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Critical Habitat Assessment

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Acronyms and Abbreviations

Name	Description
AoI	Area of Influence
AWC	Anma Offshore Wind Energy
AZE	Alliance for Zero Extinction
BAP	Biodiversity Action Plan
Bgs	below ground surface
CBRA	Cable Burial Risk Assessment
CHA	Critical Habitat Assessment
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
CPS	Cable Protection System
CR	Critically Endangered
CRM	Collision Risk Modelling
DMZ	Korean Demilitarized Zone
E&S	Environmental and Social
EAAA	Ecological Appropriate Area of Analysis
EAAF	East Asian–Australasian Flyway
EBL	Electric Business License
EHS	Environmental, Health and Safety
EIA	Environmental Impact Assessment
EN	Endangered
EP	Equator Principles
EPC	Engineering, Procurement and Construction
EPFI	Equator Principles Financial Institutions
ERM	ERM Korea Ltd.
ESAP	Environmental and Social Action Plan
ESDD	Environmental and Social Due Diligence
ESG	Environmental Social Governance
ESIA	Environmental and Social Impact Assessment
ESS	Environmental and Social Standards
FA	Fisheries Act
FDI	Fishery Damage Investigation
FDIA	Fishery Damage Impact Assessment
FOU	Foundation
GN	Guidance Note
GPS	Global Positioning System
H&S	Health and Safety
HF	High Frequency
HV	High Voltage
IAC	Inter Array Cable
IBA	Important Bird Areas
IBAT	Integrated Biodiversity Assessment Tool
IFC	International Finance Corporation
IPA	Important Plant Areas
ISO	International Organisation for Standardisation
IUCN	International Union for Conservation of Nature
KBA	Key Biodiversity Area
KEPCO	Korea Electric Power Corporation

KH	Kilohertz
LC	Least Concern
LEC	Local Environmental Consultant
LRP	Livelihood Restoration Plan
MF	Middle Frequency
MMO	Marine Mammal Observer
MoE	Ministry of Environment
MOM	Minutes of Meeting
MV	Middle Voltage
MVA	Mega-Volt-Amperes
NGIC	National Groundwater Information Center
NGO	Non-Governmental Organisation
OECD	Organization for Economic Co-operation and Development
OHS	Occupational, Health and Safety
ONS	Onshore Substation
OPPW	Occupancy Permit of Public Waters
OSS	Offshore Substation
PAM	Passive Acoustic Monitoring
PDCA	Plan-Do-Check-Act
PFDIA	Preliminary Fishery Damage Impact Assessment
PS	Performance Standard
SSEIA	Small Scale Environmental Impact Assessment
UNESCO	United Nations Educational, Scientific and Cultural Organization
VU	Vulnerable
WTG	Wind Turbine Generator

1. INTRODUCTION

1.1 Background

Anma Offshore Wind Energy Co., Ltd; (“AWC” or the “Project”) has requested ERM Korea Ltd. (ERM) to undertake Environmental and Social Impact Assessment against the internationally recognised standards (also referred as the Applicable Standards) for the fixed bottom offshore wind farm comprised of Phase 1 with permitted capacity of 224 MW, and Phase 2 with 308 MW permitted (collectively referred as “Anma Project” or “the Project”) on a voluntary basis to prepare for financing of the Project. To incorporate updates based on comments from the Lender’s Environmental and Social Advisor (LESA), IA Partners Co., Ltd., a member of INOGEN Alliance (INOGEN) has been engaged to carry out the necessary revisions.

The internationally recognised standards (the Applicable Standards) subject to the Assignment are:

- Applicable environmental and social (E&S) act/law of South Korea;
- International Finance Corporation (IFC) Performance Standards (PS)(2012);
- IFC General Environmental, Health, and Safety (EHS) Guideline (2007);
- IFC EHS Guideline for Wind Energy (2015)
- IFC EHS Guideline for Electric Power Transmission and Distribution (2007); and
- Equator Principle (EP) 4 (2020).

1.2 Objective

The objective of this Critical Habitat Assessment is to determine if the project area can be classified as critical habitat as defined in the International Finance Corporation (IFC) Performance Standard 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources.

The following definitions of areas have been used:

- The Project area is defined as the development boundaries of the Project land plots and sea Occupation Permit of Public Waters (OPPW);
- A 50 km buffer around the Project Area has been used to identify biodiversity habitats, species and protected and/or designated sites that may potentially be relevant to this assessment.
- An indicative Ecologically Appropriate Area of Assessment (EAAA) has been established based on the initial screening findings, as described further in **Section 5.2**.
- The background assessment includes a review of:
 - The Integrated Biodiversity Assessment Tool (IBAT) and existing datasets (e.g. International Union for Conservation of Nature’s [IUCN] Red List of Threatened Species);
 - Locations of habitats of conservation significance, including those that are internationally recognised (e.g. World Heritage Sites; United Nations Educational, Scientific and Cultural Organization Man and the Biosphere (UNESCO-MAB) Reserves, Ramsar sites, etc.) and legally protected in South Korea (e.g. Special Islands, National Parks, etc.);
 - Pre-existing biodiversity assessments available, such as the local Small Scale Environmental Impact Assessment (SSEIA) of March 2020;
 - Information regarding two (2) rounds of terrestrial surveys in August 2022 and October 2022;
 - Information about seven (7) rounds of baseline surveys for marine birds: once (1) in August 2020, twice (2) in September 2020, twice (2) in October 2020, once (1) in November 2020, and once (1) in February 2021.

- Information about two (2) additional rounds of bird surveys: once (1) in January 2022 and once (1) in July 2022.
- Information regarding 12 rounds of supplementary biodiversity surveys conducted monthly from March 2023 to February 2024, specifically targeting marine birds, bats, and marine mammals, using systematic ship-based assessments and point-count observation methods to enhance data precision for Critical Habitat evaluation.
- Literature review from internet resources and databases.

1.3 Structure of the Report

The remainder of this report is structured as follows:

- **Section 2:** Project Description
- **Section 3:** Critical Habitat Assessment Criteria
- **Section 4:** Background Assessment
- **Section 5:** Critical Habitat Screening and Assessment
- **Section 6:** Summary and Next Steps
- **Section 7:** Supplementary Materials

2. PROJECT DESCRIPTION

Anma Offshore Wind Energy Co., Ltd; (AWC) is in process of developing a fixed bottom offshore wind farm comprised of two (2) phases: Phase 1 with a total power generation capacity of 224 MW, and Phase 2 with 308 MW (collectively referred as “the Project”) located in the western sea area of Anma Island, Yeonggwang-gun, Jeollanam-do, South Korea (the Site).

Project Background and Project Description (including the Project location, key milestones, facilities and components, and a summary of EPC construction activities) are provided under the [APPENDIX A](#).

3. CRITICAL HABITAT ASSESSMENT CRITERIA

According to IFC Performance Standard 6 (PS6), Critical Habitat is identified based on five distinct criteria as follows:

1. Both natural and modified habitats may contain high biodiversity values, thereby qualifying as “Critical Habitat”¹ if they include at least one or more of the five criteria² specified below: Habitat of significant importance to Critically Endangered and/or Endangered species³;
2. Habitat of significant importance to endemic and/or restricted-range species;
3. Habitat supporting globally significant concentrations of migratory species and/or congregatory species;
4. Highly threatened and/or unique ecosystems; and/or
5. Areas associated with key evolutionary processes”.

Furthermore, Critical Habitat may not be limited to pristine or highly biodiverse areas, but rather may include both modified habitat and natural habitats across the broader landscape that supports the biodiversity values that trigger the Critical Habitat criterion. Critical Habitats can therefore be a subset of both modified habitat and natural habitat.

Assessment for Critical Habitat is undertaken as a screening process against the criteria defined within IFC PS 6 Guidance Note. This involves analysis of desk-based data collection, habitat mapping and incorporation of field survey results where available. Critical Habitat criteria are defined in PS6 (2012) Guidance Note 6 (GN6, 2019), paragraphs GN69 to 97. Table 3-1 provides details of the qualifying requirements for Criteria 1 to 4 (i.e. thresholds), while details of the likely qualifying interests for Criterion 5 will be defined based on research and expert opinions. The criteria listed have been used to complete this screening study.

The five criteria are independently ‘triggers’ of Critical Habitat; if an area of habitat meets any one of the criteria it will be considered Critical Habitat irrespective of failing to meet any other criterion. This approach is generally more cautious but is used more widely in conservation. Critical Habitat criteria therefore have two distinctive characteristics. First, components of biodiversity are essentially assigned to only two levels of conservation significance, those that trigger Critical Habitat and those that do not (Tier considerations being secondary to this primary Critical Habitat determination). Second, each criterion is applied separately and not in combination, meaning that the scores are not cumulative.

Additionally, essential considerations used to determine Critical Habitat for species classified as Critically Endangered (CR), Endangered (EN), and Migratory species are population proportion. Population proportion is typically determined based on globally significant thresholds—commonly $\geq 0.5\%$ of the global population for Critically Endangered and Endangered species, or $\geq 1\%$ for migratory or congregatory species. These thresholds underscore the importance of consistent presence and significant population representation to classify an area as Critical Habitat under IFC PS6. Therefore, the assessment carefully evaluates the proportion of the population using the Project area, ensuring rigorous adherence to these IFC criteria.

1 GN28. IFC Guidance Note (2019) of PS6 (2012).

2 GN53. IFC Guidance Note (2019) of PS6 (2012).

3 As listed on the International Union for the Conservation of Nature (IUCN) Red List of Threatened Species. The determination of critical habitat based on other listings is as follows: (i) If the species is listed nationally / regionally as critically endangered or endangered, in countries that have adhered to IUCN guidance, the critical habitat determination will be made on a project by project basis in consultation with competent professionals; and (ii) in instances where nationally or regionally listed species’ categorizations do not correspond well to those of the IUCN (e.g., some countries more generally list species as “protected” or “restricted”), an assessment will be conducted to determine the rationale and purpose of the listing. In this case, the critical habitat determination will be based on such an assessment.

This study focuses on whether the criteria are likely to be triggered and where it is necessary to conduct further analysis or data collection to determine whether the thresholds for the criteria are met.

Table 3-1 Quantitative Thresholds for Critical Habitat

Criteria	Thresholds
Criterion 1: Critically Endangered (CR) / Endangered (EN) species:	(a) 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 of a CR or EN species). (b) Areas that support globally important concentrations of an IUCN Red-listed 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 (a). (c) As appropriate, areas containing nationally/regionally important concentrations of an IUCN Red-listed EN or CR species.
Criterion 2: Habitat of significant importance to endemic and/or restricted-range species;	Areas that regularly hold ≥ 10 % of the global population size AND ≥ 10 reproductive units of a species.
Criterion 3: Habitat supporting globally significant concentrations of migratory species and/or congregatory species;	(a) 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. (b) Areas that predictably support ≥ 10 % of the global population of a species during periods of environmental stress.
Criterion 4: Highly threatened and/or unique ecosystems; and/or	(a) Areas representing ≥ 5 % of the global extent of an ecosystem type meeting the criteria for IUCN status of CR or EN. (b) Other areas, not yet assessed by IUCN, but determined to be of high priority for conservation by regional or national systematic conservation planning.
Criterion 5: Areas associated with key evolutionary processes	No set thresholds

Source: IFC, PS6 (Guidance Note 2019)

Notes: Restricted-range/ Endemic Species (GN74) = For terrestrial vertebrates and plants, restricted-range species are defined as those that have an Extent of occurrence (EOO) less than 50,000 km². For marine systems, restricted-range species are provisionally being considered those with an EOO of less than 100,000 km²; 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 span (i.e., the distance between occupied locations furthest apart).

Migratory species = Any species of which a significant proportion of its members cyclically and predictably move from one geographical area to another (including within the same ecosystem);

Congregatory Species = Species whose individuals gather in large groups on a cyclical or otherwise regular and/or predictable basis.

In accordance with IFC PS6 Guidance Note 6 (GN6, 2019), this Critical Habitat assessment employed multiple approaches to ensure robust evaluation:

Literature Review

A comprehensive literature review was conducted to establish baseline ecological conditions, incorporating peer-reviewed scientific literature, regional biodiversity assessments (e.g., Park et al., 2015), publicly accessible environmental impact assessments, and IUCN Red List species profiles. This literature-based review served as foundational knowledge informing both initial desktop screening (Table 7-1) and updated screening outcomes following field survey validation (Table 5-2).

Expert Consultations

Expert consultations were conducted with marine mammal specialists, avian ecologists, and biodiversity experts affiliated with national research institutions and universities. The purpose of these consultations was to confirm the accuracy and reliability of species distributions, habitat use, and to assist in identifying potential critical habitats within the Ecologically Appropriate Area of Analysis (EAAA).

Stakeholder Engagement

Stakeholder consultations were carried out to integrate local ecological knowledge and insights from key stakeholders, including local fisheries cooperatives, environmental NGOs, community representatives, and relevant governmental agencies (e.g., Ministry of Oceans and Fisheries). Stakeholder input helped validate species presence, absence, and habitat significance within the project's broader assessment area.

Field Surveys and Passive Acoustic Monitoring (PAM)

Field surveys were performed systematically over multiple years (2020–Feb 2024) to document species occurrence within the defined project area. Complementing these visual surveys, PAM studies documented in the Biodiversity Impact Assessment (BIA) provided continuous acoustic monitoring to detect marine mammal presence, particularly under conditions unfavorable for visual surveys (e.g., night-time, adverse weather conditions). These combined survey methodologies strengthened the evidence supporting final critical habitat determinations.

Collectively, the integration of these multiple evidence-based methods ensures that this Critical Habitat assessment is robust, thorough, transparent, and fully compliant with IFC PS6.

4. BACKGROUND ASSESSMENT

This section summarises information on biodiversity values within the seascape/ landscape of the Project area. It starts by summarising the details of the ecoregion(s) the Project is within, before describing the legally protected and internationally recognised areas of interest to the Project. Figure 4.1 gives an overview of all the areas of biodiversity value in the Project surroundings.

The information is used to inform the Critical Habitat Screening in Section 5.

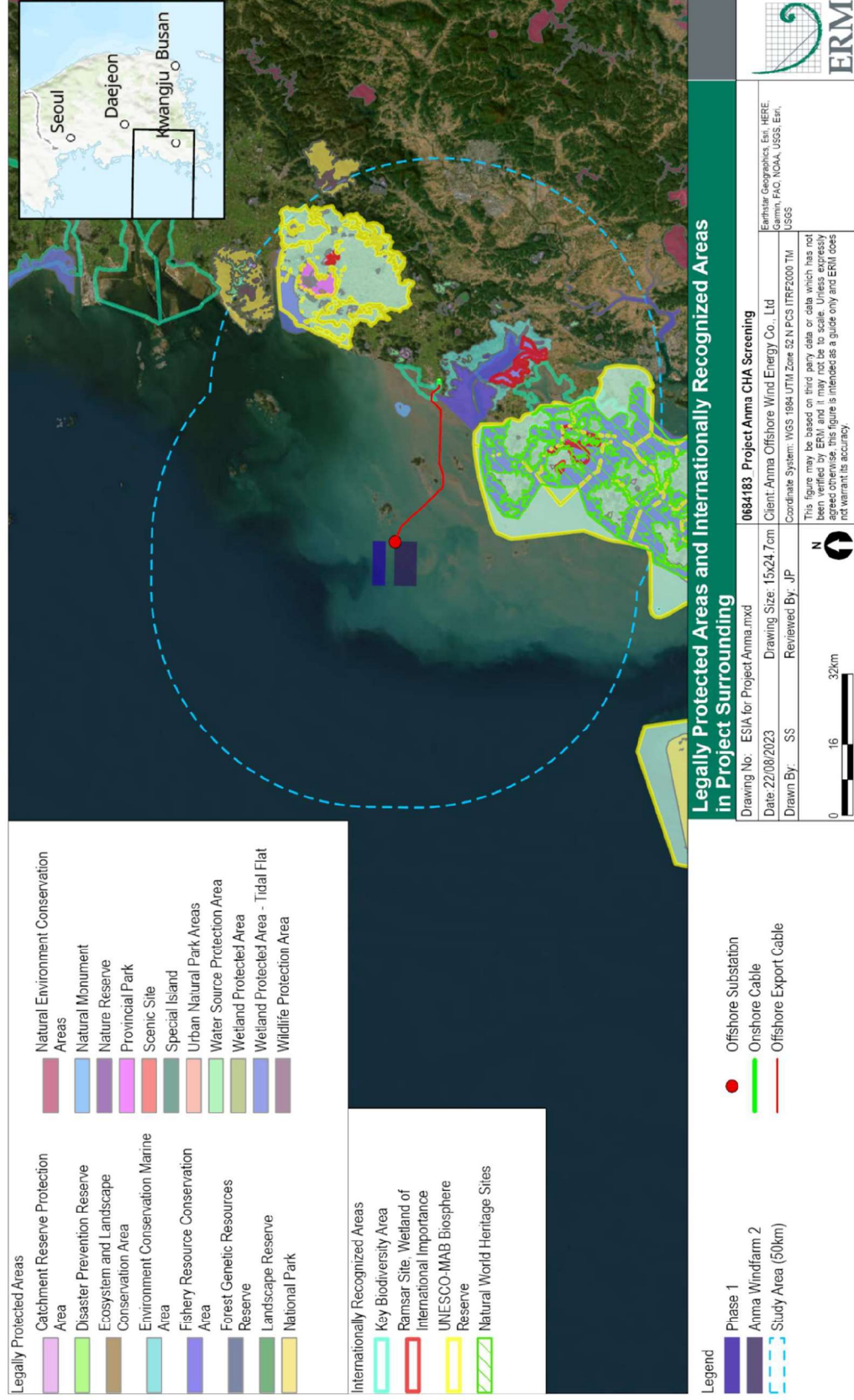


Figure 4.1 Nationally Designated and Internationally Recognized Areas in 50 km Buffer Around Project Area

4.1 Ecoregion Description

In the Korean Peninsula four (4) ecoregions can be found (see Figure 4.2), namely the Changbai Mountain Mixed Forests, the Manchurian Mixed Forests⁴, the Central Korean Deciduous Forests⁵ and the Southern Korean Evergreen Forests⁶.

The Project area falls within the Central Korean Deciduous Forests ecoregion, which is discussed in further detail in the following section covering the habitat values of the greater sea/landscape surrounding the Project area. Three (3) ecoregions are present on the Korean Peninsula, but do not overlap with the Project area.

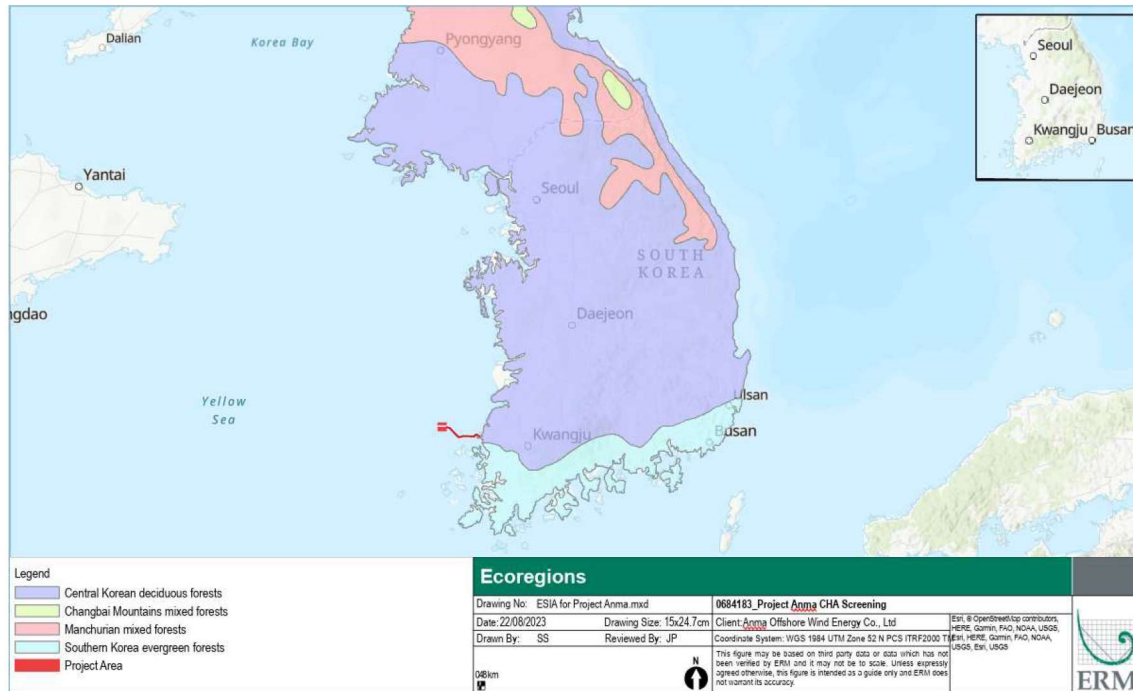


Figure 4.2 Ecoregions in the South Korean Peninsula

⁴ World Wildlife Fund. (2021) Eastern Asia: China and North Korea. Retrieved from: <https://www.worldwildlife.org/ecoregions/pa0414> [Accessed October 2024]

World Wildlife Fund. (2021). Eastern Asia: Central Korean Peninsula. Retrieved from: <https://www.worldwildlife.org/ecoregions/pa0413> [Accessed October 2024]

6 World Wildlife Fund. (2021). Eastern Asia: Southern tip of the Korean Peninsula. Retrieved from: <https://www.worldwildlife.org/ecoregions/pa0439> [Accessed October 2024]

4.1.1 Central Korean Deciduous Forests

Based on Oneearth⁷, The Central Korean Deciduous Forests ecoregion occupies most of the Korean Peninsula, excluding the southern coastal margin and the hilly north. Low hills and plains support deciduous hardwood forests, while evergreen conifer forests dominate higher elevations and more recently disturbed sites.

A diverse assemblage of Palearctic mammals and birds once resided in this ecoregion, but the natural habitats on the Korean Peninsula of today are much more diminished in comparison. The “ecological axes” of the Korean Peninsula include the Baekdudaegan mountain range; which runs the length of the peninsula, and the Korean Demilitarized Zone (DMZ); a habitat in the form of a ribbon located in the centre of the Korean Peninsula which remains practically undisturbed for historical reasons.

The Korean Peninsula (lat. 33°-43°; long. 124°-132°) lies in the middle of Northeast Asia, flanked by China to its west and Japan to its east. The peninsula is surrounded by water on three sides, with flat land and mountains accounting for 30% and 70% of the entire territory, respectively. Mountains over 1,000 m above sea level make up only 15% of the mountainous areas, while mountains lower than 500 m account for 65%.⁸

The southern forests are warm temperate forest and composed of broad-leaved deciduous forests, conifer and deciduous mixed forests, especially pine forests and evergreen broad-leaved trees, *Camellia japonica* grow in that area. The northern part of the ecoregion has cool temperate forests and is composed of mostly pine forests but also a few broad-leaved deciduous forests, especially deciduous broad-leaved trees, oak trees, pine trees, bamboos, etc.⁹

Surveys conducted by the National Institute of Ecology from 2014 to 2017, identified 5,929 species of wildlife including 2,954 species of insects, 1,926 species of plants, 417 species of benthic macroinvertebrates, 277 species of birds, 138 species of arachnids, 136 species of freshwater fish, 47 species of mammals, and 34 species of reptiles in the DMZ. There are 18 species listed as Class I endangered wildlife under Wildlife Protection and Management Act including six species of mammals among others *Moschus moschiferus* (Siberian musk deer) and *Lutra lutra* (Eurasian otter), 10 species of birds including *Aquila chrysaetos* (Golden eagle) and *Egretta eulophotes* (Chinese Egret), one species of amphibian *Hyla suweonensis* (Suwon treefrog), and one species of freshwater fish *Gobiobotia nakdongensis* (freshwater fish). The Class II Endangered wildlife includes 83 species with 17 species of plants, five species of mammals, 35 species of birds, five species of amphibians and reptiles, five species of terrestrial insects, 11 species of freshwater fish, and five species of benthic macroinvertebrates¹⁰.

4.2 Areas of Conservation Significance

This section provides the background on relevant internationally recognized areas that may not necessarily be fully designated as protected areas in South Korea. Overall, eight key areas are identified (four Key Biodiversity Areas [KBAs] one World Heritage Site, and three Ramsar sites), which are described in more detail following:

A summary of biodiversity areas of conservation significance that relate to the Project area is provided in Table 4-1.

⁷ Carpenter, C.2000.Eastern Asia: Central Korean Peninsula. Retrieved from: [Eastern Asia: Central Korean Peninsula | Ecoregions | WWF \(worldwildlife.org\)](#) [Accessed October 2024]

⁸ Korean Cultural Center NY. Retrieved from: [Korea Information - Society — Korean Cultural Center New York \(koreanculture.org\)](#) [Accessed October 2024]

⁹ Korea Forest Service. Retrieved from: [Korea Forest Service - Forest In Korea > Korea's Nature > Fauna and Flora](#) [Accessed October 2024]

¹⁰ Ministry of Environment. Retrieved from: [Ministry of Environment Press Release – A Total of 5,929 Wildlife Species, Including 101 Endangered Species, Identified in the DMZ \(me.go.kr\)](#) [Accessed October 2024]

Table 4-1 Areas of Conservation Significance

Area Type	Description	Relevance
Biodiversity Hotspot	A biodiversity hotspot is a biogeographic region that is both a significant reservoir of biodiversity and is threatened with destruction. The term 'biodiversity hotspot' specifically refers to 36 biologically rich areas around the world that have lost at least 70 percent of their original habitat ¹¹ .	0
Key Biodiversity Area	Key Biodiversity Areas (KBAs) are places of international importance for the conservation of biodiversity through protected areas and other governance mechanisms. KBAs are typically sites where there is a regular occurrence of significant numbers of one or more globally threatened species, restricted-range species and/or congregatory species. KBAs include IBAs, Alliance for Zero Extinction (AZE) sites, Important Plant Areas (IPA) and Important Sites for Freshwater Biodiversity.	4
World Heritage Area	World Heritage Areas are sites that are selected by the United Nations Educational, Scientific and Cultural Organization (UNESCO) as having cultural, historic, scientific or other form of significance. These areas are legally protected by international treaties and demarcated by UNESCO as protected zones.	1
RAMSAR Site	The Convention of Wetlands, called the RAMSAR Convention, is an intergovernmental treaty that provides the framework for the conservation and use of wetlands and their resources ¹² . The convention entered into force in the South Korea on 28 July 1997, and South Korea has 24 sites designated as Wetlands of International Importance, which cover an approximate surface area of 20,214 ha ¹³ .	3

4.2.1 Key Biodiversity Area

Key Biodiversity Areas (KBA) are defined by the Key Biodiversity Areas Partnership as sites that contribute significantly to the global persistence of biodiversity and are applicable to terrestrial, freshwater, and marine ecosystems. Sites qualify as global KBAs if they meet one or more of 11 criteria as defined by the Partnership, grouped into the following five categories: threatened biodiversity, geographically restricted biodiversity, ecological integrity, biological processes, and irreplaceability.

KBAs include Important Bird and Biodiversity Areas (IBA), Alliance for Zero Extinction (AZE), Important Plant Areas (IPA), and Important Sites for Freshwater Biodiversity. Four KBAs have been identified within 50 km of the Project and one site overlaps the Project site, as detailed in Table 4-2. There are no AZEs within a 50 km radius of the Project site.

Table 4-2 KBAs Identified within 50km of the Project Area

S/N	Area Name	KBA type	Distance and Direction
1.	Baeksu tidal flat	IBA	Overlap of approximately 4 km with the offshore export cable
2.	Hampyeong Bay	IBA	8.58 km to the South East
3.	Muan tidal flat	IBA	17.05 km to the South East
4.	Donglim reservoir	IBA	46.56 km to the North East

¹¹ Conservation International (2019) <https://www.conservation.org/How/Pages/Hotspots.aspx>

¹² The RAMSAR Convention on Wetlands (2014) About the RAMSAR Convention. Retrieved from <https://www.ramsar.org/about-the-ramsar-convention> [Accessed October 2024]

¹³ The RAMSAR Convention on Wetlands (2011) The Annotated RAMSAR List of Wetlands of International Importance. Retrieved from <https://www.ramsar.org/wetland/republic-of-korea> [Accessed October 2024]

Baeksu tidal flat was designated a KBA in 2004 and the area is 2,204 ha¹⁴. It meets one or more previously established criteria and thresholds for identifying sites of biodiversity importance (including Important Bird and Biodiversity Areas, Alliance for Zero Extinction sites, and Key Biodiversity Areas). Also, in this area some endangered, vulnerable and near threatened species such as, Chinese Egret (*Egretta eulophotes*), [VU (IUCN ver.15.1)], Bar-tailed Godwit (*Limosa lapponica*) [NT (IUCN ver. 15.1)], *Numenius madagascariensis* [VU (IUCN ver. 15.5)], Black-faced Spoonbill (*Platalea minor*) [EN (IUCN ver. 15.1)], and *Tringa guttifer* [EN (IUCN ver. 15.1)] listed in the Korean red list of threatened species were observed.

Hampyeong Bay was designated a KBA in 2004 and the area is 8,619 ha¹⁵. It meets one or more previously established criteria and thresholds for identifying sites of biodiversity importance (including Important Bird and Biodiversity Areas, Alliance for Zero Extinction sites, and Key Biodiversity Areas). Also, in this area the endangered species, Chinese Egret (*Egretta eulophotes*), [VU (IUCN ver.15.1)], was observed.

Muan tidal flat was designated KBA in 2004 and the area is 25,646 ha¹⁶. It meets one or more previously established criteria and thresholds for identifying sites of biodiversity importance (including Important Bird and Biodiversity Areas, Alliance for Zero Extinction sites, and Key Biodiversity Areas). Endangered species *Charadrius alexandrinus*, *Charadrius mongolus*, *Egretta eulophotes*, and *Xenus cinereus* were observed.

Donglim Reservoir was designated as a Key Biodiversity Area (KBA) in 2004, encompassing an area of 265 ha¹⁷. This designation was achieved by applying established criteria and thresholds for the identification of Important Bird and Biodiversity Areas (IBAs). However, it is noteworthy that the available data suggest that Donglim Reservoir does not meet the global KBA criteria and thresholds defined in the Global Standard. Endangered species *Anas Formosa* and *Anas platyrhynchos* have been observed within this area.

4.2.2 UNESCO World Heritage Sites

Getbol, Korean Tidal Flats¹⁸ are situated in the eastern Yellow Sea on the southwestern and southern coast of the Republic of Korea. They are one of two natural World Heritage Sites recognised in South Korea, recently designated in 2021.

To be included on the World Heritage List, sites must be of outstanding universal value and meet at least one out of ten selection criteria, six being cultural and four being natural criteria. The World Heritage Committee's decision to inscribe this site on the World Heritage List in 2021¹⁹, was based on criterion (x), namely 'to contain the most important and significant natural habitats for in situ conservation of biological diversity, including those containing threatened species of outstanding universal value from the point of view of science or conservation.' It had previously concluded that it did not meet criterion (ix) to 'to be outstanding examples representing significant on-going ecological and biological processes in the evolution and development of terrestrial, fresh water, coastal and marine ecosystems and communities of plants and animals'.

The Sinan tidal flats exhibit a complex combination of geological, oceanographic, and climatologic conditions that have led to the development of coastal diverse sedimentary systems. The Sinan tidal

¹⁴ Key Biodiversity Areas Baeksu tidal flat, South Korea. Retrieved from [Baeksu tidal flat, South Korea - KeyBiodiversityAreas.org](https://keybiodiversityareas.org) [Accessed October 2024]

¹⁵ Key Biodiversity Areas Hampyeong Bay, South Korea. Retrieved from [Hampyeong Bay, South Korea - KeyBiodiversityAreas.org](https://keybiodiversityareas.org) [Accessed October 2024]

¹⁶ Key Biodiversity Areas Muan tidal flat, South Korea. Retrieved from [Muan tidal flat, South Korea - KeyBiodiversityAreas.org](https://keybiodiversityareas.org) [Accessed October 2024]

¹⁷ Key Biodiversity Areas Donglim reservoir, South Korea. Retrieved from [Donglim reservoir, South Korea - KeyBiodiversityAreas.org](https://keybiodiversityareas.org) [Accessed October 2024]

¹⁸ UNESCO Getbol, Korean Tidal Flats. Retrieved from [Getbol, Korean Tidal Flats - UNESCO World Heritage Centre](https://whc.unesco.org/en/criteria/) [Accessed October 2024]

¹⁹ UNESCO World Heritage Convention, The Criteria for Selection. Retrieved from: <https://whc.unesco.org/en/criteria/>

flat has an area of 110,086 ha² and has unique features that are hard to find in the world, such as a mud flat with a maximum depth of 40 m and a special sand deposit on the tidal flat. The Sinan tidal flat is a place where more than 54,000 water birds of 90 species, including 14 IUCN Red Listed species, visit, making it a tidal flat with high global value²⁰.

4.2.3 Ramsar Site

The Convention of Wetlands, called the Ramsar Convention, is an intergovernmental treaty that provides the framework for the conservation and use of wetlands and their resources. The Ramsar Convention for South Korea has been effective from 28 July 1997, and currently has 25 sites designated as Wetlands of International Importance, which cover an approximate surface area of 20,227 ha²¹. There are three Ramsar sites within 50 km of the Project area, and hence Ramsar sites are considered relevant for this assessment. The Ramsar sites of concern are Ungok Wetland, Jeungdo tidal flat, and Muan tidal flat.

Ungok Wetland was registered a Ramsar Wetland in Korea on 7 April 2011²². The registered area is 180 ha, and around the wetland is a low mountain area with an altitude of less than 100 m above sea level, and most of the area near Ungok Wetland is less than 30 m above sea level. The whole site is designated as a Wetland Conservation Area and part of the site is an Electric Source Development Area and an Agricultural Conservation Land Area. In Ungok Wetland, *Ciconia boyciana* which is Class I endangered wildlife species, and *Falco subbuteo* and *Pitta nympha* which is Class II endangered wildlife species were observed. Twenty plant species were observed, including *Nakai* (*Silene fasciculata*) [CR (IUCN ver.15.1)], and in addition, Amur rat snake, (*Elaphe schrenckii*) [EN (IUCN ver.15.1)], which is Class II endangered wildlife species and Korean Salamander (*Hynobius leechii*), [VU (IUCN ver.15.1)], were also observed.

Jeungdo tidal flat was registered as a Ramsar Wetland in Korea on 1 September 2011²³. The registered area is 3,130 ha, and Jeungdo tidal flat has rich ecology and biodiversity providing spawning grounds for fish and macro benthic animal diversity. The site also provides food and resting grounds for waders and migratory birds that pass by this area for breeding and wintering. The area supports five internationally endangered species including the *Egretta eulophotes*, *Anas Formosa*, *Numenius madagascariensis*, *Platalea leucorodia*, and *Falco peregrines*.

Muan tidal flat was registered as a Ramsar Wetland in Korea on 14 January 2008²⁴. The registered area is 3,589 ha, and Muan tidal flat is an intertidal sand- and mudflat ecosystem, free of human disturbance, on the coastline of the Yellow Sea, located in the mouth of a semi-enclosed inner bay. Some 49 species of winter waterbirds have been observed, and the site provides habitat to various endangered and rare species such *Larus saundersi*, *Platalea minor*, and *Egretta eulophotes*. It is a notable spawning ground for marine organisms, with some 357 species recorded, providing valuable food resources for the migratory birds.

4.3 Legally Protected Areas in South Korea

There are 146 nationally designated Protected Areas within 50 km of the Project area. One overlaps with the Project area as indicated in Figure 4.1, namely:

- Baeksu tidal flat

²⁰ Sinangun. Retrieved from Press Releases / Statements < Shinan County News < Open Administration < Shinan County Government Website (shinan.go.kr) [Accessed October 2024]

²¹ Ramsar Republic of Korea. Retrieved from [Republic of Korea | Convention on Wetlands \(ramsar.org\)](http://Republic of Korea | Convention on Wetlands (ramsar.org)) [Accessed October 2024]

²² Ramsar Sites Information Service Ungok Wetland. Retrieved from Ungok Wetland | Ramsar Sites Information Service [Accessed October 2024]

²³ Ramsar Sites Information Service Jeungdo Tidal Flat. Retrieved from Jeungdo Tidal Flat | Ramsar Sites Information Service [Accessed October 2024]

²⁴ Ramsar Sites Information Service Muan Tidal Flat. Retrieved from Muan Tidal Flat | Ramsar Sites Information Service [Accessed October 2024]

The majority of the Protected Areas (35) are Catchment Reserve Protection area, while Special Island (27), Natural Monument (17), Wildlife Protection Area (13), Water Source Protection Area (12), Disaster Prevention Reserve (8), Landscape Reserve (8), Wetland Protected Area (7), Forest Genetic Resources Reserve (3), Scenic Site (3), Fishery Resource Conservation Area (2), National Park (2), Provincial Park (2), Ecosystem and Landscape Conservation Area (1), Natural Environment Conservation Area (1), Urban Natural Park Areas (1) are the next most abundant.

The high number of Protected Areas within the 50 km buffer area indicates a high value of conservation of the terrestrial ecosystems, however not all Protected Areas are directly relevant to the Critical Habitat screening. For example, the Catchment Reserve Protection Areas are designated by the Forest Protection Act, Enforcement Decree Article 3, to establish forest portions of value to maintain the quality of the local water catchment areas. The Water Source Protection Area is designated by the Article 7 of the Water Supply and Waterworks Installation Act with the aim to secure water sources and conserve the quality of the water. They are therefore not considered significant for the CHA as it is not a Protected Area or KBA.

In addition, in South Korea, the term "wildlife" is defined as 'species of animals, plants, fungi, lichens, protists, and prokaryotes that inhabit or grow in nature, such as around mountains, plains, or rivers' and "endangered wildlife" as species prescribed by Ordinance of the Ministry of Environment, including:

- Class I (threatened with extinction) species; and
- Class II (population has decreased substantially and threatened with imminent extinction) species.

The Wildlife Protection and Management Act, also recognizes "globally endangered species" as animals and plants, the international transaction of which is regulated by the CITES (Convention on International Trade in Endangered Species of Wild Fauna and Flora).

Table 4-3 List of National Protected Areas within 1 km of the Project Area

S/N.	Protected Area	Designation	Area (km ²)	Screened in/out	Criterion	Summary
1.	Natural Environment Conservation Areas	Natural Environment Conservation Areas	9,790.88	out	-	This area is designated by the Natural Environment Conservation Act. The law aims to systematically preserve and manage the natural environment, such as protecting the natural environment from artificial damage. Therefore, it is unlikely that it would be a Critical Habitat Trigger.
2.	Hampyeong Bay	Fishery Resource Conservation Area	218.52	in	4	This area is designated by the National Land Planning and Utilization Act. This law aims to providing matters necessary for the formulation, implementation, etc. of plans to utilize, develop and conserve national land for the fishery resource protection. Therefore, it is likely that it would represent a Critical Habitat Trigger.

Table 4-4 List of National Protected Areas within 1 to 10 km of the Project Area

S/N.	Protected Area	Designation	Area (km ²)	Screened in/out	Criterion	Summary
1.	Hampyeong Bay	Environment Conservation Marine Area	306.52	in	4	This area is designated by the Act on Conservation and Utilization of the Marine Environment. The law aims to preserve and manage the marine environment, such as natural and living conditions at sea, including organisms inhabiting the sea. Therefore, it is likely that it would be a Critical Habitat Trigger.
2.	Gakgeodo	Special Island	0.05	in	4	This area is designated by the Special Act on The Conservation of the Ecosystems in Island Area Including Dokdo. The law aims to protect islands with excellent natural ecosystems, topography, geology, and natural environment (e.g. Breeding grounds for <i>Apus pacificus</i> , habitat for <i>Falco peregrinus</i> , scenery etc.), it is likely that it would be a Critical Habitat Trigger.
3.	Jeollanamdo Yeonggwanggun Yeomsanmyeon 1	Catchment Reserve Protection Area	2.09	out	-	This area is designated by the Forest Protection Act. The law aims to protect forests systematically, including management of forest conservation areas, forest disease prevention and observation, and forest disease prevention and observation. Therefore, it is unlikely that it would be a Critical Habitat Trigger.
4.	Jeollanamdo Yeonggwanggun Yeomsanmyeon 2	Catchment Reserve Protection Area	0.01	out	-	This area is designated by the Forest Protection Act. The law aims to protect forests systematically, including management of forest conservation areas, forest disease prevention and observation, and forest disease prevention and observation. Therefore, it is unlikely that it would be a Critical Habitat Trigger.
5.	Songido Reserve	Forest Genetic Resources Reserve	0.01	out	-	This area is designated by the Forest Protection Act. The law aims to protect forests systematically, including management of forest conservation areas, forest disease prevention and observation, and forest disease prevention and observation. Given the limited footprint and the distance to the Project, it is unlikely that it would be a Critical Habitat Trigger.
6.	Breeding Ground of Black-tailed Gulls, Chinese Egrets, and Black-faced Spoonbills on Chilsando Island, Yeonggwang	Natural Monument	9.59	in	4	This area is designated by the Cultural Heritage Protection Act. The law aims to preserve of cultural heritage (e.g. Breeding grounds for <i>Larus crassirostris</i> , <i>Egretta ulophotes</i> , and <i>Platalea minor</i>). Therefore, it is likely that it would be a Critical Habitat Trigger considering the species inhabiting in the area.
7.	Yuksando	Special Island	0.04	in	1, 4	This area is designated by the Special Act on The Conservation of the Ecosystems in Island Area Including Dokdo. The law aims to protect islands with excellent natural ecosystems, topography, geology, and natural environment (e.g. Breeding grounds for Eurasian Spoonbill, (<i>Platalea leucorodia leucorodia</i>) [VU (IUCN ver. 15.1)], Eurasian Oystercatcher (<i>Haematopus ostralegus</i>) [VU (IUCN ver. 15.1)], and etc.), and it is likely that it would be a Critical Habitat Trigger.
8.	Jeollanamdo Yeonggwanggun Baeksueup 1	Catchment Reserve Protection Area	5.43	out	-	This area is designated by the Forest Protection Act. The law aims to protect forests systematically, including management of forest conservation areas, forest disease prevention and observation, and forest disease prevention and observation. Therefore, it is unlikely that it would be a Critical Habitat Trigger.
9.	Yeomsan (Yeonggwang)	Water Source Protection Area	1.29	out	-	This area is designated by the Water Supply and Waterworks Installation Act. The law aims to establish and manage an appropriate and reasonable water supply system while establishing a comprehensive water and sewage plan. Therefore, it is unlikely that it would be a Critical Habitat Trigger.
10.	Jeollanam-do Urban Natural Park Areas	Urban Natural Park Areas	42.64	out	-	This area is designated by the National Land Planning and Utilization Act and Act on Urban Parks, Green Areas. The law aims to prescribe matters necessary for the establishment and implementation of national land utilization and development and conservation plans, and to create a pleasant urban environment by setting matters necessary for the expansion, management, and use of parks and green spaces in the city. Therefore, it is unlikely that it would be a Critical Habitat Trigger.

S/N.	Protected Area	Designation	Area (km ²)	Screened In/out	Criterion	Summary
11.	Jeollanamdo Yeongwanggun Baeksueup 2	Catchment Reserve Protection Area	0.12	out	-	This area is designated by the Forest Protection Act. The law aims to protect forests systematically, including management; of forest conservation areas, forest disease prevention and observation, and forest disease prevention and observation. Therefore, it is unlikely that it be a Critical Habitat Trigger.
12.	Sinan	Wetland Protected Area - Tidal Flat	1,109.96	in	1, 3, 4	This area is designated by the Wetland Conservation Act. The law aims to prescribe matters necessary for the efficient conservation and management of wetlands to contribute to the conservation of wetlands and wetland biodiversity, and for the promotion of international cooperation by reflecting the purpose of an international convention on wetlands. This area has been used for breeding (e.g. <i>Ciconia boyciana</i> , <i>Falco peregrinus</i> , <i>Platalea leucorodia</i> etc.), and a migratory route (e.g. <i>Limosa lapponica</i> , <i>Calidris tenuirostris</i> , <i>Platalea minor</i> etc.) for endangered species. Therefore, it is likely that it would be a Critical Habitat Trigger.
13.	Daesin	Water Source Protection Area	2.27	out	-	This area is designated by the Water Supply and Waterworks Installation Act. The law aims to establish and manage an appropriate and reasonable water supply system while establishing a comprehensive water and sewage plan. Therefore, it is unlikely that it would be a Critical Habitat Trigger.
14.	Barammagido	Special Island	0.01	out	-	This area is designated by the Special Act on The Conservation of the Ecosystems in Island Area Including Dokdo. The law aims to protect islands with excellent natural ecosystems, topography, geology, and natural environment (e.g. scenery, breeding grounds for <i>Haematopus ostralegus</i> , <i>Locustella pleskei</i>). Therefore, it is unlikely that it would be a Critical Habitat Trigger.

Table 4-5 List of National Protected Areas within 10 to 30 km of the Project Area

S/N.	Protected Area	Designation	Area (km ²)	Screened In/out	Criterion	Summary
1.	Jeollanamdo Sinangun Imjamyeon 2	Disaster Prevention Reserve	1.65	out	-	This area is designated by the Forest Protection Act. The law aims to prevent soil erosion and rockslides and the prevention of damage by sea breeze, tidal waves, sand, etc. Therefore, it is unlikely that it would be a Critical Habitat Trigger.
2.	Beobseong	Water Source Protection Area	3.13	out	-	This area is designated by the Water Supply and Waterworks Installation Act. The law aims to establish and manage an appropriate and reasonable water supply system while establishing a comprehensive water and sewage plan. Therefore, it is unlikely that it would be a Critical Habitat Trigger.
3.	Yukgakdo	Special Island	0.00	out	-	This area is designated by the Special Act on The Conservation of the Ecosystems in Island Area Including Dokdo. The law aims to protect islands with excellent natural ecosystems, topography, geology, and natural environment (e.g. habitat for <i>Lutra lutra</i>). Therefore, it is unlikely that it would represent a Critical Habitat Trigger.
4.	Muangaetbol	Provincial Park	42.49	out	-	This area is designated by the Natural Parks Act. The law aims to preserve the natural ecosystem, nature and cultural scenery (hereafter referred to as "scenery"), etc. and to promote the sustainable utilization thereof by prescribing matters concerning the designation, conservation, and management of natural parks. Therefore, it is unlikely that it would be a Critical Habitat Trigger.
5.	Muan	Wetland Protected Area - Tidal Flat	41.16	in	3, 4	This area is designated by the Wetland Conservation Act. The law aims to prescribe matters necessary for the efficient conservation and management of wetlands to contribute to the conservation of wetlands and wetland biodiversity, and for the promotion of international cooperation by reflecting the purpose of an international convention on wetlands. 47 species of halophytes, 250 species of benthic species including endangered wild animals and plants class II, and about 52 species of migratory birds were observed in the area. Therefore, it is likely that it would be a Critical Habitat Trigger.
6.	Daegi	Water Source Protection Area	0.21	out	-	This area is designated by the Water Supply and Waterworks Installation Act. The law aims to establish and manage an appropriate and reasonable water supply system while establishing a comprehensive water and sewage plan. Therefore, it is unlikely that it would be a Critical Habitat Trigger.
7.	Jeollanamdo Sinangun Imjamyeon 1	Disaster Prevention Reserve	0.00	out	-	This area is designated by the Forest Protection Act. The law aims to prevent soil erosion and rockslides and the prevention of damage by sea breeze, tidal waves, sand, etc. Therefore, it is unlikely that it would be a Critical Habitat Trigger.
8.	Jeollanamdo Yeongwanggun Bulgapmyeon 1	Catchment Reserve Protection Area	3.00	out	-	This area is designated by the Forest Protection Act. The law aims to protect forests systematically, including management of forest conservation areas, forest disease prevention and observation, and forest disease prevention and observation. Therefore, it is unlikely that it would be a Critical Habitat Trigger.
9.	Jeollanamdo Yeongwanggun Yeonggwangeup	Catchment Reserve Protection Area	0.63	out	-	This area is designated by the Forest Protection Act. The law aims to protect forests systematically, including management of forest conservation areas, forest disease prevention and observation, and forest disease prevention and observation. Therefore, it is unlikely that it would be a Critical Habitat Trigger.
10.	Beopseongjin Wooded Fort in Yeonggwang	Scenic Site	0.03	out	-	This area is designated by the Cultural Heritage Protection Act. The law aims to preserve cultural heritage and natural heritage (e.g. forest). Therefore, it is unlikely that it would be a Critical Habitat Trigger.
11.	Jeollanamdo Yeongwanggun Myoryangmyeon	Catchment Reserve Protection Area	0.80	out	-	This area is designated by the Forest Protection Act. The law aims to protect forests systematically, including management of forest conservation areas, forest disease prevention and observation, and forest disease prevention and observation. Therefore, it is unlikely that it would be a Critical Habitat Trigger.

S/N.	Protected Area	Designation	Area (km ²)	Screened in/out	Criterion	Summary
12.	Soheosado	Special Island	0.24	in	4	This area is designated by the Special Act on The Conservation of the Ecosystems in Island Area Including Dokdo. The law aims to protect islands with excellent natural ecosystems, topography, geology, and natural environment (e.g. <i>Juniperus procumbens</i>). Therefore, it is likely that it would be a Critical Habitat Trigger.
13.	Jeollanamdo Yeonggwanggun Hongnonggeup 1	Landscape Reserve	0.36	out	-	This area is designated by the Forest Protection Act. The law aims to protect forests systematically, including management of forest conservation areas, and forest disease prevention and observation. This area is designated conservation zone for scenic views. Therefore, it is unlikely that it would be a Critical Habitat Trigger.
14.	Jeollanamdo Yeonggwanggun Hohngnonggeup 1	Catchment Reserve Protection Area	0.35	out	-	This area is designated by the Forest Protection Act. The law aims to protect forests systematically, including management of forest conservation areas, forest disease prevention and observation, and forest disease prevention and observation. Therefore, it is unlikely that it would be a Critical Habitat Trigger.
15.	Gwangjeong	Water Source Protection Area	0.39	out	-	This area is designated by the Water Supply and Waterworks Installation Act. The law aims to establish and manage an appropriate and reasonable water supply system while establishing a comprehensive water and sewage plan. Therefore, it is unlikely that it would be a Critical Habitat Trigger.
16.	Jeollanamdo Yeonggwanggun Hohngnonggeup 2	Catchment Reserve Protection Area	0.40	out	-	This area is designated by the Forest Protection Act. The law aims to protect forests systematically, including management of forest conservation areas, forest disease prevention and observation, and forest disease prevention and observation. Therefore, it is unlikely that it would be a Critical Habitat Trigger.
17.	Beopgoseom	Special Island	0.08	in	4	This area is designated by the Special Act on The Conservation of the Ecosystems in Island Area Including Dokdo. The law aims to protect islands with excellent natural ecosystems, topography, geology, and natural environment (e.g. habitat for <i>Scutellaria pекinensis</i> var. <i>transfirra</i> (Makino) H. Hara, and <i>Michelia undulata</i> Siebold & Zucc, <i>Bubo bubo</i>). Therefore, it is likely that it would be a Critical Habitat Trigger.
18.	Jeollanamdo Yeonggwanggun Bulgapmyeon	Landscape Reserve	3.86	out	-	This area is designated by the Forest Protection Act. The law aims to protect forests systematically, including management of forest conservation areas, and forest disease prevention and observation. This area is designated conservation zone for scenic views. Therefore, it is unlikely that it would be a Critical Habitat Trigger.
19.	Jeollanamdo Yeonggwanggun Hongnonggeup 2	Landscape Reserve	0.02	out	-	This area is designated by the Forest Protection Act. The law aims to protect forests systematically, including management of forest conservation areas, and forest disease prevention and observation. This area is designated conservation zone for scenic views. Therefore, it is unlikely that it would be a Critical Habitat Trigger.
20.	Jeonnam Yeonggwang Bulgapmyeon (Bulgapsan)	Wildlife Protection Area	2.91	in	4	This area is designated by the Wildlife Protection and Management Act. The law aims to prevent the extinction of wildlife by systematically protecting and managing wildlife and the habitats thereof. Therefore, it will be further assessed during the Critical Habitat Assessment.
21.	Northernmost Population of Sericeous Newlts at Bulgapsa Temple, Yeonggwang	Natural Monument	3.07	out	-	This area is designated by the Cultural Heritage Protection Act. The law aims to preservation of cultural heritage (e.g. <i>Neolisea sericea</i> (Blume) Koidz). Therefore, it is unlikely that it would be a Critical Habitat Trigger.
22.	Jeollanamdo Yeonggwanggun Bulgapmyeon 2	Catchment Reserve Protection Area	0.07	out	-	This area is designated by the Forest Protection Act. The law aims to protect forests systematically, including management of forest conservation areas, forest disease prevention and observation, and forest disease prevention and observation. Therefore, it is unlikely that it would be a Critical Habitat Trigger.
23.	Maeseom	Special Island	0.01	in	4	This area is designated by the Special Act on The Conservation of the Ecosystems in Island Area Including Dokdo. The law aims to protect islands with excellent natural ecosystems, topography, geology, and natural environment (e.g. breeding for <i>Haematopus ostralegus</i> , habitat for <i>Hepatica</i> , <i>Vitex rotundifolia</i> , and <i>Platanthera mandarinorum</i> Rchb. fil. var. <i>neglecta</i>). Therefore, it is likely that it would be a Critical Habitat Trigger.
24.	Juklim	Water Source Protection Area	4.82	out	-	This area is designated by the Water Supply and Waterworks Installation Act. The law aims to establish and manage an appropriate and reasonable water supply system while establishing a comprehensive water and sewage plan. Therefore, it is unlikely that it would be a Critical Habitat Trigger.
25.	Jeollanamdo Hampyeonggun Daedongmyeon	Catchment Reserve Protection Area	0.78	out	-	This area is designated by the Forest Protection Act. The law aims to protect forests systematically, including management of forest conservation areas, forest disease prevention and observation, and forest disease prevention and observation. Therefore, it is unlikely that it would be a Critical Habitat Trigger.
26.	Daedong	Water Source Protection Area	1.94	out	-	This area is designated by the Water Supply and Waterworks Installation Act. The law aims to establish and manage an appropriate and reasonable water supply system while establishing a comprehensive water and sewage plan. Therefore, it is unlikely that it would be a Critical Habitat Trigger.
27.	Copper-winged bat Habitat of Gosanbong	Ecosystem and Landscape Conservation Area	8.75	in	4	This area is designated by the Natural Environment Conservation Act. The law aims to systematically preserve and manage the natural environment, such as protecting the natural environment from artificial damage. This area has endangered species (e.g. habitat for <i>Myotis rufoniger</i> , <i>Pronailurus bengalensis</i> , and <i>Buteo buteo</i> etc.). Therefore, it will be further assessed during the Critical Habitat Assessment.

S/N.	Protected Area	Designation	Area (km ²)	Screened in/out	Criterion	Summary
28.	Jeonnam Hamgyeong Daedongmyeon	Wildlife Protection Area	0.97	in	4	This area is designated by the Wildlife Protection and Management Act. The law aims to prevent the extinction of wildlife by systematically protecting and managing wildlife and the habitats thereof. Therefore, it will be further assessed during the Critical Habitat Assessment.
29.	Yeonam	Water Source Protection Area	3.34	out	-	This area is designated by the Water Supply and Waterworks Installation Act. The law aims to establish and manage an appropriate and reasonable water supply system while establishing a comprehensive water and sewage plan. Therefore, it is unlikely that it would be a Critical Habitat Trigger.
30.	Hamgyeong	Water Source Protection Area	0.36	out	-	This area is designated by the Water Supply and Waterworks Installation Act. The law aims to establish and manage an appropriate and reasonable water supply system while establishing a comprehensive water and sewage plan. Therefore, it is unlikely that it would be a Critical Habitat Trigger.
31.	Bakdariseom	Special Island	0.06	out	-	This area is designated by the Cultural Heritage Protection Act. The law aims to preservation of cultural heritage and natural heritage (e.g. <i>Vaccinium bracteatum</i> , <i>Vitex rotundifolia</i> L. f). Therefore, it is unlikely that it would be a Critical Habitat Trigger.
32.	Jeollabukdo Gochanggun Gongeummyeon 1	Catchment Reserve Protection Area	3.16	out	-	This area is designated by the Forest Protection Act. The law aims to protect forests systematically, including management of forest conservation areas, forest disease prevention and observation, and forest disease prevention and observation. Therefore, it is unlikely that it would be a Critical Habitat Trigger.
33.	Bunamseom	Special Island	0.09	in	4	This area is designated by the Cultural Heritage Protection Act. The law aims to preserve cultural heritage and natural heritage (e.g. geographical feature). Therefore, it is likely that it would be a Critical Habitat Trigger considering the species that inhabit in the area.
34.	Jeollanamdo Yeonggwanggun Daemamyeon 1	Catchment Reserve Protection Area	1.53	out	-	This area is designated by the Forest Protection Act. The law aims to protect forests systematically, including management of forest conservation areas, forest disease prevention and observation, and forest disease prevention and observation. Therefore, it is unlikely that it would be a Critical Habitat Trigger.
35.	Jeollanamdo Yeonggwanggun Daemamyeon 2	Catchment Reserve Protection Area	0.10	out	-	This area is designated by the Forest Protection Act. The law aims to protect forests systematically, including management of forest conservation areas, forest disease prevention and observation, and forest disease prevention and observation. Therefore, it is unlikely that it would be a Critical Habitat Trigger.
36.	Daeseom	Special Island	0.10	out	-	This area is designated by the Cultural Heritage Protection Act. The law aims to preservation of cultural heritage and natural heritage (e.g. geographical feature). Therefore, it is unlikely that it would be a Critical Habitat Trigger.
37.	Jeollabukdo Gochanggun Gongeummyeon 2	Catchment Reserve Protection Area	0.30	out	-	This area is designated by the Forest Protection Act. The law aims to protect forests systematically, including management of forest conservation areas, forest disease prevention and observation, and forest disease prevention and observation. Therefore, it is unlikely that it would be a Critical Habitat Trigger.
38.	Hogamseom	Special Island	0.02	in	1, 4	This area is designated by the Cultural Heritage Protection Act. The law aims to preserve cultural heritage and natural heritage (e.g. habitat for Amur Rat Snake, (<i>Elaphe schrenckii</i>) [IEN (IUCN ver. 15.1)]. Therefore, it is likely that it would be a Critical Habitat Trigger considering the species inhabit in the area.
39.	Sinan Jeungdogaetbol	Provincial Park	30.87	out	-	This area is designated by the Natural Parks Act. The law aims to preserve the natural ecosystem, nature and cultural scenery (hereafter referred to as "scenery"), etc. and to promote the sustainable utilization thereof by prescribing matters concerning the designation, conservation and management of natural parks. Ten species of endangered wild animals are observed in the area. Given the limited footprint and the distance to the Project, it is unlikely that it would be a Critical Habitat Trigger.
40.	Yeomsan (Sinan)	Water Source Protection Area	0.50	out	-	This area is designated by the Water Supply and Waterworks Installation Act. The law aims to establish and manage an appropriate and reasonable water supply system while establishing a comprehensive water and sewage plan. Therefore, it is unlikely that it would represent a Critical Habitat Trigger.
41.	Mopyeong Reserved forest	Forest Genetic Resources Reserve	0.01	out	-	This area is designated by the Forest Protection Act. The law aims to protect forests systematically, including management of forest conservation areas, forest disease prevention and observation, and forest disease prevention and observation. Therefore, it is unlikely that it would be a Critical Habitat Trigger.
42.	Jeollanamdo Hamgyeonggun Haebomyeon	Forest Genetic Resources Reserve	0.00	out	-	This area is designated by the Forest Protection Act. The law aims to protect forests systematically, including management of forest conservation areas, forest disease prevention and observation, and forest disease prevention and observation. Therefore, it is unlikely that it would be a Critical Habitat Trigger.
43.	Northernmost Population of Japanese Evegreen Oaks in Gigak-ri, Hamgyeong	Natural Monument	0.00	out	-	This area is designated by the Cultural Heritage Protection Act. The law aims to preserve cultural heritage (e.g. <i>Quercus acuta</i>). Therefore, it is unlikely that it would be a Critical Habitat Trigger.
44.	Forest of Hackberry Zelkova and Hornbeam in Hyanggyo ri Hamgyeong	Natural Monument	0.02	out	-	This area is designated by the Cultural Heritage Protection Act. The law aims to preserve cultural heritage (e.g. <i>Forest of Zelkova serrata</i> , <i>Celtis sinensis</i> , and <i>Carpinus ischonokii Maxim</i>). Therefore, it is unlikely that it would be a Critical Habitat Trigger.

S/N.	Protected Area	Designation	Area (km ²)	Screened in/out	Criterion	Summary
45.	Retusa Fringe Tree of Jungsan-ri, Gochang	Natural Monument	0.00	out	-	This area is designated by the Cultural Heritage Protection Act. The law aims to preserve cultural heritage (e.g. <i>Chionanthus retusus</i>). Therefore, it is unlikely that it would be a Critical Habitat Trigger.
46.	Jeollabukdo Gochanggun Sanghamyeon	Catchment Reserve Protection Area	0.58	out	-	This area is designated by the Forest Protection Act. The law aims to protect forests systematically, including management of forest conservation areas, forest disease prevention and observation, and forest disease prevention and observation. Therefore, it is unlikely that it would be a Critical Habitat Trigger.
47.	Jeollanamdo Sinangun Jeungdomyeon	Disaster Prevention Reserve	0.48	out	-	This area is designated by the Forest Protection Act. The law aims to prevent soil erosion and rockslides and the prevention of damage by sea breeze, tidal waves, sand, etc. Therefore, it is unlikely that it would be a Critical Habitat Trigger.
48.	Jeollabukdo Gochanggun Seongsongmyeon	Catchment Reserve Protection Area	0.49	out	-	This area is designated by the Forest Protection Act. The law aims to protect forests systematically, including management of forest conservation areas, forest disease prevention and observation, and forest disease prevention and observation. Therefore, it is unlikely that it would be a Critical Habitat Trigger.
49.	Breeding Ground of Egrets and Grey Herons in Yongwol-ri, Muan	Natural Monument	0.03	in	4	This area is designated by the Cultural Heritage Protection Act. The law aims to preserve cultural heritage (e.g. Breeding ground of <i>Ardeidae</i> , and <i>Ardea cinerea</i>). Therefore, it will be further assessed during the Critical Habitat Assessment considering the species inhabit in the area.
50.	Jeollabukdo Gochanggun Haerimyeon 2	Catchment Reserve Protection Area	2.24	out	-	This area is designated by the Forest Protection Act. The law aims to protect forests systematically, including management of forest conservation areas, forest disease prevention and observation, and forest disease prevention and observation. Therefore, it is unlikely that it would be a Critical Habitat Trigger.
51.	Jeollabukdo Gochanggun Haerimyeon 1	Disaster Prevention Reserve	0.15	out	-	This area is designated by the Forest Protection Act. The law aims to prevent soil erosion and rockslides and the prevention of damage by sea breeze, tidal waves, sand, etc. Therefore, it is unlikely that it would be a Critical Habitat Trigger.
52.	Pyeongrim Dam	Water Source Protection Area	0.99	out	-	This area is designated by the Water Supply and Waterworks Installation Act. The law aims to establish and manage an appropriate and reasonable water supply system while establishing a comprehensive water and sewage plan. Therefore, it is unlikely that it would be a Critical Habitat Trigger.
53.	Jeonnam Jangseong Samgyemyun	Wildlife Protection Area	0.99	in	4	This area is designated by the Wildlife Protection and Management Act. The law aims to prevent the extinction of wildlife by systematically protecting and managing wildlife and the habitats thereof. Therefore, it will be further assessed during the Critical Habitat Assessment.

Table 4-6 List of National Protected Areas within 30 to 50 km of the Project Area

S/N.	Protected Area	Designation	Area (km ²)	Screened in/out	Criterion	Summary
1.	Jeollabuk-do Urban Natural Park Areas	Urban Natural Park Areas	1.08	out	-	This area is designated by the National Land Planning and Utilization Act and Act on Urban Parks. Green Areas. The law aims to prescribe matters necessary for the establishment and implementation of national land utilization and development and conservation plans, and to create a pleasant urban environment by setting matters necessary for the expansion, management, and use of parks and green spaces in the city. Given the limited footprint and the distance to the Project, it is unlikely that it would be a Critical Habitat Trigger.
2.	Seonunsan	Provincial Park	43.82	out	-	This area is designated by the Natural Parks Act. The law aims to preserve the natural ecosystem, nature and cultural scenery (hereafter referred to as "scenery"), etc. and to promote the sustainable utilization thereof by prescribing matters concerning the designation, conservation and management of natural parks. Given the distance to the Project, it is unlikely that it would be a Critical Habitat Trigger.
3.	Jeollabukdo Gochanggun Haerimyeon 1	Catchment Reserve Protection Area	0.07	out	-	This area is designated by the Forest Protection Act. The law aims to protect forests systematically, including management of forest conservation areas, forest disease prevention and observation, and forest disease prevention and observation. Given the limited footprint and the distance to the Project, it is unlikely that it would be a Critical Habitat Trigger.
4.	Jeollabukdo Gochanggun Simwonmyeon 2	Catchment Reserve Protection Area	2.14	out	-	This area is designated by the Forest Protection Act. The law aims to protect forests systematically, including management of forest conservation areas, forest disease prevention and observation, and forest disease prevention and observation. Given the limited footprint and the distance to the Project, it is unlikely that it would be a Critical Habitat Trigger.
5.	Gochang	Wetland Protected Area - Tidal Flat	64.63	out	-	This area is designated by the Wetland Conservation Act and Ramsar Convention. The law aims to prescribe matters necessary for the efficient conservation and management of wetlands to contribute to the conservation of wetlands and wetland biodiversity, and for the promotion of international cooperation by reflecting the purpose of an international convention on wetlands. This area has been used for habitat for endangered species (e.g. <i>Buteo buteo</i> , and <i>Falco tinnunculus</i>). Given the limited footprint and the distance to the Project, it is unlikely that it would be a Critical Habitat Trigger.

6.	Jeollabukdo Gochanggun Simwonmyeon 1	Catchment Reserve Protection Area	0.04	out	-	This area is designated by the Forest Protection Act. The law aims to protect forests systematically, including management of forest conservation areas, forest disease prevention and observation, and forest disease prevention and observation. Given the limited footprint and the distance to the Project, it is unlikely that it would be a Critical Habitat Trigger.
7.	Jeollabukdo Gochanggun Gosumyeon 1	Catchment Reserve Protection Area	4.81	out	-	This area is designated by the Forest Protection Act. The law aims to protect forests systematically, including management of forest conservation areas, forest disease prevention and observation, and forest disease prevention and observation. Given the limited footprint and the distance to the Project, it is unlikely that it would be a Critical Habitat Trigger.
8.	Hackberry and Hornbeam Forest in Cheongcheon ri Muan	Natural Monument	0.01	out	-	This area is designated by the Cultural Heritage Protection Act. The law aims to preserve cultural heritage (e.g. Forest of <i>Cellis sinensis</i> , and <i>Carpinus tshonoskii Maxim</i>). Given the limited footprint and the distance to the Project, it is unlikely that it would be a Critical Habitat Trigger.
9.	Seongam	Water Source Protection Area	1.76	out	-	This area is designated by the Water Supply and Waterworks installation Act. The law aims to establish and manage an appropriate and reasonable water supply system while establishing a comprehensive water and sewage plan. Given the limited footprint and the distance to the Project, it is unlikely that it would be a Critical Habitat Trigger.
10.	Jeollabukdo Gochanggun Gosumyeon 2	Catchment Reserve Protection Area	0.26	out	-	This area is designated by the Forest Protection Act. The law aims to protect forests systematically, including management of forest conservation areas, forest disease prevention and observation, and forest disease prevention and observation. Given the limited footprint and the distance to the Project, it is unlikely that it would be a Critical Habitat Trigger.
11.	Dosolgyegok Valley and Surroundings in Seonunsan Mountain in Gochang	Scenic Site	0.95	out	-	This area is designated by the Cultural Heritage Protection Act. The law aims to preserve cultural heritage and natural heritage (e.g. scenery). Given the limited footprint and the distance to the Project, it is unlikely that it would be a Critical Habitat Trigger.
12.	Jangsasong Pine Tree at Dosoram Hermitage of Seonunsa Temple, Gochang	Natural Monument	0.00	out	-	This area is designated by the Cultural Heritage Protection Act. The law aims to preserve cultural heritage and natural heritage (e.g. Jangsasong Pine Tree). Given the limited footprint and the distance to the Project, it is unlikely that it would be a Critical Habitat Trigger.
13.	Daejeongsseom	Special Island	0.07	out	-	This area is designated by the Special Act on The Conservation of the Ecosystems in Island Area Including Dokdo. The law aims to protect islands with excellent natural ecosystems, topography, geology, and natural environment (e.g. <i>Albizia kalkora Prain</i> , <i>Orchidaceae</i> , and scenery). Given the limited footprint and the distance to the Project, it is unlikely that it would be a Critical Habitat Trigger.
14.	Daehyeongjedo	Special Island	0.02	out	-	This area is designated by the Special Act on The Conservation of the Ecosystems in Island Area Including Dokdo. The law aims to protect islands with excellent natural ecosystems, topography, geology, and natural environment (e.g. The coastline is complicated and scenic). Given the limited footprint and the distance to the Project, it is unlikely that it would be a Critical Habitat Trigger.
15.	Odo	Special Island	0.04	out	-	This area is designated by the Special Act on The Conservation of the Ecosystems in Island Area Including Dokdo. The law aims to protect islands with excellent natural ecosystems, topography, geology, and natural environment (e.g. breeding for <i>Haematopus ostralegus</i>). Given the limited footprint and the distance to the Project, it is unlikely that it would be a Critical Habitat Trigger.
16.	Jeollanamdo Naju Si Dasimyeon 2	Catchment Reserve Protection Area	3.33	out	-	This area is designated by the Forest Protection Act. The law aims to protect forests systematically, including management of forest conservation areas, forest disease prevention and observation, and forest disease prevention and observation. Given the limited footprint and the distance to the Project, it is unlikely that it would be a Critical Habitat Trigger.
17.	Youngsan Reservoir	Fishery Resource Conservation Area	43.64	out	-	This area is designated by the National Land Planning and Utilization Act. This law aims to provide for matters necessary for the formulation, implementation, etc. of plans to utilize, develop and conserve national land for the fishery resource protection. However, given the limited footprint and the distance to the Project, it is unlikely that it would be a Critical Habitat Trigger.

18.	Sojeongseom	Special Island	0.04	out	-	This area is designated by the Special Act on The Conservation of the Ecosystems in Island Area Including Dokdo. The law aims to protect islands with excellent natural ecosystems, topography, geology, and natural environment (e.g. scenery, <i>Epipactis palustris</i> , and <i>Albizia kalkora</i> Prain). Given the limited footprint and the distance to the Project, it is unlikely that it would be a Critical Habitat Trigger.
19.	Jeollanamdo Naju Dasimyeon 1	Catchment Reserve Protection Area	0.20	out	-	This area is designated by the Forest Protection Act. The law aims to protect forests systematically, including management of forest conservation areas, forest disease prevention and observation, and forest disease prevention and observation. Given the limited footprint and the distance to the Project, it is unlikely that it would be a Critical Habitat Trigger.
20.	Durido	Special Island	0.12	out	-	This area is designated by the Special Act on The Conservation of the Ecosystems in Island Area Including Dokdo. The law aims to protect islands with excellent natural ecosystems, topography, geology, and natural environment (e.g. Habitat for <i>invertebrate</i>). Given the limited footprint and the distance to the Project, it is unlikely that it would be a Critical Habitat Trigger.
21.	Jeollanamdo Sinangun Jaemunyeon 2	Disaster Prevention Reserve	2.62	out	-	This area is designated by the Forest Protection Act. The law aims to prevent soil erosion and rockslides and the prevention of damage by sea breeze, tidal waves, sand, etc. Given the limited footprint and the distance to the Project, it is unlikely that it would be a Critical Habitat Trigger.
22.	Camellia Forest in Samin ri Gochang	Natural Monument	0.05	out	-	This area is designated by the Cultural Heritage Protection Act. The law aims to preserve cultural heritage and natural heritage (e.g. <i>Camellia japonica</i>). Given the limited footprint and the distance to the Project, it is unlikely that it would be a Critical Habitat Trigger.
23.	Galmaeseom	Special Island	0.09	out	-	This area is designated by the Special Act on The Conservation of the Ecosystems in Island Area Including Dokdo. The law aims to protect islands with excellent natural ecosystems, topography, geology, and natural environment (e.g. Habitat for <i>Haematopus ostralegus</i> , <i>Charadrius alexandrinus</i> , and <i>Sternula albinors</i>). Given the limited footprint and the distance to the Project, it is unlikely that it would be a Critical Habitat Trigger.
24.	Jeollabukdo Gochanggun Asanmyeon 2	Catchment Reserve Protection Area	5.95	out	-	This area is designated by the Forest Protection Act. The law aims to protect forests systematically, including management of forest conservation areas, forest disease prevention and observation, and forest disease prevention and observation. Given the limited footprint and the distance to the Project, it is unlikely that it would be a Critical Habitat Trigger.
25.	Jeonbuk Gochang Asanmyeon 2	Wildlife Protection Area	3.93	out	-	This area is designated by the Wildlife Protection and Management Act. The law aims to prevent the extinction of wildlife by systematically protecting and managing wildlife and the habitats thereof. However, given the limited footprint and the distance to the Project, it is unlikely that it would be a Critical Habitat Trigger.
26.	Ogodo	Special Island	0.01	out	-	This area is designated by the Special Act on The Conservation of the Ecosystems in Island Area Including Dokdo. The law aims to protect islands with excellent natural ecosystems, topography, geology, and natural environment (e.g. breeding grounds for <i>Falco peregrinus</i> , habitat for <i>Lutra lutra</i> , and scenery). Given the limited footprint and the distance to the Project, it is unlikely that it would be a Critical Habitat Trigger.
27.	Jeonbuk Gochang Asanmyeon 1	Wildlife Protection Area	0.71	out	-	This area is designated by the Wildlife Protection and Management Act. The law aims to prevent the extinction of wildlife by systematically protecting and managing wildlife and the habitats thereof. However, given the limited footprint and the distance to the Project, it is unlikely that it would be a Critical Habitat Trigger.
28.	Ungok Wetland	Wetland Protected Area	1.90	out	-	This area is designated by the Wildlife Protection and Management Act. The law aims to prevent the extinction of wildlife by systematically protecting and managing wildlife and the habitats thereof. However, given the limited footprint and the distance to the Project, it is unlikely that it would be a Critical Habitat Trigger.
29.	Jeollabukdo Gochanggun Asanmyeon 1	Catchment Reserve Protection Area	0.34	out	-	This area is designated by the Forest Protection Act. The law aims to protect forests systematically, including management of forest conservation areas, forest disease prevention and observation, and forest disease prevention and observation. Given the limited footprint and the distance to the Project, it is unlikely that it would be a Critical Habitat Trigger.
30.	Oechido (keuntanchido)	Special Island	0.09	out	-	This area is designated by the Special Act on The Conservation of the Ecosystems in Island Area Including Dokdo. The law aims to protect islands with excellent natural ecosystems, topography, geology, and natural environment (e.g. scenery). Given the limited footprint and the distance to the Project, it is unlikely that it would be a Critical Habitat Trigger.
31.	Naejodo	Special Island	0.02	out	-	This area is designated by the Special Act on The Conservation of the Ecosystems in Island Area Including Dokdo. The law aims to protect islands with excellent natural ecosystems, topography, geology, and natural environment (e.g. Habitat for <i>verbena officinalis</i> , <i>Orobanchae</i> , and <i>Tetrailia japonica</i> Pilsbry, 1916). Given the limited footprint and the distance to the Project, it is unlikely that it would be a Critical Habitat Trigger.
32.	Songak of Samin-ri, Gochang	Natural Monument	0.00	out	-	This area is designated by the Cultural Heritage Protection Act. The law aims to preserve cultural heritage and natural heritage (e.g. scenery). Given the limited footprint and the distance to the Project, it is unlikely that it would be a Critical Habitat Trigger.
33.	Jeonnam Muan Mongtannmyeon	Wildlife Protection Area	1.35	out	-	This area is designated by the Wildlife Protection and Management Act. The law aims to prevent the extinction of wildlife by systematically protecting and managing wildlife and the habitats thereof. However, given the limited footprint and the distance to the Project, it is unlikely that it would be a Critical Habitat Trigger.

34.	Jeollabukdo Gochanggun Gochanggeup	Catchment Reserve Protection Area	0.21	out	-	This area is designated by the Forest Protection Act. The law aims to protect forests systematically, including management of forest conservation areas, forest disease prevention and observation, and forest disease prevention and observation. Given the limited footprint and the distance to the Project, it is unlikely that it would be a Critical Habitat Trigger.
35.	Gochang the mouth of Incheon river Wetland Protected Areas	Wetland Protected Area	0.72	out	-	This area is designated by the Wetland Conservation Act. The law aims to prescribe matters necessary for the efficient conservation and management of wetlands to contribute to the conservation of wetlands and wetland biodiversity, and for the promotion of international cooperation by reflecting the purpose of an international convention on wetlands. This area has been used for habitat for endangered species (e.g. <i>Egretta eulophides</i> , <i>Elaphe schrenckii</i> , <i>Kaloula borealis</i> , and <i>Mauremys reevesii</i> etc.,). Given the limited footprint and the distance to the Project, it is unlikely that it would be a Critical Habitat Trigger.
36.	Forest of Maple Trees at Munsusa Temple, Gochang	Natural Monument	0.12	out	-	This area is designated by the Cultural Heritage Protection Act. The law aims to preserve cultural heritage (e.g. Forest of <i>Acer palmatum</i>). Given the limited footprint and the distance to the Project, it is unlikely that it would be a Critical Habitat Trigger.
37.	Jeonnam Naju Gyeonghyundong	Wildlife Protection Area	0.41	out	-	This area is designated by the Wildlife Protection and Management Act. The law aims to prevent the extinction of wildlife by systematically protecting and managing wildlife and the habitats thereof. However, given the limited footprint and the distance to the Project, it is unlikely that it would be a Critical Habitat Trigger.
38.	Dallido	Special Island	0.02	out	-	This area is designated by the Special Act on The Conservation of the Ecosystems in Island Area Including Dokdo. The law aims to protect islands with excellent natural ecosystems, topography, geology, and natural environment (e.g. Habitat for <i>Caessalpinia decapetala</i> , and scenery). Given the limited footprint and the distance to the Project, it is unlikely that it would be a Critical Habitat Trigger.
39.	Bead Tree of Gyocheon-ri, Gochang	Natural Monument	0.00	out	-	This area is designated by the Cultural Heritage Protection Act. The law aims to preserve cultural heritage (e.g. <i>Melia azedarach</i>). Given the limited footprint and the distance to the Project, it is unlikely that it would be a Critical Habitat Trigger.
40.	Gwangju Jangrok Wetland Protected Area	Wetland Protected Area	2.72	out	-	This area is designated by the Wetland Conservation Act. The law aims to prescribe matters necessary for the efficient conservation and management of wetlands to contribute to the conservation of wetlands and wetland biodiversity, and for the promotion of international cooperation by reflecting the purpose of an international convention on wetlands. This area has been used for habitat for endangered species (e.g. <i>Lutra lutra</i> , <i>Charadrius placidus</i> , <i>Falco subbuteo</i> , and <i>Prionailurus bengalensis</i> etc.,). Given the limited footprint and the distance to the Project, it is unlikely that it would be a Critical Habitat Trigger.
41.	Sehangdo	Special Island	0.00	out	-	This area is designated by the Special Act on The Conservation of the Ecosystems in Island Area Including Dokdo. The law aims to protect islands with excellent natural ecosystems, topography, geology, and natural environment (e.g. Habitat for <i>Lutra lutra</i> , <i>Haematopus ostralegus</i> , and scenery). Given the limited footprint and the distance to the Project, it is unlikely that it would be a Critical Habitat Trigger.
42.	Byeonsanbando	National Park	154.77	in	4	This area is designated by the Natural Parks Act. The law aims to preserve the natural ecosystem, nature and cultural scenery (hereafter referred to as "scenery"), etc. and to promote the sustainable utilization thereof by prescribing matters concerning the designation, conservation and management of natural parks. Furthermore, as the size of the area is relatively large, therefore, it will be further assessed during the Critical Habitat Assessment.
43.	Ttanjeonggeumdo	Special Island	0.01	out	-	This area is designated by the Special Act on The Conservation of the Ecosystems in Island Area Including Dokdo. The law aims to protect islands with excellent natural ecosystems, topography, geology, and natural environment (e.g. Diversity of invertebrate). Given the limited footprint and the distance to the Project, it is unlikely that it would be a Critical Habitat Trigger.
44.	Population of Horned Hollies in Docheong-ri, Buan	Natural Monument	0.00	out	-	This area is designated by the Cultural Heritage Protection Act. The law aims to preserve cultural heritage (e.g. Population of <i>Ilex cornuta</i>). Given the limited footprint and the distance to the Project, it is unlikely that it would be a Critical Habitat Trigger.
45.	Jeollabukdo Gochanggun Sillimyeon 1	Catchment Reserve Protection Area	2.81	out	-	This area is designated by the Forest Protection Act. The law aims to protect forests systematically, including management of forest conservation areas, forest disease prevention and observation, and forest disease prevention and observation. Given the limited footprint and the distance to the Project, it is unlikely that it would be a Critical Habitat Trigger.
46.	Jeollabukdo Gochanggun Buanmyeon	Catchment Reserve Protection Area	0.45	out	-	This area is designated by the Forest Protection Act. The law aims to protect forests systematically, including management of forest conservation areas, forest disease prevention and observation, and forest disease prevention and observation. Given the limited footprint and the distance to the Project, it is unlikely that it would be a Critical Habitat Trigger.
47.	Common Camellia of Geumsajeong Pavilion in Songjuk-ri, Naju	Natural Monument	0.00	out	-	This area is designated by the Cultural Heritage Protection Act. The law aims to preserve cultural heritage (e.g. <i>Camellia japonica</i>). Given the limited footprint and the distance to the Project, it is unlikely that it would be a Critical Habitat Trigger.

48.	Jeollabukdo Gochanggun Sillimyeon 2	Catchment Reserve Protection Area	0.29	out	-	This area is designated by the Forest Protection Act. The law aims to protect forests systematically, including management of forest conservation areas, forest disease prevention and observation, and forest disease prevention and observation. Given the limited footprint and the distance to the Project, it is unlikely that it would be a Critical Habitat Trigger.
49.	Byeonsanbando	Forest Genetic Resources Reserve	0.35	out	-	This area is designated by the Forest Protection Act. The law aims to protect forests systematically, including management of forest conservation areas, forest disease prevention and observation, and forest disease prevention and observation. Given the limited footprint and the distance to the Project, it is unlikely that it would be a Critical Habitat Trigger.
50.	Chaesokgang and Jeokbyeokgang Cliff in Buan	Scenic Site	0.34	out	-	This area is designated by the Cultural Heritage Protection Act. The law aims to preserve cultural heritage and natural heritage (e.g. <i>Machilus thunbergii</i> scenery). Given the limited footprint and the distance to the Project, it is unlikely that it would be a Critical Habitat Trigger.
51.	Jeollanamdo Jangseunggun Jangsungeup 2	Landscape Reserve	1.09	out	-	This area is designated by the Forest Protection Act. The law aims to protect forests systematically, including management of forest conservation areas, and forest disease prevention and observation. This area is designated conservation zone for scenic views. Given the limited footprint and the distance to the Project, it is unlikely that it would be a Critical Habitat Trigger.
52.	Horned Holly of Sangbang-ri, Naju	Natural Monument	0.00	out	-	This area is designated by the Cultural Heritage Protection Act. The law aims to preserve cultural heritage (e.g. <i>Ilex cornuta</i>). Given the limited footprint and the distance to the Project, it is unlikely that it would be a Critical Habitat Trigger.
53.	Japanese Hackberry of Sudong-ri, Gochang	Natural Monument	0.00	out	-	This area is designated by the Cultural Heritage Protection Act. The law aims to preserve cultural heritage (e.g. <i>Celtis sinensis</i>). Given the limited footprint and the distance to the Project, it is unlikely that it would be a Critical Habitat Trigger.
54.	Population of Machilus in Gyeokpo-ri, Buan	Natural Monument	0.00	out	-	This area is designated by the Cultural Heritage Protection Act. The law aims to preserve cultural heritage (e.g. Population of <i>Machilus thunbergii</i>). Given the limited footprint and the distance to the Project, it is unlikely that it would be a Critical Habitat Trigger.
55.	Jeollanamdo Jangseunggun Buklimyeon 2	Landscape Reserve	1.13	out	-	This area is designated by the Forest Protection Act. The law aims to protect forests systematically, including management of forest conservation areas, and forest disease prevention and observation. This area is designated conservation zone for scenic views. Given the limited footprint and the distance to the Project, it is unlikely that it would be a Critical Habitat Trigger.
56.	Utang	Water Source Protection Area	0.16	out	-	This area is designated by the Water Supply and Waterworks Installation Act. The law aims to establishing and managing an appropriate and reasonable water supply system while establishing a comprehensive water and sewage plan. Given the limited footprint and the distance to the Project, it is unlikely that it would be a Critical Habitat Trigger.
57.	Jeonnam Jangseong Jangseongeup	Wildlife Protection Area	0.16	in	4	This area is designated by the Wildlife Protection and Management Act. The law aims to prevent the extinction of wildlife by systematically protecting and managing wildlife and the habitats thereof. Therefore, it will be further assessed during the Critical Habitat Assessment.
58.	Buan Joopdo Bay	Wetland Protected Area - Tidal Flat	3.66	out	-	This area is designated by the Wetland Conservation Act and Ramsar Convention. The law aims to prescribe matters necessary for the efficient conservation and management of wetlands to contribute to the conservation of wetlands and wetland biodiversity, and for the promotion of international cooperation by reflecting the purpose of an international convention on wetlands. This area has been used for habitat for endangered species (e.g. <i>Scalopacidae</i> , <i>Egretta euophotes</i> , <i>Tringa guttifer</i> , and <i>Grus monacha</i> etc.). Given the limited footprint and the distance to the Project, it is unlikely that it would be a Critical Habitat Trigger.
59.	Jeollanamdo Jangseunggun Jangsungeup 1	Landscape Reserve	0.10	out	-	This area is designated by the Forest Protection Act. The law aims to protect forests systematically, including management of forest conservation areas, and forest disease prevention and observation. This area is designated conservation zone for scenic views. Given the limited footprint and the distance to the Project, it is unlikely that it would be a Critical Habitat Trigger.
60.	Jeollanamdo Jangseunggun Buklimyeon 1	Landscape Reserve	0.16	out	-	This area is designated by the Forest Protection Act. The law aims to protect forests systematically, including management of forest conservation areas, and forest disease prevention and observation. This area is designated conservation zone for scenic views. Given the limited footprint and the distance to the Project, it is unlikely that it would be a Critical Habitat Trigger.
61.	Jeollabukdo Buangun Jinseomyeon	Landscape Reserve	0.56	out	-	This area is designated by the Forest Protection Act. The law aims to protect forests systematically, including management of forest conservation areas, and forest disease prevention and observation. This area is designated conservation zone for scenic views. Given the limited footprint and the distance to the Project, it is unlikely that it would be a Critical Habitat Trigger.

62.	Jeollanamdo Jangseonggun Jangseongeup 2	Catchment Reserve Protection Area	4.54	out	-	This area is designated by the Forest Protection Act. The law aims to protect forests systematically, including management of forest conservation areas, forest disease prevention and observation, and forest disease prevention and observation. Given the limited footprint and the distance to the Project, it is unlikely that it would be a Critical Habitat Trigger.
63.	Jeollanamdo Jangseonggun Jangseongeup 1	Catchment Reserve Protection Area	0.11	out	-	This area is designated by the Forest Protection Act. The law aims to protect forests systematically, including management of forest conservation areas, forest disease prevention and observation, and forest disease prevention and observation. Given the limited footprint and the distance to the Project, it is unlikely that it would be a Critical Habitat Trigger.
64.	Jeonbuk Buan Byeonsanmyeon	Wildlife Protection Area	9.76	in	4	This area is designated by the Wildlife Protection and Management Act. The law aims to prevent the extinction of wildlife by systematically protecting and managing wildlife and the habitats thereof. Therefore, it will be further assessed during the Critical Habitat Assessment.
65.	Jeollabukdo Gochanggun Heungdoekmyeon	Catchment Reserve Protection Area	1.26	out	-	This area is designated by the Forest Protection Act. The law aims to protect forests systematically, including management of forest conservation areas, forest disease prevention and observation, and forest disease prevention and observation. Given the limited footprint and the distance to the Project, it is unlikely that it would be a Critical Habitat Trigger.
66.	Jeonbuk Gochang Seongnaemyeon	Wildlife Protection Area	3.68	in	4	This area is designated by the Wildlife Protection and Management Act. The law aims to prevent the extinction of wildlife by systematically protecting and managing wildlife and the habitats thereof. Therefore, it will be further assessed during the Critical Habitat Assessment.
67.	Jeollabukdo Gochanggun Seongnaemyeon	Catchment Reserve Protection Area	1.11	out	-	This area is designated by the Forest Protection Act. The law aims to protect forests systematically, including management of forest conservation areas, forest disease prevention and observation, and forest disease prevention and observation. Given the limited footprint and the distance to the Project, it is unlikely that it would be a Critical Habitat Trigger.
68.	Buan Dam	Water Source Protection Area	17.03	out	-	This area is designated by the Water Supply and Waterworks Installation Act. The law aims to establish and manage an appropriate and reasonable water supply system while establishing a comprehensive water and sewage plan. Given the limited footprint and the distance to the Project, it is unlikely that it would be a Critical Habitat Trigger.
69.	Jeonbuk Buan Jinseomyeon	Wildlife Protection Area	1.31	in	4	This area is designated by the Wildlife Protection and Management Act. The law aims to prevent the extinction of wildlife by systematically protecting and managing wildlife and the habitats thereof. Therefore, it will be further assessed during the Critical Habitat Assessment.
70.	Jeollabukdo Jeongeupsi Ipammyeon 1	Catchment Reserve Protection Area	0.45	out	-	This area is designated by the Forest Protection Act. The law aims to protect forests systematically, including management of forest conservation areas, forest disease prevention and observation, and forest disease prevention and observation. Given the limited footprint and the distance to the Project, it is unlikely that it would be a Critical Habitat Trigger.
71.	Naejangsan	National Park	81.66	out	-	This area is designated by the Natural Parks Act. The law aims to preserve the natural ecosystem, nature and cultural scenery (hereafter referred to as "scenery"), etc. and to promote the sustainable utilization thereof by prescribing matters concerning the designation, conservation and management of natural parks. Given the limited footprint and the distance to the Project, it is unlikely that it would be a Critical Habitat Trigger.
72.	Jeollabukdo Jeongeupsi Ipammyeon 2	Catchment Reserve Protection Area	0.02	out	-	This area is designated by the Forest Protection Act. The law aims to protect forests systematically, including management of forest conservation areas, forest disease prevention and observation, and forest disease prevention and observation. Given the limited footprint and the distance to the Project, it is unlikely that it would be a Critical Habitat Trigger.
73.	Jeollabukdo Buangun Boanmyeon	Catchment Reserve Protection Area	3.21	out	-	This area is designated by the Forest Protection Act. The law aims to protect forests systematically, including management of forest conservation areas, forest disease prevention and observation, and forest disease prevention and observation. Given the limited footprint and the distance to the Project, it is unlikely that it would be a Critical Habitat Trigger.
74.	Seokdo (Nuedo)	Special Island	0.03	out	-	This area is designated by the Special Act on The Conservation of the Ecosystems in Island Area Including Dokdo. The law aims to protect islands with excellent natural ecosystems, topography, geology, and natural environment (e.g. scenery, habitat for <i>Lutra lutra</i> , and <i>Locustella pleskeri</i>). Given the limited footprint and the distance to the Project, it is unlikely that it would be a Critical Habitat Trigger.

75.	Jeonnam Jangseong Bukhamyeon	Wildlife Protection Area	7.46	in	4	This area is designated by the Wildlife Protection and Management Act. The law aims to prevent the extinction of wildlife by systematically protecting and managing wildlife and the habitats thereof. Therefore, it will be further assessed during the Critical Habitat Assessment.
76.	Saw-leaf Zelkova of Daechi-ri, Damyang	Natural Monument	0.00	out		This area is designated by the Cultural Heritage Protection Act. The law aims to preserve cultural heritage (e.g. <i>Zelkova serrata</i>). Given the limited footprint and the distance to the Project, it is unlikely that it would be a Critical Habitat Trigger.
77.	Damyang Riverine Wetland	Wetland Protected Area	1.08	out	-	This area is designated by the Wetland Conservation Act and Ramsar Convention. The law aims to prescribe matters necessary for the efficient conservation and management of wetlands to contribute to the conservation of wetlands and wetland biodiversity, and for the promotion of international cooperation by reflecting the purpose of an international convention on wetlands. This area has been used for habitat for endangered species (e.g. <i>Prorailurus bengalensis</i> , <i>Elaphe schrenckii</i> , and <i>Chaiadrius placidus</i> etc.). Given the limited footprint and the distance to the Project, it is unlikely that it would be a Critical Habitat Trigger.

5. CRITICAL HABITAT SCREENING AND ASSESSMENT

5.1 Screening Parameters

A Critical Habitat screening was undertaken considering the provisions of the IFC PS6 paragraph 16. Critical Habitats are areas with “high biodiversity value, including

1. Habitat of significant importance to Critically Endangered and/or Endangered species;
2. Habitat of significant importance to endemic and/or restricted-range species;
3. Habitat supporting globally significant concentrations of migratory species and/or congregatory species;
4. Highly threatened and/or unique ecosystems; and/or
5. Areas associated with “key evolutionary processes”.

Critical Habitat may not be limited to pristine or highly biodiverse areas, but rather may include both modified habitat and natural habitats across the broader landscape that supports the biodiversity values that trigger the Critical Habitat criterion.

The screening process against the paragraph 16 criteria is informed by the additional guidance provided in IFC Guidance Notes (GN) 69 to 97 of the 2019 update of the 2012 guidance. Table 5-1 details the five criteria by which Critical Habitats can be defined, and further details the quantitative qualifying requirements (i.e. thresholds) that trigger each criteria. It is noted that the likely qualifying interests for Criterion 4 and 5 are subject to research and expert opinion.

The five criteria are each independently ‘triggers’ of Critical Habitat i.e. if an area of habitat meets any one of the criteria, it will be considered Critical Habitat irrespective of failing to meet any other criterion. This approach is generally more cautious but is used more widely in conservation. Critical Habitat criteria therefore have two distinctive characteristics; first, components of biodiversity are essentially assigned to only two levels of conservation significance, those that trigger Critical Habitat and those that do not (Tier considerations being secondary to this primary Critical Habitat determination); and second, each criterion is applied separately and not in combination, meaning that the scores are not cumulative.

Table 5-1 Critical Habitat Criteria

Criteria	Thresholds
Criterion 1: Critically Endangered (CR) / Endangered (EN) species:	(d) 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 of a CR or EN species); (e) Areas that support globally important concentrations of an IUCN Red-listed 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 (a). (f) As appropriate, areas containing nationally/regionally important concentrations of an IUCN Red-listed EN or CR species.
Criterion 2: Habitat of significant importance to endemic and/or restricted-range species;	(a) Areas that regularly hold ≥ 10 % of the global population size AND ≥ 10 reproductive units of a species.
Criterion 3: Habitat supporting globally significant concentrations of migratory species and/or congregatory species;	(a) 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. (b) Areas that predictably support ≥ 10 % of the global population of a species during periods of environmental stress.

Criteria	Thresholds
Criterion 4: Highly threatened and/or unique ecosystems; and/or	(a) Areas representing $\geq 5\%$ of the global extent of an ecosystem type meeting the criteria for IUCN status of CR or EN. (b) Other areas, not yet assessed by IUCN, but determined to be of high priority for conservation by regional or national systematic conservation planning.
Criterion 5: Areas associated with key evolutionary processes	No set thresholds

Source: IFC, 2019

Notes: Restricted-range/ Endemic Species = Species with global distributions of less than 50,000 km²; Migratory species = Any species of which a significant proportion of its members cyclically and predictably move from one geographical area to another (including within the same ecosystem); Congregatory Species = Species whose individuals gather in large groups on a cyclical or otherwise regular and/or predictable basis.

Screening for Critical Habitat was undertaken for relevant species against the Criteria 1-3, to determine which species to take forward for further review as part of the full CHA. As part of this screening, any differences between global and national threatened categories have been considered, as well the habitat and ecology of a species, such that species requiring habitat not present in the vicinity of the Project are excluded from further analysis. In some cases, readily available information is insufficient to exclude a species and therefore further review is proposed.

Two sources of information were used to screen in and out species. Experts on specific taxa and ecosystems found within 50 km of the project were consulted on the presence, abundance and ecology of the species screened. Specific requests were made to identify literature providing the latter information. If there was a strong likelihood of species being present and in globally significant numbers, it was screened in.

Where expert opinion was ambiguous, habitat features of the EAAA has been analysed, such as bathymetric data, seabed substratum, presence of marine vegetation and nature of tidal flats to establish presence and where possible abundance.

Data was also used from fisheries data and modelling of catch and abundance to infer likely abundance of marine fish species.

The CHA will later look to determine whether the screened species meet the thresholds as defined in Table 5-1.

5.2 Ecological Appropriate Area of Analysis (EAAA) for Critical Habitat Assessment

5.2.1 Concept of Ecological Appropriate Area of Analysis (EAAA)

Guidelines for delineation of Ecological Appropriate Area of Analysis (EAAA), have been provided in Guidance Note (2019) of IFC Performance Standard 6 (2012). Ecologically Appropriate Area of Analysis²⁵ (EAAA) should be identified, to determine presence of critical habitat for each species/taxa groups with regular occurrence in the project's area of influence, or ecosystem, covered by Criteria 1-4. EAAA will consider 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. In all cases, the critical habitat should consider the distribution and connectivity of such features in the landscape/seascape and the ecological processes that support them.

²⁵ GN59. IFC Guidance Note (2019) of PS6 (2012).

5.2.2 Approach and Guideline for Determination of EAAA

PS 6 and GN 6 provide a significant emphasis on the need to take forward landscape/ seascape approaches; and also, to define Ecologically Appropriate Areas of Analysis (EAAAs) for critical habitat assessment. A core requirement of PS 6 is to ensure that a comprehensive Natural and Critical Habitat Assessment is conducted for projects, which is underpinned by the determination of biodiversity value at an ecologically relevant scale. To meet PS 6 requirements project studies must go beyond the project site and its Area of Influence (Aol) – as defined within PS 6 and Performance Standard 1 (PS 1) (IFC, 2012b). The main intent is to ensure that the context of biodiversity values is properly understood and that the potential consequences of a project are assessed across seascape areas, which include the consequence of broad-scale indirect project induced impacts. The area of analysis includes the consideration of areas where direct, indirect or cumulative effects might be observed (a project's Aol); and broader areas as necessary to identify outcomes for affected ecosystems or species populations.

Whilst GN 6 provides comprehensive steer on the need for biodiversity analysis at an ecologically appropriate scale that extends beyond a project site and its Aol, no detailed guidance is provided in PS6 on how such areas may be defined, especially for the marine environment. Considering this particular wind power project is located offshore in the coastal waters of South Korea, following industrial best practice, EAAA has been delineated following the “Guideline for Defining Ecological Appropriate Scales of Analysis for Marine Biodiversity in Relation to IFC Performance Standard 6”²⁶.

5.2.2.1 Spatial Scale of Analysis

Defining ecologically appropriate spatial scales for biodiversity assessment depends on the values that are present and the ecological patterns and processes that sustain them including critical connectivity. In the marine environment, these relationships operate across scales in time and space and can include complex processes at relatively broad scales²⁷.

Identifying interconnectivities and the spatial and temporal scales at which these processes operate is particularly important when considering wide-ranging and IUCN threatened species such as Chinese Crested Tern (*Thalasseus bernsteini*) [CR (IUCN v2022-2)] and Narrow Ridged Finless Porpoise (*Neophocaena asiaeorientalis*) [CR IUCN (v2022-2)]. Many marine species use a mosaic of habitat or use different types of habitats during different stages of their life cycle. Therefore, if the spatial scale of biodiversity analysis is inappropriate and is localised only to a project site or Aol, this will likely undermine the understanding of biodiversity values with regards to broader ranging species. Such a scale mismatch could result in considerable shortfalls in the assessment of critical habitat with potential for avoidable impacts to species and habitat.

Area of Influence (Aol) of the Project is not expected to go beyond 10 km from the WTG locations, however, considering regular presence of multiple wide ranging and migratory species (both marine mammal and avian species), a larger area, i.e. 50 km radius around the project site was analysed to identify EAAA for marine species as provided in Figure 5.1. These will include habitat/specific areas used for roosting and nesting, foraging, or feeding areas, specific habitat features suitable for range restricted species [*Sebastes koreanus* (VU IUCN v2022-2)] and areas providing specific ecological conditions that are required for certain species etc. Wide ranging and migratory species congregating, roosting, or nesting within 50 km of the WTG location can come in close contact with the WTGs during foraging over a larger area or during their migratory movement and thus get impacted. So, though these important ecological features located within 50 km are located outside the Aol, their biodiversity values associated with these ecological features can get impacted by project construction and operation activity and these important ecological features within 50 km are assessed as EAAA.

²⁶ Cousins, N. and Pittman, S.J. 2021. Guideline for Defining Ecological Appropriate Scales of Analysis for Marine Biodiversity in Relation to IFC Performance Standard 6. Bluedot guidance report.

²⁷ Levin SA (1992) The problem of pattern and scale in ecology: the Robert H. MacArthur award lecture. Ecology 73(6): 1943-1967.

5.2.3 EAAAs for Anma Offshore Wind Power Project

The Project is located in the eastern part of Yellow sea, along the western coast of Korean Peninsula [South Korean Exclusive Economic Zone (EEZ)]. Large quantities of silt feeding into the Yellow Sea from large rivers in the west (Yellow River and Yangtze) and smaller rivers in the east (Yalu, Daedong, Han, Geum and Yeongsan rivers) over the last 9,000 years have contributed a large volume of terrigenous sediment. The sediment is redistributed around the shores by tides and waves, where it settles to develop into some of the most extensive mud and sand flats on Earth.

The 50 km area around the WTG locations in the west coast of South Korea contains a habitat matrix of islands surrounded by tidal-flats, oceans with intricate waterways and fauna habitats, temperate evergreen forests, indigenous seashore and inland plant vegetation, all of which contribute nutrition to the shallow ocean areas in the region. This results in a highly productive shallow sea and intertidal mudflats.

Based on the ecological features and screening of species of conservation importance, following EAAAs were drafted based on records of occurrence and likely critical habitat trigger species habitat requirements.

5.2.3.1 Uninhabited/less Habited Offshore Islands (EAAA for Avian Species)

Offshore islands within 50 km of the WTG locations are rocky in nature, varying greatly in size and their vegetation profile. Larger islands such as Jukdo-ri, Singi-ri, Nagwol-myeon, Odo-ri are located within 8 km of the WTG location and are covered by temperate evergreen forests and are inhabited.

Islands such as Nagwol-myeon, Gagi-ri and Songi-ri located at 14-17 km from the WTG location but within 4 km of the subsea power cable are also relatively larger in size, inhabited (relatively less population density) and covered by temperate evergreen forests.

In contrast to these islands the Chilsan-do Island clusters, located 30 km from WTGs, are smaller in size and mostly devoid of forest like vegetation. Instead, they are covered by grassy areas, bare rock, and a zone of interspersed bare rock and low grass devoid of tall vegetation. The Chilsan Archipelago²⁸, is the southernmost breeding site of Black-faced Spoonbills in South Korea. The archipelago consists of seven uninhabited islets: Ilsan-do, Yisan-do, Samsan-do, Sasan-do, Osan-do, Yuksa-do, and Chilsan-do. Five of the seven islets (excluding Osan-do and Chilsan-do), are breeding sites for various birds, including Chinese Crested Terns (*Thalasseus bernsteini*) [CR (IUCN v2022-2)], Black-faced Spoonbills (*Platalea minor*) [EN (IUCN v2022-2)] and Chinese Egrets (*Egretta eulophotes*) [VU (IUCN v2022-2)]²⁹. These uninhabited islands are significant for roosting and nesting of multiple IUCN threatened avian species such as black faced spoonbill, which are known to prefer areas with low levels of human disturbance³⁰.

Considering ecological significance of these rocky offshore islands, providing roosting and nesting habitat for IUCN Threatened Avian species, these uninhabited islands with low density of human population, located within 50 km of WTG location are considered as avian roosting and nesting habitat EAAA.

Further south, but located within 50 km of WTG, there are islands such as Samdu-ri, Imja-myeon. These islands have substantial human population with extensive agricultural fields and aquaculture. Considering IUCN threatened and migratory congregatory species mostly prefers smaller, rocky

²⁸ Son, Seok-Jun & Lee, Ki-Sup & Kwon, Inki & Kang, Jung-Hoon & Lee, Sung-Kyung & Kim, In-Kyu & Cho, Hae-Jin & Yoo, Jeong-chil. (2021). Black-Faced Spoonbill *Platalea minor* Population Trends, Breeding Success, and Nest Characteristics in the Chilsan Archipelago, South Korea. ORNITHOLOGICAL SCIENCE. 20. 57-64. 10.2326/osj.20.57.

²⁹ National Research Institute of Cultural Heritage (2015) Study on the habitat preservation of natural monument (Black-faced Spoonbill and Chinese Egret) (2013–2015). National Research Institute of Cultural Heritage, Daejeon.

³⁰ Chong J, Pak U. 1999. The breeding sites and distribution of black-faced spoonbills *Platalea minor* in the Democratic People's Republic of Korea (DPRK). In: Ueta M, Kurosawa R, Allen D, editors. Conservation and research of black-faced spoonbills and their habitats. Tokyo, Japan: Wild Bird Society of Japan; p. 59.

islands devoid of human disturbance, these islands were not considered as EAAA, despite being located within 50 km of the WTG locations.

5.2.3.2 Intertidal Mudflat Habitat (EAAA for Avian Species)

Extensive mudflat habitats are located along the coast of the Western Coast of South Korea. These areas are located approximately within 30-40 km from the WTG location. Shoreline of rocky offshore islands within 50 km radius are mostly devoid of mudflats as larger estuaries are absent in the islands and their rocky shorelines are narrow and deep, preventing accumulation of sediment. While the rocky islands provide suitable nesting and roosting habitat for migratory congregatory coastal and oceanic bird species, the intertidal mudflats provide suitable foraging habitat for these birds. Various marine organisms can be found in the tidal flat including benthic macro-invertebrates and macrophytes³¹. Highly diverse species of salt marsh and sand dune plants, tidal flat animals and sand dune insects contribute to an abundant food chain and increased stability of an inter-tidal ecosystem³².

The two most significant tidal flat or mudflat habitat within 50 km of the WTG are Baeksu tidal flat and Hampyeong Bay. Baeksu tidal flat is also an Important Bird Area (IBA) located about 33 km from the WTG location and land fall location of Export Cable is located within the southern part of the Baeksu tidal flat IBA. IUCN threatened avian species such as Chinese Crested Tern and Black Faced Spoonbills are known to forage in the Baeksu tidal flat. Project components do not have any direct overlap with the Hampyeong Bay mudflat; however, it is also ecological significant and recognised as the Hampyeong Bay Fishery Resource Conservation Area.

Apart from these two significant mudflats, there are multiple other mudflats located within 50 km radius of the project site. The Ministry of Oceans and Fisheries of South Korea has developed a tidal flat map with the primary objective of documenting the rich biodiversity present in these mudflats. It is essential to note that the mapped tidal flats do not automatically receive protected area status. The purpose of the mapping initiative is to identify these ecologically significant regions, so that they can be more easily considered while planning development or ecotourism activities.

Detailed sedimentological studies³³ such as surface sediment distribution, facies changes and sedimentation rate have been carried out over two years (1997–1998) in the Baeksu intertidal mudflat. In the winter and spring seasons, sand facies is relatively dominant on the flat resulting from the strong and frequent influence of wind storms. Average sedimentation rates are ca. 4 and 3 mm/month in winter and spring, respectively. High temperature and weak wave energy would facilitate mud deposition over the sand-facies deposits during the summer with an average sedimentation rate of ca. 10 mm/month. In fall, mud sediments deposited in summertime, are subjected to erosion by strong waves. Sedimentation rate shows net erosion of ca. –10 mm/month on average. Such a seasonal cyclic pattern in deposition/erosion of surface sediments is most likely to reflect the importance of monsoonal controls in open-coast intertidal flats in temperate regions. The annual sedimentation rate of <0.5 mm/yr suggests that the intertidal flat would be in steady or quasi-equilibrium state.

Owing to rapid urban, industrial, and agricultural expansion in the region over the last 50 years, coastal ecosystem integrity and threatened species conservation have become issues of local and international environmental significance. Considerable degradation of the Yellow Sea's coastal

³¹ Koh CH, Shin HC. 1988. Environmental characteristics and distribution of macrobenthos in a mud flat of the west coast of Korea (Yellow Sea). *Neth J Sea Res* 22: 279-290.

³² Lee, Heon-Jong & Cho, Kyoung-Man & Hong, Sun-Kee & Kim, Jae-Eun & Kim, Kyoung-Wan & Lee, Kyoung-Ah & Moon, Kyong-O. (2010). Management plan for UNESCO Shinan Dadohae Biosphere Reserve (SDBR), Republic of Korea: Integrative perspective on ecosystem and human resources. *Journal of Ecology and Field Biology*. 33. 95-103. 10.5141/JEFB.2010.33.2.095.

³³ Yang, B.C., Chun, S.S. A seasonal model of surface sedimentation on the Baeksu open-coast intertidal flat, southwestern coast of Korea. *Geosci J* 5, 251–262 (2001). <https://doi.org/10.1007/BF02910308>

environments recently led to the principal coastal ecosystem of the region, the Yellow Sea tidal flats, being listed as Endangered under criteria set by IUCN34 35.

5.2.3.3 Rocky Coastal Marine Habitat (EAAA for range restricted rockfish and threatened Molluscs)

Shoreline of offshore islands within 50 km radius are mostly devoid of mudflats as larger estuaries are absent and this islands' rocky shoreline is narrow and deep, preventing accumulation of sediment. So, these rocky offshore islands provide suitable shallow (0-20 m) rocky outcrops that provide suitable marine underwater microhabitat habitat for multiple species. One such species is IUCN Data Deficient³⁶ (DD) new to science species *Sebastes koreanus*. Based on available information, the species is probably range restricted (RR). The species was recorded from offshore islands located south³⁷ of the Project site as well as north³⁸ of the Project site. So, it is highly likely that the species can be found in shallow coastal rocky habitat along the shoreline of rocky offshore islands. Moreover, bivalve species like *Haliotis discus* [EN IUCN (v2022-2)] larvae almost always need coralline algae to settle and then it can grow. Coralline algae needs rocky substrate to develop. So, the species can be found along the offshore islands. So suitable shallow rocky marine habitat, located along the shoreline of offshore islands within 50 km has been assessed as EAAA for DD and RR rockfish species and IUCN threatened bivalves.

5.2.3.4 Shallow Seascape within 50 km of WTGs (EAAA for Marine Mammals, Sharks, Skates, and other fish species)

The Yellow Sea is a shallow epicontinental sea with an average minimum and maximum depth of 44 m and 103 m, respectively. The Project site (particularly the offshore WTGs) is located in an area where average depth is 25 m. Environmental conditions and processes within the Yellow Sea are highly variable over its geographic range. This is primarily a result of variation in abiotic processes and geomorphological environments. Tidal waves originating from the Pacific Ocean enter the Yellow Sea and move counterclockwise, resulting in a large tidal range along the eastern shores (including the Project site located along the west coast of Korean Peninsula) of between 3.5 and 10 m, whereas tides in the northern and western coasts range from less than 2 m to around 3.5 m.

The entire marine area is heavily fished for many economically important species of fish and invertebrates (crabs, prawns, squid, and jellyfish). In addition to forming a complex food web within the marine environment, these species are sometimes washed ashore, where they support coastal seabirds including gulls and terns. Many marine species viz. Korean Skate (*Hongoeo koreana*) [CR IUCN (v2022-2)], Mottled Skate (*Beringraja pulchra*) [EN IUCN (v2022-2)], Chinese Stingray (*Hemirhina sinensis*) [EN IUCN (v2022-2)], Japanese Topeshark (*Hemirhina japonica*) [EN IUCN (v2022-2)] and many more are found in shallow coastal water and utilise the intertidal zone and shallow inshore waters as nursery areas. Upwellings and tidal fronts are a key driver of the spatial distribution of foraging seabirds. Seasonal changes in species composition are typically driven by species migration, with species including loons present in winter, and murrelets, Streaked Shearwaters (*Calonectris leucomelas*) [NT IUCN (v2022-2)] and Swinhoe's Storm-petrels (*Oceanodroma monorhis*) [NT IUCN (v2022-2)] occurring primarily in the summer. Terns occur during their migration and gulls are present throughout the year. Marine mammals, Spotted Seals (*Phoca*

³⁴ IUCN (2023). The 2023 IUCN Situation analysis on ecosystems of the Yellow Sea with particular reference to intertidal and associated coastal habitats. Bangkok, Thailand: IUCN.

³⁵ Murray, Nicholas & Ma, Zhijun & Fuller, Richard. (2015). Tidal flats of the Yellow Sea: A review of ecosystem status and anthropogenic threats: Status of Yellow Sea tidal flats. *Austral Ecology*. 40. 10.1111/aec.12211.

³⁶ Murdy, E. 2010. *Sebastes koreanus* (errata version published in 2017). The IUCN Red List of Threatened Species 2010: e.T154735A115228870. <https://dx.doi.org/10.2305/IUCN.UK.2010-4.RLTS.T154735A4621845.en>. Accessed on 27 July 2023.

³⁷ Eschmeyer, W.N. 2008. Catalog of fishes. Available at: <http://research.calacademy.org/research/ichthyology/Catalog/fishcatmain.asp>.

³⁸ Myoung SH, Myoung J-G, Jawad LA, Kim MJ, Park JM (2022) First report of abnormal body coloration in *Sebastes koreanus* (Actinopterygii: Perciformes: Sebastinae). *Acta Ichthyologica et Piscatoria* 52(3): 209–213. <https://doi.org/10.3897/aiep.52.89592>

largha) [LC IUCN (v2022-2)] usually occur near the coastal zone, while the narrow-ridged Finless Porpoise (*Neophocaena asiaeorientalis*) [CR IUCN (v2022-2)] occurs seasonally in both inshore and offshore marine waters, sometimes together with other species of cetaceans. Nearshore tidal shallow seascape is also significant for plants of conservation significance such as Asian Surf Grass (*Phyllospadix japonicus*) [EN IUCN (v2022-2)], Japanese Spiky Sea Cucumber (*Apostichopus japonicus*) [EN IUCN (v2022-2)].

Seascape within 50 km of the Project site varies between 75 m in the far shore areas to 25 m at the offshore WTG locations and gradually levels off with the intertidal mudflats along the west coast of South Korea. This shallow sea section within 50 km is considered as the Shallow Seascape EAAA for nearshore mammals like Narrow-Ridged Finless Porpoise, oceanic birds like Swinhoe's Storm-petrels and multiple IUCN Threatened marine plants, invertebrates, shark, sawfish, and skate species that forage in these shallow waters and use these coastal, silt bearing shallow water as potential nursery.

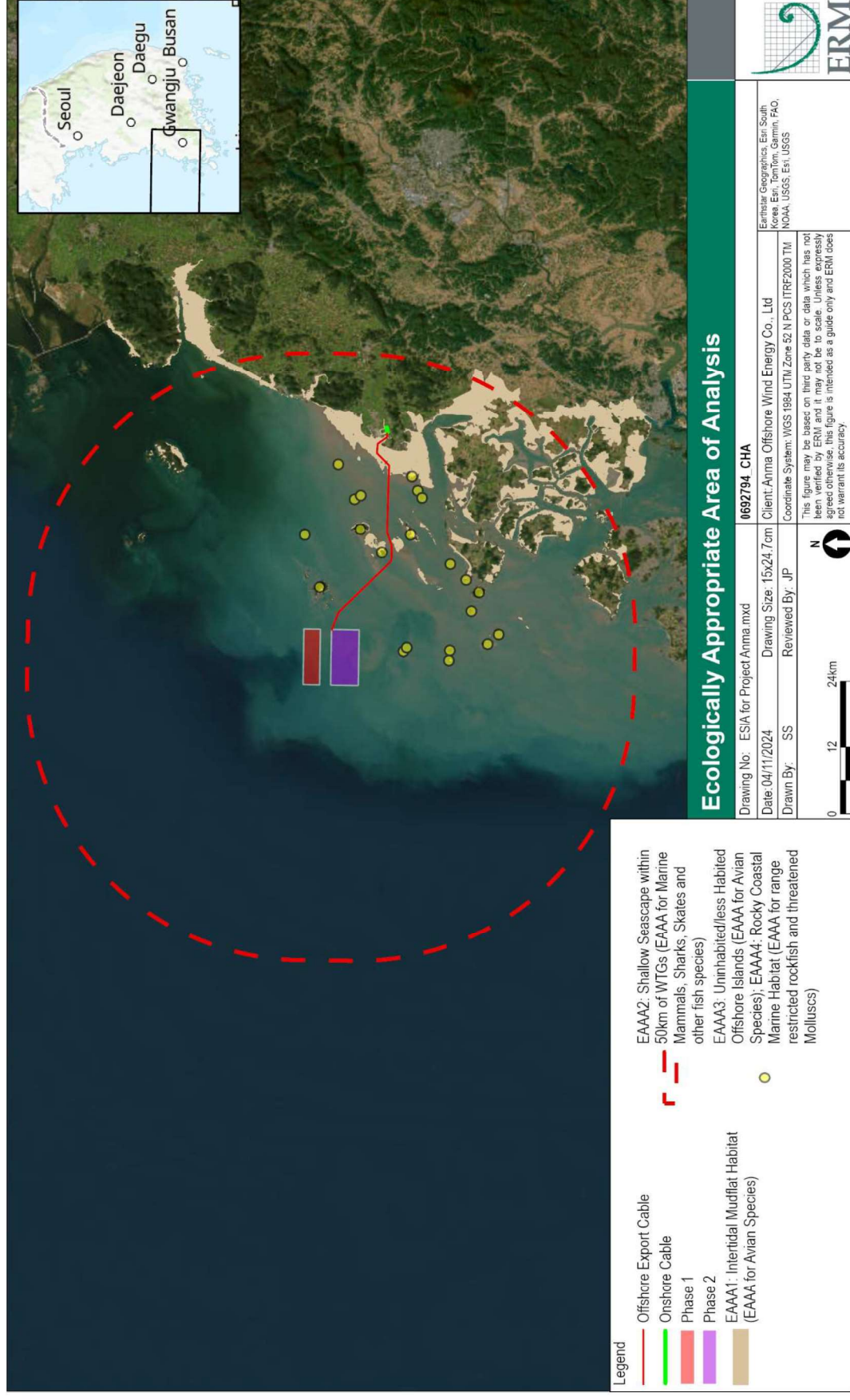


Figure 5.1 Ecological Appropriate Area of Analysis

5.3 Species Reviewed

The IBAT³⁹ database was used to identify potential Critical Habitat species (as per criteria (1), (2), and (3) listed in **Section 5.1**) within the EAAA. For this screening, a total list of around 949 critical habitat candidate species were considered. This included the following orders and their constituent species 311 species of Actinopterygii (ray-finned fish), four species of Agaricomycetes (gilled mushrooms), 13 species of Amphibia, two species of Anthozoa (sea anemones and corals), one species of Arachnida (spiders, scorpions, etc.), 247 species of Aves (birds), 10 species of Bivalvia (marine and freshwater molluscs) one species of Cephalaspidomorphi (jawless fish), 62 species of Chondrichthyes (cartilaginous fish), nine species of Clitellata (annelid worms), 83 species of Gastropoda (slugs and snails), one species of Holothuroidea (sea cucumbers), 36 species of Insecta (insects), two species of Lecanoromycetes (lichen), 30 species of Liliopsida (flowering plant), 45 species of Magnoliopsida (type of flowering plant), 13 species of Malacostraca (type of crustacean), 62 species of Mammalia (mammals), one species of Myxini (hagfish), and 16 species of Reptilia (turtles, crocodiles, lizards and snakes).

The IBAT report uses a 50 km buffer from the Project area boundary and was used to identify potential species that might meet Criterion 1-3 for the Project. These species were filtered to exclude any specialist habitat requirements that make them unlikely to occur within the Project area and its 50 km buffer area. In addition, any species which are classified as Near Threatened (NT OR LR/NT), Least Concern (LC OR LR/LC) or Data Deficient (DD) species but are not defined as restricted range or migratory and/or congregatory were excluded.

There were also eight bat species indicated as potentially present in the Project area by the Convention on Biological Diversity - Clearing-House Mechanism Korea⁴⁰, two of which are classified as EN by the IUCN Red List (2022-1) and one (1) EN under the Korea Red List of Threatened Species⁴¹.

5.4 Results of Critical Habitat Assessment

In total, 108 candidate species were carried forward to the initial screening assessment based on Criteria 1 and 2. These species were further evaluated and screened according to the ecology of the species, its probability of occurrence near the Project site and information from consultations with biodiversity experts and locals to narrow down on 33 species for which a critical habitat assessment is required. Table 7-1 provides details of species carried forward and Table 7-2 lists the screened in species requiring a critical habitat assessment.

Table 7.2 highlights the Narrow-ridged Finless Porpoise [*Neophocaena asiaeorientalis*; EN, (IUCN v. 2024-1)] as a potential critical habitat trigger. Comprehensive visual surveys conducted across 2020, 2022, and 2024 recorded the following observations:

- 2020: 110 individuals recorded (6 surveys; average 18.3 individuals per survey, maximum 29).
- 2022: 27 individuals recorded (1 survey).
- 2023: 57 individuals recorded (10 surveys; average 5.7 individuals per survey, maximum 14).
- 2024: 1 individual recorded (2 surveys; average 0.5 individuals per survey, maximum 1).

Thus, a cumulative total of 195 individuals were recorded from 2020 to 2024.

³⁹ [Integrated Biodiversity Assessment Tool \(IBAT\) \(ibat-alliance.org\)](https://ibat-alliance.org/)

⁴⁰ Convention on Biological Diversity - Clearing-House Mechanism Korea available at: <http://www.cbd-chm.go.kr/eng/index.do> [Accessed October 2024]

⁴¹ National Institute of Biological Resources, 2014. Korean Red List of Threatened Species. Pp 256. Available at: <https://www.nationalredlist.org/files/2016/04/Korean-Red-List-of-Threatened-Species-English-compressed-2.pdf> [Accessed October 2024]

Passive Acoustic Monitoring (PAM) surveys conducted as documented in the Biodiversity Impact Assessment (BIA) did not detect any marine mammal species, including the Narrow-ridged Finless Porpoise, throughout the monitoring period. This provides robust evidence suggesting no persistent or regular acoustic presence of the species within the project area.

Considering both the cumulative visual survey data and the PAM results, the recorded visual sightings of the Narrow-ridged Finless Porpoise appear intermittent and do not represent evidence of regular, sustained occupancy or significant ecological dependence on the project area. The absence of acoustic detections further reinforces this conclusion. Consequently, the species does not meet the criteria for Critical Habitat under IFC Performance Standard 6 (PS6)..

There is currently no consolidated data on the global population of the Narrow-ridged Finless Porpoise (*N. asiaeorientalis*). The IUCN Red List⁴² indicates population decline trends but does not provide an estimate of the total global population. However, based on recent research data from the species' estimated range—including China, South Korea, and Japan—an approximate global population can be inferred.

In South Korea, a 2023 survey conducted across the West and Southwest Seas estimated a population of approximately 4,500 individuals⁴³. In China, surveys around the Shandong Peninsula reported the presence of around 4,000 individuals⁴⁴. In Japan, a 2012 aerial survey of the region between Sendai Bay and Tokyo Bay estimated approximately 1,500 individuals⁴⁵. Although the species is known to inhabit five regional zones in Japan, no recent studies were found detailing updated population distributions.

Based on these results, a global estimate of approximately 10,000 individuals can be inferred. Considering the limited geographic scope of the surveys and that not all known habitats of the species were assessed, this figure appears to be conservatively estimated.

Applying the IFC PS6 threshold of 0.5% for Critical Habitat determination, the threshold would be approximately 50 individuals. As previously noted, the maximum number of individuals recorded during 19 surveys conducted between 2020 and 2024 was 29. This does not exceed the estimated regional threshold, and therefore, the project area is unlikely to support a Critical Habitat as defined under IFC PS6.

However, considering that all surveys have only covered a very limited portion of the potential habitat range for the Narrow-ridged Finless Porpoise in the broader western and southern coastal waters of Korea, the limitations of the survey results are evident. Furthermore, if the possibility of undetected individuals is taken into account, the number of potentially present individuals may be higher than observed. Taking these factors into consideration, and although despite not meeting the Critical Habitat threshold under IFC PS6 is not met, the species has been screened in and precautionary mitigation measures have been applied.

Chinese Crested Tern (*Thalasseus bernsteini*) is classified as Critically Endangered (CR) by the IUCN Red List, with an estimated global population of approximately 150 individuals⁴⁶. The supplementary monthly surveys conducted from March 2023 to February 2024 included systematic transect surveys and coastal habitat assessments across the Ecologically Appropriate Area of Analysis (EAAA), did not record any individual sightings.

⁴² Wang, J.Y. , Reeves, R. 2017. *Neophocaena asiaeorientalis*. The IUCN Red List of Threatened Species 2017: e.T41754A50381766.

⁴³ 수과원, 동해 바다에 참고래, 향고래 등 멸종 위기 고래류 개체수 증가 확인(2024, National Institute of Fisheries Science (NIFS), Ministry of Oceans and Fisheries)

⁴⁴ Yongtao Li et al. 2023. Distribution and Abundance of the East Asian Finless Porpoise in the Coastal Waters of Shandong Peninsula, Yellow Sea, China

⁴⁵ Kunio Shirakihara et al. 2019. Abundance decline in the narrow-ridged finless porpoise population off the Pacific coast of eastern Japan

⁴⁶ [Chinese Crested Tern - Eaaflyway](https://eaaflyway.net/) from <https://eaaflyway.net/> (accessed June 2025).

However, the earlier EIA surveys conducted from 2020 to 2023 across 13 sessions recorded only a single individual in July 2022, indicating an extremely low of this species within the EAAA.

According to IFC PS6 Criterion 1 (Paragraph GN72, IFC PS6 Guidance Note 6, 2019), designation as Critical Habitat for Critically Endangered (CR) species requires:

- Population Proportion Threshold: Habitat qualifies if it supports $\geq 0.5\%$ of the global population and ≥ 5 reproductive units of a CR species (IFC PS6 GN72, 2019).

Given the global population estimate, the threshold for a significant proportion is approximately 0.75 individuals ($\geq 0.5\%$ of the global population of 150 individuals). For the Chinese Crested Tern, this threshold translates to approximately 0.75 individuals and means that 5 reproductive units must also be present.

Therefore, based on the explicit criteria of IFC PS6 (GN72), the Project area does not qualify as Critical Habitat for the Chinese Crested Tern.

Table 7-2 indicates a total of 10 avian species namely, Spoon-billed Sandpiper [*Calidris pygmaea*; CR (IUCN v.2024-1)], Oriental Stork [*Ciconia boyciana*; EN (IUCN v.2024-1)], Far Eastern Curlew [*Numenius madagascariensis*; EN (IUCN v.2024-1)], Great Knot [*Calidris tenuirostris*; EN (IUCN v.2024-1)], Black-faced Spoonbill [*Platalea minor*; EN (IUCN v.2024-1)], Lesser White-fronted Goose [*Anser erythropus*; VU (IUCN v.2024-1)], Sharp-tailed Sandpiper [*Calidris acuminata*; VU (IUCN v.2024-1)], Saunders's Gull [*Saundersilarus saundersi*; VU (IUCN v.2024-1)], Hooded Crane [*Grus monacha*; VU (IUCN v.2024-1)], Chinese Egret [*Egretta eulophotes*; VU (IUCN v.2024-1)], as a potential critical habitat trigger species.

A yearlong survey conducted for avian species, did not indicate presence of Spoon-billed Sandpiper [*Calidris pygmaea*; CR (IUCN v.2024-1)], Lesser White-fronted Goose [*Anser erythropus*; VU (IUCN v.2024-1)], and Oriental Stork [*Ciconia boyciana*; EN (IUCN v.2024-1)] during costal, island and transect survey.

Sharp-tailed Sandpiper (*Calidris acuminata*, VU [IUCN v.2024-1]) was recorded with 11 individuals in April 2024 at Baeksu tidal flat. The global population is estimated at approximately 73,000 individuals⁴⁷, and the threshold (IFC PS6 GN78, 2019) is 730 individuals, thus falling below the threshold.

Saunders's Gull (*Saundersilarus saundersi*, VU [IUCN v.2024-1]) was recorded with 3 individuals in September 2020 at Baeksu tidal flat. The global population is estimated at approximately 14,400 individuals⁴⁸, and the threshold (IFC PS6 GN78, 2019) is 144 individuals, thus falling below the threshold.

Far Eastern Curlew (*Numenius madagascariensis*, EN [IUCN v.2024-1]) was recorded with 14 individuals in October 2020 in the Seoldo Port area. As the global population is estimated at a minimum of 20,000 individuals⁴⁹, the threshold (IFC PS6 GN72, 2019) is 100 individuals, and the observation falls below the threshold.

Great Knot (*Calidris tenuirostris*, EN [IUCN v.2024-1]) was recorded with 164 individuals in September 2020 in the Seoldo Port area. As the global population is estimated at a minimum of 292,000 individuals⁵⁰, the threshold (IFC PS6 GN72, 2019) is 1,460 individuals, and the observation falls below the threshold.

⁴⁷ BirdLife International. 2022. *Calidris acuminata*. The IUCN Red List of Threatened Species 2022: e.T22693414A152588591.

⁴⁸ BirdLife International. 2018. *Saundersilarus saundersi*. The IUCN Red List of Threatened Species 2018: e.T22694436A132551327.

⁴⁹ BirdLife International. 2024. *Numenius madagascariensis*. The IUCN Red List of Threatened Species 2024: e.T22693199A250045646.

⁵⁰ BirdLife International. 2019. *Calidris tenuirostris* (amended version of 2016 assessment). The IUCN Red List of Threatened Species 2019: e.T22693359A155482913.

Hooded Crane (*Grus monacha*, VU [IUCN v.2024-1]) was recorded with 43 individuals in February 2024 in islands area. As the global population is estimated at a minimum of 6,000 individuals⁵¹, the threshold (IFC PS6 GN78, 2019) is 60 individuals, and the observation falls below the threshold.

Presence of Black-faced Spoonbill [*Platalea minor*, EN (IUCN v.2024-1)] was recorded during coastline survey in the months of June, July and August 2023 with a count of 108, 148 and 197 individuals. The global population of this species is estimated as 3,941 individuals. The stipulated threshold for triggering the critical habitat with respect to Black-faced Spoonbill [*Platalea minor*, EN (IUCN v.2024-1)] is 19 individuals ($\geq 0.5\%$ of the global population) of the species. Hence, the EAAA supports the globally important concentrations of the species and is a critical habitat with respect to this species. Hence, the species is considered as potential CH trigger with respect to the EAAA.

Chinese Egret (*Egretta eulophotes*, VU [IUCN v.2024-1]) was recorded with 683 individuals in September 2020 in offshore export cable area. consistent pattern of occurrence was observed, indicating recurring presence over time. As the global population is estimated at a minimum of 2,500 individuals⁵², the threshold (IFC PS6 GN78, 2019) is 25 individuals ($\geq 1\%$ of the global population of migratory birds), and this meets the conditions for Critical Habitat, and thus the species is considered a potential CH trigger with respect to the EAAA.

Surf Grass [*Phyllospadix iwatensis*; VU (IUCN v.2024-1)] was observed forming small colonies near Hoengdo and Mokseom around Anmado during the Environmental Impact Assessment. The species was confirmed through diving surveys, though exact population numbers could not be identified. However, its distribution area is estimated to be less than 1,000 m². Considering the global extent of occurrence is approximately 20,000 km²⁵³, and the threshold defined by IFC PS6 GN78 (2019) is 200 km², the observed presence thus falls below the threshold.

Survey findings from EIA for other plants, benthic species and fishes did not indicate presence of any of the screened in species given in the Table 7-2. Nevertheless, literature survey was conducted to review the general distribution and likelihood of occurrence of the species to provide confirmation of the survey findings.

- Spoon-billed Sandpiper (*Calidris pygmaea*, CR [IUCN v.2024-1]) has been documented⁵⁴ in other parts of the Yellow Sea, including Saemangeum and Yubudo, but these areas are located at least 70 km away from the project site. Given this distance, the likelihood of occurrence within the project area is considered low.
- Korean Skate (*Hongoeo koreana*, CR [IUCN v.2024-1]) is known⁵⁵ to have a localized distribution limited to the southern waters of Heuksan-do and the Jeju Strait, but these areas are located at least 80 km away from the project site. Given this distance, the likelihood of occurrence within the project area is considered low.
- Bowmouth Guitarfish (*Rhina ancylostoma*, CR [IUCN v.2024-1]) is known⁵⁶ to occur in tropical coastal waters throughout much of the Indo-Pacific region. Although the Korean coastline is technically within the Pacific portion of this range, there are no confirmed records of the species occurring on or around the Korean Peninsula. Given its preference for tropical coastal habitats, its actual distribution is likely limited to lower-latitude areas such as southern Japan. Therefore, the likelihood of occurrence within the project area is considered low.

⁵¹ BirdLife International. 2016. *Grus monacha*. The IUCN Red List of Threatened Species 2016: e.T22692151A93337861.

⁵² BirdLife International. 2016. *Egretta eulophotes*. The IUCN Red List of Threatened Species 2016: e.T22696977A93596047.

⁵³ Short, F.T. & Waycott, M. 2010. *Phyllospadix iwatensis*. The IUCN Red List of Threatened Species 2010: e.T173344A6995596.

⁵⁴ National Institute of Biological Resources (<https://species.nibr.go.kr>)

⁵⁵ Dulvy, N.K., et. 2020. *Hongoeo koreana*. The IUCN Red List of Threatened Species 2020: e.T161483A124493295.

⁵⁶ Kyne, P.M. et al. 2019. *Rhina ancylostoma*. The IUCN Red List of Threatened Species 2019: e.T41848A124421912.

- Japanese Angelshark (*Squatina japonica*, CR [IUCN v.2024-1]) is known⁵⁷ to occur in the Northwest Pacific, ranging from Russia to Taiwan, but it has been rarely recorded in South Korea. Aside from a single individual documented off the southwest coast in 2019, there are no other confirmed records of this species in the country. Moreover, considering that there have been no recent records in adjacent Japanese waters over the past two decades, the likelihood of occurrence within the project area is considered low.
- Chinese Puffer (*Takifugu chinensis*, CR [IUCN v.2024-1]) is one of the commercially valuable pufferfish species, but by 2008, only 1 tonne was recorded in the market⁵⁸, indicating that it is now extremely rare and difficult to observe in the wild. Given this sharp decline, the likelihood of occurrence within the project area is considered low.
- *Sebastes koreanus* (DD) is a data-deficient species, and no reliable information is available regarding its population size or distribution trends. However, the closest known occurrence based on existing records is in Jeollabuk-do, which is located more than 60 km away from the project site.
- Mottled Skate (*Beringraja pulchra*, EN [IUCN v.2024-1]) has experienced a sharp decline in catch volumes in South Korea, leading to the establishment of a Total Allowable Catch (TAC) for the species⁵⁹. And, it is primarily caught in areas such as Gunsan (Jeollabuk-do), Heuksan-do (Sinan-gun), and Mokpo. Based on the results of both field and literature surveys, only a closely related species, the Ocellate Spot Skate, was observed.
- Japanese Grenadier Anchovy (*Coilia nasus*, EN [IUCN v.2024-1]) is an anadromous species that inhabits brackish river estuaries flowing into the Yellow Sea in South Korea⁶⁰. It is primarily observed in the estuarine zones of the Geum River and Dongjin River, with its distribution concentrated in Chungcheongnam-do and Jeollabuk-do.
- Japanese Topeshark (*Hemitriakis japonica*, EN [IUCN v.2024-1]) is extremely rarely observed, not only in Japan, China, and Taiwan⁶¹, but also in fish markets in South Korea, with even incidental bycatch records being uncommon.
- Chinese Stingray (*Hemirhina sinensis*, EN [IUCN v.2024-1]) is occasionally recorded as bycatch along the coasts of China and South Korea⁶², but in South Korea, it has reportedly declined by up to 92%, making it extremely difficult to observe in recent years. In addition, only similar species were recorded during both field and literature surveys, indicating that the likelihood of occurrence is very low.
- Shortfin Mako (*Isurus paucus*, EN [IUCN v.2024-1]) is a species found in temperate and tropical waters worldwide⁶³, but in South Korea, it has only been recorded along the east coast near Pohang⁶⁴. Therefore, the likelihood of occurrence near the project area is considered very low.
- Asian Surf Grass (*Phyllospadix japonicus*, EN [IUCN v.2024-1]) is primarily distributed along the east coast of Korea and typically inhabits high-energy environments with rocky substrates⁶⁵.

⁵⁷ Walls, R.H.L. et al. 2021. *Squatina japonica*. The IUCN Red List of Threatened Species 2021: e.T161558A134194013.

⁵⁸ Shao, K., Leis, J.L., Hardy, G., Jing, L., Liu, M. & Pollard, D. 2014. *Takifugu chinensis*. The IUCN Red List of Threatened Species 2014: e.T193605A2246312.

⁵⁹ Dulvy, N.K. et al. 2020. *Beringraja pulchra*. The IUCN Red List of Threatened Species 2020: e.T161669A124525206.

⁶⁰ Je Cheon Jun et al. 2009. Maturation and Spawning of the Korean Anchovy *Coilia nasus* on the West Coast of Korea

⁶¹ Walls, R.H.L. et al. 2021. *Hemitriakis japonica*. The IUCN Red List of Threatened Species 2021: e.T161507A124497048.

⁶² Rigby, C.L. et al. 2020. *Hemirhina sinensis*. The IUCN Red List of Threatened Species 2020: e.T161576A124509727.

⁶³ Rigby, C.L. et al. 2019. *Isurus paucus*. The IUCN Red List of Threatened Species 2019: e.T39341A2903170.

⁶⁴ Yonhap News. (2023, July 21). Shortfin mako shark repeatedly spotted off Pohang coast.

⁶⁵ Short, F.T. & Waycott, M. 2010. *Phyllospadix japonicus*. The IUCN Red List of Threatened Species 2010: e.T173341A6994909.

Given that the project footprint is predominantly composed of clay and sandy sediments, the likelihood of occurrence is considered even lower.

- Japanese Spiky Sea Cucumber (*Apostichopus japonicus*, EN [IUCN v.2024-1]) is a widely distributed sea cucumber species in Korea and is relatively commonly observed in rocky intertidal zones during low tide⁵⁴. However, the species was not recorded during either field surveys or literature reviews.
- Oriental Stork (*Ciconia boyciana*, EN [IUCN v.2024-1]) is a migratory bird species that winters in Korea, and is primarily observed in the Cheonsu Bay area of Chungcheongnam-do. In Jeollanam-do, the species is mostly observed in inland areas, and therefore the likelihood of occurrence near the project area is considered low.
- Haliotis discus (EN [IUCN v.2024-1]) is a representative abalone species that inhabits subtidal rocky reefs⁵⁴. In Korea, Wando in Jeollanam-do is known as a key habitat for the species. However, it was not observed during intertidal and subtidal benthic fauna surveys, and given the limited extent of rocky subtidal habitat within the project area, the likelihood of occurrence is considered low.
- Ringed Guitarfish (*Rhinobatos hynnicephalus*, EN [IUCN v.2024-1]) is known to occur in China, Japan, Taiwan, and South Korea⁶⁶, but there are no confirmed records of direct observation in South Korea to date.
- Clouded Angelshark (*Squatina nebulosa*, EN [IUCN v.2024-1]) is a demersal species inhabiting the continental shelf and upper slope⁶⁷, typically found at depths of at least 35 meters or more. Given this depth preference, the likelihood of occurrence in the shallow coastal waters near the project area is considered low.
- Ocean Sunfish (*Mola mola*, VU [IUCN v.2024-1]) is a temperate marine species with a global coastal distribution. In the Yellow Sea off Korea⁶⁸, it has been primarily observed near Mokpo, and therefore, the likelihood of occurrence near the project area is considered low.
- Broadnose Sevengill Shark (*Notorynchus cepedianus*, VU [IUCN v.2024-1]) is a species found in temperate and tropical coastal waters worldwide. In South Korea, it has been reported primarily in the southern coast, around Jeju Island, and the southeastern East Sea⁵⁴.
- Stone Flounder (*Platichthys bicoloratus*, VU [IUCN v.2024-1]) is a demersal species that inhabits sandy or muddy bottoms at depths of 30 to 100 meters⁵⁴. Given that the project area is mostly shallower than 20 meters, the likelihood of occurrence is considered low.
- Yellow-spotted Fanray (*Platyrrhina tangi*, VU [IUCN v.2024-1]) is known to occur in China, Taiwan, Vietnam, Japan, and South Korea⁶⁹; however, no individuals were recorded in or around the project area during field surveys or literature reviews.
- Amur Stickleback (*Pungitius sinensis*, VU [IUCN v.2024-1]) is known to inhabit lower river reaches and brackish waters. In South Korea, it has been recorded in Gangwon-do, Gyeongsangbuk-do, and Chungcheongbuk-do⁷⁰, but no occurrences have been confirmed near the project area.
- *Alveopora japonica* (VU [IUCN v.2024-1]) is a coral species that inhabits rocky walls and substrates at depths of 5 to 20 meters. In South Korea, it is known to occur only in the waters around Jeju Island⁵⁴.

⁶⁶ Rigby, C.L. et al.. 2020. *Rhinobatos hynnicephalus*. The IUCN Red List of Threatened Species 2020: e.T60167A124446775.

⁶⁷ Rigby, C.L. et al. 2021. *Squatina nebulosa*. The IUCN Red List of Threatened Species 2021: e.T161325A134193576.

⁶⁸ Dong woo Lee et al. 2013. Catch Distribution of Ocean Sunfish *Mola mola* off Korean Waters

⁶⁹ Rigby, C.L. et al. 2021. *Platyrrhina tangi*. The IUCN Red List of Threatened Species 2021: e.T169234885A169234948.

⁷⁰ Myung Hoon Ko. 2016. Distribution Status and Threatened Assessment of Endangered Species, *Pungitius sinensis* in Korea

- *Zostera caespitosa* (VU [IUCN v.2024-1]) is a seagrass species that grows rooted in sandy substrates at depths of 3 to 8 meters, typically found within sheltered, low-current sandy areas such as the inner parts of harbors⁷¹. Given these habitat preferences, the likelihood of occurrence near the project area is considered low.
- Lesser White-fronted Goose (*Anser erythropus*, VU [IUCN v.2024-1]) is a representative wintering migratory bird, and in South Korea, its occurrence has been confirmed only in the Seoul and Chungcheongnam-do regions⁷².
- Oriental Stingaree (*Urolophus aurantiacus*, VU [IUCN v.2024-1]) is a demersal species that primarily inhabits sandy and muddy seafloors at depths greater than 155 meters⁷³. Given these habitat preferences, the likelihood of occurrence near the project area is considered low.

Based on the survey findings and literature survey of all flora and fauna groups, the final screening table is presented in Table 5-2. This table includes the scientific and common names of potential critical habitat (CH) species which were screened in based on desktop assessment, along with their respective IUCN status, updated screening results, and the rationale for each classification.

⁷¹ Ministry of Ocean and Fishery, 2020

⁷² NIBR. 2022-2023 Winter Waterbird Census of Korea

⁷³ Rigby, C.L. et al. 2020. *Urolophus aurantiacus*. The IUCN Red List of Threatened Species 2020: e.T60087A124438082.

Table 5-2 Updated Screening Results Based on the Survey Findings

SN	Scientific Name	Common Name	IUCN Status	Screening Result based on Survey	Rationale
1	<i>Calidris pygmaea</i>	Spoon-billed Sandpiper	CR	Screened out	Not observed during field and desktop surveys, and its likelihood of occurrence within the project area is considered low; does not meet the IFC PS6 criteria
2	<i>Thalasseus bernsteini</i>	Chinese Crested Tern	CR	Screened out	Only 1 individual recorded during 25 surveys; does not meet IFC PS6 criteria
3	<i>Hongeo koreana</i>	Korean Skate	CR	Screened out	Not observed during field and desktop surveys, and its likelihood of occurrence within the project area is considered low; does not meet the IFC PS6 criteria
4	<i>Rhina ancylostoma</i>	Bowmouth Guitarfish	CR	Screened out	Not observed during field and desktop surveys, and its likelihood of occurrence within the project area is considered low; does not meet the IFC PS6 criteria
5	<i>Squatina japonica</i>	Japanese Angelshark	CR	Screened out	Not observed during field and desktop surveys, and its likelihood of occurrence within the project area is considered low; does not meet the IFC PS6 criteria
6	<i>Takifugu chinensis</i>	Chinese Puffer	CR	Screened out	Not observed during field and desktop surveys, and its likelihood of occurrence within the project area is considered low; does not meet the IFC PS6 criteria
7	<i>Sebastes koreanus</i>	-	DD	Screened out	Not observed during field and desktop surveys, and its likelihood of occurrence within the project area is considered low; does not meet the IFC PS6 criteria
8	<i>Beringraja pulchra</i>	Mottled Skate	EN	Screened out	Not observed during field and desktop surveys, and its likelihood of occurrence within the project area is considered low; does not meet the IFC PS6 criteria
9	<i>Coilia nasus</i>	Japanese Grenadier Anchovy	EN	Screened out	Not observed during field and desktop surveys, and its likelihood of occurrence within the project area is considered low; does not meet the IFC PS6 criteria
10	<i>Hemitriakis japonica</i>	Japanese Topeshark	EN	Screened out	Not observed during field and desktop surveys, and its likelihood of occurrence within the project area is considered low; does not meet the IFC PS6 criteria
11	<i>Hemitrygon sinensis</i>	Chinese Stingray	EN	Screened out	Not observed during field and desktop surveys, and its likelihood of occurrence within the project area is considered low; does not meet the IFC PS6 criteria
12	<i>Neophocaena asiaeorientalis</i>	Narrow-ridged Finless Porpoise	EN	Screened in	The maximum number of individuals observed does not meet the threshold, but it has been considered in light of population uncertainty and the precautionary principle of IFC PS6.
13	<i>Isurus oxyrinchus</i>	Shortfin Mako	EN	Screened out	Not observed during field and desktop surveys, and its likelihood of occurrence within the project area is considered low; does not meet the IFC PS6 criteria

14	<i>Phyllospadix japonicus</i>	Asian Surf Grass	EN	Screened out	Not observed during field and desktop surveys, and its likelihood of occurrence within the project area is considered low; does not meet the IFC PS6 criteria
15	<i>Apostichopus japonicus</i>	Japanese Spiky Sea Cucumber	EN	Screened out	Not observed during field and desktop surveys, and its likelihood of occurrence within the project area is considered low; does not meet the IFC PS6 criteria
16	<i>Numenius madagascariensis</i>	Far Eastern Curlew	EN	Screened out	A maximum of 14 individuals were observed, which does not meet the thresholds of 100.
17	<i>Platalea minor</i>	Black-faced Spoonbill	EN	Screened in	Yearlong avian survey indicates presence of individuals crossing the stipulated threshold number
18	<i>Ciconia boyciana</i>	Oriental Stork	EN	Screened out	Not observed during field and desktop surveys, and its likelihood of occurrence within the project area is considered low; does not meet the IFC PS6 criteria
19	<i>Calidris tenuirostris</i>	Great Knot	EN	Screened out	A maximum of 164 individuals were observed, which does not meet the thresholds of 1,460.
20	<i>Halotis discus</i>	-	EN	Screened out	Not observed during field and desktop surveys, and its likelihood of occurrence within the project area is considered low; does not meet the IFC PS6 criteria
21	<i>Rhinobatos hynnicephalus</i>	Ringed Guitarfish	EN	Screened out	Not observed during field and desktop surveys, and its likelihood of occurrence within the project area is considered low; does not meet the IFC PS6 criteria
22	<i>Squatina nebulosa</i>	Clouded Angelshark	EN	Screened out	Not observed during field and desktop surveys, and its likelihood of occurrence within the project area is considered low; does not meet the IFC PS6 criteria
23	<i>Mola mola</i>	Ocean Sunfish	VU	Screened out	Not observed during field and desktop surveys, and its likelihood of occurrence within the project area is considered low; does not meet the IFC PS6 criteria
24	<i>Notorynchus cepedianus</i>	Broadnose Sevengill Shark	VU	Screened out	Not observed during field and desktop surveys, and its likelihood of occurrence within the project area is considered low; does not meet the IFC PS6 criteria
25	<i>Platichthys bicoloratus</i>	Stone Flounder	VU	Screened out	Not observed during field and desktop surveys, and its likelihood of occurrence within the project area is considered low; does not meet the IFC PS6 criteria
26	<i>Platyrrhina tangi</i>	Yellow-spotted Fanray	VU	Screened out	Not observed during field and desktop surveys, and its likelihood of occurrence within the project area is considered low; does not meet the IFC PS6 criteria
27	<i>Pungitius sinensis</i>	Amur Stickleback	VU	Screened out	Not observed during field and desktop surveys, and its likelihood of occurrence within the project area is considered low; does not meet the IFC PS6 criteria
28	<i>Alveopora japonica</i>	-	VU	Screened out	Not observed during field and desktop surveys, and its likelihood of occurrence within the project area is considered low; does not meet the IFC PS6 criteria

29	<i>Phyllospadix iwatensis</i>	Surf grass	VU	Screened out	Due to its small and limited colony distribution, it does not meet the threshold criteria.
30	<i>Zostera caespitosa</i>	-	VU	Screened out	Not observed during field and desktop surveys, and its likelihood of occurrence within the project area is considered low; does not meet the IFC PS6 criteria
31	<i>Anser erythropus</i>	Lesser White-fronted Goose	VU	Screened out	Not observed during field and desktop surveys, and its likelihood of occurrence within the project area is considered low; does not meet the IFC PS6 criteria
32	<i>Calidris acuminata</i>	Sharp-tailed Sandpiper	VU	Screened out	A maximum of 11 individuals were observed, which does not meet the thresholds of 730.
33	<i>Saundersilarus saundersi</i>	Saunders's Gull	VU	Screened out	A maximum of 3 individuals were observed, which does not meet the thresholds of 144.
34	<i>Urolophus aurantiacus</i>	Oriental Stingaree	VU	Screened out	Not observed during field and desktop surveys, and its likelihood of occurrence within the project area is considered low; does not meet the IFC PS6 criteria
35	<i>Egretta eulophotes</i>	Chinese Egret	VU	Screened in	Yearlong avian survey indicates presence of individuals crossing the stipulated threshold number
36	<i>Grus monacha</i>	Hooded Crane	VU	Screened out	A maximum of 43 individuals were observed, which does not meet the threshold of 60.

Note: Table 7-1 provides an initial desktop-based screening of potential critical habitat trigger species, relying primarily on documented regional occurrence and expected habitat overlap within the EAAA. In contrast, Table 5-2 presents updated screening results informed by comprehensive field surveys, PAM data, literature reviews, expert consultations, and stakeholder engagement, ensuring a robust, evidence-based evaluation. For species not recorded in field surveys, the updated screening explicitly considers known ecological habitat requirements, historical presence, and regional species distribution, in alignment with IFC PS6. This comprehensive approach provides strong justification and clarity for screening decisions, ensuring consistency between tables and compliance with PS6 guidelines. Specifically, for benthic species (e.g., Bowmouth guitarfish) and other species unlikely to be detected through pelagic-focused surveys, their potential occurrence within the EAAA was evaluated through literature reviews, historical records, and expert consultations, ensuring their screening-out decisions are not based solely on survey absence.

6. SUMMARY AND NEXT STEPS

Critical Habitat Assessment revealed that, considering Criterion 1-3, two species has qualified as Critical Habitat candidate under ‘Criterion 1: Critically Endangered (CR) / Endangered (EN) species’ and one species has qualified as Critical Habitat candidate under ‘Criterion 3: Migratory and Congregatory species’ as described in Table 6-1.

Table 6-1 Potential Critical Habitat Trigger species

S.N.	Common Name	Scientific Name	Global IUCN Status (IUCN v 2024-1)
1	Black-faced Spoonbill	<i>Platalea minor</i>	EN
2	Narrow-ridged Finless Porpoise	<i>Neophocaena asiaeorientalis</i>	EN
3	Chinese Egret	<i>Egretta eulophotes</i>	VU

Where, EN = Endangered, VU = Vulnerable

6.1 Assessment of Impact

Table 6-2 Assessment of Impacts for Potential Critical Habitat Candidate

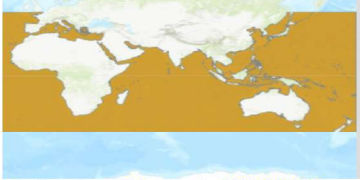
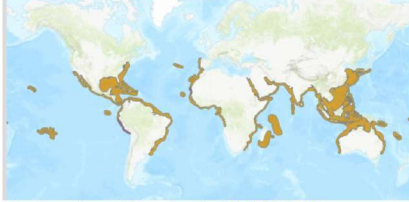
Species	Additional and Embedded Mitigation measures	Assessment of Impacts
Black-faced Spoonbill [<i>Platalea minor</i> ; EN (IUCN v.2024-1)]	- Qualitative and quantitative bird surveys shall be carried out in the project site for the 6 times in a year to monitor migratory birds. - Turbine blades shall be painted with a white tint paint allowing bird species that are sensitive to identify the wind turbine generators (WTG).	While the species was not recorded within the immediate vicinity of the wind farm project area during baseline surveys, it was observed during island and coastal area surveys conducted nearby. This indicates that while the species may utilize habitats in the broader region, it does not frequent the specific location where the wind turbines are to be installed. Considering the limitations of previous desktop studies, the likelihood of Black-faced Spoonbill or Eurasian Spoonbill—species known to migrate between southern China and South Korea—passing near the project area is assessed to be very low. However, it cannot be conclusively stated that these species can be excluded in consideration of collision risk with OWF. Therefore, additional mitigation measures will be considered to ensure that the risk of collision is minimized.
Chinese Egret [<i>Egretta eulophotes</i> ; VU (IUCN v.2024-1)]	- Aviation lights and blade colours shall be applied in accordance with MoLIT regulations to enhance visibility and reduce the risk of bird collisions. Additional mitigation measures will be sought through continuous monitoring as outlined in the post-EIA phase. - To prevent predatory activity, a fishing exclusion zone of 200 m radius around the WTGs shall be defined. - Construction of artificial features that may attract birds for roosting, perching, or feeding shall be avoided unless they are related to OWF operations or a future phase of the project. - During trenching works in or near intertidal areas, turbidity control measures, such as silt curtains or phased trenching methods, will be applied to limit sediment suspension and protect prey availability for shorebirds.	To minimize potential impacts on the Black-faced Spoonbill and Chinese Egret, the Project has implemented several embedded and additional mitigation measures. Although there were some variations depending on the survey period, both the Black-faced Spoonbill and the Chinese Egret were consistently observed around Chilsan-do and the adjacent coastal mudflats. The export cable installation is planned to pass through a portion of these coastal mudflats and overlap with the project footprint is expected. Even if the risk of collision is considered low, construction activities could potentially affect breeding and foraging behavior, and therefore it is important to consider the seasonal presence of these species. The Black-faced Spoonbill is known to occur from March to November, and the Chinese Egret from April to September. Both species are known to breed on Chilsan-do, with the typical breeding season spanning from March to July. Offshore cable installation and burial work is planned to take place in total around 60 days with non-consecutive schedule throughout April ~ October, which can be considered relatively short. Nevertheless, overlapping period with key species exists. Accordingly, to minimize impacts on key species, construction will be carried out in a single direction, and the schedule will be managed so that the works can be completed earlier than the planned period, thereby reducing potential impacts on these bird species.

Narrow-ridged Finless Porpoise [<i>Neophocaena asiaeorientalis</i>, EN (IUCN v.2024-1)]	■ Prior to commencement of construction activities, qualified Marine Mammal Observers (MMOs) will conduct visual monitoring to confirm the absence of marine mammals within a predefined exclusion zone around the construction site. Monitoring will be conducted before initiating pile-driving or other noise-intensive activities. If marine mammals are detected within the exclusion zone, construction activities will be paused and resume after MMOs have confirmed that all marine mammals have left the exclusion zone. ■ Marine mammals will be proactively encouraged to leave the immediate vicinity of construction activities by deploying Acoustic Deterrent Devices (ADDs) as a warning alarm. ADDs will be activated prior to the initiation of noise-intensive construction activities, such as piling, to allow sufficient time for marine mammals to vacate the area. This procedure effectively reduces the likelihood of direct exposure to harmful noise levels, minimizing potential impacts on marine mammals.	The residual impacts on these species are assessed as Not Significant, provided that the mitigation measures and continuous monitoring are effectively implemented during the post-EIA phase. This species showed an observed population size below the Critical Habitat threshold in previous surveys. This indicates that while the species may utilize habitats in the broader region, it does not frequent the specific location where the wind turbines are to be installed. Nevertheless, the Project, acknowledging the risk of early decision has implemented several embedded and additional mitigation measures to minimize potential impacts as well. Pre-construction monitoring and the establishment of exclusion zones will minimize direct exposure of marine mammals to harmful noise, and these measures are considered sufficient and reliable. In addition, the use of ADDs before piling activities serves as an effective supplementary protection measure by encouraging marine mammals to vacate the area in advance, thereby reducing underwater noise impacts. Further to mitigation measures, monitoring on the specie will be conducted during construction and operation period, such as the specie's behaviour or use of the area, to assess the Project's impacts. The residual impacts on the Narrow-ridged Finless Porpoise are assessed as Not Significant, provided that the mitigation measures and continuous monitoring are effectively implemented during the post-EIA phase.
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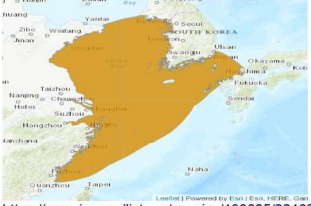
7. SUPPLEMENTARY MATERIALS

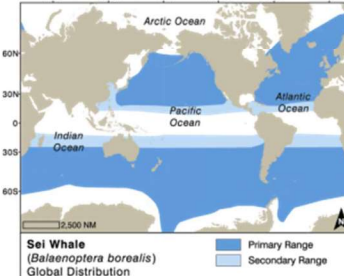
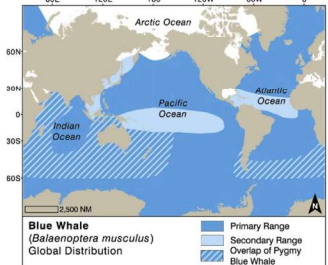
Table 7-1 summarises the species screened for this assignment based on the three criteria for critical habitat. The species here are 'screened in' based on the desktop assessment only. Actual results based on a yearlong survey of the project are provided in the **chapter 5**.

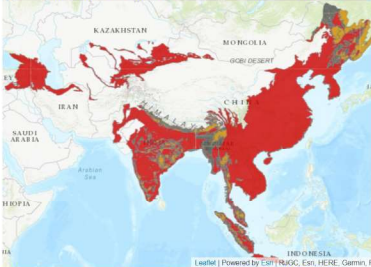
Table 7-1 List of Potential Critical Habitat Triggers

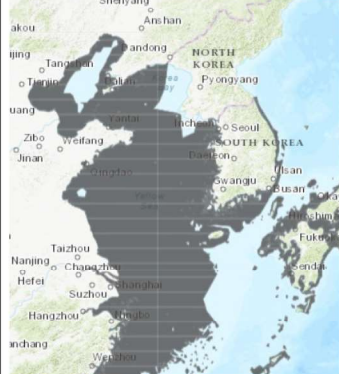
Sr. no.	Scientific name	Common name	IUCN status	Rationale	Screened in/ out
1	<i>Acipenser sinensis</i>	Chinese Sturgeon	CR	 https://www.iucnredlist.org/species/236/219152605 Migratory status – non migratory Estimated extent of occurrence (km²): 10 km² Congregatory – No Global population estimate - NA Habitat: Wetlands (inland). The Chinese sturgeon is an anadromous fish found in China, Japan, and the Korean Peninsula, but it has been extirpated from most regions due to habitat loss and overfishing. It is largely dispersed over the main streams of the Yangtze River and coastal regions of China near the Qiantang River, Minjiang River, and Pearl River. The adults are predators that consume any aquatic animal that can be swallowed, while the young feed on aquatic insects, larvae, diatoms, and humic substances. The ecologically appropriate area of analysis of the project overlaps with the extant distribution of this species. A large wild specimen of the species was caught off the shore of Taean-gun in Republic of Korea which is located 145 kms from the project site (https://www.koreaherald.com/view.php?ud=20180625000715). However, according to regional fisheries experts it is not found near the project site and this species has been screened out.	Screened out
2	<i>Carcharias taurus</i>	Sand Tiger Shark	CR	 https://www.iucnredlist.org/species/3854/2876505 Migratory status – migratory Estimated extent of occurrence (km²): NA Congregatory – no Global population estimate – NA Habitat: Marine Neritic, Marine Deep Benthic Sand tiger sharks roam the epipelagic and mesopelagic regions of the ocean, sandy coastal waters, estuaries, shallow bays, and rocky or tropical reefs, at depths of up to 190 m. Despite their global distribution and migration habits they are not reported along the Korean peninsula coast. The ecologically appropriate area of analysis for the project lies outside the extant distribution of this species.	Screened out
3	<i>Eretmochelys imbricata</i>	Hawksbill Turtle	CR	 https://www.iucnredlist.org/species/8005/12681238 Migratory status – Full migrant Estimated extent of occurrence (km²): NA Congregatory – Yes Global population estimate - NA Habitat: Marine Neritic, Marine Oceanic, Marine Intertidal Hawksbills are found mainly throughout the world's tropical oceans, predominantly in coral reefs. They feed mainly on sponges by using their narrow-pointed beaks to extract them from crevices on the reef, but also eat sea anemones and jellyfish. They occur on the west coast of Korean peninsula but are not reported from the western coast especially from the area near the project site. Therefore, this species has been screened out (Kim, Il-Hun. (2017). Occurrence of Sea Turtles in the Korean Waters and the Morphological Characteristics of Two Major Species. Journal of Fisheries and Aquatic Science, 50. 10.5657/KFAS.2017.0311.)	Screened out
4	<i>Sphyrna lewini</i>	Scalloped Hammerhead	CR	 https://www.iucnredlist.org/species/39385/2918526 Migratory status – migratory Estimated extent of occurrence (km²): NA Congregatory – Yes Global population estimate - NA Habitat: Marine Neritic, Marine Oceanic, Marine Intertidal	Screened out

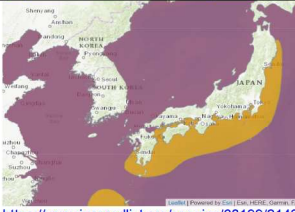
Sr. no.	Scientific name	Common name	IUCN status	Rationale	Screened in/ out
				The Scalloped Hammerhead is a coastal and semi-oceanic pelagic shark, found over continental and insular shelves and nearby deep water, ranging from the intertidal and surface usually to 275 m – 1000m. It is caught globally as target and bycatch in commercial and small-scale pelagic longline, purse seine, and gillnet fisheries. Most of the catch is taken as bycatch of industrial pelagic fleets in offshore and high seas waters. The ecologically appropriate area of analysis of the project overlaps with the extant distribution of the species. As this species does not occur in the Western Sea coast of Korean peninsula it has been screened out (Preliminary study on spatio-temporal variations of five giant and 17 large fish species around the Korean peninsula from 2011 to 2016. Fisheries and Aquatic Sciences, 25(5), 298-310).	
5	<i>Rhina ancylostoma</i>	Bowmouth Guitarfish	CR	 https://www.iucnredlist.org/species/41848/124421912 Migratory status – non migratory Estimated extent of occurrence (km²): NA Congregatory – No Global population estimate - NA Habitat: Marine Neritic The Bowmouth Guitarfish is widespread in the Indo-West Pacific from South Africa through the Western Indian Ocean, the Arabian Sea, Southeast Asia, and extending north to Japan, south to Australia and east to New Caledonia. It occurs from close inshore to depths of at least 70 m on the continental shelf. It occurs on or close to the seabed, mainly over sandy or muddy substrates, and around coral reefs. This type of habitat occurs near the project site and this species is likely to be present. It is subjected to intense fishing pressure on their coastal and shelf habitats that is unregulated across most of its distributions. The ecologically appropriate area of analysis overlaps with the extant distribution of the species.	Screened in
6	<i>Hongo koreana</i>	Korean Skate	CR	 https://www.iucnredlist.org/species/161483/124493295 Migratory status – NA Estimated extent of occurrence (km²): 90,000 Congregatory – no Global population estimate – NA Habitat: Marine Neritic, Range restricted The Korean Skate is demersal on the continental shelf at depths of 30–80 m. Reproduction is oviparous. This skate is both a target and utilised bycatch of commercial and artisanal fisheries. Skates are targeted using set gillnets off southern Korea. International demand for skates by Korea is very high, driven by demand for Hongo or Hongohoe, fermented skate meat which is a traditional Korean delicacy. The extant distribution of the species overlaps the ecologically appropriate area of analysis of the project. Latest spot records (2015) indicate its presence in the region of the project site (https://www.gbif.org/species/5962980).  https://www.gbif.org/species/5962980	Screened in
7	<i>Squatina japonica</i>	Japanese Angelshark	CR	 https://www.iucnredlist.org/species/161558/134194013 Migratory status – NA Estimated extent of occurrence (km²): NA Congregatory – no Global population estimate – NA Habitat: Marine Neritic, It is range restricted because is endemic to the Northwest Pacific Ocean, where it occurs from southern Russia to southern Taiwan, including Japan, North and South Korea, and China (Walls, R.H.L., Rigby, C.L., Derrick, D., Dylidin, Y.V., Ebert, D.A., Herman, K., Ishihara, H., Jeong, C.-H., Semba, Y., Tanaka, S., Volvenko, I.V. & Yamaguchi, A. 2021. <i>Squatina japonica</i>. The IUCN Red List of Threatened Species 2021: e.T161558A134194013. https://dx.doi.org/10.2305/IUCN.UK.2021-1.RLTS.T161558A134194013.en. Accessed on 22 July 2023.). The Japanese Angelshark's range spreads across coastal waters of the Northwest Pacific Ocean, where it occurs from southern Russia to southern Taiwan, including Japan, North and South Korea, and China. It is demersal on the continental shelf and upper slope at depths of 10–352 m. This species is subject to fishing pressure across its entire spatial and depth range. It is taken as bycatch by demersal trawl, gillnet, set net, and longline and retained. The ecologically appropriate area of analysis overlaps with the extant distribution of the species. No information on its ecology, behaviour, habitat choice or biology is known (Walsh, J. H., & Ebert, D. A. (2007). A review of the systematics of western North Pacific angel sharks, genus <i>Squatina</i>, with redescription of <i>Squatina formosa</i>, <i>S. japonica</i>, and <i>S. nebulosa</i> (Chondrichthyes:	Screened in

Sr. no.	Scientific name	Common name	IUCN status	Rationale	Screened in/ out
				Squatinaformes, Squatinidae). Zootaxa, 1551(1), 31-47., https://www.iucnssg.org/uploads/5/4/1/2/54120303/fao_species_catalogue_for_fishery_purposes_-_2001_-_sharks_of_the_world_-_an_annotated_and_illustrated_catalogue_of_shark_species_known_to_date_-_volume_2_-_bullhead_mackerel_and_carpet_sharks.pdf)	
8	<i>Takifugu chinensis</i>	Chinese Puffer	CR	 https://www.iucnredlist.org/species/193605/2246312 Migratory status – NA Estimated extent of occurrence (km²): NA Congregatory – no Global population estimate – NA Habitat: Marine Neritic <i>Takifugu chinensis</i> is found in the Northwest Pacific, from Northern Kyushu, Japan west to the East China and Yellow seas. It inhabits the continental shelf and sandy bottoms and is usually found at depths of 50 to 100 metres. The global population of <i>T. chinensis</i> is estimated to have declined by over 99.99% over the last 40 years. This estimate is based on landing statistics from the East China Sea and Yellow Sea provided by the Sekai National Fisheries Institute in Nagasaki and the National Fisheries University in Shimonoeki City (https://www.fishbase.se/summary/13075). The ecologically appropriate area of analysis of the project site overlaps with the extant distribution of the species.	Screened in
9	<i>Calidris pygmaea</i>	Spoon-billed Sandpiper	CR	 https://www.iucnredlist.org/species/22693452/154738156 Migratory status – Migratory Estimated extent of occurrence (km²): 355,000 Congregatory – no Global population estimate – 240-620(best estimate 490) individuals. Habitat: Marine Neritic The Spoon-billed sandpiper is a small wader which breeds on the coasts of the Bering Sea and winters in Southeast Asia. This species is highly threatened, and it is said that since the 1970s the breeding population has decreased significantly. By 2000, the estimated breeding population of the species was 350–500. The species has a very specialised breeding habitat, using only lagoon spits with crowberry-lichen vegetation or dwarf birch and willow sedges near lakes and marshes, together with adjacent estuary and mudflat habitats that are used as feeding sites by adults during nesting. It may also use stream-deposited gravel pits. Breeding birds are very site faithful. It breeds either in single pairs or loose aggregations. It nests in June-July. Throughout its migratory and wintering ranges, tidal flats are being reclaimed for coastal development (industry, leisure, infrastructure, aquaculture, and agriculture) and are becoming increasingly polluted. The important staging area at Saemangeum ~65 km from the project site and Geum estuary ~90km from the project site, South Korea, including the Mangyeung and Tongjin estuaries, has already been reclaimed, and remaining wetlands are under serious threat of reclamation soon. Smooth Cordgrass <i>Spartina alterniflora</i> is an invasive plant used to stabilise mudflats to assist in reclamation along the Chinese coast and rapidly leaves intertidal areas unsuitable for Spoon-billed Sandpipers, dramatically reducing habitat availability. The Rudong mudflats ~500 km west of the project site (China) are also the site for development of the largest wind farm in Asia, which could prove to be another threat to this species. Recent observation on the breeding grounds unfortunately confirms a worrying trend of increasing bushes intruding on the coastal tundra habitats in the southern range, as well as drying of the tundra in the northern range with significant consequences on food access for breeding waders. The Ecologically appropriate area of analysis of the project site overlaps with the extant distribution of the species.	Screened in
10	<i>Thalasseus bernsteini</i>	Chinese Crested Tern	CR	 https://www.iucnredlist.org/species/22694585/131118818 https://eaaflyway.net/chinese-crested-tern/ Migratory status – Full migrant Estimated extent of occurrence (km²): 114,000 km², Range restricted species. Congregatory – No Global population estimate – 150 individuals. Habitat: Marine Neritic, Marine Intertidal, Marine Coastal/Supratidal The species is poorly known, recorded breeding in 2005 at only three sites on the eastern coast of China (Matsu Islands of Fujian, Jiushan Islands, Vuzhishan Islands of Zhejiang and Islands all are ~ 1,200 kms from the project site) and one site in Jeollanam-do, South Korea ~120 kms from project site (Chen, Shuihua, (2010). A new breeding site of the Critically Endangered Chinese Crested Tern <i>Sterna bernsteini</i> in the Vuzhishan Archipelago, eastern China. Forktail, 26, 132-134. And Song, S. K., Lee, S. W., Lee, Y. K., Lee, S. Y., Kim, C. H., Choi, S. S., & Kim, W. Y. (2017) First report and breeding record of the Chinese Crested Tern <i>Thalasseus bernsteini</i> on the Korean Peninsula. Journal of Asia-Pacific Biodiversity, 10(2), 250-253. The discovery in 2016 of two pairs breeding in a colony of Black-tailed Gulls (<i>Larus crassirostris</i>) on an uninhabited island off the southeast tip of the Republic of Korea (Muan-gun, Jeollanam-do, South Korea, ~35 km from the project site) represents the first breeding record outside of coastal China. Records indicate that it is exclusively coastal and pelagic in distribution. It is found on offshore islets (breeding) and tidal mudflats. Breeding season mid-May to early September. Egg collection is a major threat to this species, having been linked to breeding failures in 1999, 2001, 2002, 2003, and 2005 at the Matsu Island tern colonies as well as in 2007 on Jiushan Islands. Shellfish fishing near breeding grounds is deter breeding birds (Chen, Shuihua & Chang, Shou-hua & Yang, Liu & Chan, Simba & Fan, Zhongyong & Chen, Cangsang & Yen, Chung-wei & Guo, Dongsheng. (2009). A small population and severe threats: status of the Critically Endangered Chinese crested tern <i>Sterna bernsteini</i>. Oryx, 43,	Screened in

Sr. no.	Scientific name	Common name	IUCN status	Rationale	Screened in/ out
				209 - 212. 10.1017/S0030605308001142.). Harmful 'red tide' algal blooms, caused by industrial pollution in the area, cause the death of fish, reducing prey availability to breeding seabirds. The EAAA for the project overlaps with the extant distribution of the species.	
11	<i>Larimichthys crocea</i>	Large Yellow Croaker	CR	 https://www.iucnredlist.org/species/49182559/49239394 Migratory status – NA Estimated extent of occurrence (km²): NA, Range restricted species. Congregatory – No Global population estimate – NA Habitat: Marine Neritic <i>Larimichthys crocea</i> is found along the coast of China from the Yellow Sea, East China Sea, and northern South China Sea. It is heavily exploited throughout its range. Evidence strongly suggests that a combination of heavy exploitation of spawning and over-wintering aggregations, poor management, and overfishing pressure were major factors in stock declines, with contributions from pollution, habitat degradation and marine ecosystem shift causing severe decline in populations (https://www.fishbase.se/summary/SpeciesSummary.php?ID=428&AT=Large+Yellow+Croaker). The ecologically appropriate area of analysis lies outside the extant distribution of the species.	Screened out
12	<i>Balaenoptera borealis</i>	Sei Whale	EN	 Sei Whale (<i>Balaenoptera borealis</i>) Global Distribution Distribution of species according to international Whaling commission https://iwc.int/about-whales/whale-species/sei-whale Migratory status – Migratory Estimated extent of occurrence (km²): NA Congregatory – No Global population estimate – 50,000 individuals Habitat: Marine Neritic, Oceanic The Sei Whale is a cosmopolitan species, with a mainly offshore distribution. The species occurs in the North Atlantic, North Pacific, and Southern Hemisphere, but there are no confirmed records in the northern Indian Ocean. Sei Whales migrates between tropical and subtropical latitudes in winter and temperate and subpolar latitudes in summer, staying mainly in water temperatures of 8-18°C. Their winter distribution seems to be widely dispersed and is not fully mapped. Sei Whales exhibits a greater variety in diet than some other large whales such as Blue Whales (<i>Balaenoptera musculus</i>) but tend to feed on only one type of prey at a time. Sei Whale exploitation by modern whaling was particularly intensive in the Southern Hemisphere and the North Pacific from the late 1950s to the mid-1970s, following the depletion of Blue, Fin (<i>Balaenoptera physalus</i>) and Humpback (<i>Megaptera novaeangliae</i>) Whales. The World Wildlife Fund has declared ~30 km area surrounding southern tip of peninsular Korea as Globally Significant Areas for Mammals in Yellow Sea region, however this area is still undergoing assessment by the Marine Mammal Protected Areas Task Force. The International Whaling Commission has reported the Yellow Sea as the secondary distribution of the species and it is therefore unlikely to occur at the project site and has therefore been screened out.	Screened out
13	<i>Balaenoptera musculus</i>	Blue Whale	EN	 Blue Whale (<i>Balaenoptera musculus</i>) Global Distribution https://iwc.int/about-whales/whale-species/blue-whale Distribution of species according to International Whaling commission. Migratory status – Migratory Estimated extent of occurrence (km²): NA Congregatory – No Global population estimate – 5,000-15,000 individuals Habitat: Marine Neritic, Oceanic The Blue Whale is a cosmopolitan species, found in all oceans but absent from some regional seas such as the Mediterranean, Okhotsk, and Bering seas. Blue Whales feed almost exclusively on euphausiids (krill) and migrate to areas where krill occurs in abundance. The migration patterns of Blue Whales are not well understood but appear to be diverse. Although there is evidence of migratory behaviour in most of the populations studied, both wintering and summering areas appear to be occupied at some level throughout the year. Blue whales come very close to the coast when there is abundance of food available. The main food of Antarctic Blue Whales, <i>Euphausia superba</i> and <i>E. crystallorophias</i>, are predicted to decline due both to reduced ocean productivity associated with warming and increasing ocean acidity. The World Wildlife Fund has declared ~30 km area surrounding southern tip of peninsular Korea as Globally Significant Areas for Mammals in Yellow Sea region, however this area is still undergoing assessment by the Marine Mammal Protected Areas Task Force. Since the project site is in the secondary distribution of the species according to the International Whaling Commission it has been screened out.	Screened out

Sr. no.	Scientific name	Common name	IUCN status	Rationale	Screened in/ out
14	<i>Carcharhinus plumbeus</i>	Sandbar Shark	EN	 https://www.iucnredlist.org/species/3853/2874370 Migratory status – some native and some migratory populations. Estimated extent of occurrence (km²): NA Congregatory – No Global population estimate – NA Habitat: Marine Neritic, Oceanic The Sandbar Shark has a circumglobal distribution. It is demersal and pelagic in tropical and temperate seas on the continental shelf from close inshore to a depth of 280 m. It occurs in shallow waters associated with bays, estuaries, and harbours and offshore on oceanic banks. It is subject to fishing pressure across its range. The species is an important component of target industrial shark fisheries, and is also captured as bycatch in artisanal, industrial, and recreational fisheries. It is captured with multiple fishing gears including gillnet, longline, and trawl and retained for its meat and fins, unless regulations prohibit retention. The species' presence in inshore and estuarine waters and its use of coastal nursery areas means it is also threatened by habitat loss and degradation, including pollution, and clearing. However, there are no confirmed records of this species in and around the project site and is therefore screened out.	Screened out
15	<i>Cetorhinus maximus</i>	Basking Shark	EN	 https://www.iucnredlist.org/species/4292/194720078 Migratory status – No Estimated extent of occurrence (km²): NA Congregatory – No Global population estimate – NA Habitat: Marine Neritic, Oceanic The basking shark (<i>Cetorhinus maximus</i>) is a cosmopolitan, pelagic, and migratory species, with a circumglobal distribution across the temperate and boreal oceans. It is a very large, filter feeding shark, second only to the whale shark in size. Adults grow to lengths of up to 12 meters and weights of up to 20 tons, though specimens of this size are now rare. It is a filter feeder and employs a passive feeding mechanism. Its fins, which are highly sought after for international trade to East Asia, for shark fin soup. It is highly susceptible to shipping vessels and recreational boats. Due to its slow maturity, long longevity and low reproduction rate, the basking shark is extremely vulnerable to overfishing, and population numbers have seen significant and rapid declines in the past few decades. There are no records of this species from in and around the project site and it is screened out.	Screened out
16	<i>Panthera tigris</i>	Tiger	EN	 https://www.iucnredlist.org/species/15955/214862019 Migratory status – No Estimated extent of occurrence (km²): 978,293 Congregatory – No Global population estimate – 2,608-3,905 individuals. Habitat: Forest, Savanna, Shrubland, Grassland, Wetlands Tigers have been extinct and absent from the Korean peninsula for several decades and it is therefore screened out.	Screened out.
17	<i>Isurus oxyrinchus</i>	Shortfin Mako	EN	 https://www.iucnredlist.org/species/39341/2903170 Migratory status – No Estimated extent of occurrence (km²): NA Congregatory – No Global population estimate – NA Habitat: Marine Oceanic	Screened in

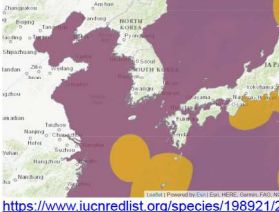
Sr. no.	Scientific name	Common name	IUCN status	Rationale	Screened in/ out
				The Shortfin Mako (<i>Isurus paucus</i>) is widespread in temperate and tropical waters of all oceans. The Shortfin Mako is caught globally as target and bycatch in pelagic commercial and small-scale longline, purse seine, and gillnet fisheries. Most of the catch is taken as bycatch of industrial pelagic fleets in offshore and high-seas waters. The species is generally retained for the meat and fins. This is one of the most valuable shark species due to its high-quality meat. The meat is utilized fresh, frozen, smoked, and dried salted for human consumption. The fins of the Shortfin Mako are commonly traded, comprising 1.2% of the fin imported in Hong Kong in 2014. It regularly occurs near the Korean coast of the yellow sea. This species was found to be second most common species found along the Korean peninsula coast in a survey conducted to estimate the abundances of large fishes in the region from 2011 to 2016 and is reported from in and around the project site and is thereby screened in (Kim, J. K., Kim, H. C., Ryu, J. H., & Ahn, J. S. (2022). Preliminary study on spatio-temporal variations of five giant and 17 large fish species around the Korean peninsula from 2011 to 2016. Fisheries and Aquatic Sciences, 25(5), 298-310.)	
18	<i>Anoxypristis cuspidata</i>	Narrow Sawfish	EN	 Migratory status – Non-migratory Estimated extent of occurrence (km²): NA Congregatory – No Global population estimate – NA Habitat: Marine Neritic, Marine Intertidal The presence of this species near the west coast of Korean peninsula and the project site is uncertain and therefore this species has been screened out (https://www.fishbase.se/summary/Anoxypristis-cuspidata.html). (Dulvy, N. K., Davidson, L. N., Kyne, P. M., Simpfendorfer, C. A., Harrison, L. R., Carlson, J. K., & Fordham, S. V. (2016). Ghosts of the coast: global extinction risk and conservation of sawfishes. Aquatic Conservation: Marine and Freshwater Ecosystems, 26(1), 134-153.)	Screened out
19	<i>Neophocaena asiaeorientalis</i>	Narrow-ridged Finless Porpoise	EN	 https://www.iucnredlist.org/species/41754/50381766 Migratory status – No Estimated extent of occurrence (km²): NA Congregatory – No Global population estimate – NA Habitat: Marine Oceanic In general, this species occurs in a narrow strip of shallow (usually <50 m deep) coastal water around the western Pacific Ocean from the Taiwan Strait to the waters of northern China, Korea and northern Honshu, Japan. The distribution also includes a few estuaries and rivers (e.g., the <i>N. a. asiaeorientalis</i> subspecies appears to be found exclusively in the Yangtze River system. Narrow-ridged Finless Porpoises are found mainly in coastal waters, including shallow bays, possibly mangrove swamps, estuaries, and some large rivers. However, they can also occur in shallow waters (<200 m deep) quite far from shore (up to 240 km). They appear to have a strong preference for waters with a sandy or soft bottom. Small fishes, cephalopods, and crustaceans (mainly demersal species) form the diet of Finless Porpoises. Finless Porpoises, like other phocoenids are extremely susceptible to entanglement in gillnets, and large numbers have been, and continue to be, killed in many parts of their range. In Korea (information is available only from the Republic of Korea), an official reporting system implemented in 2011 resulted in a count of 2,107 Finless Porpoises bycaught inshore, mainly along the west coast, in 2012. Latest research indicates that the population of the finless porpoises has declined by more than 70% from 2004-05 and 2011 (Park, K. J., Sohn, H., An, Y. R., Kim, H. W., & An, D. H. (2015). A new abundance estimates for the finless porpoise <i>Neophocaena asiaeorientalis</i> on the west coast of Korea: An indication of population decline. Fisheries and Aquatic Sciences, 18(4), 411-416.). Since the ecologically appropriate area of analysis overlaps with the extant distribution range of the species it has been screened in.	Screened in
20	<i>Epinephelus akaara</i>	Hong Kong Grouper	EN	 https://www.iucnredlist.org/species/43974/100459934 Migratory status – No Estimated extent of occurrence (km²): NA Congregatory – No Global population estimate – NA Habitat: Marine Oceanic This western Pacific species occurs in southern Japan, Republic of Korea, and southern China, including Hong Kong and Taiwan Extant distribution overlaps EAAA however, the modelled distribution of the species predicts its occurrence near the project site with a probability of <20% and therefore the species is screened out (https://www.fishbase.se/summary/Epinephelus-akaara.html).	Screened out

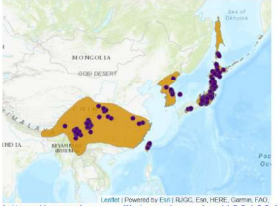
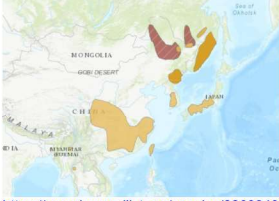
Sr. no.	Scientific name	Common name	IUCN status	Rationale	Screened in/ out
21	<i>Rhinobatos hynnicephalus</i>	Ringed Guitarfish	EN	 https://www.iucnredlist.org/species/60167/124446775 Migratory status – non migratory Estimated extent of occurrence (km²): NA Congregatory – No Global population estimate – NA Habitat: Marine Neritic The Ringed Guitarfish is endemic to the Northwest Pacific where it is found from Japan to Vietnam, including South Korea, China, and Taiwan. It is demersal on the continental shelf at depths of 20–100 m. It reaches a maximum size of 100 cm total length. In South Korea, the reconstructed catch data showed a 97% decline in landings of sharks, rays, and skates over 46 years from 1969 to 2014. Fishing effort in South Korea has increased by about one-quarter since the 1950s. The Ringed Guitarfish is subject to heavy fishing pressure on its coastal and shelf habitats across its entire range. It is captured in industrial, artisanal, and subsistence fisheries with multiple fishing gears, including trawl, gillnet, longline, hook and line, trap, and seine net, and is retained for the meat and fins. This species has been screened in as the extant distribution overlaps with the ecologically appropriate area of analysis for the project site (https://www.fishbase.se/summary/Rhinobatos-hynnicephalus.html).	Screened in
22	<i>Mobula tarapacana</i>	Sicklefin Devil Ray	EN	 https://www.iucnredlist.org/species/60199/214371388 Migratory status – non-migratory Estimated extent of occurrence (km²): NA Congregatory – No Global population estimate – NA Habitat: Marine Neritic The Sicklefin Devil Ray has a patchy circumglobal distribution and is found in tropical, subtropical, and temperate waters of the Pacific, Atlantic, and Indian Oceans. This species is primarily oceanic, but is also found in coastal waters, and appears to be a seasonal visitor along productive coastlines with regular upwelling in oceanic island groups, and near offshore pinnacles and seamounts. The Sicklefin Devil Ray has been observed travelling both in schools and in solitude. The species is highly mobile and capable of significant migrations. This species is targeted and caught incidentally in industrial and artisanal fisheries. Its tendency to aggregate makes mobulid rays particularly susceptible to bycatch in purse seine fisheries and longline fisheries, targeted capture in artisanal fisheries, and incidental entanglement. Global landings of mobulid species, including the Sicklefin Devil Ray, have been increasing steadily due in large part to the recent rise (from the 1990s onwards) in demand for gill plates. Indirect and sublethal sources of mortality include habitat destruction and degradation, climate change, ocean acidification, oil spills, and other pollution and contaminants. The modelled distribution of the species predicts its occurrence near the project site at <20% probability (https://www.fishbase.se/summary/Mobula-tarapacana.html). This species is screened out because of its global distribution and no confirmed records from the Yellow Sea or the region of the project site.	Screened out
23	<i>Mobula thurstoni</i>	Bentfin Devil Ray	EN	 https://www.iucnredlist.org/species/60200/214368409 Migratory status – non-migratory Estimated extent of occurrence (km²): NA Congregatory – No Global population estimate – NA Habitat: Marine Neritic The Bentfin Devil Ray has a patchy circumglobal distribution and is found in tropical, subtropical, and temperate waters of the Pacific, Atlantic, and Indian Oceans. This species is primarily oceanic, but is also found in coastal waters, and appears to be a seasonal visitor along productive coastlines with regular upwelling in oceanic island groups, and near offshore pinnacles and seamounts. This species is targeted and caught incidentally in industrial and artisanal fisheries. Its tendency to aggregate makes mobulid rays particularly susceptible to bycatch in purse seine fisheries and longline fisheries, targeted capture in artisanal fisheries, and incidental entanglement. Global landings of mobulid species, including the Bentfin Devil Ray, have been increasing steadily due in large part to the recent rise (from the 1990s onwards) in demand for gill plates. Indirect and sublethal sources of mortality include habitat destruction and degradation, climate change, ocean acidification, oil spills, and other pollution and contaminants. The species is screened out as the confirmed extant distribution of the species does not overlap with the ecologically appropriate area of analysis of the project site. The modelled distribution of the species predicts its occurrence near the project site at <20% probability (https://www.fishbase.se/summary/Mobula-tarapacana.html). This species is screened out because of its global distribution and no confirmed records from the Yellow sea or the region of the project site. (https://www.fishbase.se/summary/Mobula-thurstoni.html)	Screened out

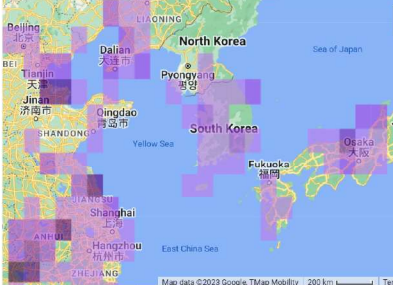
Sr. no.	Scientific name	Common name	IUCN status	Rationale	Screened in/ out
24	<i>Isurus paucus</i>	Longfin Mako	EN	 https://www.iucnredlist.org/species/60225/3095898 Migratory status – non-migratory Estimated extent of occurrence (km²): NA Congregatory – No Global population estimate – NA Habitat: Marine Oceanic The Longfin Mako is widespread in tropical and warm temperate waters, and likely occurs in all oceans, although its distribution is poorly recorded. The Longfin Mako is a poorly known epi-, meso- and bathypelagic species found in tropical and warm-temperate seas. It usually occurs to depths of 760 m, but has been reported to 1,752 m. But several resources such as https://www.floridamuseum.ufl.edu do not specify its presence in the Yellow Sea. The Longfin Mako is caught globally as target and bycatch in pelagic commercial and small-scale longline, purse seine, and gillnet fisheries. This species has been screened out as its presence along the western coast of peninsular Korea is uncertain.	Screened out
25	<i>Squatina nebulosa</i>	Clouded Angelshark	EN	 https://www.iucnredlist.org/species/161325/134193576 Migratory status – non-migratory Estimated extent of occurrence (km²): NA Congregatory – No Global population estimate – NA Habitat: Marine Neritic The Clouded Angelshark is endemic to the Northwest Pacific Ocean, where it occurs from Japan to Taiwan, including the Ryukyu Islands, North and South Korea, and China. The population trend of the Clouded Angelshark has decreased and populations have dramatically declined (>80%) when fished intensively for as little as two decades. The Clouded Angelshark is demersal on the continental shelf and upper slope at depths of 0–330 m. This species is subject to fishing pressure across its spatial and depth range. It is taken as bycatch by demersal trawl, gillnet, set net, and longline and retained (Weigmann, S., Vaz, D. F., Akhilesh, K. V., Leeney, R. H., & Naylor, G. J. (2023). Revision of the Western Indian Ocean Angel Sharks, Genus <i>Squatina</i> (Squatiformes, Squatinidae), with Description of a New Species and Redescription of the African Angel Shark <i>Squatina africana</i> Regan, 1908. <i>Biology</i>, 12(7), 975.) In South Korea, fishing effort has increased by about one-quarter since the 1950s. The Yellow Sea was once one of the most intensively exploited Large Marine Ecosystems in the world and is considered severely impacted in terms of overfishing, with destructive fishing practices. Indirect and sublethal sources of mortality include dramatic habitat loss in the region. In both the East and South China Seas, reclamation has contributed to a dramatic reduction in coastal and mangrove wetlands, with a loss of 70% of mangroves in the last 70 years in the South China Sea, where there has also been modification of up to 50% of seagrass beds. This species has been screened in as the extant distribution overlaps with the ecologically appropriate area of analysis for the project site.	Screened in
26	<i>Triakis scyllium</i>	Banded Houndshark	EN	 https://www.iucnredlist.org/species/161395/124476903 Migratory status – non-migratory Estimated extent of occurrence (km²): NA Congregatory – No Global population estimate – NA, Range restricted. Habitat: Marine Neritic The Banded Houndshark is endemic to the Northwest Pacific where it occurs in Russia (Vladivostok and southern Kuril Islands), Japan, Republic of Korea, Democratic Republic of Korea, Taiwan, and China. There are no species-specific time-series available. It is regularly seen at fish markets on the south coast of South Korea and is considered the most abundant shark in Republic of Korea's waters, however this abundance is typically judged relative to other depleted species and <10 individuals at a time are observed. The Banded Houndshark is demersal on the continental shelf at depths of 30–150 m. This species does not occur in shallow waters and is therefore screened out as its extant distribution does not overlap with the ecologically appropriate area of analysis for the project site.	Screened out
27	<i>Squalus japonicus</i>	Japanese Spurdog	EN	 https://www.iucnredlist.org/species/161433/124484752 Migratory status – non-migratory Estimated extent of occurrence (km²): NA Congregatory – No Global population estimate – NA, Range restricted. Habitat: Marine Neritic, Marine Deep Benthic The Japanese Spurdog is endemic to Northwest Pacific from southeast Japan to China, including South and North Korea and Taiwan. The Japanese Spurdog is demersal on the continental shelf and upper slope at depths of 52–400 m. The Japanese Spurdog is subject to fishing pressure across its range. It is taken as bycatch by demersal trawl, longline, and possibly gillnet, and is retained. Since the habitat of the	Screened out

Sr. no.	Scientific name	Common name	IUCN status	Rationale	Screened in/ out
				species is deep marine benthic it is unlikely to occur on along the shallow coastline where the project is situated.	
28	<i>Hemirhamphysa japonica</i>	Japanese Topeshark	EN	 https://www.iucnredlist.org/species/16150/12449/048 Migratory status – non-migratory Estimated extent of occurrence (km²): NA Congregatory – No Global population estimate – NA, Range restricted. Habitat: Marine Neritic The Japanese Topeshark is endemic to the Northwest Pacific Ocean where it occurs in southern Japan, Republic of Korea, Democratic Republic of Korea, Taiwan, and China. There are no species-specific time-series available. Catches of sharks, rays, and skates from 1950–2014 have been reconstructed for Japan, China, and South Korea EEZs, based on landings data. In South Korea, the reconstructed catch data showed a 97% decline in landings of sharks, rays, and skates over 46 years from 1969–2014. There were minimal catches during 1950 that then rose steeply during the mid-1960s to a peak of 8,900 t followed by a steady decline to 294 t in 2014. The Japanese Topeshark is demersal on the continental shelf from inshore to a depth of 100 m. This species is screened in as it is likely to occur at the project site.	Screened in
29	<i>Hemirhamphysa sinensis</i>	Chinese Stingray	EN	 https://www.iucnredlist.org/species/16150/12449/048 Migratory status – non-migratory Estimated extent of occurrence (km²): NA Congregatory – No Global population estimate – NA, Range restricted. Habitat: Marine Neritic The Chinese Stingray is endemic to the Northwest Pacific from South Korea to China, including North Korea. In South Korea, the reconstructed catch data showed a 97% decline in landings of sharks, rays, and skates over 46 years from 1969 to 2014. There were minimal catches during 1950 that then rose steeply during the mid-1960s to a peak of 8,900 t followed by a steady decline to 294 t in 2014. Historical and current fishing pressure ('actual levels of exploitation') is very high across the entire spatial and depth range of the Chinese Stingray. The Chinese Stingray is demersal on the continental shelf, primarily inshore and probably at depths of 0–200 m, although no specific information is available on its maximum depth. The Chinese Stingray is subject to fishing pressure across its entire spatial range. It is taken as bycatch in industrial and artisanal fisheries with multiple fishing gears, including trawl, and probably set net and gillnet, and is retained for human consumption and fish meal. The demand for seafood in South Korea is very high at 53.5 kg per capita in 2013, compared to that in China of 33.1 kg per capita in 2010. This species is screened in as it is likely to occur in and around the project site.	Screened in
30	<i>Mustelus manazo</i>	Starspotted Smoothhound	EN	 https://www.iucnredlist.org/species/161633/124518703 Migratory status – non-migratory Estimated extent of occurrence (km²): NA Congregatory – No Global population estimate – NA, Range restricted. Habitat: Marine Neritic, Marine Deep Benthic The Starspotted Smooth hound occurs in the Northwest and Western Central Pacific Oceans from southern Russia to Borneo, including Japan, North and South Korea, China, Taiwan, Vietnam, and the Philippines. There are no species-specific time-series available. Once a common commercial species, the population has declined drastically over the last few decades due to fishing and it is now become rare. The Starspotted Smooth hound is demersal from intertidal waters to a depth of 360 m. The species is valued for its meat and fins. Extant distribution overlaps EAAA but given the large extent of its distribution it may rarely occur near the project site and is therefore screened out.	Screened out
31	<i>Beringraja pulchra</i>	Mottled Skate	EN	 https://www.iucnredlist.org/species/161669/124525206 Migratory status – non-migratory Estimated extent of occurrence (km²): NA Congregatory – No Global population estimate – NA, Range restricted. Habitat: Marine Neritic, Marine Deep Benthic The Mottled Skate is endemic to the Northwest Pacific Ocean from China to the Sea of Okhotsk, Russia, including Taiwan, North and South Korea, and Japan. The Mottled Skate previously underwent a severe population reduction inferred from the decline in catch landings. In South Korea, the average annual catch of this species sharply declined from 3,500 metric tons (mt) in the 1992 to 250 mt in 2001. The Mottled Skate is demersal on the inner continental shelf at depths of 5–30 m. Skates are targeted using trawls,	Screened in

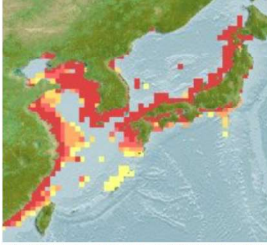
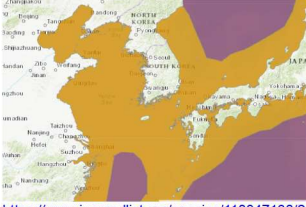
Sr. no.	Scientific name	Common name	IUCN status	Rationale	Screened in/ out
				longlines, and set gillnets off southern Korea. International demand for skates in Korea is very high, driven by demand for Hongoe or Hongoehoe, fermented skate meat which is a traditional delicacy. This species is screened in as its extant distribution overlaps the ecologically appropriate area of analysis. This species occurs all along the western coast of the Korean peninsula and spawns year-round and has two egg capsules containing 7-8 eggs each. It has been reported from Daechong-do which is an island 280 kms north of the project site and from Heuksan-do which is ~ 60 kms south of the project site. Peak spawning period occurs from April to June (Kang, H. W., Jo, Y. R., Kang, D. Y., Jeong, G. S., & Jo, H. S. (2013). Spawning characteristics and artificial hatching of female mottled skate, <i>Beringraja pulchra</i> in the West Coast of Korea. Development & reproduction, 17(3), 247). This species is highly likely to occur at the project site and is screened in.	
32	<i>Halaelurus buergeri</i>	Blackspotted Catshark	EN	 https://www.iucnredlist.org/species/161680/124527450 Migratory status – non-migratory Estimated extent of occurrence (km²): NA Congregatory – No Global population estimate – NA, Range restricted. Habitat: Marine Neritic, Marine Deep Benthic The Blackspotted Catshark is endemic to Northwest and Western Central Pacific Oceans. In the Northwest Pacific, it is found from Japan to China, including North and South Korea and Taiwan. Catches of sharks, rays, and skates from 1950 to 2014 have been reconstructed for Japan, China, South Korea, and Borneo EEZs, based on landings data. In South Korea, the reconstructed catch data showed a 97% decline in landings of sharks, rays, and skates over 46 years from 1969 to 2014. There were minimal catches during 1950 that then rose steeply during the mid-1960s to a peak of 8,900 t followed by a steady decline to 294 t in 2014. Fishing effort in South Korea has increased by about one-quarter since the 1950s. The Blackspotted Catshark is demersal on the continental shelf at depths of 27–100 m. There is a high level of fisheries resource use across the range of the Blackspotted Catshark and this species is subject to fishing pressure across its entire range. It is taken as bycatch in industrial and artisanal fisheries with multiple fishing gears including trawl, seine net, gillnet, and torchlight net. Trawls operate across the entire depth range of this species, while the other net fisheries likely operate in its upper depth range. The probability of this species occurring at the project site is 0 as per the modelled distribution of the species (https://www.aquamaps.org/preMap2.php?cache=1&SpecID=Fis-23141). The species is thereby screened out.	Screened out
33	<i>Mustelus griseus</i>	Spotless Smoothhound	EN	 https://www.iucnredlist.org/species/161715/124532728 Migratory status – non-migratory Estimated extent of occurrence (km²): NA Congregatory – No Global population estimate – NA, Range restricted. Habitat: Marine Neritic, Marine Deep Benthic The Spotless Smooth-hound is endemic to the Northwest and Western Central Pacific Oceans where it occurs from Japan to Vietnam, including the Koreas, China, and Taiwan. There are no species-specific time-series available. The Spotless Smooth-hound is demersal from inshore waters to a depth of 260 m. The Spotless Smooth-hound is subject to fishing pressure across its range. It was previously targeted and is now taken as bycatch in industrial and artisanal fisheries with multiple fishing gears including trawl, longline, set net, and gillnet. Trawls and longline operate across the entire depth range of this species, while the other net fisheries likely operate in its upper depth range. All incidental catch is retained for human consumption. There is a high level of fisheries resource use across the range of the Spotless Smooth-hound. The species is rarely likely to occur at the project site given its extent of distribution and is screened out.	Screened out
34	<i>Anguilla japonica</i>	Japanese Eel	EN	 https://www.iucnredlist.org/species/166184/176493270 Migratory status – migratory Estimated extent of occurrence (km²): NA Congregatory – No Global population estimate – NA Habitat: Wetlands (inland), Marine Neritic, Marine Oceanic, Artificial/Aquatic & Marine The range of this species extends from the Pacific coast of Japan and south to Hainan Island covering large areas of mainland China, Taiwan, and South Korea. Most population genetic studies have previously indicated that <i>Anguilla japonica</i> consists of one genetically homogenous, panmictic population. The species is catadromous, spending its lifetime in freshwater, estuaries, and coastal environments, including rivers, streams, lakes and wetlands, but it migrates thousands of kilometres to spawn. While anguillids are often referred to as 'freshwater eels', it is known that they can exhibit inter-habitat migration and movements. The proportion of yellow eels that remain in saline waters, rarely, if ever, entering fresh water, is particularly poorly understood which makes management challenging. However, they are not reported to occur in the western coast of Korean peninsula and are therefore screened out. <i>Anguilla japonica</i>, as with all anguillid eels, is susceptible to several, primarily anthropogenic, threats. These threats include but are not limited to: barriers to migration, climate change, habitat degradation, invasive species, parasitism, pollution, predation, and unsustainable exploitation.	Screened out

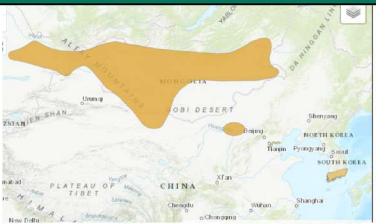
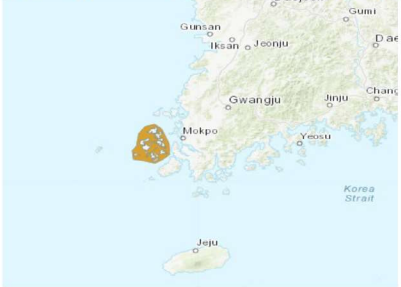
Sr. no.	Scientific name	Common name	IUCN status	Rationale	Screened in/ out
35	<i>Phyllospadix japonicus</i>	Asian Surf Grass	EN	 https://www.iucnredlist.org/species/173341/6994909 Migratory status – non-migratory Estimated extent of occurrence (km²): 500, Range restricted Congregatory – No Global population estimate – NA Habitat: Marine Neritic <i>Phyllospadix japonicus</i> occurs in the northwestern Pacific from the northeast coast of China to South Korea and northwestern Honshu, Japan. Its distribution is very limited. Given its shallow depth range, patchy occurrence, and current distribution, this species has an area of occupancy estimated to be less than 500 km². <i>Phyllospadix japonicus</i> inhabits the intertidal and subtidal rocky bottoms of temperate regions of Japan and China. In South Korea, it occurs mainly on rocky substrata along the east coast and distributed on soft sediments and rocky substrata from intertidal to a depth of approximately 15 m in coastal waters of Korea (Lee, K-S., Kim, S.H., Kim, Y.K., 2016. Current status of seagrass habitat in Korea. In: Finlayson, C.M. et al. (Eds). Wetland Book. Springer Netherlands, pp. 1-8) This species has been observed in both sheltered and open shores, but usually grows in high-energy environments. This species lives at depths from 0-8 m. Major threats to <i>P. japonicus</i> include coastal development, shoreline hardening and kelp aquaculture. The recruitment rate of this species is low as it inhabits a high energy environment, where conditions need to be right for seeds to be successful (PARK, J. I., KIM, J. H., KIM, J. H., & KIM, M. S. (2019). Growth dynamics of the surfgrass, <i>Phyllospadix japonicus</i> on the southeastern coast of Korea. The Sea Journal of the Korean Society of Oceanography, 24(4), 548-561.). This species is likely to occur in and around the project site and is therefore screened in as it is reported from the southwestern coast of peninsular Korea (Hong, S. J., & Lee, J. H. (2022). Distribution of Seagrass in the Southwest Coast and Dadohaehaesang National Park of Korea. Aquatic Nature, 2(1), 39-47.)	Screened in
36	<i>Zostera geojeensis</i>		EN	 https://www.iucnredlist.org/species/173345/6995781 Migratory status – non-migratory Estimated extent of occurrence (km²): 500, Range restricted Congregatory – No Global population estimate – NA Habitat: Marine Neritic <i>Zostera geojeensis</i> has an extremely limited distribution. It occurs in only two locations on the west coast and south coast of South Korea – Chungcheongnam-do ~ 150 kms from the project site and Gyeongsangnam-do ~ 200 kms from the project site. In Korea, <i>Zostera geojeensis</i> is threatened by the hardening of shorelines, dredging and land reclamation. However, it is not reported from the region where the project site is located and has therefore been screened out.	Screened out
37	<i>Apostichopus japonicus</i>	Japanese Spiky Sea Cucumber	EN	 https://www.iucnredlist.org/species/180424/1629389 Migratory status – non-migratory Estimated extent of occurrence (km²): NA Congregatory – No Global population estimate – NA Habitat: Marine Neritic <i>Apostichopus japonicus</i> is found in the Northwest Pacific including Japan (from Hokkaido to Kyushu), China, Korean Peninsula and Far Eastern Russia. Catches of this species have significantly declined over the past 50 years throughout its range, and wild populations of this species are considered mostly extirpated from China. <i>Apostichopus japonicus</i> is found in shallow coastal bottom communities from the intertidal zone to depths of 40 m, possibly more (Choo 2008). It forms aggregations, usually in the upper sublittoral zone in the subtropics. Juveniles are often associated with algal/seagrass and oyster beds. <i>A. japonicus</i> ingests organic matter, bacteria, protozoa, diatoms as well as plant and animal detritus and re-utilizes residual food and feces. It becomes inactive when water temperature exceeds 18 °C and will aestivate at water temperatures about 20–24.5°C. They inhabit gravel bed offshore and sand-muddy bottom inshore (Choo, P. S. (2008). Population status, fisheries, and trade of sea cucumbers in Asia). <i>Apostichopus japonicus</i> is one of the most important commercial species in Asia with the longest history of exploitation. It may occur in and around the project site and is screened in.	Screened in
38	<i>Mobula birostris</i>	Oceanic Manta Ray	EN	 https://www.iucnredlist.org/species/198921/214397182 Migratory status – migratory Estimated extent of occurrence (km²): NA Congregatory – No	Screened out

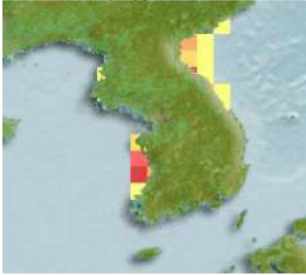
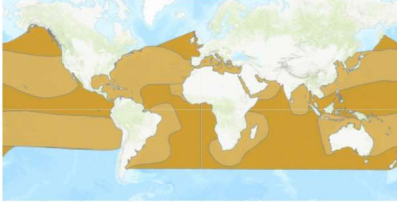
Sr. no.	Scientific name	Common name	IUCN status	Rationale	Screened in/ out
				Global population estimate – NA Habitat: Marine Neritic The Oceanic Manta Ray is circumglobal in tropical and temperate waters from the surface to 1,000 m depth. Although the distribution overlaps the ecologically appropriate area of analysis of the project site the habitat of the species is deep ocean, and it usually does not come close to land. The project site is located 20-30 kms from the mainland and surrounded by islands. This species usually occurs in deep sea and transverse the globe using currents and is unlikely to occur near the project site and is thereby screened out.	
39	<i>Trillium tschonoskii</i>	Keun-yeon-yeong-cho	EN	 https://www.iucnredlist.org/species/18816841/84010024 Migratory status – NA Estimated extent of occurrence (km²): NA Congregatory – No Global population estimate – NA Habitat: Forest <i>Trillium tschonoskii</i> is a plant species and is the most widely distributed species among Asiatic <i>Trillium</i>. The distribution range of the species varies from lowland deciduous forest floor to subalpine mixed forest of conifers and subalpine birch at an altitude of 1,000 to 3,200 m. This species is found on the mainland and does not overlap with the ecologically appropriate area of analysis of the project and therefore has been screened out.	Screened out
40	<i>Mergus squamatus</i>	Scaly-sided Merganser	EN	 https://www.iucnredlist.org/species/22680488/118860238 Migratory status – migratory Estimated extent of occurrence (km²): 731,000 Congregatory – Congregatory and dispersive. Global population estimate – 2,400-4,500 individuals Habitat: Forest, Wetlands (inland), Marine Neritic. Small numbers winter in Japan, South Korea (150-200 individuals estimated for South Korea in 2012). It breeds below c.900 m in mountainous areas, along clear flowing rivers with tall riverine forest, mainly within the temperate conifer-broadleaf forest zone. It is largely confined to primary forests, with an abundance of potential nest-holes. On passage and in winter it feeds along large rivers and tracking of several birds over multiple years suggests winter site fidelity. Primary threats include loss of primary forests, damming of rivers, illegal hunting, human disturbance, and use of poisons and explosives for fishing and pollution. This species is confined to forest habitats and winters in north Russia and unlikely to occur near the coast and the yellow sea is not likely to occur near the project site and is therefore screened out.	Screened out
41	<i>Numenius madagascariensis</i>	Far Eastern Curlew	EN	 https://www.iucnredlist.org/species/22693199/118601473 Migratory status – migratory Estimated extent of occurrence (km²): 5,590,000 Congregatory – Congregatory and dispersive. Global population estimate – 32,000 Habitat: Forest, Wetlands (inland), Marine Neritic. The Far Eastern Curlew breeds in eastern Russia, from the upper reaches of the Nizhnyaya Tunguska river east through the Verkhoyarsk mountains to Kamchatka, and south to Primorye and north-eastern Mongolia (del Hoyo et al. 1996). The Yellow Sea region of Democratic People's Republic of Korea, Republic of Korea and China is a particularly important stopover site on northward and southward migration. The species breeds on open mossy or transitional bogs, moss-lichen bogs, and wet meadows, and on the swampy shores of small lakes; in the non-breeding season it is essentially coastal, occurring at estuaries, mangrove swamps, saltmarshes, and intertidal flats, particularly those with extensive seagrass (<i>Zosteraceae</i>) meadows. Its diet on breeding grounds includes insects, such as larvae of beetles and flies, and amphipods. Berries are also consumed during the autumn migration. In non-breeding areas it feeds on marine invertebrates, preferentially taking crabs and small molluscs but also feeding on other crustaceans and polychaete worms. Habitat loss on the Yellow Sea staging grounds is probably the primary threat to the species, with loss of stopover sites thought to be responsible for shorebird population declines on the East Asian-Australasian Flyway. It is estimated that up to 65% of intertidal habitat in the Yellow Sea has been lost over the past 50 years, with the rate of habitat loss estimated at >1% every year. This scale of habitat loss is predicted to continue owing to growing populations around the Yellow Sea. Further threats may include disturbance at the nesting and feeding sites direct persecution throughout its range, and a decrease in the availability of food due to pollution at stopover points in South Korea. Since the stopover points and extant distribution of the species overlaps with the ecologically appropriate area of analysis this species is screened in.	Screened in

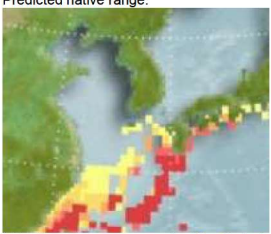
Sr. no.	Scientific name	Common name	IUCN status	Rationale	Screened in/ out
42	<i>Platalea minor</i>	Black-faced Spoonbill	EN	 https://www.iucnredlist.org/species/22697568/119347801 Migratory status – migratory Estimated extent of occurrence (km²): 169,000 Congregatory – Congregatory and dispersive. Global population estimate – 2,250 Habitat: Marine Intertidal, Marine Coastal/Supratidal. <i>Platalea minor</i> breeds on islets off the west coast of North Korea and South Korea, and offshore islets in Liaoning province in mainland NE China. Some of the important breeding sites off the western coast of peninsular Korea include – Jindo Island ~ 90 km, Muan ~ 50 km, Chilsando Islet ~ 30 km, Mangyeong River ~ 90 km, Keum River estuary ~ 87 km from the project site (Kang, J. H., Kim, I. K., Lee, K. S., Lee, H., & Rhim, S. J. (2016). Distribution, breeding status, and conservation of the black-faced spoonbill (<i>Platalea minor</i>) in South Korea. Forest Science and Technology, 12(3), 162-166.). It breeds in mixed colonies on small islands from March to August. Breeding success is low. It is mainly a crepuscular feeder and utilises intertidal mudflats, resting, sleeping, and digesting occur at a variety of sites (trees, man-made structures, shallow water) within 2-3 km of feeding areas. Satellite tracking has shown that birds wintering in Hong Kong and Taiwan migrate along the coast of eastern China to northern Jiangsu, then over the Yellow Sea to the Korean peninsula. The Chilsan Archipelago where the project is located is an important breeding site constitutes the southern breeding point of this species and is an important site as it helps buffer population concentrated in the Gyeonggi Bay area. In a long-term study from 2014 to 2018, a slight increase in the population was observed but the region and the breeding islands need to remain undisturbed and supported by conservation activities such as management of other species and provision of vegetation that is used as nesting material by the birds [Son, S. J., Lee, K. S., Kwon, I. K., Kang, J. H., Lee, S. K., Kim, I. K., & Yoo, J. C. (2021)]. Black-faced Spoonbill <i>Platalea minor</i> population trends, breeding success, and nest characteristics in the Chilsan Archipelago, South Korea. Ornithological Science, 20(1), 57-64.) Wintering birds form large aggregations, and it has been recorded amongst flocks of Eurasian Spoonbills <i>Platalea leucorodia</i>. pollution from pesticides is most congruent with demographic history, in terms of scale and timing of declines and subsequent recovery, as an explanation of past population reduction. Habitat destruction is probably the biggest threat currently. The breeding range of this species lies almost entirely in the Yellow Sea area where the intertidal mudflat has been reclaimed in an alarmingly fast rate. The main wintering grounds are threatened by industrial development and reclamation, especially in South Korea, Japan, and China. An outbreak of botulism at one of the major wintering sites killed 73 birds representing 7% of the world population from December 2002 to February 2003. This species is screened in.	Screened in
43	<i>Ciconia boyciana</i>	Oriental Stork	EN	 https://ebird.org/species/oristo1 Migratory status – Full migrant Estimated extent of occurrence (km²): 941,000 Congregatory – Congregatory and dispersive. Global population estimate – 1,000-2,499 Habitat: Forest, Wetlands (inland), Marine Coastal/Supratidal. The Oriental Stork nests on tall trees and artificial structures such as electricity pylons. It feeds on fish and small animals in open, usually fresh water, wetlands, and occasionally coastal tidal flats. It often feeds in shallow water (20-30 mm) and is often seen in rice paddy fields. Deforestation and drainage of wetlands for agricultural development are the main causes of decline in its breeding grounds. A satellite-tracking study indicated very high juvenile mortality on passage and in winter. Pollution is another threat to the birds. This species is screened in.	Screened in
44	<i>Argyrosomus japonicus</i>	Dusky Meagre	EN	 https://www.iucnredlist.org/species/59034974/59034995 Migratory status – NA Estimated extent of occurrence (km²): NA Congregatory – NA Global population estimate – NA Habitat: Marine Neritic <i>Argyrosomus japonicus</i> is a pantropical fish species occurring throughout the Indo-West Pacific from South Africa to Beira, Mozambique. This species occurs in nearshore, turbid coastal habitats and is found in estuaries, in the surf zone, and in the nearshore zone to depths of about 100 m. Large individuals tend to occur near the mouths of estuaries, in surf zones, and near rocky reefs and ridges offshore. Juveniles are estuary dependent and euryhaline. In the nearshore environment, the species rarely ventures onto the soft, flat substrates exploited by trawlers and prefers reefs, especially wrecks or high-profile rocky reefs that are associated with sand. Overexploitation and habitat loss are the major threats to <i>A. japonicus</i>. Screened out as the species does not prefer soft sand areas found at the project site.	Screened out

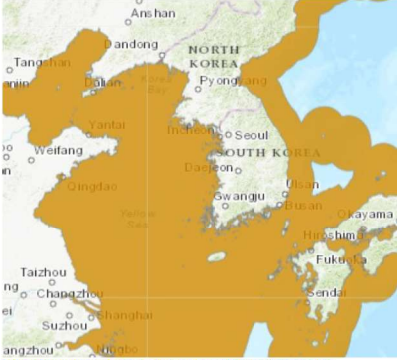
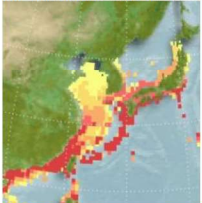
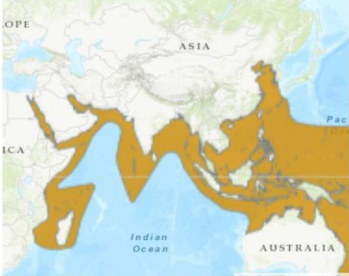
Sr. no.	Scientific name	Common name	IUCN status	Rationale	Screened in/ out
45	<i>Evynnis cardinalis</i>	Threadfin Porgy	EN	 https://www.iucnredlist.org/species/59034974/59034995 Migratory status – NA Estimated extent of occurrence (km²): NA Congregatory – NA Global population estimate – NA Habitat: Marine Neritic <i>Evynnis cardinalis</i> is distributed in the northwest Pacific from China, Japan and Korea to Vietnam and Indonesia. <i>Evynnis cardinalis</i> is more common in the southern part of its range. This species is considered to have three geological stocks: Taiwan Strait stock, South China sea stock and the Beibu Gulf stock. <i>Evynnis cardinalis</i> is threatened by overexploitation. This species rarely occurs in its northern distribution boundary where the project site is located and is therefore screened out.	Screened out
46	<i>Fomitopsis officinalis</i>	Eburiko	EN	 https://www.iucnredlist.org/species/75104087/75104095 Migratory status – NA Estimated extent of occurrence (km²): NA Congregatory – NA Global population estimate – NA Habitat: Forest This species is a terrestrial fungus which grows on dead bark and does not occur in and around the project site and is screened out.	Screened out
47	<i>Haliotis discus</i>		EN	 https://www.iucnredlist.org/species/78764186/78772433 Migratory status – NA Estimated extent of occurrence (km²): NA Congregatory – NA Global population estimate – NA Habitat: Marine Neritic <i>Haliotis discus</i> is an important commercial species of abalone. There are two subspecies: <i>Haliotis discus discus</i> (Kuro-awabi), which can grow to 232 mm and occurs in the waters of Japan off Honshu (except for north-eastern coast), Kyushu and Shikoku, and Jeju in Korea (An et al. 2005, Geiger and Owen 2012, Hirase et al. 2021); and the commercially more important <i>H. d. hannai</i> (Ezo-awabi), which is slightly smaller at 154 mm and occurs off Korea as well as Japan on the western coast of Hokkaido and northern Pacific coast of Honshu. This species has been overexploited throughout its range since the 1970s, although fluctuations in catch levels have been identified. Nevertheless, the general trend has seen an overall declining catch indicating reduced populations. Rising sea water temperatures and water chemistry, disease, poaching and loss of seaweed beds are other factors contributing the decline of the species. This species has been screened in.	Screened in
48	<i>Coilia mystus</i>	Osbeck's Grenadier Anchovy	EN	 https://www.iucnredlist.org/species/98894402/143840543 Migratory status – NA Estimated extent of occurrence (km²): NA Congregatory – NA Global population estimate – NA Habitat: Marine Neritic This species occurs in the western Pacific from northern Vietnam along the coast of mainland China to the western Korean Peninsula. This species inhabits marine coastal waters and estuaries. This species is experiencing threats from over fishing (especially of juveniles), juvenile occurrence as bycatch, pollution, and habitat degradation. Additionally, this species was previously (1970s) present in the Geum River estuary located ~ 85 km from the project site, in South Korea but has been potentially extirpated from this river after the construction of an estuary barrage in the 1990s despite the inclusion of fish passageways (Hwang, S., & Choi, K. H. (2022). Comparative fish community structure among different types of enclosures of estuarine environments. <i>Aquaculture and Fisheries</i>, 7(3), 336-344. Since it is locally extinct from estuaries near the project site this species is screened out. The species has been screened out as it is unlikely to be present at the project site.	Screened out

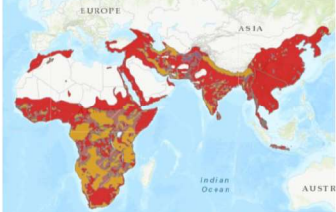
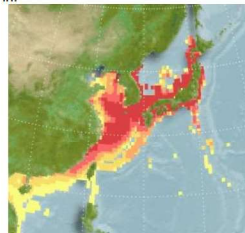
Sr. no.	Scientific name	Common name	IUCN status	Rationale	Screened in/ out
49	<i>Coilia nasus</i>	Japanese Grenadier Anchovy	EN	 https://www.iucnredlist.org/species/98895427/143840780 Migratory status – NA Estimated extent of occurrence (km²): NA Congregatory – NA Global population estimate – NA Habitat: Wetlands (inland), Marine Neritic This species occurs in the western Pacific from Canton, China, north along the mainland coast to the Yellow and Bohai seas. This anadromous species inhabits coastal marine, estuarine and riverine waters. It spends its first year in freshwater and then enters brackish/marine waters as far as 300 km from the coast. This species is heavily exploited in both China and Japan, with near extirpation observed in the Yangtze and Yellow River. The distribution modelling for this species indicates that it is 80% likely to occur at the region of the project site and is therefore screened in (https://www.fishbase.se/summary/Coilia-nasus.html).  https://www.aquamaps.org/receive.php?type_of_map=regular&map=cached	Screened in
51	<i>Mobula mobular</i>	Spinetail Devil Ray	EN	 https://www.iucnredlist.org/species/110847130/214381504 Migratory status – NA Estimated extent of occurrence (km²): NA Congregatory – NA Global population estimate – NA Habitat: Marine Oceanic The Spinetail Devil Ray is circumglobal in temperate and tropical waters throughout all oceans. There are no current or historical estimates of the global abundance of the Spinetail Devil Ray. Despite a broad worldwide distribution, populations appear to be patchily distributed. Abundance also appears to vary substantially and may be based on food availability and the degree that they have been, or are currently being, fished. There are no current or historical estimates of the global abundance of the Spinetail Devil Ray. Despite a broad worldwide distribution, populations appear to be patchily distributed. Abundance also appears to vary substantially and may be based on food availability and the degree that they have been, or are currently being, fished. This species is reported from the West coast of Korea and has been caught as a by catch at least twice from 2011 to 2016 (Preliminary study on spatio-temporal variations of five giant and 17 large fish species around the Korean peninsula from 2011 to 2016. Fisheries and Aquatic Sciences, 25(5), 298-310). (Preliminary study on spatio-temporal variations of five giant and 17 large fish species around the Korean peninsula from 2011 to 2016. Fisheries and Aquatic Sciences, 25(5), 298-310). However, since the occurrence of the species near the project site is rare it has been screened out.	Screened out
52	<i>Squalus mitsukurii</i>	Shortspine Spurdog	EN	 https://www.iucnredlist.org/species/152781967/2957982 Migratory status – NA Estimated extent of occurrence (km²): NA, Congregatory – NA Global population estimate – NA Habitat: Marine deep benthic The Shortspine Spurdog is known from Japan, China, and Korea in the Northwest Pacific Ocean. The Shortspine Spurdog is known from continental and insular slope and shelves, submarine ridges, and seamounts. Depth range 29 - 600 m. It feeds on bony fishes including hake, snoek, conger eels and lantern fishes. The Shortspine Spurdog is subject to fishing pressure across its range. Verifiable depth ranges seem to be 22–640 m, possibly down to 980 m, and is commonly caught between 180–300 m depth https://www.iucnredlist.org/species/152781967/2957982#habitat-ecology This species is screened out as it has a very wide distribution and is unlikely to occur in shallow waters.	Screened out

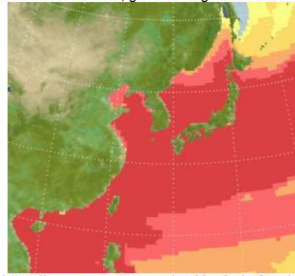
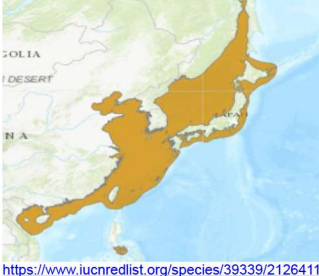
Sr. no.	Scientific name	Common name	IUCN status	Rationale	Screened in/ out
53	<i>Larus relictus</i>	Relict Gull	VU	 https://www.iucnredlist.org/species/22694447/119398496 Migratory status – Migratory Estimated extent of occurrence (km²): 230,000 Congregatory – Congregatory Global population estimate – 12,000 Habitat: Wetlands (inland), Marine Neritic <i>Larus relictus</i> breeds at two localities in eastern Kazakhstan, one in Russia and several in Mongolia. The largest colonies are thought to occur in China, at Honjian Nur Lake, Shaanxi (up to 5,000 pairs). Its non-breeding range is poorly understood, but some are known to winter in South Korea. Both breeding and wintering ranges are known to fluctuate widely in response to weather conditions. The population has been estimated at 12,000 individuals. All known breeding colonies are below 1,500 m, in the arid-steppe zone, on islands in saline and slightly saline lakes with fluctuating water-levels. No nesting occurs if lakes dry up, if the islands become joined to the shore, or if the water-level is too high and the islands become too small or overgrown with vegetation. All known breeding colonies are below 1,500 m, in the arid-steppe zone, on islands in saline and slightly saline lakes with fluctuating water-levels. No nesting occurs if lakes dry up, if the islands become joined to the shore, or if the water-level is too high and the islands become too small or overgrown with vegetation. In South Korea, most of the mudflats at the Nakdong estuary have been reclaimed and it is likely that many other coastal wetlands are under similar pressure from development. It is mainly found on the eastern coast of peninsular Korea and is therefore screened out.	Screened out
53	<i>Helopsaltes pleskei</i>	Pleske's Grasshopper Warbler	VU	 https://www.iucnredlist.org/species/22714674/111074931 Migratory status – non migratory Estimated extent of occurrence (km²): 29,100 Congregatory – NA Global population estimate – 2,500-9,999 Habitat: Shrubland, Wetlands (inland) <i>Locustella pleskei</i> is a localised breeder on small islands in Peter the Great Bay in the extreme south of far eastern Russia, the Izu Islands and islands off Kyushu, Japan, and islands off South Korea and probably North Korea (unconfirmed). Since this species is found inlands in scrublands and inland wetlands and does not occur on the coasts it has been screened out. Also the annotated and updated latest checklist of birds of Korea does not include the species (https://www.birdskoreablog.org/wp-content/uploads/2022/11/2022-Birds-Korea-Checklist-ENG.pdf) and there are no records of this species on eBird as well (https://ebird.org/species/cogwar1?siteLanguage=en_IN)	Screened out
55	<i>Hynobius quepaertensis</i>	Cheju Salamander	VU	 https://www.iucnredlist.org/species/119242042/11010160 Migratory status – non migratory Estimated extent of occurrence (km²): 18,764, Range restricted. Congregatory – NA Global population estimate – 2,500-9,999 Habitat: Forest, Wetlands (inland), Artificial/Aquatic & Marine This species is known from the southern tip of the Republic of Korea where it has been recorded from the mainland and Jindo and Jeju Islands. This species is known from the southern tip of the Republic of Korea where it has been recorded from the mainland and Jindo and Jeju Islands. Since this species is terrestrial and unlikely to occur on the offshore project site it has been screened out.	Screened out
56	<i>Sebastes koreanus</i>	-	DD	 https://www.iucnredlist.org/species/154735/115228870 Migratory status – NA Estimated extent of occurrence (km²): NA Congregatory – NA Global population estimate – NA Habitat: Unknown <i>Sebastes koreanus</i> is a recently described fish species known only from the Yellow Sea, South Korea. There is no population information available for <i>Sebastes koreanus</i>. It is unknown whether <i>Sebastes koreanus</i> is impacted by any major threat processes. The unconfirmed swimming depth of the species is	Screened in.

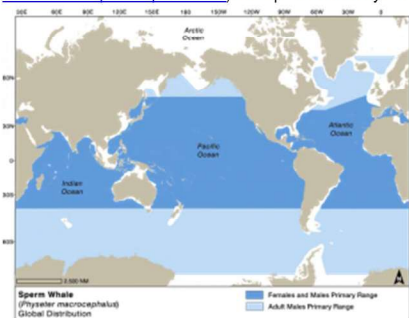
Sr. no.	Scientific name	Common name	IUCN status	Rationale	Screened in/ out
				~ 20 m (https://www.fishbase.se/summary/Sebastes-koreanus.html). The latest report of <i>S. koreanus</i> is from Ongdo, Taejeon-gun which is more than 200 km north of the project site (Myoung, S. H., Myoung, J. G., Jawad, L. A., Kim, M. J., & Park, J. M. (2022). First report of abnormal body coloration in <i>Sebastes koreanus</i> (Actinopterygii: Perciformes: Sebastinae). <i>Acta Ichthyologica et Piscatoria</i>, 52(3), 209-213.).  https://www.aquamaps.org/preMap2.php?cache=1&SpecID=Fis-145424 The native range overlaps with the location of the project site and the species distribution model indicates the species to occur at the project site with 60-80% probability. (https://www.fishbase.se/summary/Sebastes-koreanus.html). The species has been screened in.	
57	<i>Balaenoptera physalus</i>	Fin Whale	VU	 https://www.iucnredlist.org/species/2478/50349982 Migratory status – migratory Estimated extent of occurrence (km²): NA Congregatory – No Global population estimate – 100,000 Habitat: Marine Neritic, Marine Oceanic Fin Whales occurs worldwide, mainly, but not exclusively, in offshore waters of the temperate and subpolar zones. In recent years they have only rarely been seen off central and southern Japan or around the Korean peninsula at any time of year the Fin Whale is a generalist feeder, sometimes preying heavily on fish but mostly on crustaceans. The Fin Whale is the fastest of the great whales, being able to maintain speeds of over 10 km/h to 15km/h. The apparent lack of winter breeding aggregations may also be an adaptation to avoid predation of calves, in the context of a flight rather than fight strategy to escape predation. commercial whaling in the 20th century depleted Fin Whales worldwide. Fin Whales are one of the more commonly recorded species of large whale reported in vessel collisions. Fin Whales is subject to entanglement in commercial fishing gear. This species is screened out as it is rarely seen in and around the Korean peninsula.	Screened out
58	<i>Carcharodon carcharias</i>	White Shark	VU	 Migratory status – Migratory Estimated extent of occurrence (km²): NA Congregatory – No Global population estimate – NA Habitat: Marine Neritic, Marine Oceanic. The White Shark is wide-ranging throughout most temperate and tropical oceans but occurs most frequently in temperate waters. The White Shark is pelagic and most commonly occurs in temperate continental shelf waters but also ranges into estuaries and the open ocean, and occurs to depths of 1,200 m. The White Shark undertakes long distance trans-oceanic movements. The White Shark is caught as bycatch mostly in inshore fisheries in a range of gears, such as longlines, setlines, gillnets, trawls, hand-held rod and reel, and fish-traps; it is rarely caught in offshore pelagic fisheries. This species has been recorded at least three times from 2011 to 2016 as by catch from the western coast of peninsular Korea ((Preliminary study on spatial-temporal variations of five giant and 17 large fish species around the Korean peninsula from 2011 to 2016. Fisheries and Aquatic Sciences, 25(5), 298-310). However, according to regional fisheries experts this species is unlikely to occur at the project site and is screened out.	Screened out
59	<i>Caretta caretta</i>	Loggerhead Turtle	VU	 https://www.iucnredlist.org/species/3897/119333622 Migratory status – Full Migrant Estimated extent of occurrence (km²): NA Congregatory – NA Global population estimate – NA Habitat: Marine Neritic, Marine Oceanic, Marine Intertidal The Loggerhead Turtle nests on insular and mainland sandy beaches throughout the temperate and subtropical regions worldwide. Like most sea turtles, Loggerhead Turtles are highly migratory and use a wide range of broadly separated localities and habitats during their lifetimes. There are 10 Loggerhead	Screened out

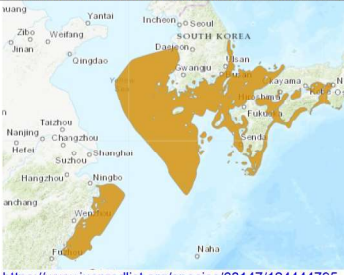
Sr. no.	Scientific name	Common name	IUCN status	Rationale	Screened in/ out
				subpopulations: North West Atlantic Ocean, North East Atlantic Ocean, South West Atlantic Ocean, Mediterranean Sea, North East Indian Ocean, North West Indian Ocean, South East Indian Ocean, South West Indian Ocean, North Pacific Ocean, and South Pacific Ocean. Total population size is unknown. Threats include fisheries bycatch, incidental capture of marine turtles in fishing gear targeting other species, direct utilization of turtles or eggs for human use (i.e., consumption, commercial products), coastal development affecting critical turtle habitat, human-induced alteration of coastal environments due to construction, dredging, beach modification, pollution, pathogens, and climate change. There are reports of this species from coast near Taena-gun, South Korea which is approximately 100 kms from the project site (Lee, H. J., Kim, I. H., Kim, J. K., Jeong, S., & Park, D. (2014). First detailed morphological description of the loggerhead sea turtle (<i>Caretta caretta</i>) caught from the Yellow Sea of Korea. <i>Journal of Ecology and Environment</i>, 37(4), 201-208.). At least 21 individuals of this species were recorded as by catch from the Korean coast (Moon, Y., Shim, W. J., Han, G. M., Jeong, J., Cho, Y., Kim, I. H., ... & Hong, S. H. (2022)). Turtles are also susceptible to ingestion of plastics (Y. Moon, (2022) What type of plastic do sea turtles in Korean waters mainly ingest? Quantity, shape, color, size, polymer composition, and original usage. <i>Environmental Pollution</i>, 298, 118849.) This species has been screened out as it is unlikely to occur at the project site.	
60	<i>Dermochelys coriacea</i>	Leatherback Turtle	VU	 https://www.iucnredlist.org/species/6494/43526147 Migratory status – Full Migrant Estimated extent of occurrence (km²): NA Congregatory – NA Global population estimate – NA Habitat: Marine Oceanic, Marine Intertidal, Marine Coastal/Supratidal <i>D. coriacea</i> is an oceanic, deep-diving marine turtle inhabiting tropical, subtropical, and subpolar seas. Leatherbacks make extensive migrations between different feeding areas at different seasons, and to and from nesting areas. Leatherbacks feed predominantly on jellyfishes, salps and siphonophores. Threats to Leatherbacks include, fisheries bycatch, direct utilization and, coastal development affecting turtle habitat. In a study documenting sea turtle on Korean shores from 2014 to 2020, only one individual of <i>D. coriacea</i> was found as bycatch near Taean-gun coast which is ~120 km from the project site (Kim, J., Kim, I.H., Kim, M.S. Et al. Occurrence and diet analysis of sea turtles in Korean shore. <i>J ecology environ</i> 45, 23 (2021). https://doi.org/10.1186/s41610-021-00206-w). This makes it highly unlikely that the species will occur near the project site and is therefore screened out.	Screened out
61	<i>Hippocampus histrix</i>	Thorny Seahorse	VU	 https://www.iucnredlist.org/species/10070/54905206 Migratory status –non-migrant Estimated extent of occurrence (km²): NA Congregatory – NA Global population estimate – NA Habitat: Marine Neritic <i>Hippocampus histrix</i> is found at depths between 10 and 40 m or deeper. It is found on a variety of substrates including sponges, weedy rocky reefs, soft corals, and seagrass beds. This species likely consumes small benthic and/or planktonic crustaceans such as harpacticoid and cyclopoid copepods, gammarid shrimps, and mysids. The major threat to <i>Hippocampus histrix</i> is over-exploitation. This species is caught in both targeted fisheries and as bycatch in other non-selective fisheries, particularly shrimp trawls. There are no records of this species from the western coast of Korea yet. The probability of occurrence of this species near the project site based on the modelled native range of this species is 0, and therefore, this species is screened out (https://www.fishbase.se/summary/Hippocampus-histrix.html). Predicted native range:  https://www.aquamaps.org/preMap2.php?cache=1&SpecID=Fis-31607	Screened out

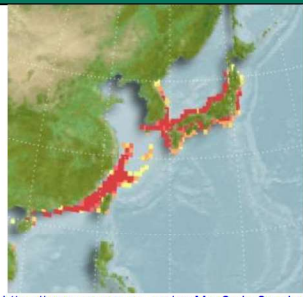
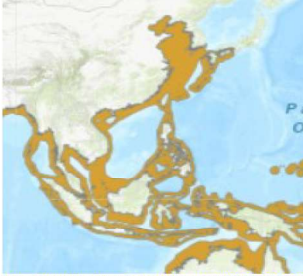
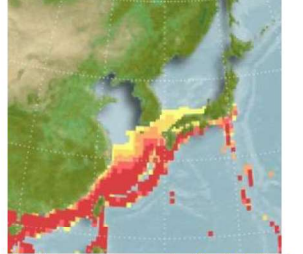
Sr. no.	Scientific name	Common name	IUCN status	Rationale	Screened in/ out
62	<i>Hippocampus trimaculatus</i>	Three-spot Seahorse	VU	 https://www.iucnredlist.org/species/10087/17252219 Migratory status – non migratory Estimated extent of occurrence (km²): NA Congregatory – NA Global population estimate – NA Habitat: Marine Neritic This species' range encompasses much of the Eastern Indian Ocean and the Western Pacific. <i>Hippocampus trimaculatus</i> is most often found at depths greater than 10 m with a maximum reported depth for this species being 100 m. This species utilizes soft substrates such as sand and mud as well as macro algae and soft corals. The primary threat to <i>Hippocampus trimaculatus</i> is bycatch in incidental and target fisheries throughout its range. There are no confirmed records of this species from the western coast of Korea (https://www.fishbase.org/summary/Hippocampus-trimaculatus.html). The predictive modelling of its native range predicts its occurrence in the region of the project site at 10 to 20% which is low and therefore this species is screened out.  https://www.aquamaps.org/preMap2.php?cache=1&SpecID=Fis-52583	Screened out
63	<i>Hydropotes inermis</i>	Water Deer	VU	 Migratory status – NA Estimated extent of occurrence (km²): NA, Range restricted. Congregatory – NA Global population estimate – NA Habitat: Forest, Shrubland, Grassland, Wetlands (inland), Marine Intertidal, Artificial/Aquatic & Marine This species occurs in China and Korea. Water Deer is evidently an "edge" species, preferring habitats characterized by shrubs and small trees. It prefers coastal plains, salt marshes, and riparian areas, and is negatively affected by human presence. Other than during the mating season, it is in general a solitary species; stable pairs or small groups have been reported in places with high population densities. Poaching and habitat destruction are major threats to this species. This species deer preferred landscapes with 20°–25° of slope and broadleaf forest and predominantly occurred in inland (81%) than in coastal (60%) areas (Kim, B. J., Oh, D. H., Chun, S. H., & Lee, S. D. (2011). Distribution, density, and habitat use of the Korean water deer (<i>Hydropotes inermis argyropus</i>) in Korea. Landscape and Ecological Engineering, 7, 291-297.). This species is screened out as it is terrestrial and unlikely to occur near the project site.	Screened out
64	<i>Lepidochelys olivacea</i>	Olive Ridley Turtle	VU	 https://www.iucnredlist.org/species/11534/3292503 Migratory status – Full migrant Estimated extent of occurrence (km²): NA Congregatory – NA Global population estimate – NA Habitat: Marine Neritic, Marine Oceanic, Marine Intertidal The Olive Ridley Sea turtle has a circumtropical distribution, with nesting occurring throughout tropical waters and migratory circuits in tropical and some subtropical areas. Within a region, Olive Ridleys may	Screened out

Sr. no.	Scientific name	Common name	IUCN status	Rationale	Screened in/ out
				move between the oceanic and neritic zones. In a study documenting sea turtle on Korean shores from 2014 to 2020, <i>Lepidochelys olivacea</i> was not recorded from the western coast and is unlikely to occur near the project site (Kim, J., Kim, I.H., Kim, M.S. et al. Occurrence and diet analysis of sea turtles in Korean shore. <i>J ecology environ</i> 45, 23 (2021). https://doi.org/10.1186/s41610-021-00206-w). A first record of olive ridley turtle was first reported from eastern coast of Korean peninsula only in 2019 (Kim, Il-Hun & Yi, Changho & Lee, Jeong-Hyun & Park, Dae-Sik & Cho, In-young & Han, Dong-Jin & Kim, Min-Seop. (2019). The first Record of the Olive Ridley Sea Turtle <i>Lepidochelys olivacea</i> (Reptilia: Testudines: Cheloniidae) from South Korea. <i>Current Herpetology</i> , 38, 153-159. 10.5358/hj.38.153) and is therefore unlikely to occur on the eastern coast near the project site and is therefore screened out.	
65	<i>Moschus moschiferus</i>	Siberian Musk Deer	VU	 Migratory status – non-migratory Estimated extent of occurrence (km²): NA Congregatory – NA Global population estimate – NA Habitat: Forest, Rocky areas This species occurs widely in the Russian Federation (Siberia and the Far East), extreme eastern Kazakhstan, northeastern and northwestern China, Mongolia, Republic of Korea, and Democratic People's Republic of Korea. Inhabiting mountainous taiga (broadleaf and needle forest), these animals are typically found in forests of dense birch (<i>Betula</i> spp.) and larch (<i>Larix</i> spp.), and shrub-covered slopes in sub-alpine zones. Since this is a forest species the offshore project is unlikely to impact the species and it is therefore screened out.	Screened out
66	<i>Panthera pardus</i>	Leopard	VU	 https://www.iucnredlist.org/species/15954/163991139 Migratory status – NA Estimated extent of occurrence (km²): NA Congregatory – NA Global population estimate – NA Habitat: Forest, Savanna, Shrubland, Grassland, Rocky areas The leopard is found in Asia and Africa. But due to habitat loss has led it to have a patchy distribution. There is no observed data available for this species in recent years and the species might be regionally extinct in Korea and is therefore screened out. (National Institute of Biological Resources, 2014. Korean Red List of Threatened Species. Pp 256. Available at: http://archive.nationalredlist.org/files/2016/04/Korean-Red-List-of-Threatened-Species-English-compressed-2.pdf)	Screened out
67	<i>Notorynchus cepedianus</i>	Broadnose Sevengill Shark	VU	 https://www.iucnredlist.org/species/39324/2896914 Migratory status – NA Estimated extent of occurrence (km²): NA Congregatory – Seasonal aggregations Global population estimate – NA Habitat: Marine Neritic The Broadnose Sevengill Shark has a global, yet patchy, distribution in the south Atlantic and Indo-Pacific Oceans. The Broadnose Sevengill Shark is demersal in mostly temperate waters in shallow, primarily nearshore areas from the surface to 570 m, mostly <130 m. The Broadnose Sevengill Shark is infrequently reported as target and incidental catch from industrial and artisanal demersal trawl, longline, and gillnet fisheries across its range. Discard rates are unknown, but fishing mortality is high; at-vessel-mortality estimates from gillnet fisheries range from 33–85%. The species exhibits site fidelity to seasonal aggregations, making the species susceptible to targeted fishing. It is reported from the southern tip of south Korea and is likely to occur near the project site. The predictive modelling of the species predicts its occurrence at the region of the project site at 60-90% which is high and therefore the species is screened in.  https://www.aquamaps.org/preMap2.php?cache=1&SpecID=Fis-24153	Screened in

Sr. no.	Scientific name	Common name	IUCN status	Rationale	Screened in/ out
68	<i>Alopias vulpinus</i>	Common Thresher	VU	 https://www.iucnredlist.org/species/39339/212641186 Migratory status – migratory Estimated extent of occurrence (km²): NA Congregatory – Global population estimate – NA Habitat: Marine Neritic The Common Thresher occurs worldwide in tropical to cold-temperate seas. It is oceanic and coastal to depths of 650 m. It is more frequently found close to land and in temperate waters. The species reaches a maximum size of 573 cm total length. The Common Thresher is caught globally as target and bycatch in commercial and small-scale pelagic longline, purse seine, and gillnet fisheries. Most catch is taken as bycatch of industrial pelagic fleets in offshore and high-seas waters. The species is generally retained for the meat and fins. At vessel mortality of 66.7% was estimated on Portuguese longlines in the Atlantic. Predictive modelling of the native distribution of the species predicts its occurrence near the project site as 70-90. However, given its large distribution it is unlikely to occur at the project site and is screened out.  https://www.aquamaps.org/preMap2.php?cache=1&SpecID=Fis-23899	Screened out
69	<i>Sphyrna zygaena</i>	Smooth Hammerhead	VU	 https://www.iucnredlist.org/species/39339/212641186 Migratory status – migratory Estimated extent of occurrence (km²): NA Congregatory – NA Global population estimate – NA Habitat: Marine Neritic The Smooth Hammerhead is a coastal and semi-oceanic pelagic shark that occurs on the continental shelf to at least 200 m depth, and possibly 500 m. It is the most oceanic of the hammerhead species, commonly leaving coastal habitats at 2–3 years of age. Despite its widespread occurrence, biological data on this species is limited. There are no data available on the global population size of the Smooth Hammerhead. Population growth rate estimate is among the fastest of the known pelagic sharks and the fastest of the hammerhead species at 0.225 per year. The Smooth Hammerhead is caught globally as target and bycatch in commercial and small-scale pelagic longline, purse seine, and gillnet fisheries. It is also captured in coastal longlines, gillnets, trammel nets, and sometimes trawls, particularly in areas with narrow continental shelves. This species is recorded from the Korean Yellow Sea at least 6 times as a bycatch from 2011-2016 ((Preliminary study on spatial-temporal variations of five giant and 17 large fish species around the Korean peninsula from 2011 to 2016. Fisheries and Aquatic Sciences, 25(5), 298-310)). Since it is widely distributed it is unlikely to occur at the project site and is screened out.	Screened out
70	<i>Hippocampus kelloggi</i>	Great Seahorse	VU	 https://www.iucnredlist.org/species/41010/54908593 Migratory status – migratory Estimated extent of occurrence (km²): NA Congregatory – NA Global population estimate – NA Habitat: Marine Neritic <i>Hippocampus kelloggi</i> has a relatively wide range throughout much of the Indo-Pacific. <i>Hippocampus kelloggi</i> is most associated with gorgonian corals and sea whips as well as soft bottomed habitats. It can be found in relatively deep waters, with a maximum recorded depth of 152m. Little is known about feeding, but this species likely consumes small benthic and/or planktonic crustaceans such as harpacticoid and cyclopoid copepods, gammarid shrimps, and mysids. <i>Hippocampus kelloggi</i> is threatened	Screened out

Sr. no.	Scientific name	Common name	IUCN status	Rationale	Screened in/ out
				from bycatch in multiple artisanal as well as commercial fisheries throughout its range and this is the major threat facing this species. The species may also be targeted for use in the aquarium trade. Destructive fishing practices such as dynamite fishing and trawling also threaten the species habitat. Based on its wide distribution this species is unlikely to be present near the project site and is therefore screened out.	
71	<i>Carcharhinus brachyurus</i>	Copper Shark	VU	 https://www.iucnredlist.org/species/41741/2954522 Migratory status – migratory Estimated extent of occurrence (km²): NA Congregatory – NA Global population estimate – NA Habitat: Marine Neritic The Copper Shark has a circumglobal but patchy distribution. The Copper Shark occurs in warm temperate and subtropical waters on the continental shelf from close inshore to depths of 145 m. It also occurs in brackish or freshwater in the lower reaches of large rivers and estuarine bays, appears singly and in loose schools of hundreds of individuals, and has inshore nursery grounds. The Copper Shark is caught globally as target and retained bycatch of industrial, small-scale, and recreational fisheries using a range of gears, mainly demersal longline and gillnet and to a lesser extent, pelagic longline and demersal trawl. The species is taken in beach protection programs that target large sharks. Reconstructed catches based on landings data for combined sharks, rays, and skates from 1950–2014 for Japan, China, and South Korea EEZs showed 98%, 67%, and 97% declines, respectively. This species is recorded from the Korean Yellow Sea at least once as a bycatch from 2011–2016 ((Preliminary study on spatial-temporal variations of five giant and 17 large fish species around the Korean peninsula from 2011 to 2016. Fisheries and Aquatic Sciences, 25(5), 298–310).). Since it is likely to occur at the project site this species has been screened in. This species is unlikely to occur in area near the project site due to its wide distribution and is therefore screened out.	Screened out
72	<i>Physeter macrocephalus</i>	Sperm Whale		 https://www.iucnredlist.org/species/41755/160983555 Migratory status – migratory Estimated extent of occurrence (km²): NA Congregatory – NA Global population estimate – NA Habitat: Marine Neritic, Marine Oceanic The Sperm Whale is a cosmopolitan species, found in all oceans. Sperm Whales feed almost exclusively on euphausiids (krill) and migrate to areas where krill occurs in abundance. The migration patterns of Sperm Whales are not well understood but appear to be diverse. Although there is evidence of migratory behaviour in most of the populations studied, both wintering and summering areas appear to be occupied at some level throughout the year. Blue whales come very close to the coast when there is abundance of food available. The main threat to Sperm Whales in the past was direct exploitation, which only became possible on a regular basis in the modern era using deck-mounted harpoon cannons. The World Wildlife Fund has declared ~ 30 km area surrounding southern tip of peninsular Korea as Globally Significant Areas for Mammals in Yellow Sea region, however this area is still undergoing assessment by the Marine Mammal Protected Areas Task Force. The project site is not within the primary or secondary distribution of the species according to the international whaling commission database (https://iwc.int/about-whales/whale-species/sperm-whale). The species is thereby screened out.  Sperm whale global distribution. Adapted by Nina Lisowski from Würsig, B., Thewissen, J.G.M. and Kovacs, K.M. Editors (2018) "Encyclopedia of Marine Mammals", 3rd ed. Academic Press, Elsevier: San Diego, CA. Copyright Elsevier: http://www.elsevier.com Since it is predominantly a deep ocean species it has been screened out.	Screened out

Sr. no.	Scientific name	Common name	IUCN status	Rationale	Screened in/ out
73	<i>Pelophylax chosonicus</i>	Gold-spotted Pond Frog	VU	 https://www.iucnredlist.org/species/58577/110101963 Migratory status – non migratory Estimated extent of occurrence (km²): NA Congregatory – NA Global population estimate – NA Habitat: Wetlands (inland) This species occurs on Korean peninsula and China. It is greatly reduced in numbers and the species is suspected to have gone locally extinct at some localities in the Republic of Korea because of land conversion. The species is found in the agricultural lowlands between the Yellow Sea and the Taebaek Range on the west coast of the Korean Peninsula. It is found in some natural wetlands, but mostly in ditches and small ponds between and around rice paddies, as the natural habitat of the species is close to being totally modified. Adults have a very narrow home range of less than 1 ha. Habitat destruction and degradation are the major threats to this species, due to changes in agricultural land use from rice to other crops, which is greatly reducing the habitat available to the species. Infrastructure development and water pollution pose additional threats. Since this is freshwater terrestrial species, it has been screened out.	Screened out
74	<i>Urolophus aurantiacus</i>	Oriental Stingaree		 https://www.iucnredlist.org/species/60087/124438082 Migratory status – non migratory Estimated extent of occurrence (km²): NA Congregatory – NA Global population estimate – NA Habitat: Marine Neritic, Marine Deep Benthic The Oriental Stingaree is endemic to the Northwest Pacific from southern Japan to Taiwan, including South Korea and China. The Oriental Stingaree is demersal on the continental shelf and uppermost slope at depths of 10–205 m; on sandy and muddy habitats, it occurs mainly at depths of 155–205 m but occurs much shallower on rocky habitats. It is subject to fishing pressure across its range. It is taken as bycatch in industrial and artisanal fisheries by trawl and gillnet and is retained for fish meal in Taiwan and China. It may be discarded in Japan and South Korea, although the capture still poses a threat because at-vessel-mortality of urolophid species ranges from 0–50% and abortion upon capture is typical of urolophid species and can lead to reduced population viability. In the Korean waters of the Yellow Sea there is intense trawl fishing pressure. It is likely to occur near the project site based on its reports from the yellow sea, extant distribution, and habitat choice. It has therefore been screened in.	Screened in
74	<i>Telatrygon acutirostra</i>	Sharpnose Ray	VU	 https://www.iucnredlist.org/species/60147/124444795 Migratory status – non migratory Estimated extent of occurrence (km²): NA Congregatory – NA Global population estimate – NA Habitat: Marine Neritic, Marine Deep Benthic The Sharpnose Ray is endemic to the Northwest Pacific Ocean where it occurs in southern Japan, South Korea, and China. The species is now uncommon in South Korea, and there are concerns that it may have undergone significant declines given that there has been a 50% decline in myliobatid landings. Despite the lack of species-specific trend data, catches of sharks, rays, and skates have been reconstructed for Japan, South Korea, and China Exclusive Economic Zones (EEZs), based on landings data. In South Korea, the reconstructed catch data showed a 97% decline in landings over 46 years from 1969 to 2014. There were minimal catches during 1950 that then rose steeply during the mid-1960s to a peak of 8,900 t followed by a steady decline to 294 t in 2014. Fishing effort in South Korea has increased by about one-quarter since the 1950s. Since it has undergone drastic decline in the south Korea up to 97% it has been screened out. Also, the predictive modelling of the species indicates that is absent from the region of the project site with zero probability of this occurrence near the project site (https://www.fishbase.se/summary/Telatrygon-acutirostra.html).	Screened out

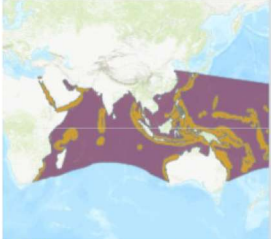
Sr. no.	Scientific name	Common name	IUCN status	Rationale	Screened in/ out
				 https://www.aquamaps.org/preMap2.php?cache=1&SpecID=Fis-171589	
75	<i>Taeniurops meyeri</i>	Blotched Fantail Ray	VU	 https://www.iucnredlist.org/species/60162/68646736 Migratory status – non migratory Estimated extent of occurrence (km²): NA Congregatory – NA Global population estimate – NA Habitat: Marine Neritic, Marine Deep Benthic Occurs in a wide range of habitats, from shallow lagoons to outer reef slopes, depth range 1 – 500 m, (Last, P.R. and J.D. Stevens, 1994. Sharks and rays of Australia. CSIRO, Australia. 513 p). Nothing is known of the current population size or structure, nor of the degree of connectivity across subpopulations across this ray's wider distribution. The species is inferred to have undergone a population size reduction of at least 30% across its global range over the past 65 years (three generations), based on the intense and unregulated fishing pressure known to exist on large batoid species across much of the Blotched Fantail Ray's range. Globally, shark and ray landings have declined by at least 20% since 2003, but the Indo-Pacific is amongst the regions where this decline has been more severe. Despite the lack of species-specific trend data, catches of sharks, rays, and skates have been reconstructed for Japan, South Korea, and China Exclusive Economic Zones (EEZs), based on landings data. In South Korea, the reconstructed catch data showed a 97% decline in landings over 46 years from 1969 to 2014. There were minimal catches during 1950 that then rose steeply during the mid-1960s to a peak of 8,900 t followed by a steady decline to 294 t in 2014. Fishing effort in South Korea has increased by about one-quarter since the 1950s. Since it has undergone drastic decline in the south Korea up to 97% it has been screened out. Also, the predictive modelling of the species distribution indicates that the species is unlikely to occur at the region of the project site (https://www.fishbase.se/summary/Taeniurops-meyeri.html).  https://www.aquamaps.org/preMap2.php?cache=1&SpecID=Fis-166734	Screened out
76	<i>Alveopora japonica</i>		VU	 https://www.iucnredlist.org/species/132865/3467805 Migratory status – non migratory Estimated extent of occurrence (km²): NA Congregatory – NA Global population estimate – NA Habitat: Marine Neritic This species is found only near Japan and in the East China Sea. There is no species-specific population information available for this species. However, there is evidence that overall coral reef habitat has declined, and this is used as a proxy for population decline for this species. The depth range is unknown for this species. It is estimated to take three years for a colony of <i>A. japonica</i> to reach sexual maturity. Threats to this species therefore include coral removal and harvesting for display in aquariums and for the curio-trade. In addition, the <i>Alveopora</i> genus was ranked as having the highest bleaching response and is in the top ten genera for extinction risk in the Western Indian Ocean. This species is likely to occur near the project site based on the distribution and therefore is screened in.	Screened in

Sr. no.	Scientific name	Common name	IUCN status	Rationale	Screened in/ out
77	<i>Narke dipterygia</i>	Spottail Sleeper Ray		 https://www.iucnredlist.org/species/161607/124514068 Migratory status – non migratory Estimated extent of occurrence (km²): NA Congregatory – NA Global population estimate – NA Habitat: Marine Neritic The Spottail Sleeper Ray occurs in the Indian, Western Central, and Northwest Pacific Oceans from Oman to Japan. It occurs on the continental shelf on sandy and muddy habitats from nearshore to at least 100 m depth. This species is subject to fishing pressure across its range. It is taken as bycatch in industrial and artisanal fisheries with multiple fishing gears including trawl, gillnet, and longline. Electric rays are not targeted in any part of this species' region and are often discarded at sea with low survivorship. In some areas, the species is retained as bycatch for fish meal production. However, all species of rays have witnessed a drastic drop as much as 97% in and around the Korean peninsula and therefore is unlikely to occur near the project site.	Screened out
78	<i>Gymnura japonica</i>	Japanese Butterfly Ray		 https://www.iucnredlist.org/species/161630/124518082 Migratory status – non migratory Estimated extent of occurrence (km²): NA Congregatory – NA Global population estimate – NA, Habitat: Marine Neritic The Japanese Butterfly Ray occurs from the Northwest Pacific Ocean from Japan to Taiwan, including North and South Korea, and China. It is demersal on sandy and muddy substrates inshore at depths of 0–27 m. Subject to fishing pressure across its entire spatial and depth range. It is taken as bycatch in industrial and artisanal fisheries with multiple fishing gears, including demersal trawl, set net, and gillnet, and retained for human consumption or fish meal in Taiwan and China, and discarded in Japan and possibly South Korea. At-vessel mortality of butterfly rays is 41–46% in trawl fisheries with post-release mortality unknown. Predominantly recorded from the eastern and the southern coast. No records of the species from the western coast therefore it is screened out (Kim, J. K., Ryu, J. H., Jang, S. H., Han, K. H., & Kim, B. Y. (2022). Taxonomic Review of a Rare Butterfly Ray <i>Gymnura japonica</i> (Gymnuridae, Chondrichthyes), in Korea. Korean Journal of Fisheries and Aquatic Sciences, 55(1), 30-36.).  https://www.inaturalist.org/observations?place_id=any&subview=map&taxon_id=101908	Screened out
79	<i>Okamejei acutispina</i>	Sharpspine Skate		 https://www.iucnredlist.org/species/161636/124519140 Migratory status – non migratory Estimated extent of occurrence (km²): NA Congregatory – NA Global population estimate NA, Range restricted. Habitat: Marine Neritic The Sharpspine Skate occurs from Northwest Pacific Ocean from southern Japan to Taiwan, including North and South Korea, and China. This is one of the most abundant and common bycatch species of skate from the trawl fisheries. Catches of sharks, rays, and skates from 1950 to 2014 have been reconstructed for the South Korea and China EEZs, based on landings data (Pauly et al. 2020). In South Korea, the reconstructed catch data showed a 97% decline in landings over 46 years from 1969 to 2014. There were minimal catches during 1950 that then rose steeply during the mid-1960s to a peak of 8,900 t followed by a steady decline to 294 t in 2014. Fishing effort in South Korea has increased by about one-quarter since the 1950s. Therefore, this species is unlikely to occur in the area. Also, the predictive	Screened out

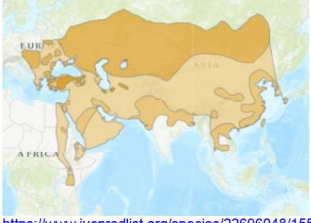
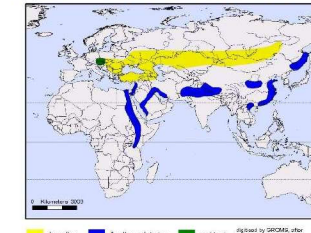
Sr. no.	Scientific name	Common name	IUCN status	Rationale	Screened in/ out
				modelling of the native species range of the species indicates that it is unlikely to occur in the region of the project site and is therefore screened out. (https://www.fishbase.se/summary/Okamejei-acutispina.html).  https://www.aquamaps.org/receive.php?type_of_map=regular&map=cached	
80	<i>Okamejei kenojei</i>	Spiny Skate	VU	 https://www.iucnredlist.org/species/161645/124520681 Migratory status – non migratory Estimated extent of occurrence (km²): NA Congregatory – NA Global population estimate – NA, Habitat: Marine Neritic The Sharpspine Skate occurs from Northwest Pacific Ocean from southern Japan to Taiwan, including North and South Korea, and China. This is one of the most abundant and common bycatch species of skate from the trawl fisheries. Catches of sharks, rays, and skates from 1950 to 2014 have been reconstructed for the South Korea and China EEZs, based on landings data. In South Korea, the reconstructed catch data showed a 97% decline in landings over 46 years from 1969 to 2014. There were minimal catches during 1950 that then rose steeply during the mid-1960s to a peak of 8,900 t followed by a steady decline to 294 t in 2014. Fishing effort in South Korea has increased by about one-quarter since the 1950s. Therefore, this species is unlikely to occur in the area. This species is recorded from the west sea of Korea and may be present near the project site. However, location in the open sea where the species was recorded is ~ 200 kms from the project site (Youn, B. I., Choi, D. H., Lee, S. H., Han, K. H., Lee, S. J., Kwon, D. H., & Kim, M. J. (2022). Spawning Period and Size at Maturity of the Ocellate Spot skate <i>Okamejei kenojei</i> in the West Sea of Korea. Journal of Marine Science and Engineering, 10(8), 1067.). The species is therefore screened out.	Screened out
81	<i>Proscyllium habereri</i>	Graceful Catshark		 https://www.iucnredlist.org/species/161733/124535240 Migratory status – non migratory Estimated extent of occurrence (km²): NA Congregatory – NA Global population estimate – NA, Habitat: Marine Neritic, Marine Deep Benthic The Graceful Catshark is endemic to Northwest and Western Central Pacific and Eastern Indian Oceans. It is demersal on the continental shelf and upper slope at depths of 50–320 m. Catches of sharks, rays, and skates from 1950 to 2014 have been reconstructed for the South Korea and China EEZs, based on landings data. In South Korea, the reconstructed catch data showed a 97% decline in landings over 46 years from 1969 to 2014. There were minimal catches during 1950 that then rose steeply during the mid-1960s to a peak of 8,900 t followed by a steady decline to 294 t in 2014. Fishing effort in South Korea has increased by about one-quarter since the 1950s. Therefore, this species is unlikely to occur in the area and has been screened out. Current records of the species do not indicate its presence in the west sea of Korea (https://www.gbif.org/species/2418836)  https://www.gbif.org/species/2418836	Screened out

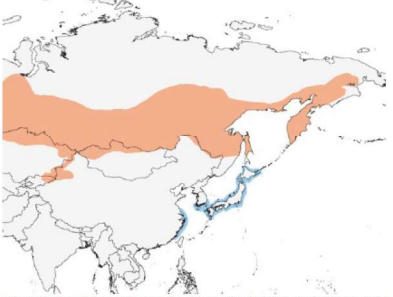
Sr. no.	Scientific name	Common name	IUCN status	Rationale	Screened in/ out
82	<i>Okamejei boesemani</i>	Boeseman's Skate	VU	 https://www.iucnredlist.org/species/161636/124519140 Migratory status – non migratory Estimated extent of occurrence (km²): NA Congregatory – NA Global population estimate – NA, Range restricted. Habitat: Marine Neritic The Sharpnose Skate is endemic to the Northwest Pacific Ocean from southern Japan to Taiwan, including North and South Korea, and China. This is one of the most abundant and common bycatch species of skate from the trawl fisheries. Catches of sharks, rays, and skates from 1950 to 2014 have been reconstructed for the South Korea and China EEZs, based on landings data (Pauly et al. 2020). In South Korea, the reconstructed catch data showed a 97% decline in landings over 46 years from 1969 to 2014. There were minimal catches during 1950 that then rose steeply during the mid-1960s to a peak of 8,900 t followed by a steady decline to 294 t in 2014. Fishing effort in South Korea has increased by about one-quarter since the 1950s. Therefore, this species is unlikely to occur in the area. The current distribution of the species does not indicate its presence near the region of the project site and is therefore screened out (https://www.gbif.org/species/2420118)  https://www.gbif.org/species/2420118	Screened out
83	<i>Verasper variegatus</i>	Spotted Halibut	VU	 https://www.iucnredlist.org/species/166966/1157918 Migratory status – non migratory Estimated extent of occurrence (km²): NA Congregatory – NA Global population estimate – NA, Range restricted. Habitat: Marine Neritic This species is distributed in the western North Pacific Ocean along continental Asia in the East China, Bohai and Yellow seas. The depth range is 1-200 m. Demersal species occur on sand and mud bottoms in coastal waters. Juveniles utilize shallow, inshore areas as nursery grounds, including estuarine intertidal flats and brackish inlets. Overfishing is a major threat to this species. Degradation of inshore nursery habitats may also negatively impact this species. This species is more abundant near Japan than near Korea and is therefore screened out. There is no confirmatory evidence indicating the presence of this species near the project site. The current know distribution indicate its abundance on the east and south coasts of Korean peninsula (https://www.gbif.org/species/2409297).  https://www.gbif.org/species/2409297	Screened out
84	<i>Istiophorus platypterus</i>	Sailfish		 https://www.iucnredlist.org/species/170338/46649664 Migratory status – non migratory Estimated extent of occurrence (km²): NA	Screened out

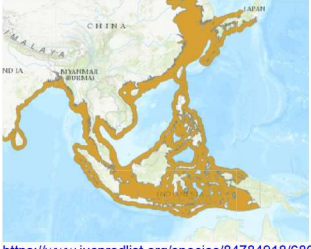
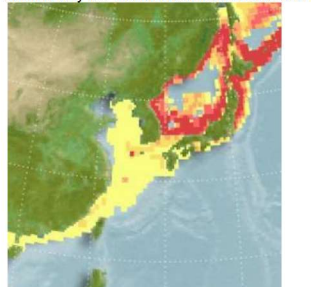
Sr. no.	Scientific name	Common name	IUCN status	Rationale	Screened in/ out
				Congregatory – NA Global population estimate – NA Habitat: Marine Neritic, Marine Oceanic In the Indian and Pacific oceans, Sailfish occur between approximately 45.5°N and 40.35°S in the western Pacific, 35°N and 35°S in the eastern Pacific, 45°S in the western Indian Ocean and 35°S in the eastern Indian Ocean. Sailfish are oceanic and epipelagic, spending most of their time in the upper 10 m in a temperature range between 21 and 28 °C. However, on occasion they descend into deeper waters, greater than 100 m. Sailfish are primarily targeted by coastal artisanal and recreational fleets, but also caught as bycatch in longline, purse seine, trawl and gillnet fisheries. In the Eastern Pacific Ocean, sailfish are mainly captured by: (1) the large-scale tuna longline fishery (mostly China, Taiwan, Japan and Korea); (2) the small-vessel longline fisheries targeting tuna and other species, and in particular, those operating off Central America; (3) the artisanal and recreational fisheries of Central and South America. Occasionally, the species is also caught in the purse-seine fisheries targeting tropical tunas, especially in more coastal regions. Since they predominantly occur in open ocean, they are unlikely to frequently occur at the project site and is therefore screened out. As this species does not occur in the Western Sea coast of Korean peninsula it has been screened out (Preliminary study on spatio-temporal variations of five giant and 17 large fish species around the Korean peninsula from 2011 to 2016. Fisheries and Aquatic Sciences, 25(5), 298-310).	
85	<i>Phyllospadix iwatensis</i>	Surf grass	VU	 https://www.iucnredlist.org/species/173341/6994909 Migratory status – non-migratory Estimated extent of occurrence (km²): 500 Congregatory – No Global population estimate – NA Habitat: Marine Neritic <i>Phyllospadix iwatensis</i> occurs in the northwestern Pacific from the northeast coast of China to South Korea and northwestern Honshu, Japan. Its distribution is very limited. Given its shallow depth range, patchy occurrence, and current distribution, this species has an area of occupancy estimated to be less than 500 km². <i>Phyllospadix iwatensis</i> inhabits the intertidal and subtidal rocky bottoms of temperate regions of Japan and China. In South Korea, it occurs mainly on rocky substrata along the east coast. This species has been observed in both sheltered and open shores, but usually grows in high-energy environments. This species lives at depths from 0-8 m. Major threats to <i>P. japonicus</i> include coastal development, shoreline hardening and kelp aquaculture. The recruitment rate of this species is low as it inhabits a high energy environment, where conditions need to be right for seeds to be successful. This species is likely to occur in and around the project site and is therefore screened in.	Screened in
86	<i>Zostera caespitosa</i>		VU	 https://www.iucnredlist.org/species/173345/6995781 Migratory status – non-migratory Estimated extent of occurrence (km²): NA Global population estimate – NA Habitat: Marine Neritic <i>Zostera caespitosa</i> has a very limited distribution. It is known from less than 10 locations in the northwest Pacific on the northern coast of China, the Korean Peninsula and in northern Japan. Given its very shallow depth range, patchy distribution, and recent declines in many parts of its range, it has an area of occupancy estimated to be less than 2,000 km². In a survey in Jangmok Bay of Geoje Island, Korea, flowering shoots appeared in early March and developed into fruits in early May. By the end of May, all reproductive shoots bore mature fruits. The study indicated that the growth and flowering phenology of <i>Z. caespitosa</i> was strongly coupled to seasonal light conditions. Since this species is reported off the coast of Korea and is likely to occur at the project site it has been screened in.	Screened in
87	<i>Mola mola</i>	Ocean Sunfish	VU	 https://www.iucnredlist.org/species/190422/97667070 Migratory status – NA Estimated extent of occurrence (km²): NA Congregatory – NA Global population estimate – NA Habitat: Marine Neritic <i>Mola mola</i> is circumglobally distributed throughout warm and temperate zones of all oceans. In the eastern Pacific it is known from Canada (British Columbia), south to Peru and Chile. It is deep benthic species. Ocean sunfish populations may be vulnerable to fishing activity because of the high levels of bycatch observed in many fisheries, including long lines, drift gillnets and midwater trawls. As many as 11 individuals were caught as bycatch along the western coast of Korea from 2011-2016 and is likely to occur in the region of the project site. This species is therefore screened in. (Preliminary study on spatio-temporal variations of five giant and 17 large fish species around the Korean peninsula from 2011 to 2016. Fisheries and Aquatic Sciences, 25(5), 298-310).	Screened in

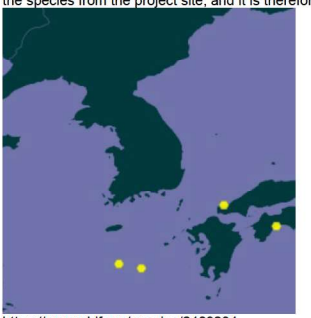
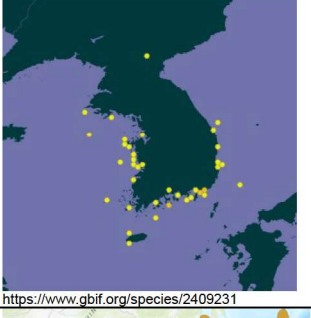
Sr. no.	Scientific name	Common name	IUCN status	Rationale	Screened in/ out
88	<i>Mobula alfredi</i>	Reef Manta Ray	VU	 https://www.iucnredlist.org/species/195459/214395983 Migratory status – NA Estimated extent of occurrence (km²): NA Congregatory – NA Global population estimate – NA Habitat: Marine Neritic The Reef Manta Ray is widely distributed in tropical and sub-tropical waters throughout much of the Indian and Pacific Oceans, from the surface down to depths of 432 m. The Reef Manta Ray is a neritic and oceanic pelagic ray typically resident in productive near-shore environments, such as coral and rocky reefs, island groups, atolls, and continental coastlines. The species is among the longest-living rays and has an extremely conservative life history; the average Reef Manta Ray may produce only 4–7 pups during its estimated lifespan, which would contribute to its slow recovery from population reductions due to over-exploitation or other threats. Given the drastic declines in the diversity and abundances of rays in the yellow sea and along the Korean coast this species is highly unlikely to occur at the project site and is screened out.	Screened out
89	<i>Pungitius sinensis</i>	Amur Stickleback	VU	 https://www.iucnredlist.org/species/19915743/159638809 Migratory status – NA Estimated extent of occurrence (km²): NA Congregatory – NA Global population estimate – NA Habitat: Marine Neritic <i>Pungitius sinensis</i> has a wide and continuous distribution along the continental coast of the southern Sea of Okhotsk, in Russia and China, and the entire coast of Sea of Japan and north-eastern coast of the Korean Peninsula. This species is likely to occur at the project site based on the distribution and is screened in.	Screened in
90	<i>Anser erythropus</i>	Lesser White-fronted Goose	VU	 https://www.iucnredlist.org/species/22679886/132300164 Migratory status – Migratory Congregatory – Congregatory Global population estimate – 16,000-27,000 Habitat: Shrubland, Grassland, Wetlands (inland), Rocky areas (e.g. inland cliffs, mountain peaks), Artificial/Terrestrial. It breeds in scrubby tundra and winters in agricultural fields, saltmarshes, and drier areas adjacent to wetlands. Satellite tagging has shown that its wintering grounds are in northern Europe and Russia and breeding grounds in China and Japan in the East (Ao, P. R., Wang, X., Solovyeva, D., Meng, F. J., Ikeuchi, T., Shimada, T., ... & Fox, A. D. (2020). Rapid decline of the geographically restricted and globally threatened Eastern Palearctic Lesser White-fronted Goose <i>Anser erythropus</i>. <i>Wildfowl</i>, 9, 206-43.). Migratory route of <i>Anser erythropus</i> estimated from flight paths of satellite tagged individuals. The flight path of birds may intersect the project site. Therefore, the species is screened in.	Screened in

Sr. no.	Scientific name	Common name	IUCN status	Rationale	Screened in/ out
				Ao, P. R., Wang, X., Solovyeva, D., Meng, F. J., Ikeuchi, T., Shimada, T., ... & Fox, A. D. (2020). Rapid decline of the geographically restricted and globally threatened Eastern Palearctic Lesser White-fronted Goose <i>Anser erythropus</i>. <i>Wildfowl</i>, 9, 206-43.	
91	<i>Aythya ferina</i>	Common Pochard	VU	https://www.iucnredlist.org/species/22680358/205288455 Migratory status – Migratory Estimated extent of occurrence (km²): 5,160,000 Congregatory – Congregatory Global population estimate – 760,000-790,000 Habitat: Wetlands (inland), Marine Neritic, Marine Coastal/Supratidal, Artificial/Aquatic & Marine The species breeds from western Europe through central Asia to south-central Siberia and northern China. It is a terrestrial species and is screened out.	Screened out
92	<i>Halcyon pileata</i>	Black-capped Kingfisher	VU	https://www.iucnredlist.org/species/22683249/212490546 Migratory status – Migratory Estimated extent of occurrence (km²): 5,160,000 Congregatory – Congregatory Global population estimate – NA Habitat: Wetlands (inland), Artificial/Terrestrial. The global population size has not been quantified, but the species is reported to be locally frequent and common to uncommon. Since this is a terrestrial species and unlikely to occur at the project site it has been screened out.	Screened out.
93	<i>Coturnicops exquisitus</i>	Swinhoe's Rail	VU	https://www.iucnredlist.org/species/22692270/93345348 Migratory status – Migratory Estimated extent of occurrence (km²): 5,160,000 Congregatory – Congregatory Global population estimate – 2,500-9,999 Habitat: Wetlands (inland), Artificial/Terrestrial. Forest, Wetlands (inland), Marine Neritic, Marine Intertidal, Marine Coastal/Supratidal, Artificial/Terrestrial	Screened out

Sr. no.	Scientific name	Common name	IUCN status	Rationale	Screened in/ out
				<i>Coturnicops eximius</i> is known to breed at a handful of sites in south-eastern Russia and north-eastern China (BirdLife International 2001), with recent reports of possible breeding in Aomori Prefecture, Japan (S. Chan in litt. 2003). It has been recorded on passage and in winter in Mongolia, North Korea, South Korea, Japan. Its ecology is poorly known. It has been recorded in wet, grassy meadows and tussock-swamps in the lowlands, reed-swamps, grassy swamps near rivers, rice-fields and around streams and pools with thick cover. Since this is predominantly a terrestrial species and unlikely to occur at the project site it has been screened out. Also, these are small-bodied birds are not known to collide with wind turbines or transmission lines and are unlikely to be affected by the project and are therefore screened out.	
94	<i>Calidris acuminata</i>	Sharp-tailed Sandpiper	VU	 https://www.iucnredlist.org/species/22693414/152588591 Migratory status – Migratory Estimated extent of occurrence (km²): 820,000 Congregatory – Congregatory Global population estimate 60,000 120,000 Habitat: Grassland, Wetlands (inland), Marine Neritic, Marine Intertidal, Marine Coastal/Supratidal Breeds in north-central and north-east Siberia from Lena Delta to the River Kolyma, Russia. Occurs throughout East Asia and Australasia on passage with critical staging/stopover sites in China and South Korea as well as Alaska, U.S.A. The species breeds on tundra of low Arctic and subarctic, especially damp hillock tundra and moss-sedge bogs with drier, shrub-covered hummocks (up to 2–3 m high). During non-breeding season, the species uses a wide variety of coastal and inland wetlands (many ephemeral), including coastal saltmarshes, intertidal mudflats, shallow brackish lagoons, flooded grassland, river mouths and rice fields. Since this species is likely to occur near the project site it has been screened in.	Screened in
95	<i>Saundersilarus saundersi</i>	Saunders's Gull	VU	 https://www.iucnredlist.org/species/22694436/132551327 Migratory status – Migratory Estimated extent of occurrence (km²): 531,000 Congregatory – Congregatory Global population estimate – 14,400 Habitat: Wetlands (inland), Marine Neritic The species nests on the ground and is restricted to common seepweed <i>Suaeda glauca</i> saltmarsh habitats. Wintering birds are found on estuarine tidal flats, with regular movements between different sites, dependent on weather and food supply. Since this species is likely to occur at the project site it has been screened in.	Screened in
96	<i>Aquila heliaca</i>	Eastern Imperial Eagle	VU	 https://www.iucnredlist.org/species/22696048/155464885 Migratory status – Migratory Estimated extent of occurrence (km²): 14,900,000 Congregatory – Congregatory Global population estimate – 2,500-9,999 Habitat: Forest, Shrubland, Grassland, Wetlands (inland). This is a lowland raptor species that has been pushed to higher altitudes by persecution and habitat loss in Europe. In central and eastern Europe, it breeds in forests up to 1,000 m and in steppe and agricultural areas with large trees, and nowadays also on electricity pylons. Since this is a terrestrial species, it is unlikely to occur at the offshore project site and is screened out.  http://www.groms.de/Species_HTMLs/Abeliaca.html The project does not pose a hindrance to the movement of <i>A. heliaca</i> in their breeding, feeding, and wintering grounds.	Screened out

Sr. no.	Scientific name	Common name	IUCN status	Rationale	Screened in/ out
97	<i>Podiceps auritus</i>	Horned Grebe	VU	 https://www.iucnredlist.org/species/22696606/132066871 Migratory status – Migratory Estimated extent of occurrence (km²): 52,900,000 Congregatory – NA Global population estimate – NA Habitat: Terrestrial, Freshwater This species is found in the Palearctic and Nearctic. It breeds from Iceland and the Baltic to Kamchatka, Russia, wintering from the North Sea to the Caspian Sea and off Japan to China. Since this species is predominantly terrestrial it unlikely to occur at the offshore project site and is therefore screened out.  https://birdsoftheworld.org/bow/species/horgre/cur/introduction There is no overlap between the species distribution and the project site.	Screened out
98	<i>Egretta eulophotes</i>	Chinese Egret	VU	 https://www.iucnredlist.org/species/22696977/93596047 Migratory status – Migratory Estimated extent of occurrence (km²): 1,240,000 Congregatory – NA Global population estimate – 2,500-9,999 Habitat: Forest, Marine Intertidal, Marine Coastal/Supratidal, Artificial/Terrestrial <i>Egretta eulophotes</i> breeds on small islands off the coasts of eastern Russia, North Korea, South Korea and mainland China. It formerly bred in Taiwan and Hong Kong but is now only a non-breeding visitor or passage migrant. Since this species is predominantly terrestrial it unlikely to occur at the offshore project site and is therefore screened out.	Screened out
99	<i>Emberiza rustica</i>	Rustic Bunting	VU	 https://www.iucnredlist.org/species/22720960/89641304 Migratory status – Migratory Estimated extent of occurrence (km²): 4,870,000 Congregatory – yes Global population estimate – 6,000,000-8,999,999 Habitat: Forest, Shrubland, Wetlands (inland), Artificial/Terrestrial This bunting breeds across northern latitudes of the Palearctic from Norway in the west to Kamchatka (Russia) in the east. It is a full migrant, wintering in central and eastern Asia (primarily from eastern China to Japan). Since this species is predominantly terrestrial and will not occur at the offshore project site it has been screened out.	Screened out
100	<i>Tricholoma acerbum</i>		VU	 https://www.iucnredlist.org/species/76265852/76266227 Migratory status – NA Estimated extent of occurrence (km²): NA Congregatory – NA Global population estimate – NA Habitat: Forest, Since this species is a terrestrial fungus, it will not occur at an offshore site and is screened out. It is also not present in the tidal mudflats as it requires forested habitats	Screened out

Sr. no.	Scientific name	Common name	IUCN status	Rationale	Screened in/ out
101	<i>Aetomylaeus nichofii</i>	Banded Eagle Ray	VU	 https://www.iucnredlist.org/species/84784918/68607458 Migratory status – NA Estimated extent of occurrence (km²): NA Congregatory – NA Global population estimate – NA Habitat: Marine Neretic The Banded Eagle Ray is an Indo-West Pacific species, ranging from the Persian/Arabian Gulf westwards to Indonesia and Southeast Asia and northwards to southern Japan. There are single records from the Maldives and from southern Mozambique, indicating that the species may have a wider distribution in the Indian Ocean than currently known. In northern Australia it is replaced by the Blue-banded Eagle Ray. The Banded Eagle Ray is a demersal species on the continental shelf inshore to at least 115 m. This species is a major commercial eagle ray that is marketed throughout the region. Declines in this species are inferred based on high levels of exploitation in the coastal zone across its range. Since the rays have undergone drastic population declines in the Yellow Sea and in Korea, it is highly unlikely to occur at the project site and is therefore screened out.	Screened out
102	<i>Aetobatus narutobiei</i>	Naru Eagle Ray	VU	 https://www.iucnredlist.org/species/104021947/104021988 Migratory status – NA Estimated extent of occurrence (km²): NA Congregatory – NA Global population estimate – NA Habitat: Marine Neretic The Naru Eagle Ray is endemic to the Northwest Pacific Ocean where it occurs from Japan to Vietnam, including North and South Korea, and China. Since the rays have undergone drastic population declines in the Yellow Sea and in Korea, it is highly unlikely to occur at the project site and is therefore screened out.	Screened out
103	<i>Clidoderma asperimum</i>	Roughscale Sole	VU	 https://www.iucnredlist.org/species/158624882/158637941 Migratory status – NA Estimated extent of occurrence (km²): NA Congregatory – NA Global population estimate – NA Habitat: Marine Neretic This species is distributed in the North Pacific Ocean. In the western North Pacific Ocean, it occurs along continental Asia from the East China Sea to the Yellow and Bohai seas and the Sea of Japan to the Tatar Strait. This demersal, cold-water species occurs on sandy and muddy bottoms on the outer continental shelf and upper slope. It does not occur on the western coast of peninsular Korea where the project site is located and therefore is screened out (https://www.fishbase.se/summary/8838). The modelling of the native range of the species indicates there is a 10-20% chance of species occurring near the project site which is very low and therefore it has been screened out.  https://www.aquamaps.org/preMap2.php?cache=1&SpecID=Fis-27194	Screened out

Sr. no.	Scientific name	Common name	IUCN status	Rationale	Screened in/ out
104	<i>Eopsetta grigorjewi</i>	Shotted Halibut	VU	 https://www.iucnredlist.org/species/158625391/158637956 Migratory status – NA Estimated extent of occurrence (km²): NA Congregatory – NA Global population estimate – NA Habitat: Marine Neretic This species is distributed in the western North Pacific Ocean. It occurs along continental Asia from off Shanghai, China in the East China Sea to the Yellow and Bohai seas and in the Sea of Japan from Busan, South Korea to off southwestern Sakhalin Island, Russia. This species is common off eastern and southern Korea. Catch per unit effort data for Korean flounder fisheries has not been consistently collected but effort has likely increased over time. Catches have been trending downwards since the late 1970s, and overfishing is suspected. Since it is rarely found on the western coast of Korea its unlikely to occur at the project site and has been screened out. Latest records (2006-2019) indicate the absence of the species from the project site, and it is therefore screened out (https://www.gbif.org/species/2409234).  https://www.gbif.org/species/2409234	Screened out
105	<i>Platichthys bicoloratus</i>	Stone Flounder	VU	 https://www.iucnredlist.org/species/158631336/158638006 Estimated extent of occurrence (km²): NA Congregatory – NA Global population estimate – NA Habitat: Marine Neretic This species is distributed in the western North Pacific Ocean. It occurs off Taiwan and along continental Asia from the East China Sea to the Yellow and Bohai seas and along the Korean Peninsula to the Sea of Japan. This demersal species occurs on soft bottoms from brackish and fresh waters to marine waters on the outer continental shelf. The maximum standard length is 50 cm. Estuaries are important nursery areas. Latest records confirm the presence of the species in and around the project site (https://www.gbif.org/species/2409231) and is therefore screened in.  https://www.gbif.org/species/2409231	Screened in
106	<i>Verasper moseri</i>	Barfin Flounder	VU	 https://www.iucnredlist.org/species/158637880/158638136 Estimated extent of occurrence (km²): NA	Screened out

Sr. no.	Scientific name	Common name	IUCN status	Rationale	Screened in/ out
				Congregatory – NA Global population estimate – NA Habitat: Marine Neretic This species is distributed in the western North Pacific from the Sea of Japan, including the Korean Peninsula, Peter the Great Bay, the Primorye coast to Chikhacheva Bay, southwestern Sakhalin Island, and Japan (Hokkaido to Hamada in Shimane Prefecture); in the southern Sea of Okhotsk from Aniva Bay north to Chaivo Bay off Sakhalin and the southern Kuril Islands; and off Pacific Japan from Hokkaido to Ibaraki Prefecture https://www.iucnredlist.org/species/158637880/158638136#geographic-range However, this species is unlikely likely to occur at the project site due to its wide distribution and is screened out. https://www.gbif.org/species/2409299.  https://www.gbif.org/species/2409299	
107	<i>Platyrrhina tangi</i>	Yellow-spotted Fanray	VU	 https://www.iucnredlist.org/species/169234885/169234948 Estimated extent of occurrence (km²): NA Congregatory – NA Global population estimate – NA Habitat: Marine Neretic The Yellow-spotted Fanray is endemic to the Northwest Pacific from southern Japan to northern Vietnam, including South and North Korea, China, and Taiwan. The Yellow-spotted Fanray is demersal in inshore waters on sandy and muddy habitats of the continental shelf at depths of 10–100 m. The Yellow-spotted Fanray is subject to fishing pressure across its entire spatial and depth range. It is taken as bycatch in industrial and artisanal fisheries with multiple fishing gears including trawl, longline, set net, and gillnet, and retained for human consumption or fish meal. Since this species is unlikely to occur at the project site due to its wide distribution it is screened out.  https://www.gbif.org/species/5963017	Screened out
108	<i>Trillium tschonoskii</i>		EN	 https://www.iucnredlist.org/species/18816841/84010024 Migratory status – NA Estimated extent of occurrence (km²): NA Congregatory – No Global population estimate – NA Habitat: Forest <i>Trillium tschonoskii</i> is a plant species and is the most widely distributed species among Asiatic <i>Trillium</i>. The distribution range of the species varies from lowland deciduous forest floor to subalpine mixed forest of conifers and subalpine birch at an altitude of 1,000 to 3,200 m. <i>Trillium tschonoskii</i> is a perennial herb that about 3,000 individuals and occurs in 10 populations that occur only in Ulleung Island of Gyeongsangbukdo off the eastern coast of peninsular Korea and is more than 500 kms from the project site. This species is found at shady habitats in forests. This species is screened out (National Institute of Biological Resources, 2014. Korean Red List of Threatened Species. Pp 256. Available at: https://www.nationalredlist.org/files/2016/04/Korean-Red-List-of-Threatened-Species-English-compressed-2.pdf)	Screened out

Note

*Criterion 1: Critically Endangered (CR) / Endangered (EN) species; *Criterion 2: Endemic and/ or restricted-range species; Criterion 3: Migratory and/or congregatory species.

Table 7-2 List of Potential Critical Habitat Trigger Species

Sr. no.	Common name	Scientific Name	IUCN Status
1	<i>Rhina ancylostoma</i>	Bowmouth Guitarfish	CR
2	<i>Hongo koreana</i>	Korean Skate	CR
3	<i>Squatina japonica</i>	Japanese Angelshark	CR
4	<i>Takifugu chinensis</i>	Chinese Puffer	CR
5	<i>Calidris pygmaea</i>	Spoon-billed Sandpiper	CR
6	<i>Thalasseus bernsteini</i>	Chinese Crested Tern	CR
7	<i>Isurus oxyrinchus</i>	Shortfin Mako	EN
8	<i>Neophocaena asiaeorientalis</i>	Narrow-ridged Finless Porpoise	EN
9	<i>Rhinobatos hynnicephalus</i>	Ringed Guitarfish	EN
10	<i>Squatina nebulosa</i>	Clouded Angelshark	EN
11	<i>Hemitriakis japonica</i>	Japanese Topeshark	EN
12	<i>Hemitrygon sinensis</i>	Chinese Stingray	EN
13	<i>Beringraja pulchra</i>	Mottled Skate	EN
14	<i>Phyllospadix japonicus</i>	Asian Surf Grass	EN
15	<i>Apostichopus japonicus</i>	Japanese Spiky Sea Cucumber	EN
16	<i>Numenius madagascariensis</i>	Far Eastern Curlew	EN
17	<i>Platalea minor</i>	Black-faced Spoonbill	EN
18	<i>Ciconia boyciana</i>	Oriental Stork	EN
19	<i>Haliotis discus</i>		EN
20	<i>Coilia nasus</i>	Japanese Grenadier Anchovy	EN
21	<i>Sebastes koreanus</i>		DD
22	<i>Notorynchus cepedianus</i>	Broadnose Sevengill Shark	VU
23	<i>Urolophus aurantiacus</i>	Oriental Stingaree	VU
24	<i>Alveopora japonica</i>		VU
26	<i>Phyllospadix iwataensis</i>	Surf grass	VU
27	<i>Zostera caespitosa</i>		VU
28	<i>Mola mola</i>	Ocean Sunfish	VU
29	<i>Pungitius sinensis</i>	Amur Stickleback	VU
30	<i>Anser erythropus</i>	Lesser White-fronted Goose	VU
31	<i>Calidris acuminata</i>	Sharp-tailed Sandpiper	VU
32	<i>Saundersilarus saundersi</i>	Saunders's Gull	VU
33	<i>Platichthys bicoloratus</i>	Stone Flounder	VU
33	<i>Platyrrhina tangi</i>	Yellow-spotted Fanray	VU

APPENDIX A PROJECT DESCRIPTION



ESIA for Project Anma



Project Description

7 October 2024

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Signature Page

7 October 2024

ESIA for Project Anma

Project Description

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Acronyms and Abbreviations

AWC	Anma Offshore Wind Energy
AZE	Alliance for Zero Extinction
BAP	Biodiversity Action Plan
bgs	below ground surface
CCRA	Climate Change Risk Assessment
CHA	Critical Habitat Assessment
CPS	Cable Protection System
CRM	Collision Risk Modelling
EBL	Electric Business License
E&S	Environmental and Social
EAAF	East Asian–Australasian Flyway
EHS	Environmental, Health and Safety
EIA	Environmental Impact Assessment
EMS	Environmental Management System
EP	Equator Principles
EPAP	Equator Principles Action Plan
EPC	Engineering, Procurement and Construction
EPFI	Equator Principles Financial Institutions
ERM	ERM Korea Ltd.
EN	Endangered
ESAP	Environmental and Social Action Plan
ESDD	Environmental and Social Due Diligence
ESG	Environmental Social Governance
ESIA	Environmental and Social Impact Assessment
ESMP	Environmental and Social Management Plan
ESMS	Environmental and Social Management System
ESS	Environmental and Social Standards
EXC	Export Cable
FA	Fisheries Act
FDA	Fishery Damage Assessment
FDIA	Fishery Damage Impact Assessment
FOU	Foundation
FTEs	Full Time Employees

GHG	Greenhouse Gas
GIPS	Geotechnical Information Portal System
GIS	Gas Insulated Switchgear
HDD	Horizontal Directional Drilling
H&S	Health and Safety
HR	Human Resources
IAC	Inter Array Cable
IBA	Important Bird Areas
IBAT	Integrated Biodiversity Assessment Tool
ID	Identity
IESC	Independent E&S Consultant
IFC	International Finance Corporation
IPA	Important Plant Areas
ISO	International Organisation for Standardisation
IUCN	International Union for Conservation of Nature
KBA	Key Biodiversity Area
KEPCO	Korea Electric Power Corporation
kV	kilovolt
LC	Least Concern
LIDAR	Laser Imaging, Detection And Ranging
LRP	Livelihood Restoration Plan
LURIS	Land Use Regulation Information Service
MEMA	Marine Environment Management Act
MoE	Ministry of Environment
NGIC	National Groundwater Information Center
NGO	Non-Governmental Organisation
OHS	Occupational, Health and Safety
ONS	Onshore Substation
OSS	Offshore Substation
OPPW	Occupancy Permit of Public Waters
PDCA	Plan-Do-Check-Act
PFDIA	Preliminary Fishery Damage Impact Assessment
PS	Performance Standard
PWMRA	Public Waters Management and Reclamation Act

Q	Quarter
RAP	Resettlement Action Plan
SEP	Stakeholder Engagement Plan
SGRE	Siemens Gamesa Renewable Energy
SOP	Standard Operating Procedure
TJB	Transition Joint Bay
TMS	Tele-Monitoring System
VU	Vulnerable
WBG	World Bank Group
WGS	World Geodetic System
WTG	Wind Turbine Generator
XLPE	Cross-linked polyethylene

1. OVERVIEW

The Project consists of two (2) phases - Phase 1 and Phase 2 - corresponding to Electricity Business Licences (EBL 1 and EBL 2). The Project will utilise Siemens Gamesa Renewable Energy's (SGRE) SG DD-236 14.0 MW wind turbine generators (hereinafter as "WTGs"). Phase 1 consists of 16 WTG units with a permitted total capacity of 224 MW and Phase 2 consists of 22 WTG units with a permitted total capacity of 308 MW. The Project's wind turbines area will take up a total area of 80 km² of public waters.

The WTGs will be connected via 66kV Inter-Array submarine cables (hereinafter as "IACs" - Phase 1: circa 51 km and Phase 2: circa 69 km) to the Offshore Substation (hereinafter as "OSS") (125°56'32.86"E, 35°19'44.00" N¹).

230kV export submarine cables (hereinafter as "EXCs") will then be routed to the Onshore Substation (hereinafter as "ONS"). And then, using 154kV onshore cables, electricity will be connected to the West Yeonggwang (or Seoyeonggwang) KEPCO onshore substation operated by KEPCO.

¹ WGS 84

2. PROJECT LOCATION

The area proposed for installation of the Project WTGs (the Site) is situated in the Yellow Sea (or West Sea) West of Anma Island, Yeonggwang-gun, Jeollanam-do, South Korea. The coordinates of the WTGs, as well as the Project location and its surrounding areas are presented in Table 2.1 and Figure 3.1 respectively.

Table 2.1 Coordinate for the WTGs

WTG ID for Phase 1	Coordinate (WGS 84)		WTG ID for Phase 2	Coordinate (WGS 84)	
	Longitude ±ddmmss.ss	Latitude ±ddmmss.ss		Longitude ±ddmmss.ss	Latitude ±ddmmss.ss
A01	125°50'4.5"	35°22'24.1"	C01	125°50'5.1"	35°19'2.58"
A02	125°50'39.6"	35°22'24.1"	C02	125°50'43.46"	35°19'2.59"
A03	125°51'14.7"	35°22'24.1"	C03	125°51'21.86"	35°19'2.63"
A04	125°51'49.7"	35°22'24.0"	C04	125°52'0.23"	35°19'2.63"
A05	125°52'24.8"	35°22'24.0"	C05	125°52'38.63"	35°19'2.65"
A06	125°52'59.9"	35°22'24.0"	C06	125°53'17.03"	35°19'2.68"
A07	125°53'34.9"	35°22'24.0"	C07	125°53'55.39"	35°19'2.7"
A08	125°54'10.0"	35°22'23.9"	C08	125°54'33.79"	35°19'2.72"
A09	125°54'45.1"	35°22'23.9"	C09	125°55'12.15"	35°19'2.73"
A10	125°55'20.1"	35°22'23.8"	C10	125°55'50.55"	35°19'2.75"
A11	125°55'55.2"	35°22'23.8"	C11	125°56'28.91"	35°19'2.79"
A12	125°56'30.3"	35°22'23.8"	D01	125°50'5.56"	35°17'8.65"
B01	125°50'5.4"	35°20'55.2"	D02	125°50'43.94"	35°17'8.59"
B02	125°52'13.8"	35°20'55.2"	D03	125°51'22.33"	35°17'8.56"
B03	125°54'22.3"	35°20'55.0"	D04	125°52'0.67"	35°17'8.53"
B04	125°56'30.7"	35°20'54.9"	D05	125°52'39.05"	35°17'8.49"
			D06	125°53'17.4"	35°17'8.46"
			D07	125°53'55.78"	35°17'8.41"
			D08	125°54'34.17"	35°17'8.4"
			D09	125°55'12.51"	35°17'8.35"
			D10	125°55'50.9"	35°17'8.33"
			D11	125°56'29.24"	35°17'8.27"
Offshore Substation	125°56'32.86"	35°19'44.00"			

Source: AWC dated 18 July 2023

3. PROJECT HISTORY

3.1 Key Milestones

The achieved milestones of the Project have been summarized below:

- October 2017: Installation of a wind condition measuring instrument (Hoeng-do onshore LiDAR) for preparation of electric business license (EBL) for Phase 1;
- April 2019: Acquired EBL for Phase 1;
- May 2019: Installation of wind condition gauge (offshore LiDAR) for preparation of EBL for Phase 2;
- July 2020: Acquired EBL Alteration for Phase 1, and acquired EBL for Phase 2;
- April 2022: Submission of draft Environmental Impact Assessment for Anma Project (hereinafter Draft Regulatory EIA);
- December 2022: Submission of Final Regulatory EIA (updated January 2023);
- June 2023: Submission of Supplementary Regulatory EIA;
- July 2023: Obtained EIA agreement;
- August 2023: Marine Traffic Safety Assessment approved.

3.2 Versions and Alterations

- Version 1: Draft Regulatory EIA, dated April 2022;
- Version 2: Final Regulatory EIA, dated December 2022 and Supplementary Regulatory EIA, dated June 2023; and
- Version 3: As of August 2023, it is anticipated that the preferred components, layouts and selected construction methods that are incorporated into this ESIA will result in an update process in the EIA and all necessary permits (hereinafter Version 3 AWF).

Table 3.1 History of Project Components

	WTGs numbers & capacity	WTGs type	OSS location & type	IAC location & type	EXC location & type	ONS location & type	Onshore cable location & type	Other
Version 1	528 MW 66 WTGs- 8 MW	WinDS8000 Doosan	Juk-do onshore substation	66 kV Phase 1: 43.3 km (3 strands) Phase2: 57.8km (4 strands)	154kV XLPE 800 mm ² 3-core, (approx. 40.4km)	1508-1 Jisan-ri, Baeksu-eup, Yeonggwang-gun, Jeollanam-do	154kV XLPE 800 mm ² single core, 12 wires (about 7.6km)	Songji-do overhead line: approx. 1.5 km
Version 2	546 MW 39 WTGs- 14 MW	SG DD-236 SIEMENS Gamesa	Offshore substation 125°53'55.2"E 35°19'45.45"N	66 kV Phase 1: approx. 32.0 km Phase2: approx. 36.2 km	154kV XLPE 800 mm ² 3-cores, (approx. 44.9km)	286-3 Songam-ri, Yeomsan- myeon, Yeonggwang-gun, Jeollanam-do	154kV XLPE 2000 mm ² single core, (approx. 1.1km x 6 strands)	No overhead line
Version 3	532 MW 38 WTGs- 14 MW	No change	Offshore substation 125°56'32.86"E 35°19'44.00"N	66 kV Phase 1: approx. 51 km Phase 2: approx. 69 km	230kV XLPE 3-core Approx.41.6 km route length	No change	154kV XLPE single core Approx. 1.5 km route length	No change

Source: Draft Regulatory EIA /Final and Supplementary Regulatory EIA / Version 3 AWF



Note: Some final designs are still under validation process and thus will be updated in relevant documents later.

Source: Version 3 AWF

Figure 3.1 Location of Project Site

4. PROJECT FACILITIES AND COMPONENTS

The main Project components as per the Final Regulatory EIA is summarized below:

- A wind turbines area divided in 2 areas (i.e. Phase 1 and Phase 2), comprised of 38 WTGs with a permitted total capacity of 532 MW;
- 38 SGRE's SG DD-236 14.0 MW WTGs comprised of the tower, foundation, nacelle, hub, rotor, and rotor blades;
- circa 120 km of 66 kV Inter-Array Cables (total for both Phase 1 and Phase 2);
- One (1) Offshore Substation (converting 66 kV to 230 kV);
- Two circuits, each circa 42 km of 230kV offshore export cable (connecting from Offshore Substation to the mainland);
- A Transition Joint Bay at the landing point, receiving the 230kV offshore export cable;
- Two circuits, circa 150m each of 230kV onshore cable (connecting the Transition Joint Bay to the Onshore Substation);
- One (1) Onshore Substation (converting 230 kV to 154kV);
- Two circuits, each circa 1.5 km of 154 kV onshore cable (connecting from the Onshore Substation to the KEPCO substation being the grid connection point); and
- One (1) Korea Electric Power Corporation (KEPCO) substation (owned and operated by KEPCO).

For clarity:

One circuit of offshore export cable refers to one (1) cable, each with three (3) power conductors within the cable.

One circuit of onshore cable refers to three (3) cables, each with one (1) power conductor within the cable.

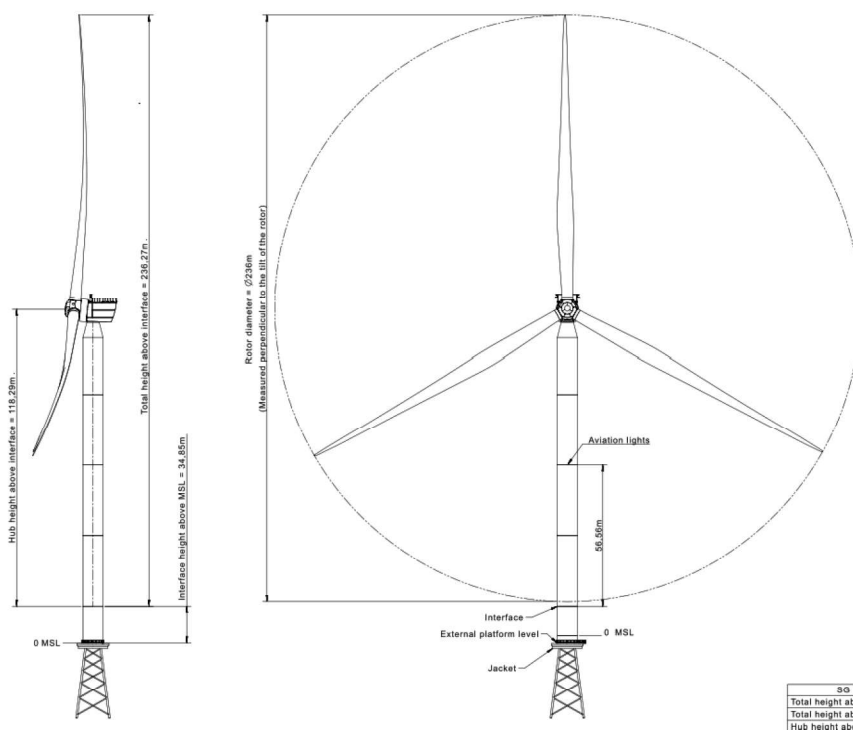
4.1 Wind Turbine Generator

The Version 3 configuration of wind turbines layout has been developed with 38 WTGs of 14 MW nominal capacity. Given the geographical context of the project site within the 'Northeast Asia-Oceania' Migratory Bird Flyway (EAAF) and its proximity to the breeding habitats of various marine bird species (such as Chilsan Island), a decision was made to curtail the number of WTGs and accordingly modify their arrangement. Elaborated information pertaining to the individual WTGs can be found in Table 4.1.

Table 4.1 WTG details

WTG Components	Parameter	Specifications
WTG	Type Class	SG DD-236
ROTOR	Type	3-bladed, horizontal axis
	Position	Upwind
	Diameter (m)	236
	Length of blade (m)	115
	Swept area (m ²)	43,500
TOWER	Type	Cylindrical and tapered tubular
	Hub height (m)	153
	Total height from Mean Sea Level (MSL) (m)	270
OPERATION DATA	Cut in Wind speed (m/s)	3
	Nominal Power (m/s)	at 12
	Cut out wind speed (m/s)	28

Source: Final and Supplementary Regulatory EIA / Version 3



Source: AWC dated 4 August 2023

Figure 4.1 Conceptual Figure of the WTG

4.2 Inter-array Cables (IAC) and Offshore Export Cables (EXC)

The Version 3 design entails all the IAC being concentrated to an Offshore Substation, and then, offshore export cables that directly connects with the mainland. The Version 3 plan is for all the inter array submarine cables to be 66 kV cross linked polyethylene cable (XLPE) submarine cable, the length of which is circa 51 km and 69 km for Phase 1 and Phase 2 respectively, and two (2) circuits of 230kV offshore export cables, each with a length of circa 42 km.

Detailed location of IAC and Offshore EXC are presented above in Figure 3.1.

The IACs will be installed to a target burial depth of between 3.0m to 3.5m, utilising a Jet Trencher for post lay burial operations.

The EXCs will be installed to a target burial depth of between 2.0m to 3.5m, depending on the water depth along the export cable route, where deeper water sections would have a deeper target burial depth. Burial operations for the EXCs will be performed by a Jetting Sled, through simultaneous lay and bury operations.

The EXC will be installed at landfall within a Horizontal Directional Drill (HDD) duct, approximately 120m in length under the sea. Upon exiting the HDD, the EXC will be held in situ via permanent beach clamps which horizontally hang off the cable and permanently secure them in position. The EXC will be terminated externally into a GIS arrangement as fitted to the ONS within a joint bay with land cable connections into the ONS GIS Building alternatively they will be pulled and terminated directly into the ONS GIS.

4.3 Offshore Substation (OSS)

An offshore substation is selected instead of installing it in Juk-do as the final design to avoid civil complaints and to reduce the overall impact to the environmental damage and the fisheries. Compared to the onshore substation, the offshore option will involve fewer external cables, resulting in relatively less environmental and fishing impacts. The opinions on the review of the offshore substation design were collected during the information session for residents as part of Draft Regulatory EIA and are documented therein. Insights and viewpoints concerning the assessment of the offshore substation design were obtained during a resident information session, a pivotal aspect of the Draft Regulatory EIA.

Currently the Offshore Substation is planned to transform the 66kV transmission voltage from the wind turbines into 230kV export transmission voltage. Table 4.2 shows the detail specification and location of OSS.

Detailed location of OSS is presented above in Figure 3.1.

Table 4.2 Offshore Substation Details

Parameter	Specification
Size	Topside: 32 m (Width) x 37 m (Depth) x 30 m (Height) Jacket: 23 m (Bottom Width) x 19 m (Top Width) x 55 m (Height) Pile: 73 m (Depth) x 12 EA
Location	125°56'32.86" E, 35°19'44.00" N

Source: Final Regulatory EIA / Version 3

4.4 Onshore Export Cable

The current landfall is in Yeomsan-myeon, Yeongwang-gun, Jeollanam-do. AWC plans to construct a 154 kV buried onshore cable route from their Onshore Substation to KEPCO onshore substation (West Yeonggwang KEPCO onshore substation). Most of the onshore underground cable route is expected

to be routed along existing roads, or then through rice paddies having been acquired and close other renewable power plants.

4.5 Onshore Substation (ONS)

The power that is generated (690 V) by the WTG will be boosted by the primary boosting transformer (690 V/66 kV) and then transmitted by the IAC (66 kV) to the Offshore Substation. The power will then be directed to the secondary step-up transformer (66 kV/154 kV) at the Offshore Substation, which will be connected to the grid connection point; Seoyeonggwang substation operated by KEPCO.

The AWC Onshore Substation will be in 286-3 Songam-ri, Yeomsan-myeon, Yeonggwang-gun, Jeollanam-do. The area is planned to be 1,550.41 m². The station will consist of three (3) buildings which include a substation, an office, and a warehouse. The office will consist of a three-story building, while the substation and warehouse will consist of one-story building each.

Figure 3.1 above shows the detail location of project site for onshore area.

4.6 Military Radar

The Project will install two radars structures upon request of Ministry of Army to compensate the obstruction generated by the WTGs once installed. The details and the localizations of the two structures shall be kept confidential due to the nature of the facilities. One radar shall be operating offshore and one radar shall be operating onshore.

The offshore radar will comprise a foundation and a top-side structure. The foundation type is yet to be determined and the dimensions of the top-side structure is expected to be no greater than 10mx10mx7.5. The construction is expected to start no earlier than Q1 2026. A maximum of 20 staff is estimated at peak time of installation phase and operation shall be unmanned.

The onshore radar will be installed on Imja island in Sinan province. The structure is estimated to comprise a steel tower measuring 5x5x10 meters. The construction is expected to earlier than May 2025 and the duration of the construction shall not exceed 6 months. A maximum of 7 persons shall be estimated during civil works and a maximum of 4 persons during steel tower installation. Operation phase planned to be unmanned.

4.7 Bird Monitoring Radar

As stipulated in the Final Regulatory EIA, a bird monitoring radar is scheduled to be established on Hoeng-do for a duration of one (1) year. The installation of the 2D Terma Scanner-5000 Radar is anticipated. The cabinet housing the monitoring system is approximately 3 meters in height, 3 meters in depth, and 3 meters in width. The antenna's height is estimated to be around 5.5 meters.

The exact placement and specifications of the monitoring equipment are currently pending finalization. Comprehensive details concerning this aspect will be provided at a later stage once they are confirmed.

4.8 Operation and Maintenance (O&M)

The project encompasses two distinct O&M harbour alternatives. One existing facility and one other location are matching the requirements for O&M harbour, however, the location of the O&M harbour is not available before lease contract execution due to high competition risk.

5. SUMMARY ON CONSTRUCTION ACTIVITIES

The purpose of this section is to provide a comprehensive overview of the high-level description of the EPC Package components and the EPC Schedule for the Project.

The EPC Package consists of various components essential for the successful execution of the Project. These components are designed to ensure optimal efficiency and adherence to project requirements. The detailed breakdown of each component, along with its specific role in the Project, is outlined below.

5.1 Foundations (FOU)

5.1.1 Pin-pile

The supplier responsible for the pin-pile has not been determined. The piling process involves several essential steps, including fabrication, transportation, and pile driving. The detailed description of each process involved in the piling work is outlined below:

1. Fabrication of piles;
2. Load out of piles onto vessel or barge;
3. Transport to offshore site; (In parallel prepare noise mitigation measures if required)
4. Upending of piles by installation vessel;
5. Lower piles to ground and wait until self-penetration is reached;
6. Lower hammer on top of pile;
7. Start pile driving activities until target depth is reached; and
8. Once done, lift hammer back to installation vessel, move to next location

Their primary activities are scheduled to commence in the third quarter of 2024, with the peak of their operations anticipated in the second quarter of 2025. At its peak, the estimated number of staff required will be approximately 200, and this period is expected to last for approximately 10 weeks. It is projected that around 10% of the workforce will consist of foreign workers, and the planned worker's accommodation is estimated to accommodate around 100 individuals.

5.1.2 Jacket

Jacket will be installed on the pin-pile after completion of pin-pile installation. The supplier responsible for the fabrication and installation of the windfarm jacket has not been finalized. The installation process of the windfarm jacket can be described as follows:

1. Fabrication of jacket;
2. Load out of Jacket onto vessel or barge;
3. Transport to offshore site lift jacket from barge and insert into pre-installed pin piles;
4. Start grouting to finalize connection between jacket and grout; and
5. Move to next location

The main activities of the Project are scheduled to commence in the fourth quarter of 2024, with the peak of their activities anticipated in the first quarter of 2026. During this peak period, it is estimated that approximately 200 staff members will be involved, and the activity is expected to last for approximately 10 weeks. It is anticipated that around 10% of the workers will be foreign workers.

5.2 Inter Array Cable

Installation of Inter Array Cable (IAC) will commence after completion of jacket installation. The contractor responsible for the installation of IAC has not been finalized. The main activity for the IAC installation is scheduled to begin by mid 2026. The IAC installation will involve the following key activities.

■ Site Preparation

1. Preparation of equipment for pull-in at the WTG foundation / OSS Jacket;
2. Pre-lay grapnel run on the seabed following the cable route; and
3. Pre-lay survey.

■ Installation

1. Mobilization of installation vessels and crew accommodations;
2. Cable loading from factory onto the installation vessel;
3. Removal of J-tube covers;
4. Cable pull-in (1st Cable End) including Cable Protection System (CPS) installation;
5. Cable surface laying;
6. Cable pull-in (2nd Cable end) including CPS installation;
7. Post lay survey;
8. Post lay burial, with jet trencher;
9. Post lay burial survey;
10. Remedial burial (if necessary only) with a jet trencher;
11. Remedial burial survey; and
12. Installation of rock bags on CPS at the WTG/ OSS (if necessary only).

During the peak period of their activities, which is expected to span from March 2026 to January 2027, the IAC installation team will consist of an estimated total of 100 - 160 staff members. These staff members will be further divided into two main groups. The first group, known as the Office Support / Management Teams, will comprise approximately 20 - 60 staff members. They will be responsible for providing support and managing various aspects of the IAC installation project. For their convenience, these team members will be accommodated in either major cities or locations near / around the port area depending on their function and role.

The second group is the Transport and Installation Vessel Crew, which will consist of approximately 80 - 100 staff members. This group will play a direct and hands-on role in the actual installation of the IAC. During their construction activities at sea, they will be accommodated either on the cable laying vessel (CLV) and a Service Operations Vessel (SOV).

Throughout the peak period, AWC expects that 10 - 30% of the workers in both groups may be foreigners. As the Project progresses and specific roles and requirements become clearer, further details regarding staffing and accommodation arrangements will be finalized and communicated accordingly.

5.3 Offshore Export Cable

Export Cable installation will occur almost in parallel to IAC installation. The contractor responsible for the installation of the offshore export cable has not been determined yet. The preparation of the offshore export cable route (such as HDD and TJB construction) is scheduled to begin in October

2024, with the actual cable installation set to commence in February 2026. The process of offshore export cable installation is described below:

■ Site Preparation

1. Construction of HDD;
2. Set up of silt curtains at excavation sites;
3. Excavation of Shore end landing approach;
4. Set up of pre-excavated trench wall stabilisation measures;
5. Set up of cable rollers in the pre-excavated trench;
6. Preparation of equipment for pull-in at the OSS Jacket and at the TJB area at the ONS;
7. Pre-lay grapnel run on the seabed following the cable route; and
8. Pre-lay survey.

■ Installation

1. Mobilization of installation vessels with cable storage and cable handling equipment;
2. Laying of cable section 1 of 2, on Circuit 1
 - a. Cable loading from factory onto the installation vessel;
 - b. Transit of the installation vessel from the factory to the near shore section near the mainland;
 - c. Cable shore end landing / beach pull-in (1st Cable End);
 - d. Backfilling of pre-excavated trenches of Circuit 1
 - e. Simultaneous lay and bury of the cable with a jetting sled towards the OSS;
 - f. Lay down of cable end at the middle of the route (near Gagi Island);
 - g. Return to the submarine cable factory;
3. Laying of cable section 1 of 2, on Circuit 2
 - a. Cable loading from factory onto the installation vessel;
 - b. Transit of the installation vessel from the factory to the near shore section near the mainland;
 - c. Cable shore end landing / beach pull-in (1st Cable End);
 - d. Backfilling of pre-excavated trenches of Circuit 2;
 - e. Simultaneous lay and bury of the cable with a jetting sled towards the OSS;
 - f. Lay down of cable end at the middle of the route (near Gagi Island);
 - g. Return to the submarine cable factory;
4. Laying of cable section 2 of 2, on Circuit 1
 - a. Cable loading from factory onto the installation vessel;
 - b. Transit of the installation vessel from the factory to the OSS;
 - c. Cable pull-in (1st Cable End) at the OSS;
 - d. Simultaneous lay and bury of the cable with a jetting sled towards the middle of the route;
 - e. Lay down of cable end at the middle of the route (near Gagi Island);
5. Laying of cable section 2 of 2, on Circuit 2
 - a. Cable loading from factory onto the installation vessel;

- b. Transit of the installation vessel from the factory to the OSS;
- c. Cable pull-in (1st Cable End) at the OSS;
- d. Simultaneous lay and bury of the cable with a jetting sled towards the middle of the route;
- e. Lay down of cable end at the middle of the route (near Gagi Island);
6. Cable joint assembly, deployment and protection of both Circuits 1 and 2 offshore joints;
7. Post installation survey;
8. Remedial burial (if necessary only) with a jet trencher; and
9. Installation of rock bags on CPS at the OSS (if necessary only).

During the peak of construction activities, expected to span from March to November 2026, approximately 170 to 260 staff will be involved in the installation process. These personnel will be divided into two main groups: the Office Support / Management Teams and the Transport and Installation Vessel Crew.

The Office Support / Management Teams, comprising about 20 to 60 staff, will be accommodated either in major cities or near / around the port depending on their function and role. Their primary responsibilities will be overseeing and managing various aspects of the installation, ensuring efficient coordination, and addressing any operational challenges.

On the other hand, the larger portion of the workforce, consisting of approximately 150 to 200 staff, will be the Transport and Installation Vessel Crew. These workers will be accommodated onboard the vessels (Cable Laying Barge, Support Barges, Jointing Jack Up Barge, etc.) during their activities.

5.4 Offshore Substation

The supplier responsible for the installation of offshore substation has not yet been determined. Installation of pin-pile and jacket will commence by end of 2026, and topside installation will follow. The process of offshore substation installation is described below:

1. Fabrication of substation components from outside of Korea (Singapore, Indonesia, or India);
2. Transportation of the assets (jacket, pin piles and topside) to site; and
3. Jacket installation, piling, topside installation and commissioning.

Estimated number of staff during installation and commissioning of Offshore Substation is approximately 12 – 24, 20% of whom are expected to be South Korean nationals, with the remainder foreign passport holders. Peak of their activities is expected to be December 2025 and January 2026 then September and October 2026. And all staff will be accommodating in vessel during their activities.

5.5 Onshore Substation (ONS) & Onshore Cable

The supplier responsible for the installation of onshore substation and Onshore Cable has not yet been determined. Their main construction activities will commence November 2024. The process of Onshore Substation and Export Cable installation are described below:

1. Installation of Onshore Cable between TJB and Onshore Substation;
2. Transmission cable installation between ONS - KEPCO substation;
3. Civil work: piling, foundation etc;
4. Electrical work: mesh grounding;
5. ONS building construction;
6. Electrical system installation;

7. Commissioning; and
8. KEPCO inspection.

The peak of construction activities is expected to be Q1 (construction) and Q3 (installation of electrical system) 2026 with each peak period expected to be 10 weeks respectively. Estimated number of staff during the peak will be approximately 70 - 100 (including vessel crew) who will be accommodated in Yeonggwang or Gwangju during their activities.

5.6 WTG

Siemens Gamesa Renewable Energy has been appointed as the WTG supplier for the Project. Their main construction activities are scheduled to commence around January 2027. The assembly and installation process of WTG are described below:

1. Transport of WTG components to the pre-assembly harbour;
2. Pre-assembly works (e.g. assembly of tower sections final preparation of blades and nacelles);
3. Transport of pre-assembled main components to the offshore windfarm;
4. WTG installation;
5. WTG commissioning and testing; and
6. Hand over to the Operations and Maintenance.

During the peak period of their activities, which is expected to span from Q2 to Q3 2027 (approximately 16 - 25 weeks), Siemens Gamesa Renewable Energy will conduct commissioning and installation processes concurrently. The estimated number of staff during this phase will be around 150 - 170 personnel, which includes the vessel crew. These staff members, predominantly foreigners, will be lodged in general accommodation such as hotels and motels in Mokpo, Gwangju, and the vessels while carrying out their tasks.

5.7 Transition Joint Bay (TJB)

However, it is planned that the transition joint bay installation will be incorporated as part of the Offshore Export Cable installation. The process of transition joint bay installation is described below:

1. Set up access roads, site fencing, site offices, etc;
2. HDD;
3. Excavate TJB Location;
4. Construction of TJB;
5. Install accessories and appliances inside the TJB;
6. Backfill of surrounding location; and
7. Reinstatement of condition (i.e. removal of fencing, site offices, access roads etc.).

During the peak of construction activities, which is expected to last approximately eight (8) weeks, the estimated number of staff will be around 15 to 30 individuals. Most of these staff members are expected to be South Korean nationals. To support their activities, suitable accommodations will be provided in either Yeonggwang or Gwangju.

5.8 Operation and Maintenance (O&M)

For the O&M, there might be modification work to the expected site. The following modification would be anticipated:

Onshore

1. Ground clearing and excavation works;
2. Laying of reinforced concrete (specifically for the warehouse and parking area);
3. Office building and warehouse construction (as per above dimensions);
4. Installation of water, electrical and sewage connectivity, depending on existing infrastructure; and
5. Car parking gravel and road gravel (depending on existing infrastructure).

Offshore

1. Development and re-paving of the existing quayside, including potential excavation and laying of reinforced concrete;
2. Marine dredging and construction of pontoons;
3. Installation of quayside crane;
4. Installation of water, electrical and sewage connectivity, depending on existing infrastructure; and
5. Car parking gravel and road gravel (depending on existing infrastructure).

5.9 Military Radar

The onshore radar tower is expected to have a height of approximately 14 meters and an area of 47.0 m². However, due to the confidentiality of military radar operations, specific details regarding the location and specifications will be updated at a later stage once they are finalized.

5.10 Bird Monitoring Radar

The installation of the 2D Terma Scanner-5000 Radar is anticipated. The cabinet housing the monitoring system is approximately and maximum 3 meters in height, 3 meters in depth, and 3 meters in width. The antenna's height is estimated to be around 5.5 meters.

The exact placement and specifications of the monitoring equipment are currently pending finalization. Comprehensive details concerning this aspect will be provided at a later stage once they are confirmed.

6. EPC SCHEDULE

Figure 6.1 shows the general EPC schedule planned. The EPC Schedule is a vital component of the Project plan, serving as a comprehensive roadmap that outlines the timeline and sequence of activities for the successful execution of the Project.

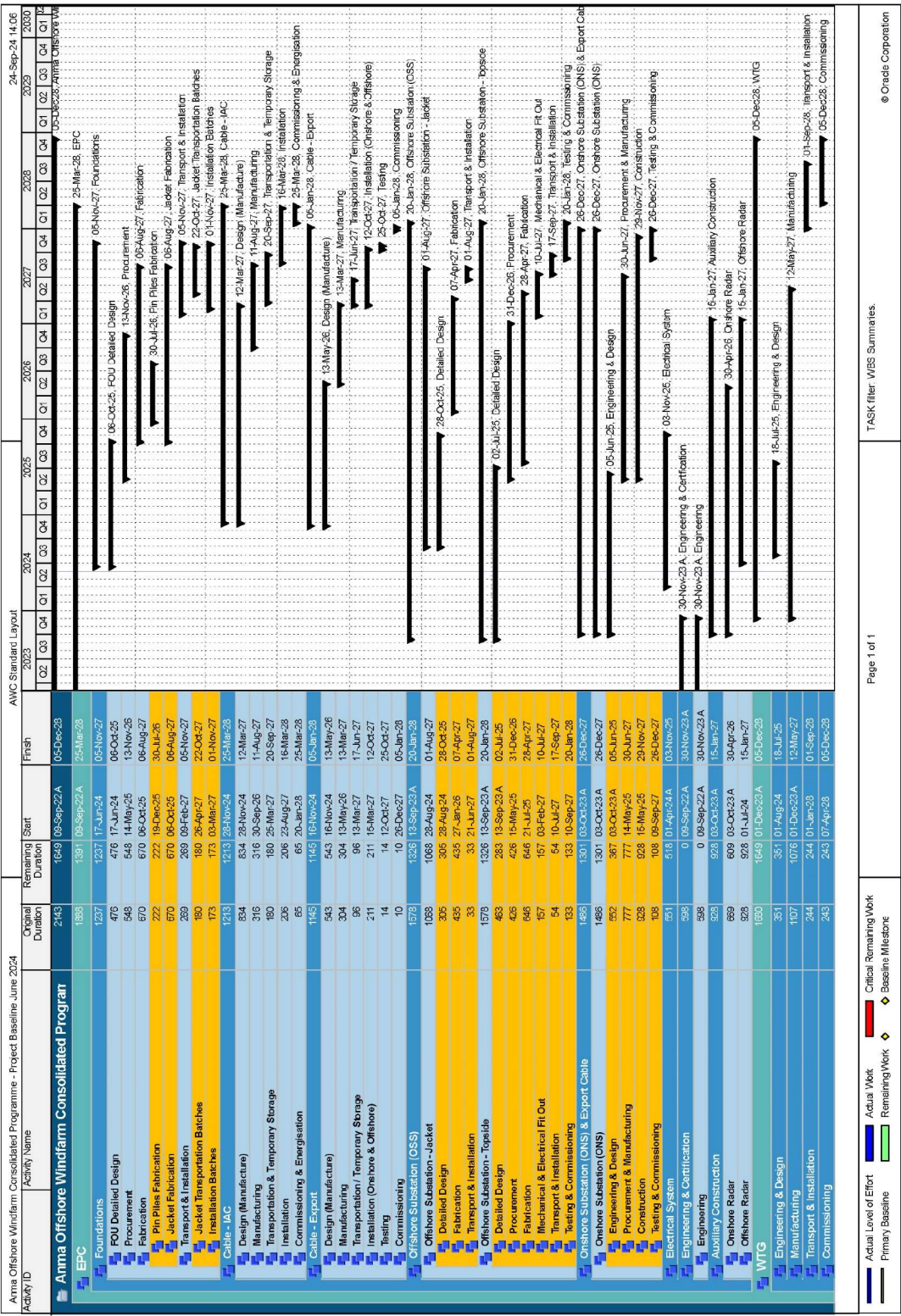


Figure 6.1 Anna Offshore Wind Power Project Master Plan

Reference: AWC - High Level Execution Schedule (August 2024)