

**Tamil Nadu Sustainably Harnessing Ocean Resources and Blue Economy (TN-SHORE) (with the financial support from the World Bank)**

## **Environmental and Social Management Plan**

*for the Sub-project*

### **International Dugong Conservation Centre at Manora, Thanjavur, Tamil Nadu**



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**DFO, THANJAVUR  
DEPARTMENT OF FORESTS,  
GOVERNMENT OF TAMILNADU**

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# Environmental and Social Management Plan

## Executive Summary

The International Dugong Conservation Centre (IDCC), an essential component of the Tamil Nadu Sustainably Harnessing Ocean Resources and Blue Economy (TN-SHORE) initiative, supported by the World Bank, is strategically located in Manora, Thanjavur. This project is designed to significantly enhance the resilience and sustainability of coastal and marine resources through a multifaceted approach that integrates conservation, education, and community empowerment. The ESMP developed for the IDCC adheres to international and local environmental and social standards, focusing on minimizing ecological disruptions and promoting sustainable development practices.

The project site covers 24,350 sq.m. near the heritage-rich Manora Fort and incorporates state-of-the-art, environmentally responsible design and construction methodologies. These include energy-efficient structures, water conservation systems, and sustainable material usage to ensure minimal environmental impact. The facility will serve various functions, segmented into public, semi-public, and private zones, each tailored to promote educational, research, and conservation activities while supporting sustainable livelihoods for the local community.

To mitigate potential environmental and social impacts, the ESMP outlines detailed measures applicable throughout the construction and operational phases of the project. These measures include strict waste management protocols, biodiversity conservation strategies, and the implementation of community health and safety initiatives. The plan also provides a robust framework for ongoing environmental quality monitoring and community engagement, ensuring that all project activities are conducted transparently and with stakeholder involvement.

The DFO, Thanjavur, Department of Forests, Government of Tamil Nadu, will oversee the implementation of the project, ensuring compliance with the ESMP through stringent supervision and monitoring. Contractors will integrate these management practices into their workflows, reinforcing the project's commitment to environmental stewardship and social responsibility. Regular updates and reports will be provided to document progress and address any challenges promptly, ensuring the project aligns with its environmental and social governance objectives. The ESMP for the IDCC is meticulously prepared to ensure that the activity supports the conservation of the Dugong and its habitat while setting a benchmark in environmental and social responsibility, thereby promoting a sustainable and resilient blue economy in Tamil Nadu.

# CHAPTER 1: PROJECT OVERVIEW AND FINDINGS OF ESDD

## 1.1 Project Overview

The TN-SHORE project, initiated by the Government of Tamil Nadu and supported by the World Bank, is designed to enhance the resilience and sustainable utilization of coastal resources through a comprehensive, multi-sectoral approach. The project aims to foster a resilient and circular blue economy, empower local livelihoods, and build capacities for a sustainable future. To achieve these objectives, TN-SHORE has identified five thematic areas for prioritized investment, encompassing a holistic integration of various sectors to address the multifaceted challenges facing coastal areas. The project components are as follows:

**Component 1: Strengthening Institutions for Integrated Coastal Management:** This component focuses on enhancing the institutional capabilities for comprehensive coastal zone management and governance, ensuring effective coordination and implementation of coastal policies and programs.

**Component 2: Shoreline Management and Coastal Protection:** Aimed at promoting coastal resilience, this component invests in two key areas: Erosion Control and Management, and Marine Biodiversity and Ecology Conservation, to safeguard and restore coastal ecosystems and habitats.

**Component 3: Improving Livelihoods for Natural Resource Dependent Communities:** This component supports initiatives that substitute alternative and sustainable livelihoods for coastal communities, enhancing their economic resilience and well-being.

**Component 4: Reducing Plastic Waste and Pollution through Enhanced Circularity:** Focusing on managing and reducing plastic waste in coastal and marine environments, this component promotes plastic circularity through ecosystem-centred approaches and innovative solutions.

**Component 5: Project Management:** This component covers the operational expenses of the project, including procurement, staffing, and other administrative costs, ensuring efficient project execution and management.

**Component 6: Contingency Emergency Response Component:** This component provides a mechanism for rapid response to natural disasters or emergencies, ensuring the project's resilience and adaptability to unforeseen challenges.

Overall, the TN-SHORE project represents a significant investment in the sustainable development and conservation of Tamil Nadu's coastal regions. Through its multi-faceted approach, the project aims to achieve a harmonious balance between environmental conservation, economic development, and social well-being.

## 1.2. Objective and Context of ESMP

The Environmental and Social Management Framework (ESMF) for the Tamil Nadu Sustainably Harnessing Ocean Resources and Blue Economy (TN-SHORE) initiative is nearing completion. Concurrently, an Environmental and Social Due Diligence (ESDD) has been conducted using established risk screening formats to ascertain potential environmental and social risks associated with the project. Based on the findings from the ESDD, this Environmental and Social Management Plan (ESMP) has been formulated to provide structured guidance to the implementing agency. This document outlines essential management strategies required to address identified impacts effectively.

The ESMP delineates clear roles and responsibilities for implementation, coupled with detailed reporting and monitoring protocols to ensure compliance and effective management throughout the project lifecycle. As a living document, this ESMP is subject to updates to incorporate stakeholder feedback and to adapt to evolving conditions on the ground prior to and during project execution. The designated Implementation Institution bears primary responsibility for enacting the ESMP, ensuring that environmental and social standards are upheld to the highest degree as project activities progress.

## 1.3 SUB-PROJECT DESCRIPTION

The following Table 1.1 outlines the salient features of the project, detailing its location,

design, expected impacts, and the comprehensive facilities planned, which underscore its potential as a center for marine conservation and a driver of sustainable tourism.

**Table 1.1: Salient Features of the International Dugong Conservation Centre**

| Category                                               | Details                                                                                                                                                                                                                                                                                                                                                                                        |
|--------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| State                                                  | Tamil Nadu                                                                                                                                                                                                                                                                                                                                                                                     |
| District                                               | Thanjavur                                                                                                                                                                                                                                                                                                                                                                                      |
| Project                                                | <ul style="list-style-type: none"> <li>International Dugong Conservation Centre</li> </ul>                                                                                                                                                                                                                                                                                                     |
| Estimated Cost                                         | <ul style="list-style-type: none"> <li>Rs. 79 Crores</li> </ul>                                                                                                                                                                                                                                                                                                                                |
| Location of the Project Site                           | <p>Manora (Sarbendrarajapatnam), Thanjavur District, Tamil Nadu</p> <ul style="list-style-type: none"> <li>- 20 km from Pattukkottai</li> <li>- 65 km from Thanjavur</li> <li>- 650 m from East Coast Road (ECR)</li> <li>- 44 km from Tiruchirapalli Airport</li> <li>- En-route to Velankanni church from southern Tamil Nadu and southern Kerala (15-20 million annual visitors)</li> </ul> |
| Latitude- Longitude                                    | 10° 15' 59" N, 79° 18' 17" E                                                                                                                                                                                                                                                                                                                                                                   |
| Coastal Regulation Zone (as per CRZ 2019 notification) | CRZ III A (based on population density)                                                                                                                                                                                                                                                                                                                                                        |
| Tourist Features of the Site                           | <ul style="list-style-type: none"> <li>- Manora Fort, a heritage site (state archeology dept), exists near the project site at a distance of 143 m</li> <li>- Weekday Visitors: 500, Weekend Visitors: 2000-3000 (Approx. 2 lakhs per year)</li> <li>- Expected 10 lakhs visitors in the initial year of DCC</li> </ul>                                                                        |
| Site Details                                           | <ul style="list-style-type: none"> <li>- Area: 24,350 sq m along the beach</li> <li>- Flat terrain with a slight seaward slope, requires filling to prevent seawater intrusion</li> <li>- Small snacketaria and a boat jetty in the southeastern part of the site</li> <li>- Area covered by a field layer and tree layers, crossed by an electrical line</li> </ul>                           |
| Building Design Details                                | <p>Master Plan: Public Zone, Semi-Public Zone, Private Zone</p> <ul style="list-style-type: none"> <li>- Building Area: Total 4145 sq. m.</li> <li>- Dugong Building Gr. &amp; 1st Floor – 2006 sq. m.</li> <li>- Museum Building – 628 sq. m.</li> </ul>                                                                                                                                      |

|                                                           |                                                                                                                                                                                                                                                                 |
|-----------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                           | <ul style="list-style-type: none"> <li>- Ancillary (Toilet, Office, Shops) – 233 sq. m.</li> <li>- Cafeteria – 422 sq. m.</li> <li>- Cottages – 856 sq. m.</li> <li>- Estimated Occupancy Load: 2027 (1351 males and 676 females) excluding cottages</li> </ul> |
| Key Ecofriendly Design Concepts Included                  | Energy and Water Efficiency, Material Selection, Indoor Environmental Quality, Waste Reduction, Land Use, Smart Building Technology                                                                                                                             |
| Key Natural Disaster Resilience Designs Concepts Included | Roof forms, Curved and organic forms suitable for coastal/windy areas, Adherence to National Building Code                                                                                                                                                      |
| Scientific facilities                                     | Tunnel aquarium, Immersion video of marine organisms, 4D and 7D theatres, Seagrass cultivation lab, Wave flume                                                                                                                                                  |

## 1.4 PROPOSED ACTIVITIES AND INTENDED OUTCOMES

The International Dugong Conservation Centre (IDCC) is envisioned as a comprehensive facility, integrating various zones designed to support its dual mission of education and conservation. The centre will be divided into three primary zones, each tailored to facilitate specific activities and user experiences:

**Public Zone:** The heart of the IDCC, this area will feature a uniquely designed Dugong-shaped main building, housing a range of facilities including display and office spaces, a state-of-the-art Tunnel Aquarium, and immersive digital theaters (7D and 4D). Additional amenities such as a park, cafeteria, open-air theatre, ample parking, a souvenir shop, selfie points, water points, washrooms, and a grand entrance plaza are designed to enhance visitor engagement and learning experiences.

**Semi-Public Zone:** This zone will focus on more specialized functions, including a training center, a Dugong monitoring lab, and advanced Seagrass research laboratories. These facilities are intended to support both ongoing conservation efforts and provide educational opportunities for students, researchers, and professionals.

**Private Zone:** Dedicated to the staff and operational needs of the IDCC, this area will consist of 26 cottages for accommodation, alongside necessary service spaces. This zone ensures that the needs of the center's personnel are met, facilitating the smooth functioning of the conservation and educational activities.

Additionally, the project will develop **Mangrove eco-walk trails**, which will be accessible via a bridge spanning the existing backwaters. This trail will feature semi-permanent structures such as walking tracks, gazebos, a rope bridge, and sea view decks, with an Eco Tower serving as the focal point. The design and layout of these trails will be harmoniously integrated with the existing mangrove vegetation, emphasizing sustainability and minimal ecological disruption. These trails aim to provide educational insights into mangrove ecosystems and promote environmental awareness among visitors.

## 1.5 ESDD Findings and Key Impacts to be Addressed

The Environmental and Social Due Diligence (ESDD) exercise conducted for the IDCC has identified several risks and impacts associated with the project's activities, particularly in the realms of water, waste, pollution, hazards, ecology and biodiversity, protected areas, land and soils, culture and heritage, and labour and gender considerations. The project's proximity to sensitive and protected areas, such as mangrove and Dugong habitats, necessitates careful management and mitigation strategies. As the land is owned by the Tamil Nadu Government, no land acquisition or eviction processes are required, simplifying some aspects of project implementation. Nevertheless, the construction activities, which will involve both skilled and unskilled labour, present moderate risks that need to be managed effectively.

The following Table 1.2, details the applicability of the World Bank Environmental and Social Standards (WB-ESSs) and outlines the recommended management measures and plans to mitigate the identified risks:

**Table 1.2: ESS Applicability Analysis and Recommended Management Measures/Plans**

| ESS Applicability Analysis and Recommended Management measures/plans                 |                                                                                                                                                          |                                                                                                                                           |
|--------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------|
| ESS                                                                                  | Applicability with Triggers                                                                                                                              | Recommended Management Plan                                                                                                               |
| <b>ESS1:</b> Assessment and Management of Environmental and Social Risks and Impacts | Applicable<br>The project is in close proximity to sensitive ecosystems (mangrove habitat, Dugong habitat) and predominantly involves construction work. | <ul style="list-style-type: none"> <li>Comprehensive Environmental and Social Impact Assessment and Management Plan (ESIA-MP).</li> </ul> |

|                                                                                                           |                                                                                                                                                                               |                                                                                                                                                                                             |
|-----------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>ESS2:</b> Labour and Working Conditions                                                                | Applicable:<br>The interventions predominantly involve construction work for the IDCC.                                                                                        | <ul style="list-style-type: none"> <li>Labour Management Procedure (LMP) including Occupational Health and Safety (OHS) management plan and Gender-Based Violence (GBV) actions.</li> </ul> |
| <b>ESS3:</b> Resource Efficiency, Pollution Prevention and Management                                     | Applicable:<br>Construction activities near fragile ecosystems. The project is expected to significantly increase tourist footfall (approx. 10 lakh per year initially).      | <ul style="list-style-type: none"> <li>Pollution Prevention, Monitoring and Management Plan</li> </ul>                                                                                      |
| <b>ESS 4:</b> Community Health and Safety                                                                 | Applicable:<br>The project site is within a densely populated coastal area (Manora).                                                                                          | <ul style="list-style-type: none"> <li>Community Health and Safety (CHS) Plan and traffic management strategies.</li> </ul>                                                                 |
| <b>ESS 5:</b> Land Acquisition, Restrictions on Land use and Involuntary Resettlement                     | Not Applicable:<br>The land is owned by the Government of Tamil Nadu.                                                                                                         | N/A                                                                                                                                                                                         |
| <b>ESS 6:</b> Biodiversity conservation and Sustainable Management of Living Natural resources            | Applicable:<br>Interventions are located near CRZ III A, mangrove habitat, and Dugong habitat, necessitating specialized attention for the conservation of critical habitats. | <ul style="list-style-type: none"> <li>Biodiversity Conservation Plan focusing on avoiding impacts on biodiversity during the construction period.</li> </ul>                               |
| <b>ESS 7:</b> Indigenous Peoples/Sub-Saharan African Historically Underserved Tradition Local Communities | Not Applicable                                                                                                                                                                |                                                                                                                                                                                             |
| <b>ESS 8:</b> Cultural Heritage                                                                           | Applicable:<br>The project site is in close proximity to Manora Fort heritage site (State archeology dept)                                                                    | <ul style="list-style-type: none"> <li>Heritage Conservation Plan if required</li> </ul>                                                                                                    |
| <b>ESS 9:</b> Financial Intermediaries                                                                    | Not Applicable                                                                                                                                                                | N/A                                                                                                                                                                                         |
| <b>ESS 10:</b> Stakeholder Engagement and Information Disclosure                                          | Applicable:<br>The interventions plan for community engagement to enhance conservation impact.                                                                                | <ul style="list-style-type: none"> <li>Stakeholder Engagement Plan (SEP).</li> </ul>                                                                                                        |

This section and the accompanying table clearly outline the critical environmental and social considerations for the project and the robust management measures planned to address them. These efforts ensure compliance with international standards and contribute to the sustainable and responsible development of the IDCC.

## 2.0: ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN

The Environmental and Social Management Plans required for the mitigation or management of risks and impacts identified in ESDD have been discussed in brief hereunder.

### 2.1 Comprehensive Environmental and Social Impact Assessment and Management Plan (CESIA-ESMP) (ESS 1)

The construction activities for the IDCC are set to take place within the sensitive CRZ, specifically in areas that include mangrove habitats and Dugong habitats at the Manora coast. Furthermore, the project location is situated within densely populated human settlements, adding layers of social sensitivity to the environmental considerations.

The CESIA-ESMP will thus encompass a thorough assessment of baseline environmental and social conditions, rigorously analyze the impacts arising from the project interventions, and develop robust mitigation strategies to address these impacts. Key components of the plan include:

**Baseline Monitoring:** Systematic collection and analysis of environmental data to establish baseline conditions, which will assist in the accurate measurement of project impacts and effectiveness of mitigation measures.

**Impact Assessment:** Detailed examination of potential environmental and social impacts resulting from the construction and operational phases of the project, with particular attention to the preservation of critical habitats and community well-being.

**Mitigation Strategies:** Formulation of actionable and practical measures to prevent, minimize, or compensate for adverse impacts on the environment and local communities.

**Public Consultation and Engagement:** Proactive engagement with local communities and stakeholders through consultations and information sessions to ensure transparency, gather local insights, and foster community support for the project.

This comprehensive approach aims to ensure that the project adheres to the highest standards of environmental and social responsibility, mitigating risks effectively while promoting sustainable development practices in line with global and national guidelines.

## **2.2 Labour Management Procedure Including Occupational Health and Safety (OHS) Management Plan and Gender-Based Violence (GBV) Actions (ESS1 & 2)**

The IDCC project entails significant construction activities that will employ both skilled and unskilled labour. To ensure that labour practices adhere to ethical standards and promote safety, the following comprehensive Labour Management Procedure (LMP), which includes an OHS management plan and specific actions to address GBV, will be developed.

### **Key Aspects of the LMP will include:**

- i. Labour Profile: Compilation of detailed demographic data of the workforce, including numbers, characteristics, and age distribution.
- ii. Engagement Practices: Clear definitions of work schedules, contract types, and employment terms to ensure transparency and fair labour practices.
- iii. Compensation Details: Documentation of wage structures and payment schedules to comply with legal standards and ensure fair compensation.
- iv. Policy Adherence: Implementation of policies that are in accordance with national labour laws and international best practices.
- v. OHS Risks and Management Plans: Development of specific plans to mitigate occupational health and safety risks, including provision of appropriate safety equipment and training.
- vi. GBV Risks and Actions: Establishment of preventative measures and responsive actions to address potential gender-based violence, ensuring a safe work environment for all employees.
- vii. Consultation Procedures: Regular and structured consultations with workers to solicit feedback and improve labour practices.
- viii. Grievance Redressal System: Implementation of a transparent and accessible grievance mechanism to address and resolve worker complaints effectively.
- ix. Training Programs: Continuous education and training for workers to enhance their skills and awareness of safety, health, and employment rights.

### **Management of Safety Threats and Risks:**

- i. Workplace Safety: Proactive management of potential safety issues, such as injuries, accidents, and health hazards, through rigorous safety protocols and regular safety drills.
- ii. Living Conditions: Assurance of adequate accommodation, sanitation, and other

- essential facilities for all labour camps to promote well-being and productivity.
- iii. Non-Discrimination: Strict enforcement of non-discriminatory practices in all aspects of employment and engagement.
- iv. SE and GBV Risk Mitigation: Implementation of strategies to minimize social and gender-based violence risks, ensuring a respectful and inclusive work environment.
- v. Wage and Employment Clarity: Elimination of discrepancies in wage payments and clear communication of employment terms to prevent disputes and promote trust among the workforce.

The contractor is mandated to maintain a detailed profile of the workforce and to implement these measures rigorously. This comprehensive approach to labour management is designed to uphold high standards of worker welfare and safety, aligning with both the project's social responsibility goals and regulatory requirements.

## **2.3 Pollution Prevention, Monitoring and Management Plan (ESS 3)**

The construction and operational phases of the IDCC project are set to occur within sensitive ecosystems and densely populated human settlements. These activities inherently pose risks of environmental pollution, including the generation of construction waste and noise, as well as air pollution during the construction phase and solid waste during operation.

To effectively manage and mitigate these pollution impacts, a comprehensive Pollution Prevention, Monitoring, and Management Plan will be developed. This plan includes detailed environmental quality monitoring protocols and specific actions aimed at minimizing pollution in all forms—air, noise, soil, ecosystem, and debris.

### **Key Pollution Prevention and Management Strategies will include:**

- i. Noise Control Measures: Installation of mufflers on vehicles and provision of ear muffs for workers at high noise/vibration sites are mandatory. Additional noise suppression devices will be used, and operations involving noisy machinery will be restricted to daytime hours to protect local wildlife and reduce community disturbance.
- ii. Waste and Debris Management: Strict protocols will be enforced to prevent the dumping of waste and debris in conservation areas, forests, or coastal

environments. Effective waste segregation and disposal strategies will be implemented to ensure environmental compliance and reduce the ecological footprint.

- iii. **Water Conservation Practices:** Water usage will be closely monitored, and measures will be implemented to ensure judicious use of water resources. Techniques such as rainwater harvesting and the use of water-efficient fixtures will be employed to minimize water wastage.

The plan also outlines responsibilities for ongoing environmental monitoring to ensure compliance with established standards and effectiveness of the mitigation measures. Regular audits and updates to the plan may be required to respond to new challenges and findings during the project lifecycle, ensuring that the project maintains a minimal environmental impact stance throughout its development.

## **2.4 Community Health and Safety (CHS) Plan (ESS 4)**

The construction activities for the IDCC are situated within the coastal town of Manora. This location is susceptible to potential pollution and local traffic disruptions due to the influx of construction materials and machinery. To effectively address these challenges, a robust CHS Plan needs to be formulated.

### **Key Elements of the CHS Plan will include:**

- i. **Hazard Identification and Risk Assessment:** A thorough analysis will identify and evaluate potential hazards that could affect the local community. This assessment covers traffic and road safety concerns, potential health risks from construction activities, and the management of hazardous materials on-site.
- ii. **Community Consultation and Engagement:** Engaging with the community is a cornerstone of this plan. Regular consultations will be held to keep the community informed of project progress and potential impacts. These sessions will also serve as a platform for addressing community concerns and integrating their feedback into ongoing project management strategies.
- iii. **Mitigation Measures:** Based on the identified risks, specific measures will be implemented to mitigate impacts on community health and safety. These will include traffic management strategies to minimize disruptions, measures to control dust and noise pollution, and stringent guidelines for the handling and storage of hazardous materials.
- iv. **Awareness and Education Programs:** To further safeguard community health and safety, the plan includes the development and implementation of awareness

campaigns. These programs will educate the local population on safety precautions, emergency response procedures, and ways to minimize exposure to potential health hazards.

The CHS Plan is designed to ensure that the health and safety of the Manora community are prioritized throughout the construction and operation of the IDCC. Regular monitoring and responsive adjustments to the plan will ensure that emerging issues are promptly addressed, maintaining the well-being of the community in line with international best practices.

## **2.5 Biodiversity Conservation Plan (ESS 6)**

The IDCC is set to be constructed within the CRZ that adjoins critical mangrove areas and Dugong habitats along the Manora coast. These areas are recognized for their ecological sensitivity and high biodiversity value. A comprehensive Biodiversity Conservation Plan will be developed to ensure the protection and sustainable management of these vital ecosystems throughout the project lifecycle.

### **Key Components of the Biodiversity Conservation Plan will include:**

- i. **Inventorisation of Flora and Fauna:** Detailed surveys will be conducted to catalog the terrestrial and aquatic species present within and around the project site. This baseline data will be crucial for monitoring biodiversity impacts and guiding conservation efforts.
- ii. **Impact Assessment:** An analysis will be performed to understand the potential impacts of construction activities on local biodiversity. This assessment will consider all phases of project development and seek to identify direct, indirect, and cumulative impacts.
- iii. **Regulatory Compliance and Conservation Planning:** All project activities will adhere to local, national, and international environmental regulations. The plan includes strategies to integrate conservation measures into the project's design and operations, ensuring that critical habitats are preserved and enhanced.
- iv. **Sensitization and Training:** Project authorities, contractors, and workers will be educated about the importance of local biodiversity and the specific conservation needs of the ecosystem. This will include training sessions and ongoing communications to foster a conservation-minded project culture.
- v. **Access Restrictions:** To minimize disturbances to sensitive areas, access for project personnel will be strictly controlled. Areas designated as critical habitats will have restricted access, and protocols will be established to enforce these

- restrictions effectively.
- vi. **Waste Management:** Strict guidelines will be enforced to prevent the dumping of waste materials within or near protected areas. Waste management plans will include measures for waste reduction, segregation, recycling, and proper disposal to minimize ecological disruption.

This Biodiversity Conservation Plan is designed to proactively address the unique environmental challenges posed by the project's location. Through meticulous planning, continuous monitoring, and adaptive management, the plan aims to protect and sustain the rich biodiversity of the Manora coast, ensuring that the construction and operation of the IDCC contribute positively to conservation efforts.

## **2.6 Heritage Conservation Plan (ESS 8)**

Given the proximity of the IDCC project site to the historic Manora Fort (owned by State Archeology Dept.) a comprehensive Heritage Conservation Plan will be developed as per the prevailing norms. This plan is intended to safeguard the archaeological and cultural integrity of this heritage site, ensuring that the project's development will not adversely impact its historical significance.

Key Components of the Heritage Conservation Plan will include:

- i. **Buffer Zone Establishment:** A clearly defined buffer zone will be established around the boundary of Manora Fort. This zone will be designated as a 'no activity area' to prevent any construction or operational impacts on the fort's structural and aesthetic values.
- ii. **Workforce Education:** All personnel involved in the project will receive thorough briefings on the importance of the nearby heritage site. This includes detailed information on the site's historical significance and the specific restrictions in place to protect it. Regular reminders and educational materials will be provided to ensure ongoing awareness and compliance.
- iii. **Monitoring and Compliance:** Continuous monitoring will be conducted to ensure that the buffer zone is respected and that no activities encroach upon the restricted area. Compliance officers will be appointed to oversee adherence to the guidelines set forth in this plan and to address any infractions immediately.
- iv. **Collaboration with Heritage Authorities:** The project team will work closely with local heritage authorities to align the conservation efforts with national standards and to gain insights into best practices for preserving the cultural heritage. This collaboration will also assist in modifying the conservation strategies as needed.

based on expert advice and historical research.

- v. **Impact Assessment and Mitigation Strategies:** An initial assessment will be conducted to identify any potential impacts of the project on the heritage site, followed by the development of mitigation strategies tailored to preserve the site's integrity. These strategies will be integrated into the overall project planning and execution phases to ensure they are effectively implemented.

This Heritage Conservation Plan aims to protect and preserve Manora Fort while allowing for the responsible development of the IDCC. By implementing strict protective measures and promoting a respect for cultural heritage among the project team, the plan ensures that development activities coexist harmoniously with the preservation of historical legacies.

## **2.7 Stakeholder Engagement Plan (SEP) (ESS 10)**

Effective stakeholder engagement is crucial for the success of the IDCC project. The SEP will be developed to ensure comprehensive and systematic engagement with all relevant stakeholders throughout the project lifecycle. This plan aims to strengthen open communication, address concerns, and incorporate stakeholder feedback into project decision-making processes.

### **Key Components of the Stakeholder Engagement Plan will include:**

- i. **Identification of Stakeholders:** A thorough mapping of all potential stakeholders, including local communities, government entities, non-governmental organizations, and other interest groups, will be conducted to understand their interests and concerns regarding the project.
- ii. **Stakeholder Consultation:** Regular consultations will be scheduled to engage with stakeholders at various stages of the project. These consultations will provide platforms for stakeholders to voice their opinions, ask questions, and offer suggestions.
- iii. **Engagement Planning:** The stakeholder engagement activities will be planned in accordance with the project cycle. This will include setting up meetings, workshops, and public forums at critical milestones of the project.
- iv. **Development of Timelines for Information Disclosure:** Clear timelines will be established for disclosing important project information such as the Detailed Project Report (DPR), Environmental and Social Management Framework (ESMF), Environmental and Social Due Diligence (ESDD), Environmental and

Social Management Plan (ESMP), and Comprehensive Environmental and Social Impact Assessment (ESIA). This information will be made accessible to stakeholders via the project's official website.

- v. Feedback Mechanisms: Efficient mechanisms will be put in place to facilitate the collection and analysis of stakeholder feedback. These mechanisms will ensure that stakeholders can easily provide their input within specified time limits, and that their feedback is considered in project planning and implementation.
- vi. Documentation and Reporting: All engagements, feedback, and outcomes from stakeholder interactions will be documented and reported. This documentation will be reviewed regularly to adapt engagement strategies as needed and to report on engagement activities to project management and external bodies as required.

The SEP is designed to ensure that all stakeholders are well-informed, actively engaged, and have their concerns adequately addressed, thereby enhancing the project's transparency and support.

## **3.0 ENVIRONMENTAL AND SOCIAL MITIGATION AND MONITORING PLAN**

### **3.1 Purpose of Environmental and Social Mitigation and Management**

The primary objective of this section is to articulate a comprehensive Environmental and Social (E&S) Risk Mitigation and Management Plan. This plan is essential for addressing the environmental and social risks that were identified during the ESDD process of the project. It details the specific management actions and procedures, including labor management, that were discussed in section 2.

This section will outline the mitigation strategies designed to minimize or eliminate adverse impacts, the monitoring mechanisms to ensure these strategies are effectively implemented, and the responsibilities assigned to various stakeholders for both mitigation and monitoring. A detailed description of each risk, the corresponding mitigation measure, and the monitoring protocol will be presented in Table 3.1.

Additionally, the plan specifies the responsible person or institution for each action, ensuring clear accountability and systematic oversight throughout the project's lifecycle. This approach ensures that all potential environmental and social impacts are managed proactively and with the highest level of diligence.

### **3.2 E&S Mitigation and Monitoring Plan – Action Responsibility Matrix**

This section presents the Action Responsibility Matrix, a detailed framework outlining the specific environmental and social mitigation measures and monitoring protocols for the International Dugong Conservation Centre project. It specifies the roles and responsibilities assigned to various project stakeholders to ensure effective implementation and oversight. The matrix categorizes actions based on the project stages—Pre-Construction, Construction, and Post-Construction—each with tailored mitigation strategies and monitoring requirements. This structured approach facilitates clear accountability and efficient management of environmental and social impacts throughout the project lifecycle. The following table summarizes these responsibilities and activities.

| Table 3.1: Environment and Social Mitigation and Management Plan |                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                  |                                       |                        |                          |
|------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------|------------------------|--------------------------|
| Activity and Environmental aspects                               | Potential Environmental and Social impacts                                                                                                                                                                                                                                                                                  | Mitigation Measures                                                                                                                                                                                                                                                                                                                              | Monitoring requirements and Frequency | Responsibilities       |                          |
|                                                                  |                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                  |                                       | Planning and Execution | Supervision / Monitoring |
| Stage of Action - Pre-Construction                               |                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                  |                                       |                        |                          |
| Design/ Planning of IDCC                                         | <ul style="list-style-type: none"><li>Impacts on land, soil, adjoining sensitive habitats, community through construction waste, air and noise pollution, traffic load in the community access roads</li></ul>                                                                                                              | <ul style="list-style-type: none"><li>Adoption of eco-friendly design concepts (water efficient, energy efficient, eco-friendly materials)</li><li>Development of traffic management strategies</li><li>Disaster resilient design concepts (avoiding overhangs,etc.)</li></ul>                                                                   | Weekly                                | IA                     | SPMU                     |
| Land Ownership by TN-Forest Dept.                                | <ul style="list-style-type: none"><li>The Government land belongs to the category of coastal poramboke.</li></ul>                                                                                                                                                                                                           | <ul style="list-style-type: none"><li>Commissioner of Land Administration (CLA) has recommended the transfer of land at Manora to the Tamil Nadu Forest Department.</li></ul>                                                                                                                                                                    | Weekly                                | IA                     | SPMU                     |
| Permits/ Clearances/ Approvals                                   |                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                  | Weekly                                | IA                     | SPMU                     |
| Stage of Action - Construction                                   |                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                  |                                       |                        |                          |
| Construction of IDCC                                             | <ul style="list-style-type: none"><li>Impacts on Biodiversity, habitats</li><li>Community health &amp; safety</li><li>Air/ Noise Pollution</li><li>Construction Waste/ Debris Generation</li><li>Construction Water requirement</li><li>Increased Traffic Load due to transportation of materials and machineries</li></ul> | <ul style="list-style-type: none"><li>Awareness generation for project staff, No dumping near habitats</li><li>Best possible protection of natural vegetation/ mangrove</li><li>Provisioning mufflers for vehicles, ear muffs for workers exposed at high noise/vibration sites, noise suppression devices, minimizing noise producing</li></ul> | Daily                                 | Contractor             | IA                       |

**Table 3.1: Environment and Social Mitigation and Management Plan**

| Activity and Environmental aspects | Potential Environmental and Social impacts                                                                                                                                                 | Mitigation Measures                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Monitoring requirements and Frequency | Responsibilities       |                          |
|------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------|------------------------|--------------------------|
|                                    |                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                       | Planning and Execution | Supervision / Monitoring |
|                                    | <p>to the project site</p> <ul style="list-style-type: none"> <li>• Top soil removal</li> <li>• Labour camps- facilities and waste generation</li> <li>• Workers safety, health</li> </ul> | <p>machineries during night time to ensure protection of wild animals, movement of vehicles for material transport during day time only.</p> <ul style="list-style-type: none"> <li>• Recyclable construction wastes to be stored properly and disposed through authorized vendors.</li> <li>• Barricading of construction zone with safety sign boards</li> <li>• Water conservation practices to be adopted</li> <li>• All vehicles delivering construction materials to the site shall be covered to avoid spillage of materials and air pollution.</li> <li>• Top soil to be preserved for later landscaping</li> <li>• Basic amenities and safety features to be ensured at labour camps.</li> <li>• Waste generated from labour camps to be managed properly without affecting surrounding environment.</li> <li>• PPE and safety measures for workers to be provided.</li> </ul> |                                       |                        |                          |

**Table 3.1: Environment and Social Mitigation and Management Plan**

| Activity and Environmental aspects         | Potential Environmental and Social impacts                                                                                                                                | Mitigation Measures                                                                                                                                                                                                                                                                                 | Monitoring requirements and Frequency | Responsibilities       |                          |
|--------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------|------------------------|--------------------------|
|                                            |                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                     |                                       | Planning and Execution | Supervision / Monitoring |
|                                            |                                                                                                                                                                           | <ul style="list-style-type: none"> <li>Labour camp waste to be managed properly without affecting the surrounding ecosystem.</li> <li>PPE and safety measures are to be provided to the workers.</li> </ul>                                                                                         |                                       |                        |                          |
| Development of Mangrove eco-trail          | <ul style="list-style-type: none"> <li>Impacts on existing mangroves due to mobilization of materials and installations</li> </ul>                                        | <ul style="list-style-type: none"> <li>Protection measures are to be taken during development and installation activities on the island and transportation of materials to provide the best protection to the mangroves.</li> <li>Mangrove expansion to be initiated.</li> </ul>                    | Daily                                 | Contractor             | IA                       |
| <b>Stage of Action – Post-Construction</b> |                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                     |                                       |                        |                          |
| Tourist/ visitors Increase                 | <ul style="list-style-type: none"> <li>Solid waste/ plastic waste generation</li> <li>Increased number of vehicles and air/noise pollution, traffic congestion</li> </ul> | <ul style="list-style-type: none"> <li>Solid waste management plan and treatment system to be developed</li> <li>Awareness to be promoted for reducing and restricting plastic.</li> <li>Air/noise quality to be monitored periodically and remedial measures to be adopted as per plan.</li> </ul> | Monthly                               | IA                     | SPMU                     |

## **4.0 IMPLEMENTATION ARRANGEMENTS AND ESMP BUDGET**

### **4.1 Implementation, Supervision Arrangements and Recommendations**

The District Forest Office, Thanjavur, Tamil Nadu Forest Department; henceforth, DFO, is designated as the primary agency responsible for the implementation of the IDCC project, in collaboration with the contracted construction firm. It is imperative that the DFO ensures rigorous enforcement of Labor Management Procedures, Grievance Redress Mechanisms (GRM), and other critical operational guidelines.

In alignment ESDD and the standard ESMP, the contractor is required to integrate these frameworks into the bidding process. Upon award of the contract, the contractor must submit a Comprehensive Environmental and Social Impact Assessment (C-ESIA) and an updated ESMP that reflects the latest inputs from the management plans, incorporating elements from both the ESDD and the Environmental and Social Management Framework (ESMF) of the TN SHORE project. Additionally, the contractor must include a detailed budget within the bid for preparing the C-ESIA and for implementing the ESMP provisions.

### **4.2 Reporting by Contractor and Monitoring by DFO, Thanjavur**

The contractor is tasked with preparing a quarterly progress report that adheres to the Environmental and Social Mitigation and Management Plan (outlined in Section 3.2) and addresses any related issues that arise during construction. This report must also detail any incidents of accidents, injuries, and GBV concerns, along with the actions taken to resolve and prevent such incidents.

### **4.3 Reporting by DFO, Thanjavur to TNGCC**

The Implementing Agency (DFO, Thanjavur) is responsible for compiling a comprehensive report detailing the progress at the project site. This report will cover compliance with the measures outlined in the ESMP, and document any accidents or incidents of GBV. It will then be submitted to the TN SHORE project authorities through the Forest Department, ensuring transparency and accountability throughout the construction process.