BEFORE THE NATIONAL GREEN TRIBUNAL (SZ) CHENNAI

APPEAL NO.7 OF 2025

Janardhan P Mesta and Anr.

...Appellant

Vs

State Environment Impact Assessment Authority

(SEIAA), Karnataka and Anr

...Respondent

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Dated at Chennai on this the 19th day of March, 2025

A. S. Arun

Counsel for Respondent No. 2

HONNAVAR PORT PRIVATE LIMITED (HPPL)

Environment and CRZ Clearance for Development of Barge/Vessel Loading Facility for 4.9 MTPA at Honnavar Port

Marine Turtle Conservation Plan

Assystem India Limited

NABET/EIA/2326/ RA 0299 (Rev.02)

Marine Turtle Conservation Plan

1 Background

Marine biodiversity refers to the variety of life in our ocean. It includes all animals, plants and microorganisms living in our ocean, from barnacles to whales to coral reefs. The term is also used to describe the abundance of species living in an area.

Marine biodiversity allows nature in our ocean to be productive, resilient and adaptable to environmental changes. Marine biodiversity can prevent one species' extinction from causing wider negative impacts on a marine ecosystem.

We say an ecological system is resilient if it keeps functioning even when the population of a species declines, or a species becomes extinct. A functioning ecosystem means the natural processes are working effectively, including those providing goods and services to humans, such as storing carbon or filtering water.

Each species in the ocean has a particular role to play, whether that is marine worms converting organic material into carbon dioxide for marine plants to photosynthesise or sharks controlling prey populations. Some species play similar roles in an ecosystem, so if one species becomes extinct, another will be able to carry out the same function or 'service'[1].

In order to conserve marine species, Government of India has notified 130 Marine Protected Areas across the Coastal States and Islands; in addition, 106 coastal and marine sites have been identified and prioritized as Important Coastal and Marine Biodiversity Areas (ICMBAs) to take care of marine species conservation.

The Biological Diversity Act of India, 2002, as amended and the Biological Diversity Rules 2004, and the guidelines thereof ensure the protection and conservation of biodiversity (including the marine species), sustainable use and equitable sharing of its components, Intellectual Property Rights, etc..

The Coastal Regulation Zone (CRZ) Notification, 2019, promulgated under Environment (Protection) Act 1986, has specific focus on conservation and management plans of Ecologically Sensitive Areas (ESAs), like Mangroves, Seagrasses, Sand dunes, Corals and Coral reefs, Biologically active mudflats, Turtle nesting grounds, and Horse shoe crabs' habitats and prohibit developmental activities and disposal of wastes in the fragile coastal ecosystems.

Marine turtles have a major influence on the structure and function of marine biodiversity and play an important role in shaping the behaviour and life history traits of prey species and predators that is critical for the sustainability of fisheries in the region. Factors like climate change, unsustainable resource use, marine litter and pollution affect marine turtles and their habitats.

Marine turtles play a variety of ecological roles for maintaining healthy marine habitats like controlling prey populations, supporting coastal vegetation through their hatchlings etc. Their presence is an indicator of healthy marine ecosystems and provide a source of revenue for local communities through tourism. Marine turtles thus present themselves as a key indicator of healthy marine habitats and an opportunity for conservation of associated species.

The Ministry of Environment, Forest and Climate Change (MoEF&CC) has released a National Marine Turtle Action Plan (2021-2026) with the aim to conserve marine turtles and their habitats in India[2].

[1] https://www.msc.org/en-au/what-we-are-doing/oceans-at-risk/marine-biodiversity#:~:text=The%20importance%20of%20marine%20biodiversity,same%20function%20or%20'service'.
[22] https://pib.gov.in/PressReleaseIframePage.aspx?PRID=1987749

The Indian coastal waters supports five species of sea turtles found worldwide. These are the Olive ridley (*Lepidochelys olivacea*), Green (*Chelonia mydas*), Hawksbill (*Eretmochelys imbricata*), Leatherback (*Dermochelys coriacea*) and Loggerhead (*Caretta caretta*). These five species of sea turtles that occur in Indian coastal waters are protected under Schedule I of the Wildlife (Protection) Act, 2022.

The olive ridley sea turtle is the only species of sea turtle known to nest along the coast of Karnataka (Kar and Bhaskar 1982). The nesting of olive ridleys is sporadic along the Karnataka coast (Madhyastha *et al* 1986)[3].

1.1 Possible Threats to Marine Turtle

Numerous direct and indirect pressures arising from various factors adversely impact marine turtle populations and their habitat. This also includes natural disasters such as tsunamis, cyclones, hurricanes and storms[4].

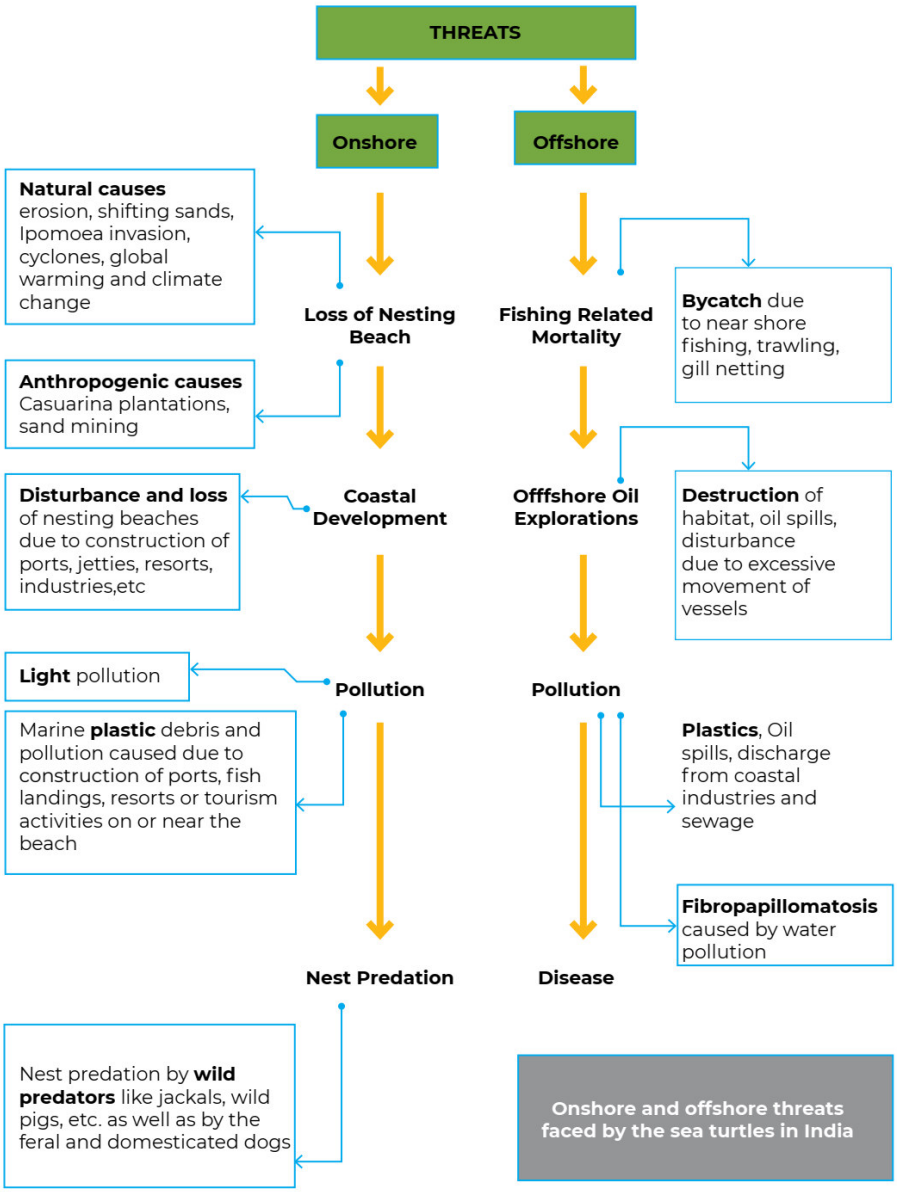

Figure 1: The Possible Threats to Marine Turtle Populations and their Habitats

[3] https://www.seaturtlesofindia.org/wp-content/uploads/2017/04/Sharath-B.K.-2006.-Sea-turtles-along-the-Karnataka-coast.-In-Marine-turtles-of-the-Indian-subcontinent-Eds.-Shanker-K.-B.C.-Choudhury.Pp_.-141-146..pdf

[4] National Marine Turtle Action Plan (2021-2026), Ministry of Environment, Forest & Climate Change, Government of India

2 Objective

- Conducting primary survey covering project area plus 5 km on either side of the project area during sea turtle nesting season
- Collection of sea turtle nesting data from secondary information and forest department
- Mapping of such collected past year(s) data with actual filed locations on discussion with forest department / hatchery centre / egg collectors.
- Status and species identification (Olive Ridley) as possible in and around Project site.
- Collection of other field data including seabed sediment profile and other data as required for the impact assessment / study
- Assessment of impact of project development / coastal facilities on sea turtle nesting status
- Prepare Conservation plan thereof related to nesting status

3 Proposed Development Details

3.1 Study Area

The proposed site for development of Barge/ Vessel loading facility is located near mouth of Sharavati River in Honnavar Taluk of Uttara Kannada district in Karnataka. It is at a distance of about 90 km from Karwar, the district headquarter and about 400 km from Bengaluru.

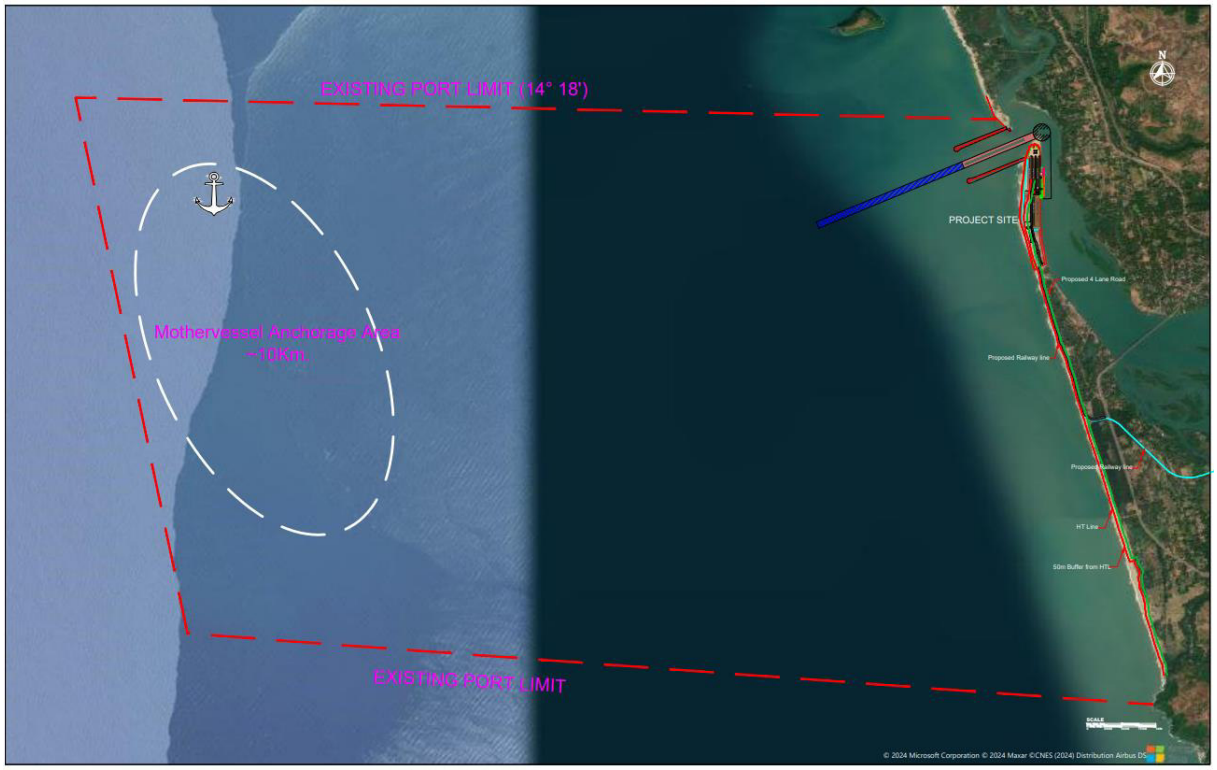

Figure 2: The Project Site

3.2 Proposed Development

As per the EC&CRZ clearance M/S. Honnavar Port Pvt. Ltd. (HPPL), have proposed for development of a barge / vessel loading facility at Coastal Sand Spit, Kasarkod Tonka Village, Honnavar Taluk, Uttara Kannda District. Total land requirement for the proposed facility is 44 Ha.

Total capacity of cargo handling is 4.9 MTPA of which Coal (2.70 MTPA), Iron Ore (1.00 MTPA), General Cargo (1.20 MTPA i.e. Granite - 0.16 MTPA; Fertilizer - 0.2 MTPA; Molasses with Agro products - 0.15

MTPA; Steel Products- 0.40 MTPA and Sugar - 0.29 MTPA. In order to maintain tranquillity in the harbour basin, two break waters are proposed (Southern Break Water: 865 m and northern break water: 820 m). Berth of 440m long and 30m wide with backup area of 44 Hectares, dredging, approach channel: (length of approach channel inner: 1395m & outer 2280m, width of the channel 100m and depth of the channel: (-)10 m), Turning circle (diameter of the turning circle -250m, dredged to a depth of (-) 10 m), Estimated dredging quantity 3.9 million cum, Estimated quantity proposed to be used for reclamation 1 million cum.

3.3 Project Status/Existing Development

HPPL initiated the construction work after completing the financial closure formalities and after getting the clearances from Honourable courts. Mobilization and material procurement activities were initiated and following activities are fully/partially completed

- Approach Trestle No. 1 (Completed)
- Approach Trestle No.2 (Partially completed 5 out of 17 piles)
- Internal earthen road work for construction materials transportation (Completed)
- Black topping of existing Kachha road for a length of 2.10 Km along the seashore of Kasarkod village (Partially Completed)

4 Methodology

Rapid survey was carried out in the impact zone area, a site identified for port, coal storage, breakwater, connectivity to port to ascertain nesting of sea turtles. Interviews with local fisherman were conducted to document the local knowledge about sea turtle species and their nesting at proposed site and adjacent areas within 5km stretch on each side. Interviews were also conducted with forest department personals who are engaged in collection of sea turtle eggs from the study site to know the exact location of nests and species.

Table 1: GPS Points of the sites visited inside the proposed port area

S. No.	Latitude	Longitude	S. No.	Latitude	Longitude
1	14.282254°	74.427078°	5	14.296203°	74.424595°
2	14.283611°	74.426667°	6	14.292135°	74.423815°
3	14.289034°	74.425702°	7	14.286925°	74.424371°
4	14.295769°	74.425800°	8	14.281852°	74.425779°

4.1 Nesting Reports in Study Area

Sporadic nesting of Olive Ridley turtles is reported from the coast of Karnataka. The oldest comprehensive study dates back to 2002, a study jointly undertaken by Government of India (GoI) and UNDP where, a baseline was prepared for the nesting beaches along the coast of Karnataka[5].

(a) GOI – UNDP Sea Turtle Project

The report has located major turtle nesting sites but no geocoordinates is available pertaining to the exact locations. Out of 13 sites identified in the Uttara Kannada District, Kasarkod beach was designated as an "occasional nesting site". The nesting season was observed to be from September to January[6].

(b) WWF - India Report

[5] Report on Survey of 45 hectares area at Kasarkdod Tonka in Honnavar Taluk of Uttar Kannada district of Karnataka on the issue of Turtle nesting ground, NCSCM.

[6] Sharath B.K. (2002) Marine turtle nesting along the coast of Karnataka – a status survey. GOI – UNDP Sea turtle project, 25 p.

The WWF 2013 report has provided an overview of the status of sea turtle nesting in Karnataka. It has mentioned Kasarkod as a potential nesting site with new nesting areas (the co-ordinates 14.26028 N, 74.43256 E). The report highlighted the decrease in turtle nesting over the years and the need for detailed research to create a database on nesting.

(c) Dakshin - EMPRI Report

The Dakshin–EMPRI Report of 2016 is a comprehensive document concerning sea turtle breeding along the Karnataka coast. According to the report, Olive Ridley nests are observed to be along the entire coastline of Honnavar Division and seven major nesting beaches have been identified. These beaches are mostly sandy with small rocky patches. The seven nesting beaches are located at Gangavali, Kagal, Dhareshwara, Haldipur, Kasarkod, Talmakki, and Bengre (Bhatkal)[7].

(d) Data from Forest Department, Honnavar Range, Karnataka

Turtle nesting data was collected from Forest Department, Honnavar Range and the compiled data was analyzed. Based on the list, Kasarkod beach has been mentioned 5 times for turtle nesting from 2015 to 2021. Pavinakurve, Haldipur and Taribagilu have far more nesting records compared to Kasarkod since 2015. The details of the geo-tagged locations taken from the Forest Department records is given below. In Kasarakod, 582 turtle eggs were collected between 2016 and 2021. From the records of the Forest Department, it was observed that the southern tip of the proposed HPPL project site had one nesting in the year 2020.

Data source: Forest Division, Honnavar

Figure 3: Geolocation of Turtle nesting sites drawn parallel to the shore

(d) Approved CZMP Map

As per CZMP Map No.: KA 25, the proposed port area is categorized into under three CRZ areas – CRZ – I (IB) intertidal area, CRZ – II and CRZ – III (No Development Zone). There is no reported ESA (CRZ 1A) in the proposed site of the Honnavar Port as per approved CZMP maps of Honnavar. A closer view

[7] Anon (2016) Establishing a baseline for monitoring sea turtle nesting sites on the Karnataka coast through coastline mapping. Final Report. Dakshin & EMPRI, 93 p.

of the CZMP map covering the port area and the entire CZMP map (KA 25) is provided below. Mangroves are present in the estuarine area of Sharavathi river.

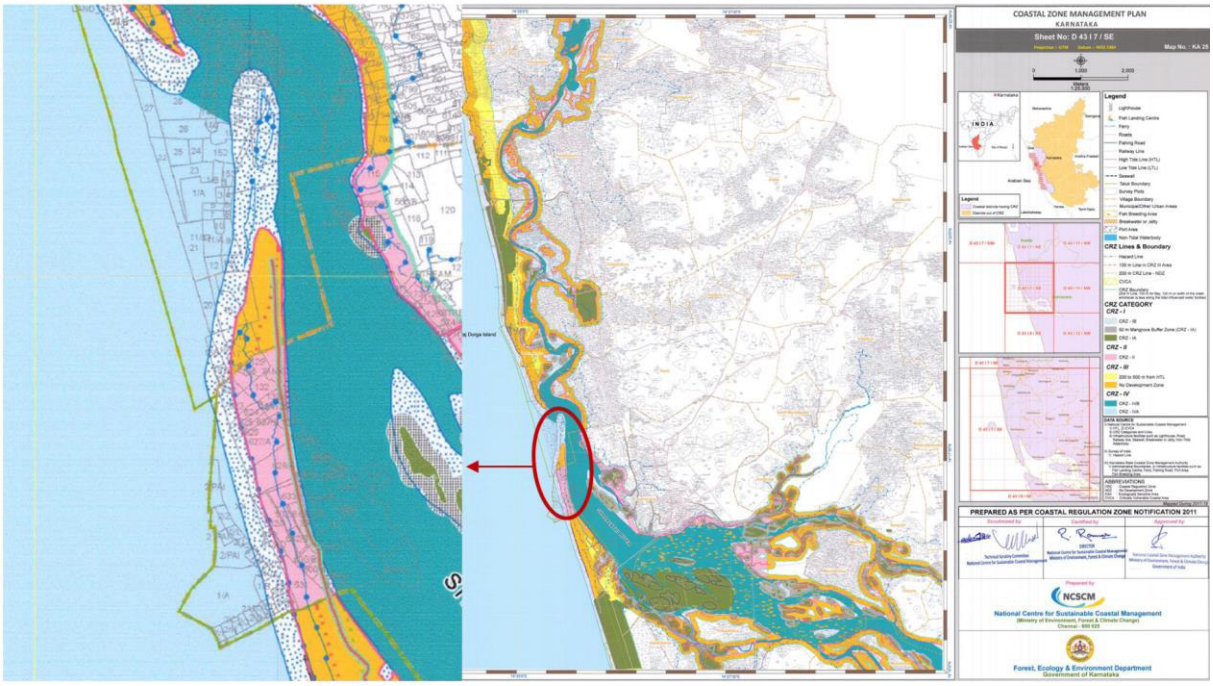

Figure 4: CZMP of KA 25 approved by KCZMA indicating the surveyed Port area in insert

(e) NCSCM Site Survey

The Hon'ble High Court of Karnataka in the Daily Order to the Infrastructure Development, Ports and Inland Water Transport Department, Government of Karnataka, had proposed to appoint NCSCM working under the Ministry of Environment, Forest and Climate Change, Government of India to survey the 45 hectares of land covered by the HPPL project with a view to ascertain whether any part of the said area is a turtle nesting ground or the entire area in the turtle nesting ground. NCSCM team surveyed the proposed port area and the surroundings around Kasarkod on 2nd and 3rd August 2021 as per the directive of the Hon'ble High Court of Karnataka.

The following are the observations

- No nests, turtles or dead carcasses of turtles were observed in the entire 45 ha area of the proposed site during the survey
- Erosion was observed along the road from the current port entry road until the estuarine mouth
- Limited port construction activity has begun along the eastern boundary of the proposed port
- For coastal defense along the eroding road, tetrapods have been deployed on the banks.
- Mangroves are present along the north right bank of the River Sharavati.
- The northwestern boundary of the port has a flat beach, which is usually not conducive for nesting

	
Eroding road leading to the entry gate of the proposed port	Erosion along the eastern boundary of the proposed site
	
Construction activity along the eastern boundary of the port	Approach Trestle 1

4.1.1 Marine Environmental Status

Marine Water:

- **Temperature:** The water temperature was recorded from 30.16°C to 31.88°C,
- **Salinity:** The salinity varied from 4.52 PSU to 35.39 PSU
- T**urbidity:** The turbidity ranged from 0.84 NTU to 8.97 NTU
- **Dissolved Oxygen:** The dissolved oxygen varied from 4.43 to 8.34 mg/l
- **Biochemical oxygen demand:** The BOD varied from 1.08 mg/l to 2.86 mg/l
- **Nitrate:** Concentration of Nitrate ranged between 0 to 0.32 µmol/l
- **Nitrite:** Concentration of Nitrite ranged between 0.01 to 0.06 µmol/l
- **Total Phosphate:** Concentration of total phosphate ranged between 0.14 to 0.45 µmol/l
- **Silicate:** Concentration of Silicates ranged between 17.96 to 111.72 µmol/
- **Ammonia:** Concentration of Ammonia ranged between 0.71 to 2.07 µmol/l

Sediment:

- The sand fraction ranged from 0.02 to 97.44%, silt fraction ranged from 2.16% to 99.32 and clay fraction ranged from 0.08 to 1.69%
- **Aluminium**: Concentration of Al ranged 7.27 to 14.43 %
- **Calcium**: Concentration of Ca ranged 0.36 to 2.26 %
- **Iron:** Concentration of Fe ranged 0.6 to 6.35 %
- **Magnesium**: Concentration of Mg ranged 0.03 to 2.38
- **Mercury**: Concentration of Hg ranged upto 0.05 µg/g
- **Chromium**: Concentration of Cr ranged 14.55 to 217.65 µg/g
- **Zinc**: Concentration of Zn ranged 21.8 to 115.9 µg/g
- **Nickel**: Concentration of Ni ranged 18.33 to 98.2 µg/g

- **Copper**: Concentration of Cu ranged 9.45 to 53.37 µg/g
- **Cobalt**: Concentration of Co ranged 0.78 to 22.38 µg/g
- **Lead**: Concentration of Pb ranged 3.14 to 19.75 µg/g
- **Arsenic**: Concentration of As ranged 4.18 to 29.52 µg/g
- **Cadmium**: Concentration of As ranged 4.18 to 29.52 µg/g
- **Manganese**: Concentration of As ranged 4.18 to 29.52 µg/g

Marine Biology:

- Total viable count of bacteria varied between 3 x 10^3 CFU 100mL^{-1} and 4 x 10^4 CFU 100mL^{-1}
- Total E. coli count of bacteria varied between 1 x 10^1 CFU 100mL^{-1} and 2 x 10^1 CFU 100mL^{-1}.
- Other coliforms count varied between 3 x 10^1 CFU 100mL^{-1} and 8.2 x 10^2 CFU 100mL^{-1}
- Total faecal coliforms count varied between 1 x 10^1 CFU 100mL^{-1} and 7 x 10^1 CFU 100mL^{-1}
- Total Vibrio count varied between 1x10^1 CFU 100mL^{-1} and 5.2x10^3 CFU100 mL^{-1}
- *Salmonella* growth was observed only at six marine sampling locations.
- Total *Shigella* count varied between 1 x 10^1 CFU 100mL^{-1} and 1.36 x 10^3 CFU 100mL^{-1}.
- The zooplankton abundance varied from 852 Nos./m^3 to 15537 Nos./m^3

4.1.2 Court Cases Details pertaining to Turtle Nesting in Project Site

Various Writ Appeal (WA) / Want of Prosecution or Writ Petition (WP) / Public Interest Litigation (PIL) / Appeals / Applications were filed from the year 2016 to 2022 against the accorded approvals related to GO's issued by the Port Officer, Honnavar, Appeal against the court order, Appeal against ownership of the land, Challenged the Environment Clearance granted on September 21, 2012 and the extension granted on July 01, 2019, on turtle nesting grounds in project area, on the dedicated road corridor to provide road connectivity from the Honnavar Port Project to the National Highway – 66.

All the court cases pertaining to turtle nesting grounds in project area, connectivity corridor and land ownership with Honourable Karnataka State High Court, Dharwad branch, Karnataka; Honourable Court of Deputy Commissioner, Uttara Kannada, Karwar, Karnataka; Honourable Karnataka State High Court, Bengaluru; Honourable Court of the PRL. District & Sessions Judge, Uttara Kannada, Karwar, Karnataka; Honourable the National Green Tribunal, Southern Zone, Chennai; were Dismissed/ Disposed in favour of Govt. of Karnataka and Project Proponent HPPL.

5 Conservation and Mitigation Plan

The Action Plan aims to conserve marine turtles and their habitats for maintaining a healthy marine ecosystem.

5.1 Conservation Strategies

Broad Strategies of Turtle conservation Plan include

Objective	Plan of Action	Activity	Responsible Agency
Reduce direct and indirect causes of marine turtle mortality	Identify and document the threats to marine turtle populations and their habitats Determine and apply best practice approaches to minimising those threats to marine	• Collate and organise existing data on threats to marine turtle populations • Establish baseline data collection and monitoring programmes to gather information on the nature and magnitude of threats • Determine those populations affected by incidental capture in fisheries, and other sources of mortality	Contractors/ HPPL/Forest Department

Objective	Plan of Action	Activity	Responsible Agency
	turtle populations and their habitats		
Protect, conserve and rehabilitate marine turtle habitats	Establish necessary measures to protect and Conserve marine turtle habitats	• Identify areas of critical habitat such as migratory corridors, nesting beaches, inter-nesting and feeding areas. • Designate and manage protected/conservation areas, sanctuaries or temporary exclusion zones in areas of critical habitat, or take other measures (e.g. modification of fishing gear, restrictions on vessel traffic) to remove threats to such areas • Undertake assessments of the environmental impact of marine and coastal development and other human activities that may affect marine turtle populations and their habitats • Manage and regulate within each jurisdiction the use of beaches and coastal dunes, for example location and design of buildings, use of artificial lighting, and transit of vehicles in nesting areas • Monitor and promote the protection of water quality from land-based and maritime pollution, including marine debris, that may adversely affect marine turtles • Mainstream the turtles and their habitats conservation into the production sectors with active participations of industrial sectors including financial supports from their CSR Fund.	HPPL/Forest Department/ Fishermen Organisations
Improve understanding of marine turtle ecology and populations through research, monitoring and information exchange	Conduct studies on marine turtles and their habitats targeted to their conservation and management	• Conduct baseline studies or gather secondary information on marine turtle populations and their habitats • Initiate and/or continue long term monitoring of priority marine turtle populations in order to assess conservation status • Carry out studies on marine turtle population dynamics and survival rates • Conduct research on the frequency and pathology of diseases of marine turtles • Promote the use of traditional ecological knowledge in research studies • Review periodically and evaluate research and monitoring activities	HPPL/Forest Department
	Conduct collaborative research and monitoring	Conduct collaborative studies and monitoring on genetic identity, conservation status, migrations, and	

Objective	Plan of Action	Activity	Responsible Agency
		other biological and ecological aspects of marine turtles	
	Analyse data to Support mitigation of threats and to assess and improve Conservation practices	• Prioritise populations for conservation actions • Identify population trends • Use research results to improve management, mitigate threats and assess the efficacy of conservation activities (e.g. hatchery management practices, habitat loss, etc.)	
Increase public awareness of the threats to marine turtles and their habitats, and enhance public participation in conservation activities	Establish public education, awareness and information programmes	• Setting up of turtle clubs at taluk • Collect, develop and disseminate education materials • Establish community learning /information centres • Develop and implement accurate mass media information programmes • Develop and conduct focused education and awareness programmes for target groups (e.g. policy makers, teachers, schools, fishing communities, media) • Organise special events related to marine turtle conservation and biology (e.g. Turtle Day, Year of the Turtle, symposia, Track-a-turtle)	HPPL/Forest Department
	Develop alternative Livelihood opportunities for local communities to encourage their active participation in conservation efforts	Identify and facilitate alternative livelihoods (including income generating activities) that are not detrimental to marine turtles and their habitats, in consultation with local communities and other stakeholders. Undertaking turtle based tourism programme like Turtle Festival	HPPL
	Promote public participation	• Involve stakeholders, and local communities in particular, in planning and implementation of conservation and management measures • Encourage the participation of Government institutions, nongovernmental organisations, the private sector and the general community (e.g. students, volunteers, fishing communities, local communities) in research and conservation efforts • Implement, where appropriate, incentive schemes to encourage public participation (e.g. T-shirts for tag returns, public acknowledgement, certificates)	HPPL/Forest Department

5.1.1 Illumination Policy

The glare of the port complex lighting system is likely to cause adverse impacts on the Nocturnal fauna and marine creatures. During the hatching of eggs laid by Olive Ridely turtle, the glare of light may destruct their movement to landward side causing desiccations and death. Considering these ecological issues, HPPL shall adopt DARK SKY LIGHTING SYSTEM an exemplary activity for the coastal eco system.

Lighting Mitigation Efforts

- All outdoor lighting, roadway lighting, wharf lighting, and lighting mounted on masts or other elevated structures will be of the minimum lamp wattage to achieve required safety within the lighted area.
- No area lighting or any lighting mounted on masts or other elevated structures will include fluorescent lamps, mercury vapour (MV) lamps, metal halide (MH) lamps, or other broad-spectrum high-intensity discharge lamp types.
- No lighting of grounds, building walls, signs, cranes, or other elevated structures will employ flood lighting, up-lighting, or other forms of directional lighting aimed above the horizon.
- Wherever possible, use low-pressure sodium vapour lamps or other light sources that exclude wavelengths less than 520 nm.

5.1.2 Monitoring Predator Population

Predators play an important role in success of sea turtle nesting and hatching and ghost crabs are one of the most common predators of it. Besides this domestic dogs, jackals and crows also predate on juvenile sea turtles. Predation pressure has affected sea turtle populations throughout their evolution; with both prey and predators adapting to coexist and survive under natural conditions. A periodic monitoring of predators especially human induced predators is thus recommended. Monitoring is advised only from nesting to hatching period.

5.1.3 Avoid destruction of Sand Dunes

Sand dunes are natural barriers between sea and land. Low lying sand dunes also ideal nesting habitats for sea turtles. In the project area there are no sand dunes. In the study area of 15km sand dunes are reported.

5.1.4 Beach Erosion Related Measures

It is difficult to suggest remedies to contain or mitigate the erosion related issues at this stage. It will depend on the sites and level of erosion/accretion. Thus, mitigation measures for erosion related issues will be provided after assessing the impacts post project operational phase. Beach nourishment is one way to mitigate erosion.

5.1.5 Nesting Site Protection

The beaches that serve as important nesting places in the port vicinity for female sea turtles should be identified and protected. Take steps to ensure that no port activity poses a concern during nesting seasons in order to avoid disruptions and guarantee successful nesting.

5.1.6 Dredging Management

The channel area is well away from the turtle congregation area and hence there is no regular movement of turtle into the channel area to avoid accidental take, HPPL followed the dredging protocol which may be continued.

5.1.7 Protection of Eggs

Ensure that the turtle nesting grounds are protected and free from predators, poaching, and natural threats. Especially, stray dogs in the turtle nesting beaches pose major threats to nesting sites.

- **Location of the hatchery:** The best location for a hatchery is at a site that is as similar as possible to the habitat of the nesting site of the turtles. Hence, hatcheries should be located on the nesting beach, and if the beach is sufficiently long, several hatcheries should be established.
- **Buried mesh and caging:** The hatchery can be enclosed by chain link fence or wire mesh. Inexpensive wooden poles, cane and bamboo or slats can also be used. To prevent the entry of crabs and other burrowing predators, chicken wire mesh (or any small mesh material) can be buried to a depth of 0.5 metres along the inside of the fence.
- **Collection and transport:** Sea turtles are very sensitive and may return to the sea without nesting if they are disturbed while stranding or excavating the nest. During this period, workers should be very careful not to disturb the turtle with lights or movement.
- **Nest enclosures in the hatchery:** Some hatcheries use mesh enclosures for each nest to restrain hatchlings after they emerge to facilitate data collection and release.
- **Hatchling release:** Hatchery personnel should anticipate hatching for each nest. Expected dates of hatchling emergence can be estimated from date of collection (and will vary depending on species and time of year), and can also be predicted by the caving in of sand surface above the nest when hatching begins

5.1.8 Bycatch Reduction

- Work with forest and fisheries department to enforce the use of Turtle Excluder Devices (TEDs) in fishing gear to prevent accidental capture of sea turtles.
- Organize awareness programs and educate fishermen about responsible fishing practices.
- Research and Monitoring
- Support studies on sea turtle behaviour, migration patterns, and population dynamics. This research study should mainly focus on nesting site monitoring, tracking sea turtle migration and threats posed to them particularly in the port vicinity.

5.1.9 Marine Debris Reduction

Organize to conduct coastal clean-ups to remove plastic and other debris that can entangle or harm sea turtles. Raise awareness about reducing plastic use to keep beaches and oceans clean.

5.1.10 Management of Pollution

- Prohibit discharge of crude oil, pesticides, heavy waters, heavy metals and other poisonous effluents to estuaries and coastal areas and near turtle nesting beaches.
- Prohibit discarding fishing lines, nets, plastic bags and other trash into the water or on the beach which results in ghost fishing and incidental mortality of sea turtles.
- Introduce organized clean-up of beaches and near shore waters by local forest and fisheries departments and other governmental agencies in collaboration with nongovernmental organisations, coastal communities, and school and college students.

5.1.11 Continuous Sea Turtle Monitoring

Continuous long term sea turtle monitoring must be undertaken (minimum 10 years including). This is essentially important considering the area as a low-density nesting area and there is no pattern in nesting. Monitoring programme will be for both nesting surveys as well as systematic transect counts in

offshore (up to 5km) and nearshore waters (up to 2km) to enumerate species composition and abundance. Nesting surveys will be confined from actual nesting period to hatchlings.

The monitoring programs should always include gathering and collating information through

- Assessment of marine turtle mortality related to fishery
- Assessment of marine turtle distribution at sea from information provided by fishers and
- Assess sea turtles nesting along the coastline
- Beach monitoring to assess the status of the nesting beach
- Assessment of the feasibility of tracking entangled turtles after release to determine survivorship and migratory paths.

5.1.12 Environmental Education

Awareness programmes for local fisher population, company labourers, local people and employees should be undertaken to highlight sea turtle conservation. Awareness regarding fisheries related issues is also necessary among fishing community.

5.1.13 Setting aside corpus fund for sea turtle conservation and other conservation measures

HPPL has submitted the turtle conservation plan in consultation with Deputy Conservator of Forests. Honnavar Division and same has been recommended and submitted through the Chief Conservator of Forests, Canara Circle, Sirsi.

An amount **Rs. 8.00 lakhs** on annual basis were allocated towards protection of turtle nesting associating with forest department, Honnavar division proposed conservation activities includes build barricades around the nesting area during breeding season, watch and ward during breeding season and conservation awareness programmes.

5.1.14 Establish Monitoring Committee

Formation of a monitoring committee is advised to oversee the implementation of specific recommendation stated in the conservation plan. The Committee should comprise of representatives of the Company, representatives of local conservation organisations and representatives of state forest department.

Communication Address

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