



DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES
KAGAWARAN NG KAPALIGIRAN AT LIKAS NA YAMAN



DENR Administrative Order
No. 2026 – 09

FEB 26 2026

SUBJECT : ENHANCED GUIDELINES FOR ENVIRONMENTAL COMPLIANCE CERTIFICATE (ECC) UNDER THE PHILIPPINE ENVIRONMENTAL IMPACT STATEMENT SYSTEM (PEISS) FOR OFFSHORE WIND (OSW) ENERGY PROJECTS

Pursuant to Presidential Decree No. 1586, "Establishing An Environmental Impact Statement System, including other Environmental Management Related Measures and for other Purposes", Republic Act No. 9513, "Renewable Energy Act of 2008", Executive Order No. 21, "Directing the Establishment of the Policy and Administrative Framework for Offshore Wind Development", and Part V, Section 1 of DENR Administrative Order No. 2024-02, "Interim Guidelines for Environmental Compliance Certificate (ECC) under the Philippine Environmental Impact Statement System (PEISS) for Offshore Wind (OSW) Energy Projects", this enhanced guidelines is hereby issued, as follows:

PART I. GENERAL PROVISIONS

SECTION 1. RATIONALE

The development of offshore wind (OSW) energy projects is vital for achieving a blue and green economy in the Philippines, promoting economic growth, social inclusion, and sustainable livelihoods while ensuring the health of oceans and coastal ecosystems. Meeting the growing demand for ocean-derived food, materials, and energy requires resource-efficient practices that address climate change impacts. OSW projects support low-carbon development by reducing greenhouse gas emissions and fostering a cleaner environment.

The Philippines has a technical offshore wind potential of 178 GW, with a high-growth scenario projecting 40 GW by 2050, contributing 23% to the national electricity supply (World Bank Group, 2022). However, OSW development may pose risks to marine and terrestrial ecosystems, fisheries, navigation, and cultural heritage. Careful planning and risk management through the Environmental Impact Assessment (EIA) framework are essential to mitigate these impacts.

These guidelines enhance DAO 2024-02 by providing a robust framework for sustainable OSW development. They address gaps in data collection, compliance monitoring, financial assurances, and stakeholder engagement, aligning with Good International Industry Practice (GIIP), including the International Finance Corporation's Performance Standards (2012) and the World Bank's Environmental and Social Framework (2017), to safeguard the environment and support socio-economic benefits.

These guidelines further operationalize the Memorandum of Agreement (MOA) dated October 10, 2024, between the DENR and the DOE, through which the DENR agreed to grant the DOE the right to use Offshore Areas and Auxiliary Areas needed for the exploration, utilization and development of OSW projects. The terms and conditions of the said MOA, as annexed hereto, shall govern access to Offshore Areas and Auxiliary Areas, including the conditions for and termination of such access, the mechanisms, roles and responsibilities for establishment and/or compliance with environmental safeguards and social obligations, and shall be incorporated as post-ECC conditions in the Environmental Management and Monitoring Plan (EMMoP) to ensure sustainable project implementation.

SECTION 2. DECLARATION OF POLICY

It shall be the policy of the State to balance the environmental benefits of utilizing oceans for renewable energy with the protection, restoration, and regeneration of the environment. To this end, the State shall:

- A. Promote sustainable OSW development to meet energy demands while safeguarding environmental and social integrity;
- B. Adopt the Precautionary Principle in evaluating Environmental Impact Assessment (EIA) studies for OSW projects to address scientific uncertainties and identify mitigating measures for adverse impacts on ocean and marine environments;
- C. Apply the Mitigation Hierarchy (avoid, minimize, restore, compensate) to manage adverse impacts on marine and terrestrial ecosystems;
- D. Evaluate all OSW projects, including associated facilities such as access roads and transmission lines, and assess cumulative impacts to ensure compliance with national and international environmental standards; and
- E. Foster inter-agency collaboration and robust stakeholder engagement to support transparent and inclusive environmental governance.

SECTION 3. OBJECTIVES

This Administrative Order aims to ensure that OSW development is done in the most environmentally sustainable manner possible by:

- A. Ensuring proper siting and design for OSW development to avoid conflicts with existing ocean uses and living resources, and validating OSW project sites for environmental and social compliance;
- B. Minimizing environmental and social impacts on biodiversity and communities;

- C. Protecting endangered marine and coastal species, habitats, and cultural heritage;
- D. Fostering collaboration among government agencies, local government units (LGUs), and relevant stakeholders for a comprehensive review of environmental, social, and economic aspects;
- E. Establishing clear procedures for ECC issuance, including Cumulative Impact Assessments (CIAs) and compliance monitoring;
- F. Ensuring robust financial assurance mechanisms to cover decommissioning costs and rehabilitation from potential environmental damages from emergency situations;
- G. Monitoring compliance and assessing impacts across all OSW project stages; and
- H. Aligning with GIIP to enhance project viability and attract international investment.

SECTION 4. SCOPE AND COVERAGE

These guidelines shall apply to all OSW energy projects in the Philippines, covering their offshore and onshore components, associated facilities, and all stages of development.

Specifically, they encompass all OSW projects, including those issued with Environmental Compliance Certificates (ECCs) from the Environmental Management Bureau (EMB) and/or Offshore Wind Energy Service Contracts (OSWESCs) from the Department of Energy (DOE) prior to the issuance of DAO 2024-02 entitled, "Interim Guidelines for Environmental Compliance Certificate (ECC) under the Philippine Environmental Impact Statement System (PEISS) for Offshore Wind (OSW) Energy Projects", regardless of project site, whether located in Protected Areas (PAs), Environmentally Critical Areas (ECAs), municipal waters, and the Exclusive Economic Zone (EEZ).

SECTION 5. DEFINITION OF TERMS

For purposes of these guidelines:

- A. **Associated Facilities (AF)** - Components of an OSW project not directly developed or funded by the developer but are directly and significantly related to the project, carried out contemporaneously with the project, and necessary for project viability, such as substations, transmission infrastructure, maintenance facilities, vessels and ports, foundations, cabling, environmental monitoring equipment, and safety infrastructure.

- B. **Auxiliary Areas** – Identified foreshore lands and onshore areas which are portions of the Production Area, deemed necessary to carry out the authorized OSW activities.
- C. **Cumulative Impact Assessment (CIA)** - Analysis of combined effects of multiple activities on the environment, society, and economy, including underwater noise, habitat loss, and socio-economic disruptions.
- D. **Environmentally Critical Area (ECA)** - Areas delineated under Proclamation No. 2146 (1981) as environmentally sensitive such that significant environmental impacts are expected if certain types of proposed projects or programs are located, developed or implemented in it, such as coral reefs, mangroves, and habitats of endangered species.
- E. **Environmental Compliance Certificate (ECC)** - A document issued by DENR/EMB after positive review of an ECC application, certifying that based on the representations of the developer, the proposed project or undertaking has complied with all the requirements as stated in the PEISS and has committed to implement its approved Environmental Management and Monitoring Plan (EMMoP) to address environmental impacts.
- F. **Environmentally Critical Project (ECP)** - Projects or undertakings identified under Proclamation No. 2146 (1981) that are identified to cause significant adverse impacts to the environment, hence are required to secure an ECC through submission of a full-blown EIA Report.
- G. **Environmental Guarantee Fund (EGF)** - A fund established under DAO 2003-30 to cover environmental rehabilitation or restoration for high-risk projects.
- H. **Environmental Impact Assessment (EIA)** - As defined in DAO 2003-30, a process that involves predicting and evaluating the likely impacts of a project (including cumulative impacts) on the environment during construction, commissioning, operation, and abandonment. It also includes designing appropriate preventive, mitigating, and enhancement measures addressing these consequences to protect the environment and the community's welfare.
- I. **Environmental Management and Monitoring Plan (EMMoP)** - A plan detailing prevention, mitigation, compensation, contingency, and monitoring measures to enhance positive impacts and minimize negative impacts and risks of the proposed project or undertaking.
- J. **Environmental Performance Report and Management Plan (EPRMP)** – documentation of the actual cumulative environmental impacts and effectiveness of current measures for single projects that are already operating.
- K. **Floating Light Detection and Ranging (fLiDAR)** - A non-intrusive remote-sensing technology using laser beams to measure wind speed and

direction, and to create exceptionally precise three-dimensional information about a specific area and its movement in the environment.

- L. **Marine Spatial Planning** – An interagency, science-based, and participatory process aimed at identifying suitable zones for OSW and avoiding conflicts with environmentally critical areas and other tenurial instruments, such as exploration permits (EPs), mineral agreements (MA), Government Seabed Quarry Permit (GSQP), and Financial or Technical Assistance Agreement (FTAA), adopted by the DOE and the DENR under a joint Technical Working Group framework.
- M. **Meteorological Tower/Mast or Metocean Mast (Met Mast)** - Towers installed in the site area to collect meteorological data, including wind speed information.
- N. **Multipartite Monitoring Team (MMT)** – an independent entity whose membership represents primarily the stakeholders/public that is intended to assist the DENR in monitoring environmental impacts and compliance with the Philippine Environmental Impact Statement System requirements and other environmental laws as a third-party entity. The MMT scheme is intended to enhance participation transparency at the post – ECC issuance stage of the EIA process.
- O. **Offshore** - The water, sea bottom and subsurface from the shore or coastline reckoned from the mean low tide level up to the two hundred nautical miles (200 n.m.) exclusive economic zone including the archipelagic sea and contiguous zone, as applicable to OSW siting. For avoidance of doubt, inland river systems are excluded; estuarine areas shall be covered only when explicitly identified under the DOE OSW service contracting framework and where marine siting and impact assessment is applicable.
- P. **Offshore Component** - Elements of an OSW project located in marine environments, including but not limited to wind turbine generators (WTGs) with fixed or floating foundations, offshore substations, inter-array and export cables, meteorological masts, and associated infrastructure such as access ladders, mooring systems, and scour protection measures.
- Q. **Offshore Wind Energy Service Contract (OSWESC)** - Renewable Energy Contract between the DOE and a qualified entity authorizing the exploration, development and/or utilization of wind energy in offshore areas, which include estuaries and other bodies of water as defined under DOE Department Circular No. DC2024-06-0018.
- R. **Onshore Component** - Elements of an OSW project located on land, including but not limited to construction ports, onshore substations, export cables (land-based portion), transmission and distribution lines, and associated infrastructures such as access roads, maintenance depots, storage areas, and docking facilities, supporting the construction, operation and maintenance of the OSW project.

- S. **Protected Area (PA)** - Areas established as Protected Areas by Congressional legislation, areas proclaimed by the President as Protected Areas, areas covered by Presidential Proclamation or Executive Order and recommended by the DENR Secretary for inclusion into the PA system, and remaining initial components of the Expanded National Integrated Protected Areas System (ENIPAS) Act of 2018, unless withdrawn or disestablished under applicable laws, rules and regulations for failure to satisfy the criteria for establishment.
- T. **Production Area** - Identified portion of the contract area of the OSWESC where renewable energy resources are utilized to produce electricity in commercial quantities or with reasonable chance of being sufficient and technically compliant, including portions outside of the contract area needed to support the commercial operations of the renewable energy project. It refers to the areas where the wind turbines, offshore substation, offshore High Voltage Direct Current (HVDC) converter station, including the export cable/tie connecting the onshore substation to the OSW facility may be located.
- U. **Project Design Envelope (PDE)** - Predefined boundaries and specifications that guide the safe and successful execution of a project, which includes essential parameters and limits crucial for meeting regulatory, environmental, and operational standards. Details on the PDE are typically elaborated in the project's Construction and Operations Plan (COP).
- V. **Strict Protection Zone (SPZ)** - Portions within protected areas that are closed to human activities by virtue of their significant biodiversity value, high susceptibility to geo-hazard, and identification as permanently dangerous. These areas may also include habitats of threatened species, or degraded areas that are designated for restoration and subsequent protection, regardless of their stages of regeneration.

SECTION 6. OFFSHORE WIND ENERGY PROJECTS WITHIN PROTECTED AREAS

OSW energy projects within protected areas may be allowed through clearance from the Protected Area Management Board (PAMB) and approval of the DENR Secretary, provided that:

- A. The OSW project shall be located outside the strict protection zones and shall undergo the EIA as provided by law, adopting reduced impact technologies so as not to be detrimental to ecosystem functions, biodiversity, cultural practices, and traditions; and
- B. Sufficient bond shall be remitted to the DENR, the amount of which shall be based on the damage estimation upon decommissioning and projected cost of rehabilitation.

Exploration activities for energy resources in PAs may be allowed only outside the strict protection zones and only for the purpose of gathering data and information and only if such activity is carried out with the least damage to surrounding areas.

Buffer zones shall be established and utilized to avert the effect of negative environmental or human influences and safeguard the resources within protected areas. Size, ecology, economic viability, legislation, social and institutional issues, among others, are aspects to be considered in the establishment and management of buffer zones.

All OSW projects located within or adjacent to protected areas shall be subjected to the joint evaluation of DENR and DOE to verify the potential overlaps with strict protection zones as identified under the Marine Spatial Planning.

As may be confirmed by the DENR through validated ground-truthing, any portion of an OSWESC overlapping with a strict protection zone shall be excluded, and the DOE shall initiate the revocation of rights over the affected portion of the OSWESC, subject to due process in accordance with DOE DC No. DC2024-06-0018. Project activities may continue in non-overlapping zones, provided all laws, regulations, and environmental rules remain complied with.

SECTION 7. TYPES AND PRIMARY COMPONENTS OF OFFSHORE WIND DEVELOPMENT

A. Types of Offshore Wind Technology

The following types of offshore wind technology are:

1. Bottom-fixed foundation wind turbine generators (WTG); and
2. Floating wind turbine generators

A typical offshore wind turbine structure comprises components both above (the nacelle, rotor, blades, and tower) and below (the sub-structure, fixed or floating foundations, mooring lines, anchors, inter-array, dynamic export cable, cable protection systems, and scour protection material) the water.

B. Components of Offshore Wind Development

The key components of an offshore wind farm development include, but are not limited to, the following:

1. *Offshore components*
 - a. Wind and meteorological data collection equipment
 - i. Meteorological mast
 - ii. Floating Light Detection and Ranging (fLiDAR)
 - b. Wind Turbine Generators (WTGs)
 - i. Hub
 - ii. Blades

- iii. Nacelle
 - iv. Tower
 - c. Foundation (types)
 - i. Monopile
 - ii. Gravity-base
 - iii. Jacket
 - iv. Floating (tension-leg platform/semi-submersible/barge/spar buoy)
 - d. Anchors (types)
 - i. Drag embedment
 - ii. Driven pile
 - iii. Suction pile
 - e. Cables for fixed foundations
 - i. Array cables
 - ii. Export and Interconnector Cables
 - f. Cables for floating foundations
 - g. Cable protection
 - h. DC export cables
 - i. Offshore substation
 - j. Associated facilities

2. *Onshore Components*

- a. Jointing bays
- b. Cables (underground cabling, overhead lines)
- c. Onshore substations
- d. Permanent or temporary worksites (supply bases, material and equipment storage, worker camps)
- e. Permanent or temporary access roads
- f. Associated facilities

C. Key considerations on components and activities per project phase

Key considerations across the lifecycle of offshore wind (OSW) projects encompass both offshore and onshore components. During the pre-development stage, foundation type selection shall consider water depth, seabed composition, environmental conditions (e.g., wind, wave, and current patterns), and proposed turbine specifications to ensure structural stability and minimal ecological impact. For floating foundations, anchor selection (e.g., drag embedment, driven piles, or suction piles) shall align with foundation design and load requirements. Cable installation methods, such as trenching, ploughing, jetting, or horizontal directional drilling, shall minimize environmental disturbance based on seabed characteristics.

In the operation and maintenance phase, offshore components require preventive and corrective maintenance to extend project lifespan, with frequency tailored to harsh marine conditions, weather patterns, sea state, the number and size of wind turbine generators (WTGs), and distance from shore. Onshore components, including substations, transmission lines, and access roads, shall undergo routine inspections, preventive and corrective maintenance, safety

measures, record-keeping, staff training, and logistical setup to ensure operational efficiency and compliance.

Decommissioning of offshore components shall address safety risks to navigation and marine industries, material deterioration, long-term environmental impacts, effects on marine flora and fauna, risks of component displacement, and removal costs and safety hazards. Onshore decommissioning involves deactivation and removal of substations, cables, and equipment, waste management, site restoration, and post-decommissioning monitoring to support ecosystem recovery and regulatory compliance.

Summary of activities and components per lifecycle stage is hereto attached as **ANNEX 1**.

PART II. STAGES OF OFFSHORE WIND (OSW) PROJECTS

SECTION 1. PRE-APPLICATION STAGE

Pre-application Stage includes initial site selection, identification of area for exploration leading to the application and award of OSW Energy Service Contracts (OSWESC) from the Department of Energy (DOE). At the onset, the developer shall coordinate with DOE to secure area clearance by filing a Letter of Intent (LOI) in accordance with the mapping requirements through the Energy Virtual One-Stop Shop (EVOSS) system.

The DOE Information and Technology Management Services (ITMS) will issue an Area Clearance upon confirmation that the Area of Interest (AOI) does not overlap with existing service contracts, tenurial instruments, strict protection zones of protected areas, environmental critical areas, ancestral domains with Certificate of Ancestral Domain Title or Claim, areas prohibited, reserved or used for national defense, navigation, irrigation, and other development projects, zones identified under the Marine Spatial Planning (MSP) of the DOE, safety and exclusion zones under Proclamation No. 72, series of 2001, titled, "Establishing Safety and Exclusion Zones for Offshore Natural Gas Wells, Flowlines, Platform, Pipelines, Loading Buoy and Other Related Facilities for the Malampaya Deep Water Gas-To-Power Project over Certain Waters and Submerged Lands Adjacent to Batangas, Mindoro and Palawan", and other areas covered by significant geospatial data as available on file with the ITMS and the NAMRIA's Philippine Geoportal Project website.

The Department of Environment and Natural Resources (DENR) and the Department of Energy (DOE) shall collaborate to share GIS-based maps identifying protected areas, and other areas with specific ecological features, vulnerabilities, or higher biodiversity characteristics, as well as areas under forest, mineral, and other tenurial agreements, to assess overlaps with proposed Offshore Wind Energy Service Contract (OSWESC) areas.

SECTION 2. PRE-DEVELOPMENT / EXPLORATION STAGE

Pre-Development/Exploration Stage involves the conduct of preliminary assessment and feasibility studies, which includes identification of the proposed production area, acquisition of permits and clearances, preparation of detailed engineering design and determination of energy yield estimate, application for grid connection, and planning of development and financial closing.

It also involves the conduct of metocean/detailed wind resource assessment and geophysical and geotechnical studies, benthic, fish and shellfish surveys, ornithological, sea mammal and onshore environmental surveys, human impact studies, and climate and disaster risk assessments using standardized survey methodologies. The activities during the Pre-Development/Exploration Stage shall be completed within five (5) years, with a possible extension of two (2) years.

To assess the impact on physical, biological, socioeconomic resources, seafloor, and sub-seafloor conditions of construction and operation elements such as meteorological towers, buoys, cables, wind turbines, and support structures, the developer shall submit the following, as part of submission for the ECC requirements.

During the Pre-Development/Exploration Stage ECC application, developers shall submit indicative plans of the required documents listed below. These indicative plans will present general design concepts, initial site layouts, and preliminary scopes of activities to enable early-stage impact screening and project alignment.

The comprehensive and detailed versions of these plans shall be required as post-ECC conditions and shall form part of the Environmental Impact Statement (EIS) for the Development Stage of the project.

A. Site Assessment Plan (SAP)

Developers shall submit a Site Assessment Plan (SAP) detailing site assessment activities, including devices to be installed at the project site for data collection to support Offshore Wind (OSW) farm development. The SAP will serve as the foundation for evaluating the environmental and socio-economic impacts of proposed site assessment and testing activities.

The SAP shall include results from site characterization and baseline environmental data collection, such as biological studies, geotechnical and geophysical investigations, archaeological surveys, and hazard assessments, to inform the design of site assessment activities and establish a baseline. It shall also identify potential environmental impacts and risks associated with these activities, along with corresponding mitigation measures and monitoring plans.

At minimum, the SAP baseline shall include marine geophysical and geotechnical investigations, as applicable, with defined survey extents, spatial resolution, and data quality procedures, and shall provide GIS-ready outputs to support DENR review:

Planned activities may involve deploying meteorological or oceanographic measurement equipment, such as meteorological towers or metocean buoys, and testing new technologies or devices for site assessment. The level of detail in the SAP shall correspond to the scale and potential impacts of the proposed structures.

The SAP shall include: (1) a project description and objectives, providing precise details on project component locations (latitude and longitude coordinates, water depth, and aliquot for meteorological and oceanographic equipment), and a schedule of site assessment activities; (2) project design, deployment, and installation procedures, including vessels used, pre-installation briefings, and mitigation measures; (3) decommissioning and site clearance procedures; and (4) an assessment of potential environmental and social impacts.

Guidance for preparing the Site Assessment Plan is provided in **ANNEX 2**.

B. Construction and Operations Plan (COP)

The Construction and Operations Plan (COP) focuses on the “how” of the OSW project as it outlines all construction and operational activities for an OSW project. It covers technical, logistical, and engineering aspects, specifying project layout, construction methods, timelines, and maintenance procedures. The COP includes strategic plans for essential infrastructure elements such as foundations, wind turbine generators (WTGs), cabling systems, and substations, focusing on practical implementation and operational efficiency. The COP shall also address key environmental sensitivities, impacts, and risks associated with project activities.

The COP shall include: (1) a project description and objectives; (2) a Project Design Envelope (PDE) defining the range of design parameters for key components to assess potential environmental, cultural, and social impacts; (3) the regulatory framework and stakeholder engagement plan; (4) a description of project infrastructure and activities; (5) a construction program (e.g., Gantt chart or diagrammatic schedule); (6) construction roles and responsibilities; (7) construction methods and procedures; (8) operation and maintenance requirements; and (9) environmental and social considerations, including mitigation measures for physical, biological, and human environment.

Guidance for preparing the Construction and Operations Plan is provided in **ANNEX 3**.

C. Abandonment and Termination Plan (ATP)

The Abandonment and Termination Plan (ATP) provides a structured framework for the safe, environmentally responsible decommissioning and termination of an Offshore Wind (OSW) project. Developers shall justify their preferred

decommissioning strategies, including full or partial removal, repowering, or life extension, based on safety, environmental impact, and economic feasibility.

It shall detail strategies to maintain habitat quality and restore coastal environments, incorporate stakeholder engagement plans, and outline comprehensive management and monitoring frameworks. It shall include provisions for cost estimation, financial security, contingency planning, and site restoration.

The ATP shall include: (1) a project description and objectives; (2) legal and regulatory requirements; (3) decommissioning strategy; (4) decommissioning methods and measures; (5) a determination of whether a new baseline may be established for both environmental and social receptors and how impacts will be mitigated; (6) stakeholder engagement plans; (7) decommissioning monitoring, maintenance, and site management protocols; (8) a schedule for the decommissioning process; (9) estimated costs and financial security arrangements; (10) a contingency plan; and (11) site restoration measures.

The ATP shall be prepared by the developer, approved by the DOE, and thereafter by the DENR, for the decommissioning, abandonment and surface restoration or rehabilitation of the contract area covered by OSWESC. It may be amended or supplemented as the need arises to consider the methods and costs of decommissioning, restoration, or rehabilitation of the contract area, in accordance with the rules and regulations of the DOE and the DENR.

Guidance for preparing the Abandonment and Termination Plan is provided in **ANNEX 4**.

D. Contingency Plan for unexpected environmental or social impacts during construction and operation, as well as decommissioning stages, with clear responsibilities and procedures for response. This may be integrated with the COP and ATP;

E. Stakeholders Engagement Plan (SEP), which defines activities relating to identification of key stakeholders, consultation with local communities, environmental experts, and relevant government agencies, communication channels, engagement activities, plans for addressing stakeholder feedback, and incorporating suggestions and timely updates, in all phases of OSW development. Guidance in preparation of SEP is provided in Part IV of this Administrative Order;

F. Emergency Response Plan (ERP) based on the Climate and Disaster Risk Assessment (CDRA) in accordance with DENR Administrative Order No. 2025-25;

G. Cumulative Impact Assessment (CIA) shall be an integral part of the EIS to be submitted for the Development, Construction, and Operations Stage of the Offshore Wind (OSW) project.

The specific requirements for the CIA shall be identified and discussed during the Technical Scoping process for the development stage, in coordination with

the Environmental Impact Assessment Review Committee (EIARC) and relevant stakeholders. Each developer shall be required to assess both the indicative and actual impacts of their proposed activities in consideration of other existing or planned activities within the same marine area or region, as identified through Marine Spatial Planning (MSP) under the DOE-DENR joint framework. This includes evaluating the combined and incremental effects of multiple OSW projects and other developments that may affect the same physical, biological, and socio-economic resources.

The CIA shall follow a four-stage process: (1) scoping to define key impact drivers and boundaries; (2) analysis to collect and evaluate data; (3) significance evaluation to assess acceptability based on thresholds, trends and expert judgment; and (4) mitigation identification to apply the mitigation hierarchy.

The CIA shall analyze the cumulative effects of key impact drivers, including but not limited to:

- Underwater noise and vibration from construction and operations;
- Habitat loss or fragmentation;
- Risk of contact with fuels or hazardous substances;
- Thermal and electromagnetic effects from cabling systems;
- Changes to hydrodynamic regimes and physiochemical water quality;
- Increased marine traffic and associated collision risks with vessels or turbines;
- Interference with fisheries, navigation, and traditional marine uses.

The assessment shall propose appropriate mitigation, monitoring, and management measures to address cumulative impacts in a manner that is reasonable and proportional to the scale and scope of the project, and in coordination with other developers and relevant agencies.

H. **Management Plan** for Production areas and Auxiliary areas identified by the DOE and cleared by the DENR pursuant to the MOA between DENR and DOE dated October 10, 2024 and to be utilized for the OSW Project. Such Management Plan shall detail development strategies, mitigation measures, monitoring protocols adherent to existing standard methodologies, and other similar activities, and shall be submitted by OSW developers to the DENR, through the DOE, for the review and approval of the DENR.

SECTION 3. DEVELOPMENT / CONSTRUCTION AND OPERATION STAGE

Development/Construction Stage includes activities pertaining to the mobilization of the offshore works, such as the layout of cables, installation of foundations (fixed bottom) or moorings and anchors (floating), installation of OSW turbines, installation of substation/s, testing, and commissioning.

It also includes the onshore development ranging from operation and maintenance facilities, staging ports, and construction sites for foundations, turbines, and other

associated infrastructures such as access roads and powerlines. While its Operation Stage includes the activities on selling and trade of power, performance management, maintenance and repair, and asset management.

Measures to minimize impacts during construction and operation, such as waste management, noise reduction, and protection of marine life and birds, shall be undertaken by the developers. Monitoring frameworks for assessing compliance with plans and other environmental regulations shall be implemented by the DENR.

Coordination with local governments and communities shall be maintained by the developers to minimize social and economic disruptions, including providing appropriate compensation or support where necessary.

SECTION 4. DECOMMISSIONING STAGE

Decommissioning stage includes the removal of turbine, foundation, mooring, and offshore substation. It also includes the removal of piles/anchors, array cable and export cable, and onshore transmission assets.

At the end of operational life of the OSW Project, the developers shall, at their own expense, cause the decommissioning and abandonment of the OSW Project in accordance with the approved ATP, in line with international best practices and applicable local regulations.

The ATP shall be reviewed and updated by the developers every five (5) years or as the need arises to consider changes to the wind farm structures such as condition of scour protection, and revisions to the methods and costs, with financial assurance mechanisms in place.

Environmental and social impact assessments shall be conducted for decommissioning activities, with appropriate mitigation measures. The assessments shall be submitted to DENR to determine whether the mitigation measures identified are adequate and appropriate.

Reasonable and relevant post-decommissioning monitoring identified as part of the decommissioning EIA process shall be carried out by DOE and DENR, at the expense of the developers, to assess the recovery of marine and coastal ecosystems and ensure that no residual impacts remain.

PART III. PHILIPPINE ENVIRONMENTAL IMPACT STATEMENT SYSTEM (PEISS) FOR OFFSHORE WIND (OSW) ENERGY PROJECTS

SECTION 1. OFFSHORE WIND (OSW) AS AN EMERGING TECHNOLOGY

Pursuant to the Revised Procedural Manual for DAO 2003-30, all project developments shall undergo Environmental Impact Assessment (EIA) Coverage and Requirement Screening using the EIA Coverage and Requirement Screening

Checklist to determine compliance with the Philippine Environmental Impact Statement System (PEISS). This process assesses whether a project is classified as an Environmentally Critical Project (ECP) or is located within an Environmentally Critical Area (ECA).

For Offshore Wind (OSW) projects, recognized as an emerging technology requiring further data and evidence, an Initial Environmental Examination (IEE) Report is required to secure an Environmental Compliance Certificate (ECC) during the pre-development stage, while a comprehensive Environmental Impact Statement (EIS) Report is mandatory for the development stage ECC.

SECTION 2. PROCEDURE AND REQUIREMENTS FOR ENVIRONMENTAL COMPLIANCE CERTIFICATE (ECC)

A. Pre-Development / Exploration Stage

1. Requirements

Project developers shall submit the following documents to the DENR-EMB Central Office as part of the requirements for Pre-Development ECC:

- a. Proof of Coordination/Documented Coordination with the following government agencies (GAs)¹:
 - i. Department of Transportation (DOTr)
 - ii. Department of Information and Communication Technology (DICT)
 - iii. Department of Agriculture (DA)
 - iv. Department of Interior and Local Government (DILG) and
 - v. Department of Tourism (DOT)
- b. PAMB Clearance for pre-development/exploration stage, if project area is within a protected area;
- c. An IEE Report that focuses on evaluating the environmental and social impacts of the project components and activities limited to the pre-development stage. These components and activities comprise the installation of equipment for wind and meteorological data collection (e.g., meteorological masts and fLIDAR), the collection of oceanographic data, and the collection of primary baseline data that requires a minimum of one year to establish. The contents of the IEER shall include the following:
 - i. Project Description
 - Project location in a nautical map indicating any known ECA category encompassing the project area;
 - Project rationale;

¹ A stamped or signed copy of the courtesy or coordination letter with an attached copy of the project description for the proposed OSW project submitted to each respective GA should suffice. This is to ensure that each GA is well coordinated and well informed on the project developments to be done in their area as part of the preliminary stakeholder engagement activities.

- Project development (including component dimensions, foundation type, dimension and other related information)²;
 - Description of all project phases (installation and methodologies, operation and maintenance activities, information on the types of vessels and vessel movement, and other research requirements across all phases);
 - Manpower requirements;
 - Project cost; and
 - Project duration and schedule that reflects the specific project activities aligned with the 5-year Pre-development Work Program of the OSWESC, or any pre – development period as prescribed by the DOE.
- ii. Baseline Characteristics for OSW for the area of influence (AOI) using secondary data and possibly further primary data collection such as:
- Ambient Water Quality (Primary Parameters per DAO 2016-08)
 - Marine Ecosystem Habitat Extent and Condition (e.g. marine flora and fauna (benthic and pelagic);
 - Ornithology
 - Marine Physical Properties and Marine Sediment, and Water Quality
 - Sea turtles (including nestling sites) and marine mammals
 - Offshore Air Quality and Noise, and
 - Other baseline characteristics relevant to the AOI (e.g. commercial or artisanal/subsistence fisheries, tourism, recreation, shipping and navigation, aviation, man-made and natural hazards etc., vulnerability assessments, (list not exhaustive) on commercial fisheries, tourism, recreation, shipping and navigation, and aviation in the area³.
- iii. Primary Baseline Data Survey Methodology⁴ describing the proposed survey methodology for gathering primary baseline data on environmental receptors/parameters, which will require at least one (1) to two (2) years of data collection such as:
- Terrestrial and Marine Ornithology
 - Intertidal Marine Biodiversity
 - Benthic Community
 - Fishes
 - Sea turtles and marine mammals
 - Environmental Management and Monitoring Plan (EMMoP)⁵

2. Procedure

² This being an example if any temporary infrastructure is installed on site for the purpose of data collection.

³ As this is only an initial overview of the baseline characterization needs, the IEE should justify the scoping in or out of these topics in the EIA for the development stage ECC application and the correct quantification of impacts.

⁴ This is to inform the DENR-EMB of the project developer's proposed approach to conducting the primary baseline data assessment in order to acquire a better understanding of the possible activities that will take place on site during the pre-development stage.

⁵ The scope of the EMMOP that will be submitted together with the IEER should be limited to the activities that will take place during the pre-development stage.

- a. Submitted documents will undergo procedural screening to ensure completeness, relevance, accuracy, and robustness before being returned to the project developer if missing information or analysis is identified. Once checked and verified, the Environmental Impact Assessment and Management Division (EIAMD) will send an order of payment to the developer, who will pay the processing fee at the EMB Cashier.
- b. Once the payment has been made, the project developer shall submit proof of payment to the DENR-EMB Central Office, along with the Pre-Development Stage ECC (PD-ECC) requirements. The submitted documents will be endorsed to proceed with the review of the office of the Environmental Impact Assessment and Management Division (EIAMD) for ten (10) working days. If the report lacks information and/or analysis, the same division will produce a letter outlining all their questions from their review. This will be returned to the project developer after four (4) working days; thus, the developer is expected to respond within three to five (3-5) working days (or request an extension if data is not available within the time frame).
- c. The submitted PD-ECC requirements once acceptable to EIAMD, will be endorsed to EMB Director for approval within four (4) working days before endorsement to DENR Secretary for the decision to issue or deny a PD-ECC.
- d. The PD-ECC will be valid for use for five (5) years, hence all data collection necessary as part of the requirement to proceed with the Development Stage ECC (D-ECC) application shall be completed within this time period. Provision for extension shall only be applicable until two (2) years.

B. Transition from Pre-Development to Development Stage

1. After the issuance of the PD-ECC, the project developer shall accomplish the following:
 - a. The collection of the necessary data and parameter sampling to establish a baseline for the purpose of EIA and future monitoring.
 - b. The conduct of preliminary stakeholder engagement activities, including focus group discussions, information education campaigns, and perception surveys.
 - c. The preparation of the indicative plans and assessments required as post-ECC conditions:
 - i. Site Assessment Plan (SAP)
 - ii. Construction and Operation Plan (COP)
 - iii. Contingency Plan
 - iv. Stakeholder Engagement Plan (SEP)
 - v. Climate and Disaster Risk Assessment (CDRA) and its respective Emergency Response Plan (ERP)

- vi. Abandonment and Termination Plan (ATP)
 - vii. Cumulative Impact Assessment (CIA)
2. Upon confirmation of project viability and the decision to proceed, developers may commence the application for the Environmental Compliance Certificate (ECC) covering the Development, Construction, and Operation Phase. The project developer shall conduct the following activities:
- a. Submission of documentary package to proceed with the conduct of Public Scoping:
 - i. Submit a report based on the gathered primary and secondary baseline data. The report shall present the collected data in tabular format, provide interpretation, and be accompanied by the records of the collected data as an attachment.
 - ii. Submit the results of preliminary stakeholder engagement activities, as well as the updated Project Description detailing the project details and activities covering development stage to the DENR-EMB Central Office to be able to proceed with the conduct of public scoping (PS).
 - b. The submitted documents, when identified as sufficient based on regulations under DAO 2017-15, will be endorsed to proceed with the conduct of PS and will be returned to the client if deemed insufficient. Once approved to proceed with the PS, the notice of PS will be posted on the website of DENR EMB⁶. The PS shall be conducted at least 10 days after the posting of the Notice of PS.
 - c. Upon the completion of PS, the project developer shall submit the Public Scoping Report (PSR)⁷ to the DENR-EMB Central Office. Once the PSR has been reviewed and approved, the DENR-EMB will schedule an EIA technical scoping meeting with the nominated EIA Review Committee, project developer, and their EIA preparer and consultants to reach an agreement on the terms of reference of the EIS Report. This process will determine the relevant contents, establish key E&S issues to be addressed in the EIS Report, and define the extent of baseline information to be collected to evaluate impacts and propose appropriate mitigation measures. This will be summarized in EMB's Technical Scoping Checklist, where each of the developers and its consultants will sign an agreement on the final agreed scope for the EIS Report. The Technical Scoping Checklist shall also record the agreed scope for geohazard and geological assessments.
 - d. The scoping for cumulative impact assessment (CIA) shall be carried out simultaneously with the EIA technical scoping. The CIA involves the analysis of all effects of multiple actions or impacts on the environment, people, and socio-economy (e.g., underwater noise, habitat loss, risk of contact with fuel or chemicals, loss of fishing groups, changes to shipping

⁶ Notice of Public Scoping | Environmental Impact Assessment and Management Division (emb.gov.ph): https://eia.emb.gov.ph/?page_id=1514

⁷ The PSR should summarize the information gathered during the PS, compiling all issues raised by various groups. It should also address how the developers, and consultants handle each concern.

routes, collisions (with vessels or turbines, etc.), and determining proper mitigation measures.

e. After completing the EIA Technical Scoping, the project developer shall proceed to conduct any other primary baseline data gathering, complete the impact assessment as agreed in the Technical Scoping Checklist, and prepare the EIS Report. The EIS Report shall contain a comprehensive evaluation of the potential impacts of the project's construction, installation, operation, maintenance, and decommissioning activities on physical, biological, and socioeconomic resources. The EIS Report shall cover, without limitation, the following contents:

- i. Marine benthic and pelagic assessment and its ocean dynamics, including identification of impacts and mitigating measures, such as alteration or degradation of habitats;
- ii. Impact on flora and fauna, and information on the migration pattern of birds offshore;
- iii. Noise and vibration levels and electromagnetic signals emitted during the construction and operation of the OSW project, which could affect fauna, flora and ecosystems;
- iv. Offshore geology and geomorphology, including identification of offshore geologic structures relevant to siting and design (e.g., offshore extensions of onshore faults);
- v. Assessment of offshore and coastal geohazards and climate-related hazards relevant to siting and engineering design, including seabed instability, active faults, ground shaking, liquefaction potential (where relevant), scour and seabed erosion, sediment transport dynamics, relative sea-level rise, and storm surge or typhoon hazards, and corresponding risk reduction measures;
- vi. Hazardous chemicals and materials, including accidental spills or leaks of hazardous materials during all phases. For spill preparedness and response plans, carrying out of spill modelling for vessel usage (worst case scenario), as necessary;
- vii. Waste management system/ disposal system for the turbine blades and other wastes, e.g., drill cuttings if using HDD for cable lay etc. during the decommissioning stage;
- viii. Wastes generated by attending vessels and means of management;
- ix. Physical and cultural resources in the offshore areas (coordinate with the National Museum (NM), National Historical Commission of the Philippines (NHCP), and the National Commission for Culture and Arts (NCCA);
- x. Waste and material flow analysis for the end-of-life of the OSW project;
- xi. Approach/methods and technology to be used to monitor of impacts for OSW development on, but not limited to, the following:
 - Mortality or injury to birds and bats brought by collision with turbine blades;

- Mortality or injury to birds, marine mammals and other fauna due to noise impacts from turbines and pile-driving equipment;
 - Impacts to the movements and navigation of species e.g., fish species, particularly elasmobranchs, some teleost fish, decapod crustaceans, and sea turtles due to electrical cables that will emit electromagnetic fields;
 - Impacts on benthic and pelagic habitats and ecosystems during other installation activities e.g., cable laying;
 - Potential displacement of pelagic and aquatic organisms (e.g., marine mammals, marine reptiles, fish) and seabirds from the project areas if the OSW installation alters the existing habitat;
 - Alteration of seabed composition resulting in changes to marine floral and faunal habitats and communities.
- f. The impact chain for each phase-specific offshore wind (OSW) pressure on the respective environmental components will be determined. The strength of the links in this chain is relative to the sensitivity level of species to pressures like underwater noise, habitat loss, and the risk of contact with fuel or chemicals. The final list of receptors to be included in the EIA is dependent on the findings of the scoping process and conformity with GIIP. Based on international experience, it is expected that other variables such as social and economic effects, health and safety, and risk management will be included on the EIA receptor list as well.

To facilitate the timely submission and processing of the D-ECC, tenurial instruments and/or proof of government's allocation of the project site to the project developer shall be secured.

During this time frame, the comprehensive and detailed versions of the plans and assessment mentioned in Part III, Section 2 (B)(1)(c) which shall form part of the EIS for D-ECC should be available.

C. Development / Construction and Operations Stage

1. Requirements

The time frame for the Development ECC (D-ECC) application will begin once the project developer has completed the activities and documents required under the pre-development stage transition to the development stage, and the EIS Report and the CIA study, has been submitted to the DENR-EMB Central Office, along with the other documentary requirements which are as follows:

- a. Respective tenurial instrument secured during the transition stage which will serve as the project developer's proof of authority over the project site.
 - i. Other documents that may be presented to DENR-EMB as proof of authority for onshore components (e.g., substations):

- Transfer Certificate of Title (TCT) over the land where the facilities will be established.
 - Lease Agreement over the area where the facilities will be constructed and installed.
- b. PAMB Clearance for development/construction stage, if project area is within a protected area;
 - c. Accountability Statements of Developers and Preparers
 - d. Duly Accomplished Project Environmental Monitoring & Audit Prioritization Scheme (PEMAPS) Questionnaire.

2. Procedure

- a. The developer shall submit the EIS Report to the EMB-Central Office. The EMB Case Handler will conduct a procedural review of the EIS Report to ensure its completeness, using the Scoping Checklist established during the Technical Scoping activity. If there is a deficiency in data or analysis, the EIS Report will be returned to the developer. Once the EIS Report has been evaluated and validated as complete, the EMB shall notify the developer to settle the processing fee, establish an EIA review support fund, and prepare copies of the EIS Report.
- b. The EMB EIAMD will evaluate the EIS Report for five (5) working days, alongside the EIA Review Committee (EIARC) and resource persons. On Day 5 of the ECC application assessment and evaluation, the first EIARC meeting will be held to discuss EIS information gaps and request clarifications in the form of additional information (AI). The developer will be allowed five (5) business days to respond to the AI. Once the AI has been provided, DENR-EMB will proceed to facilitate the public hearing in accordance with DAO 2017-15. If the project developer requests an extension of the AI response and submission, the processing time frame of 40 working days will be waived.
- c. To proceed with the conduct of the public hearing, the project developer shall provide a copy of the EIS Report's executive summary to DENR-EMB, which shall be posted as part of the Notice of Public Hearing on the DENR-EMB website⁶ at least 20 days prior to the scheduled public hearing. Moreover, the Notice of Public Hearing shall be posted in a newspaper of general circulation for two (2) consecutive weeks, with the second publication being posted at least seven (7) days prior to the scheduled public hearing.
- d. Simultaneously with the public hearing, the EIARC, together with the representatives of DENR-EMB EIAMD, will conduct a site visit to the project area. Within 10 days of the conduct of the public hearing, the hearing officer shall submit the hearing officer's report. Also, after the

⁶ Notice of Public Hearing | Environmental Impact Assessment and Management Division (emb.gov.ph): https://eia.emb.gov.ph/?page_id=72

public hearing, the project developer shall submit the revised EIS Report together with the public hearing documentation⁹. These documents will then be posted on the EMB website.

- e. The 40-working-day timeframe for the ECC will resume after the submission of the revised EIS Report and the public hearing documentation, which will be marked as Day 11. The revised EIS Report will be reviewed by the EMB, together with the EIARC and resource persons, for five (5) working days, with Day 15 being the conduct of the second (2nd) EIARC meeting. The EIARC shall then provide their recommendations during the meeting. The EIARC Chairperson shall submit the EIARC Report on Day 20. The EMB Case Handler shall prepare the Decision Folder and have it endorsed by the Chief, EIAMD, on Day 25. After which, the decision document shall be forwarded to the EMB Director on Day 30, which will subsequently be endorsed by the DENR Secretary on Day 35. The final decision on the issuance or non-issuance of the ECC shall be made on Day 40.
- f. Once the D-ECC has been issued by the DENR-EMB, the project developer shall immediately prepare and provide a proof of evidence of the decommissioning fund. This decommissioning fund will serve as a financial assurance mechanism to cover the projected cost of the project's decommissioning activities. This shall be first approved by the DENR-EMB before the project developer could proceed to any construction activities under the development stage.
- g. The project developer shall secure appropriate and applicable clearance from concerned government agencies to indicate whether a program/project or infrastructure or activity of such agency might or will be affected by the OSW Project. Such clearance shall be submitted to DENR-EMB prior to the commencement of any construction and other ground-disturbing or seabed-disturbing activities under the development stage, unless a different timing is expressly specified in the D-ECC.
- h. Furthermore, the project developer shall carry out their project in accordance with the project specifications and components specified in the D-ECC, as well as ensuring that all of their project activities adhere to the conditions outlined therein. The project developer shall adhere to the commitments outlined in their plans and the EIS Report submitted to DENR-EMB, from the development stage's pre-construction phases up to the decommissioning stage. This includes implementing fit for purpose management systems to ensure committed mitigation is implemented and monitoring to ensure it is effective in addressing the impacts as intended. Implementing stakeholder engagement as per the Stakeholder Engagement Plan, including maintaining effective mechanisms to collect and address grievances, is also critical throughout the development stage.

⁹ Refer to DAO 2017-15 Guidelines on Public Participation Under the PEISS for the content of the Public Hearing Documentation: <https://eia.emb.gov.ph/wp-content/uploads/2017/06/2-May-2017-DAO-2017-15.pdf>

- i. The Developers are required to secure an ECC amendment for any modifications to the approved project description as specified in the ECC. For major amendments—such as an increase in project capacity or expansion of the project area—the developer shall prepare an Environmental Performance Report and Management Plan (EPRMP), which shall undergo the full Environmental Impact Assessment (EIA) process. For minor amendments, the submission of a Special Study (e.g., marine survey, updated geological assessment) shall be required to support the processing of the ECC amendment. Developers may refer to EMB Memorandum Circular No. 2014-05, Annex B, as a guide in determining the applicable EIA requirements for proposed project modifications.

The Flowchart of Environmental Impact Assessment (EIA) Stages for Offshore Wind (OSW) Projects is provided in **ANNEX 5**.

The Checklist of Documentary Requirements is provided in **ANNEX 6**.

The Initial Environmental Examination (IEE) Report Annotated Outline is provided in **ANNEX 7**.

The Environmental Impact Statement (EIS) Report and Environmental Performance Report and Management Plan (EPRMP) Annotated Outline is provided in **ANNEX 8**.

D. Considerations for Ports and Harbors

Ports have been identified to support the preparatory stage of Offshore Wind (OSW) projects. Ports may require expansions or are yet to be constructed. Separate Environmental Compliance Certificate (ECC) application shall be submitted for any expansion to existing ports and harbors necessary to support the delivery of OSW projects.

In expanding ports or harbors, the amendment procedures under the Revised Procedural Manual for DAO 2003-30 shall apply, along with reference to Annex B of EMB Memorandum Circular No. 2014-005 to determine the appropriate type of EIA report required for the ECC amendment.

A separate ECC application shall be secured for newly built ports/harbors initially intended for OSW and later for transport, i.e., for seaports, causeways, and harbors. It shall be completed prior to the application of ECC for the main components of the OSW project.

E. Integration into the Energy Virtual One-Stop Shop System (EVOSS)

To ensure streamlined and transparent regulatory process for OSW development, all permitting and compliance requirement outlined in this Order shall be fully integrated into the Energy Virtual One-Stop Shop (EVOSS)

System, in accordance with Republic Act No. 11234 and its Implementing Rules and Regulations. This include, but is not limited to, the following:

1. Pre-Development Stage Environmental Compliance Certificate (ECC) applications and associated processes;
2. Development Stage ECC applications; and
3. Other required environmental permits, endorsements, and certifications in this Order.

The DENR, DOE and other relevant government agencies shall coordinate closely and facilitate integration and system interoperability.

SECTION 3. KEY ENVIRONMENTAL AND SOCIAL CONSIDERATIONS RELEVANT TO PHILIPPINE ENVIRONMENTAL IMPACT STATEMENT SYSTEM (PEISS)

To advance a sustainable green energy transition, the government shall implement strategic planning and early risk identification through screening and other appropriate tools. These measures will prioritize key impacts and sensitive receptors to ensure a comprehensive evaluation of environmental and social risks and impacts while addressing uncertainties related to OSW development.

Key environmental and social considerations shall be categorized into three areas: offshore environment impacts, onshore environment impacts, and socio-economic impacts. Developers preparing submissions for pre-development and development Environmental Compliance Certificates (ECC) under the Philippine Environmental Impact Statement System (PEISS) shall detail PEISS activities for each project phase, focusing on typical, foreseeable direct impacts on OSW project components, receptor groups (environmental entities potentially affected), survey requirements (baseline data from primary and secondary sources, tailored to project specifics, site location, and regulatory framework), and mitigation measures (actions to minimize adverse effects and promote sustainability). Mitigation measures shall be established during the pre-construction phase, incorporating site location, layout, and design, prior to development commencement. Assessments shall be project-specific, with mitigation measures customized to address significant impacts.

The offshore environment encompasses physical processes and water quality, air quality, noise and vibration, benthic and intertidal ecology, fish and shellfish ecology, marine mammals, ornithology, marine protected areas and species, offshore geology and geomorphology, and offshore geologic structures (e.g. offshore extension of onshore faults). The onshore environment includes geology, hydrology and soils, land contamination, noise, air quality, terrestrial ecology and ornithology, and protected sites and species. Socio-economic impacts cover socioeconomics, agricultural and productive land, tourism and recreation, shipping and navigation, aviation, traffic and transport, seascape, landscape and visual impact, and cultural heritage and archaeology.

Tables summarizing key environmental and social considerations across the project life cycle, with an overview of potential receptor groups, typical survey techniques or methodologies for data collection, recommended mitigations and monitoring methods, to provide guidance for developers preparing ECC submissions for OSW projects, is hereto attached as **ANNEX 9**.

SECTION 4. ISSUING AUTHORITY

The DENR Secretary or the EMB Director, upon clearance by the former, shall approve the issuance of the ECC for both the pre-development/exploration stage and development/construction stages of OSW projects, based on the recommendation of the EIA Review Committee.

SECTION 5. ENVIRONMENTAL IMPACT ASSESSMENT REVIEW COMMITTEE (EIARC)

A. Function and Composition

The Environmental Impact Assessment Review Committee (EIARC) is tasked with evaluating the Environmental Impact Statement (EIS) and related documents, providing informed recommendations to the DENR on the issuance or non-issuance of an Environmental Compliance Certificate (ECC) for Offshore Wind (OSW) projects. The EIARC shall be comprised of technical experts and professionals of recognized integrity and expertise from diverse fields, including:

1. Marine biologist/specialist;
2. Ornithologist;
3. Marine Spatial Planning Specialist/Land Use;
4. Climate Risk and Disaster Risk Specialist;
5. Sociologist/Anthropologist;
6. Terrestrial and Freshwater Specialist;
7. Geologist;
8. Health and Safety Specialist; and
9. Energy/Renewable Energy Specialist, with preference for Offshore Wind expertise.

Resource representatives from relevant lead agencies with regulatory oversight, such as the Department of Energy (DOE), Bureau of Fisheries and Aquatic Resources (BFAR), or other pertinent bodies, shall be invited to provide technical information or clarify certain legal, policy or procedural issues related to the development of OSW projects.

PART IV. STAKEHOLDER ENGAGEMENT

SECTION 1. APPLICATION OF DENR ADMINISTRATIVE ORDER NO. 2017-15

The provisions of DENR Administrative Order No. 2017-15, entitled "Guidelines on Public Participation under the Philippine Environmental Impact Statement System," which are not inconsistent with the succeeding Section, shall remain applicable.

SECTION 2. GUIDELINES FOR STAKEHOLDER ENGAGEMENT

The following guidelines for stakeholder engagement shall apply specifically to OSW projects to ensure holistic public engagement and transparency in the environmental assessment process:

- A. Initial stakeholder identification for OSW projects shall include communities, local government units (LGUs), water resource management authorities, fisherfolk, environmental NGOs, tourism operators, indigenous groups, and recreational users of the water bodies. An inclusive approach to capture a wide range of interests and concerns related to OSW installation shall be implemented by the developer, and thorough stakeholder mapping to understand the socio-economic and cultural contexts, potential conflicts, and synergies of interests shall be conducted. A directory of stakeholders for OSW Projects is attached as **ANNEX 10**.
- B. Information and Education Campaign (IEC) strategies shall be tailored by the developer specifically for OSW projects to ensure that the stakeholders are sufficiently informed about the OSW technology, its benefits, potential environmental and social impacts, and mitigation measures. Communication channels shall include community meetings, informational brochures, social media platforms, local radio and television broadcasts, SMS alerts, local newspapers, public forums, educational workshops, Key Informant Interview (KII), and Focus Group Discussions (FGD).
- C. After completion of the public scoping, the Public Scoping Report (PSR) shall be submitted by the developer to the DENR-EMB Central Office. Upon approval, an EIA technical scoping meeting involving the nominated EIA Review Committee, project developer, and their consultants shall be held for the purpose of finalizing the EIS scope, identifying key environmental and social issues, defining baseline data requirements, and outlining mitigation measures, to be signed by all parties to agree on the EIS Report scope.
- D. Public information and disclosure activities for OSW projects, its comprehensive project details, scope, objectives, including its technical aspects such as wind turbine generators technology, offshore infrastructure design, grid integration, marine environmental impacts, operational logistics, shall be transparently shared through understandable media channels to ensure that the stakeholders' insights are integrated into the EIA process.

PART V. COMPLIANCE MONITORING FRAMEWORK

SECTION 1. COMPLIANCE MONITORING ON PROJECT STAGES

The Compliance Monitoring Framework for Offshore Wind (OSW) Projects establishes a structured approach to ensure that environmental and socio-economic impacts are effectively managed throughout the lifecycle of OSW projects.

During the pre-development and transition to the development stage, project developers are responsible for observing and documenting any environmental enhancements or alterations resulting from pre-development activities. The developer shall ensure that all ECC conditions as well as its commitment in the Environmental Management and Monitoring Plan (EMMoP) in the pre-development/exploration stage are fully complied with.

In the development stage, compliance monitoring focuses on managing significant environmental and socio-economic impacts while maintaining transparent stakeholder engagement. Project developers shall conduct continuous stakeholder coordination to keep the public informed and provide opportunities to address concerns or grievances. They are required to ensure that construction activities and methodologies comply with the Site Assessment Plan (SAP), Construction Operation Plan (COP), Stakeholder Engagement Plan, and other management plans derived from the Environmental Impact Assessment (EIA) process.

Under the EMMoP, developers shall be responsible for analyzing environmental data to ensure compliance with relevant environmental regulations. In addition, a Social Impact Assessment (SIA) shall be conducted by the developers every three years, starting from the commencement of the OSW project's commercial operations. The SIA shall be included as a post-ECC condition of the D-ECC.

The decommissioning stage requires compliance monitoring to ensure that activities align with the approved Abandonment and Termination Plan (ATP) and that rehabilitation efforts restore the site to a safe and environmentally sound state. Project developers shall verify that decommissioning activities conform to the EIS Report and ATP methodologies, confirm the sufficiency of the decommissioning fund, and maintain transparent stakeholder coordination.

SECTION 2. COMPLIANCE MONITORING APPROACHES

The compliance monitoring process for OSW projects shall be tailored to project-specific circumstances, employing methods such as data and parameter sampling, third-party audits, reporting, and evaluations by the EIA Monitoring Team.

In the pre-development stage, developers shall ensure that the selected sampling stations are representative of the entire OSW development area. These stations shall be used to monitor environmental data throughout the D-ECC implementation, enabling comparative analysis with baseline data. The collected data shall be submitted semi-annually through the EMB Central Office's Compliance Monitoring Report (CMR) online system, and shared with the MMT.

SECTION 3. ENVIRONMENTAL IMPACT ASSESSMENT (EIA) MONITORING TEAM

The Environmental Impact Assessment Monitoring Team (EIAMT) is responsible for reviewing and evaluating monitoring results against applicable environmental standards, regulations, and for assessing the compliance of developers with their ECC conditions and Environmental Management Plan (EMP). The team shall convene bi-annually to discuss monitoring findings and to prepare recommendations, which are then endorsed to the DENR EMB Central Office in cases of non-compliance.

The EIAMT is composed of representatives from the DENR-EMB Regional Office concerned and EIA Review Committee members. The team shall conduct site validation activities based on submitted Compliance Monitoring Reports. Additionally, the EIAMT shall be invited by the developers to observe maintenance activities to ensure the implementation of proper safety protocols and to guarantee the protection of the environment.

SECTION 4. MONITORING ACTIVITIES FOR ENVIRONMENTAL RECEPTORS FOR OSW PROJECTS

Monitoring activities for environmental receptors vary by project stage. The baseline data gathering activities in the pre-development stage will inform the development of the requirements and conditions set forth in the PD-ECC that will be subject to compliance monitoring in subsequent project stages.

The gathering of periodic data and parameter sampling of environmental and social receptors, including terrestrial and marine ornithology and marine ecology, will take place during the pre-development stage. The duration of monitoring shall be receptor-specific and justified based on good international industry practice.

The monitoring activities that shall be accomplished during the pre-development stage is hereto attached as **ANNEX 11**.

The priority monitoring activities to be undertaken by the project developer to track compliance of the OSW project in line with the conditions and requirements identified in the pre-development and pre-development transition stages, including the environmental receptors that would require specialized mitigation measures, are attached as **ANNEX 12**.

The monitoring tools/techniques for environmental and social receptors, with brief description of each data collection method best suited for each environmental receptor, the appropriate spatial scale for data collection, and the appropriate timeframe for data collection in relation to OSW project's development phases, is provided in **ANNEX 13**.

PART VI. FINANCIAL ASSURANCE MECHANISMS

SECTION 1. PROJECTS COST FACTORS FOR DECOMMISSIONING PROGRAMME

Decommissioning of offshore wind (OSW) projects encompasses a comprehensive set of activities to ensure the responsible removal or remediation of project infrastructure while minimizing environmental impact. These activities include turbine preparation, removal, and transport to shore; foundation removal and transport; offshore substation dismantling and transport; removal of scour and cable protection; cable removal or remediation; site remediation; post-decommissioning surveys; and ongoing monitoring of any infrastructure left in situ.

The costs associated with decommissioning are influenced by multiple factors, leading to significant variability depending on the specific characteristics of the OSW project and prevailing market conditions. Key cost drivers include the size and number of turbines, foundations, and other infrastructure; the distance to the designated decommissioning port; and vessel costs, which fluctuate based on market rates. Additional factors include expenses related to project management and engineering teams, port fees, onshore facilities and offices, insurance, onshore recycling, and waste management. Contingency costs shall also be factored in to account for uncertainties such as weather-related downtime, infrastructure corrosion, and other unforeseen challenges.

To ensure financial preparedness, a robust regulatory framework for OSW decommissioning requiring developers to submit a detailed decommissioning programme in coordination with the Department of Energy (DOE). This program shall include financial modeling to demonstrate how financial securities will accrue over the project's lifetime to cover the costs of removing all seabed assets, including cables, with an alternative scenario where some assets remain in place. The framework shall specify the timing for submitting decommissioning securities, the accrual period for these funds, and periodic reviews to ensure adequacy. To mitigate risks of bankruptcy, the ownership company structure and investor hierarchy shall be clearly defined to guarantee financial accountability. Furthermore, the decommissioning process shall embed circular economy principles, incorporating waste disposal costs into cost estimates to encourage sustainable practices and minimize environmental impact.

SECTION 2. CREATION, COMPOSITION, AND FUNCTIONS OF MULTIPARTITE MONITORING TEAM (MMT)

To ensure independent oversight and accountability in OSW project operations, a Multipartite Monitoring Team (MMT) shall be established for each OSW project. The MMT is responsible for evaluating project performance against the commitments and conditions outlined in the Environmental Compliance Certificate (ECC), assessing the effectiveness of impact mitigation measures, overseeing conflict resolution, and managing grievance mechanisms.

To maintain impartiality, the MMT shall operate independently of the Department of Environment and Natural Resources- Environmental Management Bureau (DENR-EMB) and the project developer. The MMT shall comprise representatives from key stakeholders, including the DOE-Renewable Energy Management Bureau (REMB), DENR-Biodiversity Management Bureau (BMB), the Department of Agriculture-Bureau of Fisheries and Aquatic Resources (BFAR), the Local Government Unit (LGU) office responsible for coastal areas, environmental non-governmental organizations (NGOs) with a focus on marine ecosystems, academic institutions specializing in renewable energy and marine sciences, indigenous communities with traditional knowledge of marine environments, and local communities directly affected by OSW installations.

The MMT shall convene semi-annually to review project progress, environmental monitoring results, and stakeholder feedback, ensuring transparent and inclusive decision-making. The OSW developers shall provide funds for the MMT activities based on the annual work and financial plan approved by the EMB CO.

A Memorandum of Agreement (MOA) between the EMB CO and OSW developer shall be executed to formalize the creation of the MMT, outlining its roles, responsibilities, and operational guidelines to ensure effective governance and stakeholder engagement throughout the project lifecycle.

The Template MOA on the Creation of the Multipartite Monitoring Team, Environmental Monitoring Fund and the Environmental Guarantee Fund is hereto attached as **ANNEX 14**.

SECTION 3. ESTABLISHMENT OF ENVIRONMENTAL MONITORING FUND (EMF)

The Environmental Monitoring Fund (EMF) shall be established by the developers to finance the activities of the Multipartite Monitoring Team (MMT) for OSW projects, ensuring robust and independent environmental oversight. The EMF will support the MMT's initial organizational activities, ongoing monitoring efforts, and stakeholder engagement based on a detailed Work and Financial Plan.

The EMF shall cover expenses related to environmental monitoring, data collection, reporting, and public consultations, enabling the MMT to effectively evaluate project compliance with environmental commitments and mitigation measures. To operationalize the EMF, an account shall be opened in a reputable bank in the Philippines, with clear guidelines for fund administration and management as outlined in Annex 3-5 of DAO 2003-30.

SECTION 4. ESTABLISHMENT OF ENVIRONMENTAL GUARANTEE FUND (EGF)

To address potential environmental damages and ensure rehabilitation, the Environmental Guarantee Fund (EGF) shall be established for OSW projects. The EGF shall be used exclusively for immediate rehabilitation of areas affected by

environmental damage resulting from project construction, operation, or abandonment; just compensation for affected parties and communities; scientific or research studies to prevent or mitigate environmental accidents; contingency clean-up activities; environmental enhancement measures; damage prevention programs; and social equity measures, including information, education, and communication (IEC) and capacity-building activities.

The EGF shall be governed by a committee comprising representatives from the DENR-EMB Central and Regional Offices, the relevant Local Government Unit (LGU), other pertinent government authorities, and affected communities, to ensure inclusive and transparent decision-making. The administration and management of the EGF shall adhere to the guidelines outlined in Annex 3-6 of DAO 2003-30.

Notwithstanding any rule or regulation to the contrary, the EGF shall likewise incorporate the financial mechanisms outlined in the terms and conditions of the MOA between DENR and DOE dated October 10, 2024, including a uniform one-time development fee and annual fees based on delineated areas, with bond for protected areas.

SECTION 5. INTERAGENCY COORDINATION ON MARINE SPATIAL PLANNING AND ECC PROCESSING

The DENR and DOE shall establish a Technical Working Group (TWG) to harmonize environmental permitting with energy service contracting, facilitate information-sharing, and jointly evaluate OSW project applications using the MSP tools. The TWG shall serve as the coordination mechanism to address and prevent overlaps, ensure harmonization of requirements, and support timely OSW project implementation.

In the event of issues involving both contractual rights under the OSWESC and environmental obligations under the ECC, the DOE and DENR shall determine jurisdiction based on the nature of the issue: energy resource governance under RA 9513 and DOE Department Circular No. DC2024 06 0018, or environmental regulation under PD 1586 and DAO 2003 30.

The TWG shall ensure that ECC applications are cross-checked against DOE designated development zones and boundaries to avoid conflicting uses and ensure consistency with national energy and environmental conservation goals.

The DENR and DOE shall enter into a Memorandum of Agreement (MOA) to formalize and institutionalize the creation of a TWG, clearly outlining the roles, responsibilities, and implementation arrangements necessary to effectively and efficiently carry out the MSP framework in the evaluation and monitoring of OSW projects.

PART VII. MEMORANDUM OF AGREEMENT (MOA) BETWEEN DENR AND DOE

The Memorandum of Agreement between DENR and DOE dated October 10, 2024 which grants the latter the right to use Offshore Areas and Auxiliary Areas needed for the exploration, development and utilization of OSW projects during Pre-Development and Development Stages shall be effective, subject to terms and conditions for its implementation. The Memorandum of Agreement between DENR and DOE dated October 10, 2024 and its implementing terms and conditions are attached herewith as **ANNEX 15** and **ANNEX 15-A**.

PART VII. FINAL PROVISIONS

SECTION 1. PERIODIC REVIEW

These guidelines shall be reviewed every three (3) years or as needed. A Review Committee composed of DENR, DOST, DOE and other relevant National Government Agencies (NGAs) will be established to evaluate and incorporate lessons from pilot OSW projects, new scientific data, and emerging and future technologies, to ensure that the regulatory framework remains up-to-date and relevant with the country's needs.

SECTION 2. TRANSITORY PROVISION

This Administrative Order shall apply prospectively upon its effectivity. OSW ECC applications filed prior to effectivity and which are pending with the DENR-EMB Central Office shall be processed under the rules applicable at the time of filing.

For pending Pre-Development Stage ECC (PD-ECC) applications that are already under technical review, the review shall continue based on the scoping/checklist and documentary requirements previously issued by EMB; for pending Development Stage ECC (D-ECC) applications that are already at the public scoping/technical scoping stage, the approved scoping outputs (including the Scoping Checklist/Terms of Reference) shall remain controlling, and any additional requirements introduced by this Administrative Order may be imposed only where necessary to address material information gaps, significant risks, or newly identified impacts.

All OSW projects with previously issued PD-ECCs and/or D-ECCs shall comply with their existing ECC conditions; however, upon application for ECC amendment, renewal/extension, or subsequent stage approvals, the EMB may require reasonable alignment with this Administrative Order to the extent consistent with the PEISS and applicable rules.

SECTION 3. REPEALING CLAUSE

All provisions of DAO 2024-02 and other orders, circulars, or memoranda inconsistent herewith are hereby repealed or modified accordingly.

SECTION 4. SUPPLEMENTARY CLAUSE

The provisions of PD No. 1586, AO 42, DAO 2003-30, DAO 2017-15, and other applicable laws, rules, and regulations consistent with these guidelines shall have supplementary application.

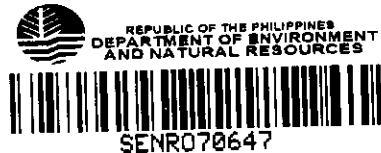
SECTION 5. SEPARABILITY CLAUSE

If any provision of this Order is declared invalid or unconstitutional, the remaining provisions shall continue in full force and effect.

SECTION 6. EFFECTIVITY CLAUSE

This Order shall take effect fifteen (15) days after its publication in a newspaper of general circulation and upon acknowledgment of three (3) certified copies hereof with the Office of the National Administrative Registrar (ONAR).


RAPHAEL P.M. LOTILLA
Secretary



Publication: The Manila Times
March 19, 2026

Acknowledgement: ONAR, UP, Law Center
March 19, 2026

ANNEX 1
SUMMARY OF ACTIVITIES PER LIFECYCLE STAGE OF AN OFFSHORE WIND ENERGY PROJECT

Lifecycle stage	Activity	Components
Pre-Development (Covered by Pre-Development Stage ECC)	Meteorological equipment installation and data collection	Met mast or fLiDAR; Other measuring device/ equipment for data collection
Construction (Covered by Development Stage ECC)	Foundation installation (including the deployment of piling vessel, barge, etc.)	Foundations
	Turbine installation (including jack-up vessels, installation of tower, nacelle, and blades)	wind turbine generator (WTG)
	Offshore substation installation (including jack-up vessels, platform, and converter)	Substation top
	Cable installation (including excavating, laying, burying, cable protection)	Inter-array and export cable, including landfall
	Onshore substation (including land acquisition, site clearance, access roads, temporary work sites)	Cabling and jointing bay
	Grid connection (including land acquisition, site clearance, access roads, temporary work sites)	Overhead power lines
O&M (Covered by Development Stage ECC)	Preventive maintenance, such as planned small repairs, routine inspections, and surveys	All offshore and onshore components
	Corrective maintenance and/ or major maintenance activities could also involve replacing one or more components or sections of cables.	All offshore and onshore components, as required.
Decommissioning (Covered by Development Stage ECC)	It is the reverse of construction. All activities are similar, except for piled foundations as in some cases, it might be allowed to cut the pile below the seabed and leave it in situ; hence, the effects of cutting might be different.	

Source: Asian Development Bank. (2024). **Guidance Note for Offshore Wind Energy Projects in the Philippines**. Technical Assistance Project: Environmental Safeguards Support for Philippine Offshore Wind and Solar Projects. Prepared by Ove Arup & Partners Hong Kong Limited (Philippines Branch).

Asian Development Bank

**Environmental Safeguards Support for Philippine Offshore Wind and Solar Projects
Site Assessment Plan Template**



© Arup

Guide to Users

This Site Assessment Plan (SAP) template is for developers of offshore wind (OSW) projects in the Philippines. The SAP is part of the requirements set by the Department of Environment and Natural Resources (DENR) for securing a Development Stage Environmental Compliance Certificate (ECC). This requirement is part of the process that occurs after the issuance of a Pre-Development ECC and during the transition from Pre-Development to Development Stage of OSW projects. The SAP shall be accomplished by the developers to provide a description of site assessment activities, particularly the devices that are planned to be installed within the project site to collect data and to support the development of an offshore wind farm. The information in the SAP will form the basis for assessing the environmental and socio-economic impacts of the planned site assessment and testing activities.

The SAP must ensure that the results of the site characterization and baseline environmental data collection (e.g., biological studies, geotechnical and geophysical investigations, archaeological surveys, hazard assessment) are provided to inform and serve as the baseline for the design of the proposed site assessment activities. The description of the potential environmental impacts and risks associated with the proposed site assessment, as well as the mitigation measures and monitoring activities, shall be presented in the SAP.

The planned activities in a SAP may include the deployment of meteorological or oceanographic measurement tools/ equipment, particularly meteorological towers or metocean buoys, and examination or trial of new technologies or devices that are used for site assessment.

The level of information in the SAP shall be proportional to impacts and scale of the proposed structures (e.g., metocean buoys have generally lower levels or lesser extent of impact as compared to a meteorological towers).

The survey data that are solely for the proposed site assessment activities shall be submitted together with the SAP as part of the appendices to enable a timely review of the document.

Acronyms and Abbreviations

ABS	-	Acrylonitrile Butadiene Styrene
DENR	-	Department of Environment and Natural Resources
ECC	-	Environmental Compliance Certificate
HSE	-	Health, Safety, and Environment
O&M	-	Operations and Maintenance
OSW	-	Offshore Wind
SAP	-	Site Assessment Plan

Contents

1.	Introduction	5
1.1	Project Overview	5
1.2	Permit Matrix	5
2.	Project Description	5
2.1	Project Description and Objectives	5
2.2	Site Location	6
2.3	Project Design	6
3.	Deployment and Installation	7
3.1	Overview of Deployment and Installation Activities	7
3.2	Vessels for Deployment	7
3.3	Pre-Installation Briefing	7
3.4	Mitigation Measures	8
4.	Operations and Maintenance	8
4.1	Operations	8
4.2	Maintenance Activities	8
4.3	Mitigation Measures	9
5.	Decommissioning	Error! Bookmark not defined.
5.1	Decommissioning and Site Clearance	9
6.	Potential Environmental and Social Impacts and Mitigation Measures	10

Tables

Table 1	Sample Schedule of Site Assessment Activities	5
Table 2	Sample Table for Parameters Measured by the Survey Instrument	7
Table 3	Sample Table for Location of Meteorological and Oceanographic Measurement Equipment	7
Table 4	Sample Summary of Environmental and Social Impacts and Mitigation Measures	11

1. Introduction

1.1 Project Overview

This section shall provide a concise overview of the project objectives and scope. The proposed activities encompass the installation of meteorological and oceanographic measurement equipment, including meteorological towers or metocean buoys, to facilitate comprehensive site assessment and data collection.

The concise project overview shall include information such as the type of meteorological tower or buoy(s), the number of tower(s) or buoy(s), and/or other devices that will be used to measure certain parameters. The location of these shall also be summarized in this section. The start and end date for installation and decommissioning shall also be stated in this section and detailed out in **Section 2.1 Project Description and Objectives**.

The lease holder, operator, and the contracted operator's contact information shall be included in this section. Details listed below shall be disclosed:

- Name of authorized representative
- Designation of authorized representative
- Contact number
- E-mail address
- Office address.

1.2 Permit Matrix

A permit matrix in table format shall be provided in this section indicating the requirements prior to site assessment activities and the status of compliance to these requirements (as described in the *Guidance Note for Offshore Wind Projects in the Philippines*). The measures taken or that need to be performed to satisfy the necessary requirements and conditions prior to site assessment activities shall be stated in the matrix. The documentary permits or clearances received shall be attached to the Site Assessment Plan (SAP) as part of the appendices section.

2. Project Description

2.1 Project Description and Objectives

Under this section, the overall objective(s) of the site assessment shall be listed. Descriptions of the site assessment activities to be performed within the site area, including details which relate to the construction and installation of a meteorological tower or buoys on the site for the purpose of collecting data, shall be clearly stated. The commencement date of each activity shall also be presented under this section with tables or Gantt chart(s). The beginning and ending date for all proposed activities shall be identified. A sample timeline is presented below in **Table 1**:

Table 1 Sample Schedule of Site Assessment Activities

Activity	January				February			
	Week 1	Week 2	Week 3	Week 4	Week 1	Week 2	Week 3	Week 4
Mobilization								
Installation of meteorological tower								
...								

Activity	January				February			
	Week 1	Week 2	Week 3	Week 4	Week 1	Week 2	Week 3	Week 4
...								

Any structures, including cables or other facilities that are proposed to be installed shall be listed in this section, and shall be detailed in **Section 2.3 Project Design**.

2.2 Site Location

This section shall provide detailed information regarding the location of project components, including precise latitude and longitude coordinates, water depth, and aliquot of the meteorological and oceanographic measurement equipment locations. These specifics are crucial for ensuring accurate site assessment and data collection. Maps showing the installation area(s) shall also be provided to provide visual representation of the project components or facilities in relation to the selected site(s). A bathymetric map showing the surface location(s) for each proposed component and anchor site and/ or radius for any construction barge(s). Existing structures or appurtenances that are found on both onshore and offshore locations that may be impacted by the proposed development shall also be indicated.

A separate map showing the location of the proposed development in relation to the shoreline and location of the onshore base(s) shall also be presented. This shall include any construction or modification to the onshore base(s). The lease area must be included in the map, using appropriate scale that is necessary to present all features described. Each map in the SAP must have a legend and must provide information on the coordinate system that was used.

2.3 Project Design

This section shall describe the design of project components, such as meteorological and oceanographic measurement equipment, in detail and should also elaborate their operational functionality. Additionally, the mooring design, inclusive of its components and anticipated impacts on the seafloor, shall be comprehensively outlined. Furthermore, comprehensive details pertaining to power supply and instrumentation equipment shall be provided to enhance understanding of the project's technical aspects.

This section shall provide a detailed description of the following:

- Type of proposed structure or facility that will be installed and the duration of its service life at the location.
- All meteorological and oceanographic measurement equipment, the number of devices to be installed, their location, and the parameters that are to be measured by the device. A table is suitable to present these details (see **Table 2**).
- Design of all associated structures and/ or cables, including information on testing, maintenance, process of repairing, included safety devices or features, the exterior corrosion protection, and the frequency of inspection.
- Locations of structure or places where activities for the project will be undertaken. The surface location, coordinates in latitude/ longitude, and the water depth shall also be described for each location. A table may be used to effectively present these details (see **Table 3**).
- Anchor radii of construction barges that will be deployed for the project. A location plan will be useful for illustrating the extent of anchor radii in relation to the area. For construction vessel anchors with unknown exact position, the maximum radius of anchors shall be reflected in the location plan.
- If metocean buoys will be deployed, the type and diameter of mooring lines or cables, radius of sweep area, and anchor dimensions and weights shall be specified. The mooring

design shall be site specific, complete and shall be considered final. In cases wherein such details are not yet fully known or confirmed, an approximate specification shall be provided, which shall reflect a reasonable worst-case scenario (from an environmental impact perspective, e.g. the largest area that may be impacted) to inform the assessment and mitigation of environmental impacts.

The use of figures to show the type of proposed structure or device is recommended to illustrate the descriptions. Sample table formats are shown below which can be used as a guide:

Table 2 Sample Table for Parameters Measured by the Survey Instrument

Parameter	Instrumentation	Range	Accuracy
Air Temperature	(brand and model of device)	-50° C to +60° C	±0.3° C at 20° C
...	...	...	...

Table 3 Sample Table for Location of Meteorological and Oceanographic Measurement Equipment

Buoy Provider	Assigned ID	Location (WGS84)	Mean Lower Low Water Depth (m)	Lease Block Number	Aliquot
ABS Technologies	A100	14°20'19.36"N; 120°33'12.10"E	20.8	116224	A
...	...	...	...	...	...

3. Deployment and Installation

3.1 Overview of Deployment and Installation Activities

This section shall present a comprehensive overview of the deployment and installation activities involved in the project. It outlines the systematic approach to deploying and installing the meteorological and oceanographic measurement equipment.

Following this overview, detailed procedures that will be followed to deploy and install the specific the meteorological and oceanographic measurement equipment shall be provided. These procedures shall include step-by-step instructions and relevant protocols to ensure efficient and effective deployment and installation processes. Reporting requirements shall also be included in this section, describing the process of how certain conditions or requirements in the permits and clearances will be met.

3.2 Vessels for Deployment

A brief description of the vessel(s) that are proposed to be used to deploy the meteorological and oceanographic measurement equipment shall be provided in this section. Details such as the engine specifications, their dimensions, and other associated mechanisms that will be used in conjunction with the vessel(s) shall be presented. An attachment shall be included in the appendices section to present the detailed technical specifications of the vessel(s).

3.3 Pre-Installation Briefing

The plans to conduct the pre-installation briefing for all personnel shall be laid out in this section. The schedule or timing of the meeting and its purpose shall also be disclosed. The briefing must include the discussion or review of Health, Safety, and Environment (HSE) requirements, emergency response requirements, roles and responsibilities of each worker and the chain of command, including communication strategies under normal and emergency scenarios, and the

planned activities. Mitigation measures to reduce environmental impacts shall also be discussed as part of the briefing.

3.4 Mitigation Measures

Identifying specific environmental impacts is crucial for implementing effective mitigation measures. Concerns such as habitat disturbance, water pollution, air contamination, and wildlife disruption are of paramount importance. Strategies including erosion control, waste management, noise reduction, and community engagement are indispensable for addressing these issues. Through diligent and proactive awareness, identification, mitigation and monitoring adverse effects to the environment can be minimized and responsible construction practices upheld.

This section shall describe measures that will be carried out to avoid, minimize or reduce environmental impacts of the site activities. This section shall discuss the following measures:

- Avoidance of impacts to protected species
- Reporting of injured or dead species
- Protection of avian and bat species
- Minimization of damage or disturbance to the seabed
- Avoidance of impacts to other users of the project area
- Prevention of harmful discharges and emissions to the environment
- Understanding and elimination of marine trash and debris
- Oil spill prevention and response
- Health and safety
- Other applicable mitigation measures.

4. Operations and Maintenance

4.1 Operations

This section shall provide a detailed description of the operations involved in conducting site assessment and data collection activities. It outlines the systematic approach that will be followed throughout the site assessment and data collection process, ensuring clarity and efficiency in operations. Normal operating procedures and procedures that will be followed in emergency situations (for both natural and manmade hazards) or in case of accidents shall also be described.

4.2 Maintenance Activities

This section shall provide a comprehensive outline of planned maintenance activities for the site assessment and data collection components of the project to ensure their optimal functioning throughout the project life. This may be done by presenting the following activities in detail:

- **Annual Inspection and Maintenance:** It is recommended that the proponent should plan for inspections approximately one year after deploying the meteorological and oceanographic measurement equipment. These inspections involve retrieving the entire mooring system and towing each measurement equipment item to shore for maintenance. After completing the necessary maintenance procedures, the measurement equipment should be redeployed at their original locations, with any exceptions noted. The process and vessels utilized should be consistent with those employed during the installation and decommissioning phases.

- **On-Site Maintenance Visits:** This activity shall describe the visits encompassing maintenance of above-surface measurement equipment components, sensor servicing, data retrieval, and solar panel cleaning, etc. (as relevant). Additionally, underwater hull inspections and chafe section assessments that are conducted to ensure structural integrity of the measurement equipment shall also be outlined.
- **Maintenance Tasks:** Details of maintenance tasks during onshore maintenance, which include removing biofouling and replenishing fuel cans, shall be discussed. The annual inspection activities that involves any items requiring service or replacement shall also be described.

4.3 Mitigation Measures

This section shall outline the strategies to mitigate environmental impacts and risks during the Operations and Maintenance (O&M) phase. It shall detail measures that will be implemented to avoid/ prevent, minimize, or reduce adverse effects on the environment resulting from the described O&M activities in the previous section, including, but not limited to, the following:

- Minimization of damage or disturbance to the seabed
- Avoidance of impacts to other users of the project area
- Prevention of harmful discharges and emissions to the environment
- Understanding and elimination of marine trash and debris
- Oil spill prevention and response
- Vessel strike avoidance measures
- Health and safety
- Other applicable mitigation measures

5. Decommissioning

5.1 Decommissioning and Site Clearance

This section should detail the decommissioning and site clearance procedure and explain the general concept of the procedures proposed for decommissioning the meteorological and oceanographic measurement equipment. It shall present:

- A comprehensive overview of decommissioning activities
- Detailed plans for site clearance
- Reporting mechanisms to document the decommissioning process.

This section must be able to present details such as the number and size of vessels that will be used for decommissioning and the duration of decommissioning. In cases wherein such details are not yet fully known or confirmed, approximate and conservative details shall be provided, which shall reflect a reasonable worst-case scenario (from an environmental impact perspective) to inform the assessment and mitigation of environmental impacts.

6. Potential Environmental and Social Impacts and Mitigation Measures

This section shall provide a summary on all anticipated environmental and social impacts of the site assessment activities, as well as the proposed mitigation measures. The discussions must include, but are not limited to, the following:

- Geological characteristics and conditions
- Biological environment
- Benthic and fisheries resources
- Marine mammals and sea turtles
- Avian and bat resources
- Water and air quality
- Social and economic resources
- Archaeological and historical sites

The description shall separately cover the mitigation of impacts of planned activities, and in the event of an unplanned accident / scenario.

A sample tabular representation of these details is shown in **Table 4**.

Table 4 Sample Summary of Environmental and Social Impacts and Mitigation Measures

Site Assessment Activity	Environmental and Social Components Likely to be Affected	Potential Impact	Options for Prevention, Mitigation, or Enhancement	Responsible Entity	Timing/Frequency
Pre-Construction and Pre-Installation of Meteorological and Oceanographic Equipment					
Mobilization	Physical Environment	The use of vessels and equipment may potentially cause degradation of air quality.	The vessels shall use low sulfur fuels and internal combustion engines that follow the permitted standards. Regular inspection and maintenance shall be performed for all vessels.	Project Proponent	All vessels shall be inspected prior to every deployment.
...	...	...	...	...	...
...	...	...	...	...	...

Asian Development Bank

**Environmental Safeguards Support for Philippine Offshore Wind and Solar Projects
Construction and Operations Plan Template**



© Arup

Guide to Users

This template is a guide for the developers of offshore wind (OSW) projects in the Philippines. It is part of the requirements set by the Department of Environment and Natural Resources (DENR) for securing a Development Stage Environmental Compliance Certificate (ECC). This process is initiated upon the issuance of the Pre-Development ECC and progresses during the transition from the pre-development stage to the development stage of OSW projects.

The Construction and Operation Plan (COP) provides a detailed framework outlining all construction and operational activities for an offshore wind (OSW) project. It covers technical, logistical, and engineering aspects, including project layout, construction methods, timelines, and maintenance procedures. The COP includes strategic plans for essential infrastructure elements such as foundations, wind turbine generators (WTGs), cabling systems, and substations, focusing on practical implementation and operational efficiency.

Additionally, the COP summarizes key environmental sensitivities, impacts, and risks associated with the project's activities. Developers must demonstrate strict adherence to applicable laws and regulations, ensuring that activities do not adversely affect natural resources, historic assets, or disrupt human uses of the marine environment. The COP is centered on the "how" of the project, detailing technical and operational plans to ensure feasibility and compliance.

Acronyms and Abbreviations

AC	-	Alternating Current
COP	-	Construction and Operation Plan
DENR	-	Department of Environment and Natural Resources
ECC	-	Environmental Compliance Certificate
FPIC	-	Free, Prior, and Informed Consent
IPRA	-	Indigenous Peoples Rights Act
LGU	-	Local Government Unit
NCIP	-	National Commission for Indigenous Peoples
NGO	-	Non-Governmental Organization
O&M	-	Operations and Maintenance
OSW	-	Offshore Wind
PDE	-	Project Design Envelope
WTGs	-	Wind Turbine Generators

Contents

1.	Introduction	5
1.1	Proponent Information Overview	5
1.2	Project Description and Objectives	5
1.3	Project Design Envelope (PDE)	5
2.	Regulatory Framework and Stakeholder Outreach	6
3.	Project Infrastructure and Description of Activities	7
3.1	Project siting	7
3.2	Project Components	7
4.	Construction	8
4.1	Construction Program	8
4.2	Construction Roles and Responsibilities	8
4.3	Construction Methods and Procedures	9
5.	Operation & Maintenance	9
5.1	Operation and Maintenance Requirements	9
6.	Environmental and Social Considerations and Mitigation Measures	10
6.1	Physical Environment	10
6.2	Biological Environment	11
6.3	Human Environment	11
7.	Other Information	12
8.	References	12

Tables

Table 1	Project Description and Objective Content	5
Table 2	Regulatory requirements for the Project	6
Table 3	Sample Consultation Highlights with Stakeholders	6
Table 4	Project Components Overview	7
Table 5	Key Milestone Dates (Sample Outline)	8
Table 6	Sample Outline Operation and Maintenance Activities	9
Table 7	Sample presentation of impacts and mitigation for Physical Environment	10
Table 8	Sample Summary of impacts and mitigation for Biological Environment	11
Table 9	Sample Summary of impacts and mitigation for Human Environment	11

1. Introduction

1.1 Proponent Information Overview

The lease holder, operator, and the contracted operator's contact information shall be included in this section. Details listed below shall be disclosed:

- Name of authorized representative
- Designation of authorized representative
- Contact number
- E-mail address
- Office address.

1.2 Project Description and Objectives

This section shall provide the following information:

Table 1 Project Description and Objective Content

Content	Description
1. Project Objectives	The overall objectives of the Construction and Operations Plan (COP) shall be listed, such as: • Develop a detailed blueprint for the construction and operation phases of OSW projects. • Minimize environmental and social impact through rigorous assessment, mitigation measures, and compliance with regulations. • Manage operational impacts responsibly, restore affected areas, and fulfill post-operational obligations.
2. Project Location	This section shall provide detailed information regarding the location of project components crucial for the construction and operation of the OSW development. It includes precise latitude and longitude coordinates, water depth, and the placement of meteorological and oceanographic measurement equipment. These specifics are essential for construction planning and logistical coordination. Maps shall be provided to visually depict the construction site(s). A separate map showing the location of construction and operations site(s) shall also be presented. This shall include any construction or modification to the onshore base(s). The lease area must be included in the map, using appropriate scale that is necessary to present all features described. Each map in the COP must have a legend and must provide information on the coordinate system that was used.
3. Project History	Brief historical overview of the project, detailing its inception, key milestones, and any significant developments leading up to its status.
4. Scope and Components	Define the overall scope of the project, outlining its size, scale, and duration.

1.3 Project Design Envelope (PDE)

This section should define the range of design parameters for the key components of the offshore wind project (i.e. foundations, Wind Turbine Generators (WTGs)). This will be used as the basis for determining the potential impacts of each design element on the environmental, cultural, and social aspects. This information will also help in identifying and recommending the type of assessments that shall be used to evaluate the anticipated impacts, as well as determining the extent of the impact to

guide in establishing the delineation of the direct and indirect impact areas. The PDE method is an approach that is used across the offshore wind industry to provide flexibility in the design of projects whilst maintaining robust impact assessments and mitigation measures in relation to each design element.

2. Regulatory Framework and Stakeholder Outreach

This section shall cover the essential elements of the COP, including permits, authorizations, and stakeholder outreach. It aims to outline the comprehensive approach taken towards regulatory compliance and community engagement. Below is the proposed table for organizing the regulatory requirements for the Project:

Table 2 Regulatory requirements for the Project

Agency	Applicable Permit or Approval	Statutory Basis	Regulation	Consultation Status
(e.g.) Local Government Unit (LGU)	LGU's Permit	Local Government Code of the Philippines	Ordinance of the LGU	Consultation completed; permit issued
(e.g.) National Commission for Indigenous Peoples (NCIP)	Free, Prior, and Informed Consent (FPIC)	Indigenous Peoples Rights Act (IPRA)	NCIP Administrative Order No. 1, Series of 2012	FPIC process initiated
...	...	...	...	...
...	...	...	...	...

On the other hand, the developer shall provide details of stakeholder outreach including a detailed account of the consultations conducted, or to be conducted with relevant stakeholders throughout the project lifecycle. This includes engaging local communities, governmental bodies, regulatory agencies, and other interested parties to ensure transparency, gather feedback, and address concerns effectively.

Table 3 Sample Consultation Highlights with Stakeholders

Date	Stakeholders	Highlights of Discussion	Proponent's Action
e.g. June 12, 2024	e.g. Local community representatives	e.g. Discussed project benefits and concerns about noise levels. Stakeholders expressed cautious support pending further noise mitigation details.	e.g. Presented a detailed noise management plan, including use of quieter equipment, sound barriers, and operational protocols to minimize noise emissions.
e.g. June 23, 2024	e.g. Environmental Non-Governmental Organizations (NGOs)	e.g. Requested transparency on emissions data and mitigation strategies. Advocated for stronger mitigation measures and habitat restoration.	e.g. Committed to conducting additional biodiversity surveys
e.g. August 7, 2024	e.g. Indigenous Groups	e.g. Highlighted the significance of cultural sites and traditional practices needing protection and recognition.	e.g. Committed to integrating traditional knowledge into environmental

Date	Stakeholders	Highlights of Discussion	Proponent's Action
		Discussed cultural heritage protection, requesting inclusion of traditional knowledge in environmental impact assessments and mitigation plans.	impact assessments and mitigation plans, ensuring cultural sites and practices are protected and recognized throughout the project.
...	...	...	...

3. Project Infrastructure and Description of Activities

3.1 Project siting

This section shall present a detailed overview of the project's location, providing crucial geographical context for the ensuing construction and operation details. Additionally, it encompasses a comprehensive description of the factors carefully considered during the project's siting process. Moreover, it shall provide a concise summary of the diverse alternatives explored for the siting, design, and construction phases of the project, showcasing a thorough examination of feasible options.

3.2 Project Components

This section delves into the intricate details of both offshore and onshore project components, serving as a comprehensive description of the essential infrastructure elements. It covers a wide array of components, including, but not limited to those listed in **Table 4**.

Table 4 Project Components Overview

Content	Description
1. Foundations	This section provides a concise summary of the different foundation types used in offshore structures, along with detailed descriptions of their design and key design parameters.
2. Wind turbine generators (WTGs)	Include here the Design parameters (parameters per turbine), access, control systems, offshore substations
3. Cabling systems	Detail the design parameters associated with the array cables, substation interconnector cables, and offshore export cables. It provides specifications such as cable type, diameter, length, and burial status for each cable type, highlighting their roles in energy transmission and their effects on navigational activities during installation and operation phases.
4. Substations	Offshore substations are essential components of alternating current (AC) transmission systems, tailored to the system's specific design. Their primary function is to stabilize and optimize voltage levels for electricity generated offshore. They also minimize electrical losses and facilitate the transmission of electricity to shore. Operational details will cover the expected lifespan, maintenance schedules, and monitoring routines. Additionally, measures to ensure safe navigation will be outlined. Supporting infrastructure requirements, such as access roads and docking facilities, will be detailed to ensure comprehensive planning and operation.

Each component shall be described, providing valuable insights into their design, functionality, and integration within the overall project framework.

4. Construction

4.1 Construction Program

This section shall provide a comprehensive description of the construction program for the OSW project. It shall include key milestone dates for each major phase of the construction process and outline any contingency planning measures to address potential delays or challenges. A sample outline of a construction program is shown in **Table 5**. This could also be illustrated in a Gantt chart or diagrammatic program.

Table 5 Key Milestone Dates (Sample Outline)

Activity	Description	Start Date	Completion Date	Challenges
Mobilization	Preparation and setup of construction sites, including the transport of materials and equipment to the site.			e.g. Logistics coordination
Foundation Installation	Installation of turbine foundations, ensuring they are securely anchored to the seabed.			e.g. Seabed conditions, equipment reliability
Turbine Installation	Assembly and commissioning of wind turbine generators (WTGs).			
Substation Installation	Setup of offshore substations to manage and transmit power.			
Cable Laying	Laying of inter-array and export cables to connect turbines and substations.			
Commissioning	Final inspection, testing, and commissioning of all installed components to ensure operational readiness.			

4.2 Construction Roles and Responsibilities

This section shall delineate the contractors responsible for constructing the main components outlined in the COP. It shall specify the roles, responsibilities, and contractual obligations of each contractor involved in the offshore wind project's construction phase. This ensures clarity in project execution and adherence to safety, quality, and environmental standards throughout the construction process.

4.3 Construction Methods and Procedures

This section shall cover the installation process for the main construction components outlined within the COP. A simple overview of the construction sequence should be included followed by a detailed description of the individual components. The key construction components could include the following:

- *Seabed preparation* - Procedures and methodologies for preparing the seabed to facilitate the installation of offshore wind infrastructure, ensuring stability and adherence to environmental regulations.
- *Foundations* – Guide for the installation of foundations, including monopiles, jackets, or other types as specified, essential for supporting wind turbine structures in varying seabed conditions.
- *WTGs* - Step-by-step installation procedures for wind turbine generators, covering assembly, lifting onto foundations, and integration with electrical and control systems to ensure operational readiness.
- *Cable installation (inter-array and export)*
 - *Inter-Array*: Methods and protocols for laying and connecting inter-array cables between wind turbines, focusing on efficient cable management and electrical connectivity.
 - *Export*: Comprehensive installation guidelines for export cables, detailing laying methods, cable protection measures, and connection to onshore or offshore substations.
- *Substations (onshore & offshore)* - Installation procedures for both onshore and offshore substations, including foundation installation, equipment placement, and integration with transmission networks to manage electricity distribution from the wind farm.

5. Operation & Maintenance

5.1 Operation and Maintenance Requirements

This section shall outline the operation and maintenance (O&M) requirements, encompassing scheduled and unscheduled activities associated with the development. It shall provide a comprehensive description of planned and unplanned maintenance activities foreseeable for the Project, detailing the methodology and frequency for each O&M task. The specific activities include:

- Turbine Foundation and Substation Foundation Maintenance Activities
- Turbine Maintenance Activities
- Offshore Substation Operation and Maintenance Activities
- Cable Maintenance Activities
- Operation and Maintenance Vessel
- Non-Routine activities such as spare parts, workforce, etc.

A sample approach to presenting this is provided in **Table 6**.

Table 6 Sample Outline Operation and Maintenance Activities

Facility	Activity	Methodology	Frequency
Wind Turbine Foundations	▪ Repainting	▪ Surface preparation, application of paint	▪ Every 5 years
	▪ Cleaning		▪ Annually

Facility	Activity	Methodology	Frequency
	Access Ladder Replacement	- Pressure washing, removal of debris - Inspection, replacement as necessary	Every 3-5 years
Offshore Substations	- Repainting - Cleaning - Access Ladder Replacement	- Surface preparation, application of paint - Pressure washing, removal of debris - Inspection, replacement as necessary	- Every 5 years - Annually - Every 3-5 years
...	...	...	...

6. Environmental and Social Considerations and Mitigation Measures

This section shall reflect the key findings and mitigation commitments relevant to construction and operational activities from the EIA Report. It shall also reflect key environmental parameters that could influence and should be considered in planning and undertaking construction and operations activities such as data collected from site assessment stage, any seasonal or location-specific sensitivities etc. Finally, it shall provide the overarching approach to the management of environmental and social impacts during the construction and O&M phases and the comprehensive mitigation strategies that will be implemented.

It shall present this information in a way that is relevant and informative to the stakeholders involved in planning and implementing construction and operations activities, including engineers, project managers, contractors, procurement personnel etc.

While these aspects are already covered in the EIA Report, this COP should provide additional detail and emphasis to ensure that all potential impacts are effectively managed and mitigated.

6.1 Physical Environment

This section should include a summary of survey results for the physical environment, document any sensitivities, summarize potential impacts from construction and O&M activities and present the mitigation that will be implemented. This could include:

Table 7 Sample presentation of impacts and mitigation for Physical Environment

Aspects	Survey Findings and Data	Potential Impacts (by activity)	Mitigating Measure
Marine Water Quality	<highlights> Chemical and biological parameters		
Marine and Coastal Processes	<highlights>		

Aspects	Survey Findings and Data	Potential Impacts (by activity)	Mitigating Measure
	Current patterns, tidal regimes, etc.		
Sediment Quality	<highlights> Contaminants, sedimentation rates		

6.2 Biological Environment

This section shall present a summary of survey results for the biological environment, document any sensitivities, summarize potential impacts from construction and O&M activities and present the mitigation that will be implemented. This could include:

Table 8 Sample Summary of impacts and mitigation for Biological Environment

Aspects	Survey Findings and Data	Potential Impacts (by activity)	Mitigating Measures
Benthic Subtidal and Intertidal Ecology	<highlights> Increased sedimentation rates in [specific area] High diversity with dominant species such as [insert species]		
Fish and Shellfish Ecology	<highlights> Reduced abundance of [species] in areas with high noise levels Presence of [species] in spawning grounds during [specific seasons]		
Ornithology	<highlights> Increased bird activity during [migration periods]		
Marine mammals and other megafauna	<highlights> Regular sightings of [marine mammal species] in [area]		

6.3 Human Environment

This section shall present a summary of survey results for the human environment document any sensitivities, summarize potential impacts from construction and O&M activities and present the mitigation that will be implemented. This could include:

Table 9 Sample Summary of impacts and mitigation for Human Environment

Aspects	Survey Findings and Data	Mitigating Measures
Commercial fisheries	<highlights> Presence of [specific fish species] during [specific seasons]	
Shipping and navigation	<highlights> Increased vessel traffic near project site	

Marine and terrestrial archaeology and cultural heritage	<i><highlights></i> Sites of historical importance within project area	
Seascape, landscape and visual impact assessment	<i><highlights></i> Alteration of local aesthetics and seascapes	
Population, economy and employment	<i><highlights></i> Demographic and economic data related to project influence	
Indigenous Communities and Traditional Knowledge	<i><highlights></i> Identification of indigenous territories or cultural sites	
Health and Safety	<i><highlights></i> Risk assessments for construction and operational phases	

7. Other Information

This section shall provide an overview of the project's approach to design standards and certification. It follows a rigorous design-basis methodology in accordance with recognized industry standards. This approach aims to ensure safety, regulatory compliance, and the sustainable development of offshore renewable energy projects.

8. References

Any references used in developing the Plan should be listed here in future updates.

Asian Development Bank

**Environmental Safeguards Support for Philippine Offshore Wind and Solar Projects
Abandonment and Termination Plan Template**



© Caro Ames/ Arup

Guide to Users

This template is intended for developers of offshore wind (OSW) projects in the Philippines, as mandated by the Department of Environment and Natural Resources (DENR) for obtaining a Development Stage Environmental Compliance Certificate (ECC). This requirement is fulfilled upon issuance of the Pre-Development ECC and during the transition from the pre-development to the development stage of OSW projects. The Abandonment and Termination Plan (ABT) must then be updated during the Decommissioning Stage, with a DENR-approved report marking the official conclusion of the project.

The ABT provides a structured framework outlining procedures and protocols for the safe and environmentally responsible abandonment and termination of an OSW project. This ABT Template provides clear guidance for developers on developing their ABT, ensuring thorough planning and compliance with regulatory requirements throughout the project lifecycle.

The ABT outlines key objectives focused on the safe and environmentally responsible decommissioning of OSW assets. It encourages the developer to set out and justify its preferred strategies for decommissioning, including options like full or partial removal, repowering, or life extension, based on considerations of safety, environmental impact, and economic feasibility. Strategies to sustain habitat quality and restore coastal environments shall be detailed, alongside plans for stakeholder engagement and comprehensive management and monitoring frameworks. Legal and regulatory requirements, including adherence to national and international standards, are integral to ensuring compliance throughout the decommissioning process. The ABT also requires the developer to set out its provisions for cost estimation, financial security, contingency planning, and site restoration, culminating in a structured approach to decommissioning that prioritizes environmental integrity and stakeholder involvement.

Acronyms and Abbreviations

ABT	-	Abandonment and Termination Plan
DAO	-	DENR Administrative Order
DENR	-	Department of Environment and Natural Resources
DOE	-	Department of Energy
EIAR	-	Environmental Impact Assessment Report
IEC	-	Information, Education, and Communication
IMO	-	International Maritime Organization
MARPOL	-	International Convention for the Prevention of Pollution from Ships
OSW	-	Offshore Wind
SOLAS	-	Safety of Life at Sea

Contents

1.	Introduction	5
1.1	Background Information	5
1.2	Objectives	5
2.	Legal and Regulatory Requirements	6
3.	Decommissioning Strategy	6
3.1	Description of items to be decommissioned	6
3.2	Decommissioning Methods and Measures	7
4.	Environmental Impact Assessment Report (EIAR)	8
5.	Stakeholder Engagement	11
6.	Decommissioning Monitoring, Maintenance and Management of the Site	11
7.	Schedule	11
8.	Costs and Financial Security	12
9.	Contingency Plan	12
10.	Restoration of the Site	12
11.	Conclusion	13
12.	Review of this ABT	13

Tables

Table 1	Sample Installations and Stabilization Features	7
Table 2	Subsea Cables details	7
Table 3	Sample Environmental and Social Impact Assessment Criteria by Receptor	
Category	9	
Table 4	Indicative Decommissioning Costs	12

1. Introduction

1.1 Background Information

This section shall provide a brief overview of the project, its location, and shall outline the purpose of the Abandonment and Termination Plan (ABT). It shall provide the following details:

- **Project Description:** Details of the companies involved in the project, including their ownership status and roles within the program.
- **Infrastructure Layout:** Description and diagrams illustrating the layout of the Offshore Wind (OSW) infrastructure slated for decommissioning.
- **Adjacent Facilities:** Information on nearby facilities such as communication cables, pipelines, and their current operational status, crucial for planning decommissioning activities.
- **Additional other background:** Data on local environmental conditions including prevailing sea states, currents, seabed characteristics, water depths, and any relevant activities in the area.

The <insert development name> offshore wind project is situated in <insert location>. It received approval for development on <insert grant/approval date>. Construction was completed and commissioning occurred on <insert dates>. Energy production is scheduled to cease on <insert dates>.

Description and diagrams illustrating the layout of the OSW infrastructure slated for abandonment and termination.

<Development Name> consists of <insert number of devices> devices with a maximum capacity of <insert capacity> located in <insert depth> meters of water. Electricity generated by the development is exported to <insert location>. The project includes <describe any other notable features of the development>.

Data on local environmental conditions including prevailing sea states, currents, seabed characteristics, water depths, and any relevant activities in the area.

The decommissioning program outlines the principles governing removal activities and is backed by an environmental impact assessment (including information for a habitats regulations appraisal. if

Box 1 Sample Introduction

1.2 Objectives

This section shall discuss the main objectives of the ABT, which should include the following aspects:

1. Justify the preferred decommissioning and termination strategy and other alternatives considered, considering factors such as safety, environmental and socio-economic impact, and economic feasibility. Options may include full removal, partial removal, full repowering, partial repowering, or life extension.
2. Develop strategies to sustain habitat quality, integrity, and resilience in and around offshore wind (OSW) assets undergoing decommissioning and termination. This involves minimizing disturbance to marine habitats and enhancing their capacity to withstand environmental change.
3. Set out the measures and strategies that will be implemented to restore the environmental integrity of environments affected by the decommissioning process. This includes mitigating potential adverse impacts and promoting the recovery of marine ecosystems.
4. Define a Stakeholder Engagement Plan to address the needs of stakeholders potentially impacted by decommissioning and termination activities. This involves engaging with affected

stakeholders, addressing concerns, and implementing measures to mitigate socio-economic impacts.

5. Establish a comprehensive framework for the management and monitoring of affected areas throughout and after the decommissioning and termination process. This includes regular assessments to track environmental changes, ensure regulatory compliance, and evaluate the effectiveness of mitigation measures.

The plan shall aim to ensure a sustainable and responsible approach to the decommissioning of offshore wind assets by delineating clear objectives encompassing environmental restoration, habitat preservation, decommissioning preferences, management, monitoring, and social considerations.

2. Legal and Regulatory Requirements

In compliance with national standards and good international industry practice, the ABT for OSW installations shall incorporate a thorough examination of pertinent legal and regulatory frameworks. This shall include:

1. A comprehensive listing of national laws, regulations, and guidelines governing the abandonment and termination process of OSW installations. These encompass environmental protection statutes, maritime safety protocols, and energy sector regulations, among others.
2. Adherence to international conventions and agreements, such as those established by the International Maritime Organization (IMO), including the International Convention for the Safety of Life at Sea (SOLAS), the International Convention for the Prevention of Pollution from Ships (MARPOL) and any future conventions and agreements. Additionally, any other relevant international codes guiding the abandonment and termination procedures shall be duly acknowledged.

The ABT shall mandate approval from the Department of Environment and Natural Resources (DENR) and the Department of Energy (DOE) to ensure alignment with regulatory standards and environmental considerations. Furthermore, in accordance with DAO 2024-02, the ABT shall be subject to a periodic review every five years by the developer. This review entails an assessment of scour protection conditions, potential revisions to methodologies, and cost evaluations, thus ensuring the plan remains adaptive and compliant with evolving regulatory requirements.

3. Decommissioning Strategy

3.1 Description of items to be decommissioned

The decommissioning and termination strategy for the OSW project entails a detailed plan for the safe and efficient removal of various infrastructure components:

Items to be decommissioned:

- ***Components and Structures:*** This phase involves the disassembly of renewable energy devices/test devices, including foundations, support structures, towers, anchor blocks, turbines, and ancillary equipment. It also includes removing offshore substations, including foundations, support structures, topside structures, and ancillary equipment, as well as meteorological masts. Additionally, materials placed on the seabed, such as rock, grout bags, sandbags, and mattresses for scour protection, will be addressed during decommissioning. Detailed descriptions and diagrams of these components are crucial to ensure the safe and efficient removal of critical offshore wind infrastructure while adhering to environmental regulations.

Table 1 Sample Installations and Stabilization Features

Component and Structures (Features)	Number	Size/Weight (Tonnes)	Location(s)	Remarks Status
e.g. Foundation (gravity base, jacket, etc.)	X	X size, Y tonnes each	Coordinates with coordinate system noted	e.g., all turbines are currently operational but will undergo decommissioning. The turbines are attached to X using X.
....				
....				

- *Subsea Cable*- Retrieval and disposal of subsea power cables, including identification and mitigation of any environmental impacts.

Table 2 Subsea Cables details

Description	Cable Number	Diameter (inches)	Length (km)	Description of Component Parts	From-To End Points	Burial Status	Cable Status
Inter-array cable							Operational
Export Cable							Inactive
Inter-substation cable							

- *Mooring*- Disconnection and recovery of mooring equipment, including anchors, chains, and lines.
- *Offshore Substation* - Decommissioning of electrical infrastructure and substation facilities, including transformers, switchgear, and control systems.
- *Scour Protection Measure*

3.2 Decommissioning Methods and Measures

Proposed decommissioning methods should detail the different options considered for each component of OSW by the following criteria:

1. Implementing safety protocols to protect personnel and assets throughout the decommissioning process, including emergency response procedures and personnel training.
2. Engaging with stakeholders to assess and address concerns related to decommissioning activities, including fishermen, marine transportation, and recreational users of the area.
3. Minimizing environmental impact through careful planning and execution, including minimizing habitat damage, habitat restoration, marine mammal monitoring, and pollution prevention measures.

4. Assessing the economic feasibility and commercial viability of decommissioning options, considering factors such as salvage value, disposal costs, and potential for reuse or recycling.
5. Ensuring the practical integrity of decommissioning methods by selecting techniques suited to offshore conditions, ensuring equipment reliability, and optimizing logistical efficiency.

Further elaboration on the technical activities involved in the decommissioning process can be provided in a separate appendix.

4. Environmental Impact Assessment Report (EIAR)

Outline if an EIAR will be needed for the decommissioning process and how impacts will be mitigated. Findings of the pre-construction EIAR should be included and considered within the ABT. A new baseline may need to be established for both environmental and social receptors as the baseline may have changed throughout the operational life of OSW.

The following criteria shall be used to guide developers in conducting a thorough EIAR to assess the environmental implications of decommissioning:

- Identification and assessment of potential environmental impacts
- Identification and use of relevant surveys to inform the assessment process, ensuring robust data collection and analysis.
- Review of nature conservation designations to ascertain potential implications and ensure compliance with conservation regulations and objectives.
- Evaluation of potential interference with other legitimate users of the sea, safeguarding against conflicts and ensuring coexistence with marine activities.
- Identification and assessment of potential impacts on local amenities, communities, and future uses of the environment, aiming to minimize disruptions and promote sustainable development.
- Examination of potential impacts on the historic environment, recognizing and preserving cultural heritage sites and structures.

Table 3 Sample Environmental and Social Impact Assessment Criteria by Receptor Category

Component	Receptors	Environment and Social Impact	Compliance with the Regulations	Mitigating Measures
Land	• Land Use and Classification • Geology, Geomorphology, Soils, Hydrology and Hydrogeology • Landscape • Terrestrial Legally Protected and Internationally Recognized Areas (Biodiversity) • Terrestrial Biodiversity • Ornithology (terrestrial)			
Water	<i>Physical Environment</i> • Geology, Oceanography, Sedimentary and Coastal Processes • Metocean (wind, wave, and climate conditions) • Water Quality (freshwater and marine) <i>Biological Environment</i> • Marine and Coastal Legally Protected and Internationally Designated Area • Intertidal Biodiversity • Benthic Biodiversity • Fish and Shellfish • Marine Mammals • Marine Ornithology • Marine Reptiles • Seascape			
Air	• Meteorology • Greenhouse Gas Emission (Vessels) • Ambient Air Quality • Noise Quality and Vibration			
People	• Community (onshore)			

Component	Receptors	Environment and Social Impact	Compliance with the Regulations	Mitigating Measures
	• Threat to delivery of basic services/resource competition • Generation of Local Benefits from the project • Displacement of Settlers • In-migration proliferation of informal settlers • Archaeological and Cultural Heritage • Occupational Health and Safety • Transport (Traffic) • Shipping and Navigation • Military and Civil Aviation • Visual Receptors (Seascape and Landscape) • Aquaculture and Fisheries			

5. Stakeholder Engagement

This section shall detail the comprehensive plan for engaging with stakeholders about the decommissioning and termination activities (updated Stakeholder Engagement Plan), encompassing local communities, regulatory bodies, and other relevant parties. The ABT should also delineate whether an Information, Education, and Communication (IEC) Campaign will be undertaken as part of social preparation for the decommissioning procedures.

This section shall also outline proactive strategies for meaningful dialogue, soliciting feedback, and addressing concerns throughout the decommissioning process. It includes:

- Identification of key stakeholders and their respective interests, ensuring representation from diverse perspectives.
- Description of communication channels and methods that will be used to facilitate transparent and accessible information sharing.
- Engagement activities such as consultations, meetings, workshops, surveys, and online platforms that will be used to encourage active participation and collaboration.
- Plans for addressing stakeholder feedback, incorporating suggestions, and providing timely updates on project developments.
- Consideration of cultural sensitivities, language barriers, and accessibility requirements to ensure inclusivity and equity in stakeholder engagement efforts.

6. Decommissioning Monitoring, Maintenance and Management of the Site

This section shall outline the procedures for monitoring and maintaining the site during and after decommissioning. This includes regular assessments to track environmental changes, ensure regulatory compliance, and evaluate the effectiveness of mitigation measures.

It shall include plans for environmental monitoring to ensure the site is in a healthy environmental state, regular inspections to address any potential hazards, and strategies for managing any residual structures or materials. The goal is to ensure the site remains safe and environmentally sound following the termination of operations.

Key elements to monitor should be aligned with the Compliance Monitoring Framework, emphasizing the importance of water quality (regular testing for contaminants and pollutants), soil health (monitoring for erosion, contamination, and nutrient levels), biodiversity (assessing the presence and health of local flora and fauna), waste management (ensuring proper disposal and treatment of any residual materials), and structural integrity (ensuring any remaining structures are stable and safe).

7. Schedule

Provide a schedule for the decommissioning process, including marine logistics and vessel plans. The schedule should aim to follow the mitigation hierarchy; i.e. that decommissioning activities should be planned to avoid environmentally-sensitive time-periods such as breeding seasons.

The ABT should indicate whether the schedule is subject to change depending on the possible decommissioning scenarios. It should also indicate when the final decommissioning program will be prepared prior to the depowering of OSW components. Project management, planning, procurement, and contract follow-up implications should be considered based on the preferred decommissioning scenario. The schedule should also indicate when a Decommissioning EIA and consultation (if necessary) will be undertaken.

8. Costs and Financial Security

Provide an estimate of the costs associated with the decommissioning process. This can be attached as an appendix. Prior to the commencement of decommissioning the estimate should be updated to reflect any changes in the decommissioning strategy. It is recommended that costs be reviewed and updated every 2-5 years.

Financial assurance mechanisms to pay for the cost of decommissioning should be outlined as well as the relevant stakeholders. This can be included in a separate appendix.

The responsible party is required to fill out the following table when submitting decommissioning programs. If decommissioning is expected to occur over several years, costs should be itemized annually.

Table 4 Indicative Decommissioning Costs

Decommissioning activity	Indicative cost range (Php)		Php / unit
	Year 1	Year 2	
Turbine preparation			
Removal of turbines			
Removal of foundations			
Removal of offshore substation			
Removal of scour protection			
Removal of inter array cables			
Removal of export cable			
Removal of inter array cable protection			
Removal of export cable protection			
Post-decommissioning survey			
Seabed clearance and restoration			
Ongoing monitoring			
Total			

9. Contingency Plan

This section shall detail the contingency plan devised to address unforeseen circumstances that may arise during the decommissioning process. The plan shall encompass proactive strategies and response protocols aimed at mitigating potential risks and minimizing disruptions to the decommissioning operations.

10. Restoration of the Site

The plan shall outline the proposed methods to restore the site to its pre-construction condition to the greatest extent feasible and appropriate. It shall set out a program for delivering this, the stakeholders involved, roles and responsibilities and how achievement of restoration will be monitored and recorded.

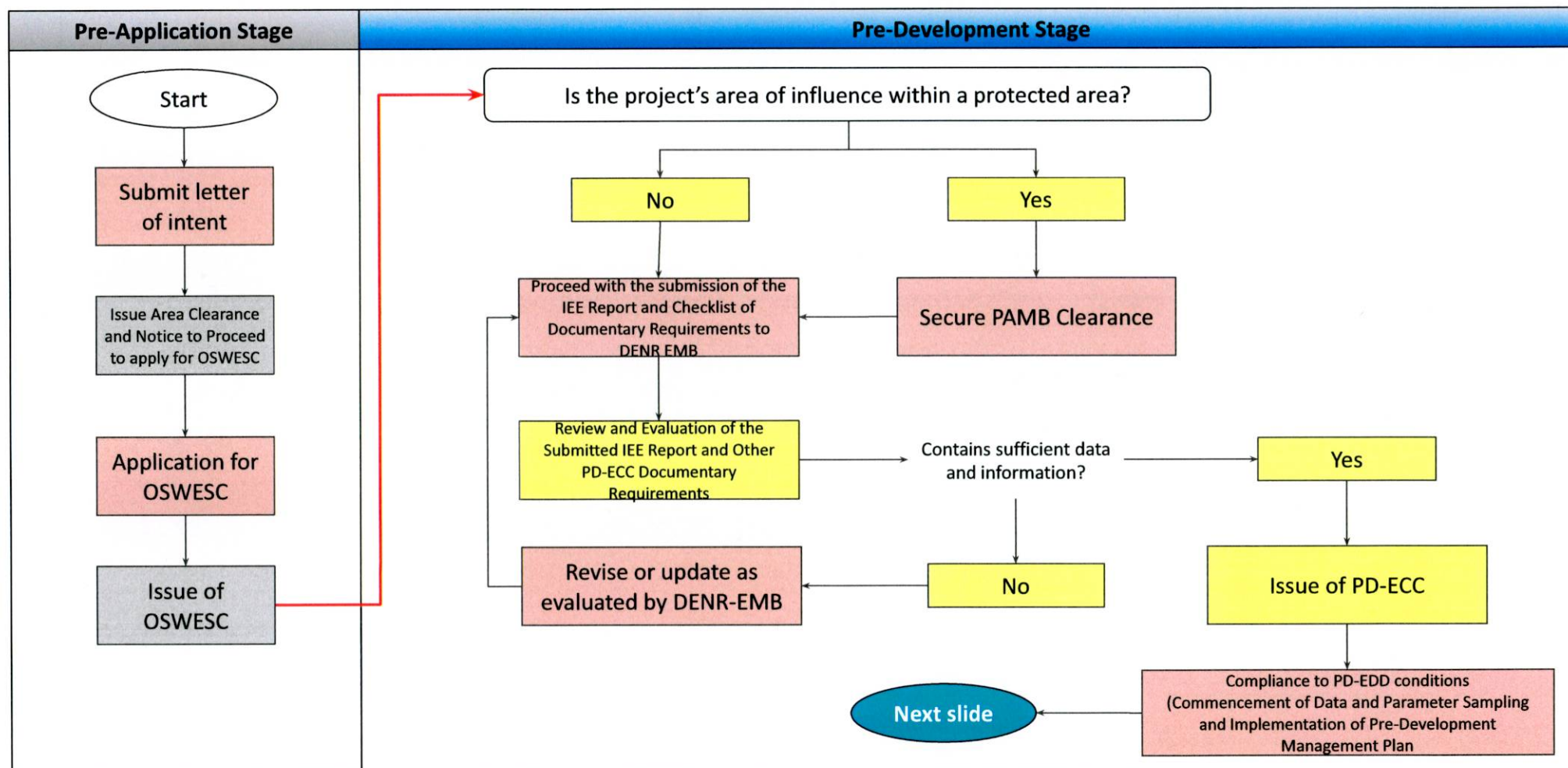
11. Conclusion

Summarize the plan and reaffirm the commitment to carrying out the decommissioning process in accordance with this plan.

12. Review of this ABT

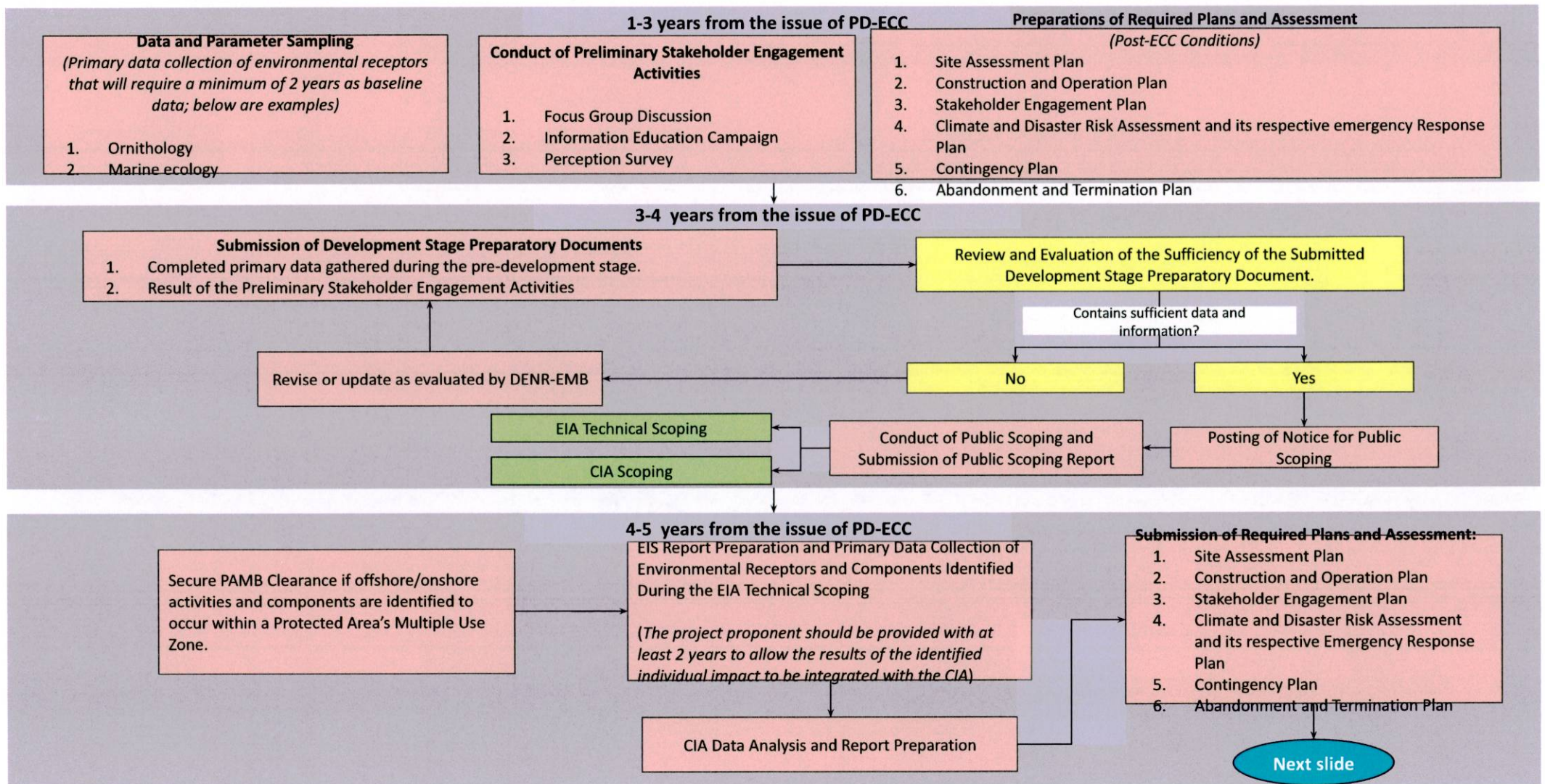
A commitment to periodically review, and if necessary, update the ABT shall be included here. It shall reflect regulatory requirements for review (as referenced in **Section 2 Legal and Regulatory Requirements**) and set out any other criteria or conditions that the developer anticipates should trigger a review. The scope of the review(s) shall also be briefly elaborated here.

DOE driven Proponent driven DENR driven Proponent and DENR driven

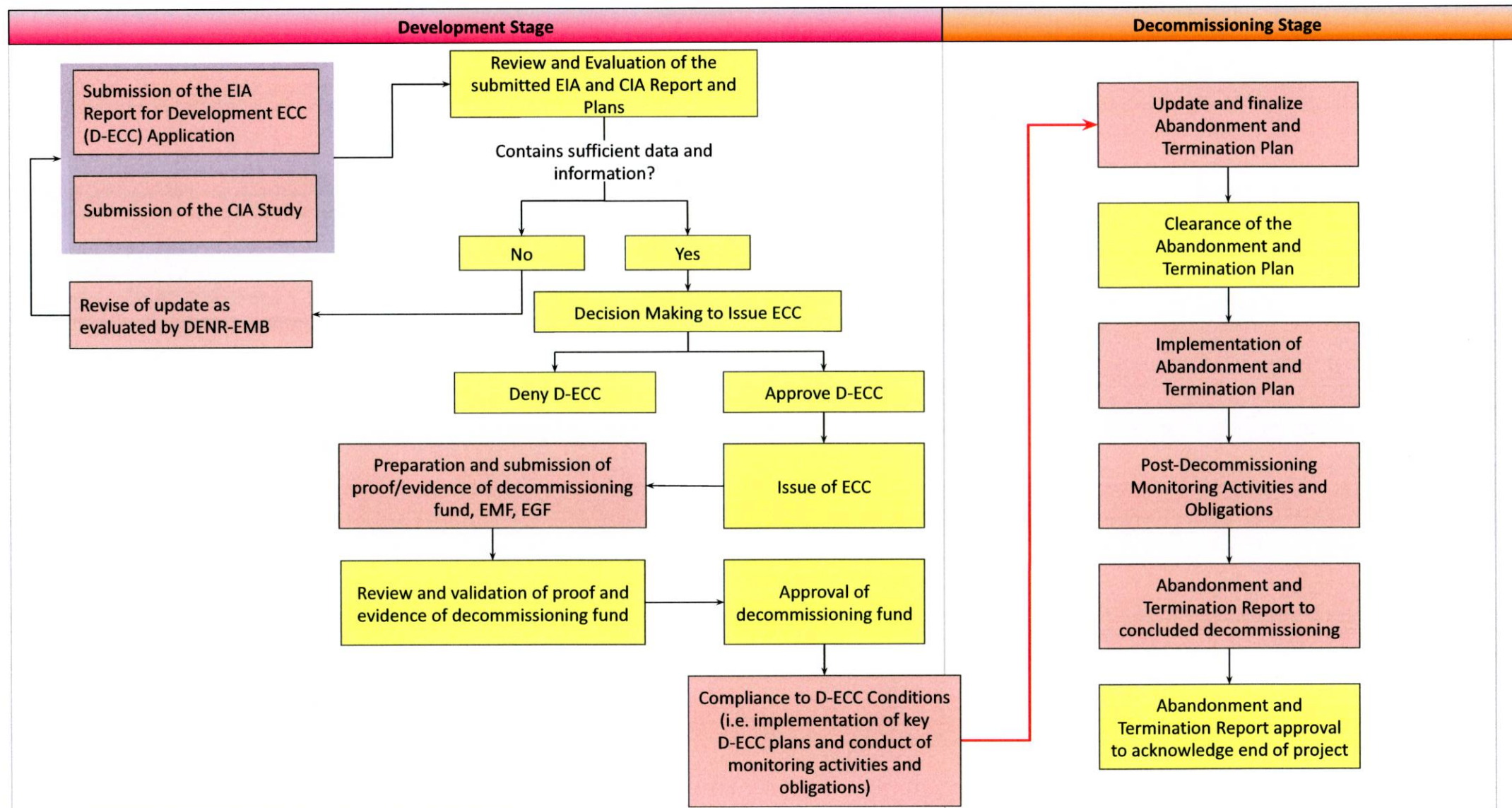




Pre-Development Transition to Development Stage



DOE driven
 Proponent driven
 DENR driven
 Proponent and DENR driven



ANNEX 6

SUMMARY OF DOCUMENTARY REQUIREMENTS FOR OFFSHORE WIND ENERGY PROJECTS

Documentary Requirements	Acceptable?		Screening Officers' Remarks
	Yes	No	
Pre-Development Stage			
Check required EIA Report: ☐ Initial Environmental Examination (IEE) Report <i>(Include photographs or plates of project site, impact/affected areas and communities and land-use plan showing compatibility of the proposed project)</i>			
Proof of Authority over the Project Site ☐ Water Rights/ Certificate of Conformity (COC) ☒ Lease Agreement ☐ Offshore Wind Energy Service Contract from DOE ☐ PAMB Clearance <i>(If the project's area of influence is within a protected area)</i> Others: _____			
Proof of Coordination: ☐ Local Government Unit; ☐ Department of National Defense (DND); ☐ Department of Transportation (DOTr); ☐ Department of Information and Communications Technology (DICT); ☐ Department of Agriculture (DA); ☐ Department of Interior and Local Government (DILG); ☐ Department of Tourism (DOT).			
Memorandum of Agreement with NAMRIA regarding the gathering of data, surveying and data sharing			
Accountability Statements of Preparers & Developer (see Annexes 2-21 & 2-22 of Revised Procedural Manual for DAO 2003-30)			

Source: Asian Development Bank. (2024). *Guidance Note for Offshore Wind Energy Projects in the Philippines*. Technical Assistance Project: Environmental Safeguards Support for Philippine Offshore Wind and Solar Projects. Prepared by Ove Arup & Partners Hong Kong Limited (Philippines Branch).

Documentary Requirements	Acceptable?		Screening Officers' Remarks
	Yes	No	
Proof of payment of fees and charges for the review and monitoring of OSW energy projects to be set in a separate guideline.			
Development Stage			
Check required EIA Report: ☐ Environmental Impact Statement (EIS) ☐ Programmatic Environmental Impact Statement (PEIS) ☐ Environmental Performance Report and management Plan (EPRMP) ☐ Programmatic Environmental Performance Report and management Plan (PEPRMP) <i>(include photographs or plates of project site, impact/affected areas and communities and land-use plan showing compatibility of the proposed project)</i>			
Proof of Authority over the Project Site ☐ Water Rights/COC ☐ Lease Agreement ☐ Offshore Wind Energy Service Contract from DOE ☐ Transfer Certificate of Title (TCT) or Lease Agreement of the area where the facilities will be installed ☐ Others: _____ For onshore facilities: ☐ Special Use Agreement in Protected Areas (SAPA) – <i>if within protected areas</i> ☐ Foreshore Lease Agreement (FLA) – <i>if within the foreshore area</i> ☐ Special Land Use Permit (SLUP) – <i>if within forest land</i> For offshore facilities: ☐ PAMB Clearance – <i>if offshore activities and components are identified to occur within a protected area's multiple use zone (MUZ)</i>			

Source: Asian Development Bank. (2024). **Guidance Note for Offshore Wind Energy Projects in the Philippines**. Technical Assistance Project: Environmental Safeguards Support for Philippine Offshore Wind and Solar Projects. Prepared by Ove Arup & Partners Hong Kong Limited (Philippines Branch).

Documentary Requirements	Acceptable?		Screening Officers' Remarks
	Yes	No	
Site Assessment Plan (SAP)			
Construction and Operations Plan (COP)			
Stakeholder Engagement Plan (SEP)			
Environmental Management and Monitoring Plan (EMMoP)			
Contingency Plan			
Abandonment and Termination Plan (ATP)			
CDRA and ERP			
Cumulative Impact Assessment (CIA)			
Letter of No Objection from: ☐ Local Government Unit; ☐ Department of Agriculture (DA); ☐ Department of Interior and Local Government (DILG); ☐ Department of National Defense (DND); ☐ Department of Tourism (DOT); ☐ Department of Transportation (DOTr); ☐ Department of Information and Communications Technology (DICT)			
Accountability Statements of Developer and Preparers (see Annexes 2-21 & 2-22 of Revised Procedural Manual for DAO 2003-30)			
Duly Accomplished Project Environmental Monitoring & Audit Prioritization Scheme (PEMAPS) Questionnaire (see Annex 2-7d of Revised Procedural Manual for DAO 2003-30)			
Proof of payment of fees and charges for the review and monitoring of OSW energy projects to be set in a separate guideline.			

Source: Asian Development Bank. (2024). **Guidance Note for Offshore Wind Energy Projects in the Philippines**. Technical Assistance Project: Environmental Safeguards Support for Philippine Offshore Wind and Solar Projects. Prepared by Ove Arup & Partners Hong Kong Limited (Philippines Branch).

Documentary Requirements	Acceptable?		Screening Officers' Remarks
	Yes	No	
Decommissioning Stage			
☐ Financial Assurance Mechanism in the form of Decommissioning Fund (<i>Shall be secured upon the issue of D-ECC</i>)			
☐ Final Abandonment and Termination Plan			

Source: Asian Development Bank. (2024). **Guidance Note for Offshore Wind Energy Projects in the Philippines**. Technical Assistance Project: Environmental Safeguards Support for Philippine Offshore Wind and Solar Projects. Prepared by Ove Arup & Partners Hong Kong Limited (Philippines Branch).

ANNEX 7
Initial Environmental Examination (IEE) Report Annotated Outline

Sections/ Subsections		Content	Page No.	Acceptable?	Remarks
Executive Summary					
Project Sheet	Fact	Summary of Project Description			
Process Documentation		Documentation of the process undertaken in the conduct of EIA (<i>EIA Study Schedule & Area, description of key EIA Methodologies including sampling and measurement plan, Scoping and Public Participation</i>)			
IEE Summary		- Summary of baseline characteristics - Summary of key environmental impacts and, mitigation measures; and sampling and measurement plans			
1.0 Project Description					
Include as an introduction, basic information about the project pre-development stage					
1.1 Project Location		- Nautical map indicating any known ECA category and municipal water boundaries covered by the project area - Area of Influence (AOI) including discussion of buffer zone or exclusion zone in the offshore area to be adopted for safety - Direct and indirect impact areas of the development - Geographic coordinates (shape file data) of project area (use World Geodetic System (WGS) 84 datum – GPS setting) including spatial extent of common components' impacts such as the rotor which may cause vibration - Description of vicinity and the accessibility of the project site/ area			

Source: Asian Development Bank. (2024). *Guidance Note for Offshore Wind Energy Projects in the Philippines*. Technical Assistance Project: Environmental Safeguards Support for Philippine Offshore Wind and Solar Projects. Prepared by Ove Arup & Partners Hong Kong Limited (Philippines Branch).

Sections/ Subsections	Content	Page No.	Acceptable?	Remarks
1.2 Project Rationale	- Cite and focus on the need for the project based on national and regional/ local economic development in terms of contribution to sustainable development agenda or current development thrusts. - Describe the justification for the Project with particular reference made to the economic and social benefits, including employment and associate economic development, which the project may provide. The status of the project should be discussed in a regional and national context.			
1.3 Project Development	Discussion on the metocean mast or floating LiDAR installation: a) General layout; b) Maps showing the particular location of the metocean mast or floating LiDAR and the boundaries of the site; c) Component dimensions; d) Foundation type (for metocean mast); and e) Other related information during met-mast installation			
	Typical design/ type options of facilities			
	Metocean data coverage			
1.4 Project Phases	Description of all pre-development phases: a) Planning (including all surveys required in Annex 9); b) Rights acquisition; c) Site selection (e.g., meteorological tower, corridor for offshore, transmission export cables, etc.); d) Typical installation and methodologies;			

Source: Asian Development Bank. (2024). **Guidance Note for Offshore Wind Energy Projects in the Philippines**. Technical Assistance Project: Environmental Safeguards Support for Philippine Offshore Wind and Solar Projects. Prepared by Ove Arup & Partners Hong Kong Limited (Philippines Branch).

Sections/ Subsections	Content	Page No.	Acceptable?	Remarks
	e) General operation and maintenance activities; f) Types of vessels and vessel movement across all phases; and g) Site Assessment Plan (SAP). Description of OSW project phases: a) Construction and operations plan (COP).			
1.5 Manpower Requirements	Tabulate the following per project phase (pre-construction, construction, operation and maintenance): a) Manpower requirements; b) Expertise/ skills needed; c) Nature & estimated number of jobs available for men, women, and indigenous peoples (if in IP's ancestral land); and d) Scheme for sourcing locally from host and neighboring LGUs			
1.6 Project Cost	Indicative Project Investment Cost (Philippine Peso)			
1.7 Project Duration and Schedule	Presentation of the project duration and schedule, reflecting the specific project activities that are aligned with the 5-year Pre-Development Work Program of the OSWESC, or any pre-development period as prescribed by the DOE.			
2.0 Baseline Characterization (limited to secondary data only)				

Source: Asian Development Bank. (2024). *Guidance Note for Offshore Wind Energy Projects in the Philippines*. Technical Assistance Project: Environmental Safeguards Support for Philippine Offshore Wind and Solar Projects. Prepared by Ove Arup & Partners Hong Kong Limited (Philippines Branch).

Sections/ Subsections	Content	Page No.	Acceptable?	Remarks
	See the attached table for the list of key environmental impacts that shall be subject to assessment. Since this is still in the pre-development stage, this will serve as an initial environmental assessment of the project, wherein the use of secondary data will suffice.			
	2.1 Ambient Water Quality (including sea surface temperature, ocean wave amplitude and frequency, and sea level rise)			
	2.2 Marine Ecosystems			
	2.3 Marine Physical Properties and Marine Sediment, and Water Quality			
	2.4 Offshore Air Quality and Noise (including air temperature which affects the air density and turbine power output, air moisture, etc.)			
	2.5 Presence of commercial fisheries, tourism, recreation, shipping and navigation, and aviation in the development area			
3.0 Environmental Management and Monitoring Plan (EMMoP)				
	The EMMoP shall include a list of the key environmental aspects of development, its potential impacts, mitigation and enhancement measures, parameters to be measured, sampling plan including the method, frequency, and location, person-in-charge, and estimated cost.			
4.0 Environmental Risk Assessment (ERA) & Emergency Response Policy and Guidelines				
	The level of coverage and type of document required shall first be determined based on Annex 2-7e of RPM for DAO 2003-30. For EMMoP, discuss the status of implementation of the safety policies/guidelines and any proposed changes. Include last three (3) years of safety statistics. Also include incidence such as spills, near spills and similar incidents such as accidents and emergency. Discuss actions taken.			

Source: Asian Development Bank. (2024). **Guidance Note for Offshore Wind Energy Projects in the Philippines**. Technical Assistance Project: Environmental Safeguards Support for Philippine Offshore Wind and Solar Projects. Prepared by Ove Arup & Partners Hong Kong Limited (Philippines Branch).

ANNEX 8

ENVIRONMENTAL IMPACT STATEMENT (EIS) REPORT, ENVIRONMENTAL PERFORMANCE REPORT, AND MANAGEMENT PLAN (EPRMP) ANNOTATED OUTLINE

Sections/ Subsections	Contents	Page No.	Acceptable?	Remarks
Executive Summary				
Project Fact Sheet	Summary of Project Description			
Process Documentation	Documentation of the process undertaken in the conduct of EIA (<i>EIA Team, EIA Study Schedule & Area, description of key EIA Methodologies including sampling and measurement plan, Scoping and Public Participation</i>)			
EIA Summary	- Summary of alternatives considered in terms of siting, technology selection/ operation processes and design. - Concise integrated summary of the main impacts and residual effects after applying mitigation. - Risks and uncertainties relating to the findings and implications for decision making			
1.0. Project Description				
Include as an introduction, basic information about the project and project developer				
1.1 Project Location	- Nautical map indicating any known ECA category and municipal water boundaries covered by the project area - Area of Influence (AOI) including discussion of buffer zone or exclusion zone in the offshore area to be adopted for safety - Direct and indirect impact areas of the development - Geographic coordinates (shape file data) of project area (use WGS 84 datum – GPS setting) including spatial extent of common components' impacts such as the rotor which may cause vibration and shadow flickers - Description of vicinity and the accessibility of the project site/ area			

Source: Asian Development Bank. (2024). **Guidance Note for Offshore Wind Energy Projects in the Philippines**. Technical Assistance Project: Environmental Safeguards Support for Philippine Offshore Wind and Solar Projects. Prepared by Ove Arup & Partners Hong Kong Limited (Philippines Branch).

Sections/ Subsections	Contents	Page No.	Acceptable?	Remarks
1.2 Project Rationale	• Cite and focus on the need for the project based on national and regional/ local economic development in terms of contribution to sustainable development agenda or current development thrusts. • Describe the justification for the Project with particular reference made to the economic and social benefits, including employment and associate economic development, which the project may provide. The status of the project should be discussed in a regional and national context.			
1.3. Project Alternatives	a) Cite criteria used in determining options for facility siting, development design, process/ technology selection, resource utilization and discuss how the decision on the preferred options were made. o Discussion on the selected options for OSW facility siting (e.g., consideration of the marine ecosystem, other sectors (fishing/ offshore mining) that use the offshore), and technology (i.e., monopole, jacket, semi-submersible and spar-buoy) selection. The siting/ technology selection considers the risks on the environment particularly its impact on the marine ecosystem. <i>Likewise contextualize the determination of preliminary options in terms of project site factors significant to the selection such as supply sustainability and susceptibility to extreme climatological conditions.</i> b) Summarize and discuss comparison of environmental impacts of each alternative for facility siting, development design, technology selection c) Discuss the consequences of not proceeding with the project or no project option			
1.4 Project Components	a) General layout of facilities in the Offshore and its transmission line b) Maps showing in particular, the location and boundaries of project area, location and footprint of main			

Source: Asian Development Bank. (2024). **Guidance Note for Offshore Wind Energy Projects in the Philippines**. Technical Assistance Project: Environmental Safeguards Support for Philippine Offshore Wind and Solar Projects. Prepared by Ove Arup & Partners Hong Kong Limited (Philippines Branch).

Sections/ Subsections	Contents	Page No.	Acceptable?	Remarks
	facilities, storage and support facilities, and proposed exclusion/ buffer zones.			
	c) Identification and general description of major components.			
	d) Identification and description of support/ associated facilities and infrastructure requirements (e.g., power transmission lines, substations)			
	e) Discussion of waste management system for the generation of used oil and other spent materials in the operation and maintenance of the OSW			
1.5 Process/ Technology	a) Technology Description and Performance Specifications <i>Include process flowsheets for the operations and the anticipated wastes streams (operations/ maintenance)</i>			
	b) Description of the operations and maintenance of OSW facility, including its frequency of maintenance and volume (in liters/ kgs) of wastes generated			
1.6 Project Size	a) Total power generating capacity in Megawatts (MW)			
	b) Total Project Area in hectares (ha) including the buffer zones			
1.7 Development Plan, Description of Project Phases and Corresponding Timeframes	Phases to be described in terms identifying specific activities (with special attention on those with significant environmental impacts as well as climate change adaptation options relevant to the project and project activities) and corresponding projected implementation timeframes:			
	• Pre-development (e.g., planning, acquisition of surface water rights, installation of metocean mast/ other non-intrusive measuring devices e.g., fLiDAR etc.)			
	• Construction (e.g., transport of materials to offshore, installation of wind turbines, construction of onshore components, health and other services for the workforce)			

Source: Asian Development Bank. (2024). **Guidance Note for Offshore Wind Energy Projects in the Philippines**. Technical Assistance Project: Environmental Safeguards Support for Philippine Offshore Wind and Solar Projects. Prepared by Ove Arup & Partners Hong Kong Limited (Philippines Branch).

Sections/ Subsections	Contents	Page No.	Acceptable?	Remarks
	• Operation (projected period of start- up/ commissioning/ full operation) include discussion on the operation of various components (as identified above) in terms of raw materials, fuel requirements, waste management and infrastructure requirements • Decommissioning/ Abandonment/ Rehabilitation - Projected life of the project; - Abandonment Plan (general) to include management plan for proper dismantling/ abandonment of facilities/ equipment.			
1.8 Manpower Requirements	Tabulate the following per project phase (pre-construction, construction, operation and maintenance): a) Manpower requirements; b) Expertise/ skills needed; c) Nature & estimated number of jobs available for men, women, and indigenous peoples (if in IP's ancestral land); and d) Scheme for sourcing locally from host and neighboring LGUs			
1.9 Project Cost	Indicative Project Investment Cost (Philippine Peso)			
1.10 Project Duration and Schedule	Presentation of the project duration and schedule, reflecting the specific project activities			
2.0 Baseline Characterization and Impact Assessment				
See Annex 9 for the list of key environmental impacts that shall be subject to assessment. The assessment shall be done using the prescribed approach/ method and in relation to the corresponding baseline characterization in the primary and secondary impact areas (as determined using the Guidelines in Annex 2-2 of the Revised Procedural Manual (RPM) for DAO 2003-30 or succeeding issuances). The sampling and measurement plan used shall be discussed in the EIA Report. Likewise, the assessment should be done for the various phases of development (i.e., pre-construction, construction, and operation) and should consider climate change projections and disaster risks based on existing natural hazard information. For all maps, include overlays of project area footprint, show sensitive/ critical receptors and sampling points for baseline data (indicate geographical coordinates). In conclusion, the residual and cumulative impacts shall be assessed. For EPRMP, the result of the developer's monitoring shall be used as baseline. The assessment of environmental impacts of				

Source: Asian Development Bank. (2024). **Guidance Note for Offshore Wind Energy Projects in the Philippines**. Technical Assistance Project: Environmental Safeguards Support for Philippine Offshore Wind and Solar Projects. Prepared by Ove Arup & Partners Hong Kong Limited (Philippines Branch).

Sections/ Subsections	Contents	Page No.	Acceptable?	Remarks
	proposed modification shall be discussed in relation to the actual impacts of existing project operations which shall be presented from a summary of the results of compliance monitoring (in matrix and graphical form) as described in 6.1.			
	2.1 Ambient Water Quality (including sea surface temperature, ocean wave amplitude and frequency, and sea level rise)			
	2.2 Marine Ecosystems			
	2.3 Marine Physical Properties and Marine Sediment, and Water Quality			
	2.4 Air Quality and Noise (including air temperature which affects the air density and turbine power output, air moisture, etc.)			
	2.5 Presence of commercial fisheries, tourism, recreation, shipping and navigation, and aviation in the development area			
3.0 Environmental Management Plan				
	Appropriate mitigation/ management measures should be specified for each of the identified key impacts (Annex 9) Appropriate climate change adaptation and disaster risk reduction measures/ options shall likewise be thoroughly discussed. The impact management plan should be summarized using at the minimum, the format in Annex 2-17 of RPM for DAO 2003-30. For EPRMP, the proposed impact management plan to be discussed shall consider review of performance of existing project based on the Environmental Quality Performance Levels (EQPLs) set. Also include change in adaptation measures / options and remediation of contaminated soil and water resources, land restoration proper dismantling, if any.			
4.0 Environmental Risk Assessment (ERA) & Emergency Response Policy and Guidelines				
	The level of coverage and type of document required shall first be determined based on Annex 2-7e of RPM for DAO 2003-30. For EPRMP, discuss status of implementation of the safety policies/ guidelines and any proposed changes. Include last three (3) years of safety statistics. Also include incidence such as spills, near spills and similar incidents such as accidents and emergency. Discuss actions taken.			
5.0 Social Development Plan/ Framework (SDP) and Information and Education Campaign (IEC) Framework				
	For EPRMP, discussion should focus on the status of implementation of SDP and IEC commitments. Discuss adjustments that should be undertaken.			

Source: Asian Development Bank. (2024). Guidance Note for Offshore Wind Energy Projects in the Philippines. Technical Assistance Project: Environmental Safeguards Support for Philippine Offshore Wind and Solar Projects. Prepared by Ove Arup & Partners Hong Kong Limited (Philippines Branch).

Sections/ Subsections	Contents	Page No.	Acceptable?	Remarks
5.1 Social Development Program (SDP)	Community development or livelihood programs/ activities, projected beneficiaries, partner institutions, timeframe of implementation as well as source and amount allotted per activity/ component (See Annex 2-18 of RPM for DAO 2003-30)			
5.2 Information and Education Campaign (IEC)	Target sector, key messages, scheme/ strategy/ methods, information medium, timelines and frequency, cost			
6.0 Environmental Compliance Monitoring				
6.1 Environmental Performance (for EPRMP only)	Results of compliance monitoring in matrix and graphical form showing and explaining the trend in environmental conditions			
	Analyse performance based on the EQPLs set			
	Discuss compliance to ECC conditions and performance against the originally approved Environmental Management and Monitoring Plan, MMT requirements/ commitments, third party audits (if any)			
	Discuss implementation of appropriate and effective environmental impact remedial actions in case of exceedances			
	Discuss operationalization of complaints management system			
6.2 Self-Monitoring Plan	The monitoring plan shall be summarized using Annex 2- 20 of RPM for DAO 2003-30 or succeeding issuances as template.			
	For EPRMP, the original and proposed additional/ changes in sampling sites/ stations shall be discussed and shown in map/s. Proposed reduction in or additional parameters shall likewise be identified. The proposed changes in parameters and/or sampling stations which shall be based on the results of the impact assessment reported in Section 2 shall be discussed in this section.			
6.3 Multi-Sectoral Monitoring Framework	Discussion on the necessity of creating a Multi-Partite Monitoring Team (MMT). Describe the proposed scope of MMT responsibilities and activities and tabulate the list of proposed stakeholder-members of the MMT, basis of selection and proposed role. (See Annex 3-4 of the RPM for DAO 2003-30).			
6.4 Environmental	Discussion on the necessity of putting up an Environmental Guarantee Fund (EGF). If			

Source: Asian Development Bank. (2024). **Guidance Note for Offshore Wind Energy Projects in the Philippines**. Technical Assistance Project: Environmental Safeguards Support for Philippine Offshore Wind and Solar Projects. Prepared by Ove Arup & Partners Hong Kong Limited (Philippines Branch).

Sections/ Subsections	Contents	Page No.	Acceptable?	Remarks
Guarantee and Monitoring Fund Commitments	deemed necessary, present a proposed amount of EGF indicating the basis for the estimate (per guidelines in annex 3-6 of RPM for DAO 2003-30) If MMT is deemed necessary, present a proposed amount of EMF (based on a draft Annual Work and Financial Plan or AWFP in following the format in Annex 3-4 and consistent with guidelines in Annex 3-5 of RPM for DAO 2003-30).			
7.0 Decommissioning/ Abandonment/ Rehabilitation Policy				
	Statement on developer's policies to implement the abandonment plan described in Item 1.7 and to formulate and submit procedures for Rehabilitation/ Decommissioning/ Abandonment within a timeframe specified in the ECC. For EPRMP, present approved plan/program, if any, and proposed changes.			
8.0 Institutional Plan for EMP Implementation				
	Present the organizational scheme of the developer including line of command and reporting procedures as well as manpower complement and relationships with other operating departments. For EPRMP, discuss status of implementation and any proposed changes in the plan to cover modification/ expansion if any.			

8.2 Key Impacts to be Included in the Assessment and Formulation of Management and Monitoring Plan (to be reflected in the IEER and EIS/ EPRMP)

Key Impacts to be Included in the Assessment and Formulation of Management and Monitoring Plan (to be reflected in the IEER and EIS/ EPRMP)													
During scoping: Unless otherwise specified as agreed during scoping, all items listed are required. Write specific instructions (if any) on the blanks/ spaces provided					✓ For completeness during procedural screening; page numbers should be provided upon submission of the IEER and EIS/ EPRMP								
Key Impacts (* - for onshore facilities; to be included in the Development and Decommissioning Phases)	Baseline Requirements	Data	Parameter	Required Assessment Methodology/ Approach	Baseline Conditions		Impact Analysis		Management Plan		Monitoring Plan		Remarks
					Page	✓	Page	✓	Page	✓	Page	✓	
1.0 Land													
1.1. Land Use and Classification													
1.1.1 Impact in terms of compatibility with existing land use*	Description & Map showing the project area in relation to existing land use and land use conversion requirements for onshore facilities.			Assessment of the compatibility of the proposed project vis-a-vis actual land use and the approved comprehensive land use plan/ zoning classification, ECA Classification.									
1.1.2 Impact on compatibility with classification as an Environmentally Critical Area (ECA)	Identify ECA where the project is located or near the project area. Identify areas vulnerable/ susceptible to natural hazards where the project is located or near the project area (include map/s).												

Source: Asian Development Bank. (2024). **Guidance Note for Offshore Wind Energy Projects in the Philippines**. Technical Assistance Project: Environmental Safeguards Support for Philippine Offshore Wind and Solar Projects. Prepared by Ove Arup & Partners Hong Kong Limited (Philippines Branch).

Key Impacts to be Included in the Assessment and Formulation of Management and Monitoring Plan (to be reflected in the IEER and EIS/ EPRMP)										
During scoping: Unless otherwise specified as agreed during scoping, all items listed are required. Write specific instructions (if any) on the blanks/ spaces provided						✓ For completeness during procedural screening; page numbers should be provided upon submission of the IEER and EIS/ EPRMP				
Key Impacts (* - for onshore facilities; to be included in the Development and Decommissioning Phases)	Baseline Data Parameter Requirements	Required Assessment Methodology/ Approach	Baseline Conditions		Impact Analysis		Management Plan		Monitoring Plan	
			Page	✓	Page	✓	Page	✓	Page	✓
1.1.3 Impact in existing land tenure issue/s*	Determine if the project area is under the Comprehensive Agrarian Reform Program (CARP) or with Certificate of Ancestral Domain Claim (CADC)/ Certificate of Ancestral Domain Title (CADT) / Certificate of Ancestral Land Claim (CALC)/ Certificate of Ancestral Land Title (CALT), with Integrated Forest Management Agreement (IFMA)/ Community Based Forest Management Agreement (CBFMA), within COC, within MPSA (Mineral Production Sharing Agreement) or other tenurial instruments and identify corresponding existing tenure issues including presence of informal settlers.	Identify and assess impact in terms of land tenure issues in relation to project implementation. Provide Certificate of Non-Overlap (CNO) on ancestral domain areas from the National Commission on Indigenous Peoples (NCIP).								

Source: Asian Development Bank. (2024). **Guidance Note for Offshore Wind Energy Projects in the Philippines**. Technical Assistance Project: Environmental Safeguards Support for Philippine Offshore Wind and Solar Projects. Prepared by Ove Arup & Partners Hong Kong Limited (Philippines Branch).

Key Impacts to be Included in the Assessment and Formulation of Management and Monitoring Plan (to be reflected in the IEER and EIS/ EPRMP)											
During scoping: Unless otherwise specified as agreed during scoping, all items listed are required. Write specific instructions (if any) on the blanks/ spaces provided						✓ For completeness during procedural screening; page numbers should be provided upon submission of the IEER and EIS/ EPRMP					
Key Impacts (* - for onshore facilities; to be included in the Development and Decommissioning Phases)	Baseline Requirements	Data Parameter	Required Assessment Methodology/ Approach	Baseline Conditions		Impact Analysis		Management Plan		Monitoring Plan	
				Page	✓	Page	✓	Page	✓	Page	✓
1.1.4 Impairment of visual aesthetics*	Visually significant landscape/ structures.		Identify and assess impact of the project on these visually significant landforms/ landscape/ structures.								
1.1.5 Devaluation of land value as a result of improper solid waste management and other related impacts*	Existing solid waste management and related land management scheme in the area		Identify and assess impacts of the estimated generation of solid wastes and other related issues on the existing management scheme.								
1.2 Geology/ Geomorphology											
1.2.1 Change in surface landform/ geomorphology/	Slope and Elevation/ Topographic Map		Identify and assess project impact in terms of the changes in surface landform/ topography/ terrain/								

Source: Asian Development Bank. (2024). **Guidance Note for Offshore Wind Energy Projects in the Philippines**. Technical Assistance Project: Environmental Safeguards Support for Philippine Offshore Wind and Solar Projects. Prepared by Ove Arup & Partners Hong Kong Limited (Philippines Branch).

Key Impacts to be Included in the Assessment and Formulation of Management and Monitoring Plan (to be reflected in the IEER and EIS/ EPRMP)												
During scoping: Unless otherwise specified as agreed during scoping, all items listed are required. Write specific instructions (if any) on the blanks/ spaces provided						✓ For completeness during procedural screening; page numbers should be provided upon submission of the IEER and EIS/ EPRMP						
Key Impacts (* - for onshore facilities; to be included in the Development and Decommissioning Phases)	Baseline Requirements	Data Parameter	Required Assessment Methodology/ Approach	Baseline Conditions		Impact Analysis		Management Plan		Monitoring Plan		Remarks
				Page	✓	Page	✓	Page	✓	Page	✓	
topography/ terrain/slope*			slope including existing hazard as maybe aggravated by climate change as projected by the Philippine Atmospheric, Geophysical and Astronomical Services Administration or PAGASA.									
1.2.2 Change in sub-surface geology/ underground conditions	Regional/ General Geological Map Natural Hazard Map (sub surface)		Identify and assess project impact in terms of the changes in sub-surface geology and inducement of subsidence, liquefaction, landslides, mud/debris flow to the									
1.2.3 Occurrence of marine geohazards (e.g., tsunamis,	Geological Map as needed; hazard maps (NAMRIA, National Disaster Risk Reduction and Management Council (NDRRMC), Mines and											

Source: Asian Development Bank. (2024). **Guidance Note for Offshore Wind Energy Projects in the Philippines**. Technical Assistance Project: Environmental Safeguards Support for Philippine Offshore Wind and Solar Projects. Prepared by Ove Arup & Partners Hong Kong Limited (Philippines Branch).

Key Impacts to be Included in the Assessment and Formulation of Management and Monitoring Plan (to be reflected in the IEER and EIS/ EPRMP)												
During scoping: Unless otherwise specified as agreed during scoping, all items listed are required. Write specific instructions (if any) on the blanks/ spaces provided						✓ For completeness during procedural screening; page numbers should be provided upon submission of the IEER and EIS/ EPRMP						
Key Impacts (* - for onshore facilities; to be included in the Development and Decommissioning Phases)	Baseline Requirements	Data Parameter	Required Assessment Methodology/ Approach	Baseline Conditions		Impact Analysis		Management Plan		Monitoring Plan		Remarks
				Page	✓	Page	✓	Page	✓	Page	✓	
volcanic eruptions, landslides, etc.)	Geosciences Bureau PHIVOLCS, PAGASA)	MGB,	environment including the possibility of aggravating existing natural hazards. Discuss and assess the impacts of geologic hazards and planned earthworks on the project facilities. Note in the discussion how climate change can aggravate the hazards and impacts. The geologic hazards map must consider the hazards/ exposure/ vulnerability/ risk maps of Section 1.1.2.									

Source: Asian Development Bank. (2024). **Guidance Note for Offshore Wind Energy Projects in the Philippines**. Technical Assistance Project: Environmental Safeguards Support for Philippine Offshore Wind and Solar Projects. Prepared by Ove Arup & Partners Hong Kong Limited (Philippines Branch).

Key Impacts to be Included in the Assessment and Formulation of Management and Monitoring Plan (to be reflected in the IEER and EIS/ EPRMP)												
During scoping: Unless otherwise specified as agreed during scoping, all items listed are required. Write specific instructions (if any) on the blanks/ spaces provided						✓ For completeness during procedural screening; page numbers should be provided upon submission of the IEER and EIS/ EPRMP						
Key Impacts (* - for onshore facilities; to be included in the Development and Decommissioning Phases)	Baseline Data Requirements	Parameter	Required Assessment Methodology/ Approach	Baseline Conditions		Impact Analysis		Management Plan		Monitoring Plan		Remarks
				Page	✓	Page	✓	Page	✓	Page	✓	
1.3 Pedology												
1.3.1 Soil erosion/ Loss of topsoil/ overburden	Summary of soil investigation report on soil type and quality including change in underwater conditions Soil map showing soil types, sampling stations, topography, streams, built-up areas, and planned project features Water and wind erodibility potential Sediment sources, and Riverbank stability		Describe capability of the land to accommodate the proposed development with minimal or without soil erosion/loss of topsoil/ overburden. Describe the physical properties and erodibility potential of the soil, ongoing erosion processes and assess the erosional impacts of the project. The Universal Soil Loss Equation (USLE) and its									

Source: Asian Development Bank. (2024). **Guidance Note for Offshore Wind Energy Projects in the Philippines**. Technical Assistance Project: Environmental Safeguards Support for Philippine Offshore Wind and Solar Projects. Prepared by Ove Arup & Partners Hong Kong Limited (Philippines Branch).

Key Impacts to be Included in the Assessment and Formulation of Management and Monitoring Plan (to be reflected in the IEER and EIS/ EPRMP)											
During scoping: Unless otherwise specified as agreed during scoping, all items listed are required. Write specific instructions (if any) on the blanks/ spaces provided						✓ For completeness during procedural screening; page numbers should be provided upon submission of the IEER and EIS/ EPRMP					
Key Impacts (* - for onshore facilities; to be included in the Development and Decommissioning Phases)	Baseline Requirements	Data Parameter	Required Assessment Methodology/ Approach	Baseline Conditions		Impact Analysis		Management Plan		Monitoring Plan	
				Page	✓	Page	✓	Page	✓	Page	✓
			variants may be used in the modelling.								
1.3.2 Change in soil quality/ fertility	Laboratory results on soil sample analysis for N, P, K, pH, organic matter, micronutrients and trace metals e. g. Pb, Hg, As, Cd, Cr hexavalent, etc.		Assess the impact of the project activities including the possibility of spills on soil quality and fertility. Assessment of the impact to soil quality due to construction/ operation.								
1.4 Terrestrial Ecology											

Source: Asian Development Bank. (2024). **Guidance Note for Offshore Wind Energy Projects in the Philippines**. Technical Assistance Project: Environmental Safeguards Support for Philippine Offshore Wind and Solar Projects. Prepared by Ove Arup & Partners Hong Kong Limited (Philippines Branch).

Key Impacts to be Included in the Assessment and Formulation of Management and Monitoring Plan (to be reflected in the IEER and EIS/ EPRMP)										
During scoping: Unless otherwise specified as agreed during scoping, all items listed are required. Write specific instructions (if any) on the blanks/ spaces provided						✓ For completeness during procedural screening; page numbers should be provided upon submission of the IEER and EIS/ EPRMP				
Key Impacts (* - for onshore facilities; to be included in the Development and Decommissioning Phases)	Baseline Data Parameter Requirements	Required Assessment Methodology/ Approach	Baseline Conditions		Impact Analysis		Management Plan		Monitoring Plan	
			Page	✓	Page	✓	Page	✓	Page	✓
1.4.1 Vegetation removal and loss of habitat*	Map showing land cover; sampling sites; location of observed important, endangered, and keystone species; ecologically sensitive sites; planned land development works Flora and fauna species inventory or survey report to cover species listing, abundance, richness, dominance, diversity, evenness, ecological status, and uses Historical occurrences of pest infestation, forest/ grass fire and/or similar incidences	To establish baseline, Use quadrat sampling for flora to cover all land cover types; Use transect walk, mist nets, traps, for fauna; and show survey locations in a map. Identify and assess specific impacts of the project activities guided by the following:								
1.4.2 Threat to existence and/or loss of important local species*	Summary of endemicity/ conservation status									

Source: Asian Development Bank. (2024). **Guidance Note for Offshore Wind Energy Projects in the Philippines**. Technical Assistance Project: Environmental Safeguards Support for Philippine Offshore Wind and Solar Projects. Prepared by Ove Arup & Partners Hong Kong Limited (Philippines Branch).

Key Impacts to be Included in the Assessment and Formulation of Management and Monitoring Plan (to be reflected in the IEER and EIS/ EPRMP)											
During scoping: Unless otherwise specified as agreed during scoping, all items listed are required. Write specific instructions (if any) on the blanks/ spaces provided						✓ For completeness during procedural screening; page numbers should be provided upon submission of the IEER and EIS/ EPRMP					
Key Impacts (* - for onshore facilities; to be included in the Development and Decommissioning Phases)	Baseline Requirements	Data Parameter	Required Assessment Methodology/ Approach	Baseline Conditions		Impact Analysis		Management Plan		Monitoring Plan	
				Page	✓	Page	✓	Page	✓	Page	✓
1.4.3 Threat to abundance, frequency, and distribution of important species*	Summary of abundance, frequency, and distribution Economic importance and uses of significant flora and fauna		1. Habitat loss or degradation – Land clearing will result in the loss of habitat. Some activities may lead to the alteration of habitat composition, structure, or function. Some habitats are critical to ecological processes or endangered species.								
1.4.4 Hindrance to wildlife access	Survey map in relation to the project site Results of ornithological surveys (for onshore and offshore components at all OSW stages)		2. Habitat fragmentation – This is the break-up of the natural landscape into small patches isolated from one another. It affects the number of species present, movement of								

Source: Asian Development Bank. (2024). **Guidance Note for Offshore Wind Energy Projects in the Philippines**. Technical Assistance Project: Environmental Safeguards Support for Philippine Offshore Wind and Solar Projects. Prepared by Ove Arup & Partners Hong Kong Limited (Philippines Branch).

Key Impacts to be Included in the Assessment and Formulation of Management and Monitoring Plan (to be reflected in the IEER and EIS/ EPRMP)													
During scoping: Unless otherwise specified as agreed during scoping, all items listed are required. Write specific instructions (if any) on the blanks/ spaces provided						✓ For completeness during procedural screening; page numbers should be provided upon submission of the IEER and EIS/ EPRMP							
Key Impacts (* - for onshore facilities; to be included in the Development and Decommissioning Phases)	Baseline Requirements	Data	Parameter	Required Assessment Methodology/ Approach	Baseline Conditions		Impact Analysis		Management Plan		Monitoring Plan		Remarks
					Page	✓	Page	✓	Page	✓	Page	✓	
				species, and transfer of materials among habitats. 3. Loss of species – Of special interest are the keystone, endangered, and endemic species. Relate discussions to estimated GHG emissions and possible carbon sequestration program/s									
2. THE WATER													
2.1 Hydrology/ Hydrogeology													

Source: Asian Development Bank. (2024). **Guidance Note for Offshore Wind Energy Projects in the Philippines**. Technical Assistance Project: Environmental Safeguards Support for Philippine Offshore Wind and Solar Projects. Prepared by Ove Arup & Partners Hong Kong Limited (Philippines Branch).

Key Impacts to be Included in the Assessment and Formulation of Management and Monitoring Plan (to be reflected in the IEER and EIS/ EPRMP)												
During scoping: Unless otherwise specified as agreed during scoping, all items listed are required. Write specific instructions (if any) on the blanks/ spaces provided						✓ For completeness during procedural screening; page numbers should be provided upon submission of the IEER and EIS/ EPRMP						
Key Impacts (* - for onshore facilities; to be included in the Development and Decommissioning Phases)	Baseline Requirements	Data Parameter	Required Assessment Methodology/ Approach	Baseline Conditions		Impact Analysis		Management Plan		Monitoring Plan		Remarks
				Page	✓	Page	✓	Page	✓	Page	✓	
2.1.1 Change in water depth	Regional hydrogeological map		Identify and assess project impact in terms of seawater depth. Include discussions taking into consideration the PAGASA medium to long term projections.									
2.2 Oceanography												
2.2.1 Change/ disruption in water circulation pattern, littoral current, and coastal erosion and deposition	Bathymetric survey and map Measurement of water currents Analysis of available proximate tides data Hydrodynamic modelling Sediment dynamics and particle dispersion modelling and map		Identify and assess project impact on the degree of change/ disruption of circulation pattern and the potential for coastal erosion or scouring.									

Source: Asian Development Bank. (2024). **Guidance Note for Offshore Wind Energy Projects in the Philippines**. Technical Assistance Project: Environmental Safeguards Support for Philippine Offshore Wind and Solar Projects. Prepared by Ove Arup & Partners Hong Kong Limited (Philippines Branch).

Key Impacts to be Included in the Assessment and Formulation of Management and Monitoring Plan (to be reflected in the IEER and EIS/ EPRMP)												
During scoping: Unless otherwise specified as agreed during scoping, all items listed are required. Write specific instructions (if any) on the blanks/ spaces provided						✓ For completeness during procedural screening; page numbers should be provided upon submission of the IEER and EIS/ EPRMP						
Key Impacts (* - for onshore facilities; to be included in the Development and Decommissioning Phases)	Baseline Requirements	Data Parameter	Required Assessment Methodology/ Approach	Baseline Conditions		Impact Analysis		Management Plan		Monitoring Plan		Remarks
				Page	✓	Page	✓	Page	✓	Page	✓	
	Scour studies		Build a hydrodynamic model based on the measured bathymetry and currents and tidal analysis and then validate the model. A public domain software like the United States Environmental Protection Agency Environmental Fluid Dynamics Code (EFDC) may be used. Through the validated hydrodynamic model, assess the impacts of the project on water circulation, littoral									
	Storm surge hazard, exposure, vulnerability, risk maps											

Source: Asian Development Bank. (2024). **Guidance Note for Offshore Wind Energy Projects in the Philippines**. Technical Assistance Project: Environmental Safeguards Support for Philippine Offshore Wind and Solar Projects. Prepared by Ove Arup & Partners Hong Kong Limited (Philippines Branch).

Key Impacts to be Included in the Assessment and Formulation of Management and Monitoring Plan (to be reflected in the IEER and EIS/ EPRMP)												
During scoping: Unless otherwise specified as agreed during scoping, all items listed are required. Write specific instructions (if any) on the blanks/ spaces provided						✓ For completeness during procedural screening; page numbers should be provided upon submission of the IEER and EIS/ EPRMP						
Key Impacts (* - for onshore facilities; to be included in the Development and Decommissioning Phases)	Baseline Requirements	Data Parameter	Required Assessment Methodology/ Approach	Baseline Conditions		Impact Analysis		Management Plan		Monitoring Plan		Remarks
				Page	✓	Page	✓	Page	✓	Page	✓	
			current, and coastal erosion and deposition. Discuss how the impacts may be affected by climate change especially sea level rise.									
2.2.2 Change in bathymetry	Bathymetric map		Use USLE or similar modeling when applicable. Use the hydrodynamic model to assess the impacts of the bathymetric changes. Discuss how the impacts may be affected by climate change.									

Source: Asian Development Bank. (2024). **Guidance Note for Offshore Wind Energy Projects in the Philippines**. Technical Assistance Project: Environmental Safeguards Support for Philippine Offshore Wind and Solar Projects. Prepared by Ove Arup & Partners Hong Kong Limited (Philippines Branch).

Key Impacts to be Included in the Assessment and Formulation of Management and Monitoring Plan (to be reflected in the IEER and EIS/ EPRMP)												
During scoping: Unless otherwise specified as agreed during scoping, all items listed are required. Write specific instructions (if any) on the blanks/ spaces provided						✓ For completeness during procedural screening; page numbers should be provided upon submission of the IEER and EIS/ EPRMP						
Key Impacts (* - for onshore facilities; to be included in the Development and Decommissioning Phases)	Baseline Data Requirements	Parameter	Required Assessment Methodology/ Approach	Baseline Conditions		Impact Analysis		Management Plan		Monitoring Plan		Remarks
				Page	✓	Page	✓	Page	✓	Page	✓	
			Compare the projected bathymetry as a result of the project with the existing bathymetry.									
2.2.3 Contamination of sediments	Sediment testing results		Conduct sediment sampling and assess the sediment quality. Relate the results to the water quality data.									
2.3 Water Quality												
2.3.1 Degradation of coastal/ marine water quality	Physico-Chemical characterization of water: pH Biological Oxygen Demand (BOD) Oil and grease		Identify and assess project impact in terms of degradation of groundwater, surface water and coastal/ marine water quality. Use DENR standard									

Source: Asian Development Bank. (2024). **Guidance Note for Offshore Wind Energy Projects in the Philippines**. Technical Assistance Project: Environmental Safeguards Support for Philippine Offshore Wind and Solar Projects. Prepared by Ove Arup & Partners Hong Kong Limited (Philippines Branch).

Key Impacts to be Included in the Assessment and Formulation of Management and Monitoring Plan (to be reflected in the IEER and EIS/ EPRMP)											
During scoping: Unless otherwise specified as agreed during scoping, all items listed are required. Write specific instructions (if any) on the blanks/ spaces provided						✓ For completeness during procedural screening; page numbers should be provided upon submission of the IEER and EIS/ EPRMP					
Key Impacts (* - for onshore facilities; to be included in the Development and Decommissioning Phases)	Baseline Requirements	Data Parameter	Required Assessment Methodology/ Approach	Baseline Conditions		Impact Analysis		Management Plan		Monitoring Plan	
				Page	✓	Page	✓	Page	✓	Page	✓
	TSS or total suspended solids Also include the sampling site map.		methods and procedures for sampling and analysis. Assess impact on siltation of surface and coastal/ marine waters. Circulation/ plume modelling for regular discharges, leaks/ spills, worst case scenario of failure of WTF and other emergency/ accident scenarios for facilities with structures in water bodies Link discussion of spills with Section 1.3								

Source: Asian Development Bank. (2024). **Guidance Note for Offshore Wind Energy Projects in the Philippines**. Technical Assistance Project: Environmental Safeguards Support for Philippine Offshore Wind and Solar Projects. Prepared by Ove Arup & Partners Hong Kong Limited (Philippines Branch).

Key Impacts to be Included in the Assessment and Formulation of Management and Monitoring Plan (to be reflected in the IEER and EIS/ EPRMP)												
During scoping: Unless otherwise specified as agreed during scoping, all items listed are required. Write specific instructions (if any) on the blanks/ spaces provided				✓ For completeness during procedural screening; page numbers should be provided upon submission of the IEER and EIS/ EPRMP								
Key Impacts (* - for onshore facilities; to be included in the Development and Decommissioning Phases)	Baseline Data Requirements	Parameter	Required Assessment Methodology/ Approach	Baseline Conditions		Impact Analysis		Management Plan		Monitoring Plan		Remarks
				Page	✓	Page	✓	Page	✓	Page	✓	
			especially if spills affect soil and groundwater.									
2.4 Marine Ecology												
2.4.1 Threat to existence and/or loss of important local species and habitat	MPAs designated for seabirds, benthic habitats and species, biological communities and biotopes, and fish species; Flight height data of seabirds; Abundance/densities/distribution of ecologically and economically important species (mangroves, fishes, benthos, planktons, coral reefs, algae, seaweeds, sea grasses);		Quadrat, transect, line intercept, spot dive, manta tow, marine resource characterization (e.g., municipal and commercial fisheries data) for baseline gathering.									
2.4.2 Threat to abundance, frequency, and distribution	Map of the distribution of physical subtidal seabed habitat types and intertidal coastal habitats;		Identify and assess project impact in terms of threats to existence, loss of important local species, threat to									

Source: Asian Development Bank. (2024). *Guidance Note for Offshore Wind Energy Projects in the Philippines*. Technical Assistance Project: Environmental Safeguards Support for Philippine Offshore Wind and Solar Projects. Prepared by Ove Arup & Partners Hong Kong Limited (Philippines Branch).

Key Impacts to be Included in the Assessment and Formulation of Management and Monitoring Plan (to be reflected in the IEER and EIS/ EPRMP)											
During scoping: Unless otherwise specified as agreed during scoping, all items listed are required. Write specific instructions (if any) on the blanks/ spaces provided						✓ For completeness during procedural screening; page numbers should be provided upon submission of the IEER and EIS/ EPRMP					
Key Impacts (* - for onshore facilities; to be included in the Development and Decommissioning Phases)	Baseline Data Parameter Requirements	Required Assessment Methodology/ Approach	Baseline Conditions		Impact Analysis		Management Plan		Monitoring Plan		Remarks
			Page	✓	Page	✓	Page	✓	Page	✓	
	Seasonality of designated or ecologically-important fish species within or adjacent to the area; Migration routes of fish species (spatial and temporal scales); Presence of pollution indicator species; Historical occurrences of red-tide, fish kill or any related events; Marine resource map; and Sampling site map	abundance, frequency and distribution and include discussions on overall impact to marine ecology. Relate discussions to air, water and oceanography. Conduct the following surveys: Seabird or ornithological survey Marine mammal survey Benthic and pelagic habitats and species survey Fish and shellfish survey									

Source: Asian Development Bank. (2024). **Guidance Note for Offshore Wind Energy Projects in the Philippines**. Technical Assistance Project: Environmental Safeguards Support for Philippine Offshore Wind and Solar Projects. Prepared by Ove Arup & Partners Hong Kong Limited (Philippines Branch).

Key Impacts to be Included in the Assessment and Formulation of Management and Monitoring Plan (to be reflected in the IEER and EIS/ EPRMP)													
During scoping: Unless otherwise specified as agreed during scoping, all items listed are required. Write specific instructions (if any) on the blanks/ spaces provided						✓ For completeness during procedural screening; page numbers should be provided upon submission of the IEER and EIS/ EPRMP							
Key Impacts (* - for onshore facilities; to be included in the Development and Decommissioning Phases)	Baseline Requirements	Data	Parameter	Required Assessment Methodology/ Approach	Baseline Conditions		Impact Analysis		Management Plan		Monitoring Plan		Remarks
					Page	✓	Page	✓	Page	✓	Page	✓	
				Show in a map, sampling sites for monitoring purposes based on the most significant threats identified. Assess the effects of shadow flicker to the marine ecology using geometrical models.									
2.5 Seascape													
2.5.1 Effects of shadow flicker or presence of wind turbine structure to	Visually significant seascape/ structures.			Identify and assess impact of the project on									

Source: Asian Development Bank. (2024). **Guidance Note for Offshore Wind Energy Projects in the Philippines**. Technical Assistance Project: Environmental Safeguards Support for Philippine Offshore Wind and Solar Projects. Prepared by Ove Arup & Partners Hong Kong Limited (Philippines Branch).

Key Impacts to be Included in the Assessment and Formulation of Management and Monitoring Plan (to be reflected in the IEER and EIS/ EPRMP)											
During scoping: Unless otherwise specified as agreed during scoping, all items listed are required. Write specific instructions (if any) on the blanks/ spaces provided						✓ For completeness during procedural screening; page numbers should be provided upon submission of the IEER and EIS/ EPRMP					
Key Impacts (* - for onshore facilities; to be included in the Development and Decommissioning Phases)	Baseline Data Parameter Requirements	Required Assessment Methodology/ Approach	Baseline Conditions		Impact Analysis		Management Plan		Monitoring Plan		Remarks
			Page	✓	Page	✓	Page	✓	Page	✓	
the overall visual aesthetic	Determine the sun path, hub height, and rotor diameter.	these visually significant seascape/ structures. Assessment using geometrical models incorporating the parameters.									
3.0 THE AIR											
3.1 Meteorology/ Climatology											
3.1.1 Change in the local micro-climate (e.g., local temperature)	Monthly average rainfall and temperature of the area; Climatological normals/ extremes; Wind rose diagrams (speed and direction); Frequency of Tropical cyclones; Pressure and humidity	Identify and assess project impact in terms of change in the local micro- climate change. Also discuss effects of climate change using									

Source: Asian Development Bank. (2024). **Guidance Note for Offshore Wind Energy Projects in the Philippines**. Technical Assistance Project: Environmental Safeguards Support for Philippine Offshore Wind and Solar Projects. Prepared by Ove Arup & Partners Hong Kong Limited (Philippines Branch).

Key Impacts to be Included in the Assessment and Formulation of Management and Monitoring Plan (to be reflected in the IEER and EIS/ EPRMP)												
During scoping: Unless otherwise specified as agreed during scoping, all items listed are required. Write specific instructions (if any) on the blanks/ spaces provided						✓ For completeness during procedural screening; page numbers should be provided upon submission of the IEER and EIS/ EPRMP						
Key Impacts (* - for onshore facilities; to be included in the Development and Decommissioning Phases)	Baseline Requirements	Data Parameter	Required Assessment Methodology/ Approach	Baseline Conditions		Impact Analysis		Management Plan		Monitoring Plan		Remarks
				Page	✓	Page	✓	Page	✓	Page	✓	
			PAGASA medium to long term projections.									
3.1.2 Contribution in terms of greenhouse gas emissions (i.e., due to vessels used during construction and operations and maintenance phases (or GHG mitigation potential); onshore construction; transport of materials)	Data on greenhouse gas (i.e., carbon dioxide, nitrous oxide)		Estimate projected greenhouse gases (GHG) (i.e., carbon dioxide, nitrous oxide) using Intergovernmental Panel on Climate Change or IPCC guidelines; include mitigation and/or sequestration for both construction and operation and maintenance phases.									

Source: Asian Development Bank. (2024). **Guidance Note for Offshore Wind Energy Projects in the Philippines**. Technical Assistance Project: Environmental Safeguards Support for Philippine Offshore Wind and Solar Projects. Prepared by Ove Arup & Partners Hong Kong Limited (Philippines Branch).

Key Impacts to be Included in the Assessment and Formulation of Management and Monitoring Plan (to be reflected in the IEER and EIS/ EPRMP)												
During scoping: Unless otherwise specified as agreed during scoping, all items listed are required. Write specific instructions (if any) on the blanks/ spaces provided						✓ For completeness during procedural screening; page numbers should be provided upon submission of the IEER and EIS/ EPRMP						
Key Impacts (* - for onshore facilities; to be included in the Development and Decommissioning Phases)	Baseline Requirements	Data Parameter	Required Assessment Methodology/ Approach	Baseline Conditions		Impact Analysis		Management Plan		Monitoring Plan		Remarks
				Page	✓	Page	✓	Page	✓	Page	✓	
3.2 Air Quality & Noise												
3.2.1 Degradation of air quality	Characterization of ambient air quality (for onshore components)*: Total suspended particles or TSP (for sampling methods refer to Clean Air Act) Sampling site map	Use DENR standard methods and procedures for sampling and analysis. Relate selection of sampling locations using data collected in 3.1.1 Show in a map, sampling sites for monitoring purposes based on the above assessment. Compare changes in air quality over time using										

Source: Asian Development Bank. (2024). **Guidance Note for Offshore Wind Energy Projects in the Philippines**. Technical Assistance Project: Environmental Safeguards Support for Philippine Offshore Wind and Solar Projects. Prepared by Ove Arup & Partners Hong Kong Limited (Philippines Branch).

Key Impacts to be Included in the Assessment and Formulation of Management and Monitoring Plan (to be reflected in the IEER and EIS/ EPRMP)												
During scoping: Unless otherwise specified as agreed during scoping, all items listed are required. Write specific instructions (if any) on the blanks/ spaces provided						✓ For completeness during procedural screening; page numbers should be provided upon submission of the IEER and EIS/ EPRMP						
Key Impacts (* - for onshore facilities; to be included in the Development and Decommissioning Phases)	Baseline Requirements	Data Parameter	Required Assessment Methodology/ Approach	Baseline Conditions		Impact Analysis		Management Plan		Monitoring Plan		Remarks
				Page	✓	Page	✓	Page	✓	Page	✓	
			statistical tools (e.g., across sampling sites over time, and test for significant changes)									
3.2.2 Increase in ambient noise level	Characterization of ambient noise level sampling site map*		Use DENR standard methods and procedures for sampling and measurement. Identification and assessment of impact to ambient noise level using noise attenuation modelling and comparing it with relevant standards (applicable if estimated total noise level will exceed noise standard).									

Source: Asian Development Bank. (2024). **Guidance Note for Offshore Wind Energy Projects in the Philippines**. Technical Assistance Project: Environmental Safeguards Support for Philippine Offshore Wind and Solar Projects. Prepared by Ove Arup & Partners Hong Kong Limited (Philippines Branch).

Key Impacts to be Included in the Assessment and Formulation of Management and Monitoring Plan (to be reflected in the IEER and EIS/ EPRMP)												
During scoping: Unless otherwise specified as agreed during scoping, all items listed are required. Write specific instructions (if any) on the blanks/ spaces provided						✓ For completeness during procedural screening; page numbers should be provided upon submission of the IEER and EIS/ EPRMP						
Key Impacts (* - for onshore facilities; to be included in the Development and Decommissioning Phases)	Baseline Data Requirements	Parameter	Required Assessment Methodology/ Approach	Baseline Conditions		Impact Analysis		Management Plan		Monitoring Plan		Remarks
				Page	✓	Page	✓	Page	✓	Page	✓	
3.2.3 Underwater noise and vibration	Underwater noise data		Measure and assess the underwater noise using hydrophones and relate with nearby activities, as well as the presence of marine life. Incorporate temporal and spatial considerations in the assessment. The assessment shall cover the pile-driving activity and operations phase of the project in relation to underwater noise.									
4.0 THE PEOPLE												
4.1 Displacement of settler/s*	Demographic data of impact area:		Identify and assess project impacts on demography of affected									

Source: Asian Development Bank. (2024). **Guidance Note for Offshore Wind Energy Projects in the Philippines**. Technical Assistance Project: Environmental Safeguards Support for Philippine Offshore Wind and Solar Projects. Prepared by Ove Arup & Partners Hong Kong Limited (Philippines Branch).

Key Impacts to be Included in the Assessment and Formulation of Management and Monitoring Plan (to be reflected in the IEER and EIS/ EPRMP)										
During scoping: Unless otherwise specified as agreed during scoping, all items listed are required. Write specific instructions (if any) on the blanks/ spaces provided						✓ For completeness during procedural screening: page numbers should be provided upon submission of the IEER and EIS/ EPRMP				
Key Impacts (* - for onshore facilities; to be included in the Development and Decommissioning Phases)	Baseline Data Parameter Requirements	Required Assessment Methodology/ Approach	Baseline Conditions		Impact Analysis		Management Plan		Monitoring Plan	
			Page	✓	Page	✓	Page	✓	Page	✓
(Displacement/ disturbance of properties, change/conflict in land ownership and Right of way Impact on Public Access)	Number of households and household size Land area, Population, Population density /growth gender and age profile, literacy rate, profile of educational attainment settlements map census of population/ property that will be displaced/ disturbed Housing ownership profile/ availability of housing/ number of informal settlers	communities. Use assessment in the formulation of SDP/ IEC Assess availability of alternative public access and housing options for displaced settlers For project with displacement/ disturbance of properties/ settlers, change/ conflict in land ownership and change/ conflict right of way, formulate resettlement framework plan or								

Source: Asian Development Bank. (2024). **Guidance Note for Offshore Wind Energy Projects in the Philippines**. Technical Assistance Project: Environmental Safeguards Support for Philippine Offshore Wind and Solar Projects. Prepared by Ove Arup & Partners Hong Kong Limited (Philippines Branch).

Key Impacts to be Included in the Assessment and Formulation of Management and Monitoring Plan (to be reflected in the IEER and EIS/ EPRMP)												
During scoping: Unless otherwise specified as agreed during scoping, all items listed are required. Write specific instructions (if any) on the blanks/ spaces provided						✓ For completeness during procedural screening; page numbers should be provided upon submission of the IEER and EIS/ EPRMP						
Key Impacts (* - for onshore facilities; to be included in the Development and Decommissioning Phases)	Baseline Requirements	Data Parameter	Required Assessment Methodology/ Approach	Baseline Conditions		Impact Analysis		Management Plan		Monitoring Plan		Remarks
				Page	✓	Page	✓	Page	✓	Page	✓	
			resettlement action plan (RAP)									
4.2 In-migration proliferation of informal settlers*			Identify and assess project impact due to in-migration patterns including proliferation of informal settlers									
4.3 Cultural/ Lifestyle change (especially on Indigenous People, if any)*	Demographic data on Indigenous People (if any) and existing Culture/Lifestyle that may be significantly affected		Identify and assess project impact in terms of Culture/ Lifestyle that may be affected and/or introduced									
4.4 Impacts on physical cultural resources	Inventory and description of physical cultural resources, landscapes (for onshore) and underwater physical resources that have archaeologic, paleontological, historical, religious,		Identify all potential project impacts in an integrated manner considering the type, significance, and value									

Source: Asian Development Bank. (2024). **Guidance Note for Offshore Wind Energy Projects in the Philippines**. Technical Assistance Project: Environmental Safeguards Support for Philippine Offshore Wind and Solar Projects. Prepared by Ove Arup & Partners Hong Kong Limited (Philippines Branch).

Key Impacts to be Included in the Assessment and Formulation of Management and Monitoring Plan (to be reflected in the IEER and EIS/ EPRMP)											
During scoping: Unless otherwise specified as agreed during scoping, all items listed are required. Write specific instructions (if any) on the blanks/ spaces provided						✓ For completeness during procedural screening; page numbers should be provided upon submission of the IEER and EIS/ EPRMP					
Key Impacts (* - for onshore facilities; to be included in the Development and Decommissioning Phases)	Baseline Data Parameter Requirements	Required Assessment Methodology/ Approach	Baseline Conditions		Impact Analysis		Management Plan		Monitoring Plan		Remarks
			Page	✓	Page	✓	Page	✓	Page	✓	
	aesthetic, or cultural significance, whether movable or immovable objects, below ground or under water, sites, structures, groups of structures, and natural features. Classify cultural interest value/ importance into local, provincial, national, or international level. Sources of information: UNESCO, National Museum (NM), National Historical Commission of the Philippines (NHCP), National Commission for Culture and Arts (NCCA) and the Local Government Units (LGUs) in the project area and other UN or National Publications	or importance of the physical cultural resource(s). Identify risks in terms of capacity and commitment in managing the impacts.									

Source: Asian Development Bank. (2024). **Guidance Note for Offshore Wind Energy Projects in the Philippines**. Technical Assistance Project: Environmental Safeguards Support for Philippine Offshore Wind and Solar Projects. Prepared by Ove Arup & Partners Hong Kong Limited (Philippines Branch).

Key Impacts to be Included in the Assessment and Formulation of Management and Monitoring Plan (to be reflected in the IEER and EIS/ EPRMP)										
During scoping: Unless otherwise specified as agreed during scoping, all items listed are required. Write specific instructions (if any) on the blanks/ spaces provided						✓ For completeness during procedural screening; page numbers should be provided upon submission of the IEER and EIS/ EPRMP				
Key Impacts (* - for onshore facilities; to be included in the Development and Decommissioning Phases)	Baseline Data Parameter Requirements	Required Assessment Methodology/ Approach	Baseline Conditions		Impact Analysis		Management Plan		Monitoring Plan	
			Page	✓	Page	✓	Page	✓	Page	✓
4.5 Threat to delivery of basic services/ resource competition*	Availability of public services in terms of: Water supply Power supply Communications/ transportation Peace and order/ crime Education facilities Recreational facilities/ sports facilities Statistical data/ information related to public services: Literacy rate, profile of educational attainment Crime rate	Identify and assess project impact in terms of threats to delivery of basic services including potential for resource competition in the area including effects of in-migration								

Source: Asian Development Bank. (2024). **Guidance Note for Offshore Wind Energy Projects in the Philippines**. Technical Assistance Project: Environmental Safeguards Support for Philippine Offshore Wind and Solar Projects. Prepared by Ove Arup & Partners Hong Kong Limited (Philippines Branch).

Key Impacts to be Included in the Assessment and Formulation of Management and Monitoring Plan (to be reflected in the IEER and EIS/ EPRMP)												
During scoping: Unless otherwise specified as agreed during scoping, all items listed are required. Write specific instructions (if any) on the blanks/ spaces provided						✓ For completeness during procedural screening; page numbers should be provided upon submission of the IEER and EIS/ EPRMP						
Key Impacts (* - for onshore facilities; to be included in the Development and Decommissioning Phases)	Baseline Data Requirements	Parameter	Required Assessment Methodology/ Approach	Baseline Conditions		Impact Analysis		Management Plan		Monitoring Plan		Remarks
				Page	✓	Page	✓	Page	✓	Page	✓	
	Food security											
4.6 Threat to public health and safety	Availability of public services in terms of health resources (Government and Private) Statistical data / information related to public services: Morbidity and mortality rates (infants and adults - 5-year trend) Common diseases in the area including endemic diseases; Environmental Health and Sanitation Profile		Identify and assess specific threats to public health and safety due to project impacts. Relate discussions to land, air and water (Item 1 to 3) Analysis of the impact of project implementation on existing disease profile including weather sensitive diseases and impact aggravation as a result of climate change as projected by PAGASA									

Source: Asian Development Bank. (2024). **Guidance Note for Offshore Wind Energy Projects in the Philippines**. Technical Assistance Project: Environmental Safeguards Support for Philippine Offshore Wind and Solar Projects. Prepared by Ove Arup & Partners Hong Kong Limited (Philippines Branch).

Key Impacts to be Included in the Assessment and Formulation of Management and Monitoring Plan (to be reflected in the IEER and EIS/ EPRMP)												
During scoping: Unless otherwise specified as agreed during scoping, all items listed are required. Write specific instructions (if any) on the blanks/ spaces provided						✓ For completeness during procedural screening; page numbers should be provided upon submission of the IEER and EIS/ EPRMP						
Key Impacts (* - for onshore facilities; to be included in the Development and Decommissioning Phases)	Baseline Data Requirements	Parameter	Required Assessment Methodology/ Approach	Baseline Conditions		Impact Analysis		Management Plan		Monitoring Plan		Remarks
				Page	✓	Page	✓	Page	✓	Page	✓	
4.7 Generation of Local Benefits from the project (Enhancement of employment and livelihood opportunities, increased business opportunities and associated economic activities, and increased revenue of LGUs)	Socioeconomic data: Main sources of income Employment rate/ profile Poverty incidence Sources of livelihood Commercial establishments and activities Banking and financial institutions		Identify and assess local benefits of the project in terms of enhancement of employment and livelihood opportunities, increased business opportunities and associated economic activities and increased revenue of LGU									
4.8 Traffic congestion*	Road network/ systems Existing Transportation/ traffic situation		Identify and assess project impact on the traffic situation in the area including									

Source: Asian Development Bank. (2024). **Guidance Note for Offshore Wind Energy Projects in the Philippines**. Technical Assistance Project: Environmental Safeguards Support for Philippine Offshore Wind and Solar Projects. Prepared by Ove Arup & Partners Hong Kong Limited (Philippines Branch).

Key Impacts to be Included in the Assessment and Formulation of Management and Monitoring Plan (to be reflected in the IEER and EIS/ EPRMP)											
During scoping: Unless otherwise specified as agreed during scoping, all items listed are required. Write specific instructions (if any) on the blanks/ spaces provided						✓ For completeness during procedural screening; page numbers should be provided upon submission of the IEER and EIS/ EPRMP					
Key Impacts (* - for onshore facilities; to be included in the Development and Decommissioning Phases)	Baseline Requirements	Data Parameter	Required Assessment Methodology/ Approach	Baseline Conditions		Impact Analysis		Management Plan		Monitoring Plan	
				Page	✓	Page	✓	Page	✓	Page	✓
			congestion based on existing capacity of road system								
4.9 Threat to artisanal and commercial fisheries	Commercial and municipal fisheries data. Information on the nearby coastal community area Data on aquaculture of nearby areas		Identify and assess the impacts of the project to the fishing and aquaculture industries. Correlate these to the affected community's living conditions, focusing on food security and livelihood.								
4.10 Disruption of shipping industry activities and navigation	Existing shipping/ navigation routes Map and list of nearby ports and data on operating shipping lines or companies		Identify and assess the routes and activities associated with the								

Source: Asian Development Bank. (2024). **Guidance Note for Offshore Wind Energy Projects in the Philippines**. Technical Assistance Project: Environmental Safeguards Support for Philippine Offshore Wind and Solar Projects. Prepared by Ove Arup & Partners Hong Kong Limited (Philippines Branch).

Key Impacts to be Included in the Assessment and Formulation of Management and Monitoring Plan (to be reflected in the IEER and EIS/ EPRMP)											
During scoping: Unless otherwise specified as agreed during scoping, all items listed are required. Write specific instructions (if any) on the blanks/ spaces provided						✓ For completeness during procedural screening; page numbers should be provided upon submission of the IEER and EIS/ EPRMP					
Key Impacts (* - for onshore facilities; to be included in the Development and Decommissioning Phases)	Baseline Data Parameter Requirements	Required Assessment Methodology/ Approach	Baseline Conditions		Impact Analysis		Management Plan		Monitoring Plan		Remarks
			Page	✓	Page	✓	Page	✓	Page	✓	
	Shipping activities Information on nearby industries	shipping industry and navigation. Include an assessment of collision risk.									
4.11 Disruption of aviation industry activities	Flight paths Existing radar systems	Identify and assess the flight paths and how the project will impact the aviation industry. Include an assessment of collision risk.									
4.12 Disruption of activities within military exercise areas	Existing military activities and naval and air bases	Identify and assess the impacts of the project to the military exercise areas.									
4.13 Disruption of tourist activities	Tourist areas and activities	Assess how the project will affect the livelihood									

Source: Asian Development Bank. (2024). **Guidance Note for Offshore Wind Energy Projects in the Philippines**. Technical Assistance Project: Environmental Safeguards Support for Philippine Offshore Wind and Solar Projects. Prepared by Ove Arup & Partners Hong Kong Limited (Philippines Branch).

Key Impacts to be Included in the Assessment and Formulation of Management and Monitoring Plan (to be reflected in the IEER and EIS/ EPRMP)										
During scoping: Unless otherwise specified as agreed during scoping, all items listed are required. Write specific instructions (if any) on the blanks/ spaces provided						✓ For completeness during procedural screening; page numbers should be provided upon submission of the IEER and EIS/ EPRMP				
Key Impacts (* - for onshore facilities; to be included in the Development and Decommissioning Phases)	Baseline Requirements	Data	Parameter	Required Assessment Methodology/ Approach	Baseline Conditions		Impact Analysis		Management Plan	
					Page	✓	Page	✓	Page	✓
				of the affected community in terms of its implication to the area's tourism industry.						

Source: Asian Development Bank. (2024). **Guidance Note for Offshore Wind Energy Projects in the Philippines**. Technical Assistance Project: Environmental Safeguards Support for Philippine Offshore Wind and Solar Projects. Prepared by Ove Arup & Partners Hong Kong Limited (Philippines Branch).

ANNEX 9

KEY ENVIRONMENTAL AND SOCIAL CONSIDERATIONS ACROSS THE LIFE CYCLE OF AN OFFSHORE WIND ENERGY PROJECT

This section highlights some of the key E&S considerations and potential impacts relating to OSW projects during each project life cycle stage: Pre-construction, Construction, O&M, and Decommissioning Phases. The succeeding sections also provide an overview of potential receptor groups, typical survey techniques or methodologies for data collection, recommended mitigations, and monitoring.

The information presented aims to guide developers when planning for and preparing their submissions for Pre-development ECC and Development ECC.

The discussion is broken down into three main subsections:

- impacts in the **offshore environment**,
- impacts to the **onshore environment**; and
- **social /socio-economic impacts** that transcend offshore and onshore environments.

These subsections are then broken down into individual topic sections incorporating a table addressing the following:

- **Project Phase:** Refers to the specific phase of the project (*Pre-construction, Construction, O&M, and Decommissioning*) and the PEISS activities. The contents of each table are then structured by project phase.
- **Direct Impacts:** Highlights the potential impacts of the components and activities of OSW projects relevant to each project phase. Note that these impacts are limited to typical / likely foreseeable direct impacts of the OSW projects. They are not intended to be comprehensive.
- **Receptor Groups:** Refers to various entities or components of the environment that may be affected by the OSW project.
- **Survey Requirement:** Lists typical data associated with establishing a baseline from both primary and secondary data sources. The surveys mentioned may vary depending on the nature of the project, its location, and the regulatory framework governing the assessment.
- **Mitigation Measures:** Lists typical practices for mitigating, managing and monitoring adverse impacts such that they are avoided or minimized. These measures typically include actions and strategies aimed at reducing negative effects and promoting sustainable development. Mitigation measures are expected to be determined during the pre-construction stage, influencing site location, layout, and design before the development stage begins. The practices presented here are generic, not all may be relevant and other strategies may be appropriate for a specific project and context. Therefore, in practice, project-specific assessments must identify and develop tailored measures for addressing key project impacts.

ANNEX 9: Key Environmental and Social Considerations across the Life Cycle of an Offshore Wind Energy Project

1.1 Offshore Environment

1.1.1 Physical Processes and Water Quality

Physical processes in the offshore environment refer to pathways such as tidal currents, sediment transport, waves, and scour. Understanding the physical processes and water quality of the marine environment, as well as the interactions between these parameters, is an integral aspect of OSW projects. OSW implementation can potentially impact these processes and lead to long-term changes in hydrological and geological processes, altering various habitats and communities. The potential impacts will be predominantly during the construction and O&M phases, brought about by disturbances in sediments and possible unregulated leakage of lubricants and other chemicals during turbine operations. It is important for developers to undertake appropriate baseline studies, assessments and to mitigate and monitor any potential impacts commensurate with the nature and scale of the project and its impacts to ensure the sustainable use of marine ecosystems.

Table 1 Key Considerations for Physical Processes and Water Quality

Phase	Direct Impact	Receptor Groups	Surveys Required	Typical Impact Avoidance Methods / Mitigations	Typical Monitoring Methods, if applicable
Pre-construction	No potential significant direct impacts during this phase.	Not applicable	Not required	Optimize metocean surveys through defining the objectives, constraints, and design of the equipment (e.g., site-specific consideration of floating LiDAR). Using techniques such as remote sensing and optimized LiDAR to ensure no direct contact with the water body.	Not required
Construction	Increased suspended sediment due to dredging, drilling, and cable installation. Impacts on tidal	Benthic habitats (including critical coastal habitats: coral reef, mangroves, seagrass meadows).	Scour studies Modelling to include consideration of impacts on natural ocean water currents, waves, and sediment dynamics (Hydrodynamic modelling	Using vessels, equipment and methods that have been optimized to minimize potential environmental impacts of dredging, drilling / piling, and cable burial. Prohibiting discharge of	If increased turbidity is likely during construction that could impact sensitive habitat, water quality monitoring (e.g. of

**ANNEX 9: Key Environmental and Social Considerations across the Life Cycle
of an Offshore Wind Energy Project**

Phase	Direct Impact	Receptor Groups	Surveys Required	Typical Impact Avoidance Methods / Mitigations	Typical Monitoring Methods, if applicable
	currents, waves, sediment transport, seabed indentations and scour. Changes to water quality from accidental spills of fuels, oil or hazardous materials and contaminated sediments	Recreational users such as surfers, divers, and tourists. Stakeholders relying on maritime environment for sustenance and employment. Fish and Shellfish (including commercial fisheries) Marine mammals, reptiles and seabirds	& Sediment dynamics and particle dispersion modelling) Depending on the sensitivity of the receiving environment, spill modelling for installation vessels may be relevant to support spill preparedness and response planning. Also depending on the sensitivity of the benthic environment and the likelihood of project activities creating sediment plumes and smothering, water quality measurements (e.g. of turbidity) or visual water quality survey may be relevant.	vessel wastewater to marine environment and/or adhering to discharge regulations and GIIP. Application of scour protection within the design. Alternative methods such as pile-driving instead of drilling to minimize surface sediment mobilization. Choosing landfall locations based on consideration of the physical process interactions and marine geology along the coast. Oil and hazardous material spill preparedness and response planning	turbidity) or visual water quality survey may be relevant.
Operation and Maintenance	Sediment transport interrupted or changed due to infrastructure on seabed. Changes to wave and tidal regimes			Similar mitigation measures are expected for the O&M and decommissioning stage as described for the construction stage	Monitoring programs designed to measure the effects of infrastructure on sediment dynamics
Decommissioning	Increased suspended sediment and deposition				Some monitoring could be put in place if assets are left in situ

**ANNEX 9: Key Environmental and Social Considerations across the Life Cycle
of an Offshore Wind Energy Project**

1.1.2 Air Quality and Greenhouse Gas Emissions

During the construction and decommissioning phases, engine emissions from vessels and installation / decommissioning equipment may contribute to temporary increases in air pollutants such as nitrogen oxides, sulfur dioxide, particulate matter and volatile organic compounds. Greenhouse gas emissions are also generated by these vessels and equipment. During the O&M phase, OSW projects do not produce air pollutants or greenhouse gas emissions with the exception of limited emissions from intermittent vessel visits and maintenance activities. Rather, OSW projects serve to reduce reliance on other more polluting forms of energy generation, Nevertheless, it is important to consider the overall life cycle emissions of OSW, including the manufacturing, installation, operation, and decommissioning phases, to accurately assess their net impact on air quality and greenhouse gas emissions.

Table 2 Key Consideration for Offshore Air Quality

Phase	Direct Impact	Receptor Groups	Surveys Required, if applicable	Typical Avoidance & Mitigation Methods	Typical Monitoring Methods
Pre-construction	No significant potential impacts. LiDAR surveys, met mast installations, and other surveys conducted as part of project feasibility studies and planning are highly unlikely to have any significant direct impact on air quality in the area due to their limited scale and nature.	Not applicable	Not required	Select vessels and equipment with high energy/fuel efficiency and lowest emissions and ensure well maintained. Optimizing survey and vessel schedules to minimize fuel use and associated emissions. Avoid engine idling time in work plans.	Not required
Construction	Potential for minor, localized and temporary reduction in air quality due to emissions from construction vessels and equipment. But likely to dissipate quickly in offshore environment.	Localized airshed immediately surrounding project activities.	Desk-based characterization and quantification of emissions, including scope 1 and 2 greenhouse gas emissions (as a minimum), and ideally scope 3 emissions.	Clear activity designs and surveys; optimize the phase activities to minimize associated emissions. Select vessels and equipment with high energy/fuel efficiency and lowest emissions.	Not required

**ANNEX 9: Key Environmental and Social Considerations across the Life Cycle
of an Offshore Wind Energy Project**

Phase	Direct Impact	Receptor Groups	Surveys Required, if applicable	Typical Avoidance & Mitigation Methods	Typical Monitoring Methods
	GHG emissions from vessels and machinery as well as embedded within the materials, manufacture, and supply of offshore components.	Offshore habitats and ecosystems Global and local climate		Maintain the vessels and equipment as per suppliers' recommendations and train personnel in operating vessels/equipment to optimize energy/fuel efficiency. Avoid engine idling time in work plans. Select materials and suppliers to minimize lifecycle GHG emissions.	
Operation & Maintenance	Impacts on air quality are considered negligible for the O&M stage. Positive benefit by reducing reliance on other more GHG intensive energy production.	As for Pre-construction & Construction	As for Pre-construction & Construction	As for Pre-construction & Construction	Not required.
Decommissioning	Similar impacts as for construction phase			As for Pre-construction & Construction	

**ANNEX 9: Key Environmental and Social Considerations across the Life Cycle
of an Offshore Wind Energy Project**

1.1.3 Noise and Vibration

The noise and vibration generated by offshore components of OSW projects are critical considerations due to the potentially significant impact this could have on marine life. During construction, activities like pile driving produce high levels of underwater noise, disturbing marine mammals, fish, and other species by interfering with their communication, navigation, feeding, and breeding behaviors. This can lead to stress, displacement, or physical harm. The continuous operation of wind turbines also contributes to noise pollution, affecting nearby marine life. Protecting marine ecosystems is essential for biodiversity and compliance with environmental regulations. Mitigation measures such as noise-reducing technologies, environmental impact assessments, and marine protected areas are necessary to minimize the negative effects on marine ecosystems and ensure the sustainable development of OSW projects.

Table 31 Key Consideration for Offshore Noise and Vibration

Phase	Direct Impacts	Receptor Groups	Surveys Required, if applicable	Typical Avoidance & Mitigation Methods	Typical Monitoring Methods
Pre-construction	Underwater and surface noise and vibration generated from vessel and equipment engines and movements. The intensity of activity is however low compared to the construction & decommissioning phases	Marine mammals, fish and reptiles Marine birds Coastal settlements	Impacts during this phase unlikely to warrant specific surveys or primary data collection. However, baseline data collection for assessment of construction impacts (if applicable) should commence during this phase – see next row. Qualitative assessment of impact to be carried out using existing data.	Optimize phase activities to minimize the duration and intensity of emissions. Schedule activities to avoid sensitive periods for receptor groups (if relevant) – e.g. breeding, migration, calving/nursing/spawning etc. Avoid engine idling time in work plans. Select vessels and equipment with low noise and vibration. Maintain vessels and equipment as per suppliers' recommendations.	Unlikely to warrant monitoring provided activities scheduled to avoid sensitive periods for receptor groups.
Construction	Underwater and surface noise		Underwater and	As for Pre-construction	Depending on

**ANNEX 9: Key Environmental and Social Considerations across the Life Cycle
of an Offshore Wind Energy Project**

Phase	Direct Impacts	Receptor Groups	Surveys Required, if applicable	Typical Avoidance & Mitigation Methods	Typical Monitoring Methods
	and vibration generated from vessel and equipment engines and movements, pile-driving, dredging, drilling, cable burial etc.		potentially surface noise baseline survey (depending on sensitivity of receptors). Noise and vibration quantification and potentially modelling (depending on sensitivity of receptors).	plus: Consideration of noise levels and criteria during the design phase to preemptively reduce offshore noise impacts to as low as reasonably practicable. Implement direct noise reduction methods such as acoustic shields, mufflers, slow ramp up of piling etc.	sensitivity of receptors and significance of impacts, deployment of long-term noise monitoring equipment may be relevant. Passive Acoustic Monitoring
Operation & Maintenance	Transformer Noise Underwater and surface noise and vibration generated from occasional inspection & maintenance vessel engines and maintenance equipment. The intensity of activity is however low compared to the construction & decommissioning phases	As for pre-construction phase	As for construction phase	As for Pre-construction plus: Consideration of noise levels and criteria during the design phase to preemptively reduce offshore noise impacts to as low as reasonably practicable.	Depending on sensitivity of receptors and significance of impacts, deployment of long-term noise monitoring equipment may be relevant.
Decommissioning	As for construction phase	As for pre-construction phase	As for construction phase	As for construction phase	As for construction phase

**ANNEX 9: Key Environmental and Social Considerations across the Life Cycle
of an Offshore Wind Energy Project**

1.1.4 Benthic and Intertidal Ecology

These components refer to various habitats and associated fish, marine invertebrate, and vertebrate communities within the project area encompassing benthic habitats (seabed, seagrass, coral reefs) and intertidal or coastal ecosystems (mangrove, intertidal zones, mudflats, estuarine). The implementation of OSW projects can potentially alter, disrupt, and damage these components throughout its project life cycle affecting various ecosystem services they provide.

Table 42 Key Considerations for Benthic and Intertidal Ecology

Phase	Direct Impact	Receptor Groups	Surveys Required, if applicable	Typical Impact Avoidance & Mitigation Measures	Typical Monitoring Methods
Pre-construction	No potential significant direct impacts during this phase. However, baseline data collection to inform subsequent project phases should commence.	Marine organisms living on the seafloor and in intertidal zones, which could be indirectly affected by survey activities. Nearby residents, fishermen, and stakeholders whose activities or livelihoods might be influenced by project planning and development.	Seabed topographical mapping (e.g. using LiDAR or similar imagery). Sampling and/or transect cross sectional seabed surveys across the project area (wind turbine locations, export cable corridor, landfall coastal area) (sediment grab sample collection, video data collection etc.) and resulting habitat mapping. Critical habitat screening and assessment as per GIIP. Geotechnical and geophysical surveys.	Engage with local stakeholders and communities to communicate survey activities. Embedded mitigation such as site selection to avoid designated and/or protected sites or critical habitats. Oil and hazardous material spill preparedness and response planning.	Not required
Construction	Potential burial and smothering of habitats due to sediment suspension and redeposition.	As for pre-construction. Sensitive habitats: coral reefs, seagrass meadows, mangroves, etc.		As for Pre-construction, plus: Selection of infrastructure siting, layout, design footprint and installation methods to avoid or	Pre- and post-construction monitoring programs designed to measure impacts and trigger adaptive management where necessary

**ANNEX 9: Key Environmental and Social Considerations across the Life Cycle
of an Offshore Wind Energy Project**

Phase	Direct Impact	Receptor Groups	Surveys Required, if applicable	Typical Impact Avoidance & Mitigation Measures	Typical Monitoring Methods
	Habitat loss from construction equipment and activities Physical damage to benthic habitats and sessile organisms from installation, cabling laying or vessel anchoring. Contaminated sediments in the event of spills. Introduction of marine invasive non-native species (INNS) via vessels and equipment. Habitat loss from scour due to wind farm infrastructure, turbines, and cables.	Low-mobility species.		minimize impacts to sensitive benthic habitats. Cable routing through protected and sensitive areas should be avoided wherever practicable. Mitigation measures to reduce mobilization of sediments as far as practical. Keeping the number of materials used to protect cables, anchors, and mooring lines such as rock armor and grout bags to a minimum. Selection, inspection, use and maintenance of vessels to minimize risk of introducing INNS in line with legal requirements and GIIP. Measures set out for physical processes and water quality in Table .	
Operation and Maintenance	Colonization of new subsea infrastructure and support structures. Physical damage to benthic habitats and sessile organisms	As for pre-and construction.	No additional surveys required	Burial of cables to reduce thermal impacts on receptors. Scheduling, frequency and methods of sub-sea infrastructure cleaning to	Periodic monitoring of any protected / sensitive habitats affected by OSW development. Marine growth on subsea infrastructure should be monitored

**ANNEX 9: Key Environmental and Social Considerations across the Life Cycle
of an Offshore Wind Energy Project**

Phase	Direct Impact	Receptor Groups	Surveys Required, if applicable	Typical Impact Avoidance & Mitigation Measures	Typical Monitoring Methods
	from cleaning of marine growth from subsea structures and vessel anchoring. Habitat degradation / alteration due to thermal load from offshore and export cables.			reduce impact to sensitive habitats. Selection, inspection, use and maintenance of vessels to minimize risk of introducing INNS in line with legal requirements and GIIP.	and inspected regularly and subsequent removal if there is substantial growth where detrimental to the superstructure.
Decommissioning	The impacts on benthic and intertidal ecology during the decommissioning stage are like those during construction. This includes increased sediment suspension, redeposition, and underwater noise from vessels. Specific assessments may be necessary in areas where important habitats have developed on or near OSW infrastructure, or where new protected sites or sensitive habitats have been designated or identified since installation. Conducting a pre-decommissioning baseline survey may be required, especially if there have been changes in the environmental baseline or protection status of receptors over time, such as a shift from International Union for Conservation of Nature (IUCN) status from Endangered to Critically Endangered. There is potential for benthic habitats to develop on turbine bases and export cable housings, which could increase biodiversity through colonization by benthic species. The value of any such created habitat should be evaluated as part of decommissioning strategy selection.				

**ANNEX 9: Key Environmental and Social Considerations across the Life Cycle
of an Offshore Wind Energy Project**

1.1.5 Fish and Shellfish Ecology

OSW projects can significantly impact fish and shellfish ecology both positively and negatively within the project area. OSW implementation has the potential to create protected sanctuaries for fish and OSW infrastructure foundations can act as artificial reefs increasing shellfish and fish populations in the area. However, marine growth on foundations and sub-surface structures typically requires removal and the benefits are also lost depending on the decommissioning strategy adopted. During the construction to decommissioning phases, fish and shellfish can experience physical harm, displacement from their natural feeding, breeding, and migration routes, and mortality from long-term exposure of water quality changes and underwater noise brought by construction activities such as pile-driving and dredging. Fish that are highly sensitive to noise and electromagnetic field are disrupted, resulting in changes in their behavior that may lead to their displacement from the area. Impacts on fish abundance and diversity also affect socioeconomic activities including fishing and recreation.

Table 5 Key Considerations Fish and Shellfish Ecology

Phase	Direct Impact	Receptor Groups	Surveys Required, if applicable	Typical Impact Avoidance Methods / Mitigations	Typical Monitoring Methods
Pre-construction	No significant potential direct impacts during this phase. However, baseline data collection to inform subsequent project phases should commence.	Not applicable	Fisheries and shellfish surveys (desk study and field survey where data is limited) to determine habitats, species, important breeding, nursery, and migration areas, fish abundance, density, and biomass. Should complement benthic habit surveys and mapping	Avoid scheduling pre-construction activities during critical spawning, migrating, and breeding seasons.	Not required.
Construction	Direct and indirect impacts on breeding and nursery grounds and important migration routes. Smothering of fish habitat/food and shellfish due to sediment suspension and redeposition from construction activities.	Fish, Shellfish and other Invertebrates. Communities (fisherfolk)		Use micro-siting strategies to avoid locating infrastructure in areas with high concentrations of shellfish or fish or habitats that support their lifecycle. Develop and implement Marine Traffic Management Plan to minimize vessel movements as far as practical, to ensure avoidance of sensitive areas (use of exclusion zones) and/or	Underwater noise monitoring during disturbing activities, e.g. piling. Integrate whale shark monitoring into any Marine Mammal Observer (MMO) requirements. Compliance with Marine Traffic

**ANNEX 9: Key Environmental and Social Considerations across the Life Cycle
of an Offshore Wind Energy Project**

Phase	Direct Impact	Receptor Groups	Surveys Required, if applicable	Typical Impact Avoidance Methods / Mitigations	Typical Monitoring Methods
	Displacement of fish from area, breeding, nursing, feed areas etc. due to underwater noise and general disturbance from construction activities Vessel collision risk with larger slow moving fish species (e.g. whale shark). Injury/sickness or mortality in the event of vessel or equipment leaks or spills.		described in Table 42. Stakeholder engagement to complement survey data on fish and shellfish ecology in area, including but not limited to potential hotspots of shark activity; migration, resting, cleaning stations, etc. Environmental DNA (eDNA) Critical habitat screening and assessment as per GIIP.	integrate appropriate speed restrictions, Passive Acoustic Monitoring and/or Marine Mammal Observers in sensitive areas and/or times. Measures set out for physical processes and water quality in Table . Measures set out for noise in Table 313.	Management Plan, integrating vessel collision (whale shark) recording.
Operation and Maintenance	Electromagnetic Fields (EMFs) emitted from subsea cables can affect elasmobranch (shark and ray) ability to navigate (commuting and migration) and find prey. Electromagnetic field impact on ability to detect	As for Construction.	No additional surveys required.	Ensure cables are buried at sufficient depth to mitigate the effects of EMFs and heat on surrounding receptors. Design and construct turbines with leak containment measures to prevent oil and other hazardous materials from	Measure EMFs emitted from subsea cables and schedule any required maintenance to ensure mitigation measures are effective. Implement regular inspection and maintenance to

**ANNEX 9: Key Environmental and Social Considerations across the Life Cycle
of an Offshore Wind Energy Project**

Phase	Direct Impact	Receptor Groups	Surveys Required, if applicable	Typical Impact Avoidance Methods / Mitigations	Typical Monitoring Methods
	or respond to natural magnetic signatures, potentially altering fish survival and reproductive success migratory patterns. Heat from subsea cables. Vessel collision risk with larger slow moving fish species (e.g. whale shark). Injury/sickness or mortality in the event of vessel or equipment leaks or spills.			entering the marine environment. Establish a Marine Traffic Management Plan to minimize vessel movements where feasible, ensuring avoidance of sensitive areas and incorporating appropriate speed restrictions in these zones.	prevent and promptly address leaks. Ensure compliance with the Marine Traffic Management Plan, including recording vessel collisions involving whale sharks.
Decommissioning	The effects of decommissioning are similar to construction impacts as increased sediment suspension and redeposition and underwater noise from vessels will occur. Avoidance can be achieved by leaving cables and foundations in situ; however, this might not be environmentally sound in the long term and monitoring will need to be put in place. Specific assessments may be required where new or updated fisheries / elasmobranch data is identified since installation. A pre-decommissioning baseline survey may be required. This is particularly important where the baseline environment and protection status of receptors may have changed over time, e.g. IUCN Status— Endangered to Critically Endangered.				

ANNEX 9: Key Environmental and Social Considerations across the Life Cycle of an Offshore Wind Energy Project

1.1.6 Marine Mammal Ecology

Marine mammals include cetaceans (whales, dolphins, porpoises), pinnipeds (seals and sealions) and sirenians (dugongs and manatees). In the Philippines, marine mammals include whales, dolphins, and dugongs. OSW projects and their percussive activities may incur lethal or sub-lethal impacts (permanent or temporary deafness), whilst disturbance can affect foraging, navigation and avoidance of key feeding and breeding grounds which can have a long-term impact on the animal's health and population dynamics. The noise and vibration generated by OSW projects can harm marine mammals primarily during the construction and decommissioning phases when pile-driving, dredging, cutting equipment and vessels are heavily deployed and operated. Electromagnetic Field (EMFs) emitted from power cables can also harm certain marine mammal species. These impacts can also affect various ecosystem services marine mammals provide that have cascading effects on the social aspect or conditions of the communities that depend on them.

Table 63 Key Considerations for Marine Mammal Ecology

Phase	Direct Impact	Receptor Groups	Surveys required, if applicable	Typical Avoidance Methods/ Mitigations	Typical Monitoring Methods
Pre-construction	No significant potential direct impacts during this phase. However, baseline data collection to inform subsequent project phases should commence.	Cetaceans (28 spp., 5 threatened). Threatened cetacean species [IUCN Status: VU, EN, CR]: sperm whale [VU], Irrawaddy dolphin [CR], blue whale [EN], fin whale [EN]. Sirenians: Dugong [VU].	Cetacean baseline study (desk based and field survey – aerial and / or boat-based) should be carried out pre-development to understand the likely presence, use/activities, movement etc. of marine mammals in the area. Seasonal surveys may be required. These surveys should then be used to determine any requirement for underwater noise modelling to determine the distance from the development at which marine mammals would either be injured or	Avoid scheduling pre-construction activities during sensitive seasons.	None required
Construction	Temporary or permanent loss of hearing from underwater noise from the increased presence of vessels and piling) Deflection of marine mammals away from potential			Select piling techniques and define piling methods to avoid percussive techniques, include soft start, incorporate noise dampening, seasonal and timing restrictions, cumulative restrictions, etc. Alternatively, foundations such as floating or gravity-	Ongoing monitoring (using Passive Acoustic Monitoring and/or MMOs) should be conducted to compare the presence of marine mammals to the baseline study

**ANNEX 9: Key Environmental and Social Considerations across the Life Cycle
of an Offshore Wind Energy Project**

Phase	Direct Impact	Receptor Groups	Surveys required, if applicable	Typical Avoidance Methods/ Mitigations	Typical Monitoring Methods
	feeding, breeding, calving, nursing or resting areas Lethal / sub-lethal and disturbance impacts from underwater noise - installation of foundations and cables and increased presence of vessels (collision risk). Injury/sickness or mortality in the event of vessel or equipment leaks or spills.		disturbed by proposed noise levels. Critical habitat screening and assessment as per GIIP.	based could be used to avoid piling. Implement noise abatement measures such as air bubble curtain around areas of piling to reduce noise levels and disturbance. Delineate and adopt a Marine Mammal Mitigation zone (MMMZ), if relevant as part of construction planning. Develop and implement Marine Traffic Management Plan to minimize vessel movements as far as practical, to ensure avoidance of sensitive areas (use of exclusion zones) and/or integrate appropriate speed restrictions, Passive Acoustic Monitoring and/or Marine Mammal Observers in sensitive areas and/or times. Use Passive Acoustic Monitoring and/or Marine Mammal Observers (MMOs) with accompanying action	conducted pre-development. Underwater noise monitoring during disturbing activities, e.g. piling. Compliance with Marine Traffic Management Plan, integrating vessel collision (cetacean and dugong) recording.

**ANNEX 9: Key Environmental and Social Considerations across the Life Cycle
of an Offshore Wind Energy Project**

Phase	Direct Impact	Receptor Groups	Surveys required, if applicable	Typical Avoidance Methods/ Mitigations	Typical Monitoring Methods
				trigger levels and adaptive management. Measures set out for physical processes and water quality in Table . Measures set out for noise in Table 31.	
Operation & Maintenance	Disturbance from underwater noise (maintenance vessels, transformer). Displacement of marine mammals due to the physical presence of the wind farm. Risk of collision and entanglement due to the presence of subsea structures and cables.	As for Pre-construction and Construction	No additional surveys required.	Removal of debris from floating lines and cables. Adequate spacing between WTGs to reduce the likelihood of marine mammals colliding with subsea structures. Scheduling inspection and maintenance activities to avoid sensitive seasons / time periods. Marine Traffic Management Plan to minimize vessel movements as far as practical, to ensure avoidance of sensitive areas and integrate appropriate speed restrictions in sensitive areas.	Subsea structures, floating lines and cables should be monitored and inspected regularly to remove marine growth if significant accumulation has taken place. Compliance with Marine Traffic Management Plan, integrating vessel collision (cetacean and dugong) recording. Depending on sensitivity and impact, ongoing cetacean field monitoring (periodic aerial and / or boat-based) to monitor effectiveness of mitigation.

**ANNEX 9: Key Environmental and Social Considerations across the Life Cycle
of an Offshore Wind Energy Project**

Phase	Direct Impact	Receptor Groups	Surveys required, if applicable	Typical Avoidance Methods/ Mitigations	Typical Monitoring Methods
Decommissioning	As for construction impacts. Noise impact due to removal activities and vessels.	As for Pre-construction and Construction	Renew baseline prior to decommissioning in same way as was done prior to construction phase. May also include noise modelling if required.	As for Construction phase. Marine Mammal monitoring prior to any activities to take place.	As for construction phase. Potential monitoring to evidence any displacement may be required.

ANNEX 9: Key Environmental and Social Considerations across the Life Cycle of an Offshore Wind Energy Project

1.1.7 Marine Ornithology

Marine birds include migratory or native seabirds, waterbirds, and shorebirds that use coastal and marine habitats. They require specific focus in planning and implementing OSW projects as they are known to be significantly impacted throughout the project life cycle. Specifically, they are affected during the construction, O&M, and decommissioning phases. Collision risks, habitat alteration and degradation, and barrier effects are some of the key impacts that influence their feeding, breeding, their migratory behavior and patterns.

Table 7 Key Considerations for Marine Ornithology

Phase	Direct Impact	Receptor Groups	Surveys required, if applicable	Typical Avoidance Methods/ Mitigations	Typical Monitoring Methods
Pre-construction	No potential direct impacts during this phase. However, baseline data collection to inform subsequent project phases should commence.	Seabirds. Shorebirds. Migratory land birds.	Ornithological baseline study (desk based and field survey – Digital Aerial Surveys ¹ and / or boat-based ²) should be carried out during pre-construction phase to establish seabird presence and use within the area of influence. Such surveys will likely need to be cover multiple seasons. Critical habitat screening and assessment as per GIIP.	None required	None recommended
Construction	Disturbance due to increased physical presence of vessels. Reduction in the availability of prey due to impacts on fish which could lead to the displacement of birds. Reduced visibility of prey due to increased sediment suspension.	As for pre-construction phase		Shorter construction periods can reduce the severity of the impacts. Operational shutdowns during biologically important seasons such as breeding can help to minimize the	Baseline and monitoring surveys of bird movement and activity (as per described baseline surveys) may continue during construction phase to gather baseline, and if relevant (due to sensitivity),

¹ Digital Aerial Surveys (DAS) use aircraft and a digital recording system (video or stills) to capture observations of bird species at sea through statistically robust transect-based or grid-based designs to provide a permanent digital record.

² Boat-based surveys can be used to support DAS and may be more applicable where a proposed offshore wind farm project is small. There may be select situations where a particular aspect of impact assessment is best informed by boat-based data collection, for instance, a colony count or specific behavioral study. If boat-based surveys are used for baseline characterization, noting the requirements above, surveys should be transect-based

**ANNEX 9: Key Environmental and Social Considerations across the Life Cycle
of an Offshore Wind Energy Project**

Phase	Direct Impact	Receptor Groups	Surveys required, if applicable	Typical Avoidance Methods/ Mitigations	Typical Monitoring Methods
	Disturbance to breeding bird areas which could affect bird population numbers. Injury/sickness or mortality in the event of vessel or equipment leaks or spills.		Use of recognized assessment methods such as displacement matrices to assess the impact of construction processes on birds.	impacts on birds and subsequent bird population. Measures set out for physical processes and water quality in Table .	monitor the effectiveness of construction-phase mitigation.
Operation & Maintenance	Displacement of birds due to the physical presence of wind farm. Disturbance of breeding areas, feeding grounds and resting areas displacing birds to less suitable locations. Barrier effects (birds have to fly around wind turbines). Collision with wind turbine blades leading to injury or mortality. Injury/sickness or mortality in the event of vessel or equipment leaks or spills.	As for pre-construction phase	As for construction phase	Siting and design of OSW project and WTGs to avoid sensitive areas. Reducing the extent of the wind farm area can help to minimize the displacement and barrier effects to birds. Collision Risk Modelling (CRM) should be carried out prior to construction as part of ecological assessments (to determine numbers of birds at risk from collision with turbines) and help inform the need for and type of mitigation.	During operation monitoring should be conducted for bird strikes. Radar and automated bird strike monitoring systems can potentially be used if warranted. Further boat based and aerial surveys should be undertaken during the operational phase to assess any changes to bird movements and activity.

**ANNEX 9: Key Environmental and Social Considerations across the Life Cycle
of an Offshore Wind Energy Project**

Phase	Direct Impact	Receptor Groups	Surveys required, if applicable	Typical Avoidance Methods/ Mitigations	Typical Monitoring Methods
				There should be an air gap between the water surface and lowest point of the turbine blade to minimize potential collisions with seabirds, many of which fly close to the water surface. Measures set out for physical processes and water quality in Table 1.	
Decommissioning	The decommissioning impacts on ornithology are similar to the effects during the construction phase due to similar vessel numbers, increased suspended sediment from decommissioning activities and disturbance to prey. Avoidance can be achieved by leaving cables and foundations in situ; however, this may not be environmentally sound in the long term and monitoring will need to be put in place.				

**ANNEX 9: Key Environmental and Social Considerations across the Life Cycle
of an Offshore Wind Energy Project**

1.1.8 Marine Protected Areas and Species

Marine Protected Areas (MPAs) in the Philippines are designated to conserve critical marine ecosystems, protect biodiversity, and sustain fish populations by regulating human activities within their boundaries. The Philippines boasts over 2,000 locally managed MPAs under the jurisdiction of Local Government Units and 75 legislated MPAs under the National Integrated Protected Areas System (NIPAS). Considering MPAs in OSW projects is crucial because these areas harbor diverse marine life, including endangered species and critical habitats. Ensuring OSW projects do not disrupt these protected zones helps maintain ecological balance, supports fisheries, and upholds legal and environmental commitments to marine conservation. Therefore, it is vital to appropriately study the area where the OSW project will be established to prevent negative impacts on these sensitive marine environments.

Table 8 Key Considerations for Marine Protected Areas and Species

Phase	Direct Impact	Receptor Groups	Surveys required, if applicable	Typical Avoidance Methods/ Mitigations	Typical Monitoring Methods
Pre-construction	Minimal to no significant impacts on Marine Protected Areas and Species provided no developments are permitted in protected areas. However, baseline data collection on marine protected species to inform subsequent project phases should commence.	Marine protected areas and species	Undertake Critical Habitat screening and assessment of protected and threatened species. Refer to Table 42, Table , Table 63 and Table .	Avoid / prohibit any OSW activities within Marine Protected Areas. Implement protected area management zoning plan	None required
Construction	Refer to Table 42, Table 5, Table 636 and Table 7.			Refer to Table 42, Table , Table 63 and Table .	Refer to Table 42, Table 5, Table 636 and Table 7.
Operation & Maintenance					

**ANNEX 9: Key Environmental and Social Considerations across the Life Cycle
of an Offshore Wind Energy Project**

Phase	Direct Impact	Receptor Groups	Surveys required, if applicable	Typical Avoidance Methods/ Mitigations	Typical Monitoring Methods
Decommissioning				Adopt mitigation as per the mitigation hierarchy ³ to achieve no overall negative impact on marine protected areas and marine protected species and ideally, to deliver a net gain.	

³ The mitigation hierarchy prioritizes avoidance, and only if avoidance is not fully effective, mitigation should be selected to minimize or restore (in that order of preference) and to offset as a last resort.

ANNEX 9: Key Environmental and Social Considerations across the Life Cycle of an Offshore Wind Energy Project

1.2 Onshore Environment

1.2.1 Geology, Hydrology, Hydrogeology and Soils

The geological and hydrological characteristics of onshore areas influence the stability and suitability of onshore infrastructure such as substations, cables, and access roads, which are essential for connecting OSW turbines to the electrical grid. An understanding of the geological makeup of the area is necessary for evaluating risks such as ground instability, foundation settling, and potential impacts on structural integrity throughout construction and operation. Similarly, hydrological processes, including groundwater flow patterns and surface water drainage, affect construction activities and environmental factors such as erosion, sedimentation, and changes in water quality.

Therefore, geological, and hydrological assessments play a pivotal role in determining suitable locations for onshore components, ensuring that development occurs in areas less prone to geological hazards like landslides, subsidence, or flooding. This proactive approach helps mitigate risks to infrastructure, maintain operational continuity, and protect the surrounding environment.

Table 94 Key considerations for Geology, Hydrology, Hydrogeology and Soils

Phase	Impact	Receptor Groups	Surveys Required, if applicable	Typical Avoidance Methods/ Mitigations	Typical Monitoring Methods
Pre-construction	No potential direct impacts during this phase.	Soil and the ecosystem services soils provide Surface water features Private Water Supply Groundwater Surface and groundwater dependent terrestrial ecosystems Peatlands	None required for the activities in this phase. However, the following should be carried out during this phase to inform the construction and O&M phases: Establish baseline of geological, hydrological, and hydrogeological environments using desk-based, and if relevant site-based surveys. This includes coverage of: Topography, geology, hydrological and hydrogeological flows,	None required as no impacts anticipated during this phase.	None required.

**ANNEX 9: Key Environmental and Social Considerations across the Life Cycle
of an Offshore Wind Energy Project**

Phase	Impact	Receptor Groups	Surveys Required, if applicable	Typical Avoidance Methods/ Mitigations	Typical Monitoring Methods
			climate and meteorological conditions (including future climate projections), surface and groundwater quality (which, depending on sensitivity, may entail site surveys and laboratory analysis) hydraulic structure surveys.		
Construction	Exacerbation of erosion and sedimentation resulting in changes to surface and ground water quality, flows and flooding. Localized changes to soil quality and structure including to the hydrological regime through peat. Pollution of soil, surface and groundwater from leaks and spills. Disruption or fouling of private water supplies. Peat slide risk		No additional surveys required	Establish a clear end-use plan for excavated material and implement appropriate storage solutions away from surface water bodies to prevent erosion and sedimentation of water bodies, or contamination. Develop a comprehensive drainage plan that considers joint bays, minimizes areas and site yards to reduce water accumulation, and strategically places temporary drains along the cable corridor for efficient water management. Ensure that joint bays are in areas with the lowest flood risk to minimize potential water damage. Implement temporary silt fences downslope of construction	Monitoring programs designed to measure impacts and trigger adaptive management to prevent impacts to geological, hydrological, and hydrogeological environments

**ANNEX 9: Key Environmental and Social Considerations across the Life Cycle
of an Offshore Wind Energy Project**

Phase	Impact	Receptor Groups	Surveys Required, if applicable	Typical Avoidance Methods/Mitigations	Typical Monitoring Methods
	Modifications to hydrogeological regime. Cables acting as preferential pathways for water.			activities to effectively filter runoff water and prevent sedimentation in surrounding areas. When possible, avoid dewatering activities to minimize negative impacts on sensitive habitats. Design, use and storage of hazardous materials and wastes away from surface water and with appropriate containment and spill prevention measures in line with GIIP. Leak and spill response plans, equipment and training.	
Operation & Maintenance	Altered drainage with potential to create or exacerbate flooding. Pollution of soil, surface and groundwater from leaks and spills.	As for pre-construction		Optimize and control the management of stormwater runoff by implementing underdrains and collector pipes in conjunction with Sustainable drainage system (SuDS) ponds or wetlands. This approach not only helps to mitigate flooding and reduce the risk of water pollution but also promotes the sustainable use of water resources and helps ensure	Regular monitoring of SuDS including visual inspections, water quality testing, and flow measurements along with any necessary maintenance.

**ANNEX 9: Key Environmental and Social Considerations across the Life Cycle
of an Offshore Wind Energy Project**

Phase	Impact	Receptor Groups	Surveys Required, if applicable	Typical Avoidance Methods/ Mitigations	Typical Monitoring Methods
				water runoff mimics natural flows. Design, use and storage of hazardous materials and wastes away from surface water and with appropriate containment and spill prevention measures in line with GIIP. Leak and spill response plans, equipment and training.	
Decommissioning	As for construction		Re-establish baseline of geological, hydrological, and hydrogeological environments before commencement of decommissioning stage.	The methods and mitigation required for decommissioning are broadly similar to those for construction.	As for construction.

**ANNEX 9: Key Environmental and Social Considerations across the Life Cycle
of an Offshore Wind Energy Project**

1.2.2 Contaminated Land

Establishing if there is any land within or around the site is vital to avoid any delays or complications during design and construction phase. A contaminated land assessment is undertaken to identify whether there is a risk of, and if so, sources of contamination, any potential routes, or pathways the contamination could spread via, and any receptors that may be at risk of encountering contaminated land. In the Philippines, an example of contaminated land could be former waste dumping sites, particularly those where industrial or municipal waste was disposed of improperly.

Table 50 Key Considerations from Contaminated Land

Phase	Impact	Receptor Groups	Surveys Required, if applicable	Typical Avoidance Methods/ Mitigations	Typical Monitoring Methods
Pre-construction	No potential direct impacts during this phase.	Not applicable	None required for the activities in this phase. However, the following should be carried out during this phase to inform the construction and O&M phases: Baseline initial site assessment (desk-based) to identify any potential for historic contamination in areas requiring disturbance / excavation involving review of historical investigations and available records, maps, and land-uses. Then if relevant, sampling and analysis of soil and groundwater environmental quality, development of conceptual site model(s) and risk assessment.	The initial phase of the project involves conducting a comprehensive desk study and site reconnaissance to evaluate the current site conditions before any on-site activities commence. This crucial step allows for a thorough understanding of the environmental context and potential risks present at the site. Creation of a conceptual site model assessing source-pathway-receptor linkages for geo-environmental risks. Reporting of contaminated land to relevant authority may be necessary to ensure legislative compliance	None required for this phase.
Construction	Construction delays	Soil Surface and ground water	If contamination is present in areas to be disturbed, further soil	Avoid disturbing contaminated soils/areas.	If there is a risk of contamination being mobilised, routine

**ANNEX 9: Key Environmental and Social Considerations across the Life Cycle
of an Offshore Wind Energy Project**

Phase	Impact	Receptor Groups	Surveys Required, if applicable	Typical Avoidance Methods/ Mitigations	Typical Monitoring Methods
	Remediation costs Health risks Design changes	Habitats and species they support Local communities	and groundwater investigations and surveys may be needed.	Implementation of the Conceptual Site Model assessing source-pathway-receptor linkages for geo-environmental risks.	monitoring of soil and/or groundwater to ensure contamination is either removed or appropriately contained.
Operation and Maintenance	Remediation costs Health risks		No additional surveys required unless maintenance activities could further disturb contaminated ground.	Continual updating of Conceptual Site Model to reflect any environmental changes over time.	As for construction.
Decommissioning	Programme delays Remediation costs Health risks	Local Communities Ecosystems including habitats and species.	Repeat of pre-construction surveys to support decommissioning planning.	Avoid creating contamination liabilities during the life of the project through appropriate management of hazardous materials.	As for construction.

**ANNEX 9: Key Environmental and Social Considerations across the Life Cycle
of an Offshore Wind Energy Project**

1.2.3 Noise

The onshore noise impacts of OSW projects are important considerations due to their potential effects on local communities, wildlife, and sensitive habitats. Noise emissions can originate from several sources associated with OSW projects, including construction activities, operational machinery such as turbines and substations, and from maintenance activities. Consideration of noise is likely most significant for the construction and decommissioning phases. Noise assessment and mitigation is addressed during the pre-construction planning and design activities and can often result in specific conditions if operational noise is predicted to exceed defined regulatory limits.

Table 11 Key Considerations for Noise

Phase	Impact	Receptor Groups	Surveys Required, if applicable	Typical Avoidance Methods/ Mitigations	Typical Monitoring Methods
Pre-construction	No potential impacts during this phase.	Not applicable	None required for the activities in this phase. However, a noise impact assessment should be carried out during this phase to inform the construction and O&M phases comprising: Baseline study (desk-based) to identify any potential for noise impact (identification, characterization and mapping of any sensitive receptors in areas that could be affected by construction or operations noise) and measuring existing noise environment at sensitive receptors (extent and detail dependent on risk). Quantification/calculation of potential noise impacts and	None required as no impacts anticipated during this phase.	None required.

**ANNEX 9: Key Environmental and Social Considerations across the Life Cycle
of an Offshore Wind Energy Project**

Phase	Impact	Receptor Groups	Surveys Required, if applicable	Typical Avoidance Methods/ Mitigations	Typical Monitoring Methods
			their extent (modelling may be relevant if there is a potential for more significant impact). Evaluating impact of expected noise on different receptor Designing noise mitigation measures		
Construction	Disturbance to human and faunal populations / displacement of these Distraction from concentration / mental health	Properties, communities and recreation sites in close proximity to construction and/or operational sites. Terrestrial and coastal fauna.	No additional surveys required	Avoid siting noisy activities close to sensitive receptors. Consideration of noise levels and criteria during design phase. Scheduling noisy activities to avoid sensitive time periods. Maintaining construction equipment. Creation and implementation of a Noise Management Plan based on the results of the Noise Impact Assessment. Methods to directly reduce noise: acoustic barriers, material damping isolation, acoustic glazing, alternative ventilation schemes, natural corridors and distancing,	Depending on noise impacts identified, noise monitoring (periodic or permanent) at sensitive receptors may be relevant as per the project-specific Noise Management Plan. Stakeholder engagement and implementation of an effective grievance redress mechanism.

**ANNEX 9: Key Environmental and Social Considerations across the Life Cycle
of an Offshore Wind Energy Project**

Phase	Impact	Receptor Groups	Surveys Required, if applicable	Typical Avoidance Methods/ Mitigations	Typical Monitoring Methods
				internal layout and orientation of structures.	
Operation & Maintenance	Transformer Noise	As for construction.	No additional surveys required.	As for construction.	As for construction
Decommissioning	Construction Noise	As for construction.	For the decommissioning phase a new Noise Impact Assessment may be necessary (see pre-construction phase).	As for construction.	As for construction.

**ANNEX 9: Key Environmental and Social Considerations across the Life Cycle
of an Offshore Wind Energy Project**

1.2.4 Air Quality and Greenhouse Gas Emissions

Ambient air quality impacts associated with onshore components of OSW projects are limited and likely to materialize only during the construction and decommissioning stage, and in the event of major maintenance. Onshore facilities do not have any air emissions sources; emissions derive only from vehicle and equipment engines, plus any dust generated during construction, maintenance or decommissioning activities.

Table 62 Key Considerations for Air Quality

Phase	Impact	Receptor Groups	Surveys Required, if applicable	Typical Avoidance Methods/ Mitigations	Typical Monitoring Methods
Pre-construction	No significant potential impacts during this phase.	Not applicable	None required for the activities in this phase. However, the following should be carried out during this phase to inform the construction and O&M phases: Baseline study (desk-based and data acquisition from relevant agencies) to characterize existing air quality and sensitive receptors. Quantification / calculation of air emissions (modelling unlikely to be warranted). Estimating Air Quality Levels in surrounding community Establishing conservative estimates for unavailable data to ensure	None required as no impacts anticipated during this phase.	None required.

**ANNEX 9: Key Environmental and Social Considerations across the Life Cycle
of an Offshore Wind Energy Project**

Phase	Impact	Receptor Groups	Surveys Required, if applicable	Typical Avoidance Methods/ Mitigations	Typical Monitoring Methods
			assessment does not underestimate potential impacts. Definition of mitigation, management and monitoring. Desk-based characterization and quantification of construction & O&M GHG emissions (scope 1 and 2 as a minimum, and ideally scope 3 emissions).		
Construction	Demolition (blasting, on-site crushing) Earthworks (dust emissions) Construction works (dust and engine emissions from substation compound) Track out (increased vehicle movement) GHG emissions from vehicles and machinery as well as embedded within the materials, manufacture, and	Localized airshed immediately surrounding project activities. Onshore habitats and ecosystems Global and local climate Local communities	No additional surveys required.	Avoid siting onshore infrastructure in close proximity to air sensitive receptors. Implement emission reduction and dust suppression strategies, guided by the results of the air quality impact assessment. Reflect these in Construction Environmental Management Plan. Optimize traffic flows and equipment use. Avoid engine idling time in work plans. Maintain vehicles and equipment as per suppliers'	That mitigation measures outlined in the Construction Environmental Management Plan are being implemented. Performance against project-specified fuel use and GHG emissions targets. Stakeholder engagement and implementation of grievance mechanism. If dust is anticipated to be a problem, dust monitoring at selected sensitive sites may be

**ANNEX 9: Key Environmental and Social Considerations across the Life Cycle
of an Offshore Wind Energy Project**

Phase	Impact	Receptor Groups	Surveys Required, if applicable	Typical Avoidance Methods/ Mitigations	Typical Monitoring Methods
	supply of onshore components.			recommendations and train personnel in operating vehicles/equipment to optimize energy/fuel efficiency. Select materials and suppliers to minimize lifecycle GHG emissions. Dust suppression to include sheeting of vehicles, wheel washing, covering spoil, use of bowzers. Inform local communities about potential air quality impacts and measures being taken to mitigate them.	warranted to confirm efficacy of dust suppression.
Operation & Maintenance	Impacts on air quality are considered negligible for the O&M stage	As per construction	No additional surveys required.	As for construction (for maintenance activities etc.)	Implementation of an effective grievance redress mechanism.
Decommissioning	As for construction phase	As per construction	Air quality and GHG assessment described for pre-construction should be repeated during decommissioning planning.	As for construction.	As per construction.

**ANNEX 9: Key Environmental and Social Considerations across the Life Cycle
of an Offshore Wind Energy Project**

1.2.5 Terrestrial Ecology and Ornithology

Various terrestrial habitats and ecosystems may be affected by the placement of onshore infrastructure such as transmission lines, convertor stations etc (see Section 3 through direct impacts, such as bird collision risks, and/or indirect impacts through habitat disturbance during construction. An ecological baseline should be established to understand what ecological features exist within and around the proposed site and how sensitive the habitats and species populations are to any proposed changes in the environment. Any potential effects are considered prior to construction phase and are submitted during the application stage.

Table 13 Key Considerations for Terrestrial Ecology and Ornithology

Phase	Impact	Receptor Groups	Surveys Required, if applicable	Typical Avoidance Methods/ Mitigations	Typical Monitoring Methods
Pre-construction	No significant potential impacts during this phase.	Not applicable.	None required for the activities in this phase. However, the following should be carried out during this phase to inform the construction and O&M phases: Desk-based and on-site biodiversity surveys (floral and faunal assemblages, potentially multi-seasonal), habitat characterization and mapping and ecological impact assessment. Critical habitat screening and, if relevant, assessment.	None required as no impacts anticipated during this phase.	None required.

**ANNEX 9: Key Environmental and Social Considerations across the Life Cycle
of an Offshore Wind Energy Project**

Phase	Impact	Receptor Groups	Surveys Required, if applicable	Typical Avoidance Methods/ Mitigations	Typical Monitoring Methods
Construction	Temporary or permanent loss of and disturbance of habitats and species. Indirect disturbance may also occur and could damage supporting habitat used by notable species including habitats used as spawning and feeding sites. Removal of natural vegetation could displace and affect the population of terrestrial fauna. Disturbance and displacement of mobile fauna due to noise, light, presence of people and equipment, dust etc. Mortality or injury of fauna due to strike, entrapment etc.	Terrestrial habitats and floral and faunal species. Birds	No additional surveys required.	Selection of infrastructure siting, layout, design footprint and installation methods to avoid or minimize impacts to sensitive or critical habitats. Also establishing appropriate buffer distances around onshore components, incorporating sustainable drainage systems (SuDS), minimizing the size and scale of onshore components etc. Secure all relevant permits including tree cutting/earth balling permit prior to land clearing. Minimize vegetation clearing and construction activities within the approved project boundary and avoid the development of temporary construction sites (such as borrow pits or dump sites) within areas of natural and critical habitat. Develop and carry out a pre-clearing protocol	Pre-and post-construction monitoring programs designed to measure impacts and trigger adaptive management to prevent impacts to habitats and associated plants and animals. Engagement of suitably experienced Ecological Clerk of Works (eCoW) to manage and monitor required biodiversity mitigation during construction.
Operation & Maintenance	Disturbance and displacement of mobile fauna due to noise, light, presence				

**ANNEX 9: Key Environmental and Social Considerations across the Life Cycle
of an Offshore Wind Energy Project**

Phase	Impact	Receptor Groups	Surveys Required, if applicable	Typical Avoidance Methods/ Mitigations	Typical Monitoring Methods
	of people, electromagnetic fields, heat generation etc. Collision risk on overhead transmission lines.			(including Ecological Clerk of Works (eCoW) and species translocations to reduce the instances of death and injury on fauna. Establish buffer zone and provide fencing for vegetation that will be retained and install no-go signs to avoid encroachment into this area.	
Decommissioning	As for construction		Establish new ecological baseline to inform decommissioning plan.	Implement the <i>mitigation hierarchy</i> to achieve no overall negative impact on biodiversity and potentially net gain. Only if avoidance is not possible, should other measures such species specific translocations and providing compensatory land for habitat restoration/creation be considered. Implement measures set out for avoidance of contamination, noise, and air pollution in pre-construction Error! Reference source not found..	

ANNEX 9: Key Environmental and Social Considerations across the Life Cycle of an Offshore Wind Energy Project

1.2.6 Terrestrial and Freshwater Protected Sites and Notable Species

The Philippines supports an array of terrestrial and freshwater biodiversity encompassing diverse landscapes, including dense tropical rainforests, mountainous terrains, and unique grassland ecosystems. Renowned for its rich biodiversity, and to safeguard its unique ecosystems, the Philippines has designated several protected sites to safeguard its diverse terrestrial ecosystems and preserve the wealth of biodiversity found across the archipelago.

Mount Hamiguitan Range Wildlife Sanctuary, a UNESCO World Heritage Site, stands as a testament to the country's commitment to conservation, protecting a vast range of unique flora and fauna, including the endangered Philippine eagle and numerous endemic species. The Mount Apo Natural Park, another crucial protected area, surrounds the highest peak in the Philippines, providing a sanctuary for diverse habitats and wildlife. The Palawan Biosphere Reserve, encompassing multiple protected areas, addresses the conservation needs of both terrestrial and marine environments on the island. Additionally, the Northern Sierra Madre Natural Park, covering a significant portion of Luzon, contributes to the preservation of primary forests and various endangered species. Protected Areas with terrestrial and freshwater components that would also need to be considered include, Critical Habitats, Important Birds Areas (IBAs), Endemic Bird Areas (EBAs), Alliance for Zero Extinction (AZE) sites, Ramsar sites, UNESCO-Man and Biosphere (MAB) Reserves, Sites of National Designation including Forest Reserves, Bird and Fish Sanctuaries, Game Refuges, Bird Sanctuaries, Mangrove Swamp Forest Reserves, National Parks, Natural Monuments, and Wildlife Sanctuaries, and Key Biodiversity Areas (KBAs).

Consequently, there are 139 sites listed as KBA's and 534 KBA trigger species (including amphibians, bird, fish, invertebrate, mammal, reptile, and plant species). According to the latest IUCN Red List Status, there 420 Critically Endangered (CR), 671 Endangered (EN), and 707 Vulnerable (VU) species that can be found across the freshwater inland wetlands, terrestrial, and coastal marine ecosystems in the country.

Table 14 Key Considerations for Terrestrial and Freshwater Protected Sites and Species

Phase	Direct Impact	Receptor Groups	Surveys required, if applicable	Typical Avoidance Methods/ Mitigations	Typical Monitoring Methods
Pre-construction	No significant potential impacts during this phase.	Terrestrial and Freshwater Protected Sites and Species	None required for the activities in this phase. However, the following should be carried out during this phase to inform subsequent phases:	None required as no impacts anticipated during this phase.	None required

**ANNEX 9: Key Environmental and Social Considerations across the Life Cycle
of an Offshore Wind Energy Project**

Phase	Direct Impact	Receptor Groups	Surveys required, if applicable	Typical Avoidance Methods/ Mitigations	Typical Monitoring Methods
			As per Error! Reference source not found. Undertake Critical Habitat screening to determine if any features in the area qualify as Critical Habitat of Priority Biodiversity Features (PBFs) and if so, undertake Critical Habitat assessment of protected and threatened species.		
Construction	As described in Baseline Data Error! Reference source not found. which can result in habitat loss / degradation and disturbance of critical habitat of threatened species, plus: Vegetation removal may lead to surface water runoff from construction sites contaminating natural watercourses which may lead to impacts to aquatic species due	Terrestrial and Freshwater Protected Sites and Species	No additional surveys required.	Avoid / prohibit any onshore activities within protected areas and sensitive onshore terrestrial and freshwater habitats. Implement protected area management zoning plan. As per Error! Reference source not found. Error! Reference source not found. Prepare detailed strategies on how the project will achieve	As per construction Error! Reference source not found.

**ANNEX 9: Key Environmental and Social Considerations across the Life Cycle
of an Offshore Wind Energy Project**

Phase	Direct Impact	Receptor Groups	Surveys required, if applicable	Typical Avoidance Methods/ Mitigations	Typical Monitoring Methods
	to the reduction in water quality, siltation, and pollution.			no-net loss (for natural habitats) and net-gain (for critical habitats) within a Biodiversity Offset Management Plan (BOMP) or Biodiversity Compensation Plan (BCP) or similar document.	
Operation & Maintenance	As described in Section 1.1.8 Error! Reference source not found. which can result in habitat loss / degradation and disturbance of critical habitat of threatened species.	Terrestrial and Freshwater Protected Sites and Species	No additional surveys required.	As per construction	Periodic monitoring of any protected habitats was affected by operational OSW.
Decommissioning	Habitat disturbance and subsequent habitat loss from removal of infrastructure.	Terrestrial and Freshwater Protected Sites and Species	Pre-decommissioning re-baselining may be required, including surveys and desk-based studies as described under pre-construction (important where the baseline environment had changed over time, including changes and	As per construction	As per construction Error! Reference source not found. Post decommissioning monitoring to assess long term impacts to protected sites and protected species.

**ANNEX 9: Key Environmental and Social Considerations across the Life Cycle
of an Offshore Wind Energy Project**

Phase	Direct Impact	Receptor Groups	Surveys required, if applicable	Typical Avoidance Methods/ Mitigations	Typical Monitoring Methods
			additions to protected areas and any newly designated protected areas).		

ANNEX 9: Key Environmental and Social Considerations across the Life Cycle of an Offshore Wind Energy Project

1.3 Social / Socio-economic Impacts

1.3.1 Socioeconomics Considerations

OSW projects significantly influence socioeconomic conditions, necessitating assessment and appropriate management strategies. This component intersects with other social receptors and primarily focuses on labor and employment, supply chain dynamics, and local services within the host community. During construction and operational phases, traditional fishing grounds, agricultural land or land used for livelihoods may be disrupted, necessitating mitigation measures to minimize economic losses and support adaptation strategies for affected stakeholders. Compensation mechanisms can play a crucial role in offsetting these disruptions and ensuring fair treatment of impacted communities however this should be a last resort; opportunities to avoid, mitigate or restore impacts (in that order) should be exhausted first.

Introducing and diversifying job opportunities through construction, maintenance, and operations can bolster local economies. However, realizing these benefits hinges on effective workforce training and local hiring initiatives to maximize socioeconomic gains. Conversely, operational noise and visual impacts may deter tourism, prompting the need for visual impact assessments and mitigation strategies to safeguard coastal tourism revenues. Socioeconomic assessments require mixed-method approaches, encompassing demographic profiles, economic data, and current community issues and concerns. These assessments will inform and shape the mitigation measures that developers must implement to ensure balanced and sustainable project outcomes.

Table 15 Key Considerations for Socioeconomics

Phase	Impact	Receptor Groups	Surveys Required, if applicable	Typical Avoidance Methods/ Mitigations	Typical Monitoring Methods
Pre-Construction	Minimal to no significant impacts on socioeconomic However, baseline data collection to inform subsequent project phases should commence.	Local Communities and Businesses (e.g. fisherfolks, coastal communities) whose livelihood or lifestyles may be directly affected by project's offshore	Socio-economic baseline study (desk-based and potentially survey among affected population) to establish livelihood dependencies and incomes from onshore, coastal and offshore resources, vulnerability, seasonality etc.	Scoping and issues identification with stakeholders via Key Informant Interview, Focus Group Discussion, Consultation with affected groups to gain insights into the local conditions; gather feedback on	None recommended

**ANNEX 9: Key Environmental and Social Considerations across the Life Cycle
of an Offshore Wind Energy Project**

Phase	Impact	Receptor Groups	Surveys Required, if applicable	Typical Avoidance Methods/ Mitigations	Typical Monitoring Methods
		or onshore activities. Indigenous Peoples (if applicable)		the project plans and potential impacts. Develop and initiate implementation of communication strategies (via a Stakeholder Engagement Plan) to inform participation of affected receptors in impact identification, assessment and management, as well as potential opportunities.	
Construction	Temporary disruption of fishing activities, potential loss of income during construction. Short-term local supply, service and employment opportunities. Disruption to land access, landowners and businesses.		No additional surveys required.	Establish and implement local procurement, skills development and recruitment strategy/plans that prioritize supporting impacted stakeholders first. Compensation for temporary loss of income and/or	Establish and implement an effective grievance redress mechanism in line with GIIP If applicable, monitoring of local content / effectiveness of local procurement/hiring strategy etc If applicable, monitoring of effectiveness of any

**ANNEX 9: Key Environmental and Social Considerations across the Life Cycle
of an Offshore Wind Energy Project**

Phase	Impact	Receptor Groups	Surveys Required, if applicable	Typical Avoidance Methods/ Mitigations	Typical Monitoring Methods
	Quality of life, health, and environment. Income inequality and poverty.			development of alternative livelihood programs. Continuous stakeholder engagement.	mitigation for lost income.
Operations & Maintenance	Long-term employment opportunities. Change in nature of local and national economic activity. Quality of life, health, and environment. Income inequality and poverty.		No additional surveys required.		
Decommissioning	As for construction		As per Pre-construction phase, during the planning for decommissioning.		

**ANNEX 9: Key Environmental and Social Considerations across the Life Cycle
of an Offshore Wind Energy Project**

1.3.2 Agricultural / Productive Land and Resources

Understanding the effects of onshore components on agricultural and productive land, and on natural resources upon which local communities depend for their livelihood is crucial for developers to protect the viability of agricultural and local livelihood activities both now and in the future. Agricultural and productive land plays a vital role in food production, livelihoods and local economies, making it essential to minimize negative impacts and ensure sustainable land use practices. Specific receptor groups, surveys, methods, mitigations, and monitoring strategies are typically addressed in other project sections such as Ecology, Geology, Hydrology, Hydrogeology and Soils, Landscape and Visual Amenity, and Socioeconomics. This holistic approach ensures that developers can effectively manage and mitigate impacts on agricultural and land resources while promoting responsible development practices that support agricultural and land sustainability and local communities.

Table 167 Key Considerations for Agricultural and other Productive Land and Resources

Phase	Impact	Receptor Groups	Surveys Required, if applicable	Typical Avoidance Methods/ Mitigations	Typical Monitoring Methods
Pre-construction	No potential impact during this phase.	Agricultural land Common land used for livestock grazing or for foraging or collection of non-agricultural resources (food, wood etc.) Farmers Local communities Landowners Environmental groups Land or environment agencies	None required for the activities in this phase. However, the following should be carried out during this phase to inform subsequent phases: Land use and classification study (desk-based, stakeholder engagement through KII, Focus Group and questionnaire and site walkovers for onshore components. Review of land-uses and land-use plans; socio-economic surveys are also relevant to	None required as no impacts anticipated during this phase.	None required.

**ANNEX 9: Key Environmental and Social Considerations across the Life Cycle
of an Offshore Wind Energy Project**

Phase	Impact	Receptor Groups	Surveys Required, if applicable	Typical Avoidance Methods/ Mitigations	Typical Monitoring Methods
			determine the agricultural production and economic status, seasonality, livelihood reliance, income and vulnerability etc.		
Construction	Land resource components including productivity (yield/quality), income and livelihoods. Loss of income. Loss of food and nutrition sources.	As for pre-construction	No additional surveys required	Avoid impacting land that is in productive use regardless of whether such use is formal (legal) or informal. Compensation for temporary loss of income and/or development of alternative livelihood programs. Continuous stakeholder engagement. Pollution prevention as per Table 94, Table and Table 6. Minimize infrastructure footprint. Clear delineation (fencing) of onshore work areas with buffer zones to avoid damaging land beyond	Establishing indicators or audits and Monitoring programs designed to measure impacts and trigger adaptive management. Establish and implement an effective grievance redress mechanism in line with GIIP. Monitoring the implementation of and effectiveness of mitigation actions taken.

**ANNEX 9: Key Environmental and Social Considerations across the Life Cycle
of an Offshore Wind Energy Project**

Phase	Impact	Receptor Groups	Surveys Required, if applicable	Typical Avoidance Methods/ Mitigations	Typical Monitoring Methods
				that necessary or agreed. Affected topsoil and subsoil treated and stored to prevent damage to soil quality. Erosion control Soil improvement Restoration and rehabilitation of temporary construction sites. Compensation for unavoidable impacts such as payments for ecosystem services	
Operation and Maintenance	Ongoing impact from construction	As for pre-construction	No additional surveys required	Compensation for temporary loss of income and/or development of alternative livelihood programs. Continuous stakeholder engagement. See also Table .	As for construction
Decommissioning	Return of potentially productive land	As for pre-construction	Re-establishment of baseline	As for construction and Operations & Maintenance phases	As for construction

ANNEX 9: Key Environmental and Social Considerations across the Life Cycle of an Offshore Wind Energy Project

1.3.3 Tourism and Recreation

OSW projects can impact offshore tourism and recreational activities, primarily through changes in visual aesthetics and perceived landscape quality. The installation of turbines in coastal waters can alter valued vistas and seascapes, potentially affecting visitor perceptions and preferences for recreational activities such as boating, fishing, and beachgoing. While some tourists may find wind farms a novel attraction or educational opportunity, others may view them as visual obstructions detracting from natural beauty.

Tourism and recreation could be considered a sub-group of socioeconomics, focusing on specific industries and economies. Typically, a specific appraisal of the impacts on tourism and recreation would fall under a Socioeconomic Impact Assessment and specific impacts such as visual amenity, traffic, noise etc. would be considered as specific sections.

Table 17 Key Considerations for Tourism and Recreation

Phase	Direct Impact	Receptor Groups	Surveys required, if applicable	Typical Avoidance Methods/ Mitigations	Typical Monitoring Methods
Pre-construction	The planning of a project may create uncertainty and apprehension among the users and may affect the visitation rates and revenue streams for local business.	Local businesses such as hotels, restaurants, dive, boat/ tour operators, and other tourism activities. Dive operators and other marine tourism businesses. Local Communities whose livelihood depends on offshore/coastal tourism and recreation. Government agencies	Baseline and mapping of tourism and recreational activities such as travel patterns, expenditures profile etc. Market research to gauge the perception, attitude, and intentions with regard to the tourism and recreation in the area. Visual impact assessments. Safety assessments.	Engaging in stakeholder consultations and public outreach efforts to address concerns, provide accurate information, and solicit feedback from tourism operators, local communities, and visitors. Design and layout of project to reflect findings of visual impact assessment.	None recommended

**ANNEX 9: Key Environmental and Social Considerations across the Life Cycle
of an Offshore Wind Energy Project**

Phase	Direct Impact	Receptor Groups	Surveys required, if applicable	Typical Avoidance Methods/ Mitigations	Typical Monitoring Methods
Construction	Construction traffic (boats and other marine vessels). Altered visual amenity due to OSW infrastructure. Increased noise from the construction. Safety and Security.	As for pre-construction	No additional surveys required	Scheduling construction activities to minimize disruption. Implementing noise barriers, using quieter construction equipment. Trenchless methodologies reducing plant and installation time. Providing safety training, issuing notices to mariners and also community-based notification if applicable, using appropriate signage and barriers. Avoiding use of local accommodation for workforce during peak tourist seasons. Ongoing stakeholder engagement.	Establish and implement an effective grievance redress mechanism in line with GIIP. If applicable, monitoring of effectiveness of any mitigation for lost income and visual impact.
Operation & Maintenance	Altered visual amenity due to OSW infrastructure.	As for pre-construction	No additional surveys required	Ongoing safety training, issuing notices to mariners and also community-based notification if applicable for any significant maintenance activities / exclusion zones, using appropriate signage and barriers. Ongoing stakeholder engagement.	As for construction

**ANNEX 9: Key Environmental and Social Considerations across the Life Cycle
of an Offshore Wind Energy Project**

Phase	Direct Impact	Receptor Groups	Surveys required, if applicable	Typical Avoidance Methods/ Mitigations	Typical Monitoring Methods
Decommissioning	As for construction	As for pre-construction	As per Pre-construction phase, during the planning for decommissioning.	As for construction	As for construction

**ANNEX 9: Key Environmental and Social Considerations across the Life Cycle
of an Offshore Wind Energy Project**

1.3.4 Shipping, Navigation and Fisheries

The presence of wind turbines can alter navigational routes for vessels, requiring adjustments to shipping lanes and fishing grounds to ensure safe passage and avoid collisions with the structures. Moreover, the construction and O&M phases of OSW projects may require access restrictions to fishing and other vessel traffic to be imposed on safety grounds, potentially displacing fishing fleets and impacting traditional fishing grounds. Furthermore, the electromagnetic fields generated by subsea cables connecting the wind turbines to onshore infrastructure can interfere with fish behavior and movements, potentially affecting local fisheries. Baseline studies and assessments are conducted to inform the siting and implementation planning for OSW projects thereby aiming to maximize the sustainable coexistence of OSW projects with other marine activities.

Table 188 Key Considerations for Shipping and Navigation

Phase	Impact	Receptor Groups	Surveys required, if applicable	Typical Avoidance Methods/ Mitigations	Typical Monitoring Methods
Pre-Construction	Minimal to no significant impacts during this phase.	Commercial fisheries Local fisherfolk Tourist fishing and boats Shipping industry Defense Recreational boats	None required for the activities in this phase. However, the following should be carried out during this phase to inform the construction and O&M phases: Baseline study (desk-based and potentially survey among affected stakeholders) to establish existing uses and users of the project area. Marine Navigational Route Data shall be secured from the National Mapping and Resource Information Authority (NAMRIA). Vessel traffic surveys to identify shipping and navigation activities occurring within and around the development site.	Scoping and issues identification with stakeholders via Key Informant Interview, Focus Group Discussion, Consultation with affected groups to gain insights into the local conditions; gather feedback on the project plans and potential impacts. Scheduling pre-construction activities to avoid sensitive periods for fishing / recreation. Close coordination with PCG, MARINA, and Philippine Ports Authority (PPA) on shipping and navigational operations and access data. Develop and initiate implementation of	None recommended.

**ANNEX 9: Key Environmental and Social Considerations across the Life Cycle
of an Offshore Wind Energy Project**

Phase	Impact	Receptor Groups	Surveys required, if applicable	Typical Avoidance Methods/ Mitigations	Typical Monitoring Methods
			Socioeconomic surveys on fish catch, demography, and identification of fishing grounds, seasonality, reliance etc. Carrying out a Navigational Risk Assessment (NRA) will identify any potential hazards and the likelihood of those occurring.	communication strategies (via a Stakeholder Engagement Plan) to inform participation of affected receptors in impact identification, assessment, and management, as well as potential opportunities.	
Construction	Increased risk of vessel collision due to increased presence at the development site and the surrounding area. Access restrictions for vessels, shipping, fishing etc.		No additional surveys required	Scheduling construction / maintenance activities to avoid sensitive periods for fishing / recreation. Close coordination with PCG, MARINA, and Philippine Ports Authority (PPA) on shipping and navigational operations and access data. Design and siting of offshore infrastructure to reduce the risk of collision, snagging etc. (siting, foundation types, lighting etc.) Adherence to legal requirements and GIIP for marine notifications, mapping and safety / navigational warning devices. Issuance of notices to mariners and, if necessary, community-based	Establish and implement an effective grievance redress mechanism in line with GIIP. If applicable, monitoring of effectiveness of any mitigation.
Operation & Maintenance	Reduction of commercial fishing area; exclusions within OSW areas. Increased duration / fuel use to circumnavigate new OSW project area. Risk of vessel collision with WTGs. Displacement of larger vessels due to				

**ANNEX 9: Key Environmental and Social Considerations across the Life Cycle
of an Offshore Wind Energy Project**

Phase	Impact	Receptor Groups	Surveys required, if applicable	Typical Avoidance Methods/ Mitigations	Typical Monitoring Methods
	being unable to transit through the windfarm. Anchor and interaction snagging with cables and floating lines.			notification as well. Ongoing stakeholder engagement.	
Decommissioning	The impacts during the decommissioning are similar to the construction impacts due to the increased number of vessels present and similar mitigations/monitoring methods as mentioned above should be carried out in this phase.				

ANNEX 9: Key Environmental and Social Considerations across the Life Cycle of an Offshore Wind Energy Project

1.3.5 Aviation

Aviation is a critical consideration in offshore wind farm implementation due to the potential hazards posed by the presence of wind turbines to air traffic. The height of wind turbines can impact on low flying aircraft and can infringe on airspace. OSW turbines turn at a speed which is fast enough for radar to sense them as moving objects and alongside their electromagnetic radiation means they can interfere with aviation radar. Additionally, the rotating blades of wind turbines can create turbulence and wake effects that may affect the stability and safety of aircraft flying in proximity during the O&M phase. Therefore, thorough baseline studies and assessments of aviation safety and potential impacts on radar systems are essential in the planning and design of OSW projects to ensure compliance with aviation regulations and to mitigate risks to air traffic operations.

Table 199 Key Considerations for Aviation

Phase	Impact	Receptor Groups	Surveys required, if applicable	Typical Avoidance Methods/ Mitigations	Typical Monitoring Methods
Pre-construction	No potential direct impacts during this phase.	Commercial and private aviation sectors Defense sector	None required for the activities in this phase. However, the following should be carried out during this phase to inform the construction and O&M phases: Desk-based baseline data collection including consultation with key stakeholders (defense, aeronautical agencies) and key informant interviews to establish and assess risks. Aviation impact assessment.	Ensure aviation impact assessments are conducted thoroughly. Involving any affected stakeholders in defining and agreeing mitigation.	Incorporating wind turbines into aeronautical charts; adding appropriate lighting and markings.
Construction	Infringements on airspace due to the lifting and installation of the WTGs.		No additional surveys required.	Adding wind turbines to aeronautical charts and incorporating lighting and	Monitoring implementation of aviation impact

**ANNEX 9: Key Environmental and Social Considerations across the Life Cycle
of an Offshore Wind Energy Project**

Phase	Impact	Receptor Groups	Surveys required, if applicable	Typical Avoidance Methods/ Mitigations	Typical Monitoring Methods
				markings in line with law and GIIP.	assessment recommendations.
Operation & Maintenance	Turbine interference with aviation radar. Safety and stability of low-flying aircraft due to turbulence and wake effect of rotating blades.		No additional surveys required.	Implement Multi-Radar Tracker (MRT) Blanking at airports which are susceptible to the effects of the turbine interference.	Monitoring radar performance and aircraft operations near turbines.
Decommissioning	The decommissioning phase is expected to have similar impact and associated management on aviation receptor as the construction phase. Surveys, assessment and monitoring similar to that described for the pre-construction and construction phases should be implemented during the planning and implementation of decommissioning.				

**ANNEX 9: Key Environmental and Social Considerations across the Life Cycle
of an Offshore Wind Energy Project**

1.3.6 Onshore Traffic and Transport

The OSW projects can disrupt traffic and transport logistics during the construction and decommissioning phases due to the transportation of large and heavy components such as wind turbine blades, towers, and nacelles. The transportation of these components requires specialized vehicles and equipment, which can lead to increased traffic congestion and potential road damage. Additionally, the delivery of these components to onshore supply basis or construction sites may require coordination with local authorities to ensure safe and efficient transport routes.

Table 20 Key Considerations for Traffic and Transport

Phase	Impact	Receptor Groups	Surveys Required, if applicable	Typical Avoidance Methods/ Mitigations	Typical Monitoring Methods
Pre-construction	No significant direct impacts during this phase.	Road users including: local communities, local businesses, tourists, pedestrians, children, livestock etc. Local government authorities	None required for the activities in this phase. However, the following should be carried out during this phase to inform subsequent phases: Establish baseline using available datasets (e.g. from government agencies, port authorities, road network, vehicular volume etc.), substituted where necessary by site survey. Transport impact assessment during each project phase and definition of mitigation including alternative routes, access requirements, time restrictions etc.	None required as no impacts anticipated during this phase.	None required.
Construction	Temporary diversions, restrictions and/or changes to road layouts around onshore sites	Road users including local communities, local businesses, tourists, pedestrians,	No additional surveys required	Avoid using busy local routes, scheduling of activities to avoid busy time periods, and provide project-	Monitoring of the Implementation of the mitigation measures stipulated in the Construction

**ANNEX 9: Key Environmental and Social Considerations across the Life Cycle
of an Offshore Wind Energy Project**

Phase	Impact	Receptor Groups	Surveys Required, if applicable	Typical Avoidance Methods/ Mitigations	Typical Monitoring Methods
	Increased traffic and potential congestion on local roads with corresponding increased journey times, lost productivity etc. Elevated traffic safety risk. Damage to local roads due to use by heavy goods vehicles.	children, livestock etc. Local government authorities		dedicated access routes if necessary. Preparation and implementation of a Construction Traffic Management Plan incorporating: Abnormal Load Transport Management; Staff Travel Plan and measures to mitigate risks to communities, safety etc. Measures to promote use of sustainable transport. Improvements to transport infrastructure and changes to project plan depending on conditions set by local authority. Ongoing Stakeholder Engagement	Traffic Management Plan
Operation & Maintenance	Limited potential for impact during this phase	As for construction	No additional surveys required	If necessary, definition and implementation of an O&M-phase Traffic and Transport Management Plan. Ongoing Stakeholder Engagement.	
Decommissioning	As for construction	As for construction	Re-establishment of baseline as described under pre-construction	As for construction	As for construction

**ANNEX 9: Key Environmental and Social Considerations across the Life Cycle
of an Offshore Wind Energy Project**

1.3.7 Seascape, Landscape, and Visual

Seascape, landscape, and visual impact assesses how the development changes the seascape and landscape and people's visual amenity. OSW farms which are closer to shore are likely to have more significant impacts on visual amenity. Onshore components of OSW projects are minimal. Monitoring is not usually put in place for seascape impacts. Alterations are primarily influenced by the scale, layout, and spatial distribution of wind turbines within marine environments. These alterations can disrupt natural views and coastal panoramas, impacting recreational activities such as boating, fishing, and tourism. Proper siting and design considerations are crucial to minimize the visual impacts of offshore wind farms and to ensure compatibility with the surrounding landscape. Additional mitigation efforts often focus on minimizing visual prominence through strategic turbine placement, color schemes, and technological advancements in turbine design to reduce visual impacts from shorelines and key viewpoints.

Table 101 Key considerations for Seascape, Landscape and Visual Impact

Phase	Impact	Receptor Groups	Surveys required, if applicable	Typical Avoidance Methods/ Mitigations
Pre-construction	No potential direct impacts during this phase. However, baseline data collection and impact assessment to inform the design and execution of subsequent project phases should commence.	Coastal communities and stakeholders Businesses (and their representatives) reliant on coastal and marine landscape (e.g. tourism) Protected area authorities (if relevant)	Desk-based surveys; site-visits and public engagements or consultations including rapid assessment to establish social acceptability of affected stakeholders, and institutional or local support of other area managers.	Stakeholder interviews and surveys to gauge public opinion on valued views and vistas. An assessment (e.g. using photomontage and virtual/video visualizations, alongside public consultation) to consider the visual impact of the development from viewpoints within the zone of theoretical visibility (ZTV) and help in the selection and design of mitigation.
Construction	Visual impact of WTGs Reduced amenity value		No additional surveys required.	Developing wind farms that are further from shore through technology such as floating foundations,
Operation & Maintenance				

**ANNEX 9: Key Environmental and Social Considerations across the Life Cycle
of an Offshore Wind Energy Project**

Phase	Impact	Receptor Groups	Surveys required, if applicable	Typical Avoidance Methods/ Mitigations
				minimizes the visual impact of WTGs. Painting requirements and layout of the project might help reduce visual impacts.
Decommissioning	As decommissioning will involve the removal of WTGs, there will be no significant impacts on the seascape, landscape, and visual impact.			

ANNEX 9: Key Environmental and Social Considerations across the Life Cycle of an Offshore Wind Energy Project

1.3.8 Cultural Heritage and Archaeology

Cultural heritage encompasses a wide range of equally important elements, physical and intangible, that connect present-day communities with their past. Physical evidence of the past can include buried archaeological remains or built structures; intangible heritage might include sacred spaces, trees or other natural physical objects. Stories, songs and art left by ancestral peoples are often also at the core of cultural heritage throughout the world. OSW projects are carefully planned to avoid potential impacts on historical sites, cultural landscapes, and intangible heritage of coastal communities. Pre-construction phase must ensure that OSW projects should be outside these areas or in cases that intersect with areas rich in archaeological significance, historical landmarks, and traditional cultural practices, necessitating careful assessment and management to preserve cultural heritage. OSW projects can alter cultural landscapes visible from shorelines, impacting visual aesthetics and cultural identity. The introduction of large-scale infrastructure like turbines and substations may disrupt views of historical landmarks or traditional fishing grounds, potentially affecting tourism and community perceptions of cultural heritage.

Furthermore, intangible cultural heritage, including traditional knowledge, practices, and oral histories of coastal communities, can be impacted by changes in local economies and social dynamics associated with wind farm development. Engaging with local stakeholders and indigenous communities throughout the project lifecycle is essential to understanding and respecting these cultural dimensions ensuring that development aligns with community aspirations and values.

Table 112 Cultural Heritage and Archaeology

Phase	Impact	Receptor Groups	Surveys Required, if applicable	Typical Avoidance Methods/ Mitigations	Typical Monitoring Methods
Pre-Construction	Can lead to social disruption as stakeholders may feel anxious or have differing opinions about the project's benefits and drawbacks.	Indigenous People Local communities Regulatory bodies with heritage preservation	Comprehensive cultural heritage desk-based study, conducted in consultation with Indigenous Peoples representatives and local communities, to identify and document world heritage sites, culturally significant sites, artifacts, and landscapes within the project area. Study the cultural practices of any Indigenous Peoples	Avoid impacts on world heritage sites (as listed by UNESCO) and sites of local / national cultural heritage value by considering alternative sites and designs. Engage with concerned stakeholders especially Indigenous Peoples to ensure meaningful and informed participation and	None recommended

**ANNEX 9: Key Environmental and Social Considerations across the Life Cycle
of an Offshore Wind Energy Project**

Phase	Impact	Receptor Groups	Surveys Required, if applicable	Typical Avoidance Methods/ Mitigations	Typical Monitoring Methods
			present in or using the Project area, traditional knowledge, and customary land use patterns that may be impacted by the project. Establish study area which is typically a 500m buffer around the site boundary. Potential walkover and site visit.	decision-making regarding project planning and impacts on cultural activities. Provide opportunities to involve the Indigenous Peoples in project planning, design, and implementation and in the capacity building initiatives.	
Construction	Removal, partial removal, or minor loss of features and/or evidence important to historic character	Local communities Indigenous Peoples World heritage sites Sites of local cultural significance	No additional surveys required.	Implementing the results from the consultations and the cultural heritage impact assessment carried out during pre-construction, as appropriate. Construction of trenchless crossing, fencing off special features, replanting, watching briefs, and pre-construction site visits. Continuous stakeholder engagement to address concerns.	Bespoke monitoring measures may be required depending on sensitivity of surveyed landscape and results of cultural heritage impact assessment. Ongoing stakeholder engagement and implementation of an effective grievance redress mechanism.
Operation & Maintenance	Change in visual aesthetics and cultural identity	As for Construction	No additional surveys required	Continuous stakeholder engagement to address concerns.	Ongoing stakeholder engagement and implementation of an effective grievance redress mechanism.

**ANNEX 9: Key Environmental and Social Considerations across the Life Cycle
of an Offshore Wind Energy Project**

Phase	Impact	Receptor Groups	Surveys Required, if applicable	Typical Avoidance Methods/ Mitigations	Typical Monitoring Methods
Decommissioning	Restoration of features and/or evidence important to historic character	As for Pre-construction and Construction	Re-baselining to capture any changes in status or circumstance.	As per construction	As per construction

ANNEX 10

DIRECTORY OF STAKEHOLDERS FOR THE OFFSHORE WIND (OSW) ENERGY PROJECTS

Stakeholder groups that are relevant to the whole development process of OSW projects and are required to be included as participants in the consultation and information disclosure activities are listed in the table, as follows:

Level	Stakeholder
National Level	- Government agencies, including government-owned and controlled corporations (GOCCs), with related mandate on the type of project and its impacts, including but not limited to: • Department of Energy (DOE) • Department of Environment and Natural Resources (DENR) through Environmental Management Bureau (EMB), Biodiversity Management Bureau (BMB), National Mapping and Resource Information Authority (NAMRIA), and Ecosystem Research and Development Bureau (ERDB) • Department of Agriculture (DA) through Bureau of Fisheries and Aquatic Resources (BFAR) • Department of Transportation (DOTr) through Philippine Ports Authority (PPA), Maritime Industry Authority (MARINA), Philippine Coast Guard (PCG), and Civil Aviation Authority of the Philippines (CAAP) • Department of Interior and Local Government (DILG) through Philippine National Police – Maritime Group (PNP-MG) • Department of National Defense (DND) – Office of Civil Defense • Department of Tourism (DOT) • Department of Science and Technology (DOST) through the Philippine Council for Agriculture, Aquatic, and Natural Resources Research and Development (PCAARRD) and Philippine Council for Industry, Energy, and Emerging Technology Research and Development (PCIEERD) • Department of Public Works and Highways (DPWH) • National Water Resource Board (NWRB) • National Economic and Development Authority (NEDA) • National Commission on Indigenous Peoples (NCIP) • National Grid Corporation of the Philippines (NGCP) • National Renewable Energy Board (NREB) • Energy Regulatory Commission (ERC) • National Power Corporation (NPC) • National Transmission Corporation (TRANSCO) • Philippine Electricity Market Corporation (PEMC) • Commission on Human Rights (CHR) • Climate Change Commission (CCC)

Source: Asian Development Bank. (2024). *Guidance Note for Offshore Wind Energy Projects in the Philippines*. Technical Assistance Project: Environmental Safeguards Support for Philippine Offshore Wind and Solar Projects. Prepared by Ove Arup & Partners Hong Kong Limited (Philippines Branch).

Level	Stakeholder
	- Other organizations or interest groups: • Development Partners (United Nations Development Program (UNDP); Asian Development Bank (ADB); World Bank; Global Environment Facility (GEF) etc) - International and National-based NGOs – (Worldwide Fund for Nature (WWF); Rare Philippines; Conservation International (CI) Philippines; Greenpeace Southeast Asia, etc) These organizations play critical roles in advocating for environmental conservation, wildlife protection, and sustainable development both globally and within specific countries.
Provincial Level	- Interest groups (NGOs/ People's Organization (PO) preferably those with mission/s specifically related to the type and impacts of the proposed undertaking/ project: • Fisheries and Aquatic Resources Management Council (FARMC) • Electric companies involved in OSW development. • Environmental NGOs - People whose socio-economic welfare and cultural heritage are projected to be affected by the project especially vulnerable sectors and indigenous populations: • Women/ Women's Group/ Sector, where there should be 40% women representation, at minimum, always¹. • Children • Below poverty line/ Poor Sector • Elderly/ Senior Citizens Organization • Persons with Disability • Lesbian, Gay, Bisexual, Transgender, Queer, Intersex or Asexual (LGBTQIA+) Community • Indigenous People (IP) • Landless/ Homeless households • Fishing and coastal communities
City Level	- Interest groups (NGOs/POs) preferably those with mission/s specifically related to the type and impacts of the proposed undertaking/ project: • Fisheries and Aquatic Resources Management Council (FARMC) • Electric companies involved in OSW development. • Environmental NGOs - Local institutions (academic institutions, churches, hospital)

¹ Based from Magna Carta for Women Section 11, Participation and Representation.

Level	Stakeholder
	- People whose socio-economic welfare and cultural heritage are projected to be affected by the project especially vulnerable sectors and indigenous populations: • Women/ Women's Group/ Sector, where there should be 40% women representation, at minimum, always. • Children • Below poverty line/ Poor Sector • Elderly/ Senior Citizens Organization • Persons with Disability • Lesbian, Gay, Bisexual, Transgender, Queer, Intersex or Asexual (LGBTQIA+) Community • Indigenous People (IP) • Landless/ Homeless households • Fishing and coastal communities
Barangay Level	- Landowners, land users, households, business activities, industries that will be displaced, lose access to land or water, assets, income sources and means of livelihood. - People whose socio-economic condition, welfare and cultural heritage are projected to be affected by the project especially vulnerable groups and indigenous populations. • Women/ Women's Group/ Sector, where there should be 40% women representation, at minimum, at all times. • Children • Below poverty line/ Poor Sector • Elderly/ Senior Citizens Organization • Persons with Disability • Lesbian, Gay, Bisexual, Transgender, Queer, Intersex or Asexual (LGBTQIA+) Community • Indigenous People (IP) • Landless/ Homeless households • Fishing and coastal communities • Tourism Organizations - Supply chain businesses (potential provider of services or goods for the project, and potential recipient of services or goods from the project.)

Source: Asian Development Bank. (2024). **Guidance Note for Offshore Wind Energy Projects in the Philippines**. Technical Assistance Project: Environmental Safeguards Support for Philippine Offshore Wind and Solar Projects. Prepared by Ove Arup & Partners Hong Kong Limited (Philippines Branch).

ANNEX 11

MONITORING ACTIVITIES TO BE ACCOMPLISHED DURING PRE-DEVELOPMENT STAGE

Environmental and Social Receptor	Data Gathering Activity
Land	
Terrestrial and Marine Ornithology - Conduct a minimum of 24 consecutive months (4 full seasons) of monthly survey data for wintering, passage, and breeding birds, considering that the Philippines has various Important Bird Areas (IBAs), to consider the gathered data as valid. The method to conduct the survey can be referred to in the Guidance Document and Framework of Baseline Environmental Data for Offshore Wind (OSW) Projects (Arup, 2024) - Using the gathered data, the project proponent shall formulate an avian management plan for the identified onshore and offshore species to be incorporated into the EIS Report, which will be implemented upon proceeding with the development stage.	
Sea birds	- Parameters to be investigated: - Distribution and abundance in the project area and vicinity - Numbers of all flying and swimming individuals - Age and sex distribution - Recommended data and parameter sampling techniques and methods: - Ship transects surveys. - Aerial transects surveys. - Aerial photography
Migratory birds	- Flight direction and intensities at various altitude gradients (100 m steps) up to 1,000 m. - Recommended data and parameter sampling techniques and methods: - Radar surveys. - Visual Observations
Intertidal Marine Biodiversity	Conduct at least 2 full seasons (1 dry and 1 wet season) to establish complete data sets on seasonal variation of growth, cover, and composition patterns in different species and communities (e.g., sea grass beds and mangroves). The method to conduct the survey can also be referred to in the Guidance Document for Baseline Data.
Benthic Community Conduct up to 2 seasons of monitoring to establish complete data sets on seasonal variation of growth, cover, and composition patterns in different species and communities.	

Source: Asian Development Bank. (2024). *Guidance Document on Environmental and Social Compliance Monitoring Framework*. Technical Assistance Project: Environmental Safeguards Support for Philippine Offshore Wind and Solar Projects. Prepared by Ove Arup & Partners Hong Kong Limited (Philippines Branch).

Environmental and Social Receptor	Data Gathering Activity
The benthic investigations should be carried out at the same time as the fish surveys, but mutual disturbances must be avoided (Federal Maritime and Hydrographic Agency 2013).	
Infauna <i>Refers to benthic animals within the bottom substrate.</i>	- Parameters to be investigated: - Species' number and composition - Species' abundance - Biomass
Epifauna <i>Refers to benthic animals living on the bottom substrate.</i>	- Recommended data and parameter sampling techniques and methods: - Infauna - Grab sampling. - Statistical analyses (community analysis, spatial analysis) - Epifauna - Video (drop or transect) survey. - Bottom trawling (where appropriate) as part of fish survey - Sampling by certified divers (if required due to sensitivity of local receptors and if permitted) - Statistical analyses (community analysis, spatial analysis) - Modelling
Phytobenthos <i>Refers to plants belonging to the benthos.</i>	- Parameters to be investigated: - Species' number and composition - Coverage - Biomass - Recommended data and parameter sampling techniques and methods: - Video survey - Quantitative and qualitative sampling by certified divers (if required due to sensitivity of local receptors and if permitted) - Community analysis, spatial analysis, modelling)
Benthic habitats <i>Refers to the biological communities associated with the seafloor.</i>	- Parameters to be investigated: - Distribution and main characteristics of habitats - Recommended data and parameter sampling techniques and methods: - Video survey

Source: Asian Development Bank. (2024). **Guidance Document on Environmental and Social Compliance Monitoring Framework**. Technical Assistance Project: Environmental Safeguards Support for Philippine Offshore Wind and Solar Projects. Prepared by Ove Arup & Partners Hong Kong Limited (Philippines Branch).

Environmental and Social Receptor	Data Gathering Activity
	○ Sampling by certified divers (if required due to sensitivity of local receptors and if permitted) ○ Spatial modelling
Fishes • Conduct of fish investigation should ideally be quarterly over a complete 12-month period. • To enable the comparison of results from other data, it is recommended that the results are presented in this format: ○ Catch must be recorded using different nets (with the following information for each captured fish: station location, depth, mesh size, length, and weight). ▪ Catch per Unit Effort (CPUE) data by stations and mesh sizes. ▪ Weight per Unit Effort (WPUE) data by stations and mesh sizes ▪ Dominance ratios ▪ Length-frequency distribution of dominant species ▪ Community analysis	
Demersal fish species <i>Consist of organisms that are closely linked to the environments found on the seafloor. Hence, they are the ones that are most likely to be affected by any sea floor alteration during the OSW project development activities.</i>	• Parameters to be investigated: ○ Observed species and abundance. ○ Biomass ○ Dominance ratios • Recommended data and parameter sampling techniques and methods: ○ Bottom-set gill net fishing. ○ Otter trawl fishing ○ Stomach analyses of predatory fish (to identify small fish species that cannot be caught with gill nets)
Pelagic fish species <i>Are fish species primarily found in water columns, where they consume planktonic life.</i>	• Parameters to be investigated: ○ Observed species and abundance. ○ Biomass ○ Dominance ratios • Recommended data and parameter sampling techniques and methods: ○ Hydro acoustics ○ Pelagic (mid water) trawling ○ Vertical gillnets
Recruitment Process Fish larvae – primary stage of fish development after hatching	• Parameters to be investigated: ○ Spawning migration routes ○ Spawning grounds and related biological processes

Source: Asian Development Bank. (2024). **Guidance Document on Environmental and Social Compliance Monitoring Framework**. Technical Assistance Project: Environmental Safeguards Support for Philippine Offshore Wind and Solar Projects. Prepared by Ove Arup & Partners Hong Kong Limited (Philippines Branch).

Environmental and Social Receptor	Data Gathering Activity
	○ Nursery areas and related biological processes • Recommended data and parameter sampling techniques and methods: ○ Video tracking ○ Telemetry Fish larvae ○ For fish eggs: diving surveys, surveys using artificial spawning substrates. ○ Manual sampling with plankton nets and samplers from ship/boat.
Sea Turtles and Marine Mammals	• Two (2) annual cycles of vessel-based visual or aerial-based visual surveys for marine mammals and sea turtles. • Two annual cycles of PAM (passive acoustic monitoring) • Tagging of sea turtles with satellite trackers is also recommended to be done to observe their behavior (e.g., foraging areas, nesting areas, and diving areas) to further refine the environmental management plan in place.
Noise	
Underwater Noise Levels	• Existing baseline sound environment monitored in accordance with National Pollution Control Commission (NPCC) and DENR standards.
People	
• Number of resolved and unresolved community concerns related to transportation (traffic), local economic benefits (livelihood opportunities), cultural heritage preservation, and community health and safety, among other issues.	

Source: Asian Development Bank. (2024). **Guidance Document on Environmental and Social Compliance Monitoring Framework**. Technical Assistance Project: Environmental Safeguards Support for Philippine Offshore Wind and Solar Projects. Prepared by Ove Arup & Partners Hong Kong Limited (Philippines Branch).

ANNEX 12
PRIORITY MONITORING ACTIVITIES TO BE CONSIDERED FOR ALL OSW PROJECTS¹

No.	Environmental Receptor/ Environmental Component to be Monitored	Spatial Scale	Project Phase	Purpose of the Monitoring	Tools/Techniques	Frequency of Monitoring
1	Comprehensive mapping of benthic habitat, especially important habitat areas for fish (e.g., HAPC)	• Local • Sub-regional	• Pre-Construction • Construction • Post-Construction • Operation	To identify biogenic habitats, classify important areas, and characterize areas of likely high ecological importance, comprehensive benthic habitat studies are required prior to construction at offshore wind sites.	• Geophysical surveys with sonar and multibeam • Remotely Operated Vehicle (ROV)/ Autonomous Underwater Vehicle (AUV) surveys • Drop cameras. • Seabed sampling to identify bottom type and species present.	Semi-annual
2	Altered Hydrodynamics	• Local • Sub-Regional • Regional	• Pre-Construction • Post-Construction • Operation	Local hydrodynamics (turbulence, eddies) are affected by individual turbines; floating wind infrastructure's underwater mooring lines and cable arrays may also have these impacts. When combined, these could lead to more significant scale changes	• Acoustic Doppler Current Profiler (ADCP) measurements of current speed and direction	Semi-annual

¹ Natural Resource and Development Corporation: https://www.nrdc.org/sites/default/files/ow_marine-life_monitoring_guidelines.pdf

Source: Asian Development Bank. (2024). Guidance Document on Environmental and Social Compliance Monitoring Framework. Technical Assistance Project: Environmental Safeguards Support for Philippine Offshore Wind and Solar Projects. Prepared by Ove Arup & Partners Hong Kong Limited (Philippines Branch).

No.	Environmental Receptor/ Environmental Component to be Monitored	Spatial Scale	Project Phase	Purpose of the Monitoring	Tools/Techniques	Frequency of Monitoring
				(such as changed stratification), which could have an impact on connection, recruitment, and settlement, especially for important prey species. Hydrodynamics and ecological monitoring in parallel could help define the influence of altered hydrodynamics in a holistic perspective	• Temperature measurements at different depths • Hydrodynamic modelling	
3	Aerodynamics	• Local • Sub-Regional	• Pre-Construction • Construction • Post-Construction • Operation	Changes in local wind patterns due to turbine density, size, and installation scale could impact bird and bat behavior. Combining aerodynamic monitoring with ecological studies may reveal any effects of altered aerodynamics on airborne species.	• In-situ measurements of aerodynamics • Aerodynamic modelling	Semi-annual
4	Underwater Noise Levels	• Local • Sub-Regional	• Pre-Construction • Construction • Post-Construction • Operation	During offshore wind construction and operations, underwater noise (including vessel noise) has the potential to disturb or displace noise-sensitive species such as diving birds, fish, and marine mammals. It is essential to establish baseline noise conditions to monitor changes in noise levels.	• Long-term passive acoustic monitoring of soundscapes • Targeted noise monitoring during construction (e.g. pile driving) and operations.	Quarterly

Source: Asian Development Bank. (2024). *Guidance Document on Environmental and Social Compliance Monitoring Framework*. Technical Assistance Project: Environmental Safeguards Support for Philippine Offshore Wind and Solar Projects. Prepared by Ove Arup & Partners Hong Kong Limited (Philippines Branch).

No.	Environmental Receptor/ Environmental Component to be Monitored	Spatial Scale	Project Phase	Purpose of the Monitoring	Tools/Techniques	Frequency of Monitoring
				Additionally, monitoring can help determine whether different foundation types (e.g., floating technology, monopiles, gravity-based) emit varying noise levels during operations.	• Cumulative noise modelling	
5	Biological sound characteristics	• Local (multiple stations) • Sub-Regional	• Pre-Construction • Construction • Post-Construction • Operation	The distribution and density of taxa before, during, and after construction can be determined by long-term soundscape characterization. Additionally, during the operations phase, this method can yield information on fish recruitment levels, or the quantity of fish born and surviving to the juvenile stage.	• Hydrophone arrays, acoustic transect equipment (e.g., slocum and wave gliders, surface-tethered arrays, and acoustic vectors)	Semi-annual
6	Electromagnetic field (EMF) interference on species location	• Local • Sub-Regional	• Pre-Construction • Post Construction/Operation	Electromagnetic fields generated by the turbines during its operational phase can potentially interfere with the migration patterns and behavior of certain marine species (e.g., invertebrates, fish, sea turtles). Lab-based research on animal behaviors to varying EMF exposure levels should be	• Free-ranging telemetry for single or multiple species using BACI (before-after-control, impact) study design. • Direct measurement of EMF emitted from in-water floating wind inter-array cables.	Semi-annual

Source: Asian Development Bank. (2024). Guidance Document on Environmental and Social Compliance Monitoring Framework. Technical Assistance Project: Environmental Safeguards Support for Philippine Offshore Wind and Solar Projects. Prepared by Ove Arup & Partners Hong Kong Limited (Philippines Branch).

No.	Environmental Receptor/ Environmental Component to be Monitored	Spatial Scale	Project Phase	Purpose of the Monitoring	Tools/Techniques	Frequency of Monitoring
				combined with data from in-situ monitoring.		
7	Benthic habitat utilized by invertebrates, commercially and non-commercially significant species, including juvenile stages	• Local • Sub-Regional	• Pre-Construction • Construction • Post-Construction • Operation	Benthic habitats are intricate environments that provide support to the overall ecosystem. The base of the marine trophic pyramid is made up of benthic dwelling crustaceans, corals, mollusks, and worms. When evaluating the effects on species and communities, it is crucial to comprehend the effects of adding numerous novel structures (such as towers, scour protection, floating wind anchors, catenary mooring systems, foundations, floating wind mooring lines and inter-array cables, and cable mattresses), as well as the potential scour from these structures and the potential mobilization of sequestered pollutants (especially in situations where the availability of complex hard structures is a limiting factor). The outcomes could help guide future project designs that improve desired conditions and	• Benthic transects and sampling, water column sampling, and sediment sampling: Data collection should include species and condition counts, size and taxon specific biomass. • Visual surveys using ROV/ AUV • Benthic characteristics mapping to correlate species and habitat health. • Larval/adult traps • Tagging of Adults • Environmental DNA (eDNA) techniques to determine the presence or absence of species	Semi-annual

Source: Asian Development Bank. (2024). Guidance Document on Environmental and Social Compliance Monitoring Framework. Technical Assistance Project: Environmental Safeguards Support for Philippine Offshore Wind and Solar Projects. Prepared by Ove Arup & Partners Hong Kong Limited (Philippines Branch).

No.	Environmental Receptor/ Environmental Component to be Monitored	Spatial Scale	Project Phase	Purpose of the Monitoring	Tools/Techniques	Frequency of Monitoring
				notify regulators of the possible effects of different decommissioning required scenarios.		
8	Forage fish and invertebrates' distribution, habitat preferences, and relative juvenile stages of both commercially and non-commercially significant species.	• Local • Sub-Regional • Regional	• Pre-Construction • Construction • Post-Construction • Operation	Much like various vertebrate species and pelagic zooplankton, forage animals play a crucial role in marine food webs. Certain species among them hold both ecological and commercial importance. To mitigate the impact of offshore wind development, continuous monitoring of species behavior and broader utilization of diverse habitats are necessary. Given that offshore wind development can influence predator species and the overall ecosystem, monitoring its effects on species distribution and habitat use is essential.	• Side-scan sonar • Tagging of adults • Acoustic backscatter (ABS) • Field examination of fish condition and gravidity • eDNA techniques to predict the future presence or absence of species	Semi-annual
9	Migratory Fish Species	• Sub-Regional • Regional	• Pre-Construction • Construction • Post-Construction	When wind arrays affect the pelagic ecosystem and produce EMF that was not previously there, monitoring is necessary to comprehend the current migration pathways and changes in the	• Side Scan Sonar • Telemetry • Commercial fisheries catch data	Semi-annual

Source: Asian Development Bank. (2024). *Guidance Document on Environmental and Social Compliance Monitoring Framework*. Technical Assistance Project: Environmental Safeguards Support for Philippine Offshore Wind and Solar Projects. Prepared by Ove Arup & Partners Hong Kong Limited (Philippines Branch).

No.	Environmental Receptor/ Environmental Component to be Monitored	Spatial Scale	Project Phase	Purpose of the Monitoring	Tools/Techniques	Frequency of Monitoring
			• Operation	behavior of migratory species. The extraction of wind energy on a local and regional scale can also alter upwelling conditions and currents, which might impact migration patterns.	• Current pattern and upwelling energy hydrodynamic monitoring. • Acoustic Tagging	
10	Coastal and oceanic distribution and migration corridors	• Sub-Regional • Regional	• Pre-Construction • Construction • Post-Construction • Operation	To evaluate overlap with development areas and track impacts, additional data on the distribution of various species in the water and their habitat use is required. Infrastructure can displace species from their preferred habitat areas, function as a barrier to migration, or serve as a fish-aggregating device (FAD).	• Tagging (satellite, acoustic, biologging) to track movement and characterize behavior, • Fishery catch data (commercial, recreational) can inform oceanic distribution and potential changes. • Underwater video monitoring • Vessel surveys and sampling (net tows and trawling) • Water turbulence to detect oceanographic changes.	Semi-annual

Source: Asian Development Bank. (2024). *Guidance Document on Environmental and Social Compliance Monitoring Framework*. Technical Assistance Project: Environmental Safeguards Support for Philippine Offshore Wind and Solar Projects. Prepared by Ove Arup & Partners Hong Kong Limited (Philippines Branch).

No.	Environmental Receptor/ Environmental Component to be Monitored	Spatial Scale	Project Phase	Purpose of the Monitoring	Tools/Techniques	Frequency of Monitoring
11	Distribution, pattern of habitat uses, and movement of marine mammals	• Local • Sub-Regional • Regional	• Pre-Construction • Construction • Post Construction • Operation	All regions need to monitor the occurrence, distribution, and habitat use of marine mammals since these species are undergoing significant changes in their distribution due to changes in the distribution of their prey caused by climate change. To comprehend potential displacement impacts and determine if any observed changes are a result of climate change, offshore wind development, or other causes, long-term pre- and post-construction monitoring is necessary. Additionally, by providing this information, impact assessments would be enhanced, and measures for monitoring and mitigation would be advised.	• Manned-aerial survey (for large whales) • Digital aerial surveys (small cetaceans, dugongs) • Infrared monitoring – vessel based (cetaceans) • Shore-based surveys (coastal species, dugongs) • PAM • Animal-borne satellite, acoustic, and other sensory tags • Prey sampling	Semi-annual
12	Sea turtle movements, distribution, and habitat use patterns.	• Local • Sub-Regional • Regional	• Pre-Construction • Construction • Post-Construction	All regions should have a thorough understanding of the prevalence and habitat use of sea turtles. To identify possible displacement impacts and determine if any changes are due	• Acoustic telemetry of caught wild and rehabilitated sea turtles. • Satellite telemetry	Semi-annual

Source: Asian Development Bank. (2024). **Guidance Document on Environmental and Social Compliance Monitoring Framework**. Technical Assistance Project: Environmental Safeguards Support for Philippine Offshore Wind and Solar Projects. Prepared by Ove Arup & Partners Hong Kong Limited (Philippines Branch).

No.	Environmental Receptor/ Environmental Component to be Monitored	Spatial Scale	Project Phase	Purpose of the Monitoring	Tools/Techniques	Frequency of Monitoring
			• Operation	to climate change, offshore wind development, or other reasons, long term monitoring commencing from the project's pre-construction to the operation phase is necessary. Additionally, information on movement, dive patterns, and surface time data would also enhance impact evaluations and provide guidance for mitigation and monitoring plans.	• Aerial surveys (visual, digital)	
13	Bird and bat collision risk monitoring	• Local	• Pre-construction • Post-Construction • Operation (until a suitable strike detection system technology is installed)	Determining which species are most vulnerable to collisions is essential for assessing how offshore wind energy projects will affect bats and birds. Technological innovation is critical, and a combination of technologies will be needed to better estimate expected collision rates in the interim, as no monitoring tool now in use is able to attribute collision events to species in the offshore environment.	• Marine radar to assess flight altitude and flux, particularly during migration. • Tracking technologies to estimate macro-avoidance rates. • Near infrared video technologies (aerial-based infrared monitoring) and targeted behavioral studies to estimate micro-avoidance rates	Semi-annual

Source: Asian Development Bank. (2024). Guidance Document on Environmental and Social Compliance Monitoring Framework. Technical Assistance Project: Environmental Safeguards Support for Philippine Offshore Wind and Solar Projects. Prepared by Ove Arup & Partners Hong Kong Limited (Philippines Branch).

No.	Environmental Receptor/ Environmental Component to be Monitored	Spatial Scale	Project Phase	Purpose of the Monitoring	Tools/Techniques	Frequency of Monitoring
					to inform Collision Risk Models.	
14	Bird and bat collision detection monitoring	Local	- Post-Construction - Operation	Advanced collision detection technology capable of pinpointing impacts at the species level is essential for assessing offshore environmental impacts. Currently, no existing monitoring technology can directly attribute collision events to specific species in offshore areas. Therefore, technological progress is vital, and a combination of innovative approaches will be necessary to estimate collision rates more accurately in the meantime.	- The combination of near-infrared video technology with acoustic surveys has the potential to detect collisions using thermal video and identify them based on sound identification. - Once strike detection technology is available, it should be deployed to track collision throughout the project's duration.	Semi-annual
15	Bird displacement, attraction, and barrier effects	- Sub-Regional - Regional	- Pre-Construction - Post Construction - Operation	To understand how offshore wind development affects 1) bird distribution in and near wind arrays and 2) migratory bird movements and paths, baseline data is necessary. These effects could have a detrimental effect on energy budgets or lead to habitat degradation, which would alter	Avian tracking studies, including automated radio telemetry nanotags and receivers, Global Positioning System (GPS) satellite tag, geolocators and altimeters as	Semi-annual

Source: Asian Development Bank. (2024). *Guidance Document on Environmental and Social Compliance Monitoring Framework*. Technical Assistance Project: Environmental Safeguards Support for Philippine Offshore Wind and Solar Projects. Prepared by Ove Arup & Partners Hong Kong Limited (Philippines Branch).

No.	Environmental Receptor/ Environmental Component to be Monitored	Spatial Scale	Project Phase	Purpose of the Monitoring	Tools/Techniques	Frequency of Monitoring
				population vital rates and have an influence at the local breeding colony level. The potential attraction or barrier effects of offshore wind turbine may differ for floating and fixed platforms. Floating turbines are also usually located further from the shoreline, which can provide resting place to migrating birds, which could increase risk of collision on some species. This is also to identify the infrasonic impacts of blade/mast and tip vortices interaction with bird species.	appropriate for the species of concern. This may require installation of automated radio telemetry receivers through the turbine array. • Radar surveys to detect attraction to turbines. • Motus telemetry receiving stations in coastal or island locations, and on installed turbines. • Digital aerial and vessel surveys as needed. • Marine Radar • Infrasonic soundscape characterization	
16	Monitoring of trans-oceanic and trans-equatorial migrants	• Local • Sub-Regional	• Pre-Construction • Post-Construction	To comprehend the species-specific exposure to potential impacts from offshore wind energy development, further data	• Automated radio telemetry nanotags (occurrence, flight height, direction)	Semi-annual

Source: Asian Development Bank. (2024). *Guidance Document on Environmental and Social Compliance Monitoring Framework*. Technical Assistance Project: Environmental Safeguards Support for Philippine Offshore Wind and Solar Projects. Prepared by Ove Arup & Partners Hong Kong Limited (Philippines Branch).

No.	Environmental Receptor/ Environmental Component to be Monitored	Spatial Scale	Project Phase	Purpose of the Monitoring	Tools/Techniques	Frequency of Monitoring
		Regional	Operation	on the nocturnal migrants' movement patterns (e.g., timing, flying heights, direction) is needed.	- Marine radar (influx, timing, altitude) - Flight calls acoustic monitoring (for birds with sufficient vocalizations)	
17	Activity rate of bats in the offshore wind project area	Local	- Post-Construction - Operation	Understanding whether and how bats are drawn to offshore wind turbines should be the top goal throughout the operational phase of monitoring, given their apparent attraction to turbines in the terrestrial environment.	Acoustic detectors	Semi-annual
18	Socio-economic impacts (e.g., livelihoods, local benefits)	Local	- Pre-Construction - Post-Construction - Operation	Assess impacts on local communities, livelihoods, and benefits	- Key Informant Interviews (KII); Focus Group Discussion - Records from Grievance redress mechanism	All throughout the project phases, ensure there is a mechanism for meaningful stakeholder feedback and addressing issues, including a structured grievance mechanism for resolving concerns

Source: Asian Development Bank. (2024). *Guidance Document on Environmental and Social Compliance Monitoring Framework*. Technical Assistance Project: Environmental Safeguards Support for Philippine Offshore Wind and Solar Projects. Prepared by Ove Arup & Partners Hong Kong Limited (Philippines Branch).

No.	Environmental Receptor/ Environmental Component to be Monitored	Spatial Scale	Project Phase	Purpose of the Monitoring	Tools/Techniques	Frequency of Monitoring
19	Community Health and Safety	Local	- Construction - Operation	Ensuring compliance with health and safety regulations and minimizing impacts on community well-being.	- Incident System - Records Grievance mechanism	Reporting from redress Monthly during active construction phases and needed for ongoing monitoring Monitoring the Self-Monitoring Plan (SMP) involves reviewing submitted documents and conducting site visits to verify implementation

Source: Asian Development Bank. (2024). **Guidance Document on Environmental and Social Compliance Monitoring Framework**. Technical Assistance Project: Environmental Safeguards Support for Philippine Offshore Wind and Solar Projects. Prepared by Ove Arup & Partners Hong Kong Limited (Philippines Branch).

ANNEX 13
MONITORING TOOLS/TECHNIQUES FOR ENVIRONMENTAL AND SOCIAL RECEPTORS

No.	Tool / Technique	Description	Environmental/ Social Receptor	Spatial Scale	Project Phase
1	Seabed Sampling	Collects sediment samples at up to 40 meters below the surface using either a grab sampler, a remotely operated vehicle, or if necessary because of the sensitivity of the local receptors, by certified divers. This process helps determine both the bottom type and the species of benthic organisms present, while also providing a brief overview of the circumstances at the time of the sampling. Time series data can be used to track the occurrence and distribution of benthic species over time and space if mapped.	• Benthic Species	• Sub-Regional • Regional	• Pre-Construction • Post-Construction
2	Underwater video monitoring	Installed underwater cameras, whether baited or not, offer non-intrusive presence and behavioral data (e.g. foraging) on how local species use the area. Species interactions with offshore wind facilities (e.g., if they act as aggregating devices) can be tracked using time series data.	• Fish and invertebrates	• Local	• Post-Construction
3	Acoustic back scatter	An acoustic device is used to emit sound and monitor the resulting echoes. The gathered data provides information about the existence of organisms, geographical patterns, and abundance levels. It also makes it possible to identify important groups of fish or other microscopic marine animals present at the time of sampling. Over time, time series data can reveal how the occurrence and spatial dynamics of zooplankton and fish may evolve.	• Fish • Zooplankton	• Local, • Sub-Regional	• Pre-construction, • Post Construction
4	Vessel-based visual survey	Depending on the scope of the study, observers are situated on a vessel conducting an off-track focal follow or a standard transect survey. This approach provides data on species presence, abundance, and distribution. It is possible to identify changes in occurrence, distribution, and habitat usage using time series data.	• Small and large cetaceans • Sea turtles • Birds	• Local, • Sub-Regional, • Regional	• Pre-Construction, • Construction, • Post-Construction

Source: Asian Development Bank. (2024). *Guidance Document on Environmental and Social Compliance Monitoring Framework*. Technical Assistance Project: Environmental Safeguards Support for Philippine Offshore Wind and Solar Projects. Prepared by Ove Arup & Partners Hong Kong Limited (Philippines Branch).

No.	Tool / Technique	Description	Environmental/ Social Receptor	Spatial Scale	Project Phase
		For certain taxa, estimates of species density can be created by distance sampling. Compared to digital or manned aerial surveys, vessel-based visual surveys cover a smaller survey area but, depending on the taxon, provide comparatively greater rates of species identification. They can also be used to watch different behavioral states (like foraging). It's crucial to remember that bird identification may not be as good as other techniques and that boats can cause a bias in detection by frightening away birds.			
5	Manned-aerial survey	Low-altitude aircraft are used to record sightings of marine mammals and other taxa by trained spotters. Time series data on species presence can be used to identify changes in distribution and habitat use. Some species' densities can be estimated via distance sampling. Spotters can also record behavioral data (such as foraging, migration, and socializing). The technique most used is distance sampling, it can be modified to incorporate off-track focal points. Large whales are more frequently detected by manned aerial surveys than by digital aerial surveys, while species identification for small cetaceans, sea turtles, and huge fish is more difficult. Whale monitoring surveys are conducted at high altitudes that make it impractical to see and identify birds. It is necessary to calibrate manned aerial surveys to ensure they fly higher than the turbines after they are installed.	• Large cetaceans • Sea turtles • Birds • Large fish,	• Local • Sub-Regional • Regional	• Pre-Construction, • Construction, • Post-Construction
6	Digital aerial survey	This method has a similar function to the manned-aerial survey, but it uses a camera in place of a spotter. The photographs are recorded in a database and then used for species identification. Changes in occurrence, distribution, and habitat usage can be identified using time-series data. Distance sampling can be used to provide estimates of species density. Comparing this technology to surveys, it has a greater detection and species-level recognition rate for birds, sea turtles, and some fish. However, due to the limited strip width,	• Small cetaceans • Sea turtles • Birds • Large fish	• Local • Sub-Regional • Regional	• Pre-Construction, • Construction • Post-Construction

Source: Asian Development Bank. (2024). *Guidance Document on Environmental and Social Compliance Monitoring Framework*. Technical Assistance Project: Environmental Safeguards Support for Philippine Offshore Wind and Solar Projects. Prepared by Ove Arup & Partners Hong Kong Limited (Philippines Branch).

No.	Tool / Technique	Description	Environmental/ Social Receptor	Spatial Scale	Project Phase
		lack of real-time ability to watch actions (e.g., whale blow, diving), and inability to do off-track focus, detection of large whales is limited. Large-bodied seabirds that are easily distinguishable from one another are ideal for avian detection. The collected data through this method also requires lengthy post-processing in order to access results.			
7	Aerial Infrared Monitoring	Unmanned aircraft systems equipped with infrared cameras can record important nighttime flight data. They are helpful for collision risk models as well as determining presence on-site. Long-term monitoring can collect the necessary data to produce time series capable of detecting changes in occurrence, distribution, and habitat usage.	• Bird and bats	• Local	• Pre-Construction • Post-Construction
8	Vessel-based Infrared Monitoring	Infrared cameras installed on vessels and operated by trained observers enhance the detection of cetaceans during nighttime hours. While the effectiveness of this technology is still under evaluation for various species, preliminary results suggest that it serves as an effective complementary monitoring method even during daylight. However, its performance is constrained by adverse weather conditions such as rain or fog. These infrared cameras provide technological support for manned observations during vessel-based surveys, primarily aimed at supporting mitigation protocols	• Cetaceans	• Local	• Construction
9	Satellite Telemetry	Satellite tags are affixed to individuals within a population, capturing and storing geospatial data about their movements. For marine animals, these tags necessitate surface time to acquire coordinates from satellites. Various tag types exist, ranging from short-term suction tags to long-term deep-implant tags, with the latter potentially requiring permits and facing restrictions for endangered species. Some tags must be removed from the individual for data	• Small and large cetaceans • Surface oriented fishes • Bats • Sea turtles • Birds.	• Local • Sub-Regional • Regional	• Pre-Construction, • Construction, • Post-Construction

Source: Asian Development Bank. (2024). *Guidance Document on Environmental and Social Compliance Monitoring Framework*. Technical Assistance Project: Environmental Safeguards Support for Philippine Offshore Wind and Solar Projects. Prepared by Ove Arup & Partners Hong Kong Limited (Philippines Branch).

No.	Tool / Technique	Description	Environmental/ Social Receptor	Spatial Scale	Project Phase
		retrieval. It's crucial to recognize that usage is constrained by battery life or attachment duration to the animal, which can span from hours to months based on the tag type. Satellite tags can be complemented by other sensors, such as pressure sensors for in-water species' dive depth detection, altimeters to track flight altitudes of birds and bats (critical for assessing risks from offshore wind energy projects), and acoustic and environmental sensors. These combined data streams facilitate the development of longer-term models for population movements and behaviors.			
10	Radio Telemetry	A radio transmitter is attached to the individual's body, transmitting a radio signal received by an offshore antenna and radio receiver. Unlike manual radio telemetry methods, this process is automated. Multiple radio receivers are necessary for accurate triangulation of the individual. Beyond providing insights into individual habitat usage offshore (such as migratory movements for birds and bats), it enables density estimation and the detection of species presence and usage patterns across a specific area.	• Marine mammals with site fidelity, • Birds • Bats	• Local • Sub-Regional • Regional	• Pre-Construction • Post-Construction
11	Water Turbulence	The most common method for measuring ocean turbulence involves using velocimeters to assess water flow. Some academic research has combined velocimeters with temperature readings to create a more comprehensive model of turbulence changes. Depending on the context, these sensors are deployed underwater using oceanographic moorings. Given that turbulence effects related to offshore wind energy are still being studied, it is advisable to pair water turbulence monitors with other monitoring efforts that utilize oceanographic moorings. These applications range from detecting immediate oceanographic changes around individual turbines or sites to monitoring long-term oceanographic shifts resulting from cumulative commercial expansion of offshore wind energy	• Ecosystem	• Local • Regional	• Pre-Construction • Post-Construction

Source: Asian Development Bank. (2024). Guidance Document on Environmental and Social Compliance Monitoring Framework. Technical Assistance Project: Environmental Safeguards Support for Philippine Offshore Wind and Solar Projects. Prepared by Ove Arup & Partners Hong Kong Limited (Philippines Branch).

No.	Tool / Technique	Description	Environmental/ Social Receptor	Spatial Scale	Project Phase
12	Passive Acoustic Monitoring (PAM) (below water)	Hydrophones are submerged in water to capture sound readings from the broader ocean environment. This technique offers comprehensive insight into the soundscape of the regional marine environment through long-term monitoring of ambient noise levels or by detecting the presence of specific species (such as baleen whale calls). Passive acoustic monitoring systems can continuously record data for several weeks up to multiple years, with analysis requiring data retrieval from the hydrophone	• Large and small cetaceans • Broader ecosystem	• Local • Sub-Regional • Regional	• Pre-Construction • Construction • Post-Construction
13	Marine Radar	This is used to detect the vertical profiles of animals in flight, enabling large-scale tracking of their movements across regions. It requires either existing weather radar systems or the installation of specialized radar technology designed for wildlife monitoring. While specialized technology provides more detailed information, weather radar is already widely implemented	• Birds • Bats	• Regional	• Pre-Construction • Construction • Post-Construction
14	Collision Detection	By attaching a collision sensor to each blade, it becomes possible to monitor for bird or bat collisions that might otherwise go unnoticed. The most effective collision detection technologies involve multi-modal sensors that pair an inertial monitor with a contact microphone and a micro camera. Once triggered by a collision event, the micro camera provides video footage from before and after the collision. Although these technologies are still largely in development, in theory, receivers can be installed for the lifetime of the offshore wind energy project."	• Birds • Bats	• Local	• Post-Construction
15	Acoustic Receivers	Acoustic receivers are designed to recognize and capture bat calls at frequencies outside of human hearing, translating them into recognized audio signals. To mitigate sound interference from wind turbines, it's advisable to choose microphones with shielding or those that are not omnidirectional. These receivers can be installed for the lifetime of an offshore wind energy project, although regular	• Birds • Bats	• Local	• Post-Construction

Source: Asian Development Bank. (2024). Guidance Document on Environmental and Social Compliance Monitoring Framework. Technical Assistance Project: Environmental Safeguards Support for Philippine Offshore Wind and Solar Projects. Prepared by Ove Arup & Partners Hong Kong Limited (Philippines Branch).

No.	Tool / Technique	Description	Environmental/ Social Receptor	Spatial Scale	Project Phase
		upkeep is necessary for battery life and data retrieval. While they are used for both birds and bats, they do not capture species that might not vocalize (e.g., during migration) and do not estimate flux. Therefore, it's recommended to use them in conjunction with other methods to address these limitations			
16	Incident Reporting System	Systematic approach for documenting, tracking, and responding to incidents, accidents, or safety concerns affecting community health and safety, including occupational health issues and safety hazards within the project vicinity.	• Community	• Local	• All project Phases

Source: Asian Development Bank. (2024). **Guidance Document on Environmental and Social Compliance Monitoring Framework**. Technical Assistance Project: Environmental Safeguards Support for Philippine Offshore Wind and Solar Projects. Prepared by Ove Arup & Partners Hong Kong Limited (Philippines Branch).

**PRO-FORMA MOA ON THE CREATION OF THE MULTI-PARTITE MONITORING
TEAM (MMT), ENVIRONMENTAL MONITORING FUND (EMF) AND
ENVIRONMENTAL GUARANTEE FUND (EGF)**

**MEMORANDUM OF AGREEMENT
ON THE CREATION OF THE
MULTI-PARTITE MONITORING TEAM,
ENVIRONMENTAL MONITORING FUND
AND THE ENVIRONMENTAL GUARANTEE FUND**

KNOW ALL MEN BY THESE PRESENTS:

This Memorandum of Agreement is made and entered into this _____ day of _____, at _____ by and among:

The **DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES**, through the **ENVIRONMENTAL MANAGEMENT BUREAU** with principal office at EMB, Bldg., DENR Compound, Visayas Avenue, Diliman, Quezon City, represented by its Director, _____ hereinafter referred to as **EMB**;

-And-

The (state the *Official Name of the Proponent: Company/Corporation*), with principal office at _____, represented by its (President), _____, hereinafter referred to as [*acronym of the company/corporation (proponent)*];

WITNESSETH, That:

WHEREAS:

- (i) (state *Proponent*) has been issued an Environmental Compliance Certificate (ECC) with ECC Reference Code No. _____ on (date of issuance) pursuant to Presidential Decree No. 1586 for its proposed (state the *Official Name of the Project and its exact location*), hereinafter referred to as the PROJECT;
- (ii) The ECC requires, as a condition, the formation of a Multi-partite Monitoring Team, hereinafter referred to as MMT, and shall be composed of representatives of the DENR, the (state *Proponent*), the [state *Local Government Units (LGUs: Province, Municipality or City, Barangay)*], [state *duly accredited Non-Governmental Organization (NGO)/People's Organization (PO) in the area*] and the affected communities/vulnerable groups;
- (iii) The ECC requires, as a condition, the establishment of an Environmental Guarantee Fund, hereinafter referred to as EGF, as a fund source for the indemnification of damages caused by the PROJECT and immediate rehabilitation and/or restoration of affected ecosystems, and Environmental Monitoring Fund, hereinafter referred to as EMF, to cover the expenses of environmental monitoring and surveillance activities;
- (iv) The Parties desire to clarify and thus define hereunder their respective commitments and responsibilities in connection with the formation of the MMT and the establishment of the EGF and EMF;

NOW, THEREFORE, for and in consideration of the foregoing premises and the mutual covenants set forth herein, the Parties hereto agree as follows:

**PRO-FORMA MOA ON THE CREATION OF THE MULTI-PARTITE MONITORING
TEAM (MMT), ENVIRONMENTAL MONITORING FUND (EMF) AND
ENVIRONMENTAL GUARANTEE FUND (EGF)**

TITLE I. THE MMT ORGANIZATION

SECTION A. COMPOSITION

The following shall be represented in the MMT:

1. Environmental Management Bureau (*include for projects issued PECC and those whose impact area covers more than 1 region*)
2. DENR Regional Office (*please state region*)
3. Proponent (*please state*)
4. LGU/s representing the affected communities based on the project/program impact assessment predictions (*please state*)
5. Accredited NGOs / POs representing the affected sectors based on the project/program impact assessment predictions (*please state*)
6. Concerned government agencies with mandates significantly affected by the project/program impact predictions (*please state*)

SECTION B. MMT STRUCTURE AND LEADERSHIP

The MMT shall be headed by _____ (*as a general rule, the DENR-EMB Regional Director shall serve as the MMT Chair. In some cases, the provisions of the MOA on the establishment of the MMT may specify procedures for the selection of the MMT Chair. The selection of non-DENR persons as chair of the MMT shall require prior concurrence of the DENR-EMB RD concerned*).

The following shall serve as the MMT Organizational Structure:

(The organizational structure should be well thought out and discussed, to avoid ambiguity with regards to the chain of command and other important aspects of MMT operations).

(An executive committee (Exec Com) may be formed if necessary – Creation of Exec Com is advisable if MMT membership is rather large, and MMT covers more than two geopolitical units. Otherwise, a simple structure with functional committees will suffice. In case of simple/straightforward-structured MMTs, officers responsible for orderly and effective operations of the MMT as a group may be elected to function as Exec Com. Roles and responsibilities as officers must be distinguished from roles and responsibilities as members of Committees that perform specific monitoring tasks).

The _____ shall head the MMT Secretariat with the following as members:

(*State the Proponent Name*)

(*State the concerned LGU*)

EMB-DENR Region ____

Sectoral Monitoring Teams (SMT) may be organized:

1. *by the environment sectoral impact concerns (air, water, etc) which are identified as critical monitoring concern or*
2. *by the geopolitical units identified as impact area (for projects w/ rather large impact area)*

**PRO-FORMA MOA ON THE CREATION OF THE MULTI-PARTITE MONITORING
TEAM (MMT), ENVIRONMENTAL MONITORING FUND (EMF) AND
ENVIRONMENTAL GUARANTEE FUND (EGF)**

Sectoral monitoring teams organized by the environment sectoral impact concerns shall be composed of MMT members representing sectors identified as affected by the sectoral impact or those conversant with the assessment of impacts on the particular environmental sector.

Sectoral monitoring teams organized by geopolitical units shall be composed of the following:

1. PENRO or CENRO (state area/jurisdiction) or EMB RO personnel assigned in the project area as the over-all head and Team/Unit Leader
2. LGU Representative (barangay, municipal level)
3. NGO Representative
4. (State Concerned Gov't agency (regional level)
5. (State the Position of the Proponent Representative)

SECTION C: MEMBERSHIP

The MMT shall be multi-sectoral and shall have representations from the stakeholders as identified in Section A above. The identified offices / sector shall officially designate/authorize through a written office order, endorsement letter or similar instruments, a representative to be a member of the MMT who must:

1. Be able to regularly attend meetings, orientations, training, actual monitoring and reporting activities.
2. Be able to read, write and learn the various aspects of monitoring.
3. Be credible to the larger community and without any criminal or administrative cases
(an alternate member for each represented entity may be officially designated if deemed necessary)

The EMB shall confirm and update the official listing of MMT Members.

**TITLE II. MMT FUNCTIONS, INSTITUTIONAL ARRANGEMENTS AND
RESPONSIBILITIES**

SECTION A. MAJOR FUNCTIONS OF THE MMT

Functions of MMT are as follows:

1. Monitor project compliance with the conditions stipulated in the ECC (**Annex A**) and the EMP (**Annex B**);
2. Validate proponent's conduct of self monitoring
3. Receive complaints, gather relevant information to facilitate determination of validity of complaints or concerns about the project and timely transmit to the proponent and EMB recommended measures to address the complaint
4. Prepare, integrate & disseminate simplified monitoring reports to community stakeholders
5. Make regular and timely submission of MMT Report based on the EMB-prescribed format

SECTION B. INSTITUTIONAL ARRANGEMENTS AND RESPONSIBILITIES

The EMB Central Office (*who may not be a represented as regular member of the MMT based on specifications stated in Section A of Title I*) shall be responsible for taking the lead in policy guidance, resolution of issues where consensus or decisions cannot be made at the regional level, the provision of needed support for the operationalization of the MMT and MMT Performance validation.

**PRO-FORMA MOA ON THE CREATION OF THE MULTI-PARTITE MONITORING
TEAM (MMT), ENVIRONMENTAL MONITORING FUND (EMF) AND
ENVIRONMENTAL GUARANTEE FUND (EGF)**

Other member offices/sector identified in Section A of Title I as needing representation in the MMT shall have the following roles, duties and responsibilities:

EMB Regional Office shall designate a representative who shall assure strict adherence with the policies and implementing rules and regulations governing the formation and operationalization of the MMT and shall initiate transmittal to the EMB Central Office for resolution, regional or project specific issues where consensus or decisions cannot be made at the regional level. *(In the case of the presence of field units or personnel in charge of areas/site hosting the project, the EMB RO may designate personnel to lead the SMT instead of the PENRO or CENRO)*

DENR-Provincial Environment and Natural Resources Officer (PENRO), the DENR-Community Environment and Natural Resources Officer (CENRO) or the EMB-RO Personnel in charge of the areas/site hosting the Project shall lead the *SMT organized by geopolitical units* in undertaking actual monitoring activities and act with dispatch on issues/problems that arise relative to the PROJECT being monitored. *(In case of the presence of EMB field unit or personnel in charge of area/site hosting the project, the EMB RO may designate its personnel to lead the SMT instead of the PENRO or CENRO)*

(state Proponent) shall provide necessary budget/funds for the MMT activities, make available to the MMT all project information necessary to determine compliance with the environmental requirements and commitments to the extent that such information is not subject to any restrictions and confidentiality, coordinate with and allow the MMT members to inspect and observe construction and operation activities of the PROJECT including the testing, calibration and operation of pollution control and in-house monitoring equipment.

(state Local Government Units) shall designate a representative who shall participate in actual monitoring work, prepare or concur with and sign the MMT monitoring reports, provide the necessary information about local policies, plans and programs affecting MMT monitoring results and standards, advise the MMT of any complaints, information or reports from LGUs concerning the PROJECT.

(state NGO/PO and other vulnerable groups) shall designate a representative who shall participate in actual monitoring work, prepare or concur with and sign the monitoring reports, provide the necessary information such as update regarding the perceptible impact of the project on the sector/concern being represented.

As may be required from time to time, MMT may request the assistance of *(state other relevant government agencies and other sectors)* to provide the necessary information about agency/sectoral policies, plans and programs affecting MMT monitoring results and standards and participate in the actual monitoring activity and concur with and sign the monitoring reports.

TITLE III. MMT OPERATIONS AND PROCEDURES

SECTION A. MMT MANUAL OF OPERATIONS

All MMT activities shall be guided by a Manual of Operations (MOO) to be prepared based on the EMB-prescribed generic manual of operations which shall be customized based on the project type/situation and the corresponding monitoring requirements and submitted to EMB for approval within sixty (60) days from the signing of this MOA. The MOO shall contain, at the minimum, the following:

**PRO-FORMA MOA ON THE CREATION OF THE MULTI-PARTITE MONITORING
TEAM (MMT), ENVIRONMENTAL MONITORING FUND (EMF) AND
ENVIRONMENTAL GUARANTEE FUND (EGF)**

MMT Code of Ethics

- I. INTRODUCTION
- II. PROJECT BACKGROUND
- III. LEGAL BASIS
- IV. VISION-MISSION
- V. OBJECTIVES
- VI. GENERAL FUNCTIONS
- VII. MEMBERSHIP
 - 7.1 Selection Process and Criteria for Membership
 - 7.2 Suspension/Removal, Resignation and Replacement of Members
- VIII. ORGANIZATION
 - 8.1 MMT Structure and leadership
 - 8.2 General Roles, Duties And Responsibilities Of MMT Members
 - 8.3 Specific Roles, Duties And Responsibilities Of MMT Members
- IX. FUND ADMINISTRATION AND MANAGEMENT
 - 9.1 Amount of EMF
 - 9.2 Utilization of EMF / Preparation of a Work and Financial Plan
 - 9.3 Management of the Fund
 - 9.4 Disbursement and Auditing Procedures
- X. ACTIVITIES AND CORRESPONDING GUIDELINES
 - 10.1 Meetings
 - 10.1.1 Regular Meetings
 - 10.1.2 Special Meetings
 - 10.1.3 Notice of Meetings
 - 10.1.4 Quorum
 - 10.1.5 Proxy Voting
 - 10.2 Compliance Monitoring, Site Validation and Reporting
 - 10.2.1 Document Review – ECC & EMP Commitments, EIA Predictions, Previous and Current Monitoring Reports
 - 10.2.2 Site Validation
 - 10.2.3 Confirmatory Sampling and Measurement Activities
 - 10.2.4 Complaint Verification and Management
 - 10.2.5 Reporting – Compliance Monitoring and Validation Report
 - 10.3 Records Keeping
 - 10.4 Public Disclosure and IEC
 - 10.5 Other MMT Operations Enhancement Activities
 - 10.5.1 Review of Proponent's Monitoring Protocols
 - 10.5.2 MMT Performance Validation
 - 10.5.3 Annual Planning Workshop
 - 10.5.4 Trainings

The MOO may be updated as the need arises to address operational problems and for continuous improvement of the MMT operations.

**PRO-FORMA MOA ON THE CREATION OF THE MULTI-PARTITE MONITORING
TEAM (MMT), ENVIRONMENTAL MONITORING FUND (EMF) AND
ENVIRONMENTAL GUARANTEE FUND (EGF)**

SECTION B. ESTABLISHMENT OF THE ENVIRONMENTAL MANAGEMENT FUND (EMF)

The EMF is a fund that the proponent shall commit to establish to support the activities of the MMT as described in the EMB-approved Annual Work and Financial Plan (AWFP).

(state Proponent) shall arrange the opening of an account in a reputable bank in the country for the EMF within ten (10) banking days after the effectivity of this Agreement, the amount of *[state the proposed amount: e.g. FOUR HUNDRED THOUSAND PESOS (PHP 400,000)]* to finance the initial organizational activities of the MMT for the PROJECT based on the attached Work and Financial Plan (**Annex C**). The Interest shall accrue to the same fund. Replenishment of this amount shall be done by the proponent regularly to correspond to the EMB-approved annual work and financial plan.

SECTION C. EMF ADMINISTRATION AND MANAGEMENT

The EMF shall be exclusively utilized to cover all costs attendant to the operation of the MMT and disbursed in accordance with the guidelines stipulated in the approved MOO. The EMF shall be managed and administered by *[duly elected/appointed fund manager-MMT member organization who has an acceptable and operational financial accounting system]* in accordance with the MMT MOO and annual work and financial plan.

A separate bank account of the EMF shall be established. The signatories shall be the designated MMT Chairman and Vice-chairman

The MMT Secretariat shall undertake the accounting of all expenses by the MMT which the Exec Com / Officers shall oversee.

An external auditor may be commissioned by the MMT, proponent or EMB to conduct audit on the expenditure/disbursement of EMF in accordance with applicable rules and guidelines *(the MMT has to discuss among the members if this will be done on a regular basis or at whose option will the audit be conducted and along with the audit procedures, shall be spelled out in the MOO)*

SECTION D. DOCUMENTATION, REPORTING AND RECORDS KEEPING

All MMT activities shall be documented and a report following the EMB-prescribed format shall be submitted semi-annually to EMB CO (in the case of MMTs for ECPs) and the EMB RO. The MMT shall document relevant data, technical references and compile monitoring reports and store them at *(MMT shall decide on the records repository to be specified here)*, under the custody of *(specify custodian: preferably member of the MMT)*.

TITLE IV. ENVIRONMENTAL GUARANTEE FUND (EGF)

SECTION A. OBJECTIVE

The EGF shall be established and used exclusively for the following purposes:

1. The immediate rehabilitation of areas affected by damages to the environment and the resulting deterioration of environmental quality as a direct consequence of project construction, operation and abandonment;

**PRO-FORMA MOA ON THE CREATION OF THE MULTI-PARTITE MONITORING
TEAM (MMT), ENVIRONMENTAL MONITORING FUND (EMF) AND
ENVIRONMENTAL GUARANTEE FUND (EGF)**

2. The just compensation of parties and communities affected by the negative impacts of the PROJECT;
3. The conduct of scientific or research studies related to the PROJECT that will aid in the prevention or rehabilitation of accidents and/or environmental damages; and
4. For contingency clean-up activities, environmental enhancement measures, damage prevention programs and social equity measures (e.g. livelihood, social development programs) including the necessary IEC and capability building activities related to the PROJECT.

SECTION B. ESTABLISHMENT OF EGF

There shall be two (2) components of the EGF as follows:

1.1 EGF Trust Fund

The *(state Proponent)* shall open an account for the Trust Fund in the amount of *[state proposed amount: e.g. FIVE MILLION PESOS (Php 5,000,000.00)]* in the form of *(please state the specific economic guarantee instrument: bank guarantee/insurance policy/letter of credit)*, the earnings/interests of which shall accrue to the same Fund. The Trust Fund will be used to compensate aggrieved parties for any damages to life or property, undertake community-based environmental programs, conduct environmental research aimed at strengthening measures to prevent environmental damage and to finance restoration and rehabilitation of environmental quality of the project-affected area.

The Trust Fund shall be replenished to its original amount annually or whenever the amount goes below Php____ *(state mutually agreed amount)*. The Trust Fund shall also be renewed upon every expiration. The proponent shall immediately inform EMB Central and RO should it fail to renew the Trust Fund (e.g. insurance policy) on its stated expiration date or should the Trust Fund be cancelled or voided by the Insurer because of non-payment of the required premiums or any other cause allowed by the Insurance Code or pertinent issuances of the Insurance Commission.

1.2 EGF Cash Fund

The *(state Proponent)* shall open an account for the Environmental Guarantee Cash Fund at a reputable bank in the area in the amount of *[state the proposed amount: e.g. THREE MILLION FIVE HUNDRED THOUSAND PESOS (Php 3,000,000.00)]* which shall be earmarked for immediate rehabilitation and compensation of affected communities in case of damage or accidents. It shall also be used to cover the operational costs of the EGF Committee. This Cash Fund shall be placed in an interest-bearing account and such interest shall accrue to the same Cash Fund. The Fund shall be replenished to its original amount annually or whenever the amount goes below 50% of the amount.

Provided, further that in the event of insufficiency of both the EGF Trust Fund and the EGF Cash Fund to answer for expenses, the Proponent shall shoulder the amount of any such insufficiency.

**PRO-FORMA MOA ON THE CREATION OF THE MULTI-PARTITE MONITORING
TEAM (MMT), ENVIRONMENTAL MONITORING FUND (EMF) AND
ENVIRONMENTAL GUARANTEE FUND (EGF)**

SECTION C. EGF ADMINISTRATION AND MANAGMENT

An EGF Committee shall be established for EGF Management and Administration. It shall be composed of the MMT Executive Committee or Officers with the EMB Director (Central or RO) as the Chairperson.

**[Other government agencies/sectors/organizations may be invited as members or resource persons of the EGF Committee, as deemed necessary.]*

The Chairperson of the EGF Committee shall not vote on any matters except to break a tie. Any determination or approval by the EGF Committee shall require a majority vote, provided there is a quorum. A quorum shall require the presence of more than half of the members including, at all times, the representatives from the DENR and the Proponent.

The Committee shall have the following functions:

- Manage, control and operate the EGF in accordance with approved procedures established regarding the mechanisms for fund disbursement, processing, validation, accounting and documentation;
- Resolve issues involving rehabilitation and compensation for damages that may be brought before it;
- Decide on issues or complaints/questions involving the implementation of the rehabilitation program between the proponent and the aggrieved party;
- Designate entities or individuals in the event that an independent body must resolve the issues and cases;
- Hire credible experts, when necessary, to conduct independent studies and research on the environmental and socio-cultural impacts of the PROJECT in order to assist the EGF Committee in making judicious decisions about environmental issues related to the PROJECT; and
- Undertake damage preventive and social equity measures.

Existing EMB guidelines on fund disbursement, processing, validation, accounting and documentation shall be implemented.

TITLE V. AMENDMENTS

Amendment - This Agreement may not be renewed, extended, amended or otherwise modified except by agreement in writing signed by both parties.

TITLE VI. EFFECTIVITY AND DURATION

Effectivity and Duration - This Agreement shall take effect immediately and shall be maintained by the Parties hereto (or their respective successors or assigns) until the transfer of ownership of the Project by the (*state Proponent*) or the abandonment or termination of the PROJECT for whatever reason. Upon such transfer, abandonment or termination of the PROJECT, all funds set up by the Proponent under this Agreement shall automatically revert to the (*state Proponent*), except to the extent necessary to satisfy any outstanding obligations of the (*state Proponent*) under this Agreement including the financing of the rehabilitation, restoration, decommissioning or other such activities as may be required for the abandonment phase relative to the PROJECT.

**PRO-FORMA MOA ON THE CREATION OF THE MULTI-PARTITE MONITORING
TEAM (MMT), ENVIRONMENTAL MONITORING FUND (EMF) AND
ENVIRONMENTAL GUARANTEE FUND (EGF)**

IN WITNESS WHEREOF, the parties hereto have signed and executed this Agreement as of the date and place first above written.

**(OFFICIAL NAME OF THE
PROPONENT)**

By:

President

**ENVIRONMENTAL MANAGEMENT
BUREAU (EMB)**

By:

Director

WITH OUR CONFORMITY

PROVINCIAL GOVERNMENT OF

By:

Governor

CITY/MUNICIPAL GOVERNMENT OF

By:

Mayor

BARANGAY _____

By:

(OFFICIAL NAME OF A DULY
ACCREDITED NGO and RECOGNIZED
PO OR GROUP/ASSOC. OF
NGOs/POs)

By:

Designated Representative

WITNESSES

EMB REGION ____

By:

Regional Director, EMB Region____

DENR REGION ____

By:

Provincial Environmental and Natural
Resources Officer (PENRO)

(PROPONENT)

By:

Authorized Representative

ANNEX 3-4

**PRO-FORMA MOA ON THE CREATION OF THE MULTI-PARTITE MONITORING
TEAM (MMT), ENVIRONMENTAL MONITORING FUND (EMF) AND
ENVIRONMENTAL GUARANTEE FUND (EGF)**

ACKNOWLEDGMENT

REPUBLIC OF THE PHILIPPINES)
CITY OF _____) S.S.

BEFORE ME, a Notary Public for and in _____, on this _____ day of _____, at this _____, personally appeared the following:

<i>Name and Designation</i>	<i>TIN/CTC No.</i>	<i>Date & Place Issued/Expiry Date</i>
_____, Director EMB CO	_____	_____
<i>(Name of proponent, position)</i>	_____	_____
<i>(Name of LGU official, Governor)</i>	_____	_____
<i>(Name of LGU official, Mayor)</i>	_____	_____
<i>(Name of LGU official, Brgy. Chair)</i>	_____	_____
<i>(Name of NGO rep., position)</i>	_____	_____

Known to me as the same persons who executed the foregoing Memorandum of Agreement and acknowledged the same as their free act and deed.

This Agreement, consisting of _____ (____) pages including this page on which this Acknowledgement is written, has been signed by the Parties and their instrumental witnesses on each and every page thereof.

WITNESS MY HAND AND SEAL on the date and at the place above written.

NOTARY PUBLIC

Doc. No. _____
Page No. _____
Book No. _____
Series of _____

Until _____
PTR No. _____
Issued at _____
on _____

ANNEX 3-4

**PRO-FORMA MOA ON THE CREATION OF THE MULTI-PARTITE MONITORING
TEAM (MMT), ENVIRONMENTAL MONITORING FUND (EMF) AND
ENVIRONMENTAL GUARANTEE FUND (EGF)**

Annex C

WORK PLAN TEMPLATE (MMT START UP)

No.	Function/Activities	Performance Indicator	1 st QTR	2 nd QTR	3 rd QTR	4 th QTR
1.0	Organizational Meeting, election/designation of officers /Exec Com and Sectoral / Committee members	Officers elected and Committees formed	✓	✓	✓	✓
2.0	Training-Workshop on the Preparation of the MMT Manual of Operations (MOO)	MMT MOO		✓		
3.0	Training-Workshops on the preparation and use of the customized MMT Compliance Monitoring and Validation Report (CMVR)	Customized CMVR Format for MMT Trained MMT Members on preparation of CMVR		✓		
4.0	Preparation of Annual Work and Financial Plan (AWFP) – fully operational MMT	AWFP			✓	
5.0	Initial Compliance Monitoring and Reporting Activities	CMVR for submission to EMB				✓

FINANCIAL PLAN TEMPLATE (MMT START UP)

No.	Cost Item Per activity in the work plan	Unit Cost	Qty	Days/ No	1 st QTR	2 nd QTR	3 rd QTR	4 th QTR	TOTAL
1.0	Organizational Meetings, election/designation of officers /Exec Com and Sectoral / Committee members								
1.1	Meals/venue								
1.2	Transportation Cost/ Allowance								
1.3	Materials								
2.0	Training-Workshop on the Preparation of the MMT Manual of Operations (MOO)								
2.1	Meals/venue								
2.2	Transportation Cost/ Allowance								
2.3	Materials								
2.4	Honoraria for Resource Persons								
3.0	Training-Workshops on the preparation and use of the customized MMT Compliance Monitoring and Validation Report (CMVR)								
3.1	Meals/venue								

ANNEX 3-4

**PRO-FORMA MOA ON THE CREATION OF THE MULTI-PARTITE MONITORING
TEAM (MMT), ENVIRONMENTAL MONITORING FUND (EMF) AND
ENVIRONMENTAL GUARANTEE FUND (EGF)**

No.	Cost Item Per activity in the work plan	Unit Cost	Qty	Days/ No	1 st QTR	2 nd QTR	3 rd QTR	4 th QTR	TOTAL
3.2	Transportation Cost/ Allowance								
3.3	Materials								
3.4	Honoraria for Resource Persons								
4.0	Preparation of the next year's Annual Work and Financial Plan (AWFP) – fully operational MMT								
4.1	Meals/venue								
4.2	Transportation Cost/ Allowance								
4.3	Materials								
5.0	Compliance Monitoring and Reporting Activities								
5.1	Document Review Mtg. Meals/Venue								
5.2	Document Review Mtg. Transportation Cost/ Allowance								
5.3	Site Validation Per Diem								
5.4	Report Preparation Mtg. Meals/Venue								
5.5	Report Preparation Mtg. Transportation Cost/ Allowance								
	TOTAL								

MEMORANDUM OF AGREEMENT

This Memorandum of Agreement (MOA) is made and entered into by and between:

The **DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES**, a national government agency duly organized and existing under the laws of the Republic of the Philippines, with principal office address at DENR Central Office, Visayas Avenue, Diliman, Quezon City, Metro Manila, Philippines, represented herein by its Secretary, **MARIA ANTONIA YULO LOYZAGA**, hereinafter referred to as the "DENR";

– and –

The **DEPARTMENT OF ENERGY**, a national government agency duly organized and existing under the laws of the Republic of the Philippines, with principal office address at Energy Center, Rizal Drive, Bonifacio Global City, Taguig City, Metro Manila, Philippines, represented herein by its Secretary, **RAPHAEL P. M. LOTILLA**, hereinafter referred to as the "DOE";

WITNESSETH:

WHEREAS, the DENR is the primary government agency responsible for the conservation, management, development and proper use of the country's environment and natural resources in order to ensure equitable sharing of the benefits derived therefrom for the welfare of the present and future generations of Filipinos;

WHEREAS, the DOE, under Republic Act (RA) No. 7638 or the Department of Energy Act of 1992, is mandated to prepare, integrate, coordinate, supervise, and control all plans, programs, projects, and activities of the Government relative to energy exploration, development, utilization, distribution, and conservation;

WHEREAS, RA No. 9513 or the Renewable Energy Act of 2008 (RE Act), establishes the framework for the accelerated development and advancement of renewable energy (RE) resources, and the development of a strategic program to increase its utilization;

WHEREAS, Section 14 of the RE Act states that all RE exploration, development, utilization, and RE systems operations shall be conducted in accordance with existing environmental regulations as prescribed by the DENR and/or any other concerned government agency;

WHEREAS, Executive Order No. 21, series of 2023, directs a whole-of-government approach for the issuance of permits, licenses, and clearances for offshore wind (OSW) projects to eliminate unnecessary delays in every stage of an OSW development project;

WHEREAS, Presidential Decree No. 1586 establishes an environmental impact statement system, including other environmental management-related measures and for other purposes that is required of all agencies and instrumentalities of the national government, including government-owned or controlled corporations, as well as private corporations, firms and entities, for every proposed project and undertaking which significantly affect the quality of the environment, which is applicable to OSW projects;

WHEREAS, the DENR and the DOE recognize the potential of OSW as a clean and sustainable energy source and aim to collaborate in facilitating its responsible development within the Philippines;

WR

NOW, THEREFORE, for and in consideration of the foregoing premises, the parties hereby agree as follows:

I. PURPOSE

The DENR agrees to grant to the DOE the right to use Offshore Areas and Auxiliary Areas needed for the exploration, utilization and development of OSW projects, subject to the terms and conditions stated hereunder.

Production Areas refer to the areas where the wind turbines, offshore substation, offshore High Voltage Direct Current (HVDC) converter station, including the export cable/tie line connecting the onshore substation to the OSW facility may be located.

Auxiliary Areas are identified Foreshore Lands, and onshore areas which are portions of the Production Area, deemed necessary to carry out the authorized OSW activities.

II. RIGHT TO USE OFFSHORE AREAS AND AUXILIARY AREAS

- A. *Scope of right.* – The right to use Offshore Areas and Auxiliary Areas granted to the DOE under this MOA is limited to those identified as sites of offshore wind energy projects of the DOE. Not later than thirty (30) calendar days from execution hereof, the DOE shall submit to the DENR the list of areas identified as sites of offshore wind energy projects. This list may be periodically updated as mutually agreed upon by the DENR and the DOE, subject to the provision under Item II.C. of this Agreement.
- B. *Identification of Production Area and Auxiliary Areas.* – When an offshore wind energy project transitions from Pre-Development/ Exploration Stage to Development/ Commercial Stage, the DOE shall provide the DENR with a copy of the Production Area and Auxiliary Areas to be utilized for the OSW Project.
- C. *Conditions for exercise of right.* – The right herein granted shall be subject to prior clearance from the DENR, which shall determine if the area to be utilized is in an environmentally critical area or is covered by prior vested rights. Should the contract area cover environmentally critical areas, the DENR may, in accordance with applicable laws, rules and regulations, deny access or impose additional conditions on the DOE to minimize any adverse effects of the OSW project on the environment.

The right to use the Production Area and its Auxiliary Areas shall be limited to that identified and submitted to the DENR for clearance.

III. GRANT OF ACCESS TO OFFSHORE AREAS AND AUXILIARY AREAS

A. Access to Offshore Areas

1. *Access during Pre-Development/ Exploration Stage.* – The DOE may access Offshore Areas pursuant to the Memorandum of Agreement between the DOE and DENR executed in February 21, 2024 in accordance with DENR Administrative Order No. 2024-02 (DAO 2024-02) entitled, "Interim Guidelines for Environmental Compliance Certificate (ECC) under the Philippine Environmental Impact Statement System (PEISS) for Offshore Wind (OSW) Energy Projects."
2. *Access during Development/ Commercial Stage.* – This MOA authorizes access to offshore areas for the conduct of activities during the

Development/Commercial stage, as specified under DAO 2024-02.

B. Access to Auxiliary Areas

1. *Access during Pre-Development/ Exploration Stage.* – The DOE shall have non-exclusive access to Auxiliary Areas to the extent necessary for Pre-Development/Exploration Activities, as specified under DAO 2024-02.
2. *Access during Development/ Commercial Stage.* – During the Development/ Commercial Stage, the DOE shall have access to Auxiliary Areas for the conduct of activities during the Development/Commercial stage, as specified under DAO 2024-02.
3. *Conditions for Grant of Access.* – The DOE shall be granted access to Auxiliary Areas pursuant to this MOA, subject to the following conditions. The DOE shall:
 - a. Secure the required ECC, permits, clearances, and other documents from the concerned agencies;
 - b. Use identified Auxiliary Areas, with prior clearance from DENR, only for authorized purposes;
 - c. Relinquish to the DENR possession of the premises and improvements thereon upon termination due to a breach of any covenant;
 - d. Respect all easements reserved by law and easements and other rights acquired by owners of adjacent lands; and
 - e. Comply with such other conditions that the DENR may impose.

Non-compliance with the foregoing may result in the termination of the grant of access to Auxiliary Areas and forfeiture of all improvements made on the Auxiliary Areas in favor of the government.

IV. ENVIRONMENTAL COMPLIANCE

The DOE shall ensure compliance with all applicable environmental laws, rules, and regulations, including, but not limited to, DAO 2024-02 and that the necessary environmental permits and clearances from the DENR are secured, prior to the conduct of any activities on the foreshore, onshore and offshore lands.

V. ROLES AND RESPONSIBILITIES OF THE PARTIES

A. The DENR shall undertake the following:

1. Oversee and monitor the environmental compliance of the DOE. This includes periodic on-site inspections and evaluations of reports submitted by the DOE;
2. Provide technical guidance to the DOE on best environmental preservation practices during pre-development or exploration; and
3. Review environmental plans submitted by the DOE, and ensure that the same aligns with environmental laws, rules, and regulations.

WP

B. The DOE shall undertake the following:

1. Ensure compliance with existing environmental laws, rules, and regulations as may be applicable, with the end view of promoting the transition to more renewable energy sources;
2. Conduct an annual review and evaluation on the utilization of Production Areas, including their respective Auxiliary Areas, assess whether they have been amended or terminated, and submit its findings and recommendations to the DENR;
3. Ensure timely payments of the applicable fees, if any, and compliance with the conditions for the grant of access;
4. Regularly submit report of compliance with the conditions for the grant of access to the DENR;
5. Facilitate the submission of regular environmental compliance reports to DENR detailing the activities undertaken and their respective environmental impacts;
6. Ensure that all environmental plans adhere to the guidelines set by the DENR;
7. Ensure that its staff undergoes necessary training and capacity building for understanding and implementing environmental guidelines; and
8. Facilitate and coordinate public consultations, especially in areas where OSW projects may have direct environmental impacts.

VI. TERM AND TERMINATION

The DOE's right to use the Offshore Areas falling within Production Areas and Auxiliary Areas under this MOA shall be subject to Constitutional limitations and existing laws, rules, and regulations. The MOA's term under such laws and regulations shall remain valid and effective unless sooner terminated by mutual consent of the Parties.

VII. SEPARABILITY CLAUSE

In the event that one or more provisions contained herein shall be held invalid, illegal, or unenforceable in any respect and for any reason, the other provisions shall remain valid, legal, and enforceable.

VIII. MISCELLANEOUS

- A. This MOA cannot be deemed modified or amended unless such modification is in writing and signed by the party against whom enforcement of such modification is sought.
- B. This MOA shall be binding upon the respective successors, representatives, and assigns of the parties hereto.
- C. This MOA is without prejudice to any considerations and additional conditions that may be imposed to address concerns that may arise based on studies and development.

IN WITNESS WHEREOF, the parties hereto have affixed their respective signatures this
____ day of _____, 2024 in _____ City, Philippines.

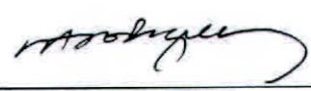

MARIA ANTONIA YULO LOYZAGA
Secretary
Department of Environment and Natural
Resources (DENR)


RAPHAEL P. M. LOTILLA
Secretary
Department of Energy (DOE)



WITNESSES


Sharon Barin



TERMS AND CONDITIONS FOR THE IMPLEMENTATION OF THE MEMORANDUM OF AGREEMENT BETWEEN THE DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES AND THE DEPARTMENT OF ENERGY ON THE RIGHT TO USE OFFSHORE AREAS AND AUXILIARY AREAS FOR OFFSHORE WIND PROJECTS

Pursuant to the Memorandum of Agreement (MOA) dated October 10, 2024 between the Department of Environment and Natural Resources (DENR) and the Department of Energy (DOE), and in consonance with the Enhanced Guidelines for the Issuance of Environmental Compliance Certificates (ECCs) under DENR Administrative Order No. 2025-__, the following terms and conditions shall govern the grant of rights to the DOE for OSW projects in Offshore Areas (Production Areas) and Auxiliary Areas (foreshore and onshore portions) to ensure environmental sustainability, social equity, and regulatory compliance.

I. GENERAL PROVISIONS

1. The DOE shall delineate the boundaries of Production Areas and Auxiliary Areas in accordance with land classification standards and established control points on the ground.
2. All OSW activities shall be confined to the delineated areas, and there shall be no interference with the rights of other contractors, lessees, operators, permittees, or permit holders.
3. No title or beneficial ownership over the areas shall be acquired by the DOE.
4. These terms and conditions shall be binding upon the successors, representatives, and assigns of the DOE, and shall be without prejudice to additional requirements under relevant laws.
5. These terms and conditions shall be subject to future modifications upon promulgation by the DENR of new or amended policies, rules, and regulations affecting the MOA, provided that such modifications shall be in writing and mutually agreed upon where applicable.
6. Additional terms and conditions may be imposed by the DENR Secretary as deemed necessary for the national interest and public welfare, based on emerging studies or developments.

II. ACCESS AND RIGHTS

1. The right to use Offshore Areas and Auxiliary Areas shall be limited to sites identified by the DOE as OSW project areas, subject to periodic updates by mutual agreement.
2. The DOE shall not alter or modify the boundaries of the areas; impede, obstruct, or prevent the passage of legitimate licensees, lessees, permittees, or other authorized persons; introduce improvements or conduct activities obstructing free navigation of streams, creeks, rivers, or marine coastal areas, or interfering with the passage of persons or the flow and ebb of tides, unless authorized by the concerned agency; or remove timber, minerals, or other resources except as provided under Presidential Decree No. 705, as amended.

3. The DOE shall guarantee free ingress and egress to DENR representatives for purposes of research, monitoring, evaluation, and other official activities.

III. ENVIRONMENTAL COMPLIANCE

1. The DOE shall cause developers to secure ECCs for Pre-Development and Development Stages, along with other required permits and clearances, and shall comply with all mitigation and enhancement measures stipulated in the Environmental Impact Assessment (EIA) report, ECC conditions, and applicable laws, including the Clean Air Act, Clean Water Act, and Ecological Solid Waste Management Act.
2. The DOE, in coordination with developers, shall submit comprehensive management plans for Production Areas and Auxiliary Areas to the DENR for review and approval. These plans shall detail development strategies, environmental mitigation and enhancement measures, and monitoring protocols. Indicative versions shall be submitted as part of the Pre-Development/Exploration Stage ECC application, with final comprehensive versions required within thirty (30) calendar days of transition to the Development/Commercial Stage. Failure to submit or comply with approved plans shall constitute grounds for suspension or revocation of access rights.
3. For forestlands, the DOE and developers shall implement measures to protect natural and protection forests; reforest denuded areas; conserve endangered flora and fauna; prevent forest fires, encroachment, and other destructive activities; and obtain permits from the National Water Resources Board (NWRB) for water use, if applicable.
4. For foreshore and onshore Auxiliary Areas, all projects shall be subject to the Environmental Impact Assessment System; salvage zones shall be excluded from the agreement; and the lease shall be subject to easements reserved under the Law on Waters and Sections 41, 109, 110, 111, 112, 113, and 114 of Commonwealth Act No. 141, as amended, with no reclamation activities permitted without prior approval.
5. For protected areas, activities shall be located outside strict protection zones, shall not be detrimental to ecosystem functions, biodiversity, or cultural practices and traditions, and shall require Protected Area Management Board (PAMB) clearance and DENR Secretary concurrence; reduced-impact technologies shall be employed, and a bond shall be remitted for decommissioning and rehabilitation based on damage estimates.
6. For all areas, the DOE and developers shall utilize the best available appropriate anti-pollution technologies and facilities to protect the environment and restore or rehabilitate affected areas in compliance with the ECC and Presidential Decree No. 984.
7. An Abandonment and Termination Plan (ATP) shall be submitted, ensuring sufficiency of funds for decommissioning, removal of infrastructure, site remediation, and post-decommissioning monitoring.

IV. SOCIAL OBLIGATIONS

1. The DOE and developers shall prioritize employment of Filipinos in all types of OSW activities for which they are qualified; transfer technology to Filipinos; undertake effective training programs for understudies where foreign technologies or executives are employed; comply with laws, rules, and regulations on labor, safety, and health standards; and prohibit discrimination on the basis of gender, age, ethnicity, or religious affiliation, while respecting the rights of women workers to participate in policy and decision-making processes affecting their rights and benefits.

2. The DOE and developers shall prioritize employment of indigenous peoples (IPs) and members of organized upland communities, whenever possible; employ registered foresters as required for development, management, and protection; recognize and respect the rights of indigenous cultural communities to their ancestral domains; notify all families and communities dependent on the areas; prepare, maintain, and periodically update a registry of such families and communities, prioritize local people in employment opportunities; respect the rights of legitimate communities and provide assistance in livelihoods, such as agroforestry, training, marketing, contract growing, and forest protection; and abide by any conditions prescribed by the DENR Secretary regarding the abode or livelihood of households and communities dependent on the areas.
3. The DENR Secretary, in cooperation with Local Government Units (LGUs), shall assist the DOE and developers in developing and executing agreements with households and communities dependent on the areas.
4. The DOE and developers shall assume all risks inherent and incidental to OSW operations and shall not be entitled to reimbursement of expenses if commerciality is not attained.

V. FINANCIAL MECHANISMS

1. A unified fee per OSW project shall be imposed based on the delineated area, encompassing all incidental uses of foreshore and onshore areas, whether forestland, foreshore land, or protected area. To maximize revenue to the Government while aligning with the treatment of renewable energy projects of national significance, the fee structure shall consist of:
 - a. A one-time development fee equivalent to five percent (5%) of the zonal value of commercial land in the nearest barangay or municipality multiplied by the area of development, plus one percent (1%) of the value of improvements as premium, payable within one (1) month upon issuance of the ECC for the Development Stage; and
 - b. An annual fee of Seven Thousand Two Hundred Pesos (P7,200.00) per hectare or fraction thereof, increased cumulatively by ten percent (10%) annually, payable to the DENR Regional Office on or before May 31 of each succeeding year.
2. Non-payment of the annual fee shall incur an eight and thirty-three percent (8.33%) monthly surcharge, and a one hundred percent (100%) surcharge if delayed by one (1) year, with fractions of a year counted as a full year; failure to pay after three (3) consecutive demand notices shall constitute grounds for cancellation.
3. Performance, rehabilitation, or environmental guarantee bonds shall be posted in accordance with DENR Administrative Order No. 2003-30, including an amount equivalent to twenty-five percent (25%) of rehabilitation costs for protected areas; Environmental Monitoring Funds (EMFs) and Environmental Guarantee Funds (EGFs) shall be established for monitoring and rehabilitation.

VI. MONITORING AND REPORTING

1. The DOE shall conduct an annual review and evaluation of the utilization of Production Areas and Auxiliary Areas, including amendments or terminations, and submit findings and recommendations to the DENR.
2. The DOE and developers shall submit annual accomplishment reports by March 31 of each succeeding year, detailing management and development activities in accordance with approved plans; regular reports on compliance with conditions for access; and environmental compliance reports to the DENR, including activities undertaken and their impacts.
3. The DENR shall oversee and monitor environmental compliance through periodic on-site inspections, evaluations of reports, and provision of technical guidance; the DOE shall facilitate submission of reports, ensure adherence to DENR guidelines, provide staff training on environmental guidelines, and coordinate public consultations, particularly in areas with direct environmental impacts.
4. Social Impact Assessments (SIAs) shall be conducted every three (3) years from the commencement of commercial operations, as required under the EMMoP.

VII. TERMINATION AND REMEDIES

1. The access provided by the DOE to developers under Offshore Wind Energy Service Contracts (OSWESCs), by virtue of the rights granted herein, shall be coterminous with the term of the respective OSWESC. Upon expiration, non-renewal, cancellation, or termination of an OSWESC, the developer's access to the Production Areas and Auxiliary Areas shall automatically cease, and the DOE shall ensure relinquishment of possession to the DENR, including forfeiture of any improvements thereon in favor of the Government, unless otherwise mutually agreed upon by the Parties.
2. The right to use the areas under this MOA shall be subject to Constitutional limitations and existing laws, rules, and regulations, and shall remain valid unless sooner terminated by mutual consent of the Parties.
3. The right may be revoked or cancelled for grounds including misrepresentation, fraud, or failure to comply with applicable laws, rules, regulations, or guidelines; violation of terms and conditions, ECCs, PAMB clearances, or other permits; non-payment of fees for two (2) consecutive years without justifiable cause; or when national interest requires summary cancellation as determined by the DENR.
4. The right may be suspended summarily in cases of imminent danger to life or property, until such danger is removed or appropriate measures are taken.
5. Violation of any term or condition shall give rise to rescission of the agreement, without prejudice to other remedies under law.