IBAT
Mammalia	Neophocaena asiaeorientalis	Narrow-ridged Finless Porpoise	EN		No	No	IBAT Project EIA
Mammalia	Neophocaena phocaenoides	Indo-Pacific Finless Porpoise	VU		No	No	IBAT
Mammalia	Physeter macrocephalus	Sperm Whale	VU		No	No	IBAT Project EIA
Mammalia	Prionailurus bengalensis	Mainland Leopard Cat	LC	EN	No	No	IBAT
Mammalia	Rusa unicolor	Sambar	VU		No	No	IBAT
Mammalia	Sousa chinensis	Indo-Pacific Humpback Dolphin	VU		No	No	IBAT Project EIA
Mammalia	Ursus thibetanus	Asiatic Black Bear	VU	EN	No	No	IBAT

Class	Scientific name	Common name	IUCN status	National red list status	Restricted range (C2)	Migratory (C3)	Source
Mammalia	Vespertilio sinensis	Asian Particolored Bat	LC	EN	No	No	IBAT
Mammalia	Sousa chinensis ssp. Taiwanensis	Taiwanese Humpback Dolphin	CR		Yes	No	IBAT Project EIA
Merostomata	Tachypleus tridentatus	Tri-spine Horseshoe Crab	EN		No	Yes	IBAT
Reptilia	Caretta caretta	Loggerhead Turtle	VU		No	Yes	IBAT
Reptilia	Chelonia mydas	Green Turtle	EN		No	Yes	IBAT
Reptilia	Deinagkistrodon acutus	Chinese Moccasin	VU		No	No	IBAT
Reptilia	Dermochelys coriacea	Leatherback Turtle	VU		No	Yes	IBAT
Reptilia	Elaphe taeniura	Cave Racer	VU		No	No	IBAT
Reptilia	Eretmochelys imbricata	Hawksbill Turtle	CR		No	Yes	IBAT
Reptilia	Lepidochelys olivacea	Olive Ridley Turtle	VU		No	Yes	IBAT
Reptilia	Mauremys mutica	Yellow Pond Turtle	CR		No	No	IBAT
Reptilia	Mauremys sinensis	Chinese Stripe-necked Turtle	CR		No	No	IBAT
Reptilia	Naja atra	Chinese Cobra	VU		No	No	IBAT

Source: Mott MacDonald, 2024