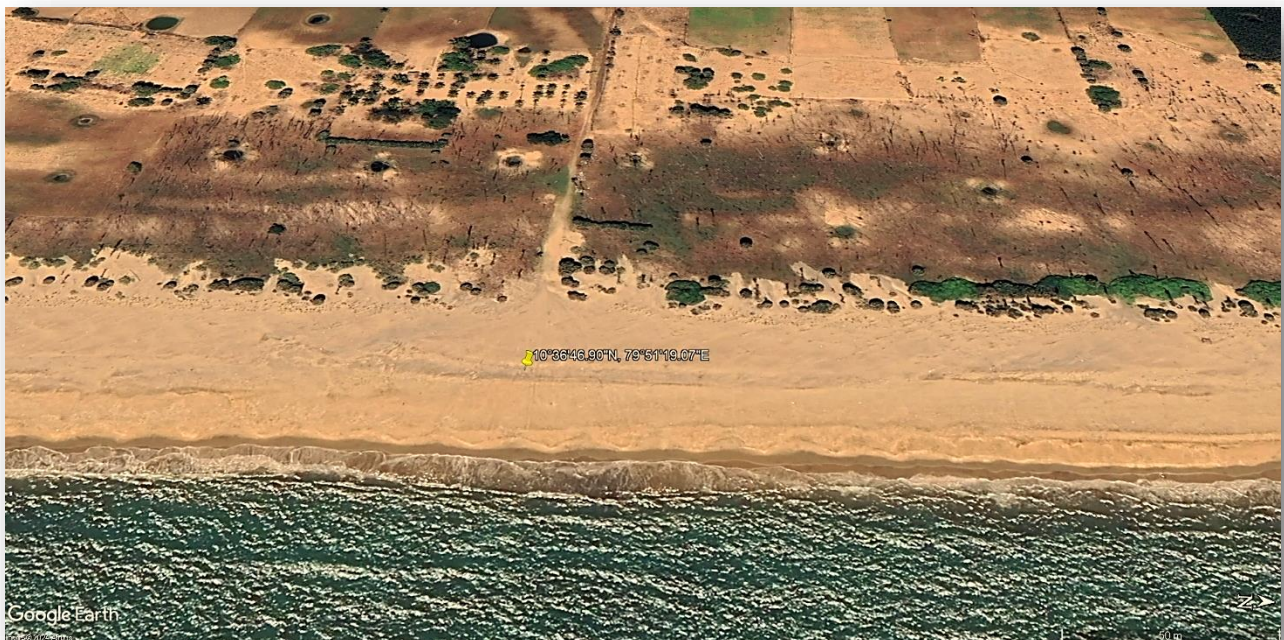


**Tamil Nadu Sustainably Harnessing Ocean Resources and Blue Economy
(TN-SHORE)**

Environment and Social Due Diligence Report

for

**Blue Flag Beach Certification of Kameswaram Beach,
Nagapattinam**



May, 2024

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Blue Flag Beach Certification of Kameswaram Beach, Nagapattinam

EXECUTIVE SUMMARY

The Tamil Nadu - Sustainably Harnessing Ocean Resources and Blue Economy (TN-SHORE) project, supported by the World Bank, aims to enhance coastal resource management and promote sustainable tourism. Kameswaram Beach in Nagapattinam district has been selected for the prestigious Blue Flag certification, signifying adherence to the highest standards of environmental management, safety, and education.

The Environmental and Social Due Diligence Report (ESDDR) for Kameswaram Beach assesses the potential environmental and social impacts of the proposed development. Key interventions include waste management, mechanized beach cleaning, and the installation of BIO-Digester units for wastewater treatment. Infrastructure improvements will focus on eco-friendly amenities such as toilet blocks, changing rooms, solar power facilities, accessible pathways, and safety and information infrastructure. Environmental education will be promoted through events and activities to raise awareness about conservation and sustainable practices. Data collection and monitoring will involve regular assessments of beach suitability, water quality, ecological impact, and safety to ensure compliance with Blue Flag standards.

The stakeholder engagement process has incorporated feedback from local communities, government officials, environmental specialists, and tourists. This collaborative approach ensures alignment with the needs and expectations of all stakeholders, promoting economic growth, cultural preservation, and environmental stewardship. The ESDDR identifies key risks such as pollution from waste storage and potential gender-specific impacts, with mitigation measures including rigorous monitoring, community engagement, and adherence to the World Bank's Environmental and Social Standards (ESS).

Overall, the project is classified as having moderate risk, with positive outcomes expected, including enhanced cleanliness, biodiversity conservation, reduced marine litter, improved water quality, and increased tourism. Achieving Blue Flag certification will transform Kameswaram Beach into a model of sustainable coastal tourism, fostering socio-economic development and ensuring the long-term sustainability of coastal resources.

1.0 INTRODUCTION

1.1 Project overview

The Government of Tamil Nadu, with financial support from the World Bank, has initiated the Tamil Nadu - Sustainably Harnessing Ocean Resources and Blue Economy (TN – SHORE) project. This ambitious project aims to enhance the resilience and sustainable utilization of coastal resources through a multi-faceted approach, promoting a resilient and circular blue economy, empowering local livelihoods, and strengthening capacities for a greener future. A key sub-project within this initiative is the accomplishment of Blue Flag certification for Kameswaram Beach in Nagapattinam district.

The Blue Flag Programme is a globally respected and recognized eco-label that promotes sustainable development in coastal and marine environments. It sets high standards in four key categories: safety, water quality, environmental management, and environmental education. The Government of Tamil Nadu has committed to obtaining Blue Flag certification for ten beaches under the Beach Environment & Aesthetics Management Services (BEAMS) programme, with Kameswaram Beach being one of the selected sites.

The current proposal focuses on developing infrastructure facilities, implementing pollution abatement measures, and enhancing safety and surveillance services at Kameswaram Beach. Located on India's southeast coast along the Coromandel Coast of the Bay of Bengal, the beach is poised to become a premier eco-tourism destination. The Department of Environment and Climate Change, Government of Tamil Nadu, has outlined an ambitious plan for developing beach tourism in the state, allocating INR 100 crores to support the Blue Flag Beach Certification Programme. This initiative underscores the state's commitment to attracting international tourists while conserving coastal areas and promoting sustainable tourism practices.

1.2 Sub-Project Description

Kameswaram is located within the Kaduvaiyar and Vedaranyam Canal Basin in Nagapattinam district, Tamil Nadu. The Kaduvaiyar and Vedaranyam Canal is one of the six major river basins in the district, encompassing areas such as Nagapattinam, Karappidagai South, and Kovilpathu. Notably, the Nagapattinam River is a significant watercourse in this region. Additionally, the Kollidam River, along with its tributaries—including Odampokki, Mullaiyar, Vallapar, Adappar, Thirumalairajanar, Arasalar, Manjalar, Harichandranadhi, Veeracholanar, Ayyapanar, Cauvery, and Vikramanar—play a crucial role in the hydrology of this area. Cauvery is one of the major rivers in South India, traversing Tamil Nadu and the Union Territory of Puducherry.

The entire basin covers an area of 4,498.5 sq.km. The Nagapattinam coast is also renowned for Olive Ridley turtle nesting, and efforts are underway to establish a dedicated turtle conservation and education centre in the district. The GPS coordinates of Kameswaram Beach are from 10°36'46.90"N latitude and 79°51'19.07"E longitude. (Figure 1)

The beach itself spans an area of 0.06 sq.km (11,781 square meters), with 430 square meters designated for the proposed infrastructure development. Kameswaram Beach attracts an average of 2,300 visitors on weekdays, with the number rising to 3,500 on weekends and public holidays. During the summer months, daily visitor counts range from 2,500 to 3,000.

1.3 Proposed interventions/activities and intended outcomes

The Kameswaram Beach Blue Flag project encompasses a comprehensive suite of interventions and activities aimed at enhancing the environmental, social, and economic aspects of the beach. These are designed to meet the stringent criteria required for Blue Flag certification, thereby ensuring the sustainable development of the beach area. The proposed interventions are categorized into the following areas:

I. Pollution Abatement Services:

- a. **Site-Specific Interventions:** Implementation of targeted measures to address and mitigate pollution sources, including beach litter, debris, plastics, solid waste, and wastewater.
- b. **Mechanized Beach Cleaning:** Utilization of walk-behind machines for efficient and regular cleaning of the beach to maintain high cleanliness standards.
- c. **Wastewater Management:** Installation of BIO-Digester/BIO-Tank Units, including Grey Water Treatment Plants and Fluidized Aerobic Bio-Reactors, to treat and manage wastewater effectively.
- d. **Solid Waste Management Plan:** Development and execution of a comprehensive plan for the collection, segregation, recycling, and disposal of solid waste generated on the beach.

II. Infrastructure Facilities Development:

- a. **Beach Planning and Zoning:** Strategic planning and zoning of the beach area to optimize usage and minimize environmental impact.

- b. Infrastructure Development:** Construction of essential facilities such as toilet blocks, changing rooms with shower panels, bamboo-made items and structures (e.g., seating benches, umbrellas), a 40 KW solar power plant, purified drinking water facilities, LED landscape lighting, beach access pathways, and an amphibious wheelchair.
- c. Safety and Information Infrastructure:** Installation of beach safety and information flags, a CCTV system, a control room, a site office, water rescue equipment, first aid and safety equipment, environment education displays, do's and don'ts kiosks, and a beach layout map and information board.

III. Environmental Education Events:

Organization of events and activities aimed at raising awareness and educating visitors and the local community about environmental conservation and sustainable practices.

IV. Data Collection for Blue Flag Criteria Compliance:

- a. Pre-Field Screening:** Initial assessment to identify potential environmental and social issues.
- b. Beach Suitability Assessment Survey (BSAS):** Comprehensive survey covering parameters such as geology, geomorphology, ecosystem, pollution, socio-economic factors, facilities, and other relevant issues.
- c. Preparation of Geomorphological & CRZ Maps:** Creation of detailed maps to understand and manage the coastal zone effectively.
- d. Ecology/Environmental Evaluation and Impact Assessment:** Assessment of the ecological and environmental impacts of the proposed interventions.
- e. Safety & Risk Assessment:** Analysis of bathymetry, wave studies, currents, and biodiversity impact to ensure the safety of beachgoers.
- f. Beach Water Quality Testing (BWQT):** Regular monitoring of beach water quality for physical, chemical, and biological contamination.

V. Obtaining Blue Flag Beach Certification and intended outcome:

Completion of all necessary steps and fulfilment of the 33 criteria stipulated for Blue Flag certification. The implementation of these interventions is expected to result in the following outcomes:

- a. **Enhanced Cleanliness:** Achieving an "A++ Category (Outstanding)" cleanliness level for the newly developed Blue Flag beach.
- b. **Biodiversity Conservation:** Effective mechanisms in place to protect and conserve beach vegetation and associated biodiversity.
- c. **Marine Litter Reduction:** Reduction of marine litter by 80% to 85% from existing levels, with conversion/safe disposal mechanisms for marine litter.
- d. **Water Quality Monitoring:** Regular monitoring and maintenance of bathing water quality to ensure safety and hygiene.
- e. **Safe Recreational Areas:** Clear demarcation of safe areas for bathing, swimming, and other recreational activities.
- f. **Economic Development:** Income generation and livelihood development for local communities through enhanced tourism and the development of eco-labelled beach recreational facilities of international standards.
- g. **Increased Visitor Numbers:** Over 200% increase in visitors for beach recreational activities, leading to revenue generation and alternate livelihoods for local fishermen communities.

These interventions and outcomes are aligned with the SDGs and are aimed at establishing Kameswaram Beach as a model of sustainable and responsible coastal tourism.

1.4 Implementation arrangement and schedule

The implementation of the Kameswaram Beach Blue Flag activity is structured around a strategic framework that ensures a systematic and phased approach to achieving the project objectives. The strategy encompasses the following aspects, all of which are critical for the successful attainment of the Blue Flag certification:

- suitability assessment,
- demarcation,
- infrastructure development, and
- certification processes

Strategy for implementation of suitability assessment, demarcation, infrastructure development and certification will be implemented as per Figure 2 given below:

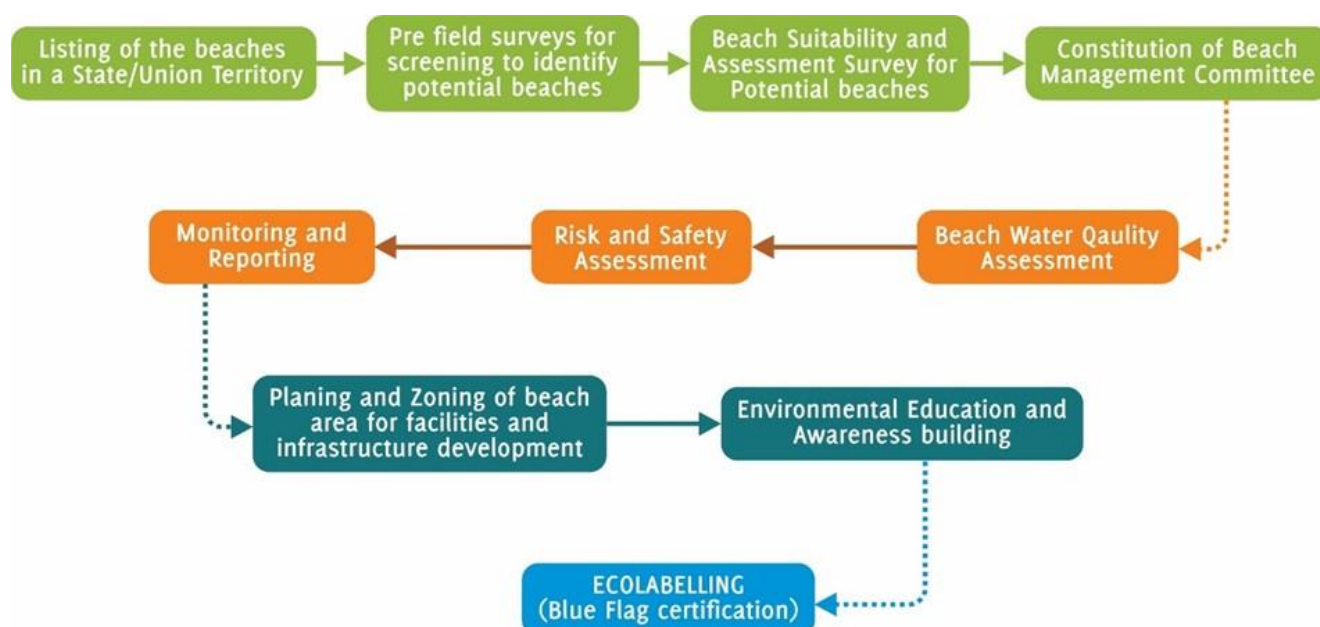


Figure 2: Strategy for implementations various activities for Blue Flag beach

Implementation Strategy:

The strategy for implementing the project is outlined in a detailed flow diagram which illustrates the sequential steps and interdependencies of the various activities. Key components of the implementation strategy include:

- a. **Suitability Assessment:** Conducting comprehensive studies, including BSAS, to evaluate the beach's eligibility for Blue Flag certification based on established criteria.
- b. **Demarcation:** Clearly demarcating zones for different activities and implementing measures to protect sensitive areas, ensuring the sustainable use of beach resources.
- c. **Infrastructure Development:** Developing and upgrading infrastructure, such as toilet blocks, changing rooms, waste management systems, and safety facilities, to meet Blue Flag standards.
- d. **Certification Process:** Undertaking rigorous monitoring and evaluation to ensure compliance with Blue Flag criteria, followed by the submission of an application for certification.

Implementation Schedule:

The project implementation is divided into several phases, with each phase having specific timelines and milestones:

- a. **Preparation Phase (Months 1-3):** Initial assessments, stakeholder consultations, and development of project plans.
- b. **Assessment and Planning Phase (Months 4-6):** Conducting BSAS, environmental impact assessments, and finalizing the project design.
- c. **Infrastructure Development Phase (Months 7-12):** Construction and installation of necessary infrastructure, with regular monitoring to ensure adherence to standards.
- d. **Monitoring and Evaluation Phase (Months 13-15):** Continuous monitoring of beach water quality, safety measures, and other criteria, with adjustments made as necessary.
- e. **Certification Application Phase (Month 16):** Compilation of documentation and submission of the application for Blue Flag certification.
- f. **Post-Certification Phase (Month 17 onwards):** Ongoing maintenance, monitoring, and periodic reassessment to retain the certification status.

This schedule is designed to ensure a systematic and timely execution of the project activities, leading to the successful certification of Kameswaram Beach as a Blue Flag beach.

		During construction phase (12 months)		Post construction phase (12 months)	
	Position	Number	Salary (approx.)/ month	Number	Salary (approx.)/ month
1	Beach manager	1	90000	1	90000
2	Beach engineer	0	0	1	50000
3	Beach supervisor	1	45000	2	45000
4	Clearing and maintenance	10	27500	15	27500
5	Security	2	37000	4 (M) +2 (F)	37000
6	CCTV operator	0	0	1	32000
7	First aid attendant	0	0	1	40000
8	Life guard	0	0	4	37000

*Total number of labours (in addition to the above manpower) to be involved directly in the construction activities (during construction phase only) may vary between 20 and 35 based on the requirement of the contractor.

1.5 Purpose of Environment and Social Due Diligence (ESDD)

The main purpose of the ESDD is to identify the key environmental and social impacts of the sub-project, and to develop an environmental and social management plan to mitigate the adverse impacts, if any. It is a tool for the implementing agency to

- a. **Identify and evaluate possible environmental and social (E&S) impacts:** Systematically assess the potential environmental and social (E&S) impacts of the sub-project, including both positive and negative effects.
- b. **Prepare a comprehensive mitigation and management plan:** Formulate a robust ESMP to address and mitigate identified adverse impacts, ensuring compliance with relevant standards.
- c. **Ensure Compliance with Legal and Regulatory Frameworks:** Clarify relevance and applicability of various international, national and bylaws for the proposed activities.
- d. **Determine the need for further assessments:** Based on the initial findings, decide whether a comprehensive Environmental and Social Impact Assessment (ESIA) or additional management plans are required for effective project implementation.

A detailed project report (DPR) is prepared for the baseline environment of the proposed area of execution. Then, a detailed assessment of each sub-project activity is laid out including risk assessment. ESDDR is done through use of initial E&S screening forms, using the information from the DPR document.

1.6 Approach for conducting the ESDD

The approach for conducting the ESDD involves a systematic and phased process:

- a) **Preparation of a Detailed Project Report (DPR):** Compile a baseline environmental report for the proposed project area, outlining the existing environmental and social conditions.
- b) **Initial Screening:** Utilize environmental and social screening forms to identify potential impacts and risks based on information from the DPR.
- c) **Stakeholder Engagement:** Engage with local communities, government authorities, and other stakeholders to gather input and ensure transparency throughout the process.

The ESDD serves as a dynamic tool for the implementing agency, guiding the integration of environmental and social considerations into the planning and execution of the Kameswaram Beach Blue Flag project, thereby promoting sustainable development and social inclusivity.

2.0 LEGAL AND INSTITUTIONAL FRAMEWORK AND CAPACITY ASSESSMENT

2.1 Policy and Legal Framework

The policy and legal framework for the Kameswaram Beach Blue Flag project is governed by a comprehensive set of national and state laws, regulations, and notifications that are pertinent to the proposed beach development activities. These legal instruments provide the foundation for ensuring environmental protection, social welfare, and sustainable development throughout the project lifecycle. For the execution and implementation of the Blue Flag beach at Kameswaram beach, the following key laws and regulations are essential:

- i. **Environment Protection Act, 1986:** Overall environment protection, compliance to environmental standards (air, water, and noise) issued under Environment (Protection) Rules.
- ii. **Coastal Regulation Zone (CRZ) Notification, 2011/2019:** Governs all aspects of the proposed development in coastal areas, ensuring the protection of the coastal environment while allowing sustainable development. It has relaxations for Blue Flag beaches.
- iii. **Air (Prevention and Control of Pollution) Act, 1981, 1987:** Protection of air quality, requiring Consent to Establish (CTE) and Consent to Operate (CTO) for units/activities causing air pollution.
- iv. **Water (Prevention and Control of Pollution) Act, 1974, 1988:** Protection of water quality, requiring Consent to Establish (NOC) and Consent to Operate (CTO) for units/activities causing water pollution.
- v. **Solid Waste Management Rules, 2016:** Management of solid waste generated from the project activities.
- vi. **Plastic Waste Management Rules, 2016:** Management of plastic/micro-plastic wastes on the beach.
- vii. **Noise Pollution (Regulation and Control) Rules, 2000:** Compliance with ambient noise standards, especially during construction and operation phases.
- viii. **Biodiversity Act, 2002:** Conservation and preservation of existing ecosystems in the beach area.

- ix. **Wildlife Protection Act, 1972:** Protection of species in coastal and marine areas adjacent to the proposed beach.
- x. **Construction and Demolition Waste Management Rules, 2016:** Management of construction and demolition wastes.
- xi. **Disaster Management Rules, 2005:** Management of disasters and adherence to codes of construction in disaster-prone areas.
- xii. **Public Liability Insurance Act, 1991:** Public liability insurance for providing immediate relief to persons affected by accidents occurring while handling hazardous substances.
- xiii. **Marine Fisheries (Regulation and Management) Act, 1983:** Regulation of fishing activities and conservation of marine resources in the coastal zones.
- xiv. **Code on Wages (2019):** Deals with minimum wages, bonus payments, and wage deductions [reference: Ministry of Labour and Employment (<https://labour.gov.in/>)].
- xv. **Occupational Safety, Health and Working Conditions Code (2020):** Focuses on workplace safety, health, and working conditions [reference: Ministry of Labour and Employment (<https://labour.gov.in/>)].

2.2 Description of Institutional Framework

The sub-project activities and strategies will be implemented by a beach management committee (BMC), led by a beach manager. To lead the beach team, achieves goals and ensures that the total identified beach area with sun-beds & bathing zone operate efficiently and profitably while maintaining company's reputation and ethos. He must lead & coordinate a variety of activities, e.g., controlling, managing stock levels, daily and weekly reporting, resource deployment & control. He is responsible for the high standards of service quality, health and safety. Beach management combines strategic planning and day- to-day management activities, including:

- i. **Strategic Planning and Oversight:** The Beach Manager is responsible for overseeing the operation of the entire beach area, including the recreation complex, parking lots, toilets, and changing room facilities. This involves strategic planning to ensure that all beach operations are aligned with the overall goals of the project.
- ii. **Supervision and Training:** The Beach Manager provides supervision to attendants and lifeguards, ensuring they are well-trained and equipped to perform

their duties effectively. This includes conducting regular training sessions to keep the staff updated on the latest safety protocols and customer service standards.

- iii. **Safety and Cleanliness:** A key responsibility of the BMC is to create a safe and clean environment for beach patrons and guests. This involves regular monitoring and maintenance of the beach area, including the sun-beds and bathing zones, to ensure they meet the required standards of safety and cleanliness.
- iv. **Resource Management:** The Beach Manager is responsible for controlling and managing stock levels, deploying resources efficiently, and ensuring that all equipment and facilities are in good working condition.
- v. **Reporting and Communication:** The Beach Manager is tasked with daily and weekly reporting to higher management, providing updates on the beach operations and any issues that need to be addressed.
- vi. **Delegation of Responsibilities:** In the absence of the Beach Manager, responsibilities are assigned to Assistants or Supervisors to ensure the smooth operation of the beach.

The detailed duties and responsibilities of the BMC and the Beach Manager are outlined in the DPR document (Chapter 5). This framework is designed to ensure that the beach operates efficiently and profitably, with a focus on maintaining high standards of service quality, health, and safety for all beach patrons and guests.

3.0 ASSESSMENT OF ENVIRONMENTAL AND SOCIAL CONDITIONS

The ESSDR for the Blue Flag certification of Kameswaram Beach includes a thorough assessment of the environmental and social conditions in the project area. This section provides an overview of the physical, protected, social, and cultural environments, offering a detailed understanding of baseline conditions and potential impacts.

3.1 Physical Environment

The physical environment of the project area encompasses its physiography, topography, land use and land cover, and climate. This section, detailed in Chapter 3 of the DPR, provides a comprehensive analysis of baseline environmental conditions. Key aspects covered include coastal geomorphology, sediment characteristics, hydrodynamics, and prevailing climatic conditions. The geology of [Kameswaram](#) is dominated by clay, sedimentary rock and sandstone. Presence of fine sand and well sorted to moderately well sorted nature of sediments was recorded. Linear discriminant functions of sediments indicate an Aeolian processes was dominant for the deposition of the fine grained sediments in shallow agitating water from the beach. The beach has an average wind speed of 4.6 m/s and a maximum wind speed of roughly 10 m/s. The relative humidity remains at 74.5% on average, ranging from 44.6% to 95.8%. Windrose of the area reveals that wind blows primarily from the NE, accounting for around 19.72% of all wind directions. A gentle beach slope with fine sediments was observed during the safety and risk assessment survey at the beach. However, about 300m coastal stretch is found suitable for bathing. Understanding these factors is essential for identifying potential environmental impacts and developing effective mitigation measures for the sustainable development of Kameswaram Beach and its surrounding areas.

3.2 Protected Area

The coast of Nagapattinam is renowned for Olive Ridley turtle nesting, with significant nesting areas near Velankanni. During the current season (December 2023 - March 2024), the Forest Department collected over 2,000 eggs by early January, with 200 eggs collected in the Nagapattinam range, which includes Kameswaram. Although no nesting has been reported directly in the Kameswaram area, local accounts were thoroughly reviewed for confirmation.

A comprehensive examination of the project area and its immediate vicinity has confirmed that the proposed site for Blue Flag certification does not fall within any designated Wildlife or Forest protected areas. This assessment ensures compliance with national and international conservation regulations, helping to identify potential environmental constraints that may need to be addressed during project implementation.

To ensure thorough monitoring, responsible entities will be identified in ESMP to document any isolated turtle nesting occurrences in the vicinity of the project area. In case of nesting, wildlife authorities will be contacted, and appropriate measures will be taken as per regulation.

3.3 Social Environment

Kameswaram Beach is home to a close-knit traditional community with a distinct culture and way of life. The primary sources of income for residents of the nearby village are agriculture and fishing, supported by favourable rainfall and groundwater levels. The population of the coastal village of Kameswaram is around 5,600 and there are 4 elementary schools & one high school in the village. The female sex ratio per 1000 males was 1021 in the rural part of the Nagapattinam district¹. The beach holds cultural significance for the community, often being the centre for traditional practices and festivals.

The introduction of increased tourism could bring new customs and ideas, potentially leading to a gradual shift in the traditional way of life. This interaction can have both positive and negative effects, depending on the community's perspective. However, by prioritizing community involvement and promoting responsible tourism practices, tourism can become a positive force for economic growth, enhancing livelihoods while preserving the unique cultural identity and social fabric of the local community.

3.4 Cultural Environment

The cultural environment assessment included a review of the National Monuments in Tamil Nadu and the State Protected Monuments in the Nagapattinam district, combined with local knowledge from the project team. Although the district houses protected monuments identified by the Archaeological Survey of India, none are located near the project site.

Local attractions near Kameswaram Beach (within 5 km radius of the beach) include the Kameswarar Temple, a shrine, a mosque, the beach itself, and the Beach Temple dedicated to Lord Shiva. These cultural sites contribute to the area's rich heritage and offer additional points of interest for visitors, enhancing the cultural value of the beach and its surroundings.

¹ <https://tamil.vkp-tnrtp.org/wp-content/uploads/2023/06/NAGAPATTINAM-FINAL.pdf>

4.0 ACTIVITY WISE ENVIRONMENT & SOCIAL SCREENING, RISK AND IMPACTS IDENTIFICATION

4.1 Sub-Project Screening

The sub-project screening for the Blue Flag certification of Kameswaram Beach is conducted following a structured three-step screening methodology, as outlined in the Environmental and Social Management Framework (ESMF). This process is designed to systematically identify and assess the potential environmental and social (E&S) risks and impacts associated with each proposed intervention within the project area.

Step I: Initial Screening (using Form SF-1)

The initial screening is carried out using the Project Screening Template and the first screening format (SF-1). This step involves a detailed review of each proposed intervention to ascertain its applicability to the sub-project, its location (whether within or outside the project area), and the likely risks and impacts. The SF-1 format is specifically designed to identify various types of E&S risks for each rehabilitation activity, including but not limited to:

- Water Quality
- Fisheries
- Conservation Areas
- Protected Areas
- Ecology
- Physical Environment
- Cultural Environment
- Tribal Presence
- Private Land/Assets/Encroachers/Squatters
- Labour
- Migrant Labour
- Gender-Based Violence (GBV) risks

During the screening of various project components, it was determined that none of the activities are likely to have any impact outside the project area. However, two of the project components were identified as having potential impacts within the project area, specifically related to environmental and social risks.

Step II: Risk/Impact Intensity Assessment (using Form SF-2)

The second screening format (SF-2) is used to assess the extent of risk/impact intensity for each identified E&S risk. This assessment is crucial for categorizing the risk level as Low, Moderate, Substantial, or High. The categorization helps in prioritizing the risks and focusing on mitigation measures for those with higher intensity.

Step III: E&S Risk Summary (using Form SF-3)

The third E&S risk summary format (SF-3) is used to consolidate the risk categories for all different types of E&S risks and impacts. The highest of the risk categories is then assigned as the overall risk category for the given Blue Flag sub-project. This comprehensive risk summary aids in the formulation of targeted mitigation and management strategies.

Based on the findings from the three-step screening process, the ESDD report recommends the risk category of the sub-project – whether it is Low, Moderate, Substantial, or High. Additionally, the report suggests the types of instruments that need to be prepared to effectively manage and mitigate the identified risks and impacts.

This systematic screening approach ensures that all potential environmental and social risks and impacts are thoroughly assessed and addressed, paving the way for the sustainable and responsible development of Kameswaram Beach as a Blue Flag certified beach.

The screening process for environmental and social risks and impacts associated with the Blue Flag certification of Kameswaram Beach is meticulously carried out using Forms SF-1 and SF-2. The following tables provide a structured assessment of the potential risks and impacts for each project component and sub-activity:

Form SF-1: Screening of Project components

Sl. No.	Project Component	Applicability	Location of Risk: within the Restoration Area (RA)/ Outside the Restoration Area (ORA)	Likely Nature of Risk/Impact • Water Quality (WQ), • Solid Waste Generation (SWG) • Fisheries (F) • Protected Area (PA) • Biodiversity (B) • Physical Environment (PE) • Cultural (C), • Tribal Presence (T) • Impact on private land / assets / encroachers/ squatters (LA), • Labour (L), • Gender Based Violence Risks (G) • Occupational Health and Safety (OHS), • Human Health and Safety (HS)
A	Project Development Stage			
1	Pollution Abatement Services			
a.	Mechanized cleaning of Beaches with walk behind machine	Applicable	RA	L, OHS
b.	Bio-Digester/ Bio-Tank Unit	Applicable	RA	L, OHS,WQ
c.	Solid Waste Management Plant	Applicable	RA	L, OHS,SWG
2	Infrastructure Facilities Development			
a.	Toilet Blocks Facilities	Applicable	RA	L, OHS,HS
b.	Changing room with shower panels facility	Applicable	RA	G
c.	Solar power plant facility (40 KW)	Applicable	RA	L, OHS
d.	Purified drinking water facility	Not Applicable	RA	-
e.	Beach access pathways	Applicable	RA	L,G
f.	Office block with: Control Room, Site office, Water rescue, First aid &safety Equipment, Environment education displays	Applicable	RA	G
B	Project Operational Stage			

a.	Human (visitors) contact with seawater	Applicable	RA	HS
b.	Physical forces- waves & currents on visitors	Applicable	RA	HS
d.	Beach access pathways	Applicable	RA	G
e.	Toilet facility	Applicable	RA	HS
f.	Dress change room and showers	Applicable	RA	G
f.	Office block with: Control Room, Site office, Water rescue, First aid & safety Equipment, Environment education displays	Applicable	RA	G

Note: All applicable activities identified in Step I are further evaluated for the extent of risk/impact (SF-2). The intensity of risk/impact is categorized as **Low** (L), **Moderate** (M), **Substantial** (S), or **High** (H) based on the criteria outlined in the screening process. During this screening, all activities deemed to carry possible risks were assessed as low to moderate risk

Form SF -2: Assessment of Risk/Impact Intensity for Sub-Activities

Sl. No.	Applicable Project Component/ Sub activity	Nature of Risk /Impact	Cause and Effect on Environment/Social	Risk/Impact intensity
A	Project Development Stage			
1	Pollution Abatement Services			
a.	Mechanized cleaning of Beaches with walk behind machine	L, OHS	Likely injury to labour	L
b.	Bio-Digester/ Bio-Tank Unit	L, OHS,WQ	Labour and occupational health risk, noise pollution, leakage	L
c.	Solid Waste Management Plant	L, OHS, SWG	Labour and occupational health risk, noise pollution, spillage	L
2	Infrastructure Facilities Development			
a	Solar power plant facility (40 KW)	L, OHS, G	Negligence to safety instructions could cause health risk	M
b.	Purified drinking water facility		NA	
c.	Beach access pathways	G	Possibility of Gender Based Violence	L
B	Project Operational Stage			
a.	Toilet Blocks Facilities	HS	Improper maintenance leads to pathogenic environment	L
b.	Changing room with shower panels facility	G	Possibility of Gender based violence	L
c	Human (visitors) contact with seawater	HS	Seawater contaminated with bacteria due to discharges from any nearby outlet.	L
d	Physical forces- waves & currents on visitors	HS	Freak waves occurring sometimes and rip currents pose a risk to human life when people move to deeper areas	L
e	Beach access pathways	G	Possibility of gender-based violence especially during dark hours	L
f	Office block with: Control Room, Site office, Water rescue, First aid &safety Equipment, Environment education displays	G	Possibility of Gender Based Violence	L

This comprehensive screening process ensures that all potential environmental and social risks and impacts associated with the Blue Flag certification of Kameswaram Beach are identified, assessed, and categorised, enabling the formulation of appropriate mitigation and management measures.

Step III Screening (using Form SF-3): Summary of Identified Risks/Impacts

Project Activity	Environment Risks					Social Risks					
	Land, Geology & Soil	Water	Biodiversity & Host Community	Waste, Pollution & Hazard	Protected Area (WLS, National Park etc.)	Land	Loss of Livelihood/ HH etc.	Labour/ Occupational Health & safety	Cultural/ Heritage	Tribal	Gender
A. Project Development Stage											
Pollution Abatement Services											
Mechanized cleaning of Beaches with walk behind machine	None	None	None	None	None	None	None	L	None	None	None
Bio-Digester/ Bio-Tank Unit	None	None	None	L	None	None	None	L	None	None	None
Solid Waste Management Plant	None	None	None	L	None	None	None	L	None	None	None
Infrastructure											
Solar power plant facility (40 KW)	None	None	None	None	None	None	None	M	None	None	L
Purified drinking water facility	None	None	None	None	None	None	None	None	None	None	None
Beach access pathways	None	None	None	None	None	None	None	None	None	None	L
B. Operational stage											
Human (visitors) contact with seawater	None	None	None	None	None	None	None	L	None	None	None

Project Activity	Environment Risks					Social Risks					
	Land, Geology & Soil	Water	Biodiversity & Host Community	Waste, Pollution & Hazard	Protected Area (WLS, National Park etc.)	Land	Loss of Livelihood/ HH etc.	Labour/ Occupational Health & safety	Cultural/ Heritage	Tribal	Gender
Physical forces- waves & currents	None	None	None	None	None	None	None	L	None	None	None
Toilet Blocks Facilities	None	None	None	None	None	None	None	L	None	None	None
Changing room with shower panels facility	None	None	None	None	None	None	None	None	None	None	L
Office block with: Control Room, Site office, Water rescue, First aid & safety Equipment, Environment education displays	None	None	None	None	None	None	None	None	None	None	L

Overall Risk Classification:

Based on the summarized risks and impacts, the overall risk classification of the sub-project may be inferred as **Moderate**.

Anticipated Environmental Impacts: 1 Impacts due to storage and Wastes - Pollution and Hazards

Anticipated Social Impacts: 1) Gender, 2) Labour/ Occupational Health & Safety

Criteria for Risk Evaluation:

Low: Localized, temporary and Negligible

Moderate: temporary, or short term and reversible under control

Substantial: medium term, covering larger impact zone, partially reversible

High: significant, non- reversible, long term and can only be contained/compensated

4.2 Stakeholder Consultation

The stakeholder engagement process is a critical component of the ESDDR for the Blue Flag certification of Kameswaram Beach. During the field survey conducted on the afternoon of November 22, 2023, it was observed that the stakeholders of Kameswaram Beach are diverse and include various local entities. Total 25 local participants (19 men and six women) from different economic background were present during the consultation. Fishing is their primary source of livelihood of the local villagers, and they use traditional methods such as catamarans and nets to catch fish. Seasonal ban in fishing often impacts the livelihood options. Many fishermen lack alternative skills or resources to find work during the ban. However, Government support programs are available to bridge the income gap.

The community wants to ensure free access to the beach and sustainable use of local resources (water, energy etc) to avoid any conflict. The local stakeholders expressed optimism that enhanced tourism could bring economic benefits through job creation and improved infrastructure development, such as roads and sanitation. They want to be involved in decision-making processes regarding tourism development. They desire a say in how tourism is managed and a chance to benefit directly from it, perhaps through ownership or profit-sharing schemes.

Tourists at the beach highlighted the need for well-maintained beaches, better accommodation options, and activities that cater to their interests. Additionally, there was strong support for responsible tourism initiatives that promote local culture and heritage, which could further attract visitors. Clean and well-maintained restrooms, changing areas, and concession stands should be available for tourist. Tourists expect to have access to clean facilities when they visit the beach. The beach should be free of hazards, such as broken glass, rip currents, or dangerous wildlife. Tourists want to feel safe and secure while they are enjoying the beach.

The feedback from the primary stakeholder consultation for the development of an identified area of Kameswaram Beach with eco-friendly infrastructure yielded the following outcomes:

- i. **Economic Benefits:** Enhanced tourism is expected to generate new employment opportunities and stimulate economic growth.
- ii. **Infrastructure Improvement:** The development of infrastructure, including roads and sanitation facilities, is anticipated to benefit the entire community.
- iii. **Tourist Needs:** There is a demand for well-maintained beaches, quality accommodation, and diverse recreational activities.
- iv. **Cultural Promotion:** Initiatives that showcase and preserve local culture and heritage are seen as attractive and beneficial for promoting sustainable tourism.

This feedback has been integral to shaping the project design, ensuring that the proposed activities align with the needs and expectations of both the local community and visitors.

Stakeholder group	Key concerns and feedback points	Response and Action
Government officials	The project must promote tourism and also boost the economy of the local people.	Blue Flag contributes to fight poverty by supporting local economies through increasing tourism and promoting free access to beaches, business activities and services
	The developments must not degrade the environment.	The infrastructure development would promote a healthy coastal environment in beaches to attract local and international tourists. Tourism development could generate revenue through taxes and create employment opportunities. Improved infrastructure could benefit the entire region.
Environmental Specialist	The sand dunes if found in the beach must be conserved.	No hind dunes have been observed at Kameswaram Beach; Tourism development could provide funds for conservation efforts to protect the beach ecosystem and endangered species. Eco-tourism initiatives that promote responsible interaction with the environment could be beneficial.
	The water quality status	A thorough Bathing Water Quality test and Risk assessment survey has been carried out.
Local community	Total 25 local participants from different economic background were present during the consultation. The beach is located in the low to medium population density area and	The sub-project aims for the development of the Kameswaram beach to enhance sustainable tourism activities as well as maintain the environment.

	hence would serve as a very good tourist destination if developed. In addition to fishing, the local community also earns income from tourism (unorganized). They sell souvenirs, snacks, and drinks to visitors to the beach. Some residents also work in the service industry, such as in hotels and restaurants. Diversification of livelihood through development of tourism could substantially enhance the socioeconomic and environmental condition of the area.	
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Additional benefits of Blue Flag beach certification:

- i. **Community Engagement and Inclusivity:** The project team will actively engage with the local community to ensure their involvement and benefit from the development of Kameswaram Beach. This will include creating job opportunities, promoting local businesses, and providing training for beach management and conservation practices.
- ii. **Environmental Monitoring and Management:** Continuous monitoring of environmental parameters, including water quality, biodiversity, and coastal erosion, will be conducted to ensure that the development and operation of Kameswaram Beach adhere to environmental sustainability principles.
- iii. **Cultural and Heritage Conservation:** Efforts will be made to integrate cultural and heritage conservation into the project design, ensuring that any historical or archaeological sites in the vicinity are preserved and highlighted as part of the tourist experience.
- iv. **Infrastructure Development:** The infrastructure development plan will include measures to minimize environmental impacts, such as using eco-friendly materials, implementing waste management systems, and ensuring energy efficiency in facilities.

This stakeholder engagement summary provides a comprehensive overview of the key concerns and feedback from various stakeholders, along with the targeted responses and actions taken by the project team to address these issues and promote the sustainable development of Kameswaram Beach for Blue Flag certification.

4.3 ESDD findings and Key impacts to be addressed

ESDD provides details on screening carried out to assess the environmental and social impacts likely to occur. The ESDD has analysed the E & S impacts arising due to the planned activities and it was found that the activities lead to low to moderate E&S impacts. The screening of potential activities associated with the Blue Flag certification of Kameswaram Beach has identified few environmental and social risks and impacts that need to be addressed. These are summarized below:

1. Environmental Risks and Impacts:

- i. **Pollution and Hazards Due to Storage and Wastes:** The management of waste and storage of materials during construction may pose environmental hazards if not properly handled.
- ii. Leakage from the Bio-digester unit can cause ground water pollution and release of Gas can harm the person maintaining the unit.

2. Social Risks and Impacts:

- i. **Gender:** The project should consider the gender-specific impacts and ensure equitable participation and benefits for both men and women. It would strictly ensure non-prevalence of Gender based violence.
- ii. Labour, OHS and HS: The influx of labour during construction should be managed to ensure fair working conditions and minimize social disruptions.

3. Environmental and Social Standards:

These are a set of ten benchmarks set by the World Bank for achieving a minimal social and environmental standard during project execution. They ensure inclusion of good management practices of international/national standard to achieve sustainability, good governance, accountability, inclusiveness and transparency. These Environmental and Social Standard (ESS) are:

ESS 1: Assessment and Management of Environmental and Social Risks and Impacts;

ESS 2: Labour and Working Conditions;

ESS 3: Resource Efficiency and Pollution Prevention and Management;

ESS 4: Community Health and Safety;

ESS 5: Land Acquisition, Restrictions on Land Use and Involuntary Resettlement;

ESS 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources;

ESS 7: Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities;

ESS 8: Cultural Heritage;

ESS 9: Financial Intermediaries; and

ESS 10: Stakeholder Engagement and Information Disclosure.

The following ESS categories are relevant and suggested mitigation measures

Table: ESS Applicability analysis and recommended management measures/plans

ESS	Recommended Management Plans	Applicability
ESS1: Assessment and Management of Environmental and Social Risks and Impacts	Precautionary steps to avoid environmental damages while carrying out all the activities and briefing the people involved on non-engagement of Gender-based violence or Harassment Safety from waves: Warning boards for occasional freak waves. Watch towers and lifeguards stationed across the designated area. The safe bathing zone is demarcated well with the aid of visible lines and buoys.	Applicable (Included in the ESMP)
ESS2: Labour and Working Conditions	Adopting labour management rules and instructions to prevent Occupational Health issues and adopting safety norms especially to avoid injuries while using manual or electric tools	Applicable (Included in the ESMP)
ESS3: Resource Efficiency, Pollution Prevention and Management	Adopting prescribed solid waste management practices including disposing of solid wastes at designated places Polluted seawater: Regular water quality monitoring and display of results in the beach information board.	Applicable (Included in the ESMP)
ESS 4: Community Health and Safety	Cultural and social environment is included in the baseline details, for proper monitoring and assessment in the DPR document (Environmental and Social Safeguards Monitoring Plan)	Applicable (Include in the ESMP)
ESS 5: Land Acquisition, Restrictions on Land use and	The project is in area that is under the control of the Government and land acquisition is not involved. There is no	Not Applicable

ESS	Recommended Management Plans	Applicability
Involuntary Resettlement	resettlement required for execution of the project. To regulate a few tourist activities within the Eco-labelled beach protective barrier such as a fence or vegetation (Engineering control) may be used	
ESS 6: Biodiversity conservation and Sustainable Management of Living Natural resources	The project area does not fall within any Environmentally Sensitive Area. To avoid cutting trees or removing vegetation, the layout plans and designs for all the activities should avoid areas with vegetation. In case felling of any tree is absolutely unavoidable due to site-specific conditions, permission of the Forest Dept. will be secured and compensatory plantation undertaken as per the instructions.	Applicable (Included in each ESMP)
ESS 7: Indigenous Peoples Historically Underserved Tradition Local Communities	No indigenous people or tribal live in the area	Not Applicable
ESS 8: Cultural Heritage	Cultural sites are located far away from the mangrove areas	Not Applicable
ESS 9: Financial Intermediaries	No financial compensation etc., involved	Not Applicable
ESS 10: Stakeholder Engagement and Information Disclosure	A stakeholder consultation was carried out during site screening. A feedback mechanism is in place to address any grievances of the stakeholders (including beach goers).	Applicable (Included in the ESDDR)

4. Mitigation and Management Measures:

The project will implement a range of mitigation and management measures to address the identified risks and impacts. These will include environmental monitoring, pollution control measures, community engagement, and capacity building initiatives. The project will also develop an Environmental and Social Management Plan (ESMP) to guide the implementation of these measures.

5.0 CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusions:

5.1.1 Justifications for undertaking the project:

- i. **Blue Flag Certification:** Achieving Blue Flag status for Kameswaram Beach will signify a commitment to coastal conservation, environmental education, and the provision of safe and quality services through ecotourism. This certification will enhance the beach's reputation, attract more visitors, and promote sustainable tourism practices.
- ii. **Implementing Agency & Institutional Framework:** The Department of Environment and Climate Change, Government of Tamil Nadu, will spearhead the project's implementation, collaborating with consultants and contractors to ensure successful execution and adherence to environmental and social standards.
- iii. **Target Beneficiaries:** The local community, particularly the vulnerable sections such as fisherwomen and women-headed families, will benefit from increased livelihood opportunities and enhanced environmental awareness. The project will also contribute to the state's tourism and environmental goals by attracting more tourists and promoting conservation.
- iv. **Legal Framework:** The project aligns with the Coastal Regulation Zone Notification 2011/2019 issued by the Ministry of Environment, Forests and Climate Change, which aims to protect and preserve coastal zones. The initiative to obtain Blue Flag Certification is part of a broader effort to maintain high standards of cleanliness, safety, and infrastructure on selected beaches.

5.1.2 Risk Classification

The ESDD exercise has identified risks related to water quality, physical environment, labour, and social and environmental health (SEAH)/gender-based violence (GBV). The overall risk classification for the sub-project is categorised as **low to moderate**, (including bio-digesters, grey water treatment plants, and solar power facilities).

5.1.3 National Legislation and World Bank ESS Applicability Screening

The Coastal Regulation Zone (CRZ) notification 2011/2019 outlines activities prohibited within the CRZ, including the establishment of new industries, discharge of untreated waste, and extraction of groundwater. For Blue Flag beaches, specific structures and facilities are permitted within the CRZ, subject to maintaining a minimum distance from the High Tide Line (HTL).

The World Bank Environmental and Social Framework comprises 10 Environmental and Social Standards (ESS). The applicability of this standard varies depending on the nature of the activities.

Environmental Codes of Practice (ECoPs):

ECoPs derived from the World Bank Environmental and Social Management Framework (ESMF) will guide the planning and implementation of mitigation measures during sub-project activities. These include ECoPs for construction activities, operation of treatment plants, water resources management, and solar energy plan. This practical tool to ensure World Bank financed projects consider and minimize environmental impacts throughout the project lifecycle.

5.2 Recommendations:

Monitoring Blue Flag-certified beach activities is an important aspect of maintaining the high environmental and safety standards associated with this prestigious eco-label. The Blue Flag program, run by the Foundation for Environmental Education (FEE), certifies beaches and marinas worldwide that meet strict criteria related to water quality, environmental management, safety, and education.

5.2.1 Mitigation and Management of Risks and Impacts:

- i. **C**
- ii. **Water Quality Testing:** Regularly test the water quality to ensure it meets the required standards for swimming. Testing should include checks for bacteria levels, chemical contaminants, and general water quality parameters.
- iii. **Safety Measures:** Ensure that safety measures are in place and well-maintained. This includes lifeguard stations, safety signage, and first-aid facilities.

- iv. **Environmental Conservation:** Monitor the beach's environmental conservation efforts. This may involve checking for the protection of local flora and fauna, erosion control measures, and waste reduction initiatives.
- v. **Educational Programs:** Verify that educational programs related to environmental awareness and conservation are being conducted at the beach or marina. This can include interpretive signage, guided tours, or outreach programs.
- vi. **Community Engagement:** Engage with the local community and beachgoers to promote responsible behaviour and environmental awareness. Encourage participation in clean-up activities and recycling efforts.
- vii. .
- viii. **Communication:** Regularly communicate the Blue Flag status and the importance of responsible beach behaviour to the public through various channels, such as social media, local news, and beach signage.
- ix. **Continuous Improvement:** Continuously seek ways to improve the beach's environmental and safety performance. This could involve implementing new initiatives or technology to enhance monitoring and management.
- x. **Training and Capacity Building:** Ensure that beach management personnel receive proper training and have the necessary skills to maintain Blue Flag standards.

5.2.2 Institutional Management, Monitoring and Reporting

Develop and implement an ESMP to address the identified impacts, including water quality, coastal erosion, wildlife conservation, and community impacts. The ESMP should include specific measures for the operation of treatment plants, waste management, and solar energy facilities.

The Blue Flag Beach Programme involves various roles and responsibilities to ensure that certified beaches adhere to programmes environmental, safety and sustainability criteria. Some major roles and responsibilities associated with Blue Flag Beach Programme: -

- (i) Beach Management Committee
- (ii) Beach manager

BMC may like to engage a “Beach Manager” for providing pollution abatement, safety & security services. This will help BMC to maintain & ensure continuity of a successful scheme. “Beach Manager” is responsible to coordinate with the BMC, National Operator, Local Community & Beachgoers (Tourists) and regulate, monitor & supervise the beach maintenance

staff, if any, for the local environment management, beach infrastructure operations & safety of tourists.

- (i) Environmental Coordinator
- (ii) Safety coordinator
- (iii) Education coordinator
- (iv) Accessibility Coordinator
- (v) Monitoring and Reporting Team
- (vi) Blue Flag National Operator

Society of Sustainable Urban Development (SSUD), Pune is the National Operator in India for periodic announced / unannounced audits duly authorized by global NGO Federation for Environment Education (FEE) to monitor the Blue Flag beach and its compliance to its prescribed 33 Blue Flag Criteria.

More details on roles and responsibilities on institutional structure for various activities and method of reporting are provided in the “Chapter 6: Process of the Blue Flag Certification” of the DPR

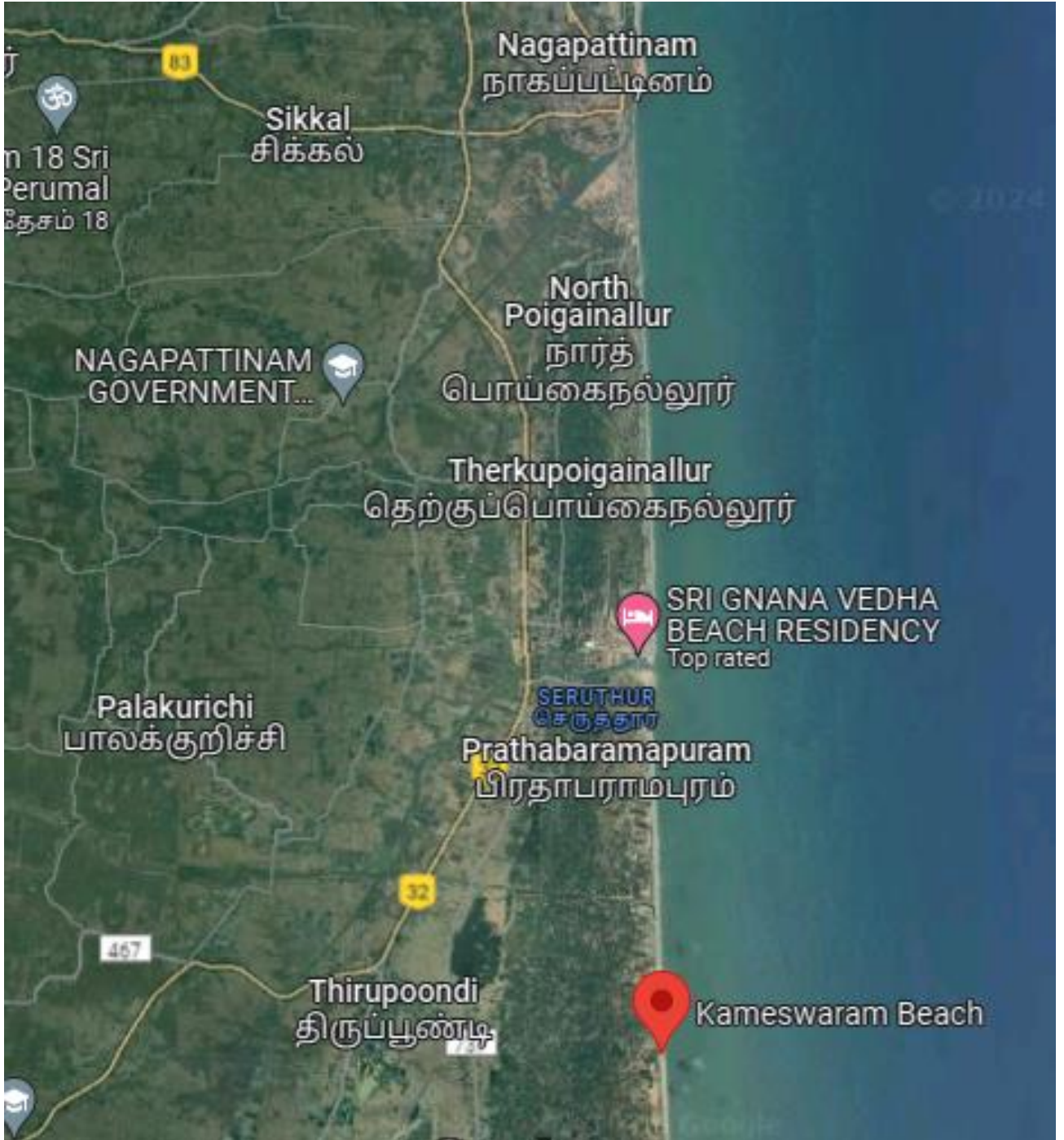


Figure. 1: Location of Kameswaram Beach, Nagapattinam, Tamil Nadu for Proposed Blue Flag Beach Development

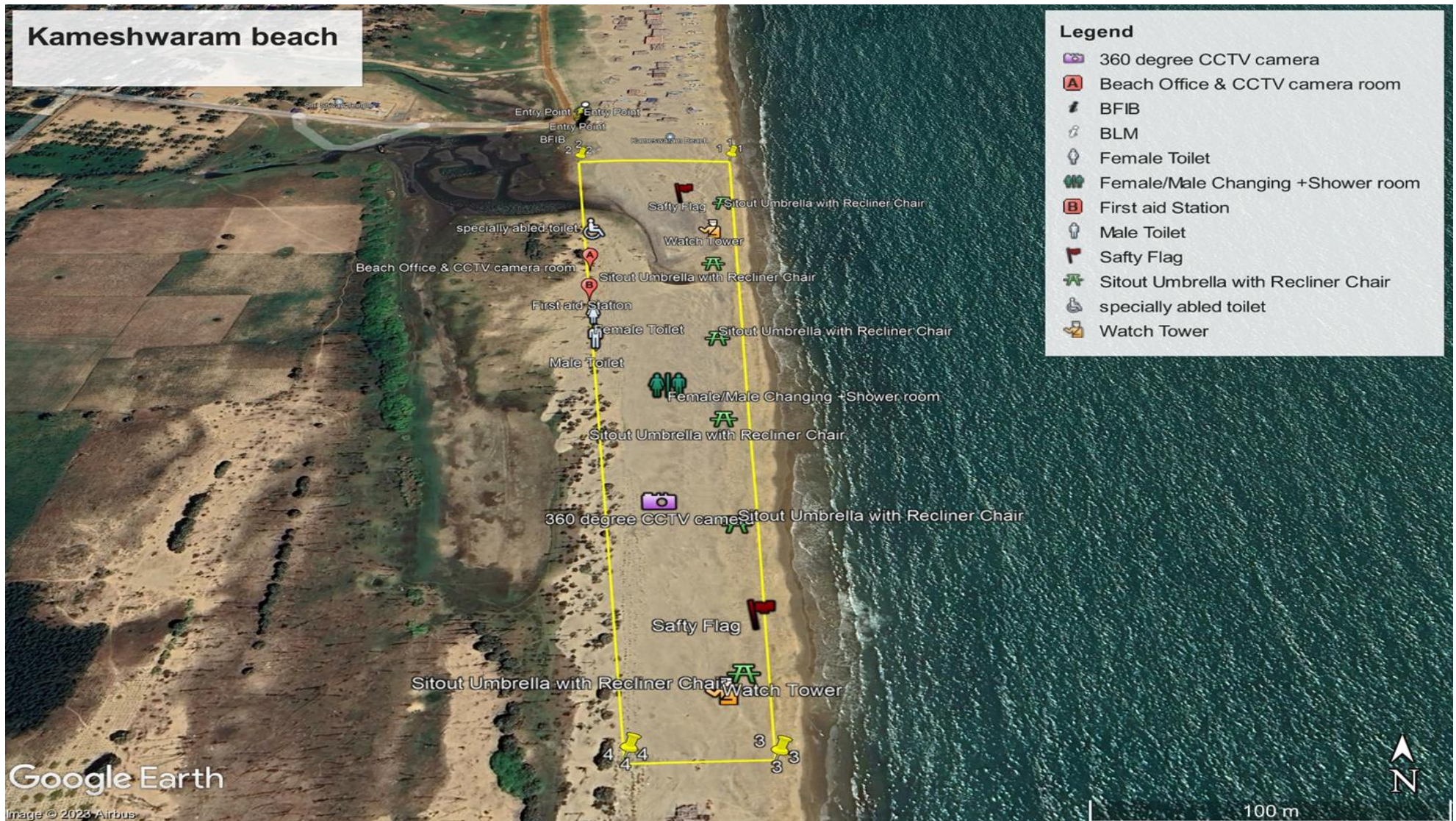


Figure 2 Proposed zonation for Blue Flag Certification area