Initial Environmental Examination

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India: Maharashtra Tertiary Care and Medical Education Sector Development Program

Subproject: Construction of 500 bedded Hospital and Government Medical College at Sindhudurg, Maharashtra

Prepared by Government of Maharashtra for the Asian Development Bank (ADB).

ABBREVIATIONS

ADB	Asian Development Bank
ASI	Archaeological Survey of India
BMW	Bio-Medical Waste
BMWM	Bio-Medical Waste Management
BUA	Built-Up Area
CBWTDF	Waste Treatment and Disposal Facility
CPCB	Central Pollution Control Board
CRZ	Coastal Regulation Zone
CTE	Consent to Establish
CTO	Consent to Operate
DG	Diesel Generator
EA	Executing Agency
EARF	Environmental Assessment and Review Framework
EC	Environmental Clearance
EIA	Environmental Impact Assessment
EMoP	Environmental Monitoring Program
EMP	Environment Management Plan
ESZs	Eco-Sensitive Zones
GMC	Government Medical College
HCF	Health Care Facility
IA	Implementing Agency
IEE	Initial Environmental Examination
IP	indigenous peoples
IR	involuntary resettlement
MEDD	Medical Education and Drugs Department
MoEFCC	Ministry of Environment, Forest, and Climate Change
MTCMESDP	Maharashtra Tertiary Care and Medical Education Sector Development Program
PUC	Pollution under Control Certificate
REA	Rapid Environmental Assessment
SDP	Sector Development Program
SPCB	State Pollution Control Board

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EXECUTIVE SUMMARY

1. The Maharashtra Tertiary Care and Medical Education Sector Development Program aims to support the holistic development of tertiary care and medical education in the state. The program will create a robust framework for attracting and retaining well-trained doctors and allied health staff, as well as providing quality health care services. It will also invest in building four medical colleges and tertiary hospitals in underserved districts, including Ambernath, Amravati, Osmanabad, Palghar, Raigarh, Ratnagiri, and Sindhudurg. The program will achieve modern medical service to all citizens of the state, improving access to quality and affordable tertiary health care and medical education. The program will enhance medical education and tertiary care facilities and systems, increase the availability of quality and gender-equitable medical human resources, and strengthen the state system to deliver quality and affordable tertiary care and medical education. As per ADB's safeguards policy statement (SPS), 2009, the program is categorized as B for environment. The Medical Education and Drugs Department (MEDD) and Directorate of Medical Education & Research (DMER), Government of Maharashtra are the Executing and Implementing agency respectively.

2. Based on the screening in consideration of ADB's SPS 2009, the environmental category of the sub-project involving construction of 500 bedded Hospital and Government Medical College at Sindhudurg, Maharashtra is determined as Category B for Environment safeguards as no significant irreversible, diverse or unprecedented impacts are anticipated.

3. The Government of India has established regulations to manage environmental conditions, biomedical waste, and other waste relevant to projects. These regulations include pollution prevention, worker and labor protection, conservation of biodiversity, management of waste (including biomedical waste and hazardous waste)– effluent and adequate management of environmental risks and impacts during the project planning and implementation stage.

4. Since the proposed facility exceeds Built-Up Area (BUA) of 20,000m^2, requisite Environment Clearance (EC) from concerned authority is obtained prior to commencement of construction works and the conditions stipulated in EC letter will be complied with during design (pre-construction), construction, and operation stage of sub-project. The Project Management Consultant (PMC) appointed for the sub-project is Public Works Department (PWD) of Maharashtra and was responsible for obtaining the EC. The copy of EC is attached as Appendix 11.

5. Environmental Guidelines and selection Criteria for subproject selection under MTCMESDP rules out the possibilities of requirement of forest clearance for acquisition of Reserve/protected forest, wildlife clearance, CRZ clearance, clearance from ASI/State Department of Archaeology; however, in addition to Environmental Clearance the sub-Project will require, consents and authorization from pollution control board, various licenses/NoC (i.e., labour license, Fire NoC, PESO License etc.) before commencement and during execution of the Project.

6. The proposed facilities include a 500-bed hospital, a medical college, a hostel, and other support facilities. The 500 Bedded hospital complex would comprise of hospital block; emergency services; radiology; central labs & blood bank; O.T. suite & critical care areas; OPD block; ICU wards - 30 beds; IPD wards - 445 Beds; emergency icu-- 5 beds; pre-operative - 10 beds; recovery room - 10 beds. The medical college (academic block) would comprise Admin Block; eight nonclinical departments with skill lab; four lecture halls; examination halls; library; O.T. suite & critical care areas; cafeteria; male & female

common room; & multipurpose hall. The Hostel Complex consists of girls & boys' hostels. Girls hostel with 150 capacity hostel double seated with dining, kitchen, warden office, warden residence, recreation hall & reading room and boys hostel with150 capacity hostel double seated with dining, kitchen, warden office , warden residence, recreation hall & reading room. Other facilities include parking; Mortuary; Laundry; Substations; HVAC plant room; pump houses; STP/ ETP; WTP

7. The environmental assessment was conducted for the sub-project which is located in the Sindhudurg Sub-Division, a significant administrative unit in the Sindhudurg district of Maharashtra state. The sub-project site is located in the administrative jurisdiction of Village Ranbambuli; Tehsil-Kudal; Dist.-Sindhudurg of Maharashtra. The sub-project site is clear of any environment sensitive features like Forest, protected area, coastal regulatory zone etc. There is no presence of forest area in the vicinity of proposed site. The nearest forest patch (Reserve Forest) is located at about 1.3 Km away from proposed site towards northern side. The forest areas fall under the Kadaval range of Sawantwadi forest division. No endangered species of flora and fauna are found within and in the surrounding area of the sub-project site. The socio-economic profile of the project is based on the Census of India, 2011. The proposed site is located in administrative jurisdiction of Village Ranbambuli of Kudal Taluka.

8. Considering the environmental setting, type and scale of the subproject, it can be fairly stated that the key potential impacts during construction as well as operation phase of the sub-project are likely to be primarily limited within sub-project footfall area. However, environmental impact likely due to transportation of construction materials by road during construction phase, increased traffic during hospital operation, generation and management of Biomedical Waste, Sewage and Effluent etc. (which are hazardous in nature posing threat to occupational and community Health and Safety) as well as other kind of hazardous/non-hazardous solid wastes etc. unless proper mitigation measures are adopted. Therefore, such concerns are required to be addressed by adopting necessary mitigation measures through implementation of Environmental Management Plan (EMP) as prepared for the subproject.

9. The EMP delineates various mitigation measures to be taken up by different entities throughout the project lifecycle and allocated responsibilities of supervision and reporting. For evaluating adequacy of EMP and to determine need for further safeguard measures (if any required) in future for the subproject, Environmental Monitoring Plan (EMoP) has been formulated. The subproject specific budget for implementation of EMP and EMoP is also estimated as part of the EMP. This IEE including the EMP and budget will need to be updated based on detailed design, stipulations of statutory or other competent authorities, change in scope, identification of unanticipated impacts, if required. Both the draft and updated EMP and budget will be included in the bid and contract documents of contractor and PMC as applicable after these are reviewed and cleared by ADB.

10. The institutional setup plays a crucial role in implementing Environmental Safeguard measures in the sub-project lifecycle. The MEDD (Executing Agency) is responsible for overall implementation of environment safeguards and regulatory compliances. Other entities, such as the implementing agency (IA), Facility Level Environmental Unit, Contractor, and Project Management Consultant (PMC), will also be involved in safeguard implementation, supervision, reporting, and stakeholder engagement. The Environmental and Social Safeguard Cell (ESSC) will be formed at IA/PMU. A Facility Level Environmental Unit will be formed, headed by the Dean of Sindhudurg Medical College and Hospital. The PMC will assist the Environmental Unit until the end of defect liability period or project closure report.

11. ADB’s SPS (2009) mandates ongoing stakeholder engagement for Category 'B' subprojects, which should be documented in the IEE report and subsequently throughout lifecycle of the project Stakeholders’ consultations have been conducted during preparation of this IEE report. The discussions with different stakeholders were focused on to obtain information about the ownership of land, presence of ecologically important areas in the vicinity, information on floral/faunal pattern, prevailing usage of land concerned and nearby area, infrastructure availability with respect to waste/effluent management, water availability – supply, presence of heritage/archaeological site, current environmental conditions, potential pollution generating sources, stakeholders general perception and expectation about the subproject etc. The consultation with IA and EA was also undertaken to understand existing and potential proposed institutional structure for environmental safeguard management.

12. The ADB's SPS (2009) mandates the establishment of a responsive, accessible, and culturally appropriate grievance redressal mechanism (GRM) for sub-projects. Currently, there is no sub-project specific GRM for environmental safeguards. A GRM will be established before construction and maintained throughout the project lifecycle to address environmental grievances. The GRM will be based on principles such as accessibility, predictability, transparency, credibility, fairness, and citizen feedback. It aims to minimize and manage complaints to reduce impacts. This GRM will be used for managing grievances related to environmental and social safeguards, and occupational health and safety related concerns during the construction and operation phases of the sub-project.

13. The Grievance Redressal Mechanism (GRM) is a three-tier system designed to provide a platform for stakeholders to register grievances. The first level of GRM will be set up at the site/facility level, while the second and third levels will be at IA/PMU and State/EA level committees. Aggrieved persons can convey grievances through various channels including the GoM's grievance portal. The GRM will be gender responsive and maintain gender representation. The GRCs will meet at least once a year to ensure its functionality of GRM. Complaints can also be taken to the ADB's Accountability Mechanism. The GRM will not hinder access to judicial or administrative remedies.

I. INTRODUCTION

A. Overview

14. The proposed Maharashtra Tertiary Care and Medical Education Sector Development Program aims to support the state Maharashtra in a holistic development of tertiary care and medical education using the sector development program (SDP) modality. Under the program, the policy actions will create a robust framework for enabling existing and new medical colleges and hospitals to attract and retain well-trained doctors and allied health staff, as well as provide quality health care services. These policy actions will enhance the value from new medical colleges and hospitals by improving quality, availability of medicines, and human resources. On the other hand, under the investment component, will build four medical colleges and tertiary hospitals in underserved districts. Underserved districts include Ambernath, Amravati, Osmanabad, Palghar, Raigarh, Ratnagiri, and Sindhudurg, which do not have state Government Medical Colleges (GMCs) or other funding opportunities for new GMCs.

15. The program will be aligned with the following impact: modern medical service to all strata of citizens of the state provided[1]. The outcome will be access to quality and affordable tertiary health care and medical education in Maharashtra improved. The program will facilitate the achievement of this outcome through following three outputs, which will be supported by the policy and investment components.

16. **Output 1: Medical education and tertiary care facilities and systems enhanced.** The program will help the state transform the quality of and access to tertiary health care and medical education. Policy actions under this output will include (i) introducing performance-based incentives to GMC staff from health insurance payments to encourage them to prioritize poor patients covered by insurance schemes; (ii) operationalizing a policy for climate-resilient asset planning, management, and sustainability for medical colleges and tertiary hospitals to improve quality, sustainability, climate and disaster resilience, and accountability; and (iii) establishing a robust, digitally enabled performance management system to improve the quality of health delivery and medical education covering all medical colleges. In addition, the program will build new tertiary health care hospitals or upgrade district hospitals to teaching hospitals in underserved districts, incorporating climate and disaster resilience and gender equality and social inclusion. It will also increase the number of beds to treat patients in government tertiary care hospitals, as well as improve the capacity of staff and introduce protocols for providing appropriate treatment.

17. **Output 2: Availability of quality and gender-equitable medical human resources increased.** To improve the availability of health human resources, especially doctors in rural areas, the program will support the state in taking policy actions on a comprehensive new “hire to retire” talent management policy, including improved recruitment rules and recruitment through a dedicated unit at the state Public Service Commission. The project component will support (i) building new medical colleges to increase the supply of doctors in the state, especially in underserved districts; and (iii) medical education reform by engaging with the National Medical Commission on assessing, updating, and revising the curriculum (by including the latest developments in digital health and climate change) and pedagogic practices.[2]

[1] Government of Maharashtra, Department of Medical Education and Medicines. Objectives and Goals.
[2] The pandemic necessitated review of the curriculum, which the project will support. Medical Council of India. 2018. Revised curriculum. New Delhi.

18. **Output 3: State system to deliver quality and affordable tertiary care and medical education strengthened.** This output will help improve the state's capacity to deliver quality and affordable tertiary health care and medical education. The policy actions will include (i) setting up a dedicated agency for the procurement of medicines and equipment to support timely availability of quality drugs; (ii) establishing India's first state-led quality health care and medical education network of Centre of Excellences under the Maharashtra University of Health Sciences as a not-for-profit company networked with other institutes; and (iii) implementing a comprehensive digital health policy, integrating fragmented systems and linking with the national digital health system. The Centre of Excellence will institutionalize the quality of health in medical colleges (linking with national quality standards), develop and implement a learning agenda for gender-responsive and socially inclusive medical education and tertiary care, develop enabling conditions for leveraging the private sector, and identify research priorities and conduct research based on state needs.

19. **ADB's value addition and strategic alignment.** Since 2013, ADB has supported the Government of India in urban primary health care; the proposed SDP will deepen this engagement by targeting medical education and tertiary and secondary care. The program—with a mix of policy actions and construction of medical colleges and teaching hospitals—can be replicated in other states, as India aims to expand access to medical education.[3] ADB and government identified seven policy actions based on the sector assessment, consultations, and policy dialogues. These aim to (i) remove human resource bottlenecks and improve the availability of quality drugs through reforms; (ii) expand access to secondary and tertiary care by the poor; and (iii) ensure the sustainability of investments to achieve continual improvement. ADB is working with the Medical Education and Drugs Department (MEDD) for private sector engagement by outsourcing auxiliary services. The program will support digitalization for tertiary care and medical education management by bringing together fragmented information technology systems. The program is aligned with pillar 3[4] of ADB's country partnership strategy for India, 2023–2027 and Strategy 2030 operational priorities 1, 2, 3, and 6.[5]

B. Program Components

20. The program has two components, i.e., a) Investment Component ($ 500 million; accounting 77% share)[6] and (b) Policy Component ($ 150 million; accounting 23 % share). Of the $500 million proposed ADB loan, $350 million will be investment lending to build four Government Medical Colleges (GMCs), including medical equipment. The remaining $150 million will be for policy-based lending and will be disbursed after the state undertakes essential policy reforms. Climate mitigation and adaptation costs will be about 14.5% of the project cost. Please refer Table 1 for Indicative Financing Plan.

[3] Ministry of Health and Family Welfare. 2022. Health Ministry Reviews Progress of Centrally Sponsored Scheme to Operationalize New Medical Colleges. New Delhi. Press Information Bureau.
[4] ADB India country partnership strategy (2023-2027), Pillar 3: Deepen social and economic inclusiveness.
[5] ADB. 2018. Strategy 2030: Achieving a Prosperous, Inclusive, Resilient and Sustainable Asia and the Pacific. Manila.
[6] Including Government counterpart funds related to investment component.

Table 1: Indicative Financing Plan

Source	Amount ($ million)	Share of Total (%)
Asian Development Bank Ordinary capital resources (regular loan) for investment component	350.0	54.0
Ordinary capital resources (regular loan) for policy component	150.0	23.0
Government for investment component	150.0	23.0
Total	650.0	100.0

Note: Government counterpart funds are related only to the investment component.

21. The Executing Agency (EA) and Implementing Agency (IA) for this program will be Medical Education and Drugs Department (MEDD).

22. The program is categorized as B for environment (C for both involuntary resettlement and indigenous peoples), as per ADB's SPS 2009. For the investment component, the subproject selection criteria will exclude subprojects located within environmentally sensitive areas. The selection criteria and screening process for the project components as provided in EARF are to be followed. Potential environmental impacts and risks will be limited to the project footprint. The civil work for the construction of new medical colleges will be on government land and there are no outstanding complaints with regards to the land.

23. For the policy-based component, no such environmental impact is perceived for this subproject which may have escalated the environmental category from 'C.'

24. In case of any change in scope or identification of unanticipated impacts (that are not assessed or mentioned in this IEE report) during implementation, the IEE report needs to be updated covering the environmental implication and mitigation measures due to additional scope/change of scope identified under the Project. Further, the works are only commenced for new/additional scope, upon clearance of updated/addendum to IEE report from ADB.

C. Purpose of the IEE Report

25. An environmental screening using the Rapid Environmental Assessment (REA) checklist has been conducted (**Appendix 1).** Based on the screening, the environmental category of the sub-project involving Construction of 500 bedded Hospital and Government Medical College at Sindhudurg, Maharashtra (Sindhudurg Sub-Project) is determined as "Category B".

26. For category B (Environmental Category) projects, as per ADB's Safeguard Policy Statement (SPS) 2009, an Initial Environmental Examination (IEE) report is required. This IEE has been conducted to identify the potential environmental impacts of the proposed development and devise appropriate mitigation measures.

27. This IEE report for Sindhudurg Sub-Project is prepared as per the ADB's SPS, 2009 and EARF requirements. This IEE report will be updated based on detailed design and requisite EC's conditions obtained. It shall be reviewed and cleared by ADB before the construction works begin. Further, ADB-cleared IEE report shall be disclosed in both ADB and MEDD websites. The Medical Education and Drugs Department (MEDD) and Directorate of Medical Education & Research (DMER), Government of Maharashtra are

the Executing and Implementing agency respectively and will be responsible for implementation of the management and monitoring provisions provided in this IEE report.

28. This IEE including the EMP, and budget will need to be updated based on detailed design, stipulations of statutory or other competent authorities, change in scope, identification of unanticipated impacts, if required. Both the draft and updated EMP and budget will be included in the bid and contract documents after these are reviewed and cleared by ADB.

D. Methodology followed for IEE

29. This IEE report has been prepared based on Design Basis Report (DBR), field investigations and stakeholder consultations to meet the requirements for environmental assessment process and documentation as per ADB SPS 2009. The IEE commenced with a review of legal requirements for the project. The following activities were taken up towards the development of the IEE document.

- **Desktop Research:** Secondary literature review and review of project related documents/reports to understand the project elements and current site condition and environmental sensitivity.

- **Regulatory Review:** Study of national regulatory norms and ADB's SPS 2009 provisions with respect to environmental safeguards towards assessment of their applicability

- **Reconnaissance Survey:** Reconnaissance survey was carried out by an environmental expert to document the environmentally sensitive features of the site and its surrounding area; to identify the hotspots (if any) and ground-truthing of secondary data obtained through literature review.

- **Stakeholders' Consultation** to ensure inclusion of stakeholders in project planning stage, to obtain information about baseline environmental condition of project surrounding area, to understand potential critical aspects likely to be associated with proposed project interventions; to understand potential measures for mitigation and enhancement with respect to the proposed project implementation.

- **Collation and Analysis of Data:** The database generated from various primary and secondary sources has been compared and collated to establish the most authentic baseline scenario.

- **Assessment of potential Impact and Proposal for Mitigation:** The impact due to the proposed development has been assessed and suitable mitigation measures have been proposed to negate adverse impact over the environment to the maximum extent possible.

- **Preparation of Environmental Management Plan (EMP):** Site specific EMP shall be formulated after detailed design and based on requisite EC to be obtained under the Project. These shall include: (i) mitigation of potentially adverse impacts; (ii) monitoring of impacts and mitigation measures during project development and operation; (iii) setting up of institutional arrangement for implementation and supervision of safeguard measures; and (iv) provisioning for budget for implementation of EMP.

II. REGULATORY FRAMEWORK

A. National Regulatory Framework

30. Government of India have established regulations to manage the environmental condition, biomedical waste, and other waste, which will be directly relevant to the project. In addition, there are relevant legal provisions to ensure the pollution prevention, protection of workers and labour and provisions to ensure adequate management of environmental risks and impacts during the project planning and implementation stage. Table 2 outlines the laws, regulations, and policies potentially relevant to the Project.

Table 2: National Laws, regulations, and policies potentially relevant to the Project

S. No.	Key Regulations	Relevance to Sub-Project	Requirement
Environmental Management			
1.	Environment (Protection) Act, 1986 and Environmental Protection Rules 1986 and subsequent amendments thereon.	This is an umbrella act under which several applicable statutes/regulations have been framed. This Act provides general guidelines for prevention of pollution. Under this Act, rules have been specified for discharge/ emission of effluents and different standards for environmental quality. These include ambient noise standard, general effluent standards, emission standards etc.	The act should be followed to ensure environmental protection, compliance towards emissions, waste discharge, water quality, air quality, noise level standards etc.
2.	EIA Notification, 2006 and subsequent amendments	The EIA notification list out type of projects that requires EIA and/or environmental clearance (EC) from the Expert Appraisal Committee of Ministry of Environment, Forest and climate change, State/District Environment Impact Assessment Authority body prior to commencement of any developmental work or project expansion. As specified in the notification, the projects are classified into Category A and B based on the type of development/sector and potential impacts. The Category B projects can be further classified into either Category B1 or Category B2.	Since the proposed facility exceeds Built-Up Area (BUA) of 20,000m^2, Environment Clearance (EC) from SEIAA, Maharashtra is obtained prior to commencement of construction works, with Identification No: EC24C0000MH5188438N issued on 03 January 2025. The conditions stipulated in EC letter will be complied with during design (pre-construction), construction, and operation stage of sub-project. EC will also be applicable for the sources of construction materials such as stone quarries, sand mines etc. both in case of new quarry/ mines opened by contractor or sourced

S. No.	Key Regulations	Relevance to Sub-Project	Requirement
			from existing third party owned quarries/ mines.). In case of any development of the Phase II area (future expansion area) in future, the Environmental Clearance which will be secured for current stage (i.e., Phase I) should be amended as per the provisions of EIA notification 2006 and its subsequent amendments.
3.	Water (Prevention and Control of Pollution) Act, 1974 and subsequent amendments	The Act prohibits discharge of pollutants into water bodies beyond a given standard and lays down penalties for non-compliance with its provisions. This act will be applicable for segregation of liquid chemical waste at source and ensuring pre-treatment or neutralization prior to mixing with other effluents generated from healthcare facilities and standard disposal. The Central and State Pollution Control Boards are the statutory authorities.	The proposed facility will require to obtain the Consent to establish (CTE) and Consent to Operate (CTO) from State Pollution Control Board (SPCB) prior to commencement of construction and operation respectively. CTE, and CTO would also be required during construction phase for construction equipment/ machineries as per the industrial categorization of the SPCB such as prior to establishing and operating batching plant, crusher etc. The CTE from the Pollution Control Board for the construction phase, including the establishment of the batching plant and related facilities such as the DG set, is currently in progress. A copy of CTO for ready mix concrete has been attached as Appendix 13.
4.	The Air (Prevention and Control of Pollution) Act. 1981 and subsequent amendments	The purpose of this Act is to prevent, and control air pollution and preserve air quality. This Act empowers Central and State Pollution Control Boards for managing air quality and emission standards, as well as monitoring air quality, prosecuting offenders and issuing licenses for construction and operation of any facility. This Act has notified National Ambient Air Quality Standard for different land uses.	
5.	Noise (Regulation and Control) Rules 2000 amended in 2010	The Rules require activity/ processes generating noise to ensure that the ambient noise standards are within the prescribed Standards. The proposed sub-projects will result in generation of noise during construction phase and will require to follow the noise standards as prescribed under the rules.	The noise levels during construction period will be attenuated to meet the levels stipulated for the land uses adjacent (within 100 m) to the sub-project. During operations stage the noise levels for silence zone needs to be achieved

S. No.	Key Regulations	Relevance to Sub-Project	Requirement
			as per the standards, i.e., 50 dB(A) during the day and 40 dB(A) during the night.
6.	National Environment Policy (NEP), 2006	NEP is a comprehensive guiding document in India for all environmental conservation programs and legislations by central, state and local government. The dominant theme of this policy is to promote betterment of livelihoods without compromising or degrading the environmental resources. The policy also advocates collaboration method of different stakeholders to harness potential resources and strengthen environmental management.	The MEDD should adhere to NEP principle of "enhancing and conservation of environmental resources and abatement of pollution".
7.	Guidelines/Criteria for evaluation of proposals/ requests for ground water abstraction (With effect from 16.11.2015) and subsequent amendments	These guidelines specify the provisions to be followed for obtaining permission towards abstraction of ground water in Notified/Non-Notified areas. The requisite permission needs to be obtained from the Central Ground Water Authority (CGWA)/ Department of Water Resources, Government of Maharashtra if groundwater is abstracted for sub-projects under the Program.	Permission from competent authority needs to be obtained prior to extraction of ground water, if borewell etc are proposed. Requisite permission for surface water extraction will be obtained prior to extraction.
8.	The Wildlife (Protection) Act, 1972 amended 1993 and Rules 1995; Wildlife (Protection) Amendment Act, 2002 and subsequent amendments	The Wildlife Protection Act, 1972 has allowed the government to establish a number of National Parks and Sanctuaries and, to protect and conserve the flora and fauna and their habitat. Prior Wildlife clearance is required to be obtained if any works are to be carried out within the boundary of WLS.	Not applicable as the sub-project being located away from Eco-Sensitive Zones or Protected Areas and doesn't attract Wildlife Clearance/NOC.
9.	Forest (Conservation) Act, 1980 and subsequent amendments;	This Act provides for the conservation of forests and regulating the diversion of forest lands to non-forestry purpose. Any project falling under the forest area is required to obtain prior clearance from the relevant authorities under Forest (Conservation) Act 1980.	Not applicable as the sub-project will not require diversion of Forest Land.
10.	Ancient Monuments and Archaeological Sites and Remains Act 1958 and subsequent amendments The Maharashtra	According to this Act, areas within the radii of 100m and 300m from the "protected property" are designated as "prohibited areas" and "regulated areas" respectively. No development activity is permitted in the "prohibited areas". Development activities are not permitted in the "regulated areas" without prior permission from the Archaeological Survey of India (ASI) if the site/remains/ monuments are protected by ASI or the State Directorate of Archaeology.	No government notified site within the immediate vicinity of the project site (i.e. 300m). However, there is one Archaeological Survey of India protected monuments i.e., Sindhudurg Fort which is located at an approximate aerial distance of 25.6 Km from the sub-project site.

S. No.	Key Regulations	Relevance to Sub-Project	Requirement
	Ancient Monuments and Archaeological Sites and Remains Act, 1960, 2016		
11.	Coastal Regulation Zone (CRZ) Notification, 2019 and subsequent amendments	This notification for the purpose of conserving and protecting the coastal areas and marine waters, the CRZ area has been classified as CRZ I (further classified as IA and IB), CRZ II, CRZ III (further classified as IIIA and IIIB) and CRZ IV (further classified as IVA and IVB) based on ecological sensitivity and zonation. Section 4 and 5 of the Act clarifies prohibited activities and Regulation of permissible activities within CRZ limit. Section 6 of the Act defines the procedure of securing CRZ clearance for permissible and regulated activities. Projects falling in CRZ needs prior clearance from the State or National coastal zone management authority as per applicability.	Not applicable as the sub-project is not located within CRZ.
12.	Wetlands (Conservation and Management) Rules, 2017 and subsequent amendments	These rules are enacted for the protection of wetlands and restriction of certain activities within wetlands by providing a regulatory mechanism. These rules apply to protected wetlands notified under the rules (which include Ramsar sites; wetlands in Eco-Sensitive Zones (ESZs) /United Nations Educational, Scientific and Cultural Organization (UNESCO) sites, high altitudes, etc.). Section 4 of the rule elaborates Restrictions of activities in wetlands.	Not applicable as the sub-project is not located in vicinity of any such wetland or no such waterbody is located within the proposed site boundary. .
13.	Notification of Eco Sensitive Zones (ESZs) and subsequent amendments	ESZs are area of significant ecological importance. The ESZs notification are to conserve and protect the natural resources and living being. Several zones are declared in the country as eco sensitive zones by notifications. Any project activity located in ESZs will require prior permission from ESZ monitoring committee.	Not applicable as the sub-project is not located within Eco-Sensitive Zones.
14.	The Maharashtra Felling of Trees (Regulation) Act, 1964	For conservation of trees and restoration of felled trees.	This is applicable as the proposed activity will involve felling of trees. Permission from concerned authority prior to tree felling was secured (please see Appendix 14). Compensatory plantation to be done at the ratio of 1:10[7]or as stipulated by

[7] As per the discussion with the State Forest Department of Maharashtra

S. No.	Key Regulations	Relevance to Sub-Project	Requirement
			the State Forest department or rules.
15.	The National Green Tribunal (NGT) Act, 2010	NGT provides an effective and expeditious disposal of cases relating to environmental protection and conservation of forests and other natural resources including enforcement of any legal right relating to environment and giving relief and compensation for damages to persons and property and for matters connected therewith. NGT has jurisdiction over matters related to Water Act, 1974; Water Cess Act, 1977; Forest (Conservation) Act, 1980; Air Act, 1981; Environment (Protection) Act, 1986; Public Liability Insurance Act, 1991; and Biodiversity Act, 2002. Consequently, no other court will have jurisdiction over the matters related to environment falling under the above referred Acts. Being a dedicated tribunal for environmental matters with the necessary expertise to handle environmental disputes, NGT provides speedy justice (within 6 months). Chennai is one of the five places of sitting of the Tribunal (Southern Zonal Bench is located in Chennai). If not satisfied with the NGT decision, aggrieved party can approach the Supreme Court within the specified period of time. Matters relating to the Wildlife (Protection) Act, 1972 do not fall under the jurisdiction of NGT.	Stakeholders / affected persons may approach NGT to resolve sub-project/s induced environmental issues
16.	The Motor Vehicle Act, 1988 and Motor Vehicles Rules, 1989 and subsequent amendments	The Act regulates all aspects of road transport vehicles. It details legislative provisions regarding licensing of drivers/conductors, registration of motor vehicles, control of motor vehicles through permits, traffic regulation, insurance, liability, offences and penalties, etc.	This Act will be applicable for all machinery including vehicles/machineries deployed/used by contractor and/or hospital authority. The law mandates requirement of valid pollution under control certificate (PUC) of vehicles or machinery used for construction works.
17.	Petroleum and Explosives Safety Organization (PESO) License under provisions of Petroleum Act 1934	The Act is pertinent to regulate the manufacture, possession, use, sale, transport, import and export of Explosives.	Licence from Chief Controller of Explosives/ PESO will be applicable if the storage quantity of Diesel exceeds the allowable limit.
18.	Manufacture, Storage, and Import of Hazardous	Defines hazardous chemicals and stipulates rules, procedures to manufacture, storage and import of hazardous chemicals requires permission, authorization from the State Pollution Control Boards for certain chemicals	For storage of any Hazardous Chemicals like chlorine (schedule -II of the rules) permission, authorization is required

S. No.	Key Regulations	Relevance to Sub-Project	Requirement
	Chemical Rules, 1989; The Gas Cylinder rules, 2016	which have hazardous property or if the total storage exceeds specified quantity; requires emergency management plan. The Gas cylinder rules were issued under the Explosives Act 1884	from the State Pollution Control Board / Controller of Explosives based on the storage quantity. Permission will be required if storage of chlorine gas/ liquid is made in more than 5 cylinders
19.	Bio-Medical Waste Management (BMWM) Rules, 2016 and subsequent amendments	Facility should have authorization under BMWM Rule, 2016. BMWM Rules, 2016 is the key legislation governing the management of biomedical waste in India. These guidelines provide the necessary compliance requirements for BMW generation, storage, transportation, disinfection, treatment and disposal. In addition, these guidelines also outline the provisions for obtaining authorization for management of biomedical waste as well as monitoring and reporting requirements for healthcare facilities involved in biomedical waste generation and management.	The Healthcare establishment needs to secure Authorization from SPCB under these rules. The Rule mandates Management, monitoring, and record keeping of BMW management processes alongside submission of annual reports to concerned authority. The rule also mandates the healthcare facility to have a formal tie-up with SPCB approved Common Biomedical Waste Treatment and Disposal Facility (CBWTDF)
20.	Solid Waste Management (SWM) Rules, 2016	These guidelines will be applicable for disposal of solid waste generated from construction camp and Health Care Facility (HCF) which may include packaging material of hospital supplies, food waste, and other general waste. All bio-degradable, non-biodegradable and domestic hazardous wastes generated in the hospital premise needs to be managed by the hospital authorities in accordance with the relevant provision of this Rule.	The hospital authority is required to engage a licensed waste disposal company to collect and handle the non-hazardous solid waste and/or arrangement with municipal authority/Local Authority for collection and disposal of non-hazardous solid waste.
21.	Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016	These rules ensure the protection to the public against improper handling and disposal of hazardous wastes. These rules will be applicable for hazardous material and waste storage and handling. The waste generated from HCFs may be hazardous in nature depending on the toxic, corrosive, flammable, reactive, and genotoxic properties. Such as broken thermometers, blood pressure gauges, or waste containing mercury and cadmium content etc. In addition to that, Effluent Treatment Plant Sludge and used oil generated from Generator Sets are also considered as Hazardous waste.	For handling and disposal of hazardous waste, authorization under this rule to be ensured for the sub-project. As per the rule the healthcare facility will have a formal tie-up with SPCB approved authorized vendor for collection and disposal of Hazardous Waste.

S. No.	Key Regulations	Relevance to Sub-Project	Requirement
22.	Construction and Demolition Waste Management Rules, 2016	The rules apply to every waste resulting from construction, re-modelling, repair and demolition of any civil structure of individual or organization or authority who generates construction and demolition waste such as building materials, debris, rubble. To promote the management of construction and demolition waste in an environmentally friendly manner and reduce the environmental impacts throughout the duration of the project; CPCB has developed guidelines on Environmental Management of C&D Waste Management in India (2017) in accordance with the Rule 10 sub-rule 1(a) of C & D Waste Management Rules, 2016.	The proposed sub-project will generate some construction and demolition (C&D) waste during the construction stage and would require to manage the C&D waste in line with the CPCB guidelines.
23.	E-Waste (Management and Handling) Rules, 2022 (Electrical and electronic waste)	Provides for the collection, dismantling, recycling, transport, disposal, and overall handling of e-waste. E-waste means waste electrical and electronic equipment, whole or in part, or rejects from manufacturing and repair processes which are intended to be discarded.	Applicable as electrical and electronics as listed in the Schedule I of the aforesaid rules will be used and will require replacement within the lifecycle of the sub-project as well during decommissioning. As per the provision of these rules, the disposal of E-wastes to be done at the specified collection centres and needs to be reported annually.
24.	Plastic Waste Management Rules, 2016 and amendments	The Act regulates the responsibilities of producers and generators, for effective segregation, management and recycling of plastic waste. The health care facilities/ hospitals are specified as institutional waste generator in the said rules. All institutional generators of plastic waste are required to segregate and store the plastic waste in accordance with the Municipal Solid Waste (Management and Handling) Rules and handover the segregated wastes to authorized waste processing or disposal facilities or deposition centres either on its own or through the authorized waste collection agency.	The hospital authority is required to engage a licensed recycler to collect and handle the recyclable plastic waste generated from facility.
25.	National Building Code (NBC), 2016	The primary requirement of the Code is the Safety of the Occupants, the safe exit of Occupants, restricting fire to a part of the building and the suppression of fire through automatic or manual means.	The proposed sub-project will have to comply with fire and life safety considerations (as applicable to) under the NBC. Approval of layout plan before commencing construction and

S. No.	Key Regulations	Relevance to Sub-Project	Requirement
			Occupancy certificate before occupying constructed building will be required from respective local development authority (as applicable).
26.	The Maharashtra Fire Prevention and Life Safety Measures Act, 2006 and Maharashtra Fire Prevention and Life Safety Measures Rules, 2009	The law mandates inclusion of fire safety measures/infrastructures in buildings.	Fire NoC from State Fires Department is to be secured by the facility.
27.	National Disaster Management Act 2005	Provides for the timely and effective response to disaster. It lays down guidelines to be followed by the State Authorities in drawing up the State Plans. This Act is applicable if the project encounters natural disaster during the construction of operation stage.	Applicable in case any disaster situation arises. The sub-project should have both onsite and offsite emergency response plan prepared for the construction and operations period.
28.	Regulation of Polychlorinated Biphenyls Order, 2016	Use of Polychlorinated Biphenyls (PCBs) by project will be prohibited as per the provisions of the order, old transformers, if any, will be handled as per the provisions of the Act, and all existing transformers to be PCB free by 2025. Disposal of PCB containing equipment must be done as per Hazardous and Other Wastes (Management, & Trans-boundary Movement) Rules	Applicable since transformers and sub stations to be installed for power supply. It will be ensured that PCB free oil is used.
29.	Ozone Depleting Substances (Regulation) Rules, 2000 as amended in 2005	Use of ozone depleting substances by project will be prohibited as per the provisions of the Act. Any equipment, using such substances will be hermetically sealed	Applicable as refrigerators, air conditioners, fire extinguishers will be used. It will be ensured that no ozone depleting substances are used such appliances
30.	Atomic Energy (safe Disposal of Radioactive Wastes) Rules, 1987 notified under the Atomic Energy Act 1962.	It exercises regulatory control over nuclear installations and the use of radioactive substances and radiation generating plants outside such installations. As per provisions of Atomic Energy (safe Disposal of Radioactive Wastes) Rules, 1987, no person shall dispose of radioactive waste (a) unless he has obtained an authorization from the competent authority under these rules; (b) in any manner other than in accordance with the terms and conditions specified in the authorization issued under these rules; (c) in any location different from those specified in the authorization; and (d) in	Applicable in case of generation of radioactive waste. Requisite authorisation shall be obtained from AERB

S. No.	Key Regulations	Relevance to Sub-Project	Requirement
		quantities exceeding those specified in the authorization. Health Care Facilities generating radionuclides waste from treatment of Cancer patients and end-of-life equipment containing radio radionuclides shall obtain authorization from AERB for its disposal.	
Other Guidelines for Handling of Biomedical Waste			
31.	Guidelines on management of bio-medical waste under Universal Immunization Program (initially released in 2004, revised in 2016, 2017, 2018, 2021)	These guidelines provide directions for stepwise management of bio-medical waste generated from the Universal Immunization Program, including provisions for training of health care workers, segregation, labelling, record-keeping, transportation, packaging, treatment and disposal of biomedical and solid waste generated from vaccination programs.	These guidelines will be applicable for waste generated from the various vaccination program in conjugation with BMW Rules 2016.
32.	Guidelines for Bar Code System for effective management of bio-medical waste, CPCB	The bar code system was designed to ensure effective monitoring of biomedical waste from the source of generation to its ultimate disposal as per BMW Rules, 2016. These guidelines provide the technical specifications of a bar code system and guidance to implement the system.	The hospital authority will ensure the implementation of Bar Code system for BMW management.
33.	Guidelines for Handling of Biomedical Waste for Utilization, CPCB	These guidelines provide guidance to healthcare facilities as well as to industry/vendors for the purpose of management i.e., collection, transportation and disposal of biomedical waste to ensure handling of biomedical waste with adequate safeguards to protect community health and the environment.	The hospital authority will ensure the compliance towards the stipulated provisions under these guidelines.
34.	The Epidemic Diseases Act 1897 and The Epidemic Diseases (Amendment) Ordinance, 2020	The Act provides for the prevention of the spread of dangerous epidemic diseases. The Ordinance amends the Act to include protections for healthcare personnel combating epidemic diseases and expands the powers of the central government to prevent the spread of such diseases.	The Ordinance has a direct applicability to ensure safety of communities, workers and sub-project/s staff working in the hospital facility and residing in the area surrounding to the hospital facility in time of epidemic/pandemic.
35.	CPCB “guidelines for Handling, Treatment and Disposal of waste generated during Treatment/Diag	These guidelines provide guidance on management of waste generated during diagnosis and treatment of COVID-19 suspected / confirmed patients.	These guidelines are required to be followed by all facilities engaged in COVID-19 waste management.

S. No.	Key Regulations	Relevance to Sub-Project	Requirement
	nosis/Quarantine of COVID-19 patients", 2020		
Workers and Labour Welfare			
36.	The Building and Other Construction Workers (Regulation of Employment and Conditions of Service) BOCW Act, 1996	This is a social welfare legislation that aims to benefit workers engaged in building and construction activities across the country and regulates the employment and conditions of service of building and other construction workers and to provide for their safety, health and welfare measures and for other matters connected therewith or incidental thereto.	This act will have a direct applicability to the sub-project as it will involve construction activity for the proposed hospital facility.
37.	Workmen's Compensation Act, 1923 and Rules 1924 and subsequent amendments	The Act requires if personal injury is caused to a workman by accident arising out of and in the course of his employment, his employer should be liable to pay compensation in accordance with the provisions of this Act. The provision of this act will be applicable during the construction and operation phase	The provisions of the act are to be adhered to by the contractor, developer and hospital administration at all times of sub-project's construction and operation. Labour insurance will be obtained for skilled, semi-skilled and unskilled workers prior to commencement of construction. The labour license and Insurance has been obtained by the PMC (Appendix 12) Renewal of the labour license shall be made prior to the validity date.
38.	The Child Labour (Prohibition and Regulation) Act, 1986	This Act prohibits employment of children in certain occupation and processes (including construction and demolition activities) as listed in the Act. The act also specifies conditions of work for children, if permitted to work. The Act also requires maintenance of a register for employed children (Section 11).	The contractor and program/sub-project authorities need to ensure that no child labour is engaged at site for construction or operation works either directly or by the contractors/sub-contractors.
39.	The Bonded Labour (Abolition) Act 1976	The bonded labour means any labour or service rendered under the bonded labour system. The act states that all forms of bonded labour stand abolished, and every bonded laborer stands freed and discharged from any obligations to render any bonded labor.	The contractor and program/sub-project authorities need to ensure that no bonded labour is practiced at site for construction or operation works either directly or by the contractors/sub-contractors.

S. No.	Key Regulations	Relevance to Sub-Project	Requirement
40.	Minimum Wages Act, 1948	The Act empowers the Government to fix minimum wages for employees working in specified employments. The Act requires the Government to fix minimum rates of wages and review the rates every 5 years. These are the minimum wages that are to be paid to employees (for construction workers).	The program/sub-project authority needs to ensure the display of wage notice and issue wage slip to workers as prescribed by the regulatory body.
41.	Equal Remuneration Act 1976	As per the Equal Remuneration Act 1976, it is the duty of an employer to pay equal remuneration to men and women workers for same work or work of a similar nature. This act will be applicable to the proposed project during construction and operation stage.	The contractor and program/sub-project authority need to ensure the adherence to provision with the Act.
42.	Inter-state Migrant Workers (ISMW) Act, 1979 and subsequent amendments	The objective of the act is to regulate the employment of inter-State migrant workmen and to provide for their conditions of service and for matters connected therewith. Every establishment that is recruiting interstate migrant workmen will be required to be registered with registering officers and every contractor who employ interstate migrant workmen need to obtain a licence from the specified authority both of the State i.e., home state (from where belongs) and the host state (where to be employed).	Applicable if more than five inter-state workers are engaged. The requisite license needs to be obtained from governing authority as per the provisions stipulated in the act. The contractor and program/sub-project authorities need to ensure this.
43.	The Contract Labour (Regulation and Abolition) Rules, 1971, 1973 and subsequent amendments. Contract Labour (Regulation and Abolition) Maharashtra Amendment Act 2005, 2017	The Act provides for certain welfare measures to be provided by the Contractor to contract labor and in case the Contractor fails to provide, the same are required to be provided by the Principal Employer by Law. The principal employer is required to take Certificate of Registration, and the Contractor is required to take a License from the designated Officer. The central Act is applicable to the establishments or Contractor of principal employer if they engage 20 or more contract labour. The Maharashtra Act is applicable if more than 50 labours are engaged on contract basis.	Labour license will be obtained for skilled, semi-skilled and unskilled workers prior to commencement of construction works and if engaged during operation stage. The labour license and Insurance has been obtained by the PMC refer appendix 12. Renewal of the labour license shall be made prior to the validity date.
44.	The E.P.F. and Miscellaneous Provisions act, 1952	This act aims to provide a kind of social security to the employees and workers. The Act provides retirement or old age benefits, such as Provident Fund, Superannuation Pension, Invalidation Pension, Family Pension and Deposit-Linked Insurance.	This norm secures well-being of the employees and will be followed as per applicability
45.	Public liability insurance act, 1991	An Act to provide for public liability insurance for the purpose of providing immediate relief to the persons affected by accident occurring while handling any hazardous substance and for	The contractor/ subcontractor needs to obtain insurance policies to cover liabilities from

S. No.	Key Regulations	Relevance to Sub-Project	Requirement
		matters connected therewith or incidental thereto.	accidents that cause harm or injury to the affected person.

Note: All relevant environmental and labour laws as amended from time to time will be applicable to the sub-project.

B. International Environmental Agreements

31. The list of major Multilateral Environmental Agreements (MEAs), to which India is a signatory are listed below:

Nature conservation

Table 3: International treaties, conventions and declarations for nature conservation

S. No.	Nature Conservation	Applicability to Sub-Project
1	Ramsar Convention on Wetlands: The Convention on Wetlands is an intergovernmental treaty that provides the framework for national action and international cooperation for the conservation and wise use of wetlands and their resources. India currently has 49 sites designated as Wetlands of International Importance (Ramsar Sites), with a surface area of 1,093,636 hectares. Source: https://www.ramsar.org/	Not Applicable. The proposed project doesn't fall in the vicinity of any designated Ramsar site
2	CITES (Convention on International Trade in Endangered Species of Fauna and Flora) is an international agreement between governments. Its aim is to ensure that international trade in specimens of wild animals and plants does not threaten the survival of the species. Source: https://cites.org/eng	Not Applicable. The proposed project doesn't involve international trade of flora and fauna species.
3	TRAFFIC (The Wildlife Trade Monitoring Network): To ensure the trade in wild plants and animals is not a threat to the conservation of nature. TRAFFIC is a leading non-governmental organization working globally on trade in wild animals and plants in the context of both biodiversity conservation and sustainable development. Source: https://www.traffic.org/about-us/our-mission/	Not Applicable. The proposed project doesn't involve international trade of wild animals and plants.
4	CMS (Convention on the Conservation of Migratory Species): CMS also known as the Bonn Convention, is an environmental treaty of the United Nations that provides a global platform for the conservation and sustainable use of terrestrial, aquatic and avian migratory animals and their habitats. CMS brings together the States through which migratory animals pass, the Range States, and lays the legal foundation for internationally coordinated conservation measures throughout a migratory range. Source: https://www.cms.int/	Not Applicable. The proposed project is not likely to have any impact on the identified migratory route of birds and animals.
5	CAWT (Coalition Against Wildlife Trafficking): The Coalition Against Wildlife Trafficking (CAWT) was established in 2005 by the U.S. State Department as a voluntary coalition of governments and organizations that aims to end the illegal trade of wildlife and wildlife products. CAWT currently includes six governments and thirteen international NGOs. Source: https://mea.gov.in/bilateral-documents.htm?dtl/6017/Fact+Sheet+on+Wildlife+Trafficking	Not Applicable. The proposed project will not involve any activities that can lead impacts on wildlife

S. No.	Nature Conservation	Applicability to Sub-Project
6	CBD (Convention on Biological Diversity): The key objective of CBD includes (a) The conservation of biological diversity (b) The sustainable use of the components of biological diversity (c) The fair and equitable sharing of the benefits arising out of the utilization of genetic resources. Source: https://www.cbd.int/intro/	Not Applicable. The proposed project is not located in any ecologically sensitive area and neither anticipated to cause any damage to the species of conservation importance.
7	ITTC (International Tropical Timber Organization): ITTC is intergovernmental organization promoting the sustainable management and conservation of tropical forests and the expansion and diversification of international trade in tropical timber from sustainably managed and legally harvested forests. Source: https://www.itto.int/about_itto/	Not Applicable. The proposed project is not located in forest land and will not include harvesting of timber/forest wood.
8	UNFF (United Nations Forum on Forests): The United Nations Forum on Forests is a high-level intergovernmental policy forum. The United Nations Strategic Plan for Forests 2017-2030 (UNSPF) provides a global framework for actions at all levels to sustainably manage all types of forests and trees outside forests and halt deforestation and forest degradation. The Strategic Plan provides a global framework for actions at all levels to sustainably manage all types of forests and trees outside forests and halt deforestation and forest degradation. Source: https://www.un.org/esa/forests/index.html	Not Applicable. The proposed project doesn't involve exploitation of forest resources.
9	IUCN (International Union for Conservation of Nature and Natural Resources): The IUCN is an international organization working in the field of nature conservation and sustainable use of natural resources. Source: https://www.iucn.org/	The proposed project will not incur exploitation of natural resources however while construction natural resources like sand, aggregate, soil would be used only to the extent necessary
10	GTF (Global Tiger Forum): Inter-governmental international body working exclusively for the conservation of Tigers in the wild.	Not Applicable. The proposed project is not located in any forest area and/or tiger reserve/habitat.

Hazardous material

Table 4: International treaties, conventions and declarations for management of hazardous material

S. No	Hazardous material	Applicability to Sub-Project
1	Cartagena Protocol on Biosafety: The Cartagena Protocol on Biosafety to the Convention on Biological Diversity is an international agreement which aims to ensure the safe handling, transport and use of living modified organisms (LMOs) resulting from modern biotechnology that may have adverse effects on biological diversity, taking also into account risks to human health. It was adopted on 29 January 2000 and entered into force on 11 September 2003. Source: https://bch.cbd.int/protocol/background/	Not Applicable. . The proposed project will not have functions related to living modified organisms (LMOs)
2	SAICM (Strategic Approach to International Chemicals Management): The Strategic Approach to International Chemicals Management (SAICM) is a	Yes,

S. No	Hazardous material	Applicability to Sub-Project
	global multi-sectoral and multi-stakeholder policy framework, whose secretariat is hosted by UN Environment Programme. It offers a forum to discuss and address the many challenges related to the adoption and implementation of national policies to safely manage chemicals. Source: https://www.unep.org/resources/factsheet/strategic-approach-international-chemicals-management-saicm	Waste and Wastewater generation from hospital if not managed/treated as per the standards, may include pollutants which are hazardous in nature.
3	Stockholm Convention on Persistent Organic Pollutants (POPs): The Stockholm Convention is a global treaty that aims to protect human health and the environment from the effects of persistent organic pollutants (POPs). The Stockholm Convention, which currently regulates 29 POPs. Source: http://chm.pops.int/	Not Applicable. PoP not to be used in the proposed sub-projects.
4	Basel Convention on the Control of Trans-boundary Movement of Hazardous Waste and Their Disposal: The overarching objective of the Basel Convention is to protect human health and the environment against the adverse effects of hazardous wastes. Its scope of application covers a wide range of wastes defined as “hazardous wastes” based on their origin and/or composition and their characteristics, as well as two types of wastes defined as “other wastes” - household waste and incinerator ash. Source: http://www.basel.int/TheConvention/Overview/tabid/1271/Default.aspx	Not Applicable. The hazardous waste generated from the facility will be disposed as per the provisions stipulated under national regulations through authorized vendor.

Atmospheric emissions

Table 5: International treaties, conventions and declarations for atmospheric emissions

S. No	Atmospheric emissions	Applicability to Sub-Project
1	UNFCCC (United Nations Framework Convention on Climate Change): The ultimate objective of all three agreements under the UNFCCC is to stabilize greenhouse gas concentrations in the atmosphere at a level that will prevent dangerous human interference with the climate system, in a time frame which allows ecosystems to adapt naturally and enables sustainable development. Source: https://unfccc.int/	Yes, Likelihood of GHG emissions by vehicular movement, usage of construction machineries, energy sourcing and functioning of proposed facility, which are to be monitored and effectively managed to reduce the impact on environment.
2	Kyoto Protocol: Kyoto Protocol operationalizes the UNFCC by committing industrialized countries and economies in transition to limit and reduce greenhouse gases (GHG) emissions in accordance with agreed individual targets. The Convention itself only asks those countries to adopt policies and measures on mitigation and to report periodically. Source: https://unfccc.int/kyoto_protocol	
3	Montreal Protocol (on Ozone Depleting Substances): The Montreal Protocol on Substances that Deplete the Ozone Layer (the Montreal Protocol) is an international agreement made in 1987. It was designed to stop the production and import of ozone depleting substances and reduce	No The proposed sub-project is not likely to contribute towards release of Ozone

S. No	Atmospheric emissions	Applicability to Sub-Project
	their concentration in the atmosphere to help protect the earth's ozone layer. Source: https://www.unep.org/ozonaction/who-we-are/about-montreal-protocol	Depleting Substances.

Marine environment

Table 6: International treaties, conventions and declarations for marine environment

S. No	Marine environment	Applicability
1	IWC (International Whaling Commission): The IWC was established in 1946 as the global body responsible for management of whaling and conservation of whales. Today the IWC has 88 member countries. The mandate has not changed but many new conservation concerns exist and the IWC work programme now also includes bycatch and entanglement, ship strikes, ocean noise, pollution and debris, and sustainable whale watching. Source: https://iwc.int/en/	No The proposed subproject is not located near to the Marine area and will not have impact on whales.

Occupational Health and Safety

Table 7: International treaties, convention for labour health and safety

S. No	Labor Health and Safety	Applicability
1	India is a signatory to the International Labour Organization (ILO) Core Labor Standards with 47 conventions and 1 protocol ratified, this relates to ensuring core labor standards are upheld for construction workers. https://www.ilo.org/dyn/normlex/en/f?p=NORMLEXPUB:11200:0::NO::p11200_country_id:102691	Yes Provisions International Labour Organization (ILO) Core Labor Standards with 47 conventions and 1 protocol will be applicable during construction and operation phase

C. ADB Environmental Safeguards

32. SPS 2009[8] provides for the environmental requirements and review procedures of ADB and applies to all projects and grants ADB finances. SPS 2009 comprises three key safeguard areas: environment, involuntary resettlement, and indigenous peoples; and aims to avoid adverse project impacts to both the environment and the affected people; minimize, mitigate and/or compensate for adverse project impacts; and help Borrowers to strengthen their safeguard systems and to develop their capacity in managing the environmental and social risks. At the project identification phase, ADB uses a categorization system to indicate the significance of potential environmental impacts and is determined by the category of its most environmentally sensitive component, including direct, indirect, cumulative, and induced impacts within the project's area of influence. The project categorization system is described below.

Category A. A proposed project is classified as category A if it is likely to have significant adverse environmental impacts that are irreversible, diverse, or unprecedented. These impacts may affect an area larger than the sites or facilities subject to physical works. An environmental impact assessment is required.

Category B. A proposed project is classified as category B if its potential adverse environmental impacts are less adverse than those of category A projects. These impacts are site-specific, few if any of them are irreversible, and in most cases mitigation measures can be designed more readily than for category A projects. An initial environmental examination is required.

Category C. A proposed project is classified as category C if it is likely to have minimal or no adverse environmental impacts. No environmental assessment is required although environmental implications need to be reviewed.

Category FI. The proposed project involves the investment of ADB funds to, or through, a financial intermediary.

33. This sub-project is categorized as B (details are provided in REA checklist - **Appendix 1**) for Environment safeguards. Therefore, further assessment in the form of a draft IEE is prepared in accordance with ADB's SPS 2009 and the Environmental Assessment and Review Framework (EARF) prepared for the Maharashtra Tertiary Care and Medical Education Sector Development Program.

34. SPS 2009 requires information about environmental safeguard issues to be made available in a timely manner, in an accessible place, and in a form and language(s) understandable to affected people and to other stakeholders, including the public, so they can provide meaningful inputs into project design and implementation. For illiterate people, suitable communication methods will be used. The EARF and draft IEE will be disclosed on ADB's website and MEDD's website as well as the site offices. During project implementation, consistent with SPS 2009, the disclosure of documents submitted by MEDD for this project will be:

(i) a new or updated IEE, and a corrective action plan, if any, prepared during project implementation, upon receipt by ADB; and,
(ii) the environmental monitoring reports, upon receipt by ADB.

[8] https://www.adb.org/sites/default/files/institutional-document/32056/safeguard-policy-statement-june2009.pdf

35. ADB's Safeguard Policy Statement (2009) requires communities, groups, or people affected by subprojects, and civil society to be engaged by MEDD through information disclosure, consultation, and informed participation in a manner commensurate with the risks to and impacts on affected communities. Meaningful consultation processes are defined as those that, (i) beginning early in the project preparation stage and being carried out on an ongoing basis throughout the project cycle, (ii) providing timely disclosure of relevant and adequate information that is accessible to affected people, (iii) being free of intimidation and coercion, (iv) being gender inclusive and responsive, and (v) enabling the incorporation of all relevant views of affected people and other stakeholders in decision-making. The consultation process and its results are to be documented and reflected in an IEE report for category B subprojects.

36. ADB's SPS 2009 also requires MEDD to set up and maintain a grievance redress mechanism (GRM) to receive and facilitate resolution of affected peoples' concerns and grievances about their environmental performance at project level. It should address affected people's concerns and complaints promptly, using an understandable and transparent process that is gender responsive, culturally appropriate, and readily accessible to all segments of the affected people. Affected people can also take complaints to ADB's Accountability Mechanism although they should approach the local GRM in the first instance; but the GRM should not impede access to the country's judicial or administrative remedies.

37. **International Finance Corporation Environment, Health, and Safety Guidelines:** ADB's SPS 2009 refers borrowers to the IFC's General Environment, Health, and Safety (EHS) Guidelines, 2007 and EHS guidelines for health care facilities which sets out international good practice related to environment, health, and safety provisions which the project should follow regarding assessment of potential impacts and applicable standards and management measures, performance indicators, and monitoring guidelines.

D. Comparison between IFC Sector Specific Guideline and national guidelines for Biomedical waste management, 2016 and other discharge/emission norms:

38. **Similarity:** There are no significant differences between the IFC EHS guidelines (HCFs specific and general), and the national regulations and guidelines for biomedical waste management practices (segregation, colour coding, storage, treatment, transportation and disposal (incinerated ash).

39. The IFC EHS guidelines and national regulation and guidelines are well aligned for disposal of radioactive waste generated from healthcare facility, which is done as per the provisions of Atomic Energy Act, 1962 (the IFC recommendation, national regulations are to be followed).

40. There are no significant differences between the IFC EHS guidelines and the national regulations for management of non-bio medical wastes like waste with high content of heavy metals, pressurized containers, general health care waste. These waste categories are governed by Hazardous and other Wastes (Management & Transboundary Movement) Rules-2016, E-waste (Management) Rules-2016, Solid Waste Management Rules-2016, Plastic Waste Management Rules-2016, Batteries Management Rules-2022 as per national regulations.

41. There are no significant differences between the IFC EHS guidelines and the national regulations for monitoring and supervising the BMW handling process i.e., record keeping, usage of personal protective gears, immunization of workers, reporting compliances to concerned authorities, information disclosure, and training and capacity building.

42. **Gap:** IFC's EHS standards on air emission levels for hospital waste incineration facilities provide standards for additional parameters than the BMW management rules 2016. Standards for PM, HCl are also more stringent in case of IFC. Details have been provided in the impact assessment chapter.

III. PROJECT DESCRIPTION

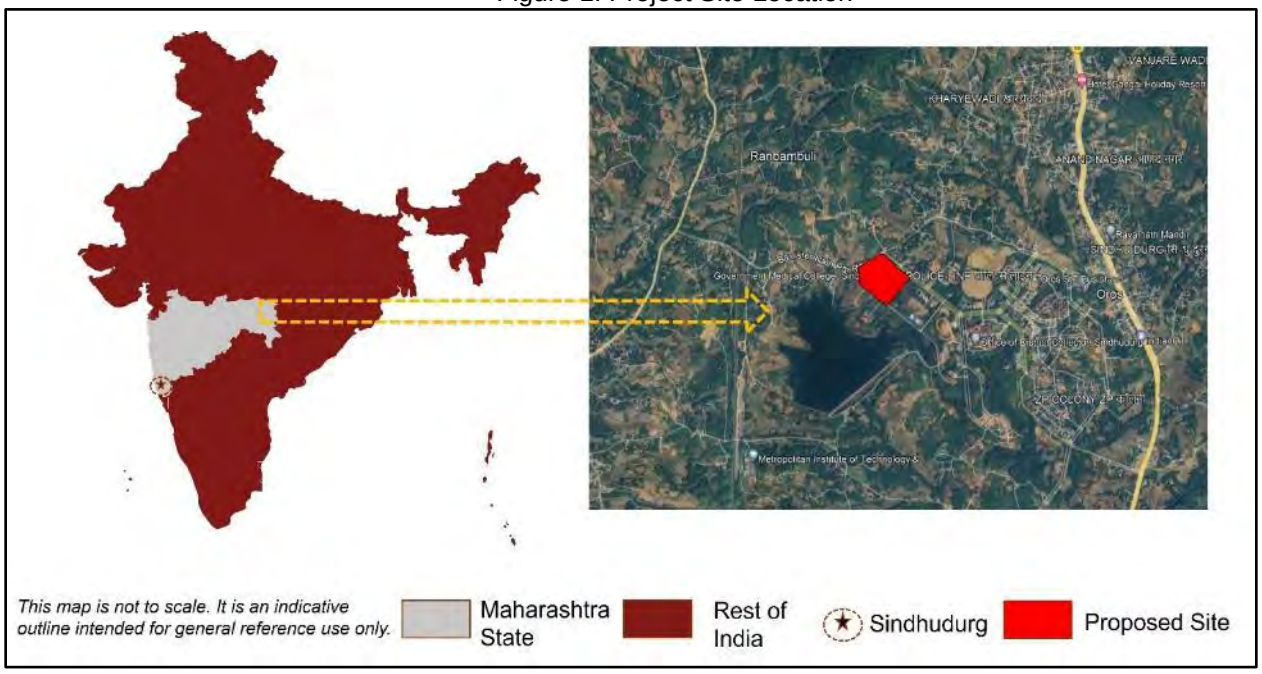
43. The proposed project i.e., Construction of Government Medical College for 100 admissions and with 500 bedded modern tertiary level patient care hospital Sindhudurg, District Sindhudurg, Maharashtra is initiative of state government of Maharashtra and is being done under the aegis of ISA, A Govt of India Enterprise under the Ministry of Health & Family Welfare, GOI and where Public Works Department (PWD), A Govt of Maharashtra Enterprise has been appointed as Project management Consultant (PMC). The PMC has been engaged in preparation of Design Basis Report (DBR). This chapter is based on information available from the DBR.

44. The Medical College campus is spread on a site of approx. 20.0 Acres and has been designed as per norms of Medical Council of India for 100 admissions annually. The master plan of the campus has been efficiently planned with clear demarcation and segregation of residential and non-residential zones. Also, care has been taken so that the public / patient movement within the campus does not disturb the academic functions.

45. The project has been planned under two phases as below. Building in Phase-I are essential as per NMC / MCI norms and client requirement. Phase II are additional facilities proposed in the campus as part of complete Master plan.

46. Location of the project: The proposed Sindhudurg medical college and hospital is located in administrative jurisdiction of Village Ranbambuli. Tehsil-Kudal; Dist.-Sindhudurg of Maharashtra. The proposed site is located at a distance of ~ 2 Km from National Highway 66 and connected by Barrister Nath Pai Rd. From Barrister Nath Pai Rd, district hospital Road is providing last mile connectivity to the site. Sindhudurg Nagari lake also known as Dhabachi Wadi lake is located at a distance of ~ 200m toward SW direction.

Figure 1: Project Site Location



47. **Site Connectivity:** The Sindhudurg district is well connected by number of highways. National Highway No. 17 passes through the district from Banda in the south to Kankavali in the north. This highway also connects district to neighbouring state Goa and Karnataka. There are regular MSRTC and private luxury buses connecting to neighbouring cities like Kolhapur (110 km away from Kanakavli City), Belgaum (90 km away from Sawantwadi City), Panaji – Goa (55 km away from Sawantwadi & Vengurla).[9]

    - **Railway**: Sindhudurg district is also well connected by Konkan railway to Mumbai, Thane, Goa and other parts of the country like Mangalore, Karwar Ernakulam, Thiruvananthapuram, Coimbatore, Tirunelveli, Hapa, Veraval, New Delhi, Jodhpur, Porbundar by Konkan Railway. The main railway stations on this route are Kudal, Kankavli and Sawantwadi. The nearest airport is Dabolim Airport in Goa which is very close (100 km) for cities like Sawantwadi, Kudal and Vengurla. New airport at Chipi-Parule Taluka Vengurla is under construction and will be operational shortly.

    - **Road:** Sindhudurg District Headquarters Oros is well connected by State highway roads. Devgad, Sawantwadi, Kudal, Kankavali, Malwan & Vengurla are the important Cities in this district having road connectivity to major towns and remote villages. District Headquarter Oros is about 492 KM by road to Mumbai (Capital of Maharashtra).

    - **Ferry Services:** One of the unique aspects of Sindhudurg's connectivity is the availability of ferry services. The town is located along the Arabian Sea, and there are regular ferry services from Kolhapur to Sindhudurg

48. **Salient Features of the Project:** The salient feature for proposed Sub-Project is furnished in Table 8 and the Proposed Master plan is presented in Figure 2.

Table 8: Salient features of proposed sub-project[10]

A	Particulars	Details
1.	Project Cost (State Government Sanctioned)	INR 483 Cr.
2.	Total plot Area	82052.00 Sqm (20 Acre)
3.	Total Built up Area	127544.01 Sqm
4.	Bye law considered for building layout	The Maharashtra Regional and Town Planning (MRTP) Act, 1966 and further amendments
5.	Proposed ground coverage	13380 Sqm (16.79% of net plot area)
6.	Total Nos. of Car Parking	4 wheeler – 658 2 wheeler – 4036
7.	No. of Beds	500
8.	Project Components	a) Hospital Complex b) Medical College (Academic Block) with Examination c) Hostel Complex for Girls and Boys

[9] District Survey Report, Sindhudurg District, Maharashtra (https://environmentclearance.nic.in/writereaddata/Online/additionalfile/14_Nov_2017_1655267200Q3I2PMFDistrictSurveyReport.pdf)

[10] Environment Clearance under the provision of the EIA Notification, 2006, EC24C0000MH5188438N

<table>
<tr><th>A</th><th>Particulars</th><th>Details</th></tr>
<tr><td></td><td></td><td>d) Parking and Other Facilities</td></tr>
<tr><td>9.</td><td>Total Water Requirements CMD</td><td>
<table>
<tr><td colspan="2">Dry season (CMD)</td><td colspan="2">Wet season (CMD)</td></tr>
<tr><td>Fresh water</td><td>376</td><td>Fresh water</td><td>376</td></tr>
<tr><td>Recycled water flushing</td><td>144</td><td>Recycled water flushing</td><td>144</td></tr>
<tr><td>HVAC</td><td>200</td><td>HVAC</td><td>200</td></tr>
<tr><td>Recycled water gardening</td><td>210</td><td>Recycled water gardening</td><td>0</td></tr>
<tr><td>Total Water Requirement</td><td>930</td><td>Total Water Requirement</td><td>720</td></tr>
<tr><td>Waste water Generation</td><td>492</td><td>Waste water Generation</td><td>492</td></tr>
</table>
</td></tr>
<tr><td>10.</td><td>Source of water supply</td><td>Sindhudurg Nagari Pradhikaran</td></tr>
<tr><td>11.</td><td>Water Treatment Plant</td><td>WTP shall consists of the following but not limited to, Water supply/Lifting Pumps/filter feed pumps/non-Clogging type submersible sump pumps etc.
Multi grade sand filter activated carbon filters, chlorine dosing and UV treatment facility shall be provided for water filtration & treatment purpose.
Panels, Allied Equipment & Accessories (level controllers, probes, starters, valves, pressure gauges etc.)</td></tr>
<tr><td>12.</td><td>Total sewage generation</td><td>492 KLD</td></tr>
<tr><td>13.</td><td>Total effluent generation</td><td>64.6 KLD</td></tr>
<tr><td>14.</td><td>Wastewater Treatment System</td><td>2 Sewage treatment plants of 530 KLD – MBBR technology
3 Effluent treatment plants of 70 KLD – Neutralization and physico-chemical technology</td></tr>
<tr><td>15.</td><td>Gas Pipeline System</td><td>Medical Gas Pipeline System (MGPS)</td></tr>
<tr><td>16.</td><td>Component of MGPS:</td><td>-</td></tr>
<tr><td>17.</td><td>Solid waste Management</td><td>Adequate space has been planned for collection of solid waste. Also, separate dedicated space has been planned for collection of Bio Medical waste generated from various buildings. The wastes will be handed over to the authorised vendors.
Solid Waste Quantities (in kg/day) will be as below:

Construction Phase:
• Dry waste – 37.5
• Wet waste – 25
• Construction waste: The waste will be segregated, reused at site and surplus will be handed over to scrap dealers.

Operation Phase:
• Dry waste – 925</td></tr>
</table>

A	Particulars	Details
		• Wet waste – 1013 • E-waste – 22
18.	Bio-medical waste Management	Adequate space has been planned for collection of solid waste. Also, separate dedicated space has been planned for collection of Bio Medical waste generated from various buildings. The wastes will be handed over to the authorised vendors. The quantity of biomedical waste generated will be 750 kg/day
19.	Rainwater harvesting/ ground water recharge	The rainwater from the terraces /roof and open surface shall be collected and disposed to rain water harvesting pits. 10 recharge pits will be developed.
20.	Electrical Power Requirement:	The power will be sourced from Maharashtra State Electricity Distribution Company Limited (MSEDCL). During operations the connected load will be 8625 KW and demand load will be 4758 KW.
21.	Electric Sub-Station,	Two Nos. 11/ 0.433 kV Electric Substations will be established
22.	DG Set for Backup Supply	Diesel Generator sets are proposed to be provided for back up supply in case of electricity failure. Provision of DG Back up shall be as per Electrical load calculation. (750 KVA x 8 nos).
23.	HSD (High Speed Diesel) UG Storage Tank,	Automatic diesel feeding system from HSD Pumping system to diesel buffer tank shall be considered.
24.	Fire Detection and Alarm System	Addressable Intelligent fire detection and Alarm system of latest technology with Fire alarm panels, multi-Sensor detectors, smoke detectors, heat detectors, beam detectors, response indicators, manual call point and hooters, light strobe etc. shall be provided. It shall meet the requirement of NBC 2016/PWD Specifications/ State By laws.
25.	Closed-circuit television (CCTV)system	IP CCTV Camera shall be provided with for all the Entry / exit of staircase, lift lobbies, main corridor, waiting area, labs, terrace on all the floors.
26.	Reverse Osmosis (RO) water supply system	Centralized RO Plant shall be provided at terrace level to cater for Operation Theatre, Lab, Dialysis demands. Ultra Filtration shall be provided for Drinking water purposes at Terrace Level. Separate storage shall be considered for drinking purposes. The Drinking Water storage tank at terrace floor and Water shall be supplied to all drinking water points for water cooler. Separate UF filtered water shall be supplied to all drinking water points.
27.	Firefighting system	Addressable Intelligent fire detection and Alarm system of latest technology with Fire alarm panels, multi-Sensor detectors, smoke detectors, heat detectors, beam detectors, response indicators, manual call point and hooters, light strobe etc. shall be provided.

Source: Design Basis Report

Figure 2: Proposed Master Plan

Figure 3: Superimposed Drawing of Existing and Proposed Structures along with landscape plan

MASTER LAYOUT

49. **Proposed Development:** Proposed sub-project involves development of 100 seated Government Medical College, 500 bedded hospital and allied buildings facilities with captive Hospital, Academic, girls & boys Hostel facilities and other ancillary requirements on a brownfield site.

50. **Civil Works for the proposed sub-project:** would include earth work, Site Clearance, Anti-termite treatment, Clearing, Site Leveling, Benchmarks, Site investigation Setting out the work, Cleaning up and handing over, site development, plain and reinforcement , cement concrete works, masonry works, flooring works, finishing works, external façade works, railing, grill work and fencing, structural steel, false ceiling, roofing, road works, miscellaneous works.

51. All the existing structures present on site shall be dismantled necessary permissions/approvals of the local bodies. contractor must stack dismantled material and it is the property of the department.

52. **Proposed Components:** The Construction of 100 seated Government Medical College, 500 bedded hospital and allied buildings facilities with captive Hospital, Academic, girls & boys Hostel facilities and other ancillary requirements to make the campus self-sufficient. (As per architectural drawings & NMC norms) (Site plan in Appendix 4).

a) Hospital Complex:

The 500 Bedded Hospital would comprise of the following blocks / departments:

- Hospital Block
- Emergency Services
- Radiology
- Central Labs & Blood bank
- O.T. suite & critical care areas
- OPD block
- ICU wards - 30 Beds
- IPD wards - 445 Beds
- EMERGENCY ICU-- 5 Beds
- PRE-OPERATIVE - 10 Beds
- RECOVERY ROOM - 10 Beds

b) Medical College (Academic Block) With Examination:

The Academic Block would comprise of the following blocks / departments:

- Admin Block
- Eight nonclinical departments with skill lab
- Four lecture Hall
- Examination halls
- Library
- O.T. suite & critical care areas
- Cafeteria
- Male & female Common room
- Multipurpose Hall

c) Hostel Complex:

The Hostel Complex consists of Girls & Boys: -

- Girls Hostel -150 Capacity Hostel double seated with Dining , kitchen , Warden Office , Warden Residence , Recreation Hall & Reading Room

• Boys Hostel -150 Capacity Hostel double seated with Dining , kitchen , Warden Office , Warden Residence , Recreation Hall & Reading Room

d) Other Facilities:

Parking and other Support Facilities

- Mortuary
- Laundry
- Substations
- HVAC Plant room
- Pump Houses
- STP/ ETP
- WTP

53. Information on Key Environmental Setting of the Project Site: The Environmental Setting of the sub-project site surrounding area is discussed in Table 9.

Table 9: Key Environmental Setting of Proposed Sub-Project Area

Particulars	Details
Latitude	16° 7'0.73"N
Longitude	73°41'24.64"E
Ownership of the land parcel	Dean, Medical College-Sindhudurg
Present Land use of the site	Existing building structures predominantly with sporadic vegetation. Trees are present on the site, and the proposed sub-project will involve tree felling. The necessary permissions for the Maharashtra felling of trees (Regulation) Act, 1964 has been obtained. Refer Appendix 14
Archaeologically Important Places	No government notified site within the immediate vicinity of the project site (i.e. 300m). However, there is one Archaeological Survey of India protected monuments i.e., Sindhudurg Fort which is located at an approximate aerial distance of 25.6 Km from the sub-project site.
Reserved / Protected Forests	No reserved/protected forest, etc. located within the sub-project site, but there is reserve forest approximately starting at an aerial distance of 1.4 km from the sub-project site.
National Parks / Wildlife Sanctuaries	No National Park/ Wildlife Sanctuary are present within the 10 km radius of the proposed sub-project site.
Seismicity	As per the 2002 Bureau of Indian Standards (BIS) map, Maharashtra falls in Zones II, III & IV and the proposed sub-project site falls under the seismic zone III (Moderate Damage Risk Zone).

Source: Secondary research, Consultation with Stakeholders

54. **Design Basis and Considerations:** The proposed structure of the project is designed in accordance with the Indian Code IS: 456-2000, with latest amendments, which is considered mandatory for reinforced concrete structures in the country. Designed structure has physical interface with almost all the disciplines like Geotechnical, MEP Services and Land scape etc.

55. The design life of all general buildings and structures is taken as 50 years and important buildings such as hospitals is taken as 100years as per IS875(Part3):2015 recommendations satisfying the criteria of environmental conditions. This requirement is applicable only for concrete works and not applicable to replaceable finishing materials,

water proofing membrane and thermal insulations (if any). Hence periodic maintenance /refurbishment is required for all replaceable material for longer life.

56. **Water Requirement:** Water requirements have been estimated on the basis of present acceptable standards, references from various sources such the National Building Code of India, Public Health Manuals, Ministry of Environment, Forests Guidelines, and Specification as well as Inputs from other services consultants involved on the projects.

57. During construction phase, water will be required for construction of structures, sprinkling for dust suppression, domestic and non-domestic uses of the construction workers/camps etc. During operation phase water will be required for domestic and other operational (washing, cleaning etc.) purpose. Total water requirements is estimated to be around 930 CMD in dry season and 720 CMD in wet season. The water will be sourced from Sindhudurg Nagari Pradhikaran. For continuous water supply at adequate pressure, complete water supply system is designed.

58. **Sewage & Effluent Treatment:** Sewage Treatment Plant and Effluent Treatment Plant shall be provided with both the installations being housed in a single plant room. The proposed 2 Sewage Treatment Plant of 530 KLD shall be with MBBR Technology or improved version, as applicable, and 3 Effluent Treatment Plant of 70 KLD

59. Sewage Treatment Plant of 530 KLD Capacity shall be provided to treat the water from toilet, wash basin, bath, kitchen pantry, etc. to meet the specified outlet parameters of water. It shall comprise of pumps with maximum efficiency {non clogging mono block type of suitable capacity & head}, Air blowers, OXYPROCESSOR & Tube Deck Media, coarse screen chambers, grease trap, equalization tanks, reaction tanks, centrifuge/filter press, sludge holding tank, Multi grade Filters/Activated Carbon Filters/Pressurized Sand Filters, clear water tanks, Softener, Ultra-filtration plant ,ultraviolet , clear water tanks , Motor Control Panel, electrical wiring, etc. complete including all necessary safety requirements. Tanks may be Partial Underground of suitable size and may be of RCC/Fabricated Metal type as per requirement. STP/ ETP plant room shall be suitably ventilated. One standby pump shall be considered for each type.

60. The effluent generated namely from the Laundry, Laboratories, OTs, Septic ICUs, CSSD, Dialysis Areas etc. shall be disposed by gravity system into the effluent treatment plant. After treatment in the ETP, the discharge shall be connected to the Equalization tank of STP. In ETP, Flocculate, Flash Mixer & Chemical dosing system should be proposed for preliminary treatment of Hospital Lab/OT effluent after which semi treated water will be treated through the entire STP Plant.

61. **Bio-medical Waste Management:** Adequate space has been planned for collection of solid waste. Also, separate dedicated space has been planned for collection of Bio Medical waste generated from various buildings.

62. **Power Demand and Source:** The Electrical Load requirement has been calculated on the basis of covered area of various buildings/ blocks considering lighting load & power loads of various buildings. The load for the Central Air Conditioning Plant, Medical Equipment/ Services, Lifts, Pumps, External Lightning, STP, ETP, WTP etc. has also been taint on to account. Peak Electrical Load Demand for buildings and facilities being provided under present scope of work has been assessed as Approximate 4400 KVA.

63. For Electric Sub-Station (ESS-1) – (for Hospital Building, Mortuary, Service building, STP, ETP etc.) Connected load works out to 3800.0 KW. Considering overall diversity factor of 60%, Peak Load Demand will be 2300 KW.

64. For Electric Sub-Station (ESS-2) – (For Male & Female Hostel, Medical College, Animal House, Dean bungalow) Connected load works out to 2500KW. Considering overall diversity factor of 70%, Peak Load Demand will be 1300.0 KW.

65. Maharashtra State Electricity Distribution Company Limited (MSEDCL) shall provide 1 No HT Power connection at 33 kV level. 33/11 KV Switching Station placed at Service gate which feed 11 kV HT Supply to Substation-1 & Substation-2. Independent Feeder Lines (1W+1S) as per their technical feasibility for doing so. 11 KV HT Power connections shall be made available by MSEDCL at a designated point up to the boundary wall of Government Medical College Sindhudurg Maharashtra to meet total electrical required load.

66. Diesel Generator sets are proposed to be provided for back up supply in case of electricity failure. Provision of DG Back up shall be as per Electrical load calculation.

Table 10: ESS and DG Sets Details

S.No.	Sub-station	Transformer	DG Set	Capacitor & AHF Pannel
1.	ESS-1 (HOSPITAL BUILDING, MORTUARY, SERVICE BUILDING)	3 x 1600 KVA (2W+1S)	750 KVA X 8 nos.	2 SET (800 KVAR CAPACITOR+14% DETUNED REACTOR + 300 AMP ACTIVE FILTER)
2.	ESS-2 (MEDICAL COLLEGE, HOSTELS, ANIMAL HOUSE, DEAN BUNGALOW)	3 x 800 KVA		2 SET (250 KVAR CAPACITOR+14%DETUNED REACTOR + 100 AMP ACTIVE FILTER)

67. **Roadworks:** All the roads are to be constructed as per IRC code and layout drawings. If any specification not available in IRC code, STATE PWD specification (up to date correction slip) shall be applicable. The roads shall meet the firefighting norms. The roads shall be RCC Roads with minimum M-30 VDC Concrete and minimum 150 mm thickness and required reinforcement as per designs to be provided as per drawings of required width as specified. Service roads of required width from main RCC roads to all round the buildings shall be constructed as per NBC/ IRC Codes.

68. All the road markings etc. shall be provided as per traffic rules. Footpaths connected to buildings plinths shall be provided with proper gradient, with masonry toe walls and MS/SS railing as specified. All footpath levels shall be 150 mm higher than road edge/green belt/ cycle track levels or as specified.

69. All road edges shall be provided with kerb stones. Painting and marking of the roads, parking, cycle tracks footpaths and handicapped ramps are to be completed as per standard road signs & specifications.

70. **Parking:** To facilitate user, provision for parking spaces of 750 cars has been planned. Provision for parking spaces has been made on the basis of —Equivalent car spacs (ECS) as laid down under —Building By Laws of Local Authority. Parking space shall be planned

with adequate vehicular access to a street and the area of drives, aisles and such other provisions required for adequate manoeuvring of vehicles would be exclusive of the parking space.

71. **Landscaping:** A clear segregation of public and semi-public realms is aimed by creating clearly defined zones delineated by landscaping. The project has of landscape area (excluding the building footprint) is covered with green open spaces. Suitable landscape & hardscape shall be provided at each area. In order to make the lawn more drought-tolerant, grass species that are known for its tolerance to heat and drought, such as Bermuda grass, Centipede Grass, Zoysia Grass, Buffalo grass, Carpet Grass and Kikuyu Grass would be used. The species of Plants are selected from the wide range of categories available in the district of Sindhudurg and neighbouring regions of Maharashtra. Each area aims to create a self-contained zone in itself to disable users from crossing over into restricted areas. The Hydrological and Hydrogeological components have been considered for natural and planned rainwater harvesting landscape treatments. Irrigation of the plantation would be done with the combination of modern irrigation techniques (sprinkler) and manual irrigation methods, inline with the site conditions and local agro-climatic conditions and assist in conserving the landscapes besides saving water and ecology. Pollution Barriers with dense foliage trees would be provided.

72. **Landscape around OPD & Emergency blocks:** Welcome Entry/Drop-off Areas for both OPD & Emergency Blocks would have ornamental plantation. Outdoor parks / green areas would have shade giving trees which will act as informal waiting or spill over spaces. Green areas would have Staff Health & fitness zones without door Exercise equipment and relaxation area.

73. **Residential Areas:** Drop off area would have dense plantation with proposal of peripheral and internal pathways inter linking all residential building blocks. Each residential block would have dedicated green areas in addition to the central main green lawn. The main green lawn would be surrounded by shade giving trees and equipped with Children Play Area with swings and benches sand peripheral guard railing. Central Green lawns would also have recreational Zone for residents. Green areas would have Resident Health & fitness zones and relaxation area.

74. **Boundary Wall:** The campus would be fully compounded by boundary wall of height 1800mm and 600mm high grill (Min total height = 2400mm) having secured entry and exit points as per master plan. The Grill above compound wall may be used to compound wall facing towards the main front side of the road, any aesthetically required area etc.

75. **Signage:** Signages of different sizes are proposed at different locations inside the campus. Design basis of the signage is readability at vehicular movement & pedestrian movement. In general, wherever required signages will be trilingual (English, Hindi & Marathi). The totem signage has been developed to enable way finding for the patients, visitors and resident. Signage will be consistent across the campus. The entrance signage would be made of Stainless-steel alphabets fixed onto concrete base with dash fasteners. The building signages would be made of Non backlit Acrylic panels of approved pantone shades, mounted onto framework made of square hollow sections.

76. **IGBC – Platinum Rating & Certification:** The Hospital Building along with its allied facilities would be IGBC-Health care Platinum certified. Also, all other buildings of the campus would be rated as per relevant IGBC Platinum certification. Also, ECBC 2017 (amended as on

date) norms would be complied with and ECBC certification would be obtained accordingly. The total project along with its allied facilities shall be IGBC-Platinum certified.

IV. BASELINE ENVIRONMENTAL DESCRIPTION[11]

77. This chapter describes the existing environmental settings of the project area and its surroundings. This includes physical environment (comprising air, water, and noise components etc.), biological environment and socio-economic environment.

78. **Study Area for IEE:** The proposed site is in administrative jurisdiction of Village Ranbambuli. Tehsil-Kudal; Dist.-Sindhudurg of Maharashtra. The proposed site is located at a distance of ~ 2 Km from National Highway 66 and connected by Barrister Nath Pai Rd. From Barrister Nath Pai Rd, district hospital Road is providing last mile connectivity to the site. Sindhudurg Nagari lake/ Dhabachi Wadi lake is located at a distance of ~ 200m toward SW direction.

79. Kudal Tehsil is located at roughly 16.008°N latitude and 73.687°E longitude in Sindhudurg District on southwest Maharashtra. For carrying out IEE assessment, 10 km radius from proposed site boundary and 500 m (primary survey) around the proposed sub-project area have been considered as study area for environmental baseline condition. District level secondary information was also collected for various environmental and social components irrespective of any demarcated limit.

A. Physical Environment

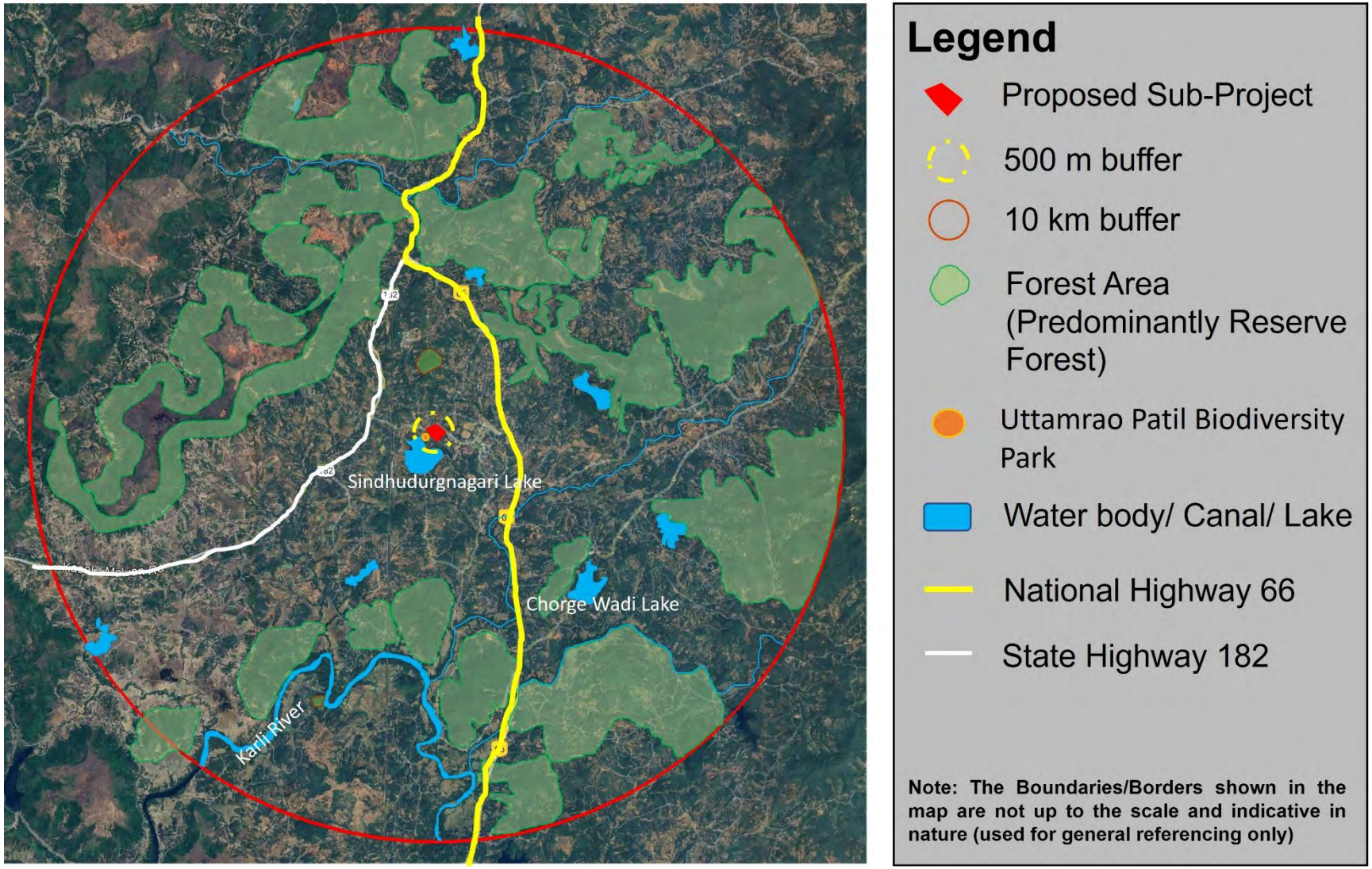
80. **Location:** Sindhudurg district is the southern part of the Konkan coast which is historically known for its long coastline and safe harbours. It has deposits of Iron, Bauxite and Manganese. Sindhudurg is bordered on the north by Ratnagiri district, on the south by the state of Goa, on the west by the Arabian Sea, and to the east across the crest of the Western Ghats or Sahyadri's is Kolhapur district.

81. The proposed project site is located in the Ranbambuli village of Kudal Tehsil (coordinates (16° 7'3.15"N to 73°41'18.19"E and 16° 7'0.61"N to 73°41'31.96"E).

82. The major environment sensitive features present within 10 km radius of the sub-project site are shown in the Figure 4. The sub-project site is clear of any environment sensitive features like Forest, protected area, coastal regulatory zone etc.

[11] Note: The maps used in the Chapter are not up to the scale and indicative in nature (used for general referencing only).

Figure 4: Map Showing Environmental Sensitive Features in the Study Area



83. **Administrative Setup:** The Sindhudurg District has eight tehsils namely Devgad, Kankavli, Malvan, Kudal, Sawantwadi, Vengurla and Dodamarg and Vaibhavwadi. There are 8 panchayat samities, 4 Nagar parishads, 433-gram panchayats and 743 villages in Sindhudurg District[12].

84. **Topography and Physiography**: Sindhudurg district is located in the Konkan zone of Maharashtra state. Sindhudurg district is broadly divided into three small sub-divisions based on the elevation and local topography i.e., Sahyadri hills, Sindhudurg plateau and Sindhudurg coast[13].

85. The **Sahyadri hills** cover the eastern portion of the district in three parts. The first part occupies Vaibhavwadi tehsil, the second spreads over the parts of Kankavli, Kudal and Sawantwadi tehsils and the third occupies part of Dodamarg tehsil. The hills have an elevation of over 200 metres at the bottom while at the upper reaches they attain a height of about 700 metres. This region has very steep slopes and is fairly covered by forests. This is the source region for most of the rivers in the district.

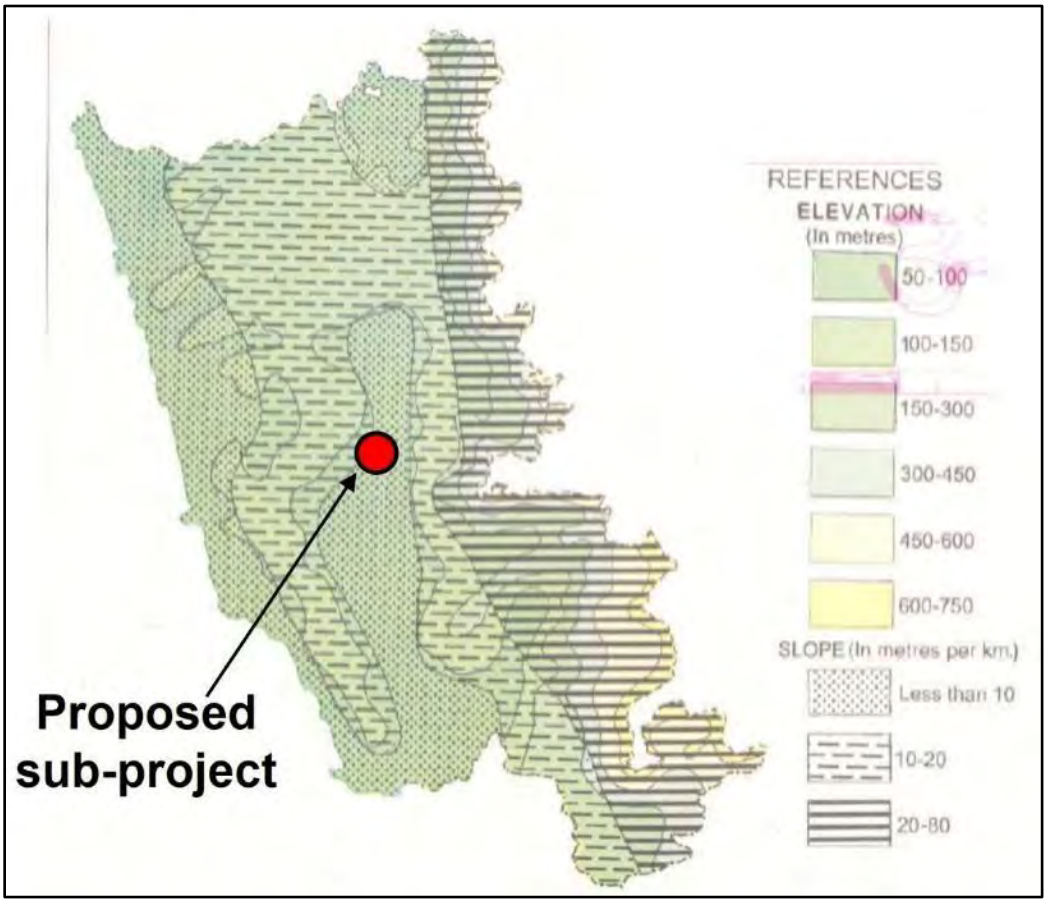
86. **Sindhudurg Plateau** extends in a north-south direction through the middle portion of the district and covers parts of all tehsils of the district except Vaibhavwadi tehsil. It has transverse chains of small hills, which are projecting from the Sahyadri hills; develop higher elevation in middle portions. The hill runs parallel to each other and forms small valleys in the intervening land. In general, the plateau attains height varying between 100 and 200 meters but there are several spot heights that rise to more than 200 meters, 455 metres in Sawantwadi tehsil being the highest. The plateau is drained mainly by parallel westward flowing streams. Forest cover is limited in this region. The soils on the slopes of the hills are partly eroded, yellowish red and poor in fertility having shallow depth and coarse texture. These soils are known as Rice soils and Varkas soils. Rice and ragi (nagli) are the principal crops in this region. Cashewnut grows in plenty in this area and the world famous “Alphonso” or “Hapus” mangoes are also grown mainly in Devgad, Malwan and Vengurla. Ratamba is other important fruit which is grown widely and after cutting into pieces is dried and is known as “Kokam.” The proposed site falls under Sindhudurg plateau

87. **Sindhudurg Coast** is situated along the extreme western fringe of the district and comprises of parts of Devgad, Malwan, Vengurla and Sawantwadi tehsils. It is a long narrow strip of land running the entire length of the district and generally lies below 100 metres. In this region unlike the coast around Mumbai and to the north, which is low lying, this coast is cliffy. However, in the upper part of the strip rice, coconut and areca nut gardening is practiced.

[12] Brief Industrial Profile of Sindhudurg District, MSME-Development Institute, Ministry of MSME, Government of India (https://dcmsme.gov.in/old/dips/State%20Profile%20Sindhudurg.pdf)

[13] District Survey Report Sindhudurg, Maharashtra (https://environmentclearance.nic.in/writereaddata/Online/additionalfile/14_Nov_2017_1655267200Q3I2PMFDistrictSurveyReport.pdf)

Figure 5: Map Showing Relief and Slope of Sindhudurg District



Note: Map presented is Indicative and not to scale
Source: Survey of India[14]

88. The elevation level of the proposed sub-project site is ranging from 50 to 100 meters, and land slope is less than 10 meters per kilometre as shown in the Figure 5.

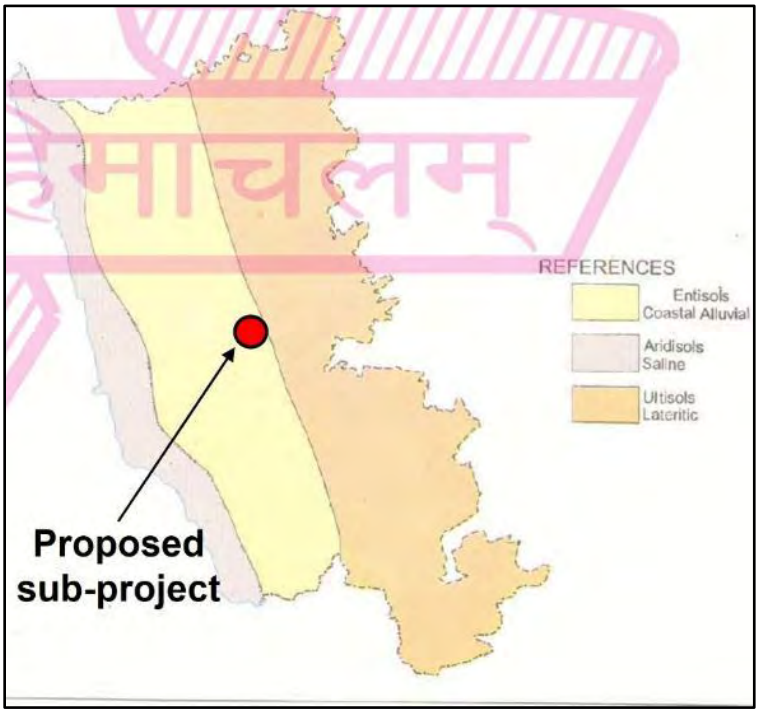
89. **Geomorphology and Soil Types:** The outstanding feature in the relief of the district is its highly uneven nature and very narrow riverine plains that fringe the coastline. About 40 to 50% of the area in the district is hilly. The district has three major physiographic divisions from east to west. (i) The eastern part close to the Western Ghats, is highly dissected with deep valleys. (ii) The middle part of the district is occupied by flat-topped hills with undulating plateau with elevations up to 300 meter above mean sea level (m amsl) covered by Laterite. (iii) The coastal plain in the western part with elevations of 100 to 150 m amsl. The physiographic features have given rise to five characteristic landforms viz. (i) The coastline (ii) The estuarine alluvial plains (iii) The Lateritic plateau (iv) Highly eroded remnant hills (v) Scarp faces of Sahyadri hill ranges. The drainage system of the major rivers in the district is mostly of sub-parallel type and the tributaries drainage pattern tends to be sub rectangular type. Major joints in the Basalt control the drainage pattern. The river systems are young with

[14] Survey of India (https://surveyofindia.gov.in/files/SINDHUDURG.compressed.pdf)

a small drainage area and westerly seasonal regime. During monsoon, the rivers carry heavy load of water having tremendous headward eroding capacity and ultimately drain in the Arabian Sea. All the major rivers originate in the Sahyadri Hill ranges. The five major rivers in the district are Gad (Length- 84km.), Karli (92km.), Terekhol (69km.), Tillari (53 km.), Deogad (48km.) and Wagothan (24km.). All these rivers form part of the westerly flowing river system originating from Sahyadri hill ranges and debouching in Arabian Sea.

90. The soil formation in the district in the district is controlled mainly by climate. Most of the soils are derived from Lateritic rocks. The soils are classified based on physical characteristics into four types viz., Rice soil, Garden soil, Varkas soil and Alluvial soil. The Rice soils are termed as 'Mali soils' when situated in higher levels, 'Kuryat soils' in lower levels and 'Panthar or Vaigam' when situated near water courses. Varkas soils are reddish brown to yellowish red in colour and are situated on hill slopes. These soils are poor in fertility, shallow in depth and coarse in texture. Garden soils are of mixed origin, yellow, red to brown in colour and are located in the valley portions. These soils are light, well drained and fairly fertile. Coastal Alluvial soils are recent deposits found along the coastal tracts and constitute deep loam. Due to inundation of sea, part of the coastal soils has become salty. In the Deogad, Malwan and Vengurla talukas practically entire strip is salty[15].

Figure 6: Map Showing Soil Types of Sindhudurg District



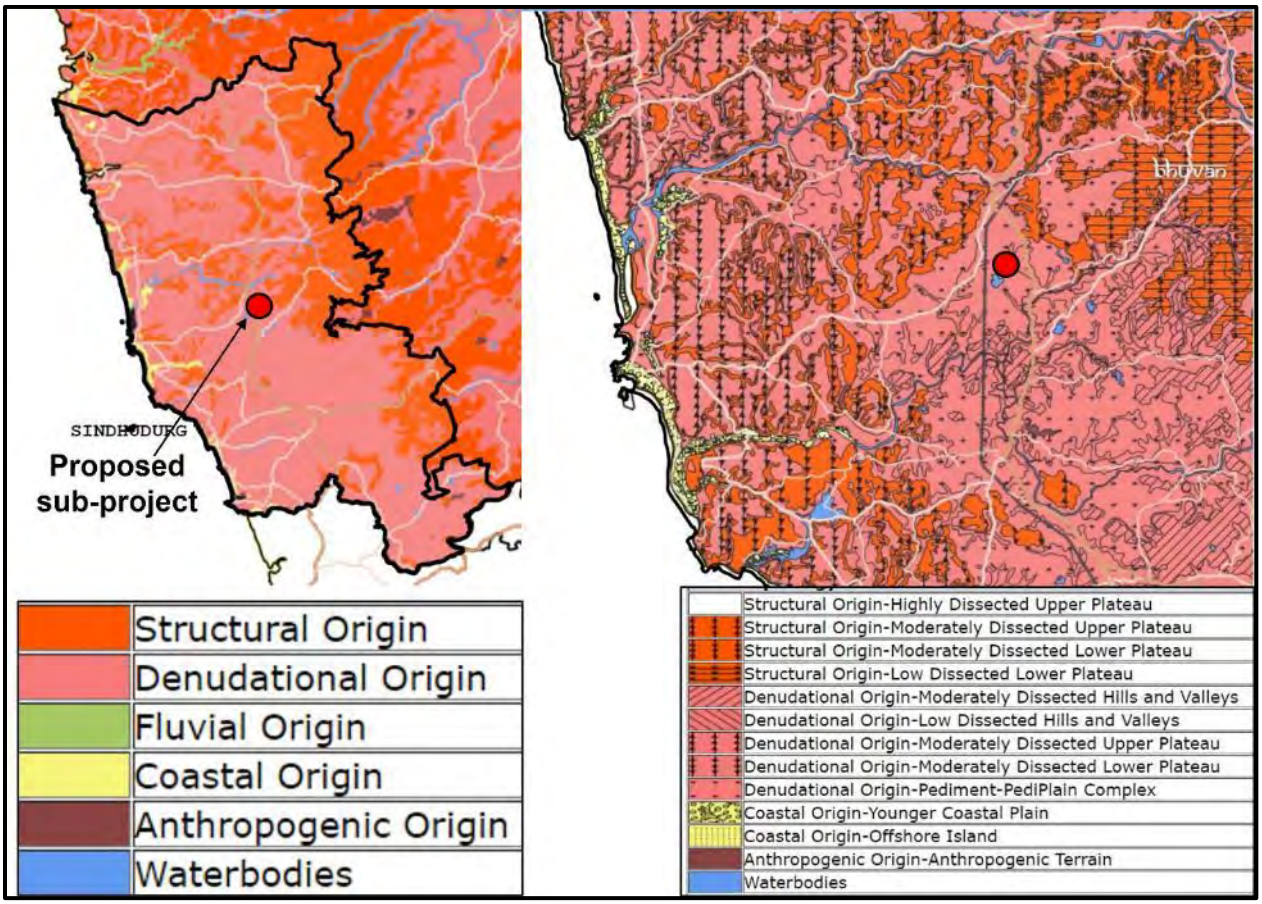
Note: Map presented is Indicative and not to scale
Source: Survey of India[16]

[15] Groundwater Information Report, Sindhudurg, Maharashtra (http://cgwb.gov.in/sites/default/files/2022-10/sindhudurg.pdf)
[16] Survey of India (https://surveyofindia.gov.in/files/SINDHUDURG.compressed.pdf)

91. The proposed sub-project site falls under the soil type of entisoils which are coastal alluvial in nature as shown in the Figure 6.

92. The maps[17] shown in Figure 7 indicate the geomorphology of the surrounding areas near the proposed sub-project site. The sub-project site falls under the geomorphological category of Denudational Origin-Pediment-Pedi Plain Complex.

Figure 7: Geomorphology of the surrounding areas near the proposed project site



Note: Map presented is Indicative and not to scale

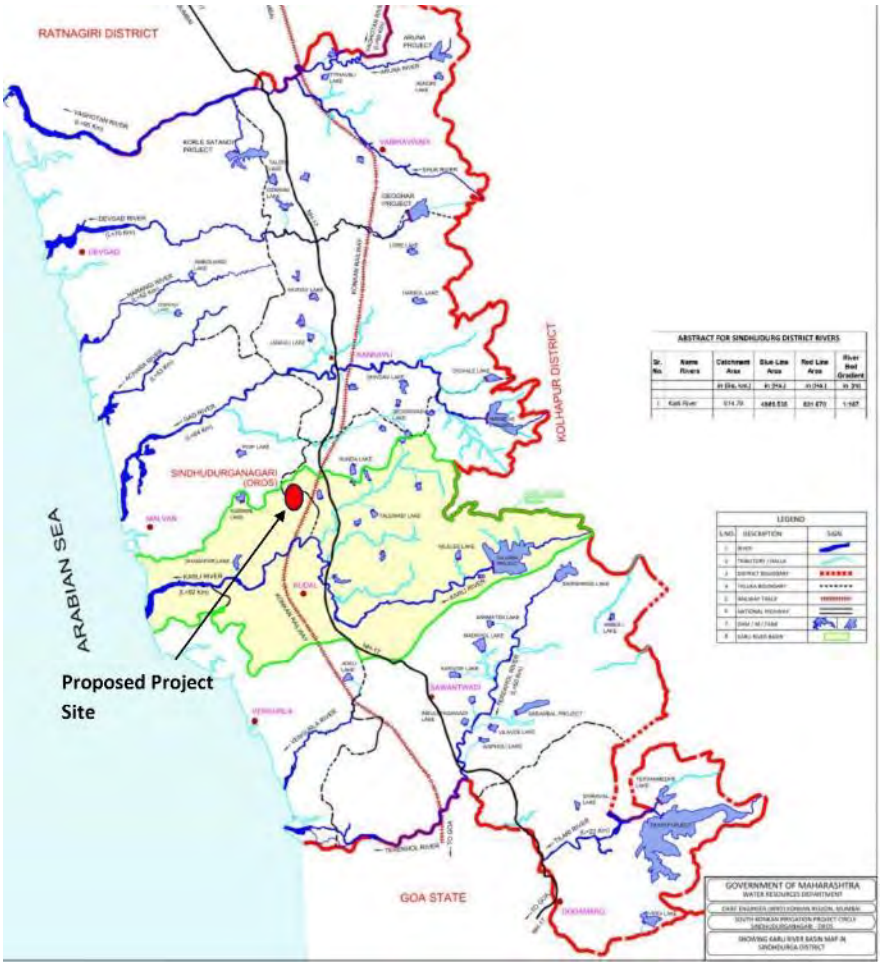
93. **Drainage Condition:** The drainage system of the major rivers in the district is mostly of sub-parallel type, and the tributaries drainage pattern tends to be sub-rectangular type. The river systems are young with a small drainage area and westerly seasonal regime. Five major rivers forms part of the westerly flowing river system originating from Sahyadri hill ranges and emerging in Arabian Sea. The following Rivers are the main Rivers of the District: Waghotan River, Karli River, Devgad River, Gad River, Terekhol River and Tillari River. However, all the rivers and other waterbodies present within a 10 km radius of the proposed sub-project site are depicted in Table 11.

[17] Bhuvan (https://bhuvan-app1.nrsc.gov.in/thematic/thematic/index.php)

Table 11: List of Waterbodies in the study area

S.No.	Name of the River/Waterbody	Distance from Project site (aerial distance)
1.	Sindhudurg Nagari Lake / Dhabachi Wadi lake	200 m, SW
2.	Pir Daval Nadi	2.38 km, SE
3.	Talegaon Lake	3.44 km, SSW
4.	Lake	3.86 km, NNE
5.	Chorge Wadi Lake	4.94 km, SE
6.	Karli River	5.28 km, SSW
7.	Kasal Nadi	5.66 km, N
8.	Lake	5.67 km, SEE
9.	Pendur Dam	9.32 km, SW

Figure 8: Map showing River Basins of Sindhudurg District



Note: Map presented is Indicative and not to scale
Source: Sindhudurg Karli River Basin Map Water Resources Department, Government of Maharashtra[18]

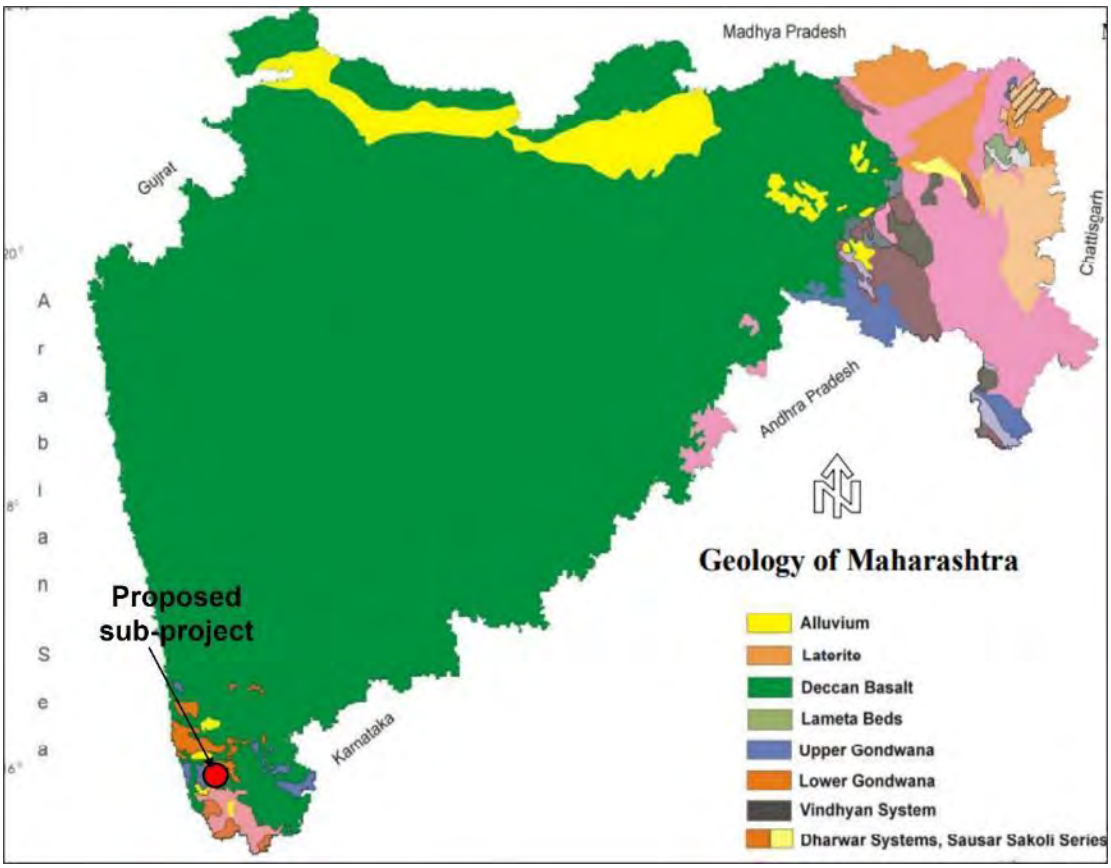
94. Proposed subproject marked on Survey of India Toposheet in furnished in Appendix 5. Based on the Survey of India's toposheet, the 10 km study area consists of medium to high dense

[18] https://wrd.maharashtra.gov.in/Site/Upload/PDF/Karli%20River%20P-1.pdf

forests including small patches of reserve forests. The remaining area apart from forest is mostly cultivable land. There are many seasonal nalas, lakes, Karli River, and its tributaries in the study area. There are small groups of settlements in the study area. The sub-project site consists of a hospital and medical college campus. The site has presence buildings and some sporadic vegetations.

95. **Geology of Maharashtra**[19]**:** The geology of Maharashtra is famous for the Deccan Traps, which occur in all the districts of the State, including Sindhudurg. The other geological formations, older and younger than Deccan Traps, occur in the northeast and as isolated patches in the Sindhudurg and Ratnagiri districts, as shown in Map below. The variation in hydrological properties is due to inherent physical characteristics of the rocks.

Figure 9: Map showing Geology of Maharashtra[20]



Note: Map presented is Indicative and not to scale\
Source: Report on the Dynamic Ground Water Resources of Maharashtra (2011-2012)

96. The sub-project site falls under the category of Deccan Basalt.

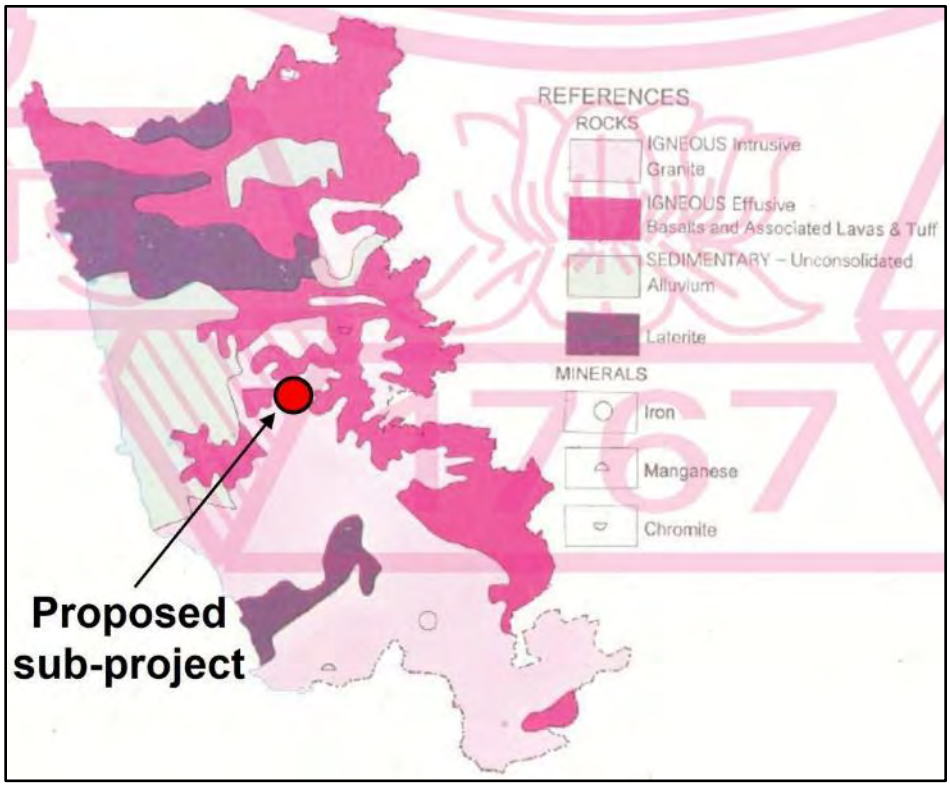
[19] https://gsda.maharashtra.gov.in/english/admin/PDF_Files/1559974566_Talukawise_GWA2011-12_compressed.pdf
[20] (https://gsda.maharashtra.gov.in/english/admin/PDF_Files/1559974566_Talukawise_GWA2011-12_compressed.pdf)

97. **Stratigraphy of rock types occurring in Sindhudurg:** The district of Sindhudurg is predominantly composed of kaladgi super group sandstones, shales conglomerates of Proterozoic age and peninsular basement complex of Precambrian age.

98. The Kaladgi rocks consist of sandstones and shales and has given rise to important deposits of silica sands. They consist of limestones, dolomitic limestones, purple-coloured shales and feldspathic sandstone.

99. Precambrian rocks are older than 3.5 billion years and are invariably metamorphosed. Structurally, these rocks are intensely folded and faulted as these were subjected to a number of tectonic events. Another group of rocks popularly referred to as the Sakoli Series is exposed in the Gadchiroli, Chandrapur, Nagpur and Gondia districts. These consist of pelitic, psamopelitic and metabasic sediments and include phyllites, schists, amphibolites, quartzites and associated basic intrusive. The Iron Ore Series constitutes an important iron ore bearing formation in the Gadchiroli and Sindhudurg districts. The rocks consist of quartzites and Banded Hematite Quartzites with sizeable quantities of exploitable iron ore.[21]

Figure 10: Map Showing Rocks & Minerals of Sindhudurg District



Note: Map presented is Indicative and not to scale
Source: Survey of India[22]

[21] Report on the dynamic groundwater resources of Maharashtra (2011-2012) - https://gsda.maharashtra.gov.in/wp-content/uploads/2023/05/1583759068_Talukawise_GWA2011-12_compressed.pdf
[22] https://surveyofindia.gov.in/files/SINDHUDURG.compressed.pdf

100. The type of rock found in the proposed sub-project is Igneous Intrusive Granite. Minerals like Iron, Manganese and Chromite are found in the parts of the district, but not in the sub-project region.

101. **Meteorological Condition:**

Historical rainfall data for proposed site[23]: The project site is located in peninsular India bound by Arabian sea on its western side. There are four meteorological subdivisions, viz. Konkan, Madhya Maharashtra, Marathwada and Vidarbha in the state. The state of Maharashtra experiences a tropical monsoon type of climate. The annual rainfall of the state can vary from 400-6000 mm and occurs for 3-4 months in a year. Maharashtra was one of the states which experienced a severe rainfall deficit during the drought of 2015, ranging from 20 per cent for Vidarbha to as high as 40 per cent for the Marathwada region.

102. **District rainfall data (for past 5 years) for Sindhudurg**[24]**:** The district rainfall in millimeters (R/F) shown in the Table 12, are the arithmetic averages of rainfall of stations under the district of Sindhudurg:

Table 12: Last 5 years' rainfall pattern – Sindhudurg District

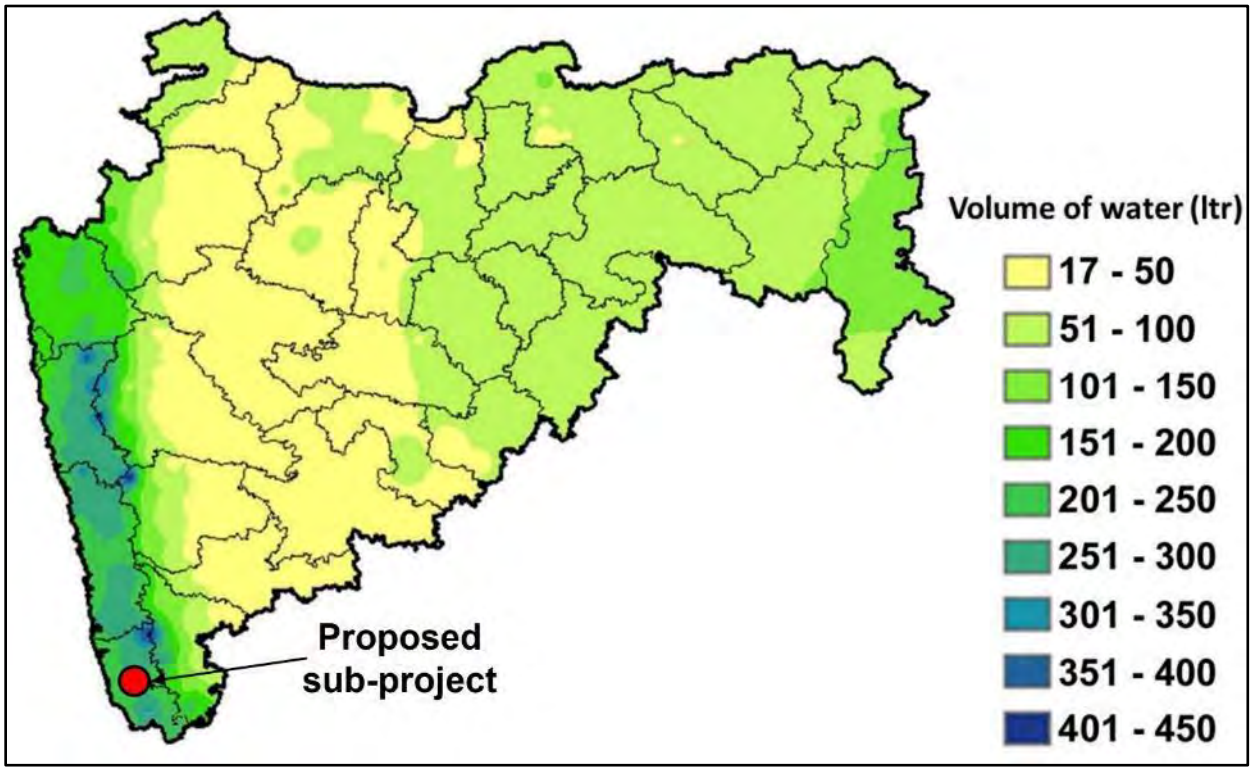
YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
2018	0	0	0.3	0.0	30.0	1382.4	962.9	540.4	152.2	73.4	33.6	1.8
2019	0	0	0	0.3	0.3	829.9	1413.8	1128.9	897.4	456.3	10.1	0.0
2020	0	0	0	5.2	12.5	1106.9	1450.3	1200.3	735.5	402.6	0.0	19.6
2021	0	0.9	0	4.4	378.7	1079.9	1615.2	453.5	724.5	155.2	148.8	93.5
2022	2	0	3.5	10.7	22.8	850.8	1106.4	732.2	506.6	212.7	7.7	1.4

Source: Customized Rainfall Information System (CRIS)

103. The highest concentration of rainwater potential is seen over western parts of Maharashtra mainly over Raigarh, Ratnagiri and Sindhudurg. The same is depicted in the Figure 12

[23] MAPPING CLIMATIC AND BIOLOGICAL DISASTERS IN INDIA- Study of Spatial & Temporal Patterns and Lessons for Strengthening Resilience (https://nidm.gov.in/PDF/pubs/GIZNIDM_21.pdf)
[24] https://hydro.imd.gov.in/hydrometweb/(S(0g2nmb33y0huxwn4hwevrr55))/DistrictRaifall.aspx

Figure 11: Annual rainwater potential (in litre/sq. ft) map for Maharashtra



Source: Rainwater Harvesting Potential for Different Locations the State of Maharashtra (India Meteorological Department, Ministry of Earth Sciences, GOI)[25]

104. The rainwater potential over roof top per square feet of area over different parts of Sindhudurg District are depicted in Table 13 provides Roof top area of the proposed sub-project that may be used for Rainwater Harvesting:

Table 13: Rainwater potential over roof top per square feet of area over different parts of Sindhudurg District

S. No.	Station	District	Run off volume of water (litre): SW monsoon season (June- Sep)	Run off volume of water (litre): annual
1.	Devgad Obsy	Sindhudurg	192.3	208.7
2.	Kankavli	Sindhudurg	274.9	298.2
3.	Kudal	Sindhudurg	244.7	262.4
4.	Malvan	Sindhudurg	183.5	198.8
5.	Sawantwadi	Sindhudurg	309.1	333.0
6.	Vengurla Obsy	Sindhudurg	227.0	247.8

(Source: Rainwater Harvesting Potential for Different Locations the State of Maharashtra (India Meteorological Department, Ministry of Earth Sciences, GOI)

[25] https://www.imdpune.gov.in/Reports/maharashtra.pdf

105. **Wind Speed and Direction:** The secondary data is collected from the nearby Indian Meteorological Department station is Devgad, the station regularly monitors wind direction, wind speed at 08.30 hrs and 17.30 hrs every day. The average annual wind speed at IMD Devgad is 14.3 Kmph and the predominant wind direction is from Northwest (NW) followed by West. Table 14 provides details of monthly wind speed and direction of Devgad.

Table 14: Monthly wind speed and direction data of IMD, Devgad

Month	Mean Wind Speed (Kmph)	Wind Direction
January	10.8	NW
February	12.8	NW
March	12.6	NW
April	14.5	NW
May	15.5	NW
June	20.0	W
July	23.7	W
August	22.1	W
September	11.9	NW
October	9.0	NW
November	9.3	NW
December	9.2	NW
Annual Total / Mean	14.3	NW

Source: IMD Climatological Normals 1971-2000[26]

106. **Natural Hazards and Climatic Disasters:** In Maharashtra, according to the Agricultural Drought Assessment Report (July 2012) 19 Districts are categorised under “Normal” class followed by 4 Districts under “Watch” class and 10 Districts under “Alert” class. Sindhudurg falls under the normal classes of Agricultural situation[27].

107. During 1995-2020, 11 out of 36 States and UT’s were impacted by cyclones. Maharashtra had the largest number of cyclones. The increase is observed in the number of cyclone incidents during the post-HFA (Hyogo Framework for Action – the Sendai Framework for Disaster Risk Reduction (After 2015).) period, in the case of Maharashtra. Twenty-seven out of 36 States and UT’s experienced heat waves during 1995-2020 with second highest number in Maharashtra[28].

108. **Seismicity of Maharashtra:** The state of Maharashtra falls in a region of moderate to high seismic hazard, according to GSHAP data. As per the Vulnerability Atlas of India, Maharashtra also falls in Zones II, III & IV. Parts of this state have prior history of seismic activity in the M 6.0-6.5 range. Approximate locations of selected towns and basic political state boundaries are displayed. The proposed sub-project falls under the zone III (Moderate

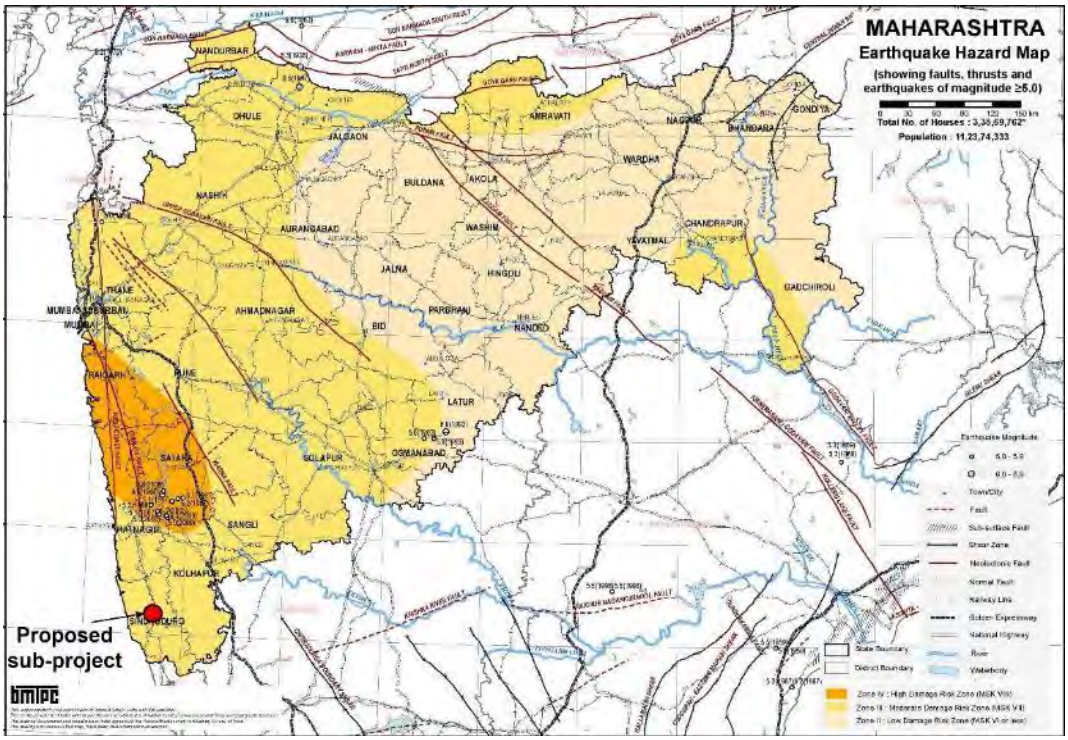
[26] IMD Climatological Normals 1971-2000 (https://imdpune.gov.in/library/public/Climatological%20Normals%20(1971-2000

[27] Agricultural Drought Assessment Report – July 2023 (https://bhuvan.nrsc.gov.in/bhuvan/PDF/NADAMS_July12_Report.pdf)

[28] Mapping Climatic and Biological Disasters in India- Study of Spatial & Temporal Patterns and Lessons for Strengthening Resilience. (https://nidm.gov.in/PDF/pubs/GIZNIDM_21.pdf)

Damage Risk Zone). Earthquake Hazard Map of Maharashtra showing the proposed sub-project site is presented in Figure 12.

Figure 12: Maharashtra Earthquake Hazard Map

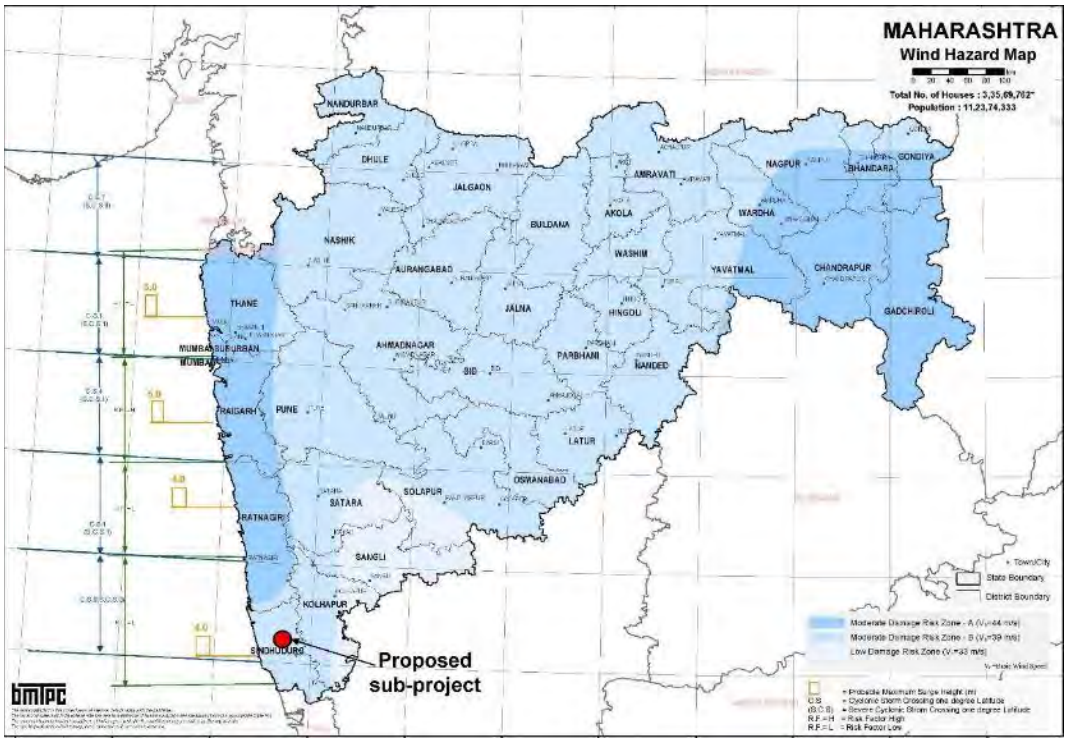


Note: Map presented is Indicative and not to scale
Source: https://vai.bmtpc.org/eq-MH.html

109. According to the map presented above, the proposed sub-project site falls under the seismic zone III (Moderate Damage Risk Zone).

110. **Cyclones:** The number of losses of human lives due to cyclonic events has shown a declining trend in HFA, considering the overall annual number of human life loss. Mortality due to cyclone is showing an increasing trend in Maharashtra during post-HFA.

Figure 13: Maharashtra Wind/Cyclone Hazard Map



Note: Map presented is Indicative and not to scale
Source: https://vai.bmtpc.org/eq-MH.html

111. According to the map presented as Figure 13, the proposed sub-project site falls under the wind and cyclone moderate damage risk zone – B (39 m/s).

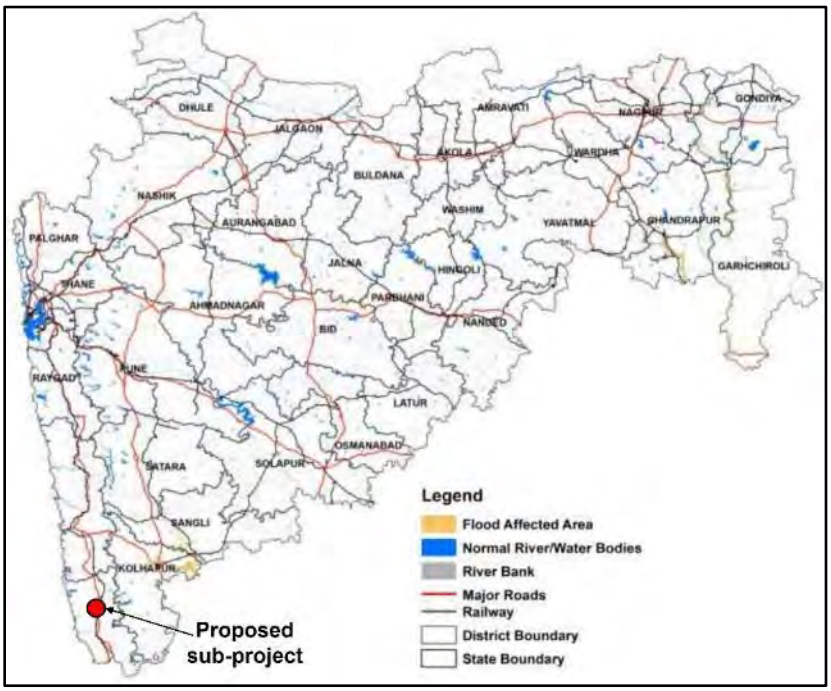
112. **Riverine and Coastal Flood Risk:**

113. **Riverine flood risk** measures the percentage of population expected to be affected by riverine flooding in an average year. Flood risk is assessed using hazard (inundation caused by river overflow), exposure (population in flood zone), and vulnerability. The existing level of flood protection is also incorporated into the risk calculation. Higher values indicate that a greater proportion of the population is expected to be impacted by riverine floods on average. The proposed sub-project does not fall under the flood affected areas.

114. **Coastal flood risk** measures the percentage of the population expected to be affected by coastal flooding in an average year. Flood risk is assessed using hazard (inundation caused by storm surge), exposure (population in flood zone), and vulnerability. The existing level of flood protection is also incorporated into the risk calculation. The impacts from infrequent, extreme flood years are averaged with more common, less newsworthy flood years to produce the “expected annual affected population.” Higher values indicate that a greater proportion of the population is expected to be impacted by coastal floods on average.

115. Maharashtra is bordered by the Arabian Sea to the west and has a long coastline stretching nearly 720 kilometers along the Arabian from Vengurla taluka of Sindhudurg district to Talasari taluka of Palghar district.

Figure 14: Flood affected areas in Maharashtra

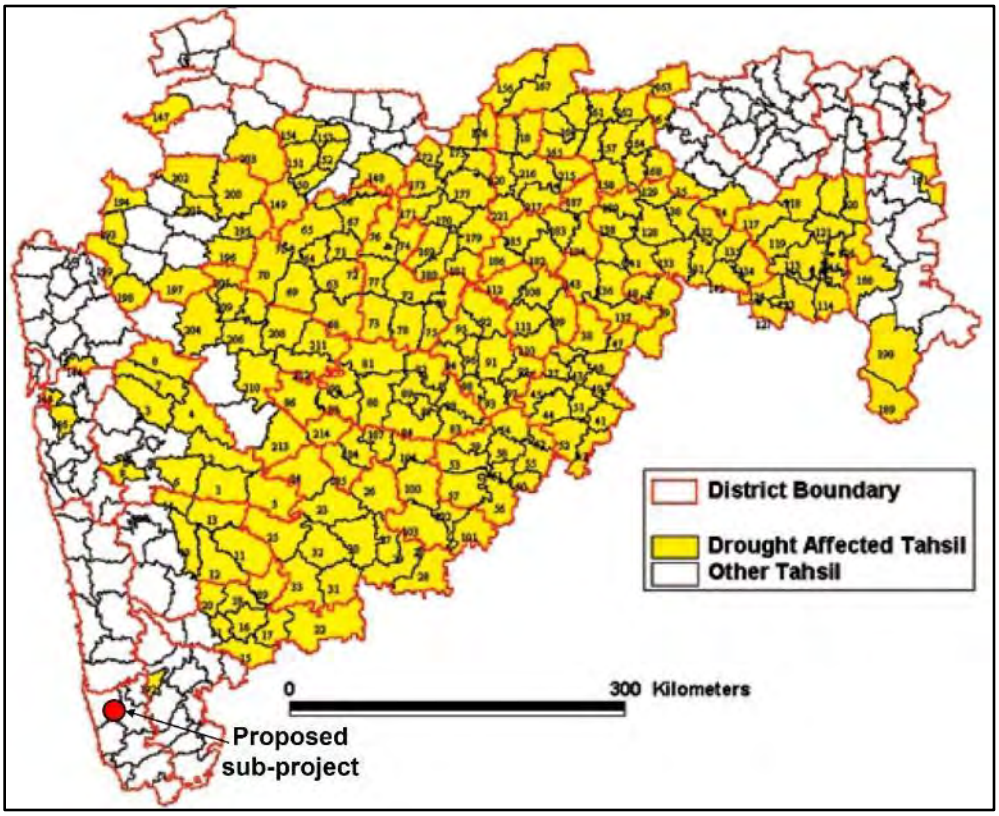


Note: Map presented is Indicative and not to scale
Source: Flood Affected Area Atlas of India - Satellite based Study (https://ndem.nrsc.gov.in/documents/downloads/Flood%20Affected%20Area%20%20Atlas%20of%20India%20-Satellite%20based%20study.pdf)

116. **Heat Waves:** The temporal distribution of human life loss due to heat waves shows that the total number of human life loss during the pre-HFA, HFA and post-HFA constitute 30, 40 and 30 percent of the total life loss during 1995-2020, respectively. As stated in the State Level Climatic Monologue (IMD), “State averaged summer mean maximum temperatures have increased over Maharashtra.” Heat Wave deaths per 100,000 population have been highest in Maharashtra. Heat Wave related deaths show an increasing trend in Maharashtra, in Post-HFA period. Heat Wave deaths per 100,000 population were highest in Maharashtra along with other states.

117. **Drought history for Maharashtra:** The consecutive three-year drought-like conditions faced by Maharashtra culminated in a severe drought in 2015-16, impacting 28,662 villages in 28 districts of Marathwada, north Maharashtra and Vidarbha. The impact of the drought of 2015 was particularly large for the Marathwada region. In the year 2014 and 2015, the rainfall decreased drastically in the region. According to the Maharashtra State Disaster Management Plan, proposed sub-project does not fall under the Drought Prone areas in Maharashtra. Drought Affected Tehsils of Maharashtra State are furnished in Figure 15.

Figure 15: Drought affected areas in Maharashtra



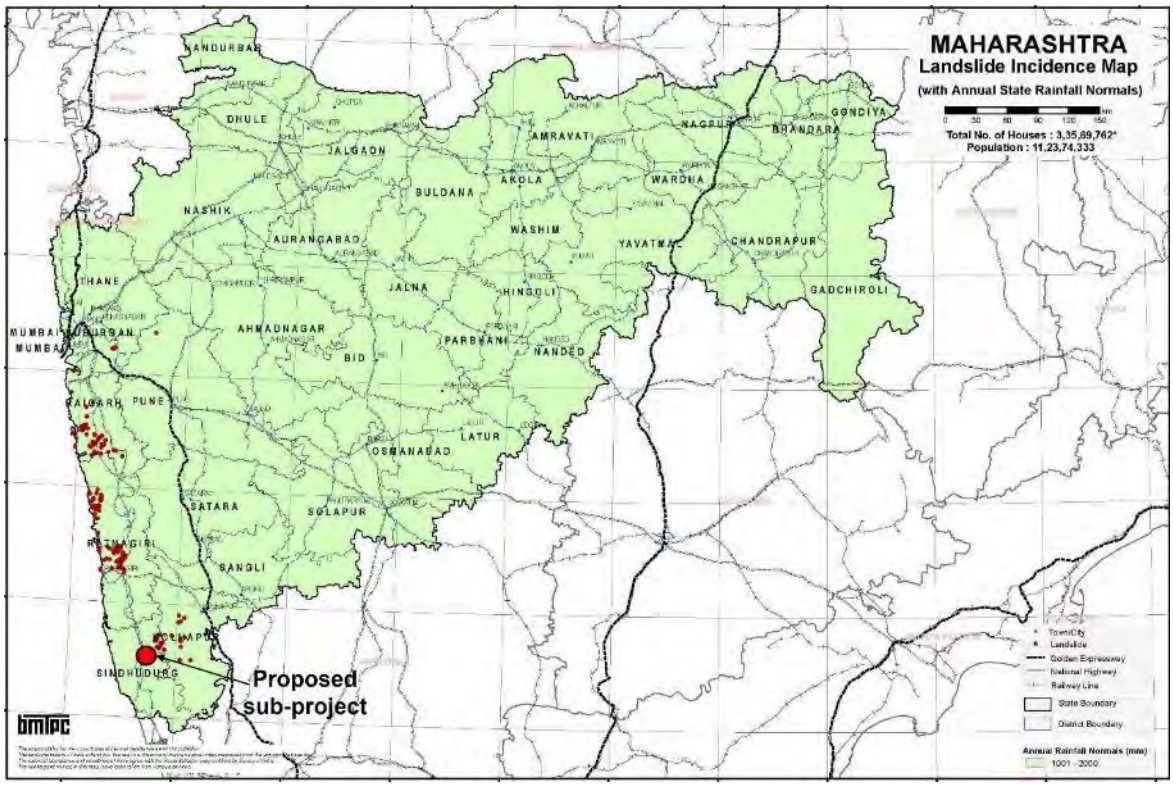
Note: Map presented is Indicative and not to scale
Source: Maharashtra State Disaster Management Plan
https://rfd.maharashtra.gov.in/sites/default/files/DM%20Plan%20final_State.pdf)

118. **Landslide:** In Maharashtra, frequent occurrences of landslides are instigated by intense rainfall in the Western Ghats. Significant landslide events have taken place during monsoon seasons due to human development in areas susceptible to landslides. These landslides have primarily resulted in the loss of human lives and property, but, more significantly, they have triggered secondary and tertiary consequences, including chemical incidents, road mishaps, railway accidents, floods, fires, gas leaks, and more.

119. The Konkan region, encompassing districts like Raigarh, Ratnagiri, **Sindhudurg**, and portions of Thane and Pune, is highly susceptible to landslides. This vulnerability extends to the foothills of the Sahyadris, where numerous villages, both small and large, are scattered throughout the Konkan area and face the risk of landslides.

120. The proposed sub-project is very near (approx. 20 km) to the landslide incidence area, but it does not fall under any of the landslide incidence area (Refer Figure 16).

Figure 16: Landslide Incidence Map of Maharashtra



Note: Map presented is Indicative and not to scale
Source: https://vai.bmtpc.org/eq-MH.html

Table 15: History of Disasters in the State of Maharashtra

Natural Disasters	Past History	Vulnerable Area
Floods	33 districts in 2005 and 31 districts in 2006	**All districts of the State**
Cyclones	No major history	**Six coastal districts**
Hail Storms	Occasional	Some parts in the State, Specially Marathawada and Vidarbha.
Extreme heavy rainfalls, sometime resulting cloud bursts	26th July 2005 Mumbai 2006 Chiplun & Mahad 2007 Amravati &Chiplun	**Entire State especially Konkan**
Heat wave	Vidarbha region and Nashik region	Marathwada, Vidarbha and Nashik Divisions
Drought	2001, 2002, 2003, 2004 2008, 2011, 2012, 2013	Drought Prone districts especially Marathwada and parts of Vidarbha
Sea Erosion	Konkan, 720 kms of coast	**Konkan Division districts**
Earthquakes	1967 Koyna earthquake 1993 Latur earthquake	High risk: Ratnagiri, Raigarh, Satara, Thane, Latur

Natural Disasters	Past History	Vulnerable Area
Landslides & Mud flow	2005 Mumbai, Mahad 2006 Ratnagiri	High risk: Ratnagiri, Raigarh, Satara, Thane, Nashik, Mumbai, **Sindhudurg**
Dam failures / Dam Bursts	1961 Panshet	106 major dams across State May be a secondary disaster

Source: Maharashtra State Disaster Management Plan[29]

121. Inferring from the above Table 15, Sindhudurg district is mainly vulnerable to the following Natural Disasters i.e; Sea Erosion, Earthquakes and Landslides, Mud flow along with floods, and Cyclone. There is no evidence of any major disaster on project site in the past 10 years. Considering the increase in precipitation due to climate change, PMC have conducted a potential increase in surface runoff in Flood Risk Assessment Report. Provided that the natural seasonal stream channel remains unobstructed both within the project site and beyond its boundaries, a significant flood risk challenges at the project location is not anticipated. Additionally, since the Sindhudurg region falls within Seismic Zone III, no major seismic disasters are expected to occur.

122. **Ambient Air Quality**

123. The nearest ambient air quality monitoring location is situated in Goa. The data from the monitoring station recorded by Goa pollution control board is considered for this assessment[30].

124. Under the National Air Monitoring Programme (NAMP), funded by the Central Pollution Control Board (New Delhi) monitoring of the ambient air quality is done at 18 locations within the state of Goa, out of which “Tuem Industrial Estate” is located closest to the proposed project site at a distance of approx. 65 km The annual averages of PM_{10}, $PM_{2.5}$, SO_2 and NO_2 of the locations is shown below in Table 16 and Fig 17. The data indicates that the levels of $PM_{2.5}$, SO_2 and NO_2 (annual averages) are within the permissible limits; the annual averages of PM10 are exceeding at 10 NAMP stations including monitoring station at Tuem.

[29] https://rfd.maharashtra.gov.in/sites/default/files/DM%20Plan%20final_State.pdf
[30] Annual Report 2022-2023, Goa State Pollution Control Board (https://goaspcb.gov.in/wpcontent/uploads/2023/08/Annual-Report-2022-23.pdf)

Table 16: Trend status of Air Quality for the period April 2022 – March 2023 at Tuem AAQM Station in Goa

ANNUAL AVERAGES OF AAQM DATA FOR NAMP STATIONS FROM APRIL 2022 to MARCH 2023					
Area type	**NAMP Station**	**PM_{10} µg/m3**	**$PM_{2.5}$ µg/m3**	**$S0_2$ µg/m3**	**$N0_2$ µg/m3**
Industrial area	Tuem	66	26	6	13

Figure 17: Trend Status of Average Annual Air Quality for the period April 2022 - March 2023 in Tuem Industrial Estate

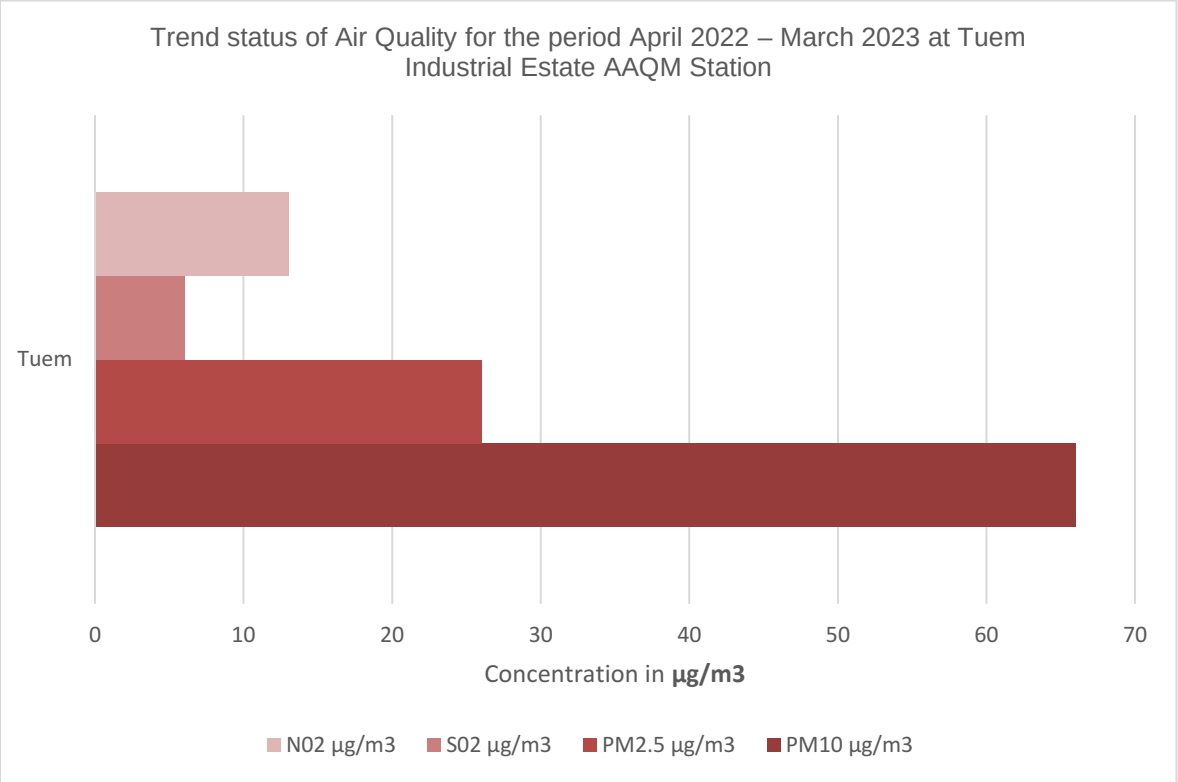


Table 17: Comparative table for Annual average data for 2021-2022 vs 2022-2023 for Teum31

Comparative table for Annual average data for 2021-2022 vs 2022-2023					
Area type	**NAMP Station**	**Annual Avg PM_{10}**		**Annual Avg $PM_{2.5}$**	
		2021-22	**2022-23**	**2021-22**	**2022-23**
Industrial	Tuem	57	66	26	26

Table 18: Interpretation / Graphical Representation of Annual NAMP data from April 2022 to March 2023 for Teum**32**

Interpretation / Graphical Representation of Annual NAMP data from April 2022 to March 2023 Station: Tuem Industrial Estate Near ESIC Hospital City: Tuem								
Parameters	**PM_{10}**	**$PM_{2.5}$**	**SO_2**	**NO_2**	***CO**	**O_3**	**Pb**	Pollutants concentration in µg/m3 (except for *CO which is in mg/m3)
Standard: Annual TWA	60	40	50	40	40	50	40	
Standard: 24 Hourly TWA	100	60	80	80	60	80	80	
Total days monitored	85	85	85	85	69	69	85	
Exceeded days	9	0	0	0	0	0	0	TWA - Time Weighted Average
No of times Exceeding on 2 consecutive Monitoring days	6	0	0	0	0	0	0	
Annual Average	66	26	6	13	0	14	BDL	
Yearly Max	192	35	14	28	0	16	BDL	
Yearly Min	49	15	2	5	0	13	BDL	

125. **Water Quality**

126. The nearest water quality monitoring location is situated in Goa. The data from the monitoring station recorded by Goa pollution control board is considered for this assessment.

127. From the water Quality data analysis for the year 2022-2023, it is observed that River Kalna at Chandel, nearest water monitoring station (located in Goa) to the project site is within limits using the limit for ‘class C’ river as per CPCB classification based on designated best use of rivers.

Table 19: NWMP DATA for monitoring station at River Kalna for the month of February 2024

Name Of Monitoring Location	**RIVER KALNA AT CHANDEL- PERNEM, GOA**
Velocity (m/s)	0.4
Temp (°C)	30

[31] GSPCB Assessment of Annual NAMP Data for The Year 2022-2023 (https://goaspcb.gov.in/wp-content/uploads/2024/05/Assessment22-23.pdf)

[32] GSPCB Assessment of Annual NAMP Data for The Year 2022-2023 (https://goaspcb.gov.in/wp-content/uploads/2024/05/Assessment22-23.pdf)

Name Of Monitoring Location	RIVER KALNA AT CHANDEL- PERNEM, GOA
DO (mg/l)	6.9
pH	6.71
Cond (µs/cm)	87.33
BOD (mg/l)	BDL
Nitrate-N (mg/l)	BDL
Nitrite-N (mg/l)	0.007
Total Coliform (MPN/100ml)	3300
Fecal Coliform (MPN/100ml)	780
Fecal Streptococci (MPN/100ml)	140
E.Coli (MPN/100ml)	-
Turbidity (NTU)	3.87
Phenolphthalein Alkalinity (mg/l)	BDL
Total Alkalinity (mg/l)	46
Chlorides (mg/l)	5.99
COD (mg/l)	10
Total Kjeldhal Nitrogen (mg/l)	1.68
Ammonia- N (mg/l)	0.64
Total Hardness (mg/l)	44
Calcium (mg/l)	4.8
Magnesium (mg/l)	7.78
Sulphate (mg/l)	4.23
Sodium (Na) (mg/l)	7.4
Total Dissolved Solids (mg/l)	52
Total Fixed Solids (mg/l)	21
Total Suspended Solids (mg/l)	4
Phosphate (mg/l)	0.16
Boron (mg/l)	0.493
Potassium (k) (mg/l)	5.4
Flouride (mg/l)	0.42
SAR	2.95
Oil & Grease (mg/l)	-
MLSS (mg/l)	-
MLVSS (mg/l)	-
Residual Chlorine (mg/l)	-

128. The current quantity of water for drinking, domestic and irrigation use is supplied from Dhabachi Wadi Medium irrigation project (Sindhudurg Nagari lake). It is designed to supply water to the Pradhikaran area till 2070. The live storage capacity of water in the reservoir is 2.421 mcm (million cubic meter). The water from the same source is supplied to 4km radial distance from the reservoir. The water from the reservoir is drawn to the WTP (4 MLD capacity) by 17000 m pipeline, it is treated and filled in overhead tanks with capacity of 10 lac litres. Monitoring of the microbial parameters are performed at regular intervals by Maharashtra Jeevan Pradhikaran, Sindhudurg at the Dhabachi Wadi / Sindhudurg Nagari lake.

129. **Ground water assessment.**

130. The nearest ground water quality monitoring location is situated in Goa at a distance of approx. 60 km from site. The data from the monitoring station recorded by Goa pollution control board is considered for this assessment.

Table 20: General Description of the Ground Water Assessment Units Of Taluka Pernem In Goa 2022[33]

District	Taluk	Rainfall (mm)			Recharge Worthy Area (ha)			Total Geographical Area (ha) Hilly Area	Total
		C	NC	Total	C	NC	Total		
GOA NORTH	PERNEM	3243.8	3243.8	3243.8	4348	14572	18920	6250	25170

Table 21: Assessment of Dynamic Ground Water Resources Of Taluka Pernem In Goa (Recharge Component) – Gwra 2022[34]

District	Taluk	Recharge from Rainfall - Monsoon (Ham)	Recharge from Other Sources - Monsoon (Ham)	Recharge from Rainfall -Non Monsoon (Ham)	Recharge from Other Sources -Non Monsoon (Ham)	Total Recharge from Rainfall (Ham)	Total Recharge from Other Sources (Ham)	Total Annual Ground Water Recharge (Ham)	Total Natural Discharges (Ham)	Annual Extractable Ground Water Resource (Ham)
GOA NORTH	PERNEM	2860.71	278.93	0	484.44	2860.71	763.37	3624.08	724.82	2899.26

Table 22: Assessment of Dynamic Ground Water Resources of Taluka Pernem In Goa– GWRA2022[35]

District	Assessment Unit Name	Annual Extractable Ground Water Resource (Ham)	Ground Water Extraction for Irrigation Use (Ham)	Ground Water Extraction for Industrial Use (Ham)	Ground Water Extraction for Domestic Use (Ham)	Total Ground Water Extraction (Ham)	Annual GW Allocation for Domestic Use as on 2025 (Ham)	Net Ground Water Availability for future Use (Ham)	Stage of Ground Water Extraction (%)	Categorization
GOA (N)	PERNEM	2899.26	507.33	6.96	296.78	811.07	315.06	2069.91	27.98	Safe

[33] Annexure IV, DYNAMIC GROUND WATER RESOURCES OF GOA 2022, Water Resource Department, vcGovernment of Goa & CGWB, South Western Region Department of Water Resources, River Development & Ganga Rejuvenation, Ministry of Jal Shakti, GOI (https://www.cgwb.gov.in/old_website/GW-Assessment/GWR-2022-Reports%20State/Goa.pdf)

[34] Annexure V A, DYNAMIC GROUND WATER RESOURCES OF GOA 2022, Water Resource Department, Government of Goa & CGWB, South Western Region Department of Water Resources, River Development & Ganga Rejuvenation, Ministry of Jal Shakti, GOI (https://www.cgwb.gov.in/old_website/GW-Assessment/GWR-2022-Reports%20State/Goa.pdf)

[35] Annexure V B, DYNAMIC GROUND WATER RESOURCES OF GOA 2022, Water Resource Department, Government of Goa & CGWB, South Western Region Department of Water Resources, River Development & Ganga Rejuvenation, Ministry of Jal Shakti, GOI (https://www.cgwb.gov.in/old_website/GW-Assessment/GWR-2022-Reports%20State/Goa.pdf)

131. The public consultation conducted in the nearby villages confirmed that the area is not water deficit. The main source of water for household consumption and agriculture is ground water i.e. through bore wells or wells. Water table is around 15 to 150 feet. The water quality is good and safe for drinking purposes.

132. **Ambient Noise**

133. The nearest ambient noise monitoring location is situated in Goa. The data from the monitoring station recorded by Goa pollution control board is considered for this assessment.

The noise monitoring station in Goa, nearest to the proposed project site, is located in Mapusa. The details for the monitoring station are as follows:

(a) Latitude & Longitude: 15.60 °N, 73.82 °E
(b) Climate/Meteorology: Tropical Climate
(c) Population: 39,989 (as per 2011 census)
(d) Major land use: Urban
(e) Monitoring Location: Near Municipal Market
(f) Description of monitoring site: Commercial
(g) Activities around the monitoring location: On Pre-Deepawali day (21-10-2022) Medium to Light Vehicular Movement.
(h) On Deepawali Day (24-10-2022) Heavy to Light Vehicular Movement, Bursting of firecrackers. **Noise levels recorded in Mapusa monitoring station, during Deepawali festival, 2022[36]:**

Table 23: Data/Observation: Noise level during Deepawali festival, 2022

Location A: Mapusa	Pre-Deepawali day (21-10-2022)			Deepawali Day (24-10-2022)		
Time duration	Lmin	Lmax	Leq dB(A)	Lmin	Lmax	Leq dB(A)
18:00 to 19:00 Hr	55.7	96.6	**65.8**	48.5	80.5	**67.0**
19:00 to 20:00 Hr	48.8	96.5	**62.0**	42.3	87.3	**62.1**
20:00 to 21:00 Hr	44.5	96.6	**58.9**	41.9	83.7	**59.9**
21:00 to 22:00 Hr	44.5	96.6	**54.5**	31.6	77.1	**55.1**
22:00 to 23:00 Hr	44.2	93.7	**61.5**	42.2	80.5	**63.1**
23:00 to 24:00 Hr	40.6	92.6	**56.9**	42.2	80.9	**64.2**

134. **Sewage and Drainage System:** There is no sewage or drainage system available. Septic tanks are built for each building and cleaning of the same is conducted by the state government authorized vendor. A STP of capacity 60KLD is constructed for the collector colony in Pradhikaran area. The solid waste management is poor in the surrounding areas. There is no organized collection of solid waste by the Nagar Panchayat. The waste

[36] Annual Report 2022-2023, Goa State Pollution Control Board (https://goaspcb.gov.in/wp-content/uploads/2023/08/Annual-Report-2022-23.pdf)

collected is taken a dumpyard situated approx. 1 km. from the hospital. The public consultation also revealed the unorganized and improper waste collection system by the local authorities.

135. **Emergency response in case of fire hazard**: There is no firefighting equipment available with the Pradhikaran. In case of requirement, the fire brigade from municipal council of Kudal or nearest MIDC in Kudal can be contacted. As an immediate response to fire instances, the Pradhikaran intends to use water tanker having 9000L capacity. As per the EC, Underground Tank of 700 KLD and Overhead Water Tank of 170 KLD has been proposed as a fire tank for the proposed project.

B. Biological Environment

136. **Protected Area /Ecologically Sensitive Area**:

137. No legally protected areas like National Park, Wildlife Sanctuary, Biosphere Reserve etc. located within 10 Km aerial distance from proposed site boundary. Radhanagari Wildlife Sanctuary (nearest from Proposed Site) is located beyond 10 Km from the proposed project site. The sanctuary is located in the area that exists between the two chief reservoirs i.e. Laxmi sagar and the Shahu sagar, and spreads over an area of around 351.16sq.kms.[37]

138. There is no special area for protection of biodiversity like Important Bird Area/Key Biodiversity Areas are not recorded in the vicinity of proposed project site. The KBA, Radhanagari WLS, Amboli Tilari Reserve Forest and Burnt Island (Bandra) Vengurla Rocks (IBA) lies beyond 10km from the proposed project site. Analysis of Ecologically Important Areas is presented in Figure 18.

[37] https://moef.gov.in/wp-content/uploads/2020/10/radhanagari.pdf

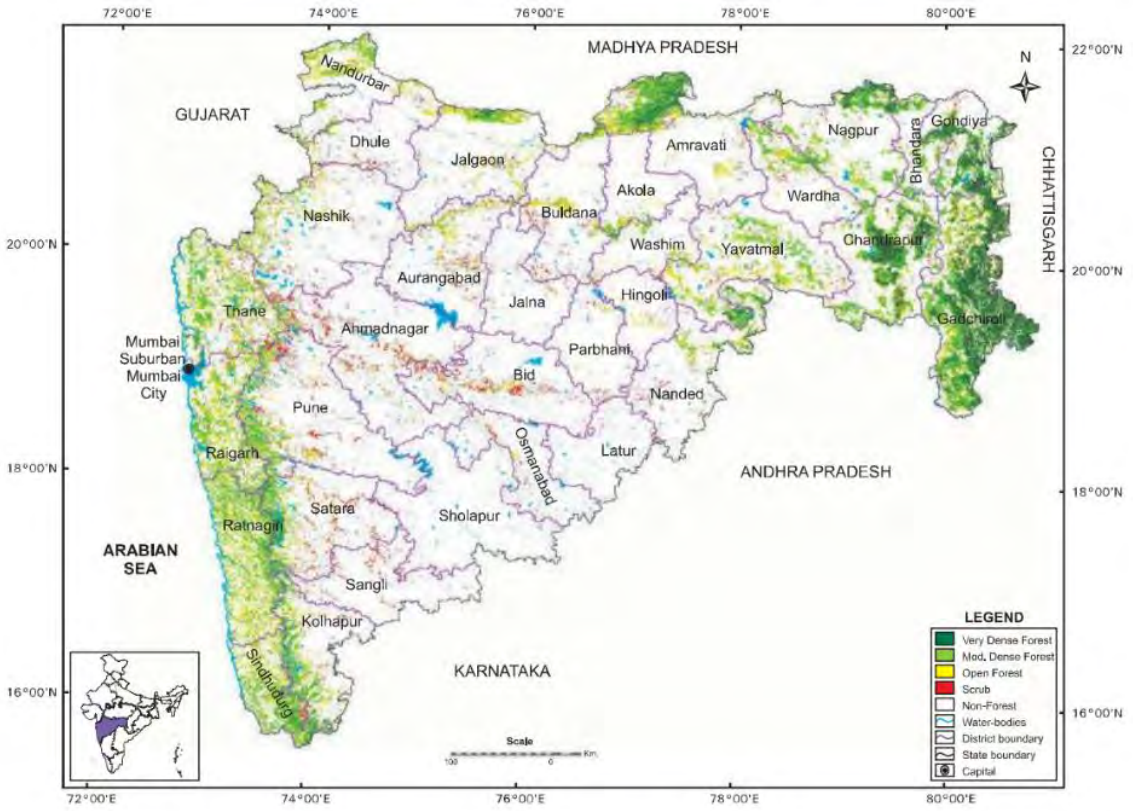
Figure 18: KBA Analysis of Ecological Sensitive Areas[38]

Note: Map presented is Indicative and not to scale

139. **Forest:** The forest area under the administrative charge of the Forest Department and Revenue Department were 55906.93 sq. km. and 1438.47 sq. km. The forest area transferred to Forest Development Corporation of Maharashtra Limited at the end of the year 2020-21 was 3462.23 Sq. Km. This constitutes about 1.13 % of the total geographical area of the state. At the close of the year 2020-21, the area of private forest brought under possession of the Forest Department was 1184.26 sq. km. which constituted about 0.38 % of the total geographical area of the state.

[38] https://wdkba.keybiodiversityareas.org/sites/map

Figure 19: Forest map of Maharashtra[39]



140. According to the 2021 assessment, the circle-wise distribution of forest area (area in sq. km.) in the district of Sindhudurg is given in the table below:

Table 24: Circle-Wise Distribution of Forest Area for the Year 2020-21

District	Controlling Agency	Reserved Forest	Protected Forest	Unclassed Forest	Total (area in sq. km.)
Sindhudurg	Forest (Terri)	246.87	0	312.88	559.75
	Wildlife	0	0	0	0
	FDCM	0	0	0	0
	Revenue	0	0	0	0
	TOTAL	**246.87**	**0**	**312.88**	**559.75**

(Source: Annual Administration Report for the Year 2020-2021, Forest Department, Government of Maharashtra)

141. The district-wise forest cover (area in sq. km.) as evaluated in the 2021 assessment is shown in the table below:

[39] India State of Forest Report, 2011 (https://fsi.nic.in/cover_2011/maharashtra.pdf)

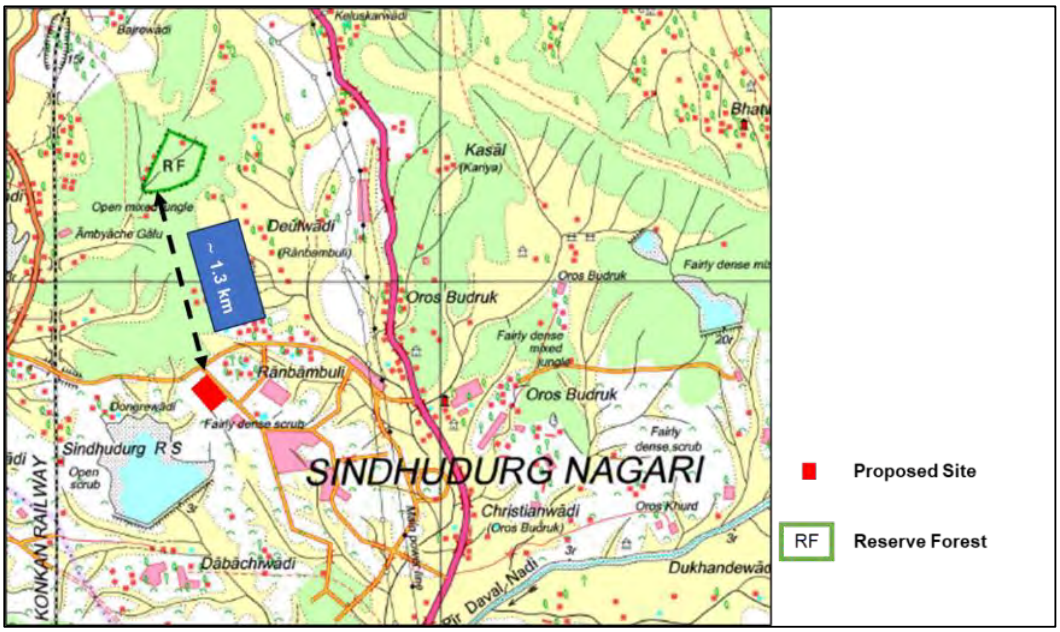
Table 25: District Wise Forest Area

District	Geographical Area	2021 Assessment				Change wrt 2019 Assessment	Scrub
		Very dense***	Moderately dense**	Open forest*	Total		
Sindhudurg	5207	90.93	1383.88	1348.87	2823.68	-4.3	29.04

Source- India State of Forest Report- 2021

142. The proposed site is devoid of any forest land. There is no presence of forest area in the vicinity of proposed site. The nearest forest patch (Reserve Forest) is located at about 1.3 Km away from proposed site towards northern side as per the reserved forest map shared by the forest department during consultation. The forest areas fall under the Kadaval range of Sawantwadi forest division. The forest map of the project area surrounding region is provided in Figure 20.

Figure 20: Forest Map of the project area surrounding region[40].



Note: Map presented is indicative and not to scale

143. **Flora and Fauna:** The floral diversity of the proposed site contains majorly trees. The site showed presence of sporadic population of shrubs. The proposed site shows presence of dense patch of trees dominated by *Acacia auriculiformis*. Other trees present at site include *Mangifera indica* (Mango), *Cocus nucifera* (Coconut), *Syzigium cumini* (Jamun), *Azadirachta indica* (Neem), *Peltophorum pterocarpum (*Copperpod*)*, *Tectona grandis* (Teak), *Ficus bengalensis* (Banyan), *Ficus religiosa* (Peepal), *Casuarina equisetifolia* (Coastal She oak) and (African Mahogany). Figure 21 presents current landscape of proposed site.

[40] Working Plan of Maharashtra Forest Department – Sawantwadi Division 2015 to 2025

Figure 21: Current Landscape of Proposed Site

144. The trees commonly found in the study area as per the Forest Department Working plan are provided in the table below. The list of shrubs, herbs, climbers as per the forest department working plan is provided in Appendix 6.

Table 26: Trees found around the study area

Sr. No.	Local Vernacular Name	Botanical Name
1	Acrocarpus	*Acrocarpus fraxinifolius Arn.*
2	Ain	*Terminalia tomentosa.*
3	Ain	*Terminalia tomentosa Wight & Arn.*
4	Alu	*Vanrueria spinosa.*
5	Amba	*Manaifera indica L.*
6	Ambada	*Sondias mangifera.*
7	Ambadi	*Trewia polycarpa Benth. & Hook. f.*
8	Amberi	*Nothopegia cokbrookians.*
9	Ambat	*Sondias ocuminata.*
10	Ambavali	*Nothopegia colebrookiana (Wight) Blume*
11	Amli	*Bauhinig racemosa.*
12	Anjani	*Memecylon edule.*
13	Apta	*Bauhinia racemosa.*
14	Arjun	*Terminalia arjuna (Roxb. ex DC.) Wight & Arn.*
15	Asana,Kutgi	*Bridilia retusa.*
16	Ashok	*Saraca indica.*
17	Astha / payar	*Ficus arnottiana Miq.*
18	Atak	*Flacourtia sp.*
19	Avaln	*Mayna laxiflora Benth.*
20	Awala	*Emblica officinalis Gaertn.*
21	Bartundi	*Morinda citrifolia L.*
22	Bakul	*Mimusops elengi L.*
23	Bel	*Aegle marmelos (L.) Corréa*
24	Bahawa	*Cassia fistula.*
25	Bendi	*Thespesia populnea.*
26	Bherlimad / Surmad	*Caryota urens.*
27	Bhokar	*Cordia myxa.*
28	Bhoma	*Gloehiaion lanceolarium.*
29	Bibla	*Pterocarpus marsupium.*
30	Biba	*Semecarpus anacardium L. f.*
31	Bibi	*Holigarna arnottiana.*
32	Bokida/ Kala umber	*Ficus hispida L. f.*
33	Bor	*Zizi hus jujuba.*

Sr. No.	Local Vernacular Name	Botanical Name
34	Bulgi	*Vitex altissima.*
35	Champhar	*Flacourtia montana.*
36	Chandan	*Santalum album.*
37	Chandada	*Macarnga roxbursii.*
38	Chandvad	*Macaranga peltata Boivin ex Baill.*
39	Chinch	*Tamarindus indica L.*
40	Char	*Buchania latifolia.*
41	Charoli	*Buchanania conchinchinensis*
42	Cheri	*Erinocarpus nimmoanus Mast.*
43	Dalchin	*Cinnamomum zeylanicum Blume*
44	Datir	*Ficus gibbosa.*
45	Datran	*Ehretia laevis.*
46	Dahivan	*Cordia macleodii.*
47	Dhaman	*Grewia tiliaefolia.*
48	Dikamali	*Gardenia luciata.*
49	Gaidhad	*Sterculia gutata Roxb.*
50	Garud	*Ficus sp.*
51	Ge la	*Randia spinosa.*
52	Goinda	*Diospyros montana.*
53	Gulumb	*Machilus macrantha.*
54	Milia	*Diospyros assinilis.*
55	Haladu	*Haldina cordifolia (Roxb.) Ridsdale*
56	Hadaka	*Rauvalfia verticillata*
57	Hanmanti	*Xantolis tomentosa (Roxb.) Raf.*
58	Hed	*Adina cardifolia.*
59	Hela	*Terminalia belerica.*
60	Hirda	*Terminalia chebula Retz.*
61	Humb	*Miliusa tomentosa.*
62	Hure	*Sapium insigne.*
63	Irai	*Calophylium wightianum.*
64	Jambhul (Lahan)	*Syzygium cumini (Skeels)*
65	Jambha	*Xylia Xylocarpa.*
66	Jambhul	*Syzygium cumini.*
67	Kadamb	*Anthocephalus cadamba.*
68	Kajara	*Strychnos nux-vomica L.*
69	Kaju	*Anacardium occidentale L.*
70	Kalhoni	*Hopea wightiana.*
71	Kakad	*Garuga pinnata.*
72	Kalam	*Mitragyna parvifolia.*
73	Kalakuda	*Wrightia tinctoria R. Br.*
74	Ka is,Khor 01	*Trema orientalis.*
75	Karambel	*Oillenia pentogyna.*
76	Karanj	*Pongamia Pinnata (L.) Merr.*
77	Karamal	*Justicia pocumbens*
78	Kasturi	*Ficus arnottiana Miq.*
79	Katak	*Bridelia retusa (L.) A. Juss.*
80	Kawti	*Hydnocarpus laumifolia.*
81	Ke	*Ficus tsjekela.*
82	Khair	*Accacia catechu.*
83	Khair	*Acacia sundra DC.*
84	Kharsin	*Radarmachera xylocarpa.*
85	Kharwat	*Fiscus asperrima.*
86	Khurai	*Ixora sp.*
87	Kilcha	*Sageraea laurifolia (Grah.) Blatt.*

Sr. No.	Local Vernacular Name	Botanical Name
88	Kinjal	*Terminalia paniculata Roth.*
89	Kinai	*Albizzia procera.*
90	Koker kolinder	*Sterculia guttata.*
91	Kokum	*Garcinia indica*
92	Kosamb /Kashimb	*Schleichera oleosa (Lour.) Oken*
93	Kuda	*Wri htia tinctoria.*
94	Kuda indrajava	*Holarrhena antidysentrica.*
95	Kuda nah	*Tabermemontana heyneana.*
96	Kuda tambata	*Wrightia tomentosa.*
97	Kumbha / Kaubhi	*Careya arborea Roxb.*
98	Kurwei sired	*Hymenodictyon aobovatum.*
99	Kuvati / Kadu kavat	*Hydnocarpus pentandrus (Buch.-Ham.) Oken*
100	Lendo bondara	*Lagerstromia falcata.*
101	Maharuk	*Ailanthus excelsa*
102	Mendshing	*Dolichandiona falcate.*
103	Mirzoli	*Salvadora persica*
104	Moha	*Madhuca latifolia (Roxb.) J.F. Macbr*
105	Moi shemat	*Lannea srandis.*
106	Muchundi	*Trewia polycarpa Benth. & Hook. f.*
107	Murmi	*Aglaia lawii (Wight) C.J. Saldanha ex Ramamoorthy*
108	Nágchafa	*Mesua ferrea.*
109	Nadi Ain-Arjun sadada	*Terminalia arjuna.*
110	Nana	*Lagerstroemioa lanceolata.*
111	Nana	*Lagerstroemia parviflora Roxb*
112	Niver	*Barringtonia recemosa.*
113	Nivar	*Barringtonia acutangula (L.) Gaertn.*
114	Nilgari (Sitadora)	*Eucalyptus citriodora Hook.*
115	Niv	*Neolamerck Chinensis*
116	Otsoal	*Antiaris toxicaria Lesch.*
117	Padali paral	*Stereospermam chednoides.*
118	Pair	*Ficus arnottiana.*
119	Palas	*Butea monosperma.*
120	Panerukh,Kanaol sulad	*Sterculia urens.*
121	Pandhara kuda	*Holarrhena pubescens Wall. ex G. Don*
122	Pandhari Savar	*ceiba petandra (L.) Gaertn.*
123	Pangara	*Erythrina indica.*
124	Pangera	*Erythrina veriegata*
125	Parjambhul lauki	*Olea aioica.*
126	Pat phanas or Ranfunnas	*Artocarpus hirsuta.*
127	Pati	*Celtis timorensis Span.*
128	Petari	*Trewia nudiflora.*
129	Phanas	*Artocarpus integrifolius L. f.*
130	Phanshi	*Carallia brachiata.*
131	Phudgus	*Alseodaphne semicarpifolia.*
132	Pimpal	*Ficus religiosa L.*
133	Putranjiva	*Drypetes roxburghii (Wall.) Hurus.*
134	Ramphal	*Annona reticulata L.*
135	Ran Bhendi (Lal)	*Thespesia populnea (L.) Sol. ex Corrêa*
136	Ran Biba	*Holigarna grahamii Kurz*
137	Rita	*Sapindus laurifolia Vahl*
138	Sag	*Tectona grandis L. f.*
139	Sagargota	*Caesalpiniab bonducella*
140	Savar	*Bombax ceiba*
141	Satwin	*Alstonia scholaris (L.) R. Br.*

Sr. No.	Local Vernacular Name	Botanical Name
142	Sita Ashok	*Saraca asoca*
143	Shivan	*Gmelina arborea Roxb. ex Sm.*
144	Surangi	*Calophyllum innophvllum.*
145	Survada	*Alseodaphne semecarpifolia Nees*
146	Sutavi/ Kate kumbal	*Xantolis tomentosa (Roxb.) Raf.*
147	Tembhurni	*Diospyros embryopteris melanoxylon (Roxb)*
148	Tivar	*Avicenia officinalis*
149	Tiwar	*Sonneratia caseolaris (L.) Engl.*
150	Tirphal	*Zanthoxylum rhetsa(Roxb)*
151	Umbar	*Ficus racemosa L. (Roxb.)*
152	Varas	*Heterophragma quadriloculare Planch.*
153	Wawala	*Holoptelea integrifolia*
154	Wala	*Vetiveria lawsonii*
155	Sisam	*Dalbergia latifolia Roxb.*
156	Vad	*Ficus bengalensis L.*

145. Tree felling permissions to be secured as per the Maharashtra (Urban Areas) Protection and Preservation of Trees Act, 1975 and its subsequent amendments. As the proposed site falls in the Navnagar Vikas Pradhikaran, Sindhudurg, the same will be concerned authority for the felling of trees. As per the EC received for the sub-project, the site has 439 trees. 279 trees are planned to be retained, while the 160 trees are planned to be felled.

146. Sawantwadi forest division has a vast expanse and has documented various faunal species. The proposed site shows presence of common birds like Red Vented Bulbul, Red Whiskered Bulbul, House Crow, Indian Pond Heron, Eurasian Collared Dove, Black Kite, Purple Rumped Sunbird, Indian Golden Oriole and Oriental Magpie Robin. Amongst mammals, Indian Squirrel was present at site. The presence of Langurs was also noted in the surrounding areas. The detailed list of birds and mammals present in the Sawantwadi Forest Division as per the forest department working plan is provided in Appendix 7

147. There were no floral or faunal species reported to be threatened or belonging to the Schedule 1 of Wildlife protection act 1972 and its subsequent amendments at the project site.

148. Principal crops: The following table depicts the data for principal crops in Sindhudurg, as per the District Survey Report, 2017:

	Principal crops[41]							
Tehsils	**Dodamarg**	**Sawantwadi**	**Vengurla**	**Kudal**	**Malvan**	**Kankavali**	**Devgad**	**Vaibhavwadi**
Kharif Crops	35053.6	24263.54	1416538	23842	21547	57036	21890	31400.34
Robi Crops -	-	1041.29	2030	552.23	0	166	350	0918.51
Non Agricultur	249.6	872.8899	12995.1	174.54	417053	333	134.28	2109.16

[41] District Survey Report, Sindhudurg, Maharashtra (2017) https://environmentclearance.nic.in/writereaddata/Online/additionalfile/14_Nov_2017_1655267200Q3I2PMFDistrictSurveyReport.pdf

Principal crops[41]								
Tehsils	**Dodamarg**	**Sawantwadi**	**Vengurla**	**Kudal**	**Malvan**	**Kankavali**	**Devgad**	**Vaibhavwadi**
al land								
Waste Land	1435.83	5166.376	149113	119	65.38	0	682.33	119.9739
Saline soil	9501.55	28049.08	611320	12749	152966	10059	32951	5016.933
Forest land	4184.66	8120.883	71744.2	11775	305	9047	0	2111.512
Playground	253	5.045	2400	2.8	0	10000	0	0
Encroached area	8.86	1.268	46000	0	0	180	0	0

Source: District Survey Report, Sindhudurg, Maharashtra (2017)

149. **Name of Cereals:** The following table depicts the data for cereals grown in in Sindhudurg, as per the District Survey Report, 2017:

Name of Cereals[42]								
Tehsils	**Dodamarg**	**Sawantwadi**	**Vengurla**	**Kudal**	**Malvan**	**Kankavali**	**Devgad**	**Vaibhavwadi**
Rice	25.5	8283.417	3819.88	17163.1	12672.1	13792	5493.09	484912
Kharif Jowar	0	0	0	0	0	0	0	0
Rabi	0	0	0	0	0	0	0	0
Jowar								
Wheat	0	0	0	0	0	0	0	0
Moong	0	72.65	119.2	0	258.75	128	66.53	513500
Sugar cane	0	106	0	0	0	2.6	2.6	490000

Source: District Survey Report, Sindhudurg, Maharashtra (2017)

150. **District Cereals:**

District Cereals[43]		
1	Rice	546161.13
2	Kharif Jowar	0
3	Rabi Jowar	0
4	Wheat	0
5	Moong	514145.13
6	Sugar cane	490178.6
7	Cotton	0
8	Others	134213.1961

[42] District Survey Report, Sindhudurg, Maharashtra (2017) https://environmentclearance.nic.in/writereaddata/Online/additionalfile/14_Nov_2017_1655267200Q3I2PMFDistrictSurveyReport.pdf

[43] District Survey Report, Sindhudurg, Maharashtra (2017) https://environmentclearance.nic.in/writereaddata/Online/additionalfile/14_Nov_2017_1655267200Q3I2PMFDistrictSurveyReport.pdf

Source: District Survey Report, Sindhudurg, Maharashtra (2017)

151. **Mangroves**: The district mangrove cover for Sindhudurg, as per the India State of Forest Report 2021 is given in the following table:

Table 27: District-wise Mangrove Cover[44]

District	Geographical Area	2021 Assessment				Change wrt 2019 Assessment
		Very dense***	Moderately dense**	Open forest*	Total	
Sindhudurg	5207	0	5	7.07	12.07	-0.12

Source- India State of Forest Report- 2021

C. Social Environment

152. **Demographic profile**

153. **Brief history of Sindhudurg[45]:** The name of the district has been adopted form the famous sea fort of Sindhudurg. This was built by Shivaji Maharaj near Malwan and it literally means 'Sea Fort'. Its construction started on November 25, 1664 and after 3 years it was completed in such a fashion that it could not be seen easily by the enemy coming from the Arabian Sea.

154. Sindhudurg district is the southern part of the greater tract known as the 'Konkan' which is historically famous for its long coastline and safe harbors. With the reorganization of the states in 1956, the district was included in the Bombay state and since 1960, it forms a part of Maharashtra. Sindhudurg district was earlier a part of the Ratnagiri district. For administrative convenience and industrial and agricultural development Ratnagiri district was divided into Ratnagiri and Sindhudurg with effect from 1st May,1981. Sindhudurg district now comprises of eight tahsils of Sawantwadi, Kudal, Vengurla, Malvan, Devgad, Kankavli, Vaibhavwadi and Dodamarg.

155. **Sindhudurg District Highlight:**

- Sindhudurg district is spread over an area of around 5,207 sq. kms.
- The population of the district is 8,68,825 as per census of 2001. The modern township of Sindhudurg Nagari is the headquarters of Sindhudurg district.
- The district is surrounded by the Arabian Sea on the west, Kolhapur on the east, the Belgaum District (Karnataka state) and Goa on the South and the Ratnagiri district on the North.
- Sindhudurg being a coastal district, the climate is generally moist and humid and the temperature variations during the day and throughout the seasons are not large.
- Sindhudurg is accessible by road on the NH-17 which passes through major towns of Kankavli, Kudal and Sawantwadi or by the picturesque journey on the Konkan Railway which stops at Kankavli, Sindhudurg, Kudal and Sawantwadi.

[44] Annual Administration Report for the Year 2020-2021, Forest Department, Government of Maharashtra, https://mahaforest.gov.in/writereaddata/report_file/1675161871AAR2020-21.pdf

[45] National Informatics Centre (https://sindhudurg.nic.in/en/about_district/history/)

- The nearest airports are at Chipi (Sindhudurg), Mopa (Goa) and Dabolim (Goa).

156. **Villages in near proposed site:** The proposed site is located in administrative jurisdiction of Village Ranbambuli of Kudal Taluk. Within 15 kms radius of the Ranbambuli are villages- Dikval, Pendur, Kudal, Nirukhe, Oros (dist. headquarters).

157. **Socio-economic Profile of Sindhudurg:** The socio-economic profile of the project is studied and analysed based on the Census of India, 2011. According to the 2001 census the State has 35 districts spread over 6 divisions in Maharashtra. Sindhudurg District has 7 tahsils in 1991 and in 2001 a new tahsil Dodamarg was created by the transfer of 56 villages from Sawantwadi tahsil. Thus, Sindhudurg presently has 5 towns, 8 tahsils and 743 villages spread over Devgad (97), Vaibhavvadi (59), Kankavli (104), Malwan (135), Vengurla (83), Kudal (124), Sawantwadi (85) and Dodamarg (56) tahsils.

Table 28: Abstract population information from Primary Census Abstract, 2011[46]

Primary Census Abstract, 2011 Maharashtra, Sindhudurg District, Kudal Sub-District No. of households: 38,128				
S. No.	**Indicators**	**Persons**	**Males**	**Females**
1	Population	1,55,624	77,159	78,465
2	Child Population	12,918	6,784	6,134
3	Scheduled Castes	10,398	5,020	5,378
4	Scheduled Tribes	1,879	985	894
5	Literate	1,22,484	64,347	58,137
6	Illiterate	33,140	12,812	20,328
7	Workers	65,497	43,374	22,123
8	Non-Workers	90,127	33,785	56,342

158. Among the 8 tahsils of Sindhudurg district, Kudal tahsil (152,939) is the most populous. The highest urban growth rate of 17.6 percent registered by Kudal tahsil. Rural growth rates are above the district average in four tahsils including Kudal. In urban areas Kudal has below urban district average (30.4 percent). The highest urban growth rate of 17.6 percent registered by Kudal tahsil.

159. Kudal Census Town (972) are having sex ratio below the district average. The Kudal C.D. Block has lower sex ratio (923) than rural district average. According to Scheduled Tribes population Kudal tahsil have the highest percentage i.e. (0.9 percent). The Kudal C.D. Block also has the highest % in Scheduled Tribes population i.e. (1.0 percent). By the size of employment generated, fishing is the largest occupation in the district. Kudal, is also known for handloom and weaving. The district is well known for the “Alphonso” and “Raiwal” varieties of mangoes cashew nut plantations are mainly grown in Kudal, among other tahsils.

[46] Primary census abstract indicators search up to town / village level (https://censusindia.gov.in/census.website/data/data-visualizations/PopulationSearch_PCA_Indicators)

160. **Socio-economic Profile of the study area:** The proposed site is located in administrative jurisdiction of Village Ranbambuli of Kudal Taluka. The socio-economic profile of Ranbambuli is discussed in detail, in the upcoming section.

161. **Proportion of the Scheduled Castes & Scheduled Tribes to the total population by ranges in Ranbambuli village of Sindhudurg[47]**

Range of Scheduled Castes population (percentages): 5-10%
Range of Scheduled Tribes population (percentages): 5-10%

162. **Primary Census Abstract, 2001[48]**

Table 29: Data pertaining to population in Ranbambuli village of Sindhudurg district.

Location Code number	Name of Village	Area Of Village İn hectares	Number Of households	Total population (İncluding Institutional and houseless population)			Population İn the age-group 0-6		
				Persons	Males	Females	Persons	Males	Females
4151300	Ranbambuli	775.0	351	1,461	710	751	215	107	108

Table 30: Data showing Illiterates, total workers and main workers population in Ranbambuli village of Sindhudurg district.

Location code number	Name of Village	Illiterates			Total workers			Main workers		
		Persons	Males	Females	Persons	Males	Females	Persons	Males	Females
4151300	Ranbambuli	434	150	284	728	415	313	450	339	111

Table 31: Data showing SC, ST & Literates population in Ranbambuli village of Sindhudurg district**.**

Scheduled Castes population			Scheduled Tribes population			Literates		
Persons	Males	Females	Persons	Males	Females	Persons	Males	Females
89	47	42	119	56	63	1,027	560	467

Table 32: Data showing quantum of Industrial category of main workers in Ranbambuli village of Sindhudurg district.

Industrial category of main workers											
Cultivators			Agricultural laborers			Household industry workers			Other workers		
Persons	Males	Females	Persons	Males	Females	Persons	Males	Females	Persons	Males	Females
147	116	31	51	41	10	19	12	7	233	170	63

D. As is Assessment

163. **Status of Regulatory Clearances and Safeguard Management Practices**

- The facility was established in 1998 and hence the mandate of preparation of Environment Report is not applicable to the current facility.

[47] APPENDIX VII B - Village Directory, DISTRICT CENSUS HANDBOOK, Part - A & B, SINDHUDURG DISTRICT, 2001 (https://censusindia.gov.in/nada/index.php/catalog/27819/download/30988/DH_27_2001_SIN.pdf)
[48] PRIMARY CENSUS ABSTRACT, DISTRICT CENSUS HANDBOOK, Part - A & B, SINDHUDURG DISTRICT, 2001 (https://censusindia.gov.in/nada/index.php/catalog/27819/download/30988/DH_27_2001_SIN.pdf)

- The biomedical waste from the Hospital and College facility is disposed to the Maharashtra State Pollution Control board authorized vendor M/s Govind Biomedical Corporation, Sindhudurg. Documentation and reporting of record of biomedical waste generation is done as per BMW rules.
- No objection certificate is present from the fire authority.
- Currently the water supply to the Hospital and College facilities is through Maharashtra Jeevan Pradhikaran, Sindhudurg. Dhabachi Wadi Medium irrigation project is designed to supply water to the Pradhikaran area till 2070. The live storage capacity of water in the reservoir is 2.421 mcm (million cubic meter).
- Septic tanks are used for the sewage. Discharge of Wastewater/sewage is currently done by suction vans on ad-hoc basis.
- Land ownership documents are in the name of project authority (Dean)
- The area does not face issue related to the air or noise pollution as there is good green cover in the surrounding areas.
- Waste management in the area is a concern to the locals and it was suggested that specific attention should be given to the bio-medical waste management by the hospital.

V. PUBLIC CONSULTATION AND DISCLOSURE

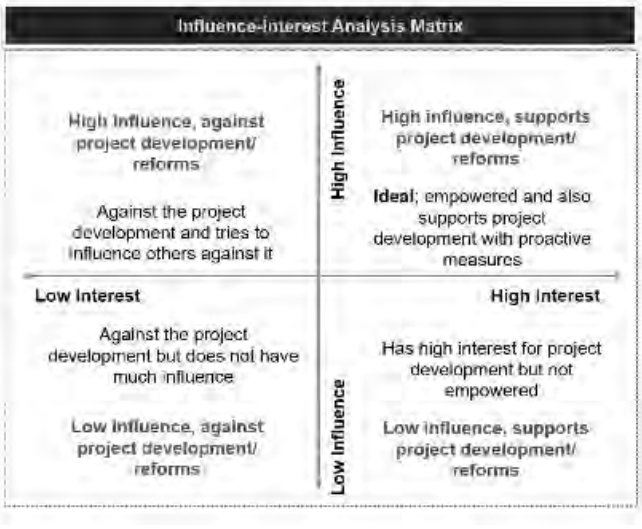
A. Overview

164. ADB's SPS (2009) requires projects to carry out meaningful public consultation on an ongoing basis. All sub-projects will need to be community involved, and as such consultation should be built into and central to the sub-project design process from initiation onwards. However, meaningful consultation per ADB SPS 2009 requirements is also mandatory for those subprojects which are Category 'B' and will need to be documented in the IEE report. Public consultation for these subprojects will: (i) begin early and carry on throughout the project cycle; (ii) provide timely disclosure of relevant information, understandable and accessible to people; (iii) ensure a free and un-intimidated atmosphere without coercion; (iv) ensure gender inclusiveness tailored to the needs of disadvantaged and vulnerable groups; and (v) enable the incorporation of all relevant views of affected people, and stakeholders into project decision making, mitigation measures, the sharing of development benefits and opportunities and implementation issues. It will then need to continue throughout the project implementation. MEDD will ensure that the communications strategies and consultations plan will refer to the requirements of ADB's SPS 2009:

I. Disclosure of relevant information that is understandable and accessible to affected people.
II. Consultation undertaken in an atmosphere free of intimidation or coercion.
III. Process of consultation that is gender inclusive and responsive, fit to the needs of disadvantaged and vulnerability groups.

165. For Category 'B' subprojects consultations at different stages may take place in the form of public meetings in villages, focus groups e.g., for women, or one-on-one consultations with landowners, adjacent residents etc. Consultations for each subproject must ensure a representative percentage of the local community are consulted, as well as gender balance and representation of vulnerable groups. If that is not possible at a public consultation a separate gender focus group must be held to ensure the concerns of women and other identified vulnerable groups (e.g., below poverty line) are heard. Meaningful consultations will inform participants of details of the subproject and the possible environmental and social impacts, collect views and opinions from affected persons, and ensure the subproject responds to them. The dates, attendees (gender details, details of any participants' vulnerabilities, topics covered, and views and opinions raised should be recorded and included

Figure 22: Stakeholder Influence-Interest Analysis Matrix



in the Environment Monitoring Reports (EMR) report, along with details of how MEDD /the subproject has responded to them throughout the pre-construction, construction and operation stages.

166. A Stakeholder is anyone who can affect or is affected by an organization, strategy or project. They can be internal or external to an organization executing the project work. So, the process of systematically gathering and analyzing qualitative information to determine whose interest and power should be considered in the planning stage of the project is called Stakeholder analysis. The analysis focuses on the stakeholder characteristics such as knowledge of project, interest related to project, position for or against to project, potential alliances with other stakeholders and ability to affect the project initiation or execution. Stakeholder analysis assists in this prioritization by assessing the significance of the project to each stakeholder group from their perspective, and vice versa.

167. Key potential stakeholders as identified during preparation of the IEE are listed in Table 33. Any others stakeholder if identified during implementation of sub-project should be brought into the process in the future.

Table 33: Potential Stakeholders with influence-interest matrix

S.I. No	Stakeholder	Phase	Interest	Potential impact of this project on stakeholder (negligible, minor, moderate, high) Interest	Level of influence of stakeholder on this project (negligible, minor, moderate, high) Power
Local Government					
i.	Medical Education and Drugs Department (MEDD),	Project preparatory phase, pre-construction phase, construction phase, operation phase, (defined in this table as “all phases”)	As the Executing agency and key Implementing Agency, all the Sub-Projects development and operation are of a direct concern for MEDD.	High	High
i.	Pollution Control Board	All phases	Regulator for green permits for establishing the project, pollution prevention, safeguard implementation, biomedical waste management, pollution control etc.	Moderate	High
i.	Department of Forest	Preconstruction and Construction Phase	Permission for felling of trees	Minor	High

S.I. No	Stakeholder	Phase	Interest	Potential impact of this project on stakeholder (negligible, minor, moderate, high) Interest	Level of influence of stakeholder on this project (negligible, minor, moderate, high) Power
			Selection of species for green area development		
v.	Urban Local Bodies (Navnagar Vikas Pradhikaran)	All Phases	Such entities will be potentially responsible for the supply of water resources for the proposed project, drainage connectivity, permits for the building layout and safety plans, municipal waste management etc.	Moderate	High
v.	Terminal wastewater treatment facility (if applicable later since no such facility is available currently in the subproject area)	Operations phase	In case the treated wastewater discharged in the public drainage which is connected to terminal wastewater treatment facility for final treatment.	Moderate	Moderate
i.	Groundwater authority/ Water resource department	Construction and operations	Water supply and permits for abstraction of water for construction works as well as during operations.	High	High
i.	Maharashtra State Electricity Board (MSEB) or other entity supplying electricity	All Phases	Supply of electricity	Moderate	High
i.	State fire department/Fire brigade	Operations phase	Responsible for firefighting and fire prevention in the building and issuing inspection certificate after conducting fire audits.	High	High

S.I. No	Stakeholder	Phase	Interest	Potential impact of this project on stakeholder (negligible, minor, moderate, high) Interest	Level of influence of stakeholder on this project (negligible, minor, moderate, high) Power
x.	Department of labor welfare	Construction Phase	Fair compensation, working hours, prohibition of child/forced labor	High	High
x.	Revenue Department	Preconstruction and Construction Phase	Facilitating discussion with affected Potential Project Affected Peoples; dissemination of information about the project at local level; fixation of entitlement for compensation	Moderate	High
Private sector					
i.	Equipment suppliers	Operation	On-time payment for equipment installation, maintenance of equipment	High	Minor
i.	Construction contractors	Construction	Fair wage, safe and healthy working environment	High	High
i.	Common Bio-medical Waste Treatment Facility (CBWTF)[49]	Operations Phase	On time collection of Biomedical Waste as well as payment for services rendered	High	High
v.	Contracted Workers (Cleaning staff, security, maintenance, etc.)	Operations Phase	Fair wage, safe and healthy working environment	High	Minor
Employee					
v.	Hospital Employees	Operations	Fair compensation, work-life balance, social security/benefits, adequate provisions for mitigation of Occupational Hazards	High	High
i.	Construction workers	Construction	Fair compensation, temporary facilities to reside, acceptable	High	High

[49] M/s. Shree Govind Bio-medical Corporation (Kudal), a Maharashtra State Pollution Control Board authorized CBWTF is involved in Biomedical Waste management (collection-Transportation-Disposal) in the region

S.I. No	Stakeholder	Phase	Interest	Potential impact of this project on stakeholder (negligible, minor, moderate, high) Interest	Level of influence of stakeholder on this project (negligible, minor, moderate, high) Power
			hygiene in workplace, access to basic amenities during construction phase		
Community					
i.	Patients, Project Affected Person (if applicable) Local community, community staying in Residential areas near proposed facility	Construction, Operation phase	Loss of assets/livelihood, Nuisance from pollution (Air pollution, traffic congestion, noise pollution, threat from improper management of waste and effluent)	Moderate	Moderate
i.	Press/social media and Civil Society Organizations/ Worker's Unions	All phases	Identify interest, express and share opinions	Moderate	Moderate

168. The stakeholder engagement and communication about the proposed sub-projects should ensure continuous communication and coordination with the government departments, utility service providers, workers, community etc. throughout the project lifecycle. Stakeholder engagement is an ongoing process and to be scaled to the project risk and phase. It also includes disclosure and dissemination of information and participation of those interested or/and affected by the project, grievance redress mechanism, and ongoing reporting to concerned public and communities.

169. In case of situations like COVID-19 pandemic, in undertaking any face to face consultations it will need to be ensured that national COVID-19 requirements and WHO meeting and hygiene guidelines are followed, including awareness raising activities for those undertaking consultations, minimizing travel requirements, undertaking screening health checks to confirm those going in the field are not symptomatic, providing them with adequate supplies of personal hand sanitizer and masks, ensuring social distancing of at least 1m, that masks are worn at all times during consultations, and that a register of all contacts is maintained. If public meetings are not possible to convene due to COVID-19 restrictions, then the same representation should be achieved through door-to-door

consultations within communities. Consultations should also convey how MEDD will ensure community health and safety during construction.

170. Aside from ADB's SPS 2009, MEDD will also ensure that the relevant national requirements in the Right to Information Act 2005 will be complied with. MEDD will ensure to make a list of the participants of the consultation process including the summary of the concerns/ issues they raised and suggestions on project design, mitigation measures and monitoring, employment opportunities, and other relevant issues on implementation. Participation of women, if any, will be highlighted as well as the date and location of the consultations.

B. Outcome of Stakeholder Consultation carried out during preparation of IEE

171. The stakeholder engagement and communication about the proposed sub-projects should ensure continuous communication and coordination with the government departments, utility service providers, workers, community etc. throughout the project lifecycle. Stakeholder engagement is an ongoing process and to be scaled to the project risk and phase. It also includes disclosure and dissemination of information and participation of those interested or/and affected by the project, grievance redress mechanism, and ongoing reporting to concerned public and communities. The outcome of the stakeholder consultations carried out during the preparation of this IEE Report are presented in Table 34. The photographs captured during the consultation are provided in Figure 23.

Table 34: Outcome of Stakeholder Consultations carried out during preparation of IEE

S. No.	Department	Person Contacted and Designation	Date of Consultation	Outcome of the discussion
1.	Sindhudurg Medical College and Hospital Authority	Mr. Manoj Joshi, Dean	06 March 2024	• Prevailing institutional arrangement for waste and effluent management • Provided information on land ownership. Conveyed that the landownership has been transferred from the Civil Hospital to Dean, Medical College and the Dean is responsible for complete management of the campus. • Provided information on regulatory compliances and arrangement for BMW Management and management of other wastes – effluent and sewage. • For septic tank cleaning, the machineries are procured on rental basis from the nearby Nagar panchayat viz. Malvan, Kudal, Kankavali and Vengurla. • An e-auction is conducted by the Admin Department office for the scrap collection. E-waste collection is also a part same process.
2.		Anil Kumar Desai (Chief Pharmacy Officer)	05 March 2024	
3.	Public Works Department	Ajay Kumar Sarvagod (Executive Engineer), Vinayak Joshi (Sub Divisional Officer), Suraj Giri (Junior Engineer)	04 March 2024	• Discussion regarding the overall development to be made at the college and hospital as per the DBR. • Provided information about ownership of the land and chronology of land transfer. • Accompanied during the site visit and shared information regarding existing structures to be demolished as per the proposed master plan. • Facilitated consultation with different stakeholders.
4.	Divisional Forest Department, Sawantwadi	Gopal Nage (Surveyor), Satyajit Sawant (Accountant)	06 March 2024	• Discussion was carried out regarding presence of any forested areas in the vicinity of the study area. • Discussion was conducted regarding documentation of flora and fauna in the region. Information related to the presence of biodiversity in the Sawantwadi forest division was discussed.
5.	Maharashtra Jeevan Pradhikaran, Sindhudurg	Mr. Sanjay Patil (Department Engineer)	05 March 2024	• Discussions regarding the water availability was carried out. • Specific details regarding the medium irrigation project at Dhabachi Wadi/ Sindhudurg Nagari lake and the potential for water supply was discussed. • Details about the sewage and drainage management systems in the Pradhikaran areas were shared.

S. No.	Department	Person Contacted and Designation	Date of Consultation	Outcome of the discussion
6.	Navnagar Vikas Pradhikaran	Rushikesh Pangale (Clerk)	05 March 2024	• Discussions were conducted regarding the fire hazard preparedness of the Navnagar Vikar Pradhikaran. • Discussions were conducted regarding presence of nearest fire brigade and immediate response actions planned in case of fire hazard.
7.	Design Basis Report (DBR) team/ Project Management Consultant	Azhar Indikar	07 March 2024	• Discussion was conducted regarding the understanding of the Masterplan. • A checklist was shared regarding requirement of clarity on Total budget, ground coverage, STP design and capacity. • Discussion was conducted regarding the bifurcation of sewage and effluent water from each building. • Tree data mapped during the Total Station Survey (TSS).
8.	Gram Panchayat, Ranbambuli	Community Representatives (Participants List attached as **Appendix 8**.)	07 March 2024	• Existing environment conditions were discussed. • The main source of water for household consumption and agriculture is ground water i.e. through bore wells or wells. Water table is around 15 to 150 feet. The water quality is good and safe for drinking purposes. • The water supply in the collectorate is through Dhabachi Wadi Medium irrigation project. • The area does not face issue related to the air or noise pollution as there is good green cover in the surrounding areas. • Waste management in the area is a concern to the locals and it was suggested that specific attention should be given to the bio-medical waste management by the hospital.
9.	Gram Panchayat, Oros Budruk	Community Representatives (Participants List attached as **Appendix 8**.)	07 March 2024	

Figure 23: Stakeholder Consultations carried out during the preparation of IEE

Consultation with Maharashtra Jeevan Pradhikaran, Sindhudurg

Consultation with Divisional Forest Department, Sawantwadi

Consultation with Dean along with PWD Representative

Meeting with community representatives of Oros Budruk Gram Panchayat

Meeting with community representatives at Ranbambuli Gram Panchayat

VI. ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

172. The proposed sub-project will be developed by demolition of existing structures. In consideration of prevailing environmental condition, this chapter assesses the nature, type, and magnitude of the potential impacts on the various environmental components i.e., physical, biological and social environment likely associated with proposed development. In commensurate with nature and type of impact on various environmental component the chapter suggests mitigation measures to avoid, reduce or alleviate potential negative impacts and enhance positive ones throughout various sub-project phases.

173. The impacts on the environment can be potential direct, indirect, cumulative, and induced impacts and risks to physical, biological, socioeconomic (including impacts on livelihood through environmental media, health and safety, vulnerable groups, and gender issues), and physical cultural resources in the context of the project's area of influence. Direct impacts are those that are directly attributable to the sub-project, whereas Indirect impacts are those that are indirectly generated as well as altered patterns of social and economic development.

174. Considering the siting, type, and scale of the sub-project, it can be fairly stated that the key potential impacts during demolition of existing structures, construction as well operation phase of the sub-project are likely to be primarily limited within sub-project footfall area. The sub-project's area of influence for direct impact has been considered as 500m around the project location, while a 10 km radius around the site location is considered for indirect impact assessment towards framing up of corresponding mitigation measure. In addition, there will also be an impact due to transportation of construction materials through trucks during construction phase, and increased traffic during hospital operation and transportation of BMW during operation phase.

175. The impacts on the various environmental and social components were assessed considering following stages of the subproject planning and implementation:

- Design phase
- Pre-construction phase
- Construction phase
- Operating phase

176. The proposed mitigation measures should be implemented alongside sound management practices and well-conceived engineering designs, construction techniques, and operational procedures. It is imperative that personnel are adequately trained and equipped to manage environmental issues at the site and effectively execute and monitor these protective measures.

A. Design Phase

177. The sub-project site is not located in any legally protected area, wetland, cultural heritage site, CRZ/Mangrove, Estuarine, important biodiversity habitat etc. As a result, no adverse effects on rare, endangered, or threatened species or habitats are expected. Compliance to Environmental Guidelines and Criteria for Subproject Selection under the program is furnished below-

S. No	Environmental Guidelines and Criteria for Subproject Selection under the program	Whether complied with stipulated requirements
a)	Design and selection of subprojects will consider the input from public consultations if any	Yes
b)	All components involving activities included in the ADB Prohibited Investment Activities List must be excluded from the Program.	Yes
c)	All components/activities that trigger environment category A (e.g. components/activities with significant adverse environmental impacts that are irreversible, diverse, or unprecedented) must be excluded from the Program	Yes
d)	Components/activities that result in the significant conversion or degradation of natural habitat or which are within a critical habitat[50] must be excluded from the Program.	Yes
e)	no subproject will be located in or encroach upon legally protected areas including national parks, wildlife sanctuaries, conservation/elephant/tiger reserves, forest land (reserved and protected forest), ecologically sensitive areas, ecologically sensitive zones, Coastal Regulation Zones, and Ramsar sites etc;	Yes
f)	sub-project components will not be located in forest land (other than reserved and protected forest) if a significant number of trees are required to be cut or any damage is envisaged to any rare or endangered species present in the land parcel.	Yes
g)	no subproject will be located in or encroach upon areas that have been identified by MoEFCC or State Government or expert institutions under the GoI /GoM like Wildlife Institute of India (WII) as potential or priority habitats/clusters for critically endangered species such as Great Indian Bustard, Lesser Florican etc. unless it has been clearly demonstrated to ADB through an ecological assessment undertaken by an external expert, in consultation with relevant biodiversity	Yes

[50] As described in ADB's Safeguard Policy Statement (2009), critical habitat is a subset of both natural and modified habitat that deserves particular attention. Critical habitat includes areas with high biodiversity value, including habitat required for the survival of critically endangered or endangered species; areas having special significance for endemic or restricted-range species; sites that are critical for the survival of migratory species; areas supporting globally significant concentrations or numbers of individuals of congregatory species; areas with unique assemblages of species or that are associated with key evolutionary processes or provide key ecosystem services; and areas having biodiversity of significant social, economic, or cultural importance to local communities. Critical habitats include those areas either legally protected or officially proposed for protection, such as areas that meet the criteria of the World Conservation Union classification, the Ramsar List of Wetlands of International Importance, and the United Nations Educational, Scientific, and Cultural Organization's world natural heritage sites

S. No	Environmental Guidelines and Criteria for Subproject Selection under the program	Whether complied with stipulated requirements
	stakeholders, that the program activity will not have significant adverse impacts on the ecology of the area.	
h)	no sub project will be located in or encroach upon other internationally or nationally recognized biodiversity sites including key biodiversity areas, important bird areas, wildlife corridors.	Yes
i)	no subproject will result in significant damage to physical cultural resources or require any physical cultural resources to be removed from their current location	Yes
j)	no subproject will be located in or encroach upon internationally or nationally recognized cultural, archaeological or heritage sites including ASI and state protected monuments and their prohibited, regulated or controlled areas as are defined by the relevant statutes.	Yes
k)	environmental screening of the subprojects will be done using the applicable rapid environmental assessment (REA) checklist	Yes
l)	subprojects which have been categorized as 'B' for environment based on SPS 2009 will not be taken up unless assessed in accordance with Safeguards Requirements 1 and confirmed by ADB following review and clearance of the IEE report; and	Yes (to be confirmed further when IEE is cleared)
m)	all necessary national and local government approvals and/or clearances (if required) will have been obtained for the subproject and shared with ADB prior to implementation.	EC and other statutory clearances will be obtained as applicable prior to commencement of construction works. Loan amount shall be disbursed only after all requisite clearances have been obtained
n)	No sub-projects will be located on flood plains or reclaimed water bodies or wetlands. The sub projects will be located above the high flood level of that region.	Yes
o)	Sub-Projects will not be located in areas of social conflicts.	Yes

178. The potential environmental impacts anticipated during the pre-construction phase are mostly the result of the design and location. The key anticipated impacts during design phase are as follows:

179. **Siting of Sub-Project:**

180. **Impacts:** Since the project operations will occur within the designated project site acquired for the development of the Government Medical College, Hospital, and allied buildings, there will be no encroachment upon any existing physical infrastructure. Information regarding private properties or encroachments will be updated in the social safeguards report. In addition to that, a discussion with the locals with local administration is going on to determine the access path from the main road through the proposed facility/along it's periphery.

181. Furthermore, there are no archaeological sites of significance in the vicinity of the subproject facilities. The site is accessible via pre-existing road networks, eliminating the necessity for constructing major new access roads. Consequently, there are no severe adverse effects anticipated on the physical environment attributable to the subproject's location.

182. Minor effects on the landscape and visual aspects are expected as a result of the demolition of existing and construction of new structures. Nonetheless, these consequences will be enduring, yet they will be kept to a minimum as the facilities will be situated within the predefined zones designated for the Government Medical College, Hospital, and allied buildings.

183. The proposed sub-project interventions will include demolition of existing structures, construction of buildings and associated infrastructures. The subproject is governed by the local authorities and follow the guidelines set by the Maharashtra Regional and Town Planning (MRTP) Act and the Maharashtra Municipal Corporation Act. In order to obtain approval for construction, it is mandatory that all new buildings adhere to building regulations, urban development blueprints, architectural directives, and ensuring compliance with concerned authorities' prerequisites. This guarantees that construction conforms to established design standards and addresses issues such as waste management, sewage, and sanitation. Consequently, there are no adverse consequences anticipated due to the subproject's design. The Government of Maharashtra will take the necessary steps to obtain all required government permits in the pre-construction stage.

184. The building bye laws followed for the design considerations of the proposed sub-project are "The Maharashtra Regional and Town Planning Act 1966"[51] and "Maharashtra Act No. XXXII of 2017"[52].

185. **Mitigation Measure:** Prior to site preparation or construction, necessary consent/permission (such as Environmental Clearance, tree felling approval from concerned authority, permission for water extraction from concerned authority for abstraction of ground/surface water etc.). Minimization of tree cutting by identifying the areas to be retained as green or open areas. The MEDD/Contractor should ensure that all essential government permits are obtained prior to site preparation or construction during the pre-construction phase.

186. **Design Consideration for Climate change:**

[51] https://mmrda.maharashtra.gov.in/documents/10180/6868243/MRTP+act+1966+Modified+upto+26+th+nov+2015.pdf/d87e0cb2-1674-406a-af50-87e36471509d?version=1.0

[52] http://dtp.maharashtra.gov.in/sites/default/files/3.mrtpact%20150 17.aspx_.pdf

187. **Impacts:** Failure to considering climate change parameters during design stage of the project can have several significant impacts, including:

- **Increased Energy Costs:** Buildings designed without accounting for future climate conditions may require more energy for heating or cooling. This can lead to higher utility bills for occupants, making the building less cost-effective to operate.
- **Decreased Comfort:** Inadequate insulation and ventilation can result in uncomfortable indoor temperatures, making it less pleasant for occupants. This can impact productivity and overall well-being.
- **Structural Vulnerability:** Extreme weather events like heavy rains and floods are becoming more frequent and severe due to climate change. Buildings that aren't designed to withstand these conditions may be structurally vulnerable, leading to damage or safety risks. And can also lead to reduced longevity, the buildings may deteriorate more quickly.
- **Environmental Impact:** Energy-inefficient buildings contribute to higher greenhouse gas emissions.
- **Health Concerns:** Poorly designed buildings can have indoor air quality issues, leading to health problems for occupants. This can include mould growth due to moisture infiltration or inadequate ventilation.

188. **Mitigation Measures:**

- Adaptation requirements for climate change in the design for this subproject and specifications for the climate change resilient factors into the design of buildings are to be considered.
- To address the challenges posed by climate change, the subproject's design incorporated adaptation measures. Furthermore, specifications for integrating climate-resilient features into the design of the buildings were carefully considered, like Climate responsive Architecture with integration of day light and electric light, thermal comfort, ventilation etc[53].
- **Green Building**: The Hospital Building along with its allied facilities would be Indian Green Building Council (IGBC) Healthcare Platinum certified.
- To mitigate the adverse effects of climate change, it is imperative to select construction materials with lower carbon footprint. An effective approach involves favouring alternative materials over conventional ones, with a particular emphasis on those that possess a significantly lower carbon footprint. For instance, the exploration of options such as fly ash AAC (Autoclaved Aerated Concrete) blocks or the incorporation of industrial waste or by-products as viable building materials stands as a noteworthy strategy. This approach substantially reduces greenhouse gas emissions associated with construction activities. The amount of energy to be saved with climate resilient and passive structures against the conventional requirement is 21.66% in the total energy consumption. This value has been calculated by PMC as per the annual energy consumption based on EBC 2017 Whole Building Performance Method. It is imperative to consider building design considerations tailored specifically for floodplain areas.
- Opting for materials sourced in close proximity to the construction site serves a dual purpose. It not only minimizes fuel consumption linked to transportation but also mitigates the associated greenhouse gas emissions. By favouring local sourcing, a

[53] DBR, Sindhudurg

project can significantly curtail its carbon footprint while concurrently fostering regional economic sustainability.

- The Hospital Building, as well as its allied facilities, would be IGBC-Healthcare Platinum certified. In addition, all additional campus buildings would be accredited according to the relevant IGBC Platinum certification. Pre-certification for green building would be obtained when needed. ECBC 2017 (as revised as of date) norms would also be followed, and ECBC certification would be obtained as a result.
- The layout of the facilities will be such that the in-patient departments, classrooms and hostel premises are away from the noise generating sources such as road traffic, pumps, DG sets.
- The siting of STP/ETP and temporary storage areas of BMW as far as possible will be away from the hostel and inpatient departments and from the residential areas around the site. Siting of STP/ ETP and waste storage areas will be avoided in the upwind direction of the hostel, in patient department and surrounding residential areas.
- Building layout will be superimposed on the site features to avoid clearing trees from the zones that are not going to be constructed. Minimization of tree cutting by identifying the areas to be retained as green or open areas.
- STP/ETP, waste storage areas etc. will be installed at height above the high flood level as a precautionary measure.
- Acoustic building materials for walls, windows, doors will be proposed based on the assessment of noise levels, if they are anticipated to be beyond the standards.
- Acoustic enclosures will be provided to noise generating sources like DG sets, pumps etc.
- Roof top and in other suitable locations rainwater harvesting structures will be proposed.
- Drainage layout will be well planned and ensured that it leads the runoff to a treatment chamber and reused as much as possible.
- Proper traffic circulation plan along with adequate parking will be ensured.
- In case of open parking areas, possible usage of grasscrete may be expolored
- Adequate provisions will be in place to deal with situation in case of emergency like proper exit path, assembly area, area for water storage for fire emergency etc.

B. Preconstruction Phase

189. **Worker's Camp Siting:**

190. **Impacts:** Poor siting and layout of workers camp (if located outside of proposed area premise) may result in loss of agricultural produce if sited on cultivable land, health hazards to workers and nearby community due to poor hygiene conditions, contamination of surface and ground water bodies if sited near water bodies, local drainage problems, fire, electrical, and other safety risks, and so on.

191. There is one seasonal nala passing within the site. There is a waterbody named Dhabachi Wadi/ Sindhudurg Nagari lake at an aerial distance of 200 m from the sub-project boundary. If proper mitigation measures are not followed, there will be adverse impact on this surface waterbody.

192. **Mitigation Measure:** Prior to the establishment of a worker's camp, the site, layout, and basic facility provision should be carefully prepared by the contractor and approved by the sub-project authority (PMC/Implementing Agency). The location of worker camps should be determined by considering the proximity of residential and sensitive facilities likeschools, existing healthcare centres, religious institutions, forests and waterbodies to the construction site. The minimum distance requirement should be determined based on site-specific factors. The camps should be planned about 500 m (or at a distance as suggested by concerned authority like gram panchayat, forest department, etc.) away from water bodies, residential areas, forest area or any environmentally sensitive areas etc. If the camps are located on the premises of a sub-project, they should be suitably barricaded. Contractors should produce a solid waste (including hazardous waste) and wastewater management plan that includes collection, storage, and disposal, subject to the sub-project Authority's (PMC/Implementing Agency's) evaluation and approval. Air polluting construction sources such as batching plant, crusher etc. shall be located in the downwind direction of residential or environmentally sensitive areas. Prior to site preparation or construction, necessary consent/permission such as labor licenses from Labour Department and labor insurance, etc.) as applicable to the sub-project must be secured. No temporary or permanent constructions to be done on the locations of water bodies (including seasonal) identified within site even if there is no water and these water bodies shall be barricaded.

193. **Utility Shifting:**

194. **Impacts:** Several types of utilities serving local and regional needs may be placed on the proposed sub-project's premises and may need to be relocated/shifted from their current location due to the proposed sub-project's activities. These features may primarily consist of electric wires, water supply/sewerage pipelines, and telephone cables. These may create service disruptions and inconvenience to residents.

195. **Mitigation Measures:**

- Prior to the start of construction, all utilities should be restored. The necessary mitigation measures should be to instruct the relevant owners of these utilities to relocate them before construction begins in order to avoid disruption of local services.
- If there are temporary service delays, the community shall be notified as soon as possible, and alternate supply facilities, such as water tanks or equivalent, must be provided if unavoidable.
- Before beginning construction, the contractor would inspect existing underground utilities such as water supplies, gas pipelines, sewerage lines, and cables to ensure that underground utilities (if any) are not disrupted during construction/excavation operations. If any subsurface utilities are anticipated to be impacted as a result of the construction activity, the contractor shall request authorization from the relevant authority before initiating construction works.
- Underground and/or aboveground utilities such as power lines, water lines, gas lines, oil pipelines (if any) and any communal property resources such as temples, mosques, and so on shall be protected. The concerned authorities shall be notified right away if any utilities are damaged.

- If it is found that AC structures are present during the survey, then the Contractor will prepare a detailed SOP for asbestos handling and management prior to disposal/ handling of the AC structure and shall be approved by the PMC.
- All AC pipes/ structures will be left in situ and untouched, if possible
- In the event, that the asbestos fibers from AC structures were accidentally disturbed/exposed, the contractor should follow Safe disposal provisions as per the USEPA.[54]
- Use of AC materials will be strictly prohibited at site.

196. **Demolition of Existing Buildings**

197. **Impacts:** The existing buildings including the current Girls hostel, ANM/GNM nursing girls hostel, Dean office, Hospital training centre building (Dharamshala building), Staff residential quarters are falling under the proposed building footprint plan. These structures will be demolished in the site preparation stage. Following impacts can be foreseen.
    - During the demolition of the existing structures, moderate, temporary impacts on air quality are foreseen, primarily stemming from fugitive dust generation in the vicinity of the project site.
    - Demolition activities disturb the soil and create airborne dust particles. Wind can carry these particles over considerable distances, impacting air quality in the surrounding area.
    - Transportation of the demolition waste materials can generate dust if not adequately covered.
    - The demolition activity can generate high noise levels that extend beyond the construction site boundaries.

198. **Mitigation Measures:**
    - Use water sprays, dust suppressants, dust screens and wind barriers to control dust emissions from construction activities, material transport, storage, and handling.
    - Covering of the demolition waste while transportation out of the site.
    - A temporary acoustic barrier of adequate height shall be provided on the boundary of the sub-project site to attenuate the noise generated due to the demolition activity.
    - All the construction and demolition waste should be managed as per Construction and Demolition Waste Management Rules, 2016.

199. **Biodiversity:**

200. **Impacts:** The floral diversity of the proposed site contains majorly trees. The site showed presence of sporadic population of shrubs. The proposed site shows presence of dense patch of trees dominated by *Acacia auriculiformis*. Tree felling is envisaged for few numbers.

[54] https://www.epa.gov/asbestos/safe-work-practices

The total number of trees to be felled will be finalised based on the contractor's final design, the necessary permission will be obtained from the concerned department, and compensatory plantation activity will be undertaken. During the site visit for due diligence for IEE preparation, it was observed that there are no endangered or rare species in the subproject area.

201. **Mitigation Measures:**
    - All efforts must be taken to conserve trees and avoid felling to the greatest extent practicable.
    - Disturbance and removal of vegetation must be confined solely to the designated sub-project area where construction of building is sited in the layout (this shall be identified in the design stage itself by superimposing the approved layout on the existing features map of site). Before proceeding with any vegetation clearance or construction work, it is essential to conduct a survey to identify mature, older trees, and to actively consider alternative measures including transplantation to avoid their removal.
    - In the case of any tree felling, prior approval from the competent department should be acquired.
    - Compensatory plantation may be carried out as specified by the competent authority along the area available within subproject premises or any other designated places.
    - A barrier of at least 6 m in height to be installed along the Southwest boundary facing the biodiversity park to avoid the impact of air and noise pollution during the demolition and construction activities.

202. **Securing Necessary Permits:** The permits or Certificates from concerned authorities (i.e., Environmental Clearance, Tree Felling Permissions, water abstraction etc.) as applicable prior to construction to be obtained prior to the start of the construction activity.[55]

203. **Social Impacts:** Impacts, if any at project site and their mitigation will be dealt in social safeguards report.

C. Construction Phase

204. The Construction of 100 seated Government Medical College, 500 bedded hospital and allied buildings facilities with captive Hospital, Academic, girls & boys Hostel facilities and other ancillary requirements includes civil works, hospital complex, Medical College (Academic Block). The construction phase represents a period in which the project directly interfaces with the surrounding environment. In this stage, the construction of medical college, Hospital and other infrastructure will be undertaken.

205. Potential impacts during the construction phase are related to soil erosion, increased noise and dust levels, the generation of liquid and solid waste from the construction site and labor camp, and safety risks to both workers and the local community. There will be no major adverse effects on flora and fauna, as the subproject site mostly consists of open barren land with very few mature trees or vegetation. There are also no known reports of physical

[55] If there is a time gap of one year or more between the baseline done during EC application and start of the construction, then baseline shall again be monitored at the pre-construction phase.

cultural resources in the vicinity of the proposed site; however, a procedure for the chance find will be established as a precautionary measure.

206. The environmental impacts associated with the construction phase are expected to be localized and of short term. These impacts can be effectively mitigated through the implementation of sound construction site management practices. The primary impacts during construction are elaborated below.

207. **Land use, Drainage and Topography:**

208. **Impacts:** The proposed project site is located on a built-up landuse. The existing structures will be demolished for construction of new hospital and medical college. There are no water bodies present inside the sub-project area except for a seasonal stream passing through the site. It is expected that there will be no substantial alteration in land use however, the seasonal stream will be diverted to some extent by not hampering the flow pattern[56].There is a waterbody Dhabachi Wadi/Sindhudurg Nagari lake situated around 200 m from the project site. Nevertheless, due to site preparation activities like land levelling, cutting, and filling, the topography and drainage patterns in the project area may be influenced. However, these impacts are predicted to be confined to specific areas. Therefore, it is advisable to incorporate measures for maintaining proper drainage conditions in the project design to prevent potential issues like localized waterlogging that could create unhygienic conditions or flooding that might affect the surrounding environment.

209. **Mitigation Measures:**

- Site levelling should be done with minimum alteration in contour level as possible while not disturbing the natural drainage system.
- Measures should be in place to avoid the drainage flowing in the nearby waterbody.

210. **Air Quality:**

211. **Impacts:** During the construction phase of the project, moderate, temporary impacts on air quality are foreseen, primarily stemming from fugitive dust generation in the vicinity of the project site. Significant fugitive emissions during the construction phase primarily originated from activities such as vehicular movements, excavation, and levelling operations. Minor elevations in the levels of PM10, PM2.5, nitrogen oxides (Nox), Hydrocarbons (HC), Carbon Monoxide (CO) and Sulfur Dioxide (SO2) are expected due to construction activities and the operation of construction equipment and machinery. It's important to note that these impacts during the construction phase will be confined to specific areas and of a short-term nature. Nevertheless, they have the potential to affect the

[56] Consultation with Public Works Department Team.

nearby residential community. Major anticipated impacts are emitted from the following sources:

- **Construction Activities:** Construction equipment, especially batching plants, Wet Mix Macadam (WMM) plants, and Hot Mix Plant (HMP), can generate dust emissions during material handling, mixing, and transportation processes. These emissions can contain particulate matter (PM10 and PM2.5),Sox, Nox etc. that can degrade air quality.
- Excavation, earthmoving, grading, and demolition activities disturb the soil and create airborne dust particles. Wind can carry these particles over considerable distances, impacting air quality in the surrounding area.
- **Transport of Construction Materials:** The transportation of construction materials to and from the construction site can also generate dust, especially if the materials are not adequately covered or contained.
- **Storage and Handling:** Storing and handling construction materials, particularly fine materials like sand, cement, and aggregates, can lead to dust emissions. Wind and human activities in these storage areas can further exacerbate the problem.
- **New Quarry/Crusher Plants:** The establishment of new quarry/crusher plants can lead to land clearance, dust emissions, and habitat disruption, which can affect air quality.
- **Existing Quarry/Crusher Sites**: Sourcing materials from existing licensed quarry/crusher sites with established environmental safeguards can reduce the environmental impact associated with new operations.
- The nearby settlements especially the school located in adjacent to the boundary towards Southern side may get exposed to the higher air pollution level during construction period.

212. **Mitigation Measures:**

- **CTE/CTO for Construction Equipment:** The installation and operation of construction equipment like batching plants, crushers, WMM plants, and HMM plants often require obtaining Consent to Establish (CTE) and Consent to Operate (CTO) from the local pollution control authorities. These permits ensure compliance with emission standards and best practices to mitigate air quality impacts.
- quarry and mines also require Consent to Establish (CTE) and Consent to Operate (CTO) to ensure that their operations meet air quality standards and environmental regulations. These permissions shall be obtained prior to their establishment and operations and the conditions stipulated in the permission shall be complied to manage the air quality.
- **Dust Control:** Use water sprays, dust suppressants, dust screens and wind barriers to control dust emissions from construction activities, material transport, storage, and handling.
- A temporary dust screen cum noise barrier of adequate height shall be provided on the boundary of the sub-project site, especially towards southern side where there is a school located (as well as residential area) to prevent the generated dust from the construction activity.
- **Emission Controls:** Equip construction vehicles and machinery with emission control technologies like catalytic converters and diesel particulate filters to reduce the release of harmful pollutants.

- **Fuel Efficiency:** Promote the use of energy-efficient equipment and machinery and their regular maintenance to minimize fuel consumption and emissions.
- **Regular Maintenance:** Ensure that construction vehicles and equipment are well-maintained to optimize combustion efficiency and reduce emissions. Ensure all the vehicles should have PUC (Pollution Under Control) certificate.
- **Compliance:** Adhere to air quality regulations and standards and monitor and report emissions as required. All the Construction vehicles and machineries should be regularly maintained to conform to the emission standards stipulated under Environment (Protection) Rules, 1986. All the DG sets will conform to the emission standards as stipulated under Environment (Protection) Rules, 1986[57].
- Batching plants should be located at downwind (as far as possible) direction from the nearest settlement.
- Batching plants will have dust screens at the silos, aggregate batcher, feeder areas of adequate height.
- Only crushers licensed by the PCB should be used along with dust screens around the outlet of crushed aggregates.
- DG sets should be provided with adequate stack height and use of low sulphur diesel as fuel.
- LPG should be used as fuel source in construction camps instead of wood
- Ambient air quality monitoring should be taken up at adequate location environment monitoring plan (To ensure adequacy of safeguard performance, the standards as provided in Appendix 9 should be considered as benchmark)
- Contractor to prepare maintain log book for water sprinkling
- PPE kits shall be provided to workers like goggles and masks.
- The workers shall be made aware of adverse impact of silica and silicosis and motivated to use proper PPE kits.

213. **Noise and Vibration:**

214. **Impacts:** The primary contributors to noise pollution stem from the movement of construction vehicles, the transportation of construction materials to the site, and the noise-generating activities taking place at the construction site. The noise level at the construction site may range from 58 dB(A) to 102 dB(A)[58] depending on the activity. Attenuation of noise level to permissible limits of residential or sensitive zones without acoustic barrier might take more than a kilometre. Specifically, concrete mixing and material handling activities are the principal sources of noise, and these activities are expected to occur consistently throughout the entire construction period. Major anticipated impacts are emitted from the following sources:

    - **Construction Activities:** Construction sites are inherently noisy due to various activities like excavation, demolition, concrete pouring, and the operation of heavy machinery and equipment. These activities can generate high noise levels that extend beyond the construction site boundaries.

[57] https://parivesh.nic.in/writereaddata/ENV/THE%20ENVIRONMENT.pdf

[58]https://www.researchgate.net/publication/43297032_Modeling_Of_Construction_Noise_For_Environmental_Impact_Assessment/link/00463519752398d550000000/download

- A temporary acoustic barrier of adequate height shall be provided on the boundary of the sub-project site to attenuate the noise generated due to the construction activity.
- **Operation of Equipment and Machinery:** Construction vehicles, cranes, loaders, and other equipment often have engines and systems that produce noise during their operation. This noise can be particularly disruptive when equipment is in use for extended periods.
- **Vibration from Heavy Machinery and Equipment:** The operation of large construction machinery, pile drivers, and other equipment can generate ground vibrations. These vibrations may be felt by residents living near the construction site.
- **Vibration from Pile Driving:** Pile driving activities, often used in foundation work, can create significant ground vibrations that can be transmitted through the soil, potentially causing structural damage to nearby buildings and discomfort to residents.

215. **Mitigation Measures:**

- **Noise Barriers:** Erecting noise barriers or sound walls around the construction site to block or reduce noise propagation to be installed.
- **Construction Scheduling:** Carefully plan construction schedules to minimize noisy activities during sensitive hours, such as early mornings and late evenings. Restrict major noise generating activities during night-time 10:00 pm to 6:00 am.
- **Equipment Selection:** Choose construction equipment and machinery that produce lower noise levels and vibrations when possible.
- **Community Engagement:** Maintain open lines of communication with local residents and sensitive receptor facilities to address concerns and provide information about construction activities.
- **Providing PPE's:** Provide personal protective equipment (e.g., Earmuffs) to all workers wherever noise is generated due to machinery operation.
- **Regulatory Compliance:** Adhere to local noise and vibration regulations and standards to ensure compliance.
- Noise monitoring should be taken up at adequate location as per the environment monitoring plan (To ensure adequacy of safeguard performance, the standards as provided in Appendix 9 should be considered as benchmark)
- If activities generating high level of vibration are proposed to be undertaken like blasting (if any) or use of heavy vibrating machines, then it will be required to establish initial data on the structural quality of nearby buildings and implement a vibration monitoring system. This monitoring should begin during the preconstruction phase and continue during activities like blasting or those generating high levels of vibration, if any. Additionally, strategies to mitigate vibration effects, including controlled vibration, reduced blasting charges, and the restoration of buildings if vibration-induced cracks occur, should be integrated into the project plan.

216. **Soil:**

217. **Impacts:** During excavation for construction, the removal of topsoil can result in the loss of fertile and nutrient-rich soil, which is vital for plant growth. This loss can impact future

landscaping, greenery, and soil quality, requiring remediation efforts to restore it for vegetation.

218. Construction activities, especially earthmoving, cut and fill operations, and the presence of stockpiles, can disrupt natural soil stability and increase the risk of soil erosion. Erosion can lead to the displacement of soil particles, negatively affecting the surrounding environment and potentially causing sedimentation in nearby water bodies.

219. The construction phase can introduce contaminants to the soil through various means, including accidental oil or chemical spills, improper disposal of debris, and poor management of wastewater and waste from labor camps. Contaminated soil poses environmental and health risks and may require remediation.

220. The frequent movement of heavy construction vehicles and equipment can lead to soil compaction, reducing soil porosity and impairing its ability to absorb water. This compaction can negatively affect soil fertility and drainage. Additionally, it can impact access and haul roads, causing wear and rutting.

221. **Mitigation Measures:**

- Provision for appropriate storage of topsoil (top 15 cm of soil) in an appropriate way (to ensure that the organic / inorganic properties of soil are retained) should be made and reused for growing vegetation.
- Excavated soil should be reused as much as possible for backfilling, landscaping and for other project areas.
- To prevent seepage into project site soil, store hazardous materials such as diesel and used oil in an isolated room/ covered area with an impervious surface with a chamber to collect spilled oil that can be reused or recycled Spill kits/ spill tray will be used at DG set locations as well.
- Fuel storage and replenishment locations should be kept away from drainage infrastructure and water bodies.
- Filling and transferring oil to and from containers must take place on an impermeable surface.
- To avoid soil contamination Oil-Interceptors will be provided at wash down and refuelling areas. Precautions should be made to avoid changes in soil quality caused by human activities such as dumping of solid and liquid waste from the labor camps on open/ unlined ground surface.
- It is crucial to implement proper soil management practices, erosion control measures, and waste handling protocols to mitigate these adverse effects on soil quality, the environment, and surrounding infrastructure.
- Soil Monitoring shall be undertaken to ensure adequacy of safeguard performance.

222. **Surface and Groundwater:**

223. **Impacts:** During the construction phase, there can be considerable stress placed on local water resources. This stress is primarily a result of increased demand for water to support various construction activities. Construction requires water for tasks such as mixing concrete, dust suppression, and general site maintenance. The increased extraction of water from local sources can lead to a strain on the availability of water in the area, potentially affecting local communities and ecosystems. The modification of natural drainage patterns on the site resulting from excavation and construction activities can lead to altered stormwater runoff. Construction activities can pose a risk of contaminating both surface and groundwater sources in several ways:

- **Fuel and Chemical Spills:** Accidental spills of fuels, oils, or chemicals used in construction machinery and equipment can occur. These spills, if not properly managed, can infiltrate the soil and potentially reach groundwater sources, leading to contamination.
- **Discharge of Wastewater:** There is one seasonal nala passing through the site. Apart from that there is a waterbody named *Dhabachi Wadi or Sindhudurg Nagari lake* at an aerial distance of 200 m from the sub-project boundary. Construction sites and construction camps are likely to generate wastewater and solid waste. If not appropriately treated and disposed of, wastewater can contaminate surface water bodies, such as rivers or streams, and infiltrate into groundwater.
- Construction may alter natural drainage patterns by changing the flow of water through grading, excavation, or dumping of construction materials/ waste etc. This alteration can affect the seasonal drain's capacity to carry water and the hydrology of nearby pond.
- **Solid Waste:** The improper disposal of solid waste from construction activities can contribute to contamination. Materials such as construction debris or hazardous waste can leach pollutants into the soil and water if not handled and disposed of correctly.

224. **Mitigation Measures:**

- Obtain approval/permission from competent authority if ground water abstraction through bore well is carried out or water is sourced from any other means.
- Temporary storm drains should be designed according to site conditions to avoid contaminating water sources from storm water and spills. Use of oil spill kit shall be mandatory at locations of fuel storage and fuel locations.
- Spills should be collected and disposed of as soon as they occur as per the Hazardous waste management rules. Oily waste/grease should be collected and skimmed using oil traps before being sold or delivered to authorized agencies. Sewage from construction camps, on the other hand, shall be collected in soak pits and septic tanks. A record of water use will be kept.
- Use of environmentally friendly sanitation solutions, such as bio toilets and bio digestor septic tanks, or any other advanced small-scale sewage treatment systems shall be made by the contractors at labor camps.
- Silt barriers shall be installed around the banks of water bodies to avoid siltation, contamination, dumping of materials/ waste into it. If dumped it must be immediately cleared.
- Use treated water for water sprinkling to optimize usage of water for dust suppression in access/haul roads, washing of vehicles, concrete mixing, etc. Littering and unauthorised discharge will be prohibited.

- Solid garbage and earth materials shall not be dumped into open drains, water bodies be it seasonal or perennial.
- Construction materials and debris shall be stored away from bodies of water or waterways, and only at approved construction zones.
- All fuel and chemical storage (if required on-site) shall be located on an impermeable base within an embankment and will be surrounded by fencing. The storage facility shall be at least 100 m away from the from the water bodies.
- Provision for water conservation e.g., rainwater harvesting at the project site.
- Monitoring of surface, ground water quality (also drinking water of workers) should be taken up at adequate location as per the environment monitoring plan

225. **Waste Generation:**

226. **Impacts:** The following activities are anticipated to have impact on generation of solid and liquid waste during construction works and from the construction camp:

a. **Solid Waste Generation:**
   - **Construction Debris:** The primary source of solid waste during construction is construction debris. This includes materials like concrete rubble, bricks, wood, metals, and other discarded building materials.
   - **Packaging Waste:** Construction materials often come packaged in various materials like cardboard, plastic, and metal. The removal and disposal of packaging materials contribute to solid waste generation.
   - **Non-Hazardous Waste:** General non-hazardous waste generated at the construction camp, including food waste, packaging, and discarded items, also adds to the solid waste stream.
   - Considering solid waste generation of 0.6 kg/cap/day according to the Manual on Solid Waste Management, CPHEEO – 2000[59].

b. **Liquid Waste Generation:**
   - **Wastewater:** Liquid waste is generated from various construction activities, particularly those involving the use of water, such as concrete mixing, dust suppression, and equipment cleaning. This wastewater can contain suspended solids, chemicals, and other contaminants.
   - **Sanitary Waste:** Liquid waste from the construction camp includes domestic wastewater from toilets, showers, and kitchen facilities.

227. **Mitigation Measures:**
   - **Waste Sorting:** Use a two-bin system to separate and store food waste and recyclables such as paper, plastic, glass, and scrap metal waste in designated waste bins/containers. The recyclables should be sold to local recyclers on a regular basis, while food waste should be disposed of through the municipal waste management agency.
   - Biodegradable waste will be preferably composted in -situ that can be utilized to establish a nursery on-site, contributing to the development of the planned green

[59] https://cpheeo.gov.in/upload/uploadfiles/files/Part2.pdf

area. The municipal solid waste should be routed through proper collection and handover to local body for further disposal.

- All the construction and demolition waste should be managed as per Construction and Demolition Waste Management Rules, 2016.[60]
- Recyclable waste should be appropriately directed to authorized recycling facilities, based on waste type.
- **Hazardous Waste Handling:** Safely manage and dispose of hazardous materials such as paints, solvents, spent oil, spilled oil, and chemicals according to Hazardous And Other Wastes (Management and Transboundary Movement) Rules, 2016[61] and their subsequent amendments.
- It is to be ensured that hazardous waste is not stored for more than 90 days.
- **Wastewater Treatment:** Sewage from construction camps shall be collected in soak pits and septic tanks.
- A sedimentation tank of adequate capacity shall be constructed for the batching plant.
- The treated water should undergo testing for alkalinity before being discharged into low-lying areas, water bodies, or open grounds. It would be better to reuse the treated water for non-potable uses.
- **Monitoring:** Regularly monitor waste generation rates and the effectiveness of waste management practices to adjust as needed. Monitoring and regulating alkalinity levels are crucial as excessive alkalinity can inhibit vegetation growth and pose harm to aquatic life.

228. **Ecosystem and Biodiversity:**

229. **Impacts:** During the site visit it was observed that there are no threatened or endangered flora and fauna species recorded in the vicinity of subproject area which may get affected. The current land uses consist of built-up with presence of trees at site. As a result, it is unlikely that there will be any adverse impacts on such species during the construction phase.

230. Furthermore, after the construction is completed, the project site will undergo landscaping efforts, including the planting of vegetation. These measures are intended to enhance the ecological quality of the site, provide habitat for local flora and fauna, and contribute positively to the overall environment following construction.

231. **Mitigation Measures:**

- **Erosion Control**: Implement erosion control measures to prevent soil erosion and protect adjacent habitats from sedimentation.
- **Hazardous Materials Management:** Ensure strict management and containment of hazardous materials to prevent accidental spills.
- **Stormwater Management:** Implement effective stormwater management practices to control runoff and reduce pollutant discharges.
- **Noise and Vibration Mitigation:** Use noise barriers, scheduling restrictions, and vibration-dampening measures to mitigate disturbances to wildlife.

[60] https://cpcb.nic.in/displaypdf.php?id=d2FzdGUvQyZEX3J1bGVzXzIwMTYucGRm
[61] https://cpcb.nic.in/displaypdf.php?id=aHdtZC9IV01fUnVsZXNfMjAxNi5wZGY=

- **Environmental Monitoring:** Regularly monitor and assess the impact of construction activities on local ecosystems and adjust mitigation measures as needed.
- A firm ban should be enforced against using fuelwood and shrubs as a source of fuel, and workers should be explicitly instructed not to cause harm to any wild or domestic animals in the region.
- Laborers should receive training regarding Do's and Don'ts in relation to animals if encountered.
- "Efficient disposal of solid and liquid waste must be guaranteed to prevent any contamination of soil or water bodies that could have adverse effects on the local species' habitats."
- Restrict construction works to construction sites, halting earthworks at depots during monsoons, timely cleaning of construction sites, and planting trees can help mitigate the impacts on ecosystem and biodiversity.

232. **Potential loss of physical cultural resources:**

233. **Impacts:** There is no documented presence of heritage or archaeological sites/ monuments on the proposed project site.

234. **Mitigation Measures:** Contractors must implement a procedure for chance find of cultural, archaeological, historical artefacts during excavation in project area. If archaeological artifacts are unexpectedly found during construction, work will be immediately halted, and the Implementing Agency (IA) and the local cultural relics/heritage department will be informed of the discovery.

- All fossils, coins, ancient artifacts, structures, and other archaeological relics discovered on the site shall be the property of the government and shall be dealt with in accordance with the appropriate legislation.
- The Contractor must take reasonable efforts to prevent workers or other individuals from removing and harming such goods or things.
- The Contractor will immediately stop work at the site if such artifacts of archaeological importance are discovered during construction.
- The Contractor must immediately notify the project authority of such discovery and follow the project authority's instructions for dealing with the same. Before instructing the Contractor to recommend work at the site, the Project Authority will obtain direction from the appropriate Archaeology Department.
- If any such archaeological relics are there and, it is destroyed or removed from the area without the knowledge of the competent authority that will be considered as violation of national regulations as well as SPS 2009

235. **Worker's Camp and living condition:**

236. **Impacts:** Inadequate site selection and ineffective camp management can result in a range of adverse environmental consequences. These include the depletion of vegetation caused by the use of wood for cooking, the degradation of nearby surface water bodies and soil quality due to improper handling of wastewater and solid waste, and an increased risk of communicable diseases spreading among both the workers and the local communities.

237. There is one seasonal nala passing through the site and one waterbody named *Dhabachi Wadi*/ Sindhudurg Nagari lakeat an aerial distance of 200 m from the sub-project boundary. If proper mitigation measures were not followed, then there will be an adverse impact on these surface water bodies.

238. **Mitigation Measures:**

- Necessary permits from the concerned labour department should be obtained, pertaining records should be maintained at site with proper documentation.
- The Contractor and project authority will ensure decent labour conditions for workers and compliance with applicable law and regulations in India.
- Contractors will ensure that wages are being paid as per the requirement of minimum wages act and records are maintained.
- Daily attendance register with name and signature of labour will be maintained.
- Notice board to display terms of employment giving details of wage rates, working hours, criterion for overtime etc. Payment of wages of workers (including subcontracted/casual labours) should be aligned with the payment of wages act.
- The contractor to put in place a Code of Conduct (customized to local sensitivities and regulations) for worker-community interaction and on-site behaviour. Oblige workers to adhere to code of conduct. The Code of Conduct should take into consideration relevant legislation, safety rules, substance abuse, environmental sensitivity, communicable diseases, gender issues (sexual harassment), respect for local beliefs and customs, community interactions etc.
- Local people should be preferred for employment wherever possible, especially as construction workers/unskilled workforce.
- Contractor to ensure non-engagement of forced and child labour, gender equity, non-discrimination on employment and opportunity and freedom to express their view .
- GRM will be disclosed to the workers and made accessible for reporting.
- Contractors should ensure access of necessary basic amenities and facilities such as drinking water, beds, mosquito net/ repellent, snake repellent, common kitchen, gender segregated toilet and crèches for female worker's children, if any.
- Contractor to monitor to avoid any conflict with local community due to influx of migrated labour.
- A record of water use will be kept.
- Littering and unauthorised discharge will be prohibited.
- Solid garbage and earth materials shall not be dumped into open drains, water bodies.

239. **Occupational Health and Safety:**

240. **Impacts**:

- **Heavy Lifting and Fall Hazards**: Construction often involves the manual handling of heavy materials such as concrete blocks, steel beams, and construction equipment components. Improper lifting techniques can lead to musculoskeletal injuries like strains and sprains. Workers are often at risk of falls from heights usually from scaffoldings or platforms constructed temporarily for construction activities.
- **Storage Hazards**: Inadequate storage of materials can result in cluttered work areas, increasing the risk of tripping, falling objects, and injuries caused by improperly stored materials.

- **Equipment Usage**: The operation of machinery for material handling, like cranes and forklifts, poses risks if not operated by trained personnel or if safety protocols are not followed.

241. **Mitigation Measures:**
    - An occupational health & safety plan will be prepared and implemented by the contractor including Health & Safety reporting and incident/accident reporting procedure. Accidents will be reported immediately to ADB (within 48 hours). Root cause analysis and corrective actions take to avoid further accidents will also be submitted to ADB (preferably within 72 hours).
    - Accident register will be maintained at site and closed monthly by the site supervisor.
    - **Training:** Provide workers with proper training on equipment operation, safety procedures, and the handling of hazardous materials. Workers with adequate training and no acrophobia shall only be assigned height works and similar for works requiring specific skills or training.
    - **Personal Protective Equipment (PPE):** Mandate the use of appropriate PPE, such as helmets, gloves, safety goggles, and harnesses, as needed.
    - **Safe Work Practices:** Implement and enforce safety protocols and work practices to minimize risks, including fall prevention measures and material handling guidelines.
    - Usage of fluorescent and retro refectory signage, in local language should be provided at construction sites.
    - The construction of scaffolding and temporary work platforms must be carefully designated and regularly inspected to ensure stability and safety for workers.
    - **Regular Inspections:** Conduct routine safety inspections and audits to identify and rectify potential hazards promptly.
    - **Health Monitoring:** Implement health monitoring programs to assess and address potential health impacts related to chemical exposures or noise levels, acrophobia, silicosis, impacted vision etc.
    - **Emergency Response:** Establish emergency response plans and first-aid stations to address accidents and injuries promptly.
    - By diligently implementing these measures and fostering a safety-conscious work environment, we can minimize occupational health and safety risks, ensuring the well-being of all workers on the site.

242. **Labour Rights/ Influx of workforce in the area:**

243. **Impacts:** The influx of a diverse workforce into an area may lead to cultural conflicts, as workers from different backgrounds may have varying customs, languages, and practices. Misunderstandings and clashes can arise if not properly managed.

244. The presence of a large number of workers can affect the social dynamics of the area, potentially leading to tensions between the existing community and the incoming workforce. An increased workforce population may strain local housing and physical infrastructure, potentially causing overcrowding and overuse of resources.

245. **Mitigation Measures:** By respecting labour rights, managing the influx of the workforce, promoting cultural understanding, and establishing effective conflict resolution mechanisms, we can create a harmonious work environment and minimize conflicts between contractors, labour, and the local community.
    - Local people should be preferred for employment wherever possible, especially as construction workers/unskilled workforce.
    - Contractor shall provide all basic amenities to the workers in the camps so that reliance of workers on community infrastructure is less thus having lesser chances of conflicts
    - Contractor to monitor to avoid any conflict with local community due to influx of migrated labour.
    - Promote cultural awareness and sensitivity among project personnel to respect local customs, traditions, and values.
    - Consider ways to contribute positively to the local community, such as supporting local schools, healthcare facilities, or other community projects. These contributions can help build goodwill.
    - Implement adequate security measures to safeguard both workers and local residents. This includes controlling access to the construction site and addressing safety concerns.
    - Keep local residents informed about construction schedules, potential disruptions, and any necessary safety precautions. Timely communication can prevent misunderstandings.
    - Continuously monitor the social and community aspects of the project's impact. Regularly report on progress and address any issues that arise promptly.
    - Regular meetings, forums, and feedback channels should be in place to address concerns and grievances promptly.
    - A community liaison officer shall be appointed if social unrest or resentments are observed amongst the community.

246. **Securing Necessary Permits:** It is essential for the Project Authority to obtain the necessary permits applicable to the project. These permits may include, but are not limited to, Consent to Operate (CTO), Biomedical Waste Authorization, Water Abstraction Permission, Pollution Under Control (PUC) certificates for vehicles, and Fire No Objection Certificates (NOC), among others. These permits should be obtained before the project begins its operations and should be renewed periodically in accordance with the relevant regulatory requirements. The Project Authority shall adhere to the conditions specified in the permit and clearance documents.

247. **Social and Socio-economic Impacts:**

248. **Impact on Nearby Settlements due to Traffic Congestion:**

249. **Impacts:** Increased construction related traffic can lead to congestion and inconvenience for residents.

250. **Mitigation Measures:** Implement traffic management plans, if necessary, schedule deliverables during off-peak hours, and encourage alternative transportation methods for workers.

251. **Community Engagement:**

252. **Impacts:** Lack of community involvement can lead to social unrest.

253. **Mitigation Measures:** Engage with the local community through public consultations, address concerns, and establish open communication channels.

D. Operation Phase

254. The project encompasses various activities, each with a diverse range of environmental impacts, necessitating comprehensive assessment. Each of these elements plays a critical role in evaluating and managing the environmental impact of the project during operation stage.

255. **Air Quality:**

256. **Impacts:** The primary sources of air pollution is from dust emissions originating from vehicles and the exhaust outlets of DG sets. In this project, DG sets are installed solely as backup power sources, and it is anticipated that their contribution to pollution will be minimal.

257. Sulfur Dioxide (SO2) and Nitrogen Oxides (Nox) emissions arise from the functioning of DG sets when the power grid experiences a failure. To reduce these emissions while DG sets are in operation, it is necessary to install appropriate control devices and ensure that the stack height adheres to CPCB (Central Pollution Control Board) regulations.

258. The minimum height of stack to be provided with each generator set can be worked out by following CPCB directive

259. **Mitigation Measures:**

- Encourage the use of low-emission vehicles and promote alternative fuels like compressed natural gas (CNG) or electric vehicles. Implement emission standards and vehicle maintenance programs to reduce SO2 and Nox emissions.
- Adopt energy-efficient technologies, renewable energy sources, and eco-friendly building designs to reduce emissions associated with heating, cooling, and power generation. Further details to be worked out during detailed design stage.
- Vehicle maintenance should be done on a regular basis.
- All DG sets shall adhere to the emission standards outlined in the Environment (Protection) Rules, 1986.
- Compliance with all stipulated conditions given by concerned regulators.

- CTO to be renewed in timely manner from concerned pollution control board and conditions as stipulated in CTO should be strictly adhered to
- Air quality monitoring should be taken up as per the environment monitoring plan (To ensure adequacy of safeguard performance, the standards as provided in Appendix 9 should be considered as benchmark).
- The air quality shall adhere to the standards. If not, then corrective action to be taken should the reason of degraded quality be related to the Project activities.
- Provisions should be kept to regularly check and repair leakages of Medical Gas Pipeline System (MGPS) immediately in order to prevent release of the GHG (especially like Nox and CO2) like into the air.

260. **Water Quantity:**

261. The total water requirements are estimated to be around 831.02 KLD for Phase 1 (Hospital – 350 KLD, Medical College – 36.75 KLD, Hostels – 90.72 KLD & Other uses – 353.55 KLD) for the operation of all proposed facilities. For continuous water supply at adequate pressure, complete water supply system is designed. During construction phase, water will be required for construction of structures, sprinkling for dust suppression, domestic and non-domestic uses of the construction workers/camps etc. During operation phase water will be required for domestic and other operational (washing, cleaning etc.) purpose. The source of wastewater will be mainly from Toilets/ Pantry/ Kitchen etc. Sewage Treatment Plant cum Effluent Treatment Plant shall be provided with both the installations being housed in a single plant room. The proposed Sewage Treatment Plant of 530 KLD (approx.) shall be with MBBR Technology or improved version, as applicable, and three Effluent Treatment Plant of 70KLD (approx.). The total water requirement is mentioned in Figure 24.

Figure 24: Total Water Requirement

May 10, 2024

Project Name : Sindhudurg Medical Campus
Rev 2
Daily Water Requirement Chart

VK:e environmental

Sr. No.	Description	Total Population	Daily Water Requirement	Domestic Water		Hot Water		Flushing Water		Total Daily Water Requirement
			lpcd	lpcd	lpd	lpcd	lpd	lpcd	lpd	lpd
	Phase 1									
1	**Hospital**									
1.1	Beds	300	450	240	72,000	60	18,000	150	45,000	135,000
1.2	Visitors	600	15	5	3,000	0	0	10	6,000	9,000
1.3	Staff	100	45	25	2,500	0	0	20	2,000	4,500
1.4	Kitchen (2 Meals + 1 breakfast per bed per day)	900	35	25	22,500	10	9,000	0	0	31,500
1.5	Laundry				50,000					50,000
1.6	Mortuary	180	45	25	4,491	0	0	20	3,593	8,085
	Sub-Total	**2,080**			**154,491**		**27,000**		**56,593**	**238,085**
2	**Medical College**									
2.1	Medical College	500	45	25	12,500	0	0	20	10,000	22,500
2.2	Interns	100	45	25	2,500	0	0	20	2,000	4,500
2.3	Professor	25	45	25	625	0	0	20	500	1,125
2.4	Associate Professor	30	45	25	750	0	0	20	600	1,350
2.5	Assistant Professor	40	45	25	1,000	0	0	20	800	1,800
2.6	Tutor/Demonstrator	50	45	25	1,250	0	0	20	1,000	2,250
2.7	Statistician	5	45	25	125	0	0	20	100	225
2.8	Animal House	29	45	25	737	0	0	20	590	1,327
2.9	Support Staff(All campus)	100	45	25	2,500	0	0	20	2,000	4,500
3	Visitors	117	15	5	585	0	0	10	1,169	1,754
	Sub-Total	**996**			**22,572**				**18,759**	**41,331**
3	**Hotels**									
3.1	Boy Hostel	238	135	70	16,660	20	4,760	45	10,710	32,130
3.2	Girls Hostel	238	135	70	16,660	20	4,760	45	10,710	32,130
	Sub-Total	**476**			**33,320**		**9,520**		**21,420**	**64,260**
4	**Dean Bungalow**	5	135	70	350	20	100	45	225	675
	Sub-Total				**350**		**100**		**225**	**675**
4	**Water supply for other uses**									
4.1	Landscape							210,000	210,000	210,000
4.2	HVAC Chiller make-up water				111,485			88,515	88,515	200,000
	Sub-Total	**0**			**111,485**		**0**		**298,515**	**410,000**
	Total For Phase-1				**322,218**		**36,620**		**395,512**	**754,351**

Existing Buildigs

1	**Hospital**									
1.1	Beds	200	450	240	48,000	60	12,000	150	30,000	90,000
1.2	Visitors	400	15	5	2,000	0	0	10	4,000	6,000
1.3	Staff	67	45	25	1,667	0	0	20	1,333	3,000
1.4	Kitchen (2 Meals + 1 breakfast per bed per day)	600	35	25	15,000	10	6,000	0	0	21,000
1.5	Laundry				30,000					30,000
	Sub-Total	**1,267**			**96,667**		**18,000**		**35,333**	**150,000**
2	**Ayush Building**									
2.1	Ayush Building	408	45	25	10,205	0	0	20	8,164	18,369
2.2	Visitors	61	15	5	306	0	0	10	612	918
	Sub-Total	**408**			**10,511**		**0**		**8,776**	**19,287**
3	**Nursing College**									
3.1	Nursing College	100	45	25	2,500	0	0	20	2,000	4,500
3.2	Professor	6	45	25	150	0	0	20	120	270
3.3	Associate Professor	8	45	25	200	0	0	20	160	360
3.4	Assistant Professor	10	45	25	250	0	0	20	200	450
3.5	Tutor/Demonstrator	12	45	25	300	0	0	20	240	540
3.6	Support Staff	15	45	25	375	0	0	20	300	675
2.2	Visitors	23	15	5	113	0	0	10	227	340
	Sub-Total	**100**			**3,888**		**0**		**3,247**	**7,135**
	Total For Existing Building				**111,066**		**18,000**		**47,356**	**176,422**

Source MEP calculations shared by PMC

262. **Mitigation Measures:**

- Effluent and sewage discharge shall comply with CPCB/SPCB/NGT standards whichever is stringent.
- Compliance with all stipulated conditions given by concerned regulators shall be ensured.
- Mechanism for proper segregation and collection of Effluent and Sewage should be ensured.
- Quality of treated wastewater from the facility should conform the discharge standards (whichever is stringent) as stipulated in the Biomedical Management Rules during facility operation i.e.,
    - For discharge into public sewers with terminal facilities, the general standards as notified under the Environment (Protection) Act, 1986 (29 of 1986) and the standards of MoEF&CC notification dated 1st January 2016[62]will be applicable.
    - For discharge into public sewers without terminal facilities (or facilities not connected to public sewers), the standards stipulated in Biomedical Management Rules
- The treated sewage should conform standard as stipulated in NGT Order 1069/2018 dated 30 April 2019 or by any regulatory authority time to time. The comparative assessment of various wastewater discharge standards (comparison for selected parameters provided) is furnished in Appendix 9
- Regular monitoring of inlet and outlet water quality (with respect to wastewater treatment plants) should be taken up (To ensure adequacy of safeguard performance, the standards as provided in Appendix 9 should be considered as benchmark).
- Sludge from Effluent Treatment Plant shall be given to common bio-medical waste treatment facility for incineration or to hazardous waste treatment, storage and disposal facility for disposal.
- A contingency plan will be in place to handle the liquid waste in case of power/ technical failures.
- Monitoring of Drinking/Groundwater and surface water quality should be taken up as per Environmental Monitoring Plan (To ensure adequacy of safeguard performance, the standards as provided in Appendix 9 should be considered as benchmark).

263. **Maintenance of Rainwater Harvesting Pits**:

264. **Impacts:** The following impacts are anticipated if the proper maintenance of rainwater harvesting pits is neglected.

- **Reduced Water Quality:** Without proper maintenance, rainwater harvesting pits can accumulate debris, sediment, and pollutants, leading to a decrease in water quality.
- **Clogging:** Accumulated debris and sediment can clog the pit, reducing its capacity to capture and store rainwater effectively.
- **Structural Damage:** Over time, the structural integrity of the pit may degrade due to erosion or settling of the surrounding soil.

265. **Mitigation Measures:**

[62] https://parivesh.nic.in/writereaddata/ENV/envstandard/envstandard2.pdf

- **Regular Cleaning:** Establish a schedule for regular cleaning and desilting of the rainwater harvesting pits. Remove debris and sediment to maintain water quality and prevent clogging.
- **Erosion Control:** Implement erosion control measures in the surrounding area to prevent soil erosion, which can undermine the pit's structure.
- **Regular Inspection:** Conduct routine inspections to identify any signs of damage or deterioration in the pit or its components. Address issues promptly to prevent further damage.
- **Seasonal Preparations:** Prior to the rainy season, ensure that the pit is in good condition and ready to capture rainfall. This may involve cleaning and performing any necessary repairs.

266. **Bio-Medical Waste Generation and management:**

267. **Impacts:** Generation of biomedical waste which is hazardous in nature that might cause spread of infections/ contamination of surrounding environment etc.

268. According to Bio Medical Waste (Management and Handling) Rules, 2016[63], "bio-medical waste" means any waste, which is generated during the diagnosis, treatment or immunisation of human beings or animals or research activities pertaining thereto or in the production or testing of biological or in health camps. As per categorization of BMW Rules, generation of following types (refer table 35) of Biomedical Waste is envisaged due to the proposed project.

Table 35: Types of Biomedical Waste envisaged due to the proposed sub-project as per BMW rules 2016

Yellow	Red	White (Translucent)	Blue	Liquid Biomedical Waste
• Human, Anatomical Waste • Soiled Waste • Expired or Discarded Medicines • Chemical Waste • discarded linen, mattresses, beddings contaminated	Contaminated Waste (Recyclable) Wastes generated from disposable items such as tubing, bottles, intravenous tubes and sets, catheters, urine bags, syringes (without needles and fixed needle	Waste sharps including Metals: Needles, syringes with fixed needles, needles from needle tip cutter or burner, scalpels, blades, or any other contaminated sharp object that may cause puncture and cuts. This	Glassware: Broken or discarded and contaminated glass including medicine vials and ampoules except those contaminated with cytotoxic wastes. Metallic Body Implants	Chemical Liquid Waste requiring separate collection system leading to effluent treatment system

[63] https://dhr.gov.in/sites/default/files/Bio-medical_Waste_Management_Rules_2016.pdf

with blood or body fluid • Microbiology, biotechnology, and other clinical laboratory waste	syringes) and vaccutainers with their needles cut) and gloves.	includes both used, discarded, and contaminated metal sharps		

269. Comparison between BMW rules 2016 and WHO-recommended segregation scheme is furnished in Table 36.

Table 36: Comparison between BMW rules 2016 and WHO-recommended segregation scheme

Waste Categories as per BMW Rules	Waste categories as per WHO	Colour coding and Storage
Human Anatomical Waste	Infectious waste	**BMW Rules:** Yellow coloured non-chlorinated plastic bags **WHO:** Yellow, marked "HIGHLY INFECTIOUS", with biohazard symbol
Soiled Waste	Infectious waste	**BMW Rules:** Yellow coloured non-chlorinated plastic bags **WHO:** Yellow, marked "HIGHLY INFECTIOUS", with biohazard symbol
Expired or Discarded Medicines	Pharmaceutical waste	**BMW Rules:** Yellow coloured non-chlorinated plastic bags or containers **WHO:** Brown, labelled with appropriate hazard symbol
Chemical Waste	Chemical Waste	**BMW Rules:** Yellow coloured containers or non-chlorinated plastic bags **WHO:** Brown, labelled with appropriate hazard symbol
Discarded linen, mattresses, beddings contaminated with blood or body fluid	Infectious waste	**BMW Rules:** Non-chlorinated yellow plastic bags or suitable packing material **WHO:** Yellow, marked "HIGHLY INFECTIOUS", with biohazard symbol
Microbiology, biotechnology and other clinical laboratory waste	Chemical Waste	**BMW Rules:** Autoclave safe plastic bags or containers **WHO:** Brown, labelled with appropriate hazard symbol
Contaminated Waste (Recyclable)	Pharmaceutical waste	**BMW Rules:** Red coloured non-chlorinated plastic bags or containers **WHO:** Brown, labelled with appropriate hazard symbol
Waste sharps including Metals:	Sharps waste	**BMW Rules:** Puncture proof, Leak proof, tamper proof containers **WHO:** Yellow, marked "SHARPS", with biohazard symbol

Waste Categories as per BMW Rules	Waste categories as per WHO	Colour coding and Storage
Glassware	Sharps waste	**BMW Rules:** Cardboard boxes with blue coloured marking **WHO:** Yellow, marked "SHARPS", with biohazard symbol
Metallic Body Implants	Chemical Waste	BMW Rules: Cardboard boxes with blue coloured marking **WHO:** Brown, labelled with appropriate hazard symbol
Chemical Liquid Waste	Chemical Waste	**BMW Rules:** Separate Collection system leading to effluent treatment system **WHO:** separate collection system and wastewater treatment

270. The biomedical waste from Sindhudurg Civil Hospital and Medical college is handed over to a government approved vendor from Kudal. The vendor is responsible for safe management and disposal of the biomedical wastes. Impacts from consequences of accidents involving infectious biomedical waste from the sub-project site may cause severe threat of spread of infections in the accident area.

271. Out of the overall volume of waste produced by healthcare practices, approximately 75-80% constitute common waste similar to municipal solid waste/plastic waste etc., while the remaining 20-25% are categorized as hazardous waste (bio-medical waste), potentially carrying environmental and health hazards. High-income countries generate on average up to 0.5 kg of hazardous waste per hospital bed per day; while low-income countries generate on average 0.2 kg.[64]

272. According to CPCB Report, 2021[65] the volume of Biomedical waste generated by state Maharashtra is 80314 Kg/ day for a total 322873 number of beds (~ 0.25 Kg/Bed) and at country level 721000 Kg of Biomedical waste was generated from 2561295 beds (~ 0.3 Kg/Bed).

273. It is estimated that the proposed sub-activity will generate approximately 220 kg per day of bio-medical waste (calculated as 0.3 Kg multiplied by 500 beds).

[64] https://www.who.int/news-room/fact-sheets/detail/health-care-waste#:~:text=High%2Dincome%20countries%20generate%20on,generate%20on%20average%200.2%20kg

[65] https://cpcb.nic.in/uploads/Projects/Bio-Medical-Waste/AR_BMWM_2021.pdf

274. Separate dedicated space has been planned for collection of Bio Medical waste generated from various buildings in the proposed sub-project site.

275. **Mitigation Measures:**

Due to the hazardous nature of Biomedical Waste, it is essential to adhere to regulatory requirements for its proper management. This involves activities such as sorting at the source, storing temporarily in designated containers marked with specific colours in assigned locations, and transporting it for timely disposal at a Pollution Control Board (PCB) approved Common Biomedical Waste Treatment and Disposal Facility (CBWTDF). These actions must align with the provisions outlined in the BMW Rules of 2016, IFCs EHS guidelines for Health care centers, 2007, WHO's guidelines for Safe management of wastes from healthcare activities, 2017 and subsequent amendments whichever is stringent to ensure compliance.

- It is proposed that a formal association will be made with CBWTDF by the proposed facility to ensure regular collection and subsequent treatment/disposal of biomedical waste. The CBWTDF, M/s. Shree Govind Bio-medical Corporation, Tal- Kudal[66], an authorised vendor by Maharashtra Pollution Control Board (MPCB) is engaged in BMW Management in the region. Sindhudurg Civil Hospital has contracted them for BMW management. The CBWTDF facility has an Authorization of MPCB for the Deep Burial Facility. As per the provisions of BMW rules, the facility should be equipped with proper facility for collection-disinfection-segregation-temporary storage in line with the requirements of BMW Rules-2016 and subsequent amendments.
- It will be ensured that storage is done in leak proof containers that should not generate leachate or attract flies/ vectors etc.
- Under the purview of BMW Rules-2016, the hospital facility should secure Authorization (or Combined Consent and Authorization) from concerned PCB for ensuring effective handling and management of biomedical waste
- The hospital facility should have a formal tie up with PCB approved Common Biomedical Waste Treatment and Disposal Facility (CBWTDF) to ensure regular and effective collection and disposal of Biomedical waste
- If no CBWTDF is available, then in-situ treatment as recommended by BMW and related rules (and concerned regulatory authority) will be done.
- The hospital should comply with the conditions precedents of Authorization or Combined Consent and Authorization (CCA) issued by PCB and ensure timely renewal of the same
- Identification and segregation of Biomedical Waste at point of generation should be ensured.
- Segregated waste should be placed in colour coded (as recommended by BMW rules) containers to avoid mixing of biomedical waste with non-biomedical waste and proper waste handling, storage and disposal must be ensured.
- Should comply with the Waste Segregation Strategies, On-site Handling, Collection, Transport and Storage guidelines and Transport to External Facilities guidelines of IFC's Environmental, Health, and Safety Guidelines for Health Care Facilities.[67]
- The Biomedical waste should be stored in designated impervious covered area temporarily before handing over to CBWTF.

[66] https://mpcb.gov.in/sites/default/files/biomedical-waste/List_of_CBMWTSDF_03032020_0.pdf
[67] https://www.ifc.org/content/dam/ifc/doc/2000/2007-health-care-facilities-ehs-guidelines-en.pdf

- Ensure workers involved in biomedical waste handling are having PPEs such as puncture resistant gloves, masks etc.
- Record for quantum of different types of generated biomedical waste and handed over to CBWTF should be well documented.
- Educate staffs engaged in BMW management about different category of infectious waste and pathogens
- Immunization of staff members as necessary
- Adequate facilities to be made for hand washing and to ensure all staffs should wash their hands before and after direct patient contacts and contact with patient blood/fluid
- Monitoring and observation of surrounding areas to ensure that no contamination is taking place due to BMW mis management.
- Conduct regular consultations with the surrounding community/ staff etc. to ensure there no spread of any infections/ disease that can be attributed to the mis management of bio medical wastes.
- Where possible, hazardous waste generated in medical areas should be stored in utility rooms, which are designated for cleaning equipment, dirty linen and waste. From here, the waste can be kept away from patients before removal, then collected conveniently and transported to a central storage facility. This is known as interim or short-term storage.
- A contingency plan involving the highway authorities as immediate measures to mitigate risk associated with accidental spills during BMW transportation and subsequent contamination of soil/ water bodies/ human health etc from the vehicles carrying bio-medical waste needs to be provided.

276. **On-site Handling, Collection, Transport and Storage guidelines according to IFC's Environmental, Health, and Safety Guidelines for Health Care Facilities to be followed[68]:**

- Seal and replace waste bags and containers when they are approximately three quarters full. Full bags and containers should be replaced immediately.
- Identify and label waste bags and containers properly prior to removal.
- Transport waste to storage areas on designated trolleys / carts, which should be cleaned and disinfected regularly.
- Waste storage areas should be located within the facility and sized to the quantities of waste generated, with the following design considerations:
    - Hard, impermeable floor with drainage, and designed for cleaning / disinfection with available water supply
    - Secured by locks with restricted access
    - Designed for access and regular cleaning by authorized cleaning staff and vehicles
    - Protected from sun, and inaccessible to animals / rodents
    - Equipped with appropriate lighting and ventilation
    - Segregated from food supplies and preparation areas
    - Equipped with supplies of protective clothing, and spare bags / containers
- Unless refrigerated storage is possible, storage times between generation and treatment of waste should not exceed the following:

[68] https://www.ifc.org/content/dam/ifc/doc/2000/2007-health-care-facilities-ehs-guidelines-en.pdf

    - Temperate climate: 72 hours in winter, 48 hours in summer
    - Warm climate: 48 hours during cool season, 24 hours during hot season
- Store mercury separately in sealed and impermeable containers in a secure location.
- Store cytotoxic waste separately from other waste in a secure location.
- Store radioactive waste in containers to limit dispersion, and secure behind lead shields.

277. **Segregation, storage and transport of health-care waste guidelines according to WHO's Safe Management of Wastes from Health-care Activities to be followed:**

278. The following general principles of waste segregation, storage and transportation relate to the control of waste flow from generation to disposal:
    - Health-care waste is generated in a medical area and should be segregated into different fractions, based on their potential hazard and disposal route, by the person who produces each waste item.
    - Separate containers should be available in each medical area for each segregated waste fraction.
    - Waste containers when filled should be labelled to help managers control waste production.
    - Closed local storage inside or near to a medical area may be needed if wastes are not collected frequently.
    - Hazardous and non-hazardous wastes should not be mixed during collection, transport or storage.
    - Collected waste is often taken to central storage sites before onsite or offsite treatment and disposal.
    - Staff should understand the risks and safety procedures for the wastes they are handling.

279. Labelling of waste containers is used to identify the source, record the type and quantities of waste produced in each area, and allow problems with waste segregation to be traced back to a medical area. A simple approach is to attach a label to each filled container with the details of the medical area, date and time of closure of the container, and the name of the person filling out the label. Using an international hazard symbol on each waste container is also recommended (Refer Figure 25).[69]

[69] https://www.who.int/publications/i/item/9789241548564

Figure 25: Biohazard, radiation and chemical hazard symbols

Source: WHO's report on Safe management of wastes from health-care activities

280. **Radioactive Waste:**

281. **Impacts:** The radiology department, as part of proposed medical facility, may involve the use of radioactive materials for diagnostic and therapeutic purposes. Improper management of radioactive waste can lead to potential health risks like radiation, cancer and damage of tissue etc. and can lead to environmental contamination posing risks to ecosystems and wildlife.

282. **Mitigation Measures:** The EA will need to adopt appropriate and strict measures to store, handle and transport (for disposal by authorised agencies) the radioactive wastes as per the provisions of Atomic Energy (safe Disposal of Radioactive Wastes) Rules, 1987, IFC EHS guidelines for Health care centres and WHO guidelines. Radioactivity traces can be present in clothing, utensils, syringes, needles, cotton swabs, vials, gloves and absorbent materials of patients administered high doses of radioisotopes like I-131 constitute the solid radioactive waste material, x-ray tubes, x-ray plates, unused liquids from radiotherapy or laboratory research; contaminated glassware, packages or absorbent paper; urine and excreta from patients treated or tested with unsealed radionuclides; sealed sources etc. The Atomic Energy Regulatory Board (AERB) has been mandated by the Central Government, as the Competent Authority as per Atomic Energy (safe Disposal of Radioactive Wastes) Rules, 1987 notified under the Atomic Energy Act 1962. It exercises regulatory control over nuclear installations and the use of radioactive substances and radiation generating plants outside such installations. As per provisions of Atomic Energy (safe Disposal of Radioactive Wastes) Rules, 1987, no person shall dispose of radioactive waste

a. unless they have obtained an authorization from the competent authority under these rules;
b. in any manner other than in accordance with the terms and conditions specified in the authorization issued under these rules;
c. in any location different from those specified in the authorization; and

d. in quantities exceeding those specified in the authorization.

283. Health Care Facilities generating radionuclides waste from treatment of Cancer patients and end-of-life equipment containing radio radionuclides shall obtain authorization from AERB for its disposal. As per the policy of AERB, radionuclides wastes are required to be re-exported back to the manufacturer. Radioactive waste should be stored in compliance with national regulations and in consultation with the radiation officer. It should be placed in containers that prevent dispersion of radiation and stored behind lead shielding. Waste that is to be stored during radioactive decay should be labelled with the type of radionuclide, date, period of time before full decay and details of required storage conditions.

284. **Other Solid Waste Generation (Hazardous and Non-hazardous):**

285. **Impacts:** During the operational phase of the project, substantial volume of solid waste are expected to be generated, including food waste, used disposable tableware, plastic sheets, fabrics, e-wastes and paper waste. Inefficient disposal of these wastes can lead to environmental deterioration. To prevent such issues, waste shall be systematically collected, distinguishing between biodegradable and non-biodegradable waste using color-coded bins, and stored in a designated garbage collection area.

286. According to a paper on Bio-medical waste generation in India[70], the average quantity of hospital waste produced in India ranges from 1.5 to 2.2 kg per bed per day. Considering 80% of this to be non-biomedical waste according to the WHO, the range will be from 1.2 kg to 1.76 kg.

287. According to Urban and Regional Development Plans Formulation and Implementation (URDPFI) Guidelines the Institutional waste generation per capita per day range from 0.05 to 0.2 kg per capita per day and the Residential waste generation per capita per day range from 0.3 to 0.6 kg/cap/day.[71]

288. Adequate space will be planned for collection of solid waste from various buildings in the proposed sub-project site.

289. **Mitigation Measures:**

- **Segregation and Collection:** Proper segregation of different waste should be taken up which may include municipal waste (biodegradable and non-biodegradable), plastic, electronic waste, hazardous waste etc.
- Set up an on-site or off-site composting facility where kitchen waste can be processed into compost. Regularly test the quality of the compost to ensure it meets quality standards for safe use in landscaping or agriculture.
- Hazardous waste should be stored in clearly marked, leak-proof containers that are resistant to corrosion and damage. Storage areas should be secure, well-ventilated, and equipped with spill containment measures. Each hazardous waste container must be clearly labelled with its contents, potential hazards, and handling instructions in

[70] https://www.ctdt.co.in/doi/CTDT/pdf/10.5005/jp-journals-10055-0064
[71] https://mohua.gov.in/upload/uploadfiles/files/URDPFI%20Guidelines%20Vol%20I(2).pdf

compliance with the Hazardous and other Wastes (Management & Transboundary Movement) Rules, 2016. Hazardous waste should be handed over to authorized and licensed hazardous waste recyclers or disposal facilities, complying with Hazardous and other Wastes (Management & Transboundary Movement) Rules, 2016.

- Ensure that inert waste is handed over to authorized municipal dumping yards or landfill sites in compliance with local waste disposal regulations.
- Establish a collection system for recyclable materials, including e-waste and plastic waste. Segregate these materials at the source for efficient recycling. Partner with authorized recyclers or recycling facilities for the proper disposal and recycling of electronic waste, plastics, and other recyclable materials.
- **Training and Awareness:** Train hospital staff on the proper handling and disposal of waste. Create awareness among all stakeholders about the importance of safe disposal.
- No untreated or infected waste will be disposed into water bodies or open pits or grounds.
- **Storage:** Store biomedical waste in secure, leak-proof containers with labels indicating the type of waste and its potential hazards.
- **Transport:** Use dedicated vehicles for transporting biomedical waste to authorized treatment facilities. Ensure proper labelling and handling during transportation.
- **Monitoring and Record-Keeping:** Implement a system for monitoring and documenting the generation, handling, and disposal of waste to ensure compliance with regulations.
- **Emergency Response:** Develop and communicate emergency response procedures in case of spills or accidents involving biomedical waste.
- **Compliance with Regulations:** Requirement of separate Authorization for Hazardous waste (Hazardous Waste Management Rules) may be checked from pollution control board time to time.
- **Regular Audits and Inspections:** Conduct regular audits and inspections to assess the effectiveness of waste management practices and make necessary improvements.

290. **Noise Environment:**

291. **Impacts:** Noise pollution arises from several sources, including vehicular traffic and D.G. sets, among others. It is imperative to implement effective measures to mitigate this noise pollution. High-noise-generating areas should be enclosed with appropriate and soundproof barriers. Furthermore, D.G. sets should be housed within acoustically treated rooms to ensure that the ambient noise level is less than 30 dB during daytime hours[72].

292. **Mitigation Measures:**

- DG sets and pumps should be provided with acoustic enclosures.
- If traffic noise is anticipated to be higher than the permissible limits, the facility sites will be encompassed with acoustic boundaries in combination with green belt with high and dense enough canopy/ building materials (door/window sheets) used will have

[72] WHO Guidelines for Noise - https://cpcb.nic.in/who-guidelines-for-noise-quality/

acoustic properties and be properly maintained to retain such properties (such as repairing gaps, or broken sheets, replantation of green belt)

- Soundproof sensitive areas like patient rooms, classrooms, and lecture halls to attenuate noise levels.
- **Landscaping:** Use dense vegetation and natural features like trees and bushes as a natural sound barrier as far as possible. Develop Green belt.
- Compliance with all stipulated conditions given by concerned regulators.
- Noise level monitoring should be taken up as per the environment monitoring plan (To ensure adequacy of safeguard performance, the standards as provided in Appendix 9 should be considered as benchmark).
- All DG Sets shall be outdoor type with Hospital Type Silencer and acoustic enclosure as per CPCB and other relevant norms.

293. **Occupational and Community Health and Safety Risks:**

294. **Impacts:** Inadequate handling of waste and wastewater, which may contain infectious agents, pathogens, chemicals, and hazardous materials, has the potential to pollute the surrounding environment in the project area. Improper waste and effluent management may contaminate surrounding land environment or waterbody present within the site and nearby and subsequently contamination of groundwater. Hence, it is crucial to ensure effective waste and wastewater management, including proper treatment and disposal. This could increase the occupational health and safety risks, hospital acquired infection for medical staff, non-medical staff and patients and also pose a safety risk to the local community since they may be exposed to healthcare waste and other hazardous substances. Civil maintenance works during operation stage can also have impact on health and safety of works, staff and community.

295. The increased traffic resulting from hospital operations might also expose the local community to potential accidents and lead to traffic congestion at the local level.

296. **Mitigation Measures:**

- OHS management procedures covering safe working conditions for employees, including staff training, job safety instructions and measures to ensure workplace safety and mitigate OHS risks emanating from exposure to infections and diseases, hazardous materials / waste should be in place and implemented as per infection management guidelines of MoHFW[73]. Additionally, these procedures should extend to encompass maintenance activities to ensure that workers are adequately protected during repair and upkeep tasks, thereby reducing the risk of accidents and health hazards.
- Depending on the nature of the maintenance work, provide and guarantee the use of personal protection equipment such as gloves, helmets, ear plugs, safety belts, and so on.

[73] https://nhm.gov.in/images/pdf/in-focus/Implementation_Guidebook_for_Kayakalp.pdf

- The facilities should have Emergency, preparedness and response plan and should be designed in commensurate with the requirement of concerned department (like Fire Department). Fire NoC should be secured from Fire Department and renewed in timely manner. Emergency preparedness plan should have the provision to manage potential risk likely associated with the industries located (planned to be located) in the vicinity like GAIL (Gas Authority of India Limited), HPCL (Hindustan Petroleum Corporation Limited)
- It is advisable to develop a traffic management plan. Additionally, it's essential to take all reasonable precautions and create an Emergency Preparedness Plan to mitigate potential risks, considering emergency scenarios such as fires, flooding, and accidental release or spillage of hazardous materials. Maintain an effective work permit system for vital tasks including electrical work and working at heights for maintenance works.
- Provide adequate sanitation facilities.
- The emergency contact number shall be displayed.
- Provisions for a designated route for vehicle movement.
- Accidents if any will be reported to the management / SPCB/ ADB (within 48 hours to ADB) etc. in the form prescribed as per BMW rules.
- Develop and implement robust health and safety protocols to protect workers and the community.
- Conduct regular safety training sessions and drills to ensure all personnel are prepared for emergencies.
- Awareness campaign on HIV/AIDS is to be conducted to effectively mitigate the impacts on occupational health and safety.
- Develop community engagement programs that involve local residents in project-related activities, such as job fairs, skill development workshops, or community events. Encourage social interaction and collaboration between workers and locals to foster understanding and mutual respect.
- Establish open channels of communication between project management, workers, and local residents.
- Hold regular meetings, forums, or community advisory groups to discuss project progress, address concerns, and provide updates on project activities.
- In case chlorine gas or liquid storage is proposed, safety provisions shall be as per guidelines. To avoid risks and hazards to staff and workers at WTP and general public around in case of chlorine gas leakage by accident, the contractor/concerned authority should prepare OHS plan during O&M, including emergency response procedures for chlorine gas leakage, chemical spill, fire, earthquake, etc. Handling and storage chemicals should be in accordance with the Material Safety Data Sheet. Also, prepare and implement the safety procedures of handling chlorine based on national and international standards such as the World Bank's Group General EHS Guidelines and EHS Guidelines for Water and Sanitation, pollution control board guidelines, precautions mentioned in Chapter 8 of the CPHEEO Manual on Water Supply and Treatment etc.

297. **Risk of Transformers, Substation & power lines: Impacts:**

298. **Risk of Electrocutions:** This risk pertains to the potential for accidents or fatalities caused by electric shock. In a construction or operational setting, there may be exposed electrical equipment, wiring, or power lines that can pose a threat to workers, visitors, or even wildlife.

299. **Avifauna Collision Risk:** Avifauna collision risk refers to the potential harm or mortality to bird species due to collisions with power lines and electrocution.

300. **Risk of Use of Polychlorinated Biphenyls (PCBs) and Sulfur Hexafluoride (SF6)**: PCB is a hazardous chemical banned for use in India and SF6 is a green-house gas that can have adverse environmental and health effects. SF6 leakage can trigger GHG emission if not managed properly. The risk arises when these substances are used in equipment or processes associated with the project, such as electrical transformers or insulation.

301. **Mitigation Measures**:

- Visual monitoring will be conducted to detect any avian collisions. If such incidents are reported, appropriate mitigation measures, such as bird deterrence and adjusting spacing between energized components, will be implemented in consultation with the forest and wildlife department.
- If Sulphur Hexafluoride (SF6) is employed, thorough monitoring will be in place to prevent any potential leaks.
- The transformers utilized will contain oil that is free of Polychlorinated Biphenyls (PCBs) since their use is prohibited in India.

302. **Landscaping and Aesthetics:**

303. **Impacts:** During the operational phase of the project, there are no alterations to the topography of the project site. This is because all changes in land use, land levelling, and construction activities were carried out during the project's construction phase. Nevertheless, ongoing efforts to develop a green belt and plant avenues are expected to enhance the site's aesthetics further.

304. **Mitigation Measures:** Maintenance of Green belt including vegetation care, Litter Control, Irrigation, Erosion Control, maintenance of Rainwater Harvesting Pits including inspection, cleaning, repairs & upkeep etc.

305. **Socio economic Impact:**

306. **Impact on local community:** The proposed project is likely to have beneficial impact on the local community as the project will increase the opportunity for jobs during construction as well as operation as local labour/ staff will be preferred based on their qualifications and skill sets. The employment potential will shift the focus from primary sector. There will be quality health care services available to the community and might also encourage development of informal and formal commercial activities around the health facility thus helping in improving the living standards of local community. There could however be loss

of land and livelihood for few project affected persons however, they will be compensated if applicable under the relevant laws and policies.

307. **Mitigation Measures:** Skilled (Engineers and other officials), semiskilled and unskilled labour. Skilled (Engineers and other officials), semiskilled and unskilled labour. The local employment should be preferred to the extent possible. And it is suggested to take the educated and uneducated locals for employment in the proposed project. The unskilled labours can be given skill development training in order to fill the unemployment around the study and project area.

308. **Cumulative and Induced Impacts:**

309. **Cumulative impact** consists of an impact that is created because of the combination of the project evaluated together with other projects causing related impact in the area. There are no such feature found in the surrounding area of the sub-project site which can lead to cumulative impact on Air, Water, Noise, Soil and Biodiversity during construction and operation phase.

310. **Induced impact usually has no direct relationship with the action under** assessment and represent the growth- inducing potential of an action. The induced impacts due to proposed sub-project activity includes increase in traffic on the adjacent road and increase in commercial development along the road which can lead to socio-economic development. Commercialisation is likely to happen in the surrounding areas of the sub-project immediately after commencement of it’s operation and this along with increased health care facility may lead to gradual urbanisation.

VII. GRIEVANCE REDRESS MECHANISM

311. ADB's SPS (2009) requires the establishment of a responsive, readily accessible, and culturally appropriate grievance redressal mechanism (GRM) capable of receiving and facilitating the resolution of affected persons' concerns and grievances about the physical, social, and economic impacts of the sub-project.

312. Currently there is no sub-project specific Grievance Redress mechanism in place with respect to environmental safeguards[74]. At facility level, aggrieved person may reach out to Dean – Sindhudurg Medical College and Hospital to inform about any concern with respect to environmental safeguards. However, no formal platform for registering any grievances is in place currently.

313. A Grievance Redress Mechanism (GRM) will be in place before initiation of construction works and shall be maintained throughout project lifecycle to redress environmental related grievances during implementation of the sub-project. This GRM will be used for managing grievances related to environmental safeguards, and occupational health & safety during the construction and operation phases of the sub-project.

314. **Principles of GRM:** The GRM is based on the following principles and the same will be used to assess the GRM performance:

a) Accessibility

- The GRM will be accessible to all people residing in the sub-project area. It will be available and aid all project affected people irrespective of language, literacy level, or cost. Project affected people will access the GRM without fear of reprisal. Information on the GRM will be disseminated using various means to ensure people know about Grievance Redress Committee (GRC), its members and procedures.

b) Predictability

- The GRM will offer clear procedures with time frames for each stage and clarity on the type of results it can and cannot deliver.

c) Transparency

- The GRM will operate in such a way that it is easy for others to see what actions are being performed. This will be undertaken through disclosure of all information to the public and affected people.

d) Credibility

- The performance of the GRM will enable affected people to accept and believe that the mechanism works, delivers results and is trustworthy.

[74] Government of India's Centralized Public Grievance Redress and Monitoring System (CPGRAMS) and Government of Maharashtra's Grievance Portal (https://grievances.maharashtra.gov.in/en) has platform for registering all types of grievances.

e) Fairness

- The GRM procedures will be perceived as fair, especially in terms of access to information, and opportunities for meaningful participation in the final decision. Its outcome should be consistent with applicable national standards and should not restrict access to other redress mechanisms.

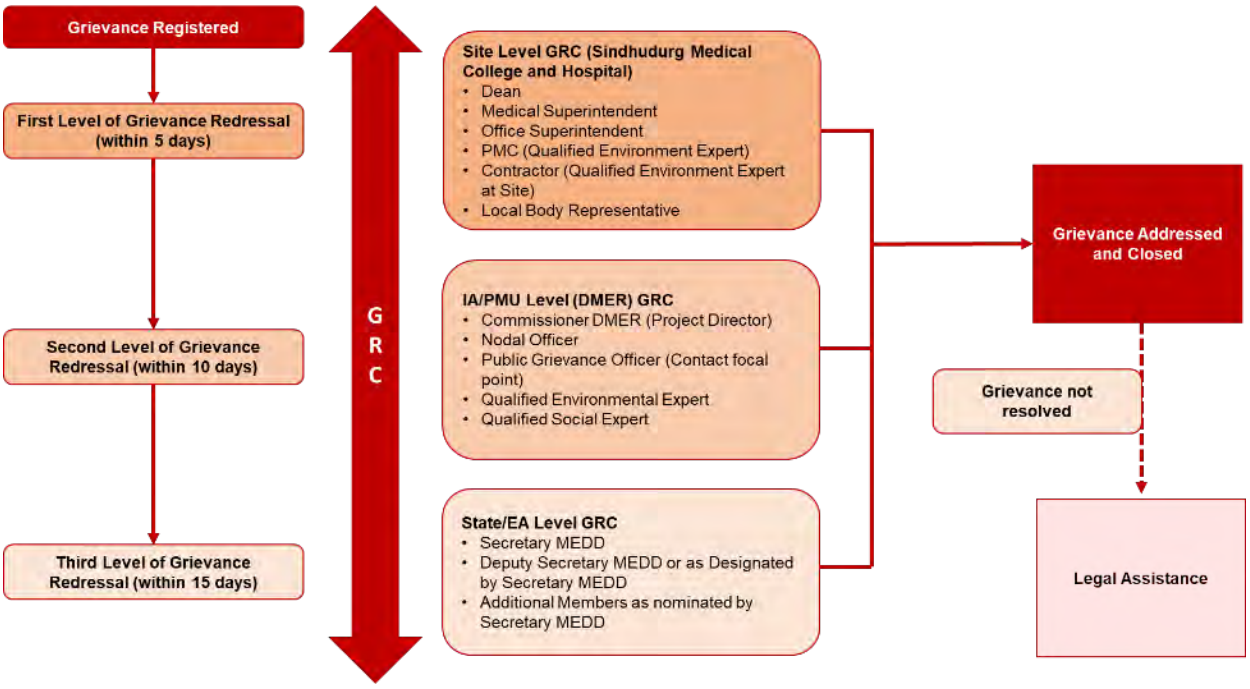
f) Feedback

- The GRM will serve as a mean to channel citizen feedback to improve sub-project and subsequently overall program outcomes for the people.

- It is difficult to avoid Grievances totally, but much can be done to minimize and manage complaints in order to reduce impacts.

315. **Grievance Redressal Structure and Function:** The GRM is intended as the tool by which a stakeholder (e.g., workers, patients and their kin, local communities) may formally have a platform to register any grievance. A three-tier grievance redress mechanism is planned: 1st level of Grievance Redresses Cells (GRCs) will be set up at the Site/Facility level (i.e., Sindhudurg Medical College and Hospital); 2nd and 3rd Level GRCs will be at IA/PMU and State/EA Level Committees respectively as furnished in Figure 26.

Figure 26: Grievance Redress Mechanism



316. The structure (can be further strengthened to add members) considered for different level of GRC for managing Environmental Safeguard related grievances are presented in Table 37.

Table 37: Structure and functions of GRCs (Proposed)

Grievance Redresses Cells (GRCs)	Levels	GRC Members	Function
First level of GRC	Facility/Site Level	• Chaired by Dean • Medical Superintendent • Office Superintendent (Focal Point/Person) • PMC (Qualified Env Expert at site) • Contractor (Qualified Env Expert/s at site) • Local body representative • Community Liaison officer, if any (Contractor)	• Registration of Grievances • Forwarding Grievances to concerned person or authorities. • Communicating with complainant regarding receipt and resolution of complaints • Resolution of complaints raised within five days of receipt. • Feedback to the complainant on action completed against registered complaint and seeking complainant feedback on level of satisfaction. • Closure of grievance • If not resolved, then forwarding the complaint to second level of GRC.
Second level of GRC	IA/ PMU Level (DMER)	• Commissioner- DMER (Project Director- Chairperson) • Nodal officer (of Joint Director or Assistant Director rank), • Public Grievance Officer (Focal Point) • Qualified Environmental Expert • Qualified Social Expert	• Registration of complaint • Eligibility assessment of grievances by GRC chairperson • Information to the complainant about eligibility of the complaint • Grievance Redress Committee meetings to discuss grievances and action required • Ensuring collection of detailed information about the eligible complaint • Assessment of complaint, draw conclusion from discussions and make recommendations • Develop action plan outlining activities required to implement the recommendations • Ensuring implementation of recommendations by stakeholders or concerned authorities • Monitoring actions of the recommendations in view of timeline • Feedback to the complainant on action completed against

Grievance Redresses Cells (GRCs)	Levels	GRC Members	Function
			registered complaint and seeking complainant feedback on level of satisfaction • Closure of grievances or forwarding of complaint to the third level of GRC if not resolved within 10 days
Third level of GRC	State/ EA Level (MEDD)	• Chaired by Secretary, MEDD , • Deputy Secretary-MEDD or as designated by Secretary MEDD (Focal Point) • Additional members as nominated by Secretary from within or outside the organisation	• Registration of complaints received • Information to the complainant about eligibility of the complaint • Eligibility assessment of grievances by the GRC chairperson • Ensuring collection of required information about the eligible complaint • Assessment of complaint to draw conclusion from discussions and make recommendations. • Develop action plan outlining activities required to implement the recommendations. • Ensuring implementation of recommendations by stakeholders or concerned authorities. • Monitoring actions of the recommendations in view of timeline • Closing complaint after all actions taken as per recommendations and feedback to the complainant • Advise to complainants about approach /appeal to the concerned department in case the complainant is not satisfied, or complaint is beyond the scope of the GRC.

317. Aggrieved persons will have the flexibility of conveying grievances/suggestions by dropping grievance redress/suggestion in complaints/suggestion boxes or through telephone, by email, by post, CPGRAMs and GoM's grievance portal or by writing in

complaints register in Facility/Site offices. The Office Superintendent at First Level GRC will be the Focal Point for facility level grievance redressal and will have the responsibility for registering the grievances, maintaining records.

318. During construction phase, the Office Superintendent will be supported by Contractor's EHS expert/s to receive and document the records pertaining to grievances with respect to environmental underperformance or other issues and subsequent actions. At facility level, adequate modes (like drop box, common email address, common phone numbers) for registering grievance will be maintained. The Public Grievance officer will be the focal contact point at the second level GRC. The contact details (weblinks, contact numbers, email-ids) will be displayed at construction sites at places accessible to the public and on the website of MEDD and Facility. The EA will issue office orders nominating the members of GRCs. The GRM will be gender responsive and ensure adequate gender representation as required. To ensure that the GRCs remain functional, the GRCs will meet at least once in six months even if there are no grievances received by the GRCs or all have been resolved at site level itself without referring the grievances to the next level GRCs.

319. The First level of GRC at facility/site level will have the responsibility for timely grievance redress on environmental safeguards related concerns and for registration of grievances, related disclosure, and communication with the aggrieved party. Depending on the type of the grievance, the First Level GRC will investigate the grievance and attempt to resolve it within 5 days of registration of grievance. If the grievance is not resolved at this level, the concern will be escalated to the Second Level. If the grievance is still unresolved at this stage (within 10 Days of registration of grievance), the grievance would be escalated to the Third level. At this level, the timeline for resolving the grievance will be within 15 Days after received by this GRC. The document trail will be maintained throughout the process of grievance redressal and will be reported thorough Semi-Annual Monitoring Reports. The provision for registering anonymous grievances will also be ensured in case the aggrieved person intends for the same.

320. Affected people can also take complaints to ADB's Accountability Mechanism although they should approach the local GRM in the first instance; but the GRM should not impede access to the country's judicial or administrative remedies.

321. **Process of Grievance Redress Mechanism:** The following process shall be adopted for receiving complaints and addressing received complaints:

Step 1: Receiving Grievances/ Complaints and its Registration at Site Level

- All grievances, complaints, concerns will be submitted verbally or in writing through drop box placed at accessible location, post, common email id or phone number
- Received complaints will be recorded, compiled and Registered (Grievance Number) in a register (database) placed at the site/ Dean's Office with support of the contractor's focal person on a daily basis (24 hours). Each grievance shall be given a unique number to track status.

Step 2: Review of Grievances, Sorting, Information and Forwarding (24 hours)

- Registered grievances will be reviewed by the focal person (Office Superintendent) with support of the PMC's Environment Expert and contractor's EHS Expert/s.
- Based on type of grievances, the focal person will sort out grievances with support of PMC's Environment Expert and contractor's EHS.
- The focal person will inform the GRC Chairperson about all grievances in writing. At that time, the focal person may suggest grievances that can be managed by the site engineer to the GRC Chairperson.
- GRC Chairperson will determine eligibility of the complaints. Inconveniences caused by minor construction related issues shall be referred to the site engineer to resolve immediately or within 24 hours. Site engineer will be responsible to respond to the complaints immediately. On the other hand, issues which cannot be resolved by the site engineer and if it is complex in nature shall be referred to GRC.
- The focal person will receive acknowledgement from concerned authorities (site engineer) on receipt of the grievances shared with them. The focal person shall inform complainants regarding eligibility of their complaint and action to be taken by the concerned authority (site engineer/ GRC) within (24-72 hours). If the grievance is ineligible, complainants should be informed of the reasons.

Step 3: Eligibility and Preparation for GRC meeting (2 days)

- GRC Chairperson will receive eligible complaints (copy of written complaint document or verbally recorded messages) from the focal person and review details; GRC Chairperson may ask to collect baseline information about the grievances registered, if required.
- GRC Chairperson will share list of documents with the GRC focal[75] to collect baseline information on selected grievances to be addressed.
- The GRC Secretary will arrange all documents with the help of PMC's Environment Expert and contractor's EHS etc. in a proper way to present in front of GRC.
- GRC Chairperson will call a meeting as per convenient date and time of the committee.

Step 4: Assessment of the Grievance, Meeting and Plan of Action (3 days)

- If necessary, the GRC will consult and seek relevant information about complaint from the concerned parties.
- On basis of members the collected evidence, GRC shall draw conclusions and make recommendations for a solution.
- GRC Secretary will keep record of the proceedings and decisions taken by GRC members to further track the status as per decided timeline.

[75] GRC focal will be responsible for receiving and maintaining records of Grievance Redressals, outcome, resolution provided etc.

- The GRC will agree on the action plan required to be implemented according to the recommendations made. The action plan shall include detailed activities along with timeline.
- GRC Secretary will inform to the complainant about the decisions taken by the committee members and expected date of resolution of the grievance.
- If the complaint is complex, the GRC may request for additional time and resolution after proper assessment or refer the complaint to the GRC-second Level.

Step 5: Implementation of Action (30 days)

- The concerned parties will be responsible to implement action plan according to recommendations of the GRC.
- The GRC members may arrange field trip and interact with the concerned persons, if needed before reaching the conclusion.

Step 6: Monitoring and Reporting (Monthly)

- The focal person shall be responsible to track and record status of all complaints - whether forwarded to site engineer or GRC in the database as follows – Grievance registered, Grievance in process to be resolved, Grievance addressed and closed, and Grievance forwarded to concerned authorities.
- The focal persons shall be responsible to report/inform status of the complaints (received, addressed, and forwarded) to the contractor for further reporting.
- Overall 1st level GRC chairperson shall be responsible for effective management of complaints at the facility/town level.

Step 7: Closure of the Complaint

- GRC Secretary shall prepare a summary of the findings and share with GRC members.
- On agreement of all GRC members, GRC Secretary shall provide information to the complainant about decisions taken in writing/verbal on the registered complaint and seek feedback of the complainant about the decisions taken. A copy of the letter shall be kept as record with GRC Secretary and the focal persons.
- Complaint shall be considered closed if all actions have been taken and the complainant satisfied with the resolution.
- GRC Secretary shall prepare a closure report of the grievances handled by GRC members and the closure shall be documented by the focal person in his register.

Step 8: Appeal to the State EA Level (MEDD) level GRC

- In the event that GRC- First and second level cannot decide on how to resolve the complaint, or if a complainant is not satisfied with the actions taken to resolve the complaint by the lower level GRCs, an appeal can be made to third level GRC either by the GRC Chairperson or complainant directly.
- GRC Chairperson/s of 1st or 2nd level or complainant shall submit an appeal in writing to the higher level GRC established at third level.

- The third level GRC Secretary shall register the case in consultation with Chairperson and provide a number of the grievances to be tracked.
- The third level GRC Secretary shall acknowledge the registration of the grievance to the complainant in writing.
- The Secretary of the GRC shall review the registered grievances and collect required evidence from relevant parties to present case to the GRC.
- The third level GRC Chairperson shall call a GRC meeting to review the complaint. GRC members shall get information about the meeting in advance to ensure their availability in the meeting.
- The third level GRC shall draw conclusions and recommendations based on the evidence in the meeting. At the same time an action plan shall be developed for implementation with a timeline.
- The third level GRC Secretary shall communicate decisions of the third level GRC to the complainant in writing. The copy of the communication shall be kept with the third level GRC Secretary as record.
- The recommendations shall be implemented immediately.
- Upon completion of the recommended actions, the third level GRC Focal shall prepare a report on the closure of the complaint which will be signed by the complainant and third level GRC Chairperson. A copy of the same shall be kept for record.

VIII. ENVIRONMENTAL MANAGEMENT AND ENVIRONMENT MONITORING PLAN

322. An environmental management plan (EMP) has been developed to provide mitigation measures to reduce all negative impacts to acceptable levels. The EMP will guide the environmentally-sound construction of the subproject and ensure efficient lines of communication between MEDD, DMER, site office, PMC and Contractor. The EMP will (i) ensure that the activities are undertaken in a responsible non-detrimental manner; (ii) provide a pro-active, feasible and practical working tool to enable the measurement and monitoring of environmental performance on site; (iii) guide and control the implementation of findings and recommendations of the environmental assessment conducted for the subproject; (iv) detail specific actions deemed necessary to assist in mitigating the environmental impact of the subproject; and (v) ensure that safety recommendations are complied with. The EMP includes the institutional arrangement and a monitoring program to measure the environmental condition and effectiveness of implementation of the mitigation measures. The EMP also includes a budget for implementation of the environment management measures.

A. Institutional Arrangement and Responsibilities:

323. For effective implementation of Environmental Safeguard measures in sub-project lifecycle (i.e., Preconstruction-Construction and Operation Phases) Institutional Setup plays the pivotal role. Beside implementation of safeguard measures, Institutional Arrangement would also be necessary to (a) ensure regulatory compliance; (b) ensure supervision and monitoring of adequacy of safeguard implementation process (c) suggest corrective action (as necessary); (d) ensure regular reporting to stakeholders including regulators and funding agency; (e) Redressing Grievances (if any)

324. The existing institutional arrangement is not equipped to ensure environmental safeguard in the sub-project. However, at facility level, aggrieved person may reach out to Dean – Sindhudurg Hospital and Medical College (concerned Dean for Sindhudurg Civil Hospital as well) to inform about any concern with respect to environmental safeguards. The existing Sindhudurg Civil Hospital has Sanitary Inspectors in place to ensure manage bio medical and other types of hospital waste.

325. The proposed institutional structure for management of environmental safeguards for this sub-project is provided in the Table and Figure below. The overall responsibility for EMP implementation and compliance with regulatory requirements would lie with MEDD (Executing Agency). During various phases of sub-project lifecycle, the other entities like implementing agency (IA)/ PMU, Facility Level Environmental Unit including Contractor, Project Management Consultant (PMC) will also be involved in the process of safeguard implementation-supervision-reporting as well as stakeholder engagement and redressing grievances (as applicable) during the period of their engagement.

Table 38: Implementation Arrangements

Proposed Institutional Arrangement for Environmental Safeguard Implementation	
(i) Executing agency	- Secretary – MEDD, - Deputy Secretary-MEDD or as designated by Secretary MEDD
(ii) Key implementing agency (IA)/ PMU	***Environmental and Social Safeguard Cell*** - Commissioner- DMER (Project Director- MTCMESDP) - Nodal officer (of Joint Director or Assistant Director rank) - Qualified Environmental Expert - Qualified Social Expert
(iii) Facility Level	***Facility Level Environment Unit in Sindhudurg Govt. Medical College and Hospital***[76] - Office of Dean assisted by Medical Superintendent and others (like Office Superintendent, Sanitary Inspector, Senior Admin Officer assisted by Superintendent) - Qualified Environment Expert, PMC - Qualified Health and Safety Expert, PMC - Qualified Environment, Health and Safety Expert, Contractor

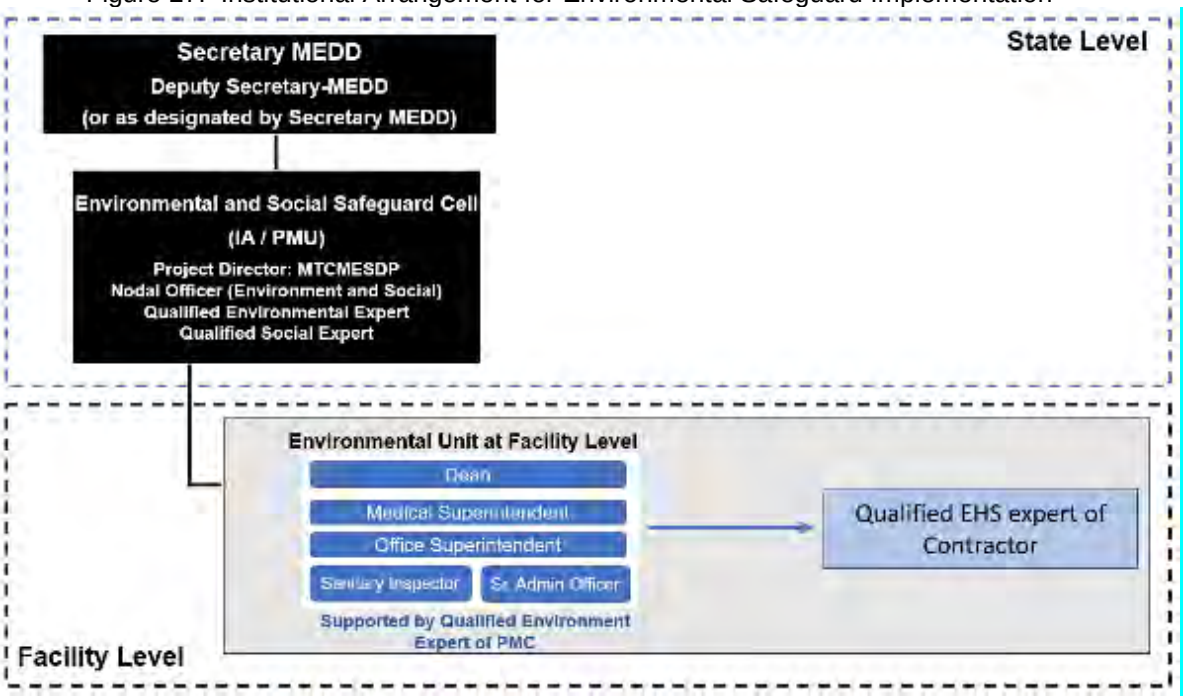
MEDD = Medical Education & Drugs Department, MTCMESDP = Maharashtra Tertiary Care and Medical Education Sector Development Program, PMC = Project Management Consultant
Source: Asian Development Bank.

326. The indicative structure of State Level Committee is provided below

Secretary – MEDD
Deputy Secretary-MEDD or as designated by Secretary MEDD
Additional members as nominated by Secretary – MEDD

[76] In addition to the entities as mentioned, MEDD will engage a NABET accredited EIA Consultant organization through PMC for conducting Environmental Assessments and to aid in securing Environmental Clearance for the Sub-Project.

Figure 27: Institutional Arrangement for Environmental Safeguard Implementation



327. An apex level (state level) committee will be formed for oversighting the safeguard performance and redressal of grievances if any not resolved at previous levels.

328. **Environmental and Social Safeguard Cell (at IA / PMU):** The PMU will form the Environment and Social Safeguard Cell (ESSC), which will include two (one qualified Environment and one qualified Social officials) experts under the Nodal Officer (of Joint Director or Assistant Director rank) who will be reporting to Project Director- MTCMESDP (Commissioner- DMER). The ESSC will be headed by Project Director- MTCMESDP. The qualified environment expert will have adequate experience in BMWM.

329. **Environmental Unit at Facility Level:** At facility level, for management of environmental safeguard measures an Environmental Unit will be formed which will be headed by the Dean of Sindhudurg Medical College and Hospital. The Medical Superintendent at facility level will be the designated Focal Point for overall supervision of Environmental Safeguards aspects. One Office Superintendent and Sanitary inspector will be supporting Medical Superintendent in implementation of EMP on day-to-day basis. In addition to that, the Environmental Unit will be supported by one Senior Admin Officer in order to provide secretarial support. In case of a radiology or oncology department or any related activities are proposed, the facility must have a well-qualified and experienced radiation safety officer (RSO) certified by Atomic Energy Regulatory Board (AERB) or as per the requirements of AERB. Job responsibilities of the RSO will be according to the relevant rules or as defined by the AERB.

330. Project Management Consultant (PMC), engaged by MEDD will be assisting the Environmental Unit (at Site/Facility level) in the process of safeguard management till the

end of defect liability period or issuance of project closure report whichever is later. Qualified Environment expert with adequate experience in BMWM and Health & Safety (H&S) expert will be appointed by PMC for the facility for extending handholding support to Environmental Unit at the facility/site level and to train the Facility Level Environment unit with respect to safeguard implementation, supervision, and reporting.

331. One qualified Environment, One Health and Safety (EHS) experts[77] will be appointed at Sindhudurg Medical College and Hospital by the Contractor who will be responsible for day-to-day implementation of EMP and EHS plan. The Contractor will also have a Community Liaison officer (CLO) on board if deemed necessary by the EA/ PMC/ADB based on the feedback/ responses/ resentments of local community received during initial consultations. The CLO will be responsible for regularly updating the community/ other stakeholders, getting feedbacks, negotiating on the requirements and will also be part of the site level GRC and help in resolving issues/ conflicts, if any.

332. The qualified environmental/H&S experts under PMU, Contractor and PMC will be retained till the end of defect liability period or issuance of project closure report whichever is later.

333. Delineated responsibilities of the entities who will be involved in EMP implementation are furnished in Table 39.

[77] Instead of One Environment Expert and one H&S Expert, an expert with Environment - Health-Safety expertise may also be considered if the person is qualified and experienced enough in terms of environment, health and safety.

Table 39: Institutional Responsibilities - Environmental Safeguard Implementation

One Environment Expert and one H&S Expert, Contractor[78] : Full Time involvement	Qualified Environment (with adequate experience in BMWM) and H&S expert at site/Facility Level: Full Time involvement (PMC)	Medical Superintendent (Supported by Office Superintendent and Sanitary inspector): Full Time involvement at Facility[79]	Qualified Environment expert (with adequate experience in BMWM) in Environment Cell, DMER (PD Office): Full Time involvement	Nodal Officer at State Level with overall responsibility for Environmental Safeguards, Environment Cell, DMER (PD Office): Full Time involvement
• Preparation of site specific Contractor's EMP including Health and safety (H&S) plan • Day to day H&S and EMP implementation at site during construction stage • Securing regulatory permits and Maintenance of records of regulatory permits/approvals prior to and during construction phase • Conduct Environmental Monitoring during construction phase. • Provide required data/information for	• Facilitate Environmental Clearance (under purview of EIA Notification 2006 and its subsequent amendments) by appointing accredited EIA consultant. • Ensuring that the requisites clearances for environment and labour are at place prior to commencement of any work. • Updating the IEE to incorporate EC conditions, changes in scope or unanticipated impacts, if any • Review of CEMP/ EHS plans prepared by Contractor.	• Get regular updates from PMC with respect to status of Environment, Health and Safety measures implementation and regulatory compliance. • Ensuring compliance to conditions precedents stipulated by regulators as part of permits/clearances. • Ensuring day to day management of waste (including biomedical waste) and effluent in a regulatory compliant manner and as per	• Assisting the Nodal officer and PD in Environment safeguards related activities. • Guide the field staff in achieving compliance. • Review sub-project progress reports submitted by PMC/ Contractors/ others from Environmental Unit at Facility/Site Level • Final Review of CEMP/ EHS plans prepared by Contractor and first review by PMC. • Assist in obtaining and renewing statutory permissions that are	• Coordination with Funding Agency and Reporting • Coordination with external regulatory authorities • Regular Coordination with Environmental Unit at Facility/Site Level • Allocation of fund for EMP implementation • Get regular updates from site level on regulatory compliance and EMP Implementation

[78] Instead of One Environment Expert and one H&S Expert, an expert with Environment - Health-Safety expertise may also be considered if the person is qualified enough in terms of qualification and professional experience.

[79] Post release of PMC and Contractor, the safeguard implementation-supervision-monitoring-reporting work (including biomedical waste, other waste and effluent management), and compliance to regulatory requirements will be ensured by Medical Superintendent with support of Office Superintendent and Sanitary inspector.

One Environment Expert and one H&S Expert, Contractor[78] : Full Time involvement	Qualified Environment (with adequate experience in BMWM) and H&S expert at site/Facility Level: Full Time involvement (PMC)	Medical Superintendent (Supported by Office Superintendent and Sanitary inspector): Full Time involvement at Facility[79]	Qualified Environment expert (with adequate experience in BMWM) in Environment Cell, DMER (PD Office): Full Time involvement	Nodal Officer at State Level with overall responsibility for Environmental Safeguards, Environment Cell, DMER (PD Office): Full Time involvement
Monitoring Reporting to PMC and others in Environmental Unit at Facility Level • Submit monthly progress report to PMC/ others of Environmental Unit at Facility Level including EHS compliances. • Establish and participate in GRM. • Participate in Stakeholder Engagement	• Day to day Monitoring of EMP and Health and safety (H&S) implementation work of contractor • Provide guidance to the contractor for achieving compliances. • Maintenance of records on regulatory permits/approvals taken by contractor during construction phase • Identify areas where specific mitigation measure is needed from safeguard point of view (Corrective Action Plan) during construction stage due to underperformance by contractor's EMP, H&S implementation practice. • EMP implementation, Environmental Monitoring, and compliance to regulatory norms during operation phase • Provide inputs for preparation of Semi-	the provisions of EMP. • Regular coordination with PD office towards providing input in preparation of Monitoring Reports and sharing records on regulatory permits/approvals. • Participate in GRM • Ensure GRM remain functional throughout implementation period. • Participate in Stakeholder consultations.	required to be taken by the DMER. • Preparation of Environmental Monitoring Report • Participate in GRM • Ensure GRM remain functional throughout implementation period. • Participate in Stakeholder consultations. • Review of updated IEE of the sub-project and put up to the Nodal officer for concurrence and further submission to ADB through the PD for further review and approval.	• Taking decision on corrective measures (if required) • Ensure formation of GRM • Ensure functionality of GRM • Participate in GRM • Review the semi-annual EMR and put up for PD's approval before submission to ADB through MEDD.

One Environment Expert and one H&S Expert, Contractor[78] : Full Time involvement	Qualified Environment (with adequate experience in BMWM) and H&S expert at site/Facility Level: Full Time involvement (PMC)	Medical Superintendent (Supported by Office Superintendent and Sanitary inspector): Full Time involvement at Facility[79]	Qualified Environment expert (with adequate experience in BMWM) in Environment Cell, DMER (PD Office): Full Time involvement	Nodal Officer at State Level with overall responsibility for Environmental Safeguards, Environment Cell, DMER (PD Office): Full Time involvement
	Annual & Annual Environmental Monitoring Report (that will include H&S components) • Participate in GRM • Ensure GRM remain functional through implementation period. • Participate in Stakeholder consultations. • Provide requisite trainings to facility level staff on environment safeguards requirements compliances for both construction and operations			

B. Environment Management Plan:

334. The Environment Management Plan (EMP) would consist of the mitigation measures for each component of the environment due to the proposed activities throughout the project lifecycle i.e., design - preconstruction – construction – operation phase to minimize adverse environmental impacts resulting from the activities of the proposed interventions. The EMP would also delineate the environmental monitoring plan to review adequacy of EMP implementation and budget for the implementation of EMP. The EMP for the sub-project is provided in Table 40. They should be implemented in conjunction with the mitigation measures as detailed out in the Chapter VI: Anticipated Environmental Impacts and Mitigation Measures. The ADB-cleared EMP will be made part of the bidding and contract documents. If the IEE needs to be updated based on detailed design the updated EMP will have to be made part of the contract document as an addendum.

Table 40:Environmental Management Plan

Item/ Components	Potential concerns /Impact	Mitigation, Management and Enhancement Measures	Means of Verification / Monitoring Procedure	Timelines/ Frequency of Monitoring	Responsibility for implementation	Supervision Responsibility
General (during entire project lifecycle)						
Legal register	Compliance to regulatory requirements, tracking of compliance to regulatory requirements	Set-up an integral compliance management system for ensuring regulatory compliance e.g., legal register should be developed for better monitoring of the compliance status of permits and approvals during pre-construction, construction and operational phase.	Verification of Consent /Permit documents	Throughout the project lifecycle (pre-construction, construction and operational phase)	Contractor, PMC, DMER	MEDD
Grievance Redressal Mechanism (GRM)	establish a grievance redressal process for receiving and dealing with the concerns and complaints of affected public and community, if any	A Grievance Redressal Mechanism (GRM) will be developed and implemented to allow the community and workers to express their concerns with respect to Environment-Health-Safety concerns, if any.	Verification of records of registered grievances and resolution outcomes; minutes of meetings.	Before initiation of construction works and throughout project lifecycle	Contractor, PMC, DMER	MEDD
Stakeholder Engagement	Dissemination of information, engaging stakeholders in process of decision making	A Stakeholder Engagement Plan (SEP) may be developed by contractor to ensure that a consistent, comprehensive, informed and coordinated approach is taken up with the concerned stakeholders and disclosure of information is ensured throughout the project cycle as and when required.	stakeholder engagement meetings/workshops.	Before initiation construction works and throughout the project lifecycle	Contractor, PMC, DMER	MEDD

Item/ Components	Potential concerns /Impact	Mitigation, Management and Enhancement Measures	Means of Verification / Monitoring Procedure	Timelines/ Frequency of Monitoring	Responsibility for implementation	Supervision Responsibility
Design Phase						
Lay out plan and Building Design	Lack of proper planning may lead to energy inefficiency, cutting of trees unnecessarily, improper drainage system (possibility of runoff being contaminated due to mis management of wastes), lack of water harvesting, contamination of water bodies, emission of odor from treatment plants and waste storage areas, disturbance to patients, students due to noise, improper landscaping and traffic management etc.	- The layout of the facilities will be such that the in-patient departments, classrooms and hostel premises are away from the noise generating sources such as road traffic, pumps, DG sets. - The siting of STP/ETP and temporary storage areas of BMW as far as possible will be away from the hostel and inpatient departments and from the residential areas around the site. - Siting of STP/ ETP and waste storage areas will be avoided in the upwind direction of the hostel, in patient department and surrounding residential areas. - Building layout will be superimposed on the site features to avoid clearing trees from the zones that are not going to be constructed. Minimization of tree cutting by identifying the areas to be retained as green or open areas. - STP/ETP, waste storage areas etc. will be installed at height above the high flood level as a precautionary measure. - Acoustic building materials for walls, windows, doors will be proposed based on the assessment of noise levels, if they are anticipated to be beyond the standards. - Acoustic enclosures will be provided to noise generating sources like DG sets, pumps etc. - Roof top and in other suitable locations rainwater harvesting structures will be proposed. - Open area runoff like parking, road, paved areas shall not be directed to groundwater recharge pits without appropriate treatment to avoid contamination. - The Hospital Building, as well as its allied facilities, would be IGBC-Healthcare Platinum certified. In addition, all additional campus buildings would be accredited according to the relevant IGBC Platinum certification	Compliance with GRIHA, ECBC , NBC criteria and those stipulated by EC, Consents, authorization letters etc.	Before initiation construction works and to be maintained during operation phase	Contractor, PMC, DMER	MEDD

Item/ Components	Potential concerns /Impact	Mitigation, Management and Enhancement Measures	Means of Verification / Monitoring Procedure	Timelines/ Frequency of Monitoring	Responsibility for implementation	Supervision Responsibility
		- Energy efficiency measures will be proposed to comply with ECBC. - Environmental Sustainability Provisions required for obtaining GHRIHA rating will be detailed in the sub-project specific IEE and EMPs. - Drainage layout will be well planned and ensured that it leads the runoff to a treatment chamber and reused as much as possible. - Proper traffic circulation plan along with adequate parking will be ensured. - In case of open parking areas, possible usage of grasscrete may be explored - Adequate provisions will be in place to deal with situation in case of emergency like proper exit path, assembly area, area for water storage for fire emergency etc.				
Securing clearances required prior to commencement of construction	If not followed strictly, it will lead to violation of EIA Notification 2006 and Air and Water Acts	- The permits or Certificates from concerned authorities (i.e., Environmental Clearance from State Environment Impact Assessment Authority, Tree Felling Permissions from Forest Department, water abstraction for GMC, consent to establish for the GMC etc. [80]) as applicable prior to construction	Clearance letters/ permits/ Monitoring of stipulated conditions	Before site preparation	DMER, PMC	MEDD
Pre-construction phase						
Contractor's Environment, Health and	Inadequate Safeguard Performance during	- The Contractor to appoint One Environment Expert and one H&S Expert,[81] having relevant qualification and adequate	Availability of the expert/s during	Before initiation of demolition of existing	Contractor	PMC, DMER, MEDD

[80] Responsibility of securing Environmental Clearance, tree felling permission, water abstraction permission (if that is to be continued during operation stage) would lie with DMER and MEDD

[81] Instead of One Environment Expert and one H&S Expert, an expert with Environment - Health-Safety expertise may also be considered if the person is qualified enough in terms of qualification and professional experience.

Item/ Components	Potential concerns /Impact	Mitigation, Management and Enhancement Measures	Means of Verification / Monitoring Procedure	Timelines/ Frequency of Monitoring	Responsibility for implementation	Supervision Responsibility
Safety Experts	project implementation	experience in implementation of Environmental safeguards in the project till the engagement period of contractor. - The expert/s to prepare construction EMP (CEMP) including Health and safety (H&S) plan based on ADB cleared EMP if required to include the site-specific conditions pertaining to construction and associated activities. - The occupational health and safety plan for construction site and nearby community will also be prepared in detail by the Contractor.	construction phase; construction EMP (CEMP), EMP Monitoring Report	strucures and site preparation		
Securing applicable Permits/consents from concerned authorities	To ensure compliance to regulatory requirements	- Consent to Establish and Consent to Operate (for facilities such as crusher, batching plant etc.) should be obtained as appropriate and terms/conditions mentioned in the consent must be complied with. - Prior permissions for management of Construction and Demolition Waste should be obtained as per Construction and Demolition Waste Management Rules 2016. - Prior Permission for ground water extraction shall be obtained from the central ground water board (CGWB) or other concerned authority for proposed borewells/abstraction of groundwater. - Registration and license to be obtained as per Contract Labour (regulation and abolition) Act 1970 or state act and rules - Registration and license under Inter State Migrant Worker Act (in case migrant workers are engaged).	Permit document and integration of related measures into the specific EMPs	Before demolition, initiation of site preparation and construction	Contractor	PMC, DMER /MEDD
Alteration of land contour and drainage pattern	Changed storm water runoff from alterations of the site's natural drainage patterns due to excavation	- Design of proposed facility components should enable efficient drainage of the sites and maintain natural drainage patterns to the extent possible. - Plan should be in place so that the drainage pattern of surrounding area is unaffected. The waterbody located within	Adoption of drainage plan in project	before initiation of site preparation and constructi	Contractor	PMC, DMER /MEDD

Item/ Components	Potential concerns /Impact	Mitigation, Management and Enhancement Measures	Means of Verification / Monitoring Procedure	Timelines/ Frequency of Monitoring	Responsibility for implementation	Supervision Responsibility
	works in the sites, construction	the site should be retained and conserved. The seasonal stream passing through the site is proposed to be realigned. It will be ensured that the diversion doesn't affect the flow and capacity of the stream.		on, during construction		
Shifting of Utility	Disruption of utility services to local community (if any)	- All utilities which are likely to be affected by the project should be shifted before start of construction. - Necessary permission and payments[82] should be made to relevant utility service agencies to allow quick shifting and restoration of utility services. - Local people must be informed in prior through appropriate means about the time of shifting of utility structures and potential disruption of services if any. - If it is found that AC structures are present during the survey, then the Contractor will prepare a detailed SOP for asbestos handling and management prior to disposal/ handling of the AC structures. - All AC pipes/ structures will be left in situ and untouched, if possible - In the event, that the asbestos fibers from AC structures were accidentally disturbed/exposed, the contractor should follow Safe disposal provisions as per the USEPA. - Use of AC materials will be strictly prohibited at site.	Utility shifting plan, Intimation to local community	before initiation of site preparation and construction	Contractor	PMC, DMER /MEDD
Selection of materials and construction technologies /design	to ensure Structural stability, visual aesthetics, ventilation, adequate health and safety condition	Applicable building regulations as per Maharashtra Regional and Town Planning (MRTP) or other relevant regulation (as per the applicability) should be followed	Adoption of Design Basis Report developed for the sub-project	before initiation of site preparation and construction and	DMER along with design consultant and	MEDD

[82] Responsibility of making payment to concerned entity would lie with DMER/MEDD

Item/ Components	Potential concerns /Impact	Mitigation, Management and Enhancement Measures	Means of Verification / Monitoring Procedure	Timelines/ Frequency of Monitoring	Responsibility for implementation	Supervision Responsibility
				during construction	PMC in approving the technology and building materials; Contractor for selection the sources of aggregates, sand etc.	
Trees	Felling of trees (if any)	- Felling of trees is envisaged during demolition and construction of new buildings. Permission from competent authority should be obtained. All efforts must be taken to conserve trees and avoid felling to the greatest extent practicable. - Before proceeding with any vegetation clearance or construction work, it is essential to conduct a survey to identify mature, older trees, and to actively consider alternative measures including transplantation to avoid their removal.	Tree Felling Permission, payment disbursed for felling and taking up of compensatory plantation, Green area	Cutting prior to start of construction and monitoring monthly to avoid cutting of trees	Contractor[83]/ PMC/DMER	PMC, DMER /MEDD

[83] In case it is defined so in the Contract document

Item/ Components	Potential concerns /Impact	Mitigation, Management and Enhancement Measures	Means of Verification / Monitoring Procedure	Timelines/ Frequency of Monitoring	Responsibility for implementation	Supervision Responsibility
		- In consultation with concerned department compensatory plantation, green area development activities should be undertaken accordingly.	development plan, Site Inspection	unnecessarily		
Chance finds procedure	Accidental discovery of historical and archeological resource/artefacts	- A rapid response procedure to protect chance finds while minimizing disruption to project activities should be in place. It will include the provisions to: i) consultation with the State Archaeology Department, ii) demarcation of the discovery site, iii) chance finds report, iv) arrival and actions of cultural authority, and v) suspension/non- suspension/further suspension of work - If archaeological artifacts are unexpectedly found during construction, work will be immediately halted, and the Implementing Agency (IA) and the local cultural relics/heritage department will be informed of the discovery. [84]	Chance finds procedure, findings (if any) record	Before initiation construction works and implementation to be ensured throughout construction phase	Contractor	PMC, DMER/ MEDD
Resettlement and Rehabilitation	Potential loss of Livelihood and/or property asset, if applicable	- Resettlement Plan/ due diligence report to be developed as per national regulatory requirement and ADB requirements. - Compensation and assistance as per Resettlement Plan/Framework/ ADB SPS, 2009 to be paid, as applicable	Resettlement Plan (in case of physical / economic displacement); disbursement of compensation	Before initiation of construction works	PMC/DMER	MEDD

[84] If any such archaeological relics are found in the sub-project site and, it is destroyed or removed from the area without the knowledge of the competent authority that will be considered as violation of national regulations as well as SPS 2009.

Item/ Components	Potential concerns /Impact	Mitigation, Management and Enhancement Measures	Means of Verification / Monitoring Procedure	Timelines/ Frequency of Monitoring	Responsibility for implementation	Supervision Responsibility
Site Induction Training	Lack of understanding of potential safeguard concerns and corresponding mitigation measures	- No works will be initiated by the contractor until the site induction training is carried out - Site induction training includes but not limited to i) discussion and review of EMP detailing specific environmental risks associated with their Scope of work; how to manage, requirement of legal compliances ii) Health and Safety Awareness	Record of Induction Trainings	Prior to start of work at site	Contractor	PMC, DMER /MEDD
Labour Camp/Accommodation	Conflicts between locals and labours Health & Safety and environmental risks related to labour camps leading disruption and delay of construction works and quality of life of the labors	Contractor to ensure the followings measures in consideration of the local conditions- - Construction camps should be established with prior permission from PCB as applicable. Camps will not be established on forest land, low lying/ flood prone areas and will be located as far as possible from the habitations, water bodies, harvesting structures, environmentally sensitive areas (atleast 500 m away) etc. - Labour camp should comply with ILO guideline (preferably those ratified by India).[85] - The location, layout and basic facility of camp will be submitted to and approved by MEDD/PMC before establishment. - Use of fuelwood should be strictly prohibited at labour camp/accommodation, Contractor should ensure supply of alternative clean fuel such as LPG and common cooking area with fire safety provisions in place. - The building materials used for camps will be sturdy and safe to ensure structural safety. - No temporary or permanent constructions to be done on the locations of water bodies (including seasonal) identified within	Visual observation / Site inspection/ consultation with labours	Monthly basis	Contractor	PMC, DMER/ MEDD

[85] https://www.ilo.org/wcmsp5/groups/public/---ed_emp/---emp_ent/---multi/documents/publication/wcms_116344.pdf

Item/ Components	Potential concerns /Impact	Mitigation, Management and Enhancement Measures	Means of Verification / Monitoring Procedure	Timelines/ Frequency of Monitoring	Responsibility for implementation	Supervision Responsibility
		site even if there is no water and these water bodies shall be barricaded. - Provisions of labour camps provided with individual dwelling units supported with piped water supply, - Provision of common toilets/latrines and bathing facilities duly segregated for male and female labour - Provision of First aid facilities, beds, mosquito repellent/ net, snake repellent will be made - Collection of domestic waste and sewage and proper disposal to be ensured as per rules - Labour camp should be developed to avoid possibility of flooding, any other natural hazards. - Organizing awareness camp on general health awareness with medical facility - Access to complaint register - Lighting and fencing will be provided. - Wildlife awareness training should be provided so that no wildlife, in case of chance encounter in the region is disturbed. - Precautions to be taken to protect the workers from insect/pest to reduce the risk to health. Use of insecticides complying with local regulations. - No liquor or prohibited drugs will be imported, sold, given to the workers of host community. - Awareness raising to immigrant workers/local community on communicable and sexually transmitted diseases such as HIV, AIDs and others. - Besides the above, the contractor to ensure the following - Workers will have access to an adequate and convenient supply of free potable water that meets national/local or WHO drinking water standards,				

Item/ Components	Potential concerns /Impact	Mitigation, Management and Enhancement Measures	Means of Verification / Monitoring Procedure	Timelines/ Frequency of Monitoring	Responsibility for implementation	Supervision Responsibility
		- All tanks used for the storage of drinking water should be covered to prevent water stored therein from becoming polluted or contaminated, - Ensure that drinking water quality is regularly monitored. - Use of environmentally friendly sanitation solutions, such as bio toilets and bio digestor septic tanks, or any other advanced small-scale sewage treatment systems shall be made by the that contractor.				
Construction Phase						
Sources of construction materials	Potential Impact on natural land Use/ contours, vegetation clearance, disturbance to natural drainage patterns, water logging, and water pollution.)	- Strip the top soil and store properly (so that it maintains the organic/ inorganic properties of the soil) for reuse later. - Maximize the re-use of earth-cut materials, spoils, and construction debris/wastes. - Obtain construction materials only from government-approved quarries/vendors that are compliance to the environmental regulations. - Creation of new borrow areas, quarries, etc., for the project should be avoided; if unavoidable, contractor to obtain all necessary clearances and permissions in prior	Documentation with respect to source of material; permit/clearance documents	Monthly basis	Contractor	PMC, DMER /MEDD
Generation of Construction and Demolition Waste and disposal of the same	Contamination of surrounding environment, risk to community health and safety, poor aesthetics	- The contractor to ensure regular collection and disposal of construction waste generated debris, concrete, metal cuttings waste, waste/used oil etc. through authorized vendor or by any other means in compliance with regulatory requirement. - Collection, storage, handling and disposal of Asbestos (if any) containing waste/material from the site should be managed in accordance with rules and guidelines on environmental management of construction & demolition (C& D) wastes by Central Pollution Control board (CPCB) and MoEFCC. Contractor should submit a demolition plan for the existing	Demolition and Waste management plan, evidence of contracting and disposal of C&D waste, record of generation	Monthly basis	Contractor	PMC, DMER /MEDD

Item/ Components	Potential concerns /Impact	Mitigation, Management and Enhancement Measures	Means of Verification / Monitoring Procedure	Timelines/ Frequency of Monitoring	Responsibility for implementation	Supervision Responsibility
		structures/ sheds (if any) within the premises that are likely to demolished for the proposed development works.	of waste, visual observation			
Asbestos Materials	Health risk due to exposure to asbestos materials	- Obtain details from Local body on location of underground AC pipes/ structures. - Contractor should conduct a survey on the presence of existing AC pipes/ structures at site (if any). - If it is found that AC structures are present during the survey, then the Contractor will prepare a detailed SOP for asbestos handling and management. ADB's Good Practice Guidance for the Management and Control of Asbestos: Protecting Workplaces and Communities from Asbestos Exposure Risks | Asian Development Bank (adb.org) will be followed along with other international guidelines in preparing the SOPs. - All AC pipes/ structures will be left in situ and untouched, if possible - In the event, that the asbestos fibers from AC structures were accidentally disturbed/exposed, the contractor should follow Safe disposal provisions as per the USEPA https://www.epa.gov/asbestos/safe-work-practices - Use of AC materials will be strictly prohibited at site	o Onsite observations & records o Asbestos management Plan o Reporting of Incidence by Contractor o Supervision report of Asbestos management in Semi-annual Environmental	As and when required	Contractor	PMC, DMER /MEDD

Item/ Components	Potential concerns /Impact	Mitigation, Management and Enhancement Measures	Means of Verification / Monitoring Procedure	Timelines/ Frequency of Monitoring	Responsibility for implementation	Supervision Responsibility
			Monitoring Report (SEMR)			
Air Quality	o Dust Generation due to demolition and construction activities and transport, storage and handling of construction materials. o Emission of air pollutants (HC, SO2,NOX,CO etc.) from Construction vehicles and use of construction equipment and machinery	- The construction site will be barricaded with temporary dust capturing and noise attenuating barriers of adequate height as must be prescribed in the CTE - Contractor to submit location and layout plan for storage areas of construction materials approved by MEDD/PMC - Transport, loading and unloading of loose and fine materials through covered vehicles. - Provisions for Paved approach roads. - Storage areas to be located downwind of the habitation area. - Water spraying on earthworks, unpaved haulage roads and other dust prone areas. - Provision of (Personal Protective Equipment) PPEs to workers. - Regular maintenance of - machinery and equipment as per SPCB requirements. - Batching plants should be located at downwind (as far as possible) direction from the nearest settlement. - Batching plants will have dust screens at the silos, aggregate batcher, feeder areas of adequate height. - Only crushers licensed by the PCB should be used - All DG Sets shall have acoustic enclosure as per CPCB and other relevant norms. - DG sets should be provided with adequate stack height and use of low sulphur diesel as fuel. - LPG should be used as fuel source in construction camps instead of wood. - Ambient air quality monitoring should be taken up at adequate location on quarterly basis or as per the recommendation of	Site Inspection/ Document review, monitoring results	Monthly basis	Contractor	PMC, DMER /MEDD

Item/ Components	Potential concerns /Impact	Mitigation, Management and Enhancement Measures	Means of Verification / Monitoring Procedure	Timelines/ Frequency of Monitoring	Responsibility for implementation	Supervision Responsibility
		MPCB or any other regulatory body. To ensure adequacy of safeguard performance, the standards as provided in Appendix 9 should be considered as benchmark. - Contractor to prepare and maintain logbook for water sprinkling - A temporary dust screen cum noise barrier of adequate height shall be provided on the boundary of the sub-project site, especially towards southern side where there is a school located (as well as residential area) for dust control. - Use of fuelwood should be strictly prohibited at labour camp/accommodation, Contractor should ensure supply of alternative clean fuel such as LPG and common cooking area with fire safety provisions in place				
Noise and Vibration	Disturbance to local residents and sensitive receptors due to increased noise and vibration from demolition and construction activities and operation of equipment, machinery and construction vehicles	- The construction site will be barricaded with temporary dust capturing and noise attenuating barriers of adequate height as must be prescribed in the CTE - All construction equipment/machineries to be timely serviced and maintained. - Construction equipment and machinery to be fitted with silencers and maintained properly. - Timing of noise generating activities should be restricted during daytime near residential areas and any noise generating works near to the primary school (located in the site adjacent area approx. 160 meters) must be avoided during school hours. - Noise generating operations may be taken up intermittently to avoid exposure to higher noise level for longer period. - Honking should be restricted near built-up areas - Provision of PPEs should be kept for workers - Noise monitoring should be taken up at adequate location on quarterly basis or as per the recommendation of MPCB or any other regulatory body. To ensure adequacy of safeguard	Site Inspection, Document review, Visual observation, monitoring results	Monthly basis	Contractor	PMC, DMER /MEDD

Item/ Components	Potential concerns /Impact	Mitigation, Management and Enhancement Measures	Means of Verification / Monitoring Procedure	Timelines/ Frequency of Monitoring	Responsibility for implementation	Supervision Responsibility
		performance, the standards as provided in Appendix 9 should be considered as benchmark. - If blasting is done, prior permission will be obtained from the competent authority. Structural assessment of surrounding building will be done. Baseline and during blasting vibration monitoring will be done to ensure no adverse impacts are there on the surrounding structures/ ground. - A temporary dust screen cum noise barrier of adequate height shall be provided on the boundary of the sub-project site, especially towards southern side where there is a school located (as well as residential area) to mitigate the concerns associated with noise generation. - All DG Sets shall be outdoor type with Hospital Type Silencer and acoustic enclosure as per CPCB and other relevant norms				
Surface and Groundwater	o Stress on water resources. o Contamination of surface and ground water with fuel and chemical spills; and discharge of wastewater/solid waste from the construction	- Obtain approval/permission from competent authority if ground water abstraction through bore well is carried out or water is sourced from any other means. - Permit conditions (if any) should be made in practice. These should be included in construction EMP by the contractor. - To avoid contaminating water, discharge of hazardous substances, chemicals, construction material and wastes into water courses, drainage systems should strictly be prohibited. - Silt fencing will be used along the seasonal stream and pond within site area whenever works are conducted adjacent to them. - Dumping of waste, construction materials will be strictly prohibited into the water bodies even if they are dry. - Temporary Storm drains should be designed according to site conditions to avoid contamination of water sources from storm water runoff and spills.	Site Inspection, Document review, monitoring results	Monthly	Contractor	PMC, DMER/ MEDD

Item/ Components	Potential concerns /Impact	Mitigation, Management and Enhancement Measures	Means of Verification / Monitoring Procedure	Timelines/ Frequency of Monitoring	Responsibility for implementation	Supervision Responsibility
	area/construction camps	- All fuel and chemical storage (if required on-site) shall be located on an bunded impermeable platform within surrounded by fencing. The storage facility shall be at least 100 m away from the water stream./bodies. - Use treated water for water sprinkling to optimize usage of water for dust suppression in access/haul roads, washing of vehicles, concrete mixing, etc. - The batching plant will have adequate capacity sedimentation tank. No untreated alkaline water from the BP will be discharged on open and unlined ground or water bodies. The treated water should undergo testing for alkalinity before being discharged into low-lying areas, water bodies, or open grounds. Reuse the treated water for non-potable uses should be ensured to the extent possible. - Labour engaged in the construction phase, should be sensitized about water conservation and encouraged for optimal use of water. - Maintain water consumption record. - Collection and disposal of spills immediately after occurrence of the event. The oily waste/grease will be collected and skimmed by oil traps and handed over to the authorized agents. - Contamination of nearby waterbodies due to surface runoff should be strictly avoided with the provisions of necessary measures like silt fencing. Silt/sediment should be collected and stockpiled for possible reuse. - Use of environmentally friendly sanitation solutions, such as bio toilets and bio digestor septic tanks, or any other advanced small-scale sewage treatment systems shall be made by the that contractors. - No temporary or permanent constructions to be done on the locations of water bodies (including seasonal ones) identified within site even if there is no water and these water bodies shall be barricaded.				

Item/ Components	Potential concerns /Impact	Mitigation, Management and Enhancement Measures	Means of Verification / Monitoring Procedure	Timelines/ Frequency of Monitoring	Responsibility for implementation	Supervision Responsibility
		- Wastes/wastewater generated from labour camp must be collected at regular interval and transported to approved disposal location. Such wastes/wastewater must not be dumped/released in open environment under any circumstances. - Provision for water conservation e.g., rainwater harvesting at the project site. - Monitoring of surface, ground water quality (also drinking water of workers) should be taken up at adequate location on quarterly basis or as per the recommendation of MPCB or any other regulatory body. To ensure adequacy of safeguard performance, the standards as provided in Appendix 9 should be considered as benchmark.				
Soil	o Loss of productive Topsoil due to excavation o Soil erosion due to Construction activities, earthwork, and cut and fill, stockpiles etc. o Contamination of soil due to leakage/ spillage of oil, debris generated from construction activities, poor	- Provision for appropriate storage of separately stripped topsoil (15 cm) in an appropriate way (to ensure that the organic / inorganic properties of soil are retained) should be made and reused for growing vegetation. - Excavated soil should be reused as much as possible for backfilling, landscaping and for other project areas. - Oil spill kits will be placed at fuel storage, refueling areas, DG sets, pump locations etc. - In case of any accidental spill, the soil should be cut and stored securely for disposal with hazardous waste. - Re-vegetation should be done in the area after the completion of construction, to reduce the risk of soil erosion. - As a best practice, site clearance, excavation and access road strengthening will not be carried out during the monsoon season to minimize erosion and run-off. - Camp site to be restored at the end. - Storage of hazardous material (like used oil, oil-soaked cotton/clothes etc.) in isolated room with impervious surface	Site Inspection, Document review, monitoring results	Monthly	Contractor	PMC, DMER /MEDD

Item/ Components	Potential concerns /Impact	Mitigation, Management and Enhancement Measures	Means of Verification / Monitoring Procedure	Timelines/ Frequency of Monitoring	Responsibility for implementation	Supervision Responsibility
	management of effluent and waste generated from the labour camp o Compaction of soil and impact on access/ haul roads due to movement of vehicles and equipment	must be ensured to avoid potential soil contamination. The hazardous waste should be disposed of through PCB approved Hazardous Waste Management vendor. - Construction vehicles, machinery, and equipment to be stationed in the designated areas to avoid compaction. - Approach roads/haulage roads should be designed along the barren and hard soil area to reduce the possibility compaction of fertile soil. - To avoid soil contamination Oil-Interceptors will be provided at wash down and refuelling areas. - Monitoring of soil quality should be taken up at adequate location on quarterly basis or as per the recommendation of MPCB or any other regulatory body				
Solid/Liquid Waste /Hazardous Waste	o Solid/liquid Waste will be generated during construction works as well as from construction camp.	- The contractor to ensure daily collection and regular disposal of construction waste/ generated debris etc. - Segregation of waste should be ensured by using color coded bin system for biodegradable and non-biodegradable waste segregation. - Employees working at the site should be provided with training and awareness on the segregation of waste at source. - Biodegradable waste will be preferably composted in -situ that can be utilized to establish a nursery on-site, contributing to the development of the planned green area - Collaborate with local authorities to transport and dispose waste in accordance with the regulatory requirements. - Biodegradable waste will be preferably composted in -situ that can be used as compost for landscaping - The municipal solid waste should be routed through proper collection and handover to local body for further disposal.	Site Inspection, document verification	Monthly	Contractor	PMC, DMER/ MEDD

Item/ Components	Potential concerns /Impact	Mitigation, Management and Enhancement Measures	Means of Verification / Monitoring Procedure	Timelines/ Frequency of Monitoring	Responsibility for implementation	Supervision Responsibility
		- All the construction and demolition waste should be managed as per Construction and Demolition Waste Management Rules, 2016[86]. - Good housekeeping should be ensured. - Recyclable waste should be appropriately directed to authorized recycling facilities, based on waste type. - Waste oils/Greases/ Oil contaminated cotton waste from equipment's should be properly collected and disposed through PCB authorized vendors. - Secured storage of civil construction materials including paint, thinner, etc. to be ensured. - Construction vehicles and equipment should undergo regular maintenance to avoid any oil leakages. - Offloading and loading protocols should be prepared for diesel, oil and used oil respectively and workers to be trained to prevent/contain spills and leaks. - Burning of any type of waste and dumping of waste at any unpermitted area (especially near watercourses) should be strictly prohibited. - Hazardous waste should be properly labelled, stored onsite at a location provided with impervious surface, shed and secondary containment system in accordance with Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016[87] and their subsequent amendments. - Hazardous waste will be disposed routinely through approved vendors and proper records will be maintained of the same. - It is to be ensured that hazardous waste is not stored for more than 90 days.				

[86] https://cpcb.nic.in/displaypdf.php?id=d2FzdGUvQyZEX3J1bGVzXzIwMTYucGRm
[87] https://cpcb.nic.in/displaypdf.php?id=aHdtZC9IV01fUnVsZXNfMjAxNi5wZGY=

Item/ Components	Potential concerns /Impact	Mitigation, Management and Enhancement Measures	Means of Verification / Monitoring Procedure	Timelines/ Frequency of Monitoring	Responsibility for implementation	Supervision Responsibility
		- Regular collection and disposal (in compliance to regulatory requirement) of domestic waste and sewage generated from labour camp to be ensured.				
Ecosystem and Biodiversity	Loss of Vegetation and associated biodiversity due to site preparation and construction activities; accidental contamination of habitat condition	- Possibility of avoidance and minimization of tree felling should be thoroughly examined prior to project development. - Vegetation disturbance and clearance should be restricted to the Project activity area only. Prior to vegetation clearance and construction activities, old mature trees should be identified through a survey and options of avoidance should be explored - Strict prohibition on use of fuel wood and shrubs from nearby areas as fuel should be imposed and workers should strictly be directed not to harm any wildlife in the area. - Labourers should be provided training about dos and don'ts when encountering wildlife. - Proper disposal of solid and liquid wastes should be ensured to avoid any kind of contamination of soil/waterbody which may affect the dwelling species. - Proper barricades to be installed at the boundary near Uttamrao Patil Biodiversity Park situated approx. 20m to the southwest from the site to avoid impact of any disturbance due to dust and noise.	Tree felling, plantation, record of plantation, survival rate of planted trees, Site Inspection	Monthly	Contractor	PMC, DMER/ MEDD
Occupational Health and Safety	Material handling and storage Possible injuries associated with working conditions and other occupational hazards	The contractor will require to comply with the followings. - An occupational health & safety Plan will be prepared and implemented by the contractor including Health & Safety reporting and incident/accident reporting procedure. Initial Notification of incidents is to be provided to ADB no later than 3 working days (for severe cases/ fatalities 24 – 48 hours is recommended)	Site inspection, document verification, training records; consultation with workers	Monthly basis	Contractor	PMC, DMER/ MEDD

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		- A more detailed incident investigations report is required within 21 days of the incident (for severe cases/fatalities 72 hours recommended unless stopped all relevant work) - - Accident register will be maintained at site and closed monthly by the site supervisor. - Provisions of personal protective equipment's (PPEs) viz., gloves, helmets, dust mask, ear plug, safety belt, etc. for the workers/staff depending on the type of works assigned to them (e.g., construction, excavation, welding, painting etc.) - A PPE matrix and its onsite inventory and deployment should be maintained. - Contractors to adopt and maintain safe working practices. - Usage of fluorescent and retro reflectory signage, in local language should be provided at construction sites - Training to workers on safety procedures, precautions and hazardous material handling should be delivered. Workers with adequate training and no acrophobia shall only be assigned height works and similar for works requiring specific skills or training. - Organizing awareness camp on general health awareness with medical facility - Access to complaint register. - Provision of First aid facilities, beds, mosquito repellent/ net, snake repellent will be made - Collection of domestic waste and sewage and proper disposal to be ensured as per rules - Appointment of safety officer should be ensured. - All regulations regarding safe scaffolding, ladders, working platforms, gangway, stair wells, excavations, trenches etc. should be complied with. The construction of scaffolding and				

Item/ Components	Potential concerns /Impact	Mitigation, Management and Enhancement Measures	Means of Verification / Monitoring Procedure	Timelines/ Frequency of Monitoring	Responsibility for implementation	Supervision Responsibility
		temporary work platforms must be carefully designated and regularly inspected to ensure stability and safety for workers - Use of hazardous material should be minimized/restricted to the extent possible. - Emergency plan should be prepared to respond to any accidents or emergencies. On-site display of emergency contact numbers of the city/local fire services, etc. to be ensured. - On-site first aid kits and trained First Aid attendants should be provided. - Mock drill/Toolbox talks will be conducted at regular intervals and training record should be maintained at site. - Loading and unloading operation of equipment should be done under the supervision of a trained professional. - All work at height to be undertaken during daytime with sufficient sunlight. - On-site fire extinguishing equipment should be provided to handle any possible fire outbreaks. Fire extinguishers should be regularly checked and working condition of the same to be ensured. - Develop and implement a code of conduct for workers, staff and labours to ensure that personnel are screened for implication in past abuses including Gender Based Violence (GBV) and adequately trained in the use of force and appropriate conduct toward the public and workers. The code of conduct will also include procedures to report incidents, for affected people to raise related grievances, for incident investigations. The code of conduct will also indicate that the contractor does not sanction use of force in relation to the project except preventive and defensive purposes in proportion to the nature and extent of the threat.A Grivance Redressal Mechanism (GRM) will be implemented to allow the workers/labours to express their concerns, if any.				

Item/ Components	Potential concerns /Impact	Mitigation, Management and Enhancement Measures	Means of Verification / Monitoring Procedure	Timelines/ Frequency of Monitoring	Responsibility for implementation	Supervision Responsibility
		- A Grievance register will be maintained at site and details such as name of complainant, date and mode of complaint receipt, details of complaints, resolution details, resolution dates, mode of communication to the complainant etc. The register will be closed on monthly basis by the site supervisor and countersigned by the PMC Environment expert/ Head. - Contractor to maintain good housekeeping to prevent trips, slips and falls.				
Labour Rights/ Influx of workforce in the area	Cultural and Behavioural Conflict. Conflict between contractor and labour.	- Necessary permits from the concerned labour department should be obtained, pertaining records should be maintained at site with proper documentation - The Contractor and project authority will ensure decent labour conditions for workers and compliance with applicable law and regulations in India. - Contractors will ensure that wages are being paid as per the requirement of minimum wages act and records are maintained - Daily attendance register with name and signature of labor will be maintained - Notice board to display terms of employment giving details of wage rates, working hours, criterion for overtime etc. Payment of wages of workers (including subcontracted/casual labours) should be aligned with the payment of wages act. - The contractor to put in place a Code of Conduct (customized to local sensitivities and regulations) for worker-community interaction and on-site behaviour. Oblige workers to adhere to code of conduct. The Code of Conduct should take into consideration relevant legislation, safety rules, substance abuse, environmental sensitivity, communicable diseases, gender issues (sexual harassment), respect for local beliefs and customs, community interactions etc. Consider ways to contribute positively to the local community, such as supporting	Site inspection/ /document verification/ Training record/ consultation with labours	Monthly basis	Contractor	PMC, DMER /MEDD

Item/ Components	Potential concerns /Impact	Mitigation, Management and Enhancement Measures	Means of Verification / Monitoring Procedure	Timelines/ Frequency of Monitoring	Responsibility for implementation	Supervision Responsibility
		local schools, healthcare facilities, or other community projects. These contributions can help build goodwill. - Local people should be preferred for employment wherever possible, especially as construction workers/unskilled workforce. - Contractor to ensure non-engagement of forced and child labour, gender equity, non-discrimination on employment and opportunity and freedom to express their vie - GRM will be disclosed to the workers and made accessible for reporting - Contractors should ensure access of necessary basic amenities and facilities such as drinking water, kitchen, separate toilet (for male & female) and crèches for female worker's children, if any. - Contractor to monitor to avoid any conflict with local community due to influx of migrated labour. - Health Monitoring: Implement health monitoring programs to assess and address potential health impacts related to chemical exposures or noise levels, acrophobia, silicosis, impacted vision etc.				
Community Health, Safety, and Security.	o Traffic congestion o Potential exposure to pollutants/hazardous material o Threat of emergency situation o Potential threat from the security personals to	- Contractor should keep local residents informed about construction schedules, potential disruptions, and any necessary safety precautions. - Contractor to continuously monitor the social and community aspects of the project's impact. Regularly report on progress and address any issues that arise promptly. - A community liaison officer shall be appointed if social unrest or resentments are observed amongst the community - .The third-party vendors/suppliers especially associated with transport of construction materials and site cleaning should not be allowed to enter into the premises without valid ID cards or gate pass.	Traffic management plan, Consultation with contractor and local community, Grievance Register, visual observation,	Weekly site inspection	Contractor	PMC, DMER /MEDD

Item/ Components	Potential concerns /Impact	Mitigation, Management and Enhancement Measures	Means of Verification / Monitoring Procedure	Timelines/ Frequency of Monitoring	Responsibility for implementation	Supervision Responsibility
	the local community (like abuse, unnecessary use of force etc.)	- The entry and exit inside the site will be strictly monitored. Unauthorized entry will be prohibited. - Excavation for foundations will be closed as soon as practicable to prevent people or animals falling into the excavation sites. - The transport of heavy loads will be undertaken out of normal working hours to the extent possible. - The contractor/project authority will make reasonable inquiries to ensure that those providing security are not implicated in past abuses; will train security staffs adequately in the use of force (and where applicable, firearms), and appropriate conduct toward workers and local Communities. - Security personnel engaged should not use force except when used for preventive and defensive purposes in consideration to the nature and extent of threat. For any issue with the community, take support of local administration as needed. - Establish a Code of Conduct for worker/security persons community interaction and on-site behaviour. Oblige workers/ security persons to adhere to code of conduct. - A Grievance Redressal Mechanism (GRM) will be implemented to allow the community to express their concerns, if any. - All construction sites should be barricaded to restrict entry of general public to avoid chance of any accidents - At least one traffic marshal/ flagmen will be deployed in junction/diversion point (at approach road to the project area and main road). - The traffic movement in the project area should be regulated to ensure safety measures for pedestrians. Traffic management plan may be developed as necessary. - speed limits for all Project vehicles will be implemented - Training will be provided to all the drivers on safety measures	environmental monitoring reports, Management Plan for Hazardous material and Emergency Preparedness plan			

Item/ Components	Potential concerns /Impact	Mitigation, Management and Enhancement Measures	Means of Verification / Monitoring Procedure	Timelines/ Frequency of Monitoring	Responsibility for implementation	Supervision Responsibility
		- Management Plan for Hazardous material and Emergency Preparedness plan should be in place. - Necessary mitigation measures as suggested for management of different environmental components (Air, Soil, surface water, ground water, noise, waste/effluent management etc.) should be adequately implemented				
Demobilization: Site restoration and rehabilitation	o Potential Community health and safety threat post construction	- Contractor will prepare site restoration plan which will be approved by the PMC/MEDD. - The clean-up and restoration operations are to be implemented by the contractor prior to demobilization. - All construction zones, workers camps, plant sites, crushers etc. or any other area used/affected by the project will be left clean and tidy, to the satisfaction of the PMC/MEDD. The restored level of the ground will be as per the original level and condition or better.	Visual observation	Completion of construction work	Contractor	PMC, DMER /MEDD
Conflicts with Wild or domestic animals	o Any harm to the animals encountered at site will be violation of regulations and can also trigger unrest amongst the community	- Workers will be made aware of the Do's and Don'ts as per wildlife and animal protection regulations incase they encounter animals during construction at site. - Wild animals if encountered shall be informed to the local forest department immediately. - The workers and staff will refrain from taking any action that could harm the animals etc.	As and when applicable	During construction phase	Contractor	PMC, DMER /MEDD
Operational Phase						
Energy efficiency and energy conservation	Integration of energy efficiency and energy	- The Hospital Building along with its allied facilities would be Indian Green Building Council (IGBC) Healthcare Platinum certified[88].	Review of relevant certifications	Prior to start of operation	PMC	DMER, MEDD

[88] DBR, Sindhudurg

Item/ Components	Potential concerns /Impact	Mitigation, Management and Enhancement Measures	Means of Verification / Monitoring Procedure	Timelines/ Frequency of Monitoring	Responsibility for implementation	Supervision Responsibility
	conservation component in design	- Also, ECBC 2017 (amended as on date) norms would be complied with and ECBC certification would be obtained accordingly				
Regulatory Compliance	To ensure compliance to regulatory requirements	Obtaining permission and ensuring that they remain valid throughout the implementation period. Ensuring compliance with the terms/conditions of various permits such as, CTO, Biomedical waste authorization, water abstraction permits, Fire License, ,PESO License etc.	Verification of documents	Semi Annually	PMC, DMER	MEDD
Air Quality	Generation of Particulate Matter, Sulphur dioxide and Oxides of Nitrogen due to traffic movement and operation of DG sets (in case of used due to power shortage).	- CTO to be renewed in timely manner from concerned pollution control board and conditions as stipulated in CTO should be strictly adhered to - Inspection and maintenance of vehicles will be done at regular intervals/as per manufacturer's specification and pollution under control certificate should be secured - Regular maintenance of DG to be carried out - Adequate height of stack should be provided for the DG sets. - Liquid waste treatment plants will be maintained well so that odor emitting gases can be prevented/ controlled - Air quality monitoring should be taken up. To ensure adequacy of safeguard performance, the standards as provided in Appendix 9 should be considered as benchmark.	Site Inspection, Document review, stakeholder consultation	Monthly	PMC, DMER	MEDD
GHG Emission	Accidental release of Greenhouse gases.	- Provisions should be kept to regularly check and repair leakages of Medical Gas Pipeline System (MGPS) immediately in order to prevent release of the GHG (especially like NOx and CO2) like into the air. - Auto leakage detection system should be installed	Site Inspection, Document review,	continuously	PMC, DMER	MEDD
Noise	Noise may be generated due to traffic movement and operation of DG sets (in case of use	- DG sets and pumps should be provided with acoustic enclosures All DG Sets shall be outdoor type with Hospital Type Silencer and acoustic enclosure as per CPCB and other relevant norms. CPCB recommends that the maximum permissible sound pressure level for new diesel generator (DG)	Site Inspection/ Document review	Monthly	PMC, DMER	MEDD

Item/ Components	Potential concerns /Impact	Mitigation, Management and Enhancement Measures	Means of Verification / Monitoring Procedure	Timelines/ Frequency of Monitoring	Responsibility for implementation	Supervision Responsibility
	due to power shortage)/ pumps at STP/ ETPs etc.	sets with rated capacity upto 1000 KVA shall be 75 dB(A) at 1 metre from the enclosure surface. diesel generator sets should be provided with integral acoustic enclosure at the manufacturing stage. - If traffic noise is anticipated to be higher than the permissible limits, the facility sites will be encompassed with acoustic boundaries in combination with green belt with high and dense enough canopy/ building materials (door/window sheets) used will have acoustic properties and be properly maintained to retain such properties (such as repairing gaps, or broken sheets, replantation of green belt) - Noise levels would be reduced using noise absorbing material on roof walls and floors. - Noise level monitoring should be taken up. To ensure adequacy of safeguard performance, the standards as provided in Appendix 9 should be considered as benchmark.				
Biomedical Waste	Generation of biomedical waste which is hazardous in nature that might cause spread of infections/ contamination of surrounding environment etc.[89]	- As per the provisions of BMW rules, the facility should be equipped with proper facility for collection-disinfection-segregation-temporary storage in line with the requirements of BMW Rules-2016 and subsequent amendments. - It will be ensured that storage is done in leak proof containers that should not generate leachate or attract flies/ vectors etc. - Under the purview of BMW Rules-2016, the hospital facility should secure Authorization (or Combined Consent and Authorization) from concerned PCB for ensuring effective handling and management of biomedical waste - The hospital facility should have a formal tie up with PCB approved Common Biomedical Waste Treatment and Disposal	Site Inspection, Document review, stakeholder consultation	Monthly	PMC, DMER	MEDD

[89] The radiology department, as part of proposed medical facility, may involve the use of radioactive materials for diagnostic and therapeutic purposes. Improper management of radioactive waste can lead to potential health risks like radiation, cancer and damage of tissue etc. and can lead to environmental contamination posing risks to ecosystems and wildlife. The mitigation measures as suggested in Chapter VI should be adhered to in case of generation of waste containing radioactive materials.

Item/ Components	Potential concerns /Impact	Mitigation, Management and Enhancement Measures	Means of Verification / Monitoring Procedure	Timelines/ Frequency of Monitoring	Responsibility for implementation	Supervision Responsibility
		Facility (CBWTDF) to ensure regular and effective collection and disposal of Biomedical waste - If no CBWTDF is available, then in-situ treatment as recommended by BMW and related rules (and concerned regulatory authority) will be done. - The hospital should comply with the conditions precedents of Authorization or Combined Consent and Authorization (CCA) issued by PCB and ensure timely renewal of the same - Identification and segregation of Biomedical Waste at point of generation should be ensured. - Segregated waste should be placed in colour coded (as recommended by BMW rules) containers to avoid mixing of biomedical waste with non-biomedical waste and proper waste handling, storage and disposal must be ensured - The Biomedical waste should be stored in designated impervious covered area temporarily before handing over to CBWTF. - Ensure workers involved in biomedical waste handling are having PPEs such as puncture resistant gloves, masks etc. - Record for quantum of different types of generated biomedical waste and handed over to CBWTF should be well documented. - Educate staffs engaged in BMW management about different category of infectious waste and pathogens - Immunization of staff members as necessary - Adequate facilities to be made for hand washing and to ensure all staffs should wash their hands before and after direct patient contacts and contact with patient blood/fluid - Monitoring and observation of surrounding areas to ensure that no contamination is taking place due to BMW mis management. - Conduct regular consultations with the surrounding community/ staff etc. to ensure there no spread of any infections/ disease				

Item/ Components	Potential concerns /Impact	Mitigation, Management and Enhancement Measures	Means of Verification / Monitoring Procedure	Timelines/ Frequency of Monitoring	Responsibility for implementation	Supervision Responsibility
		that can be attributed to the mis management of bio medical wastes.				
Other Waste	Generation of other kind of hazardous and nonhazardous waste due to hospital operation	- Proper segregation of different waste should be taken up which may include municipal waste (bio degradable and non biodegradable), plastic, electronic waste, hazardous waste etc. - The Hospital also needs to have formal mechanism for collection of municipal waste, plastic waste, Hazardous Waste and E-waste for sound management of waste generated from the facility. - Requirement of separate Authorization for Hazardous waste (Hazardous Waste Management Rules) may be checked from pollution control board time to time. - No untreated or infected waste will be disposed into water bodies or open pits or grounds. - Set up an on-site or off-site composting facility where kitchen waste can be processed into compost. Regularly test the quality of the compost to ensure it meets quality standards for safe use in landscaping or agriculture. - Hazardous waste should be stored in clearly marked, leak-proof containers that are resistant to corrosion and damage. Storage areas should be secure, well-ventilated, and equipped with spill containment measures. Each hazardous waste container must be clearly labelled with its contents, potential hazards, and handling instructions in compliance with the Hazardous and other Wastes (Management & Transboundary Movement) Rules, 2016. Hazardous waste should be handed over to authorized and licensed vendor only - Ensure that inert waste is handed over to authorized municipal dumping yards or landfill sites in compliance with local waste disposal regulations.	Site Inspection, Document review, stakeholder consultation	Monthly	PMC, DMER	MEDD

Item/ Components	Potential concerns /Impact	Mitigation, Management and Enhancement Measures	Means of Verification / Monitoring Procedure	Timelines/ Frequency of Monitoring	Responsibility for implementation	Supervision Responsibility
		- Monitoring and observation of surrounding areas to ensure that no contamination is taking place due to waste mis management. - Conduct regular consultations with the surrounding community/ staff etc. to ensure there no spread of any infections/ disease that can be attributed to the mis management of wastes from the facilities.				
Wastewater and Effluent Management	Generation of sewage, effluent (containing Chemical Liquid Biomedical Waste) due to hospital operation	- Mechanism for proper segregation and collection of Effluent and Sewage should be ensured. - The hospital will be equipped with Wastewater Treatment Plant/s (2 Sewage Treatment Plants and 3 Effluent Treatment Plants) of 530 KLD, including ETP of 50KLD for laundry and 10 KLD for medical fluids. - The performance and functioning of wastewater treatment plants should be monitored closely and in case of any underperformance, should be repaired immediately. - Quality of treated wastewater from the facility should conform the discharge standards as stipulated in the Biomedical Management Rules during facility operation i.e., o For discharge into public sewers with terminal facilities, the general standards as notified under the Environment (Protection) Act, 1986 (29 of 1986) will be applicable o For discharge into public sewers without terminal facilities (or facilities not connected to public sewers), the standards stipulated in Biomedical Management Rules o and NGT Order (as per the applicability) - Regular monitoring of inlet and outlet water quality (with respect to wastewater treatment plants) should be taken up. To ensure adequacy of safeguard performance, the standards as provided in Appendix 9 should be considered as benchmark.	Site Inspection/ Document review, stakeholder consultation	Monthly	PMC, DMER	MEDD

Item/ Components	Potential concerns /Impact	Mitigation, Management and Enhancement Measures	Means of Verification / Monitoring Procedure	Timelines/ Frequency of Monitoring	Responsibility for implementation	Supervision Responsibility
		- Backwash water recirculation system will be there to ensure recycling of backwash water - Sludge will be dried and treated to conform to the standards given in Solid waste management rules, 2016 or amendments. - Sludge from Effluent Treatment Plant shall be given to common bio-medical waste treatment facility for incineration or to hazardous waste treatment, storage and disposal facility for disposal - No untreated or infected waste will be disposed into water bodies or open pits or grounds. - Monitoring and observation of surrounding areas to ensure that no contamination is taking place due to liquid waste mis management. - Conduct regular consultations with the surrounding community/ staff etc. to ensure there no spread of any infections/ disease that can be attributed to the mis management of liquid wastes from the facilities. - A contingency plan will be in place to handle the liquid waste in case of power/ technical failures. - Disposal locations for treated water will be monitored for their water quality and ensure that the quality meets the requirement of end use of the disposed water be it for irrigation or washing or aquaculture etc. - The disposal locations will also be monitored to ensure that there are no overflow or flooding due to addition of the treated waste water from the facilities.				
Soil and Water Resource	Potential contamination to surrounding soil and water environment due to improper waste (including	- CTO and Authorization to be secured and renewed timely from concerned pollution control board and conditions as stipulated in CTO and Authorization should be strictly adhered to - To avoid contamination to surrounding environment (soil and water resource) discharge of untreated wastewater and indiscriminate dumping of Biomedical waste and other kind of solid waste should be strictly prohibited	Site Inspection, Document review, stakeholder consultation	Monthly	PMC, DMER	MEDD

Item/ Components	Potential concerns /Impact	Mitigation, Management and Enhancement Measures	Means of Verification / Monitoring Procedure	Timelines/ Frequency of Monitoring	Responsibility for implementation	Supervision Responsibility
	Biomedical waste) and effluent/sewage management	- Treated water generated from wastewater treatment plants should be reused in the facility to the extent possible (e.g., HVAC, cleaning and Greenbelt development etc.) with a target to achieve zero discharge. - Provisions for rainwater harvesting should be made. Periodic cleaning of rainwater harvesting system to be carried out. The run-off from the previous surfaces and built-up areas of the project site should be routed through a carefully designed storm water drainage network discharging into rainwater harvesting structures. - Efficient Water saving devices/ fixtures should be installed in kitchens and toilets to reduce avoidable water consumption. - Water meters may be installed at the inlet point of water uptake and the discharge point to monitor the daily water consumption and identify any leakage (if any) - Regular monitoring of Soil and Water Quality (Ground and Surface Water) from the project area and/or vicinity should be carried out. To ensure adequacy of safeguard performance, the standards as provided in Appendix 9 should be considered as benchmark.				
Health and Safety Risk	Occupational Health and Safety (OHS) risk Community Health and Safety risk	- OHS management procedures covering safe working conditions for employees, including staff training, job safety instructions and measures to ensure workplace safety and mitigate OHS risks emanating from exposure to infections and diseases, hazardous materials / waste should be in place and implemented as per infection management guidelines of MoHFW Additionally, these procedures should extend to encompass maintenance activities to ensure that workers are adequately protected during repair and upkeep tasks, thereby reducing the risk of accidents and health hazards - A set of procedures defining the overall waste (bio-medical and others) management system should be in place in consideration of scale and type of activities and identified	Site Inspection, Document review, stakeholder consultation	Monthly	PMC, DMER	MEDD

Item/ Components	Potential concerns /Impact	Mitigation, Management and Enhancement Measures	Means of Verification / Monitoring Procedure	Timelines/ Frequency of Monitoring	Responsibility for implementation	Supervision Responsibility
		hazards. This will include minimization, an adequate segregation at point of generation, safe handling, collection, temporary storage, marking, decontamination, transport, treatment and disposal procedures; this will be, accompanied by systematic record keeping of waste quantity, type and final disposal/treatment - Standard operating procedures on the use, storage and disposal of hazardous materials should be in place - Depending on the nature of the maintenance work, provide and guarantee the use of personal protection equipment such as gloves, helmets, ear plugs, safety belts, and so on. - The facilities should have Emergency, preparedness and response plan and should be designed in commensurate with the requirement of concerned department (like Fire Department). Fire NoC should be secured from Fire Department and renewed in timely manner. - It is advisable to develop a traffic management plan. Additionally, it's essential to take all reasonable precautions and create an Emergency Preparedness Plan to mitigate potential risks, taking into account emergency scenarios such as fires, flooding, and accidental release or spillage of hazardous materials. Maintain an effective work permit system for vital tasks including electrical work and working at heights for maintenance works. - Provide adequate sanitation facilities. - The emergency contact number shall be displayed. - Provisions for a designated route for vehicle movement should be maintained. - Accidents if any will be reported to the management / SPCB/ (within 48 hours to ADB) etc. in the form prescribed as per BMW rules.				

Item/ Components	Potential concerns /Impact	Mitigation, Management and Enhancement Measures	Means of Verification / Monitoring Procedure	Timelines/ Frequency of Monitoring	Responsibility for implementation	Supervision Responsibility
		- **Initial Notification** of incidents is to be provided to ADB no later than **3 working days** (for severe cases/ fatalities **24 – 48 hours** is recommended) - A more detailed incident investigations report is required **within 21 days** of the incident (for severe cases/fatalities **72** hours recommended unless stopped all work) to be provided to ADB - - Develop and implement robust health and safety protocols to protect workers and the community. - Conduct regular safety training sessions and drills to ensure all personnel are prepared for emergencies. - Awareness campaign on HIV/AIDS is to be conducted to effectively mitigate the impacts on occupational health and safety. - Develop community engagement programs that involve local residents in project-related activities, such as job fairs, skill development workshops, or community events. Encourage social interaction and collaboration between workers and locals to foster understanding and mutual respect. - Establish open channels of communication between project management, workers, and local residents. - Hold regular meetings, forums, or community advisory groups to discuss project progress, address concerns, and provide updates on project activities. - Develop and implement a code of conduct for security personnel to ensure that security personnel are screened for implication in past abuses including Gender Based Violence (GBV) and adequately trained in the use of force and appropriate conduct toward the public and workers. The code of conduct will also include procedures to report incidents, for affected people to raise related grievances, for incident investigations. The code of conduct will also indicate that the				

Item/ Components	Potential concerns /Impact	Mitigation, Management and Enhancement Measures	Means of Verification / Monitoring Procedure	Timelines/ Frequency of Monitoring	Responsibility for implementation	Supervision Responsibility
		- contractor does not sanction use of force in relation to the project except preventive and defensive purposes in proportion to the nature and extent of the threat. - A contingency plan involving the authorities as immediate measures to mitigate risk associated with accidental spills during BMW transportation and subsequent contamination of soil/ water bodies/ human health etc from the vehicles carrying bio-medical waste needs to be provided.				
Transformers, Substation & power lines	o Risk of electrocutions, Avifauna collision , o Risk of use of Polychlorinated byphenyls (PCB)	o Ocular monitoring will be carried out for collision of avifauna. In case any such collision are reported adequate mitigation measure will be taken viz bird deterrence, spacing between energized components etc. will be taken in consultation with the forest department. o The transformers used will have PCB free oil as it is banned for use in India.	Visual observation, technical specification of transformers and electrical equipment, breakdown of electrical equipment etc.	Regularly	PMC, DMER	MEDD
Maintenance works	Landscaping and aesthetics	Maintenance of Green belt including vegetation care, Litter Control, Irrigation, Erosion Control, maintenance of Rainwater Harvesting Pits including inspection, cleaning, repairs & upkeep etc..	Visual observation, record of maintenance	Monthly	PMC, DMER	MEDD
Note: Additional measures (including permits/clearances) as mandated by any regulatory bodies (if any) time to time and/or conditions precedents of permits/clearances should also be implemented by Contractor/PMC during their engagement period and MEDD in addition to mitigation measures as suggested in the EMP.						

C. Environmental Monitoring Plan

335. It is expected that project proponent and other concerned entities like Contractor, PMC will ensure and demonstrate compliance with the regulatory requirements and adhere to the measures as suggested in the document. The environmental monitoring indicators are formulated to ensure and demonstrate conformance with EMP. Monitoring of environmental and health - safety parameters and comparing them with benchmarks set by regulatory authorities will help the project authority to assess the safeguard performance and identify gaps or non-conformance and ensuring immediate actions. The indicators/ parameters as mentioned in Table 41 will be monitored during various phases of sub-project life cycle to assess the adequacy of safeguard implementation works and to take further necessary action in case desired performance is not achieved. The cost for implementation of EMoP will be budgeted in the EMP and Bill of Quantities (BOQs).

Table 41: Environmental Monitoring Plan

Sl. No	Key Indicators[90]	Monitoring Parameter	Period & Frequency	Location	Sample Size	Implementation Responsibility	Supervision responsibility
Pre-Construction Phase (baseline monitoring)							
1.	Ambient Air Quality	Measurement of PM_{10}, $PM_{2.5}$, SO2, NOx, CO	Once at 4 locations (except monsoon)	upwind, downwind and crosswind locations	4 nos	Contractor through NABL accredited/ MoEFCC registered monitoring laboratory	PMC, DMER, MEDD
2.	Ambient Noise quality	Measurement of Noise Pressure Level in dB(A)	Once at 4 locations (except monsoon)	upwind, downwind and crosswind locations	4 nos.	Contractor through NABL accredited/ MoEFCC registered monitoring laboratory	PMC, DMER, MEDD
3.	Ground Water quality and Drinking Water	Key Physicochemical and biological parameters as per IS 10500 (2012)	Once at 2 locations (except monsoon)	upslope and downslope locations	2 nos.	Contractor through NABL accredited/ MoEFCC registered monitoring laboratory	PMC, DMER, MEDD

[90] Baseline Environmental Quality of Sub-Project Area will be established though primary study during the Environmental Clearance Process prior to initiation of Construction Work

Sl. No	Key Indicators[90]	Monitoring Parameter	Period & Frequency	Location	Sample Size	Implementation Responsibility	Supervision responsibility
4.	Surface Water quality	Key Physicochemical and biological parameters as per IS: 2296 Specifications/ CPCB criteria	Once at 2 locations (except monsoon)	upstream and downstream of flowing water body and 1 location in case of stagnant water body	4 nos.	Contractor through NABL accredited/ MoEFCC registered monitoring laboratory	PMC, DMER, MEDD
5.	Soil Quality	Soil parameters viz. pH, SAR, Water holding capacity, Organic matter, Conductivity, Organic Carbon, Nitrogen, Phosphorous, Potassium Alkalinity, Acidity, heavy metals, trace metals, Alkalinity, Acidity.	Once at least at 2 locations	preferably near the treated effluent discharge points	2 nos.	Contractor through NABL accredited/ MoEFCC registered monitoring laboratory	PMC, DMER, MEDD
Construction Phase (assuming 2 Years)							
6.	Ambient Air Quality	Measurement of $PM_{10,}$ $PM_{2.5}$, SO2, NOx, CO	Once in each season at 4 locations (except monsoon) -	upwind, downwind and crosswind locations	24 nos	Contractor through NABL accredited/ MoEFCC registered monitoring laboratory	PMC, DMER, MEDD
7.	Ambient Noise quality	Measurement of Noise Pressure Level in dB(A)	Once in each season at 4 locations (except monsoon)	upwind, downwind and crosswind locations	24 nos.	Contractor through NABL accredited/ MoEFCC registered monitoring laboratory	PMC, DMER, MEDD

Sl. No	Key Indicators[90]	Monitoring Parameter	Period & Frequency	Location	Sample Size	Implementation Responsibility	Supervision responsibility
8.	Ground Water quality and Drinking Water	Key Physicochemical and biological parameters as per IS 10500 (2012)	Once in each season at 2 locations (except monsoon)	upslope and downslope locations	12 nos.	Contractor through NABL accredited/ MoEFCC registered monitoring laboratory	PMC, DMER, MEDD
9.	Surface Water quality	Key Physicochemical and biological parameters as per IS: 2296 Specifications/ CPCB criteria	Once in each season at 2 locations (except in monsoon)	upstream and downstream if flowing water body and 1 location in case of stagnant water body	24 nos.	Contractor through NABL accredited/ MoEFCC registered monitoring laboratory	PMC, DMER, MEDD
10.	Soil Quality	Soil parameters viz. pH, SAR, Water holding capacity, Organic matter, Conductivity, Organic Carbon, Nitrogen, Phosphorous, Potassium Alkalinity, Acidity, heavy metals, trace metals, Alkalinity, Acidity.	Once in each season at least at 2 locations (except in monsoon season)	preferably near the treated effluent discharge points	12 nos.	Contractor through NABL accredited/ MoEFCC registered monitoring laboratory	PMC, DMER, MEDD
11.	EHS audit	Regulatory compliances, performance against EMP	6Monthly	Project Site and associated areas	4	Contractor through external authorized auditor	PMC, DMER, MEDD
12.	Trees Cutting/ Green Area development	Record of tree felling (if applicable) and plantation; plantation within premise or any other suitable areas in	Quarterly	Project Site and associated areas	8 times	Contractor	PMC, DMER, MEDD

Sl. No	Key Indicators[90]	Monitoring Parameter	Period & Frequency	Location	Sample Size	Implementation Responsibility	Supervision responsibility
		discussion with concerned authority. Species survival rate					
13.	Traffic safety arrangements	Traffic management plan, visual observation; consultation with contractor	Regularly during construction phase	Project Site and associated areas	Continuous	Contractor	PMC, DMER, MEDD
14.	Accidents	records of all types of accidents, near miss records during construction period.	Regularly during construction phase	Project Site and associated areas	Continuous	Contractor	PMC, DMER, MEDD
15.	Records of Grievance	All pertinent to EHS underperformance/concerns	Regularly during construction phase	-	Continuous	Contractor	PMC, DMER, MEDD
Operation Phase (assuming 3 years)							
16.	Ambient Air Quality	Measurement of PM_{10}, $PM_{2.5}$, SOx, NOx, CO	Yearly basis at 2 locations except in monsoon season	upwind and downwind near facility premises	6 Nos	PMC	DMER / MEDD
17.	Ambient Noise quality	Measurement of Noise Pressure Level in dB(A)	Six monthly basis 2 locations except in monsoon season	near facility premises	12 nos.	PMC	DMER / MEDD
18.	Ground Water quality and Drinking Water	Key Physicochemical and biological parameters as per IS 10500 (2012)	Once in each season at least at 2 locations except in monsoon season	near facility premises and nearby village	18 nos.	PMC	DMER / MEDD

Sl. No	Key Indicators[90]	Monitoring Parameter	Period & Frequency	Location	Sample Size	Implementation Responsibility	Supervision responsibility
19.	Surface Water quality (depending on availability)	Key Physicochemical and biological parameters as per IS: 2296 Specifications	Once in each season at least at 2 locations except in monsoon season	preferably near the treated effluent discharge points	18 Nos	PMC	DMER / MEDD
20.	Soil Quality	Soil parameters viz. pH, SAR, Water holding capacity, Organic matter, Conductivity, Organic Carbon, Nitrogen, Phosphorous, Potassium Alkalinity, Acidity, heavy metals, trace metals, Alkalinity, Acidity.	Once in each season at least at 2 locations except in monsoon season	preferably near the treated effluent discharge points	18 Nos	PMC	DMER / MEDD
21.	Waste water from Inlet and treated water from outlet of ETPs cum STPs	The parameters as suggested under BMW rules 2016. EPA 1986, NGT order and its subsequent amendments	Daily if not defined otherwise by regulations	ETP & STPs	Continuous	STP/ETP operating agency	PMC/DMER/MEDD
22.	Treated STP / ETP water at end use location	The parameters as suggested under BMW rules 2016. EPA 1986, NGT order and its subsequent amendments	Once in each season at 2 discharge locations	Discharge points (number to be increased in case there are more	18 Nos.	PMC	DMER / MEDD

Sl. No	Key Indicators[90]	Monitoring Parameter	Period & Frequency	Location	Sample Size	Implementation Responsibility	Supervision responsibility
			except in monsoon season	discharge points)			
23.	EHS audit	Regulatory compliances, performance against EMP	Half Yearly		6 times	PMC through external authorized auditor	DMER / MEDD
24.	Green area maintenance	Survival of planted trees	Quarterly		12 times	PMC	DMER / MEDD
25.	Air Emissions & Odour monitoring at STP/ETP	H2S shall not exceed in ambient air; - 7 µg/m3 (30-minute averaging period) -150 µg/m3 (24-hour average) Methane exposure limit shall not be beyond – 1000 ppm for 8 hours Chlorine exposure limit shall not be beyond – 0.4 µg/m3 • • Ammonia exposure limit shall not be beyond – 400 µg/m3 for 24 hours **(**As per World Bank General EHS Guidelines; thresholds specified by the National Institute for Occupational Safety & Health (NIOSH); and NAAQS, 2009).	03 points Quarterly once throughout the operation phase As an when required based on public complaints (throughout the operation phase)	downwind direction wet well/ raw sewage inlet or near STP/ ETP STP, near hospital and near hostel / community residents etc.	36	PMC/DMER	DMER/ MEDD

To ensure adequacy of safeguard performance, the standards as provided in Appendix 6.1 should be considered as benchmark. The template for Environmental Monitoring report is included in Appendix 8.1.

IX. BUDGET FOR ENVIRONMENTAL MANAGEMENT PLAN

336. Most of the mitigation measures require the contractors to adopt good site practices, which should be part of their normal procedures already. This budgetary provision of approximately INR 1,20,33,340 (143,322 USD) includes mitigation, monitoring, and capacity building costs (over and above the components to be covered under Project Cost). The summary of budget for the environmental management costs for the subproject is presented in Table 42.

Table 42: Budget for Environmental Management Plan

S. No	Components	Unit	Quantity	Unit Cost (INR)	Total Cost (INR.)	Remarks
A	**Fixed Cost**					
A.1.	**Design and Preconstruction Phase**					
1	Regulatory Clearances/Permits like Environmental Clearance, Tree Felling Permission and Compensatory Plantation				To be covered under Project Cost	Statutory fees to be paid by PMU as per actuals
2	Regulatory Clearances/Permits like CTE/CTO, Authorization etc., Workman compensation insurance etc.	Lump sum			1000000	fees to be paid by contractor as per actuals
3	Contractors Qualified Environment, Health and Safety Expert/s, PMC's Qualified Health and Safety Expert/s,IA/PMU level Qualified Environmental Expert				To be covered under Project Cost	Fulltime (till the end of defect liability period or issuance of project closure report whichever is later) as referred in EARF. Indicative cost Contractor:15,00,000/person/year PMC:15,00,000/person/year IA/PMU: 24,00,000/person/year
4	Appointment of Accredited EIA Consultant for securing Environmental Clearance.	Lump sum			EC already received	
5	Monitoring: Ambient Air Quality	Number	4	6000	24000	Grab Sampling
6	Monitoring: Ambient Noise quality	Number	4	2500	10000	Grab Sampling
7	Monitoring: Ground Water quality and Drinking Water	Number	2	8000	16000	Grab Sampling

S. No	Components	Unit	Quantity	Unit Cost (INR)	Total Cost (INR.)	Remarks
8	Monitoring: Surface Water quality	Number	4	8000	32000	Grab Sampling (Sampling location should include Dhabachi wadilake/ Sindhudurg Nagari lake)
9	Monitoring: Soil Quality	Number	2	8000	16000	Grab Sampling
10	Shifting of Utility (if applicable)				To be covered under Project Cost	Responsibility of making payment to concerned entity would lie with DMER/MEDD
A.2.	**Construction Phase (2 Years)**					
1	Traffic management at worksite (signage, Warning Lights etc.)	Lump sum			200000	
2	Horticulture and Green Area Development (33% of Plot size)	Ha	7	500000	3500000	
3	Silt Fencing for adjacent waterbodies	running meter	300	2500	750000	Movable and to be shifted from one location to another construction zones
4	Waste and wastewater management				To be covered under Project Cost	
5	Monitoring: Ambient Air Quality	Number	24	6000	144000	Once in each season at 4 locations upwind, downwind and crosswind (except monsoon) -
6	Monitoring: Ambient Noise quality	Number	24	2500	60000	Once in each season at 4 locations upwind, downwind and crosswind (except monsoon)
7	Monitoring: Ground Water quality and Drinking Water	Number	12	8000	96000	Once in each season at 2 locations (except monsoon)
8	Monitoring: Surface Water quality	Number	24	8000	192000	Once in each season at 3 locations (except in monsoon) (Sampling location

S. No	Components	Unit	Quantity	Unit Cost (INR)	Total Cost (INR.)	Remarks
						should include Dhabachi wadi lake/ Sindhudurg Nagari lake)
9	Monitoring: Soil Quality	Number	12	8000	96000	Once in each season at least at 2 locations (preferably near the treated effluent discharge points)- (except in monsoon season)
10	Rainwater Harvesting structures				To be covered under Project Cost	
11	Noise Barrier near school and residential areas				To be covered under Project Cost	
12	Restoration of construction site				To be covered under Project Cost	
13	EHS audit (6 Monthly)	Number	4	50000	200000	
14	Provisions of PPE, medical check up, first aid center, Development of OHS Plan, etc.				To be covered under Project Cost	For management OHS risk as per the provisions of H&S Plan
A.3.	**Operation Phase (3 years)**					
1	Regulatory Clearances/Permits like Fire NoC, CTE/CTO, Authorization, PESO License				To be covered under Project Cost	Statutory fees to be paid by PMU as per actuals
2	Waste and wastewater management (including installation and operation of wastewater treatment plant)				To be covered under Project Cost	
3	Monitoring: Ambient Air Quality	Number	6	6500	39000	Yearly basis at 2 locations (upwind and downwind) near facility premises except in monsoon season

S. No	Components	Unit	Quantity	Unit Cost (INR)	Total Cost (INR.)	Remarks
4	Monitoring: Ambient Noise quality	Number	12	2700	32400	Six monthly basis 2 locations near facility premises except in monsoon season
5	Monitoring: Ground Water quality and Drinking Water	Number	18	8500	153000	Once in each season at least at 2 locations near facility premises and nearby village except in monsoon season
6	Monitoring: Surface Water quality (depending on availability)	Number	18	8500	153000	Once in each season at least at 2 locations (preferably near the treated effluent discharge points i.e Dhabachi Wadi Lake/ Sindhudurg Nagari lake) except in monsoon
7	Monitoring: Soil Quality	Number	18	8500	153000	Once in each season at least at 2 locations (preferably near the treated effluent discharge points) except in monsoon season
8	Monitoring: Waste water from Inlet and treated water from outlet of ETPs cum STPs	Number			To be covered under Project Cost	Daily if not defined otherwise by regulations
9	Monitoring: Treated STP / ETP water at end use location	Number	18	8500	153000	Once in each season at 2 discharge locations (number to be increased in case there are more discharge points) except in monsoon season
10	EHS audit (6 Monthly)	Number	6	70000	420000	
11	Green area maintenance (Monitoring of Survival of trees)	Number	12	30000	360000	Quarterly

S. No	Components	Unit	Quantity	Unit Cost (INR)	Total Cost (INR.)	Remarks
12	Monitoring of Air Emissions & Odour monitoring at STP/ETP	Number	36	15000	540000	Quarterly at 3 locations
A.4.	Others					
1	Implementation of Emergency Preparedness Plan, Grievance Redress Mechanism, Stakeholder Engagement activities, Traffic Management, Infection Control, Provisions for PPE, Immunization of Healthcare staffs,				To be covered under Project Cost	
2	Implementation of Corrective Action Plan				To be covered under Project Cost	Budget should be allocated as per actual basis by MEDD/DMER or Contractor depending on nature of measures to be taken
3	Training and Capacity Building	Lump sum			100000	
Total Cost					**8439400**	
10% contingency					843940	
Grand Total					**9283340**	
Note: This budget will need to be updated based on detailed design, stipulations of statutory or other competent authorities, change in scope, identification of unanticipated impacts, if required. Both the draft and updated EMP budget will be included in the bid and contract documents after these are reviewed and cleared by ADB.						

X. CONCLUSION AND RECOMMENDATION

338. The proposed subproject 'Construction of 100 seats Government Medical College, 500 bedded Hospital and allied buildings at Sindhudurg, Maharashtra' under Maharashtra Tertiary Care and Medical Education Sector Development Program (MTCMESDP) will be a brownfield development.

339. The proposed subproject will have Hospital Complex (including Hospital Block, Emergency Services, Radiology, Central Labs & Blood bank, O.T. suite & critical care areas, OPD block, ICU wards, IPD wards, pre operative and recovery rooms), Medical College (Admin Block, eight non clinical departments with skill lab, Four lecture Halls, Library, O.T. suite & critical care areas, Cafeteria, Male & female Common room, Multipurpose Hall), Hostel Complex **(**Girls Hostel, Boys Hostel, Dining, kitchen, Warden Offices, Warden Residences, Recreation Halls & Reading Rooms and other facilities (like Parking and other Support Facilities, Mortuary, Laundry, Medical Gas Pipelines, Modular Operation Theatre, Kitchen, Substations, HVAC Plant room, Pump Houses, STP/ ETP, WTP etc.

340. Since the proposed facility exceeds Built-Up Area (BUA) of 20,000m^2, Environment Clearance (EC) from concerned authority is obtained prior to commencement of construction works and the conditions stipulated in EC letter will be complied with during design (pre-construction), construction, and operation stage of sub-project. In addition, the sub project will also require consents and authorization from pollution control board, various licenses/NoC (i.e., labour license, Fire NoC, PESO License etc.). No disbursement of Loan amount towards the civil works of Sindhudurg GMC will be done unless the prior regulatory clearances have been obtained.

341. The sub-project in Sindhudurg will not require forest clearance for acquisition of Reserve/protected forest, wildlife clearance, CRZ clearance, clearance from ASI/State Department of Archaeology as it is not located in any of the environmentally and culturally sensitive or protected areas.

342. Considering the environmental setting, type and scale of the subproject, it can be fairly stated that the key potential impacts during demolition of existing structures, construction as well as operation phase of the sub-project are likely to be primarily limited within sub-project footfall area. However, environmental impact likely due to demolition of existing buildings transportation of construction materials by road during construction phase, increased traffic during hospital operation, generation and management of Biomedical Waste, Sewage and Effluent etc. (which are hazardous in nature posing threat to occupational and community Health and Safety) as well as other kind of hazardous/non-hazardous solid wastes etc. unless proper mitigation measures are adopted.

343. The Environmental Category for the proposed subproject has been determined as Category B as per ADB's SPS 2009. As per the requirement of ADB for Category B (Environment), this IEE has been conducted to identify the potential environmental impacts

of the proposed development and devise appropriate mitigation measures for the project lifecycle. This IEE will be updated to incorporate changes due to detailed design, conditions stipulated in EC, unanticipated impacts, if any that are not part of this IEE and submitted to ADB for review and clearance. The ADB-cleared EMP and updated EMP, if any will be made part of the bid and contract documents and implemented.

II. Appendices

Appendix 1: Rapid Environmental Assessment Checklist

Rapid Environmental Assessment (REA) Checklist

Instructions:

(i) The project team completes this checklist to support the environmental classification of a project. It is to be attached to the environmental categorization form and submitted to the Safeguards Division (SDSS), for endorsement by Director, SDSS and for approval by the Chief Compliance Officer.

(ii) This checklist focuses on environmental issues and concerns and includes an Asbestos Screening Tool. To ensure that social dimensions are adequately considered, refer also to ADB's: (a) checklists on involuntary resettlement and Indigenous Peoples; (b) poverty reduction handbook; (c) staff guide to consultation and participation; and (d) gender checklists.

(iii) Answer the questions assuming the "without mitigation" case. The purpose is to identify potential impacts. Use the "remarks" section to discuss any anticipated mitigation measures.

Country/Project Title:	***Proposed Sindhudurg Site***
Sector Division:	

Screening Questions	Yes	No	Remarks
A. Project Siting Is the Project area adjacent to or within any of the following environmentally sensitive areas?			
▪ Cultural heritage site		√	There are no government notified cultural heritage site located within or adjacent to the project site.
▪ Legally protected Area (core zone or buffer zone)		√	No legally protected wildlife areas (like National park, Sanctuary, Biosphere Reserve etc.) located within the immediate vicinity of the project site. Radhanagari Wildlife Sanctuary (nearest from Proposed Site) is located beyond 10 Km from the proposed project site.

Screening Questions	Yes	No	Remarks
▪ Wetland	√		There are no Ramsar site (as per Ramsar convention) within 10 km aerial distance from the proposed project site. However, the proposed site is located at ~ 200m of Sindhudurg Nagari Lake/Dhabachi Wadi Lake. The lake is located towards SW direction from proposed site. Other wetlands in the distant project surrounding area include - Oros Budruk lake (~ 4 Km; towards E) - Kasal Lake (~ 4 Km; towards NE) - Chroge Wadi Lake (~ 5 Km, towards SE) - Kasal River (~ 6 Km, towards North) - Karli River (~ 5 Km, towards South) - Mulde Reservoir (~ 10 Km, towards South) - Lake near Avalgaon (~6 Km, towards SE) etc.
▪ Mangrove		√	The is no such mangrove area exists within the immediate vicinity of the proposed project site.
▪ Estuarine		√	None within the immediate vicinity of the proposed project site. Arabian sea is located at an approximate aerial distance of ~25 km away from the proposed project site.
▪ Special area for protecting biodiversity		√	There are no special area for protection of biodiversity like IBA/KBA are not recorded in the vicinity of proposed project site. The consultation with Forest department confirmed that there is no potential nesting or breeding sites, migratory path etc. near to the proposed site.
B. Potential Environmental Impacts Will the Project cause…			
▪ impairment of historical/cultural areas; disfiguration of landscape or potential loss/damage to physical cultural resources?	√		Not applicable as there are no government notified cultural heritage site within or adjacent to the proposed project site**.** For the case of discovery of any ancient monuments/archaeological sites/remains during the sub-project activity, a chance find procedures will help in undertaking mitigation and management measures to avoid adverse impact on the cultural resources.

Screening Questions	Yes	No	Remarks
▪ disturbance to precious ecology (e.g. sensitive or protected areas)?		√	There are no protected natural habitat areas (like sanctuary, national parks etc.), reserved/protected forest, etc. located close to the proposed project site. Therefore, no such impact is perceived on protected natural habitats. However, being in the vicinity of Sindhudurg Lake, the project should ensure adequate measure during construction and operation phase to avoid causing any kind of contamination to the lake which may have an impact on aquatic ecosystem. The proposed site where new constructions are planned are having some grown trees. These trees may get affected due to proposed development and compensatory plantation should be taken up. Besides these, a biodiversity park (Uttamrao Patil Biodiversity Park) is being developed by the forest department as a part of social forestry. This is located ~20 m to the southwest of the proposed project site. The project should ensure adequate measures viz. A barrier of at least 6 m in height to be installed along the Southwest boundary facing the biodiversity park to avoid the impact of air and noise pollution during the demolition and construction activities.
▪ alteration of surface water hydrology of waterways resulting in increased sediment in streams affected by increased soil erosion at construction site?		√	No such impact is anticipated as no waterways are nearby and project footfall area will be limited to the proposed site and construction camp (if proposed). However, soil erosion and surface runoff may occur during construction phase which may further contaminate the Sindhudurg Nagari Lake/Dhabachi Wadi Lake (~200m), however the impact is likely to be short term. Contractor of the Project shall make necessary arrangements for processing of muddy water like filtering and sedimentation, and direct discharge to surface water bodies should be prohibited. In addition to that, during operation stage, if the biomedical waste (including effluent) is not properly managed, it may contaminate such surface waterbodies.

Screening Questions	Yes	No	Remarks
▪ deterioration of surface water quality due to silt runoff and sanitary wastes from worker-based camps and chemicals used in construction?	√		There are a one waterbody present in project area surrounding (as mentioned before). During construction phase these waterbodies may get affected due to poor material transportation practice, improper waste management, discharge of untreated effluent (during operation phase as well). However, such type of potential risks/impacts can be prevented through implementation of effective mitigation measures.
▪ increased air pollution due to project construction and operation?	√		This is anticipated during construction phase primarily. The sources of dust and air emission could be site preparation (excavation-leveling-earthwork) activities, movement of trucks transporting materials to the site, machinery use, DG Sets etc. But these vehicles/machineries are required to undergo emission tests in compliance with regulatory norms. During operation phase, occasional emission from usage of DG set is envisaged. Impact due to gaseous emission and dust generation can be adequately mitigated by adopting adequate mitigation measures.
▪ noise and vibration due to project construction or operation?	√		Since site demolition and preparation activities are required, generation of noise and vibration (expected to be confined locally) is anticipated due to demolition works, excavation/site leveling works, operation of construction machineries. In addition to that, movement of construction vehicles and operation of construction equipment may further contribute. The nearby receptors especially the existing facilities of existing Govt. Medical College & Hospital (likely to continue operation during the process of upgradation) may get affected from the noise likely to generate during the construction phase. Therefore, adequate mitigation measures to control noise level should be adopted to avoid impact to the patients and their keens as well as the students.
▪ involuntary resettlement of people? (physical displacement and/or economic displacement)		√	Not anticipated since the proposed development would occur within the premise of existing Govt. Medical College & Hospital.
▪ disproportionate impacts on the poor, women and children, Indigenous Peoples or other vulnerable groups?		√	Not perceived such impact.

Screening Questions	Yes	No	Remarks
▪ poor sanitation and solid waste disposal in construction camps and work sites, and possible transmission of communicable diseases (such as STIs and HIV/AIDS) from workers to local populations?	√		Poor Sanitation quality at the site (including Contractor's camp, if any) could affect the hygiene or aesthetic of immediate vicinity due to wastewater releases, improper solid waste management. These are potential sources of vector-borne diseases. The project would need to provide measures to avoid or minimize this impact, such as following the mandatory waste disposal through government authorized collection services and treatment of wastewater generated by construction camp. In case migratory labours are involved and construction camps are created for the project, possibility of transmission of communicable diseases can't be ruled out.
▪ creation of temporary breeding habitats for diseases such as those transmitted by mosquitoes and rodents?	√		This is anticipated during construction phase as mentioned in the above row. In addition to that, during operation phase, similar kind of condition may occur if adequate solid waste management (especially Biomedical waste) is not ensured or wastewater is discharged untreated. Also, biomedical waste management needs to be ensured through authorized vendor by ensuring regular collection and proper management
▪ social conflicts if workers from other regions or countries are hired?	√		In case migratory labours are involved and construction camps are created for the project, possibility of transmission of communicable diseases and possibility of having conflict with locals can't be ruled out. Prioritizing local people for opportunities to work on the project will help to minimize the chances of cultural discrepancy and conflict due to increased outside workers.

Screening Questions	Yes	No	Remarks
▪ large population influx during project construction and operation that causes increased burden on social infrastructure and services (such as water supply and sanitation systems)?		√	Based on the understanding, the project will not require significant number of labour who will move to the proposed site area. Engaging local labor will be a priority under the project. Although the project may recruit limited number of migrant workers, in this case contractor should provide water supply, source of cooking fuels, accommodation and adequate access to proper hygiene and sanitation condition. Therefore, this project might not cause significant burden to the infrastructure such as the water supply and sanitation during construction phase. During operation phase due to facility operation would require increased supply of water, drainage for collection of wastewater and stormwater streams etc. Pertinent to state the site is not currently connected with sewage supply network. Also, no wastewater treatment facility like STP/ETP is present and is planned to be established.
▪ risks and vulnerabilities related to occupational health and safety due to physical, chemical, biological, and radiological hazards during project construction and operation?	√		This is anticipated during construction phase and operation phase both. During construction phase, it is envisaged that Occupational health and safety (OHS) risk will primarily be associated with various mechanical activities. While during operation phase OHS risk will primarily be associated due to generation of biomedical waste (which may include infectious waste containing pathogens, chemicals, wastewater streams etc.). If such waste is not managed appropriately (i.e., improper segregation, storage for longer duration, improper disinfection etc.), it increases the risk of exposure of the workers to occupational health safety risks. Adequate mitigation in both the stages will be necessary to mitigate OHS risks.

Screening Questions	Yes	No	Remarks
▪ risks to community health and safety due to the transport, storage, and use and/or disposal of materials such as explosives, fuel and other chemicals during construction and operation?	√		Fuel, paints and other chemicals normally used for building development will be used during construction phase, but likely no explosives. In addition to that, gaseous emission-dust generation-increased noise level due to various construction activities (including demolition of old structures which may contain asbestos materials) and material transportation, accidental spill of material/oil etc. may expose the community to a higher risk if proper mitigation measures not taken. As mentioned in above row, improper management of healthcare/biomedical waste (which may include infectious waste containing pathogens, chemicals, wastewater streams etc.) may also get local community/patients' attendants exposed to community health and safety risks. Thus robust plan would be needed to negate such kind of risks.
▪ community safety risks due to both accidental and natural causes, especially where the structural elements or components of the project are accessible to members of the affected community or where their failure could result in injury to the community throughout project construction, operation and decommissioning?	√		It is likely that during the demolition-site preparation and construction phase the existing 320 bedded hospital building (as well as medical college) will be operational and patients/their attendant will have access to the site premise. Therefore, adequate planning i.e., restricted access, taking up construction activities in phased manner etc. needs to be explored and adequately planned priorly. To prevent any disruption or adverse impact on ongoing operations, the contractor will implement several mitigation measures, including erecting site barricades up to 6 meters in height, conducting regular water sprinkling to suppress dust, and rerouting vehicular and pedestrian traffic to ensure the safety of current facility users. These measures will be strictly followed to maintain a safe and functional environment for all occupants during the construction period.
▪ generation of solid waste and/or hazardous waste?	√		Already discussed above. In addition to that, Hazardous waste during construction and operation phase could be used oil generated from DG sets and used oil containing clothes. The sludge envisaged to be generated from wastewater treatment plant during operation phase are to be considered as hazardous waste.

Screening Questions	Yes	No	Remarks
▪ use of chemicals?	√		Fuel, paints and chemicals normally used for building development will be used during construction phase. During operation phase various Pharmaceutical waste like antibiotics, cytotoxic, waste containing reagents and chemicals from pathological/microbiological, discarded disinfectants, discarded formalin, discarded cleaning materials etc. are envisaged. Management of such chemicals and waste containing such chemicals would be necessary for construction and operation phase.
▪ generation of wastewater during construction or operation?	√		This is anticipated during the construction and operation phases of the project. Wastewater (mainly sewage) generated from labour camp may contaminate project surrounding area if properly not managed. Wastewater during operation phase is envisaged in form of sewage as well as effluent. This may also contain liquid biomedical waste and needs to be adequately treated prior to discharge in drainage network. Surrounding environment or surface water bodies.

ASBESTOS SCREENING TOOL

Screening Questions	Yes*	Maybe*	No	Remarks *For those with answers of **YES** and **MAYBE,** document the potential likelihood of asbestos being encountered.
Does the proposed project involve, or potentially involve, any of the following activities that are commonly associated with asbestos use:				
• Construction/commissioning of a new asset?	√			The proposed project is brownfield in nature. However, the project propose to construct a new 500 bedded hospital building, government medical college and other buildings like hostel/quarter within the existing premise of Sindhudurg Govt. Hospital and Medical College. During the process, some old buildings are planned to be demolished as well.
• Refurbishment / demolition of an existing asset?	√			Demolition of existing assets would be involved as mentioned above
• Post-disaster response, involving reconstruction, repair, or removal of damaged asset?			√	Not applicable as the objective is to establish a government medical college building and hospital facilities
• Maritime activities?			√	None within the vicinity of proposed site. Arabian sea is located at an approximate aerial distance of 25 km from the proposed project site
• Water supply, water sanitation, wastewater, sewerage, or water hygiene initiatives?	√			Development such utility facilities within premise is envisaged.
• Earthworks, remedial activities, or solid waste management?	√			Envisaged as a part of project intervention. However, the objective of the project to establish medical college and hospital towards providing improved healthcare services in the region
• Power, telecommunications, or energy supply infrastructure?	√			Envisaged as a part of project intervention. However, the objective of the project to establish medical college and hospital towards providing improve healthcare services in the region
• Maintenance, demolition, transportation, or disposal of wastes associated with the above activities?	√			Significant demolition work is anticipated. Such as, old staff quarters are planned to be demolished to accommodate new 500 bedded hospital building. The construction of new medical college will also require demolition of some old structures. Additionally, transportation of waste and management of waste (including Construction/demolition waste, hazardous and biomedical waste during operation phase) will be needed.

Note: If you answered YES or MAYBE to the above questions, assume that the project is likely to encounter asbestos as a direct or indirect result of project-related activities and proceed to the TOOLKIT FOR SCREENING ASBESTOS RISKS IN NEW ADB-SUPPORTED PROJECTS PART B – SCREENING TOOLS AND CHECKLISTS

Appendix 2: Calculation of Built-Up Area

GENERAL MEDICAL COLLEGE AND HOSPITAL, SINDHUDURG						18/04/24
FSI AND NON FSI STATEMENT- PHASE -1						
SR. NO.	BLDG.	FSI AREA	NON FSI AREA	TOTAL FSI+NON FSI	TENEMENTS	OCCUPANCY
1	Main Hospital Building	49396.07	9,124.54	58520.61	-	1900
2	Medical College	25170.23	2,864.40	28034.63	-	967
3	Student Hostel building	14060.1	1,517.68	15577.78	-	476
4	Dean Bungalow	112.81	10.00	122.81	1	5
5	Mortuary	1796.59	240.00	2036.59	-	180
7	Animal House	294.93	240.00	534.93	-	29
8	Services	0.00	2,000.00	2,000.00	-	-
	2517.023					
	TOTAL	90830.73	15996.62	106827.35		3557
	TOTAL FSI+ NON FSI	106827.35				

FSI AND NON FSI STATEMENT- Existing Buildings						
SR. NO.	BLDG.	FSI AREA	NON FSI AREA	TOTAL FSI+NON FSI	TENEMENTS	OCCUPANCY
1	Hospital Building	13930.47	500.00	14430.47	-	1267
2	Ayush Building	4081.94	250.00	4331.94	-	408
3	Nursing College	2063.25	150.00	2213.25	-	100
	TOTAL	20075.66	900	20975.66		1775
	TOTAL FSI+ NON FSI	127803.01				5332

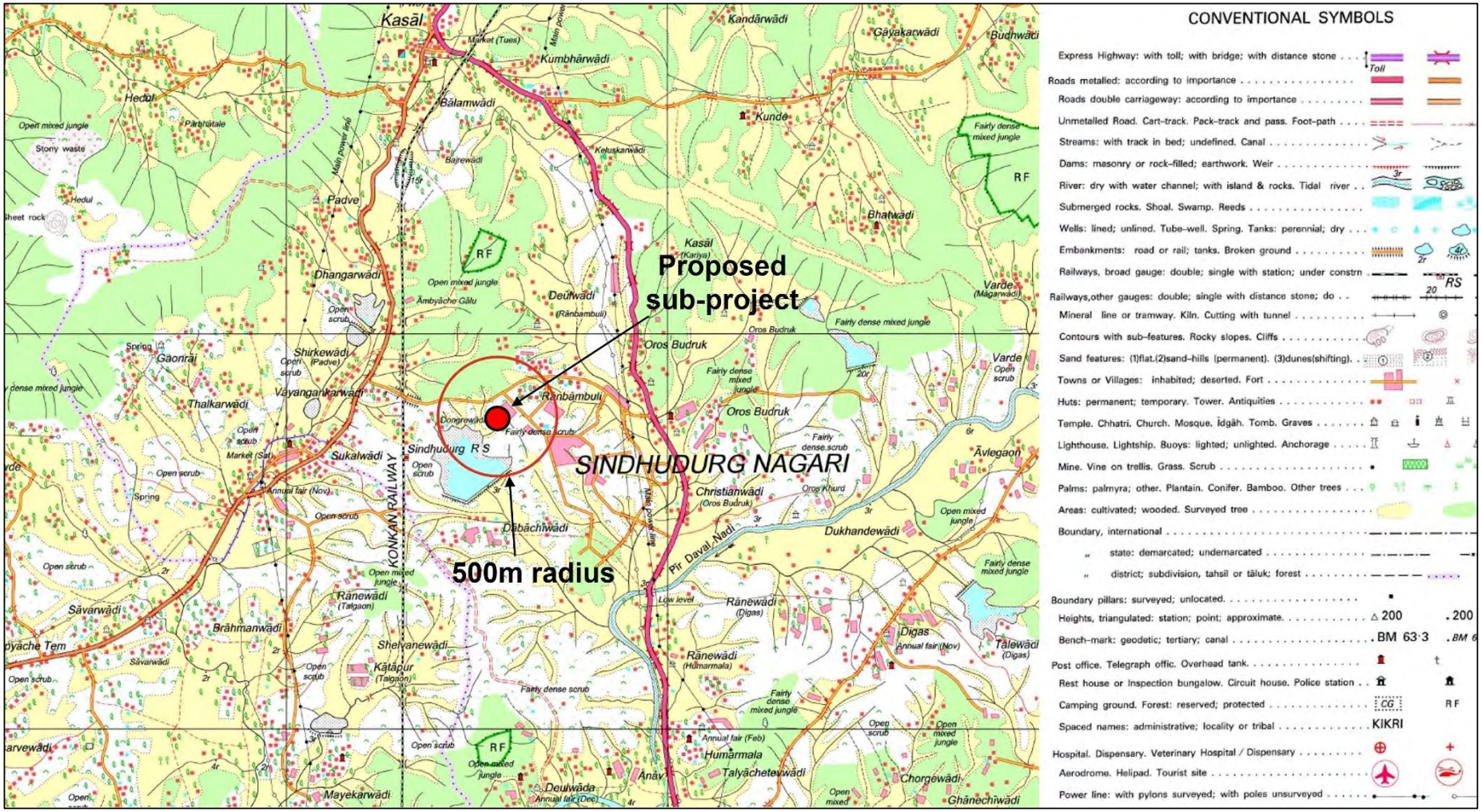
Appendix 3: Estimations for Water Demand

Sr. No.	Description	Total Population	Daily Water Requirement	Domestic Water		Hot Water		Flushing Water		Total Daily Water Requirement
			lpod	lpod	lpd	lpod	lpd	lpod	lpd	lpd
	Phase 1									
1	**Hospital**									
1.1	Beds	300	450	240	72,000	60	18,000	150	45,000	135,000
1.2	Visitors	600	15	5	3,000	0	0	10	6,000	9,000
1.3	Staff	100	45	25	2,500	0	0	20	2,000	4,500
1.4	Kitchen (2 Meals + 1 breakfast per bed per day)	900	35	25	22,500	10	9,000	0	0	31,500
1.5	Laundry				50,000					50,000
1.6	Mortuary	180	45	25	4,491	0	0	20	3,593	8,085
	Sub-Total	**2,080**			**164,491**		**27,000**		**68,593**	**238,085**
2	**Medical College**									
2.1	Medical College	500	45	25	12,500	0	0	20	10,000	22,500
2.2	Interns	100	45	25	2,500	0	0	20	2,000	4,500
2.3	Professor	25	45	25	625	0	0	20	500	1,125
2.4	Associate Professor	30	45	25	750	0	0	20	600	1,350
2.5	Assistant Professor	40	45	25	1,000	0	0	20	800	1,800
2.6	Tutor/Demonstrator	50	45	25	1,250	0	0	20	1,000	2,250
2.7	Statistician	5	45	25	125	0	0	20	100	225
2.8	Animal House	29	45	25	737	0	0	20	590	1,327
2.9	Support Staff(All campus)	100	45	25	2,500	0	0	20	2,000	4,500
3	Visitors	117	15	5	585	0	0	10	1,169	1,754
	Sub-Total	**898**			**22,572**				**18,758**	**41,331**
3	**Hotels**									
3.1	Boy Hostel	238	135	70	16,660	20	4,760	45	10,710	32,130
3.2	Girls Hostel	238	135	70	16,660	20	4,760	45	10,710	32,130
	Sub-Total	**478**			**33,320**		**9,520**		**21,420**	**64,260**
4	**Dean Bungalow**	5	135	70	350	20	100	45	225	675
	Sub-Total				**350**		**100**		**225**	**675**
4	**Water supply for other uses**									
4.1	Landscape							210,000	210,000	210,000
4.2	HVAC Chiller make-up water				111,485			88,515	88,515	200,000
	Sub-Total	**0**			**111,485**		**0**		**298,515**	**410,000**
	Total For Phase-1				**322,218**		**38,620**		**386,512**	**764,351**
	Existing Buildigs									
1	**Hospital**									
1.1	Beds	200	450	240	48,000	60	12,000	150	30,000	90,000
1.2	Visitors	400	15	5	2,000	0	0	10	4,000	6,000
1.3	Staff	67	45	25	1,667	0	0	20	1,333	3,000
1.4	Kitchen (2 Meals + 1 breakfast per bed per day)	600	35	25	15,000	10	6,000	0	0	21,000
1.5	Laundry				30,000					30,000
	Sub-Total	**1,267**			**96,667**		**18,000**		**35,333**	**150,000**
2	**Ayush Building**									
2.1	Ayush Building	408	45	25	10,205	0	0	20	8,164	18,369
2.2	Visitors	61	15	5	306	0	0	10	612	918
	Sub-Total	**408**			**10,511**		**0**		**8,776**	**19,287**
3	**Nursing College**									
3.1	Nursing College	100	45	25	2,500	0	0	20	2,000	4,500
3.2	Professor	6	45	25	150	0	0	20	120	270
3.3	Associate Professor	8	45	25	200	0	0	20	160	360
3.4	Assistant Professor	10	45	25	250	0	0	20	200	450
3.5	Tutor/Demonstrator	12	45	25	300	0	0	20	240	540
3.6	Support Staff	15	45	25	375	0	0	20	300	675
2.2	Visitors	23	15	5	113	0	0	10	227	340
	Sub-Total	**100**			**3,888**		**0**		**3,247**	**7,135**
	Total For Existing Building				**111,066**		**18,000**		**47,356**	**176,422**

Appendix 4: Site Plan

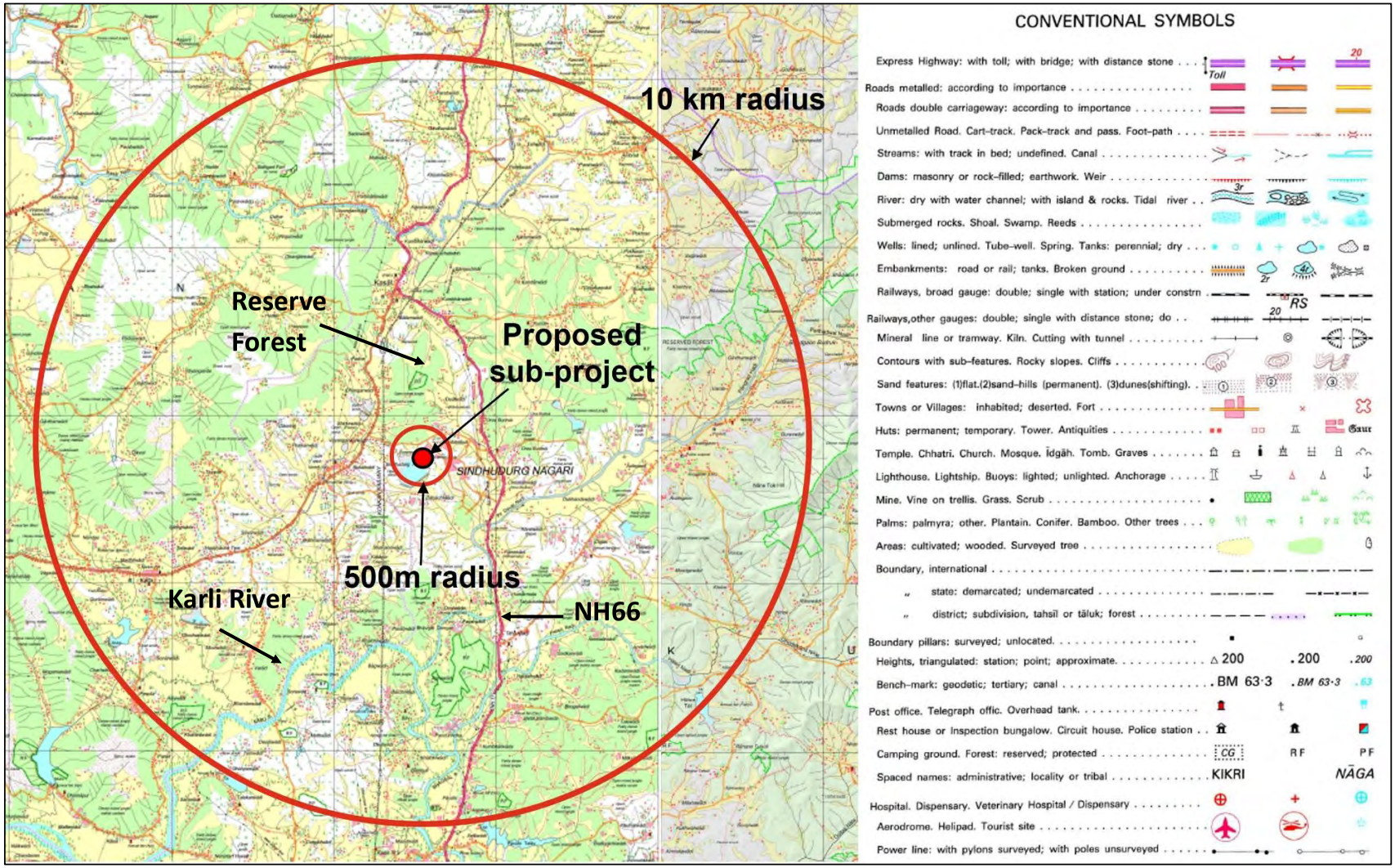
Appendix 5: Study Area Demarcated on Toposheet

Figure 28: Site shown on Toposheet



Note: Map presented is Indicative and not to scale
Source: Survey of India Toposheet (https://onlinemaps.surveyofindia.gov.in/FreeMapSpecification.aspx)

Figure 29:Map showing 10 km radius study area on Toposheet



Note: Map presented is Indicative and not to scale
Source: Survey of India Toposheet (s)

Appendix 6. Checklist: Floral Community

Table 43: List of common plants (SHRUBS) occurring in Sawantwadi Division

Sr. No.	Local Vernacular Name	Botanical Name
1	Shewati	*Homonoia riparia Lour.*
2	Machkund	*Pterospermum Macerifoliu Willd.*
3	Ranbhendi (Lahan)	*Thespesia lampas .*
4	Kushiri / Dhayati	*Woodfordia fruticosa (L.) Kurz*
5	Daiwari	*Hibiscus talbottii*
6	Mendi	*Lawsonia inermis L.*
7	Ghaneri	*Lantana camara L.*
8	Aasoli	*Grewia nervasa*
9	Bandhari	*Strobilanthes perfoliatus Anders.*
10	Nataknar (Makadlimbu)	*Atlantia racemosa Wt.*
11	Chitrangi	*Grewia unibellifera .*
12	Ranbell	*Vitex altissima L. f.*
13	Dinda	*Leea indica (Burm. f.) Merr.*
14	Karvand	*Carissa carandas L.*
15	Toran	*Ziziphus rugosa Lam.*
16	Shembi	*Acacia concinna (Wild.) DC.*
17	Anjan	*Memecylon umbellatum Burm. f.*
18	Burmbi	*Aaglaia lawii*
19	Chikni	*Bridelia scandens Gehrm.*
20	Uakashi / Baguli	*Calycopteris floribunda (Roxb.) Lam. ex Poir.*
21	Pangla	*Pogostemon parviflorus Benth.*
22	Karvati	*Ficus exasperata Vahl*
23	Kuchala	*Strychnos nux-vomica L.*
24	Gidsava / Jitasa.	*Spermadictyon suaveolens Roxb.*
25	Kali nirgudi	*Vitex leucoxylon L. f.*
26	Noni	*Morinda pubescens Sm.*
27	Petkul	*Phyllanthus sp.*
28	Lugdi	*Flemingia strobilifera (L.) R. Br.*
29	Bhamti	*Haplanthodes verticillata (Roxb.) Majumdar*
30	Amboti	*Antidesma ghaesembilla*
31	Bottle Brush	*Callistemon citrinus (Curtis) Skeels*
32	Ran Wange	*Solanum torvum Sw.*

Table 44: List of common plants (Herbs) occurring in Sawantwadi Division

Sr. No.	Local Vernacular Name	Botanical Name
1	Chitrak	*Plumbago zeylanica L.*
2	Haliv	*Lepidium ratrvus*
3	Karbella/ Jangli Ganja	*Desmodium ritchiei.*
4	Amti	*Bruguiera gymnorhiza (L.) Savigny*
5	Torani / Borati	*Zizyphus oenoplia (L.) Mill.*
6	Rametta	*Lasiosiphon eriocephalms*
7	Goti	*Zizyphus sp.*

Table 45: List of common plants (Climbers) occurring in Sawantwadi Division

Sr. No.	Local Vernacular Name	Botanical Name
1	Kawalivel	*Cocculus hirsutus (L.) Diels*
2	Bondvel	*Merremia umbellata (L.) Hallier f.*
3	Dasaravel	*Combretum sp.*
4	Kokani Vaghati/ Karvi Vaghati	*Paramignya monophylla Wight*
5	Kalimiri	*Piper nigrum*
6	Vakerivel	*Caesalpinia cucullata Roxb.*
7	Morvel /Pahadvel	*Cyclea peltata f. Hook. & Thomson*
8	Halad vel	*Hiptage bengalensis*
9	Chandwadvel	*Cissus pallida Salisb.*
10	Wakeri	*Tali minor*
11	Waghati	*Wagatea spicata*
12	Amrutvel / Anant mul.	*Hemidesmus indicus (L.) R. Br. ex Schult.*
13		*Lygodiu Fiereupsum*
14	Kandvel	*Ventilago maderaspatana Gaertn.*
15	Gotvel	*Smilax zeylanica L.*
16	Amagul	*Elaeagnus latifolia*
17	Bugvel	*Callopteris floribanda*

Table 46: List of common plants (Grass) occurring in Sawantwadi Division

Sr. No.	Local Vernacular Name	Botanical Name
1	Kocha Gavat	*Spodiopogon rhizosporous (Steud.) Pilg*
2	Karapwel Gavat / Kapuri Gavt.	*Aerva lanata (L.) Juss. ex Schult.*
3	Nirkat Gavat	*Rungea sp.*
4	Kukdus Gavat	*Arundinella leptochloa (Nees ex Steud.) Hook. F*
5	Bongarat Gavat	*Pseudanthistiria heteroclita (Roxb.) Hook. f.*
6	Karak Gavat	*Oplismenus compositus (L.) P. Beauv.*
7	Kharas Gavat / Tambit Gavat	*Apluda mutica L.*
8	Kadkada	*Canscora diffusa (Vahl) R. Br. ex Roem. & Schult.*
9	Chalduva	*Aerva lanata (L.) Juss. ex Schult.*
10	Ranbibba Gavat	*Bhumca spp.*
11	kurdu	*Celocia argentaci*

Appendix 7: Checklist: Fauna Community

Table 47: List of birds in Sawantwadi Forest Division as per the Forest Working Plan

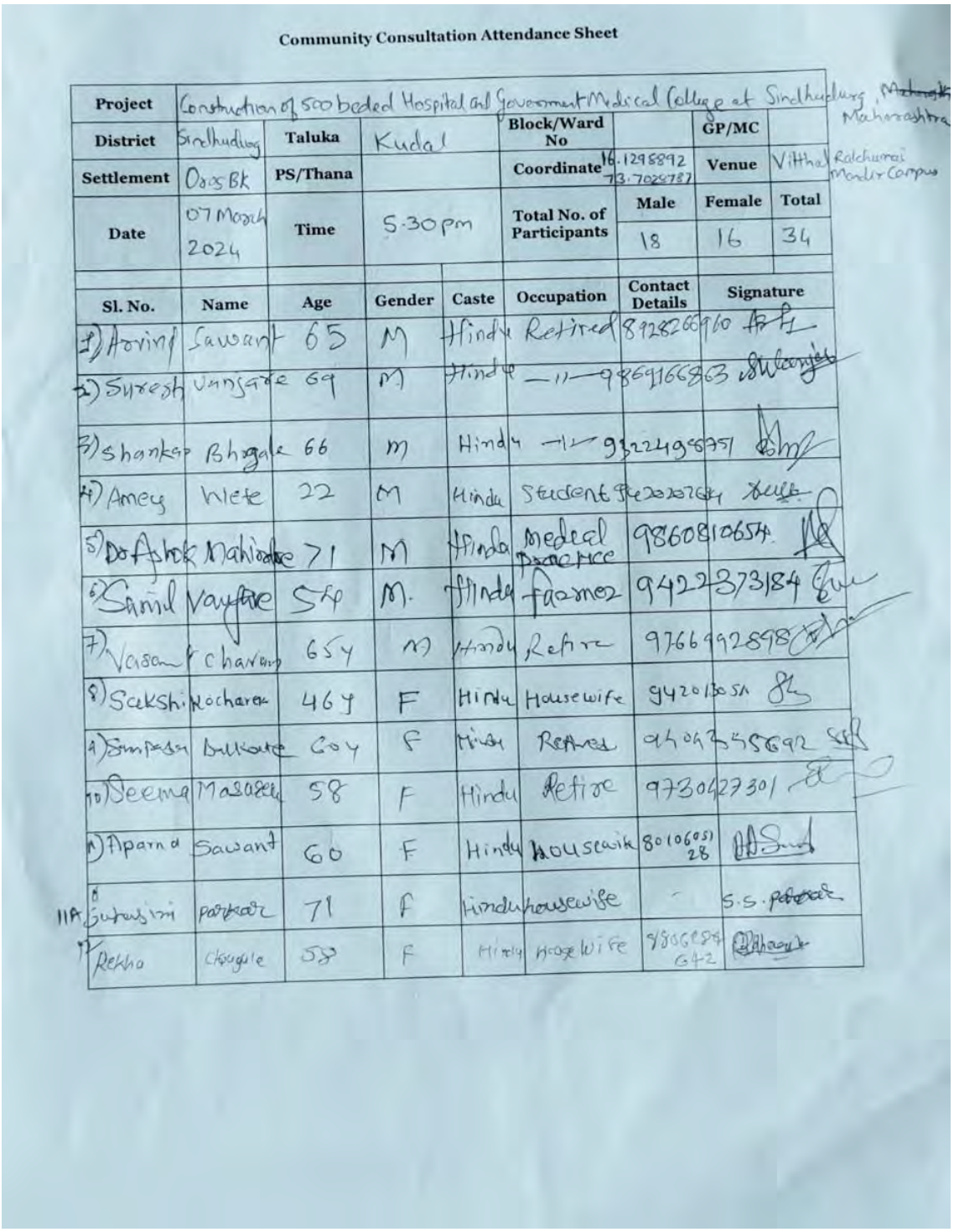
SN	Common Name	Scientific Name
1	Snipe	*Gallinago gallinago*
2	Whistling duck	*Dendro javanica*
3	Painted francolin	*Francolinus pictus*
4	The grey francolin	*Francolinus pondicerianus*
5	Common quail	*Coturnix coturnis*
6	Rainquail	*Coturnix coromandelicus*

SN	Common Name	Scientific Name
7	Bustard quail	*Turnii cidae*
8	Jungle bush quail	*Perdicula asiati*
9	Pea fowl	*Pavo cristatus*
10	Grey jungle fowl	*Gallus sonneratii*
11	Blue rock pigeon	*Columba livia*
12	Buzzards	*Butex rufinus*
13	Pallid harrier	*Circus macrounts*
14	Western Reef-egret	*Egretta gularis*
15	Gull	*Larus argentatus*
16	Crested Serpent Eagle	*Spilornis cheela*
17	Malabar Pide Hornbill	*Anthracoceros coronatus*
18	Jungle Babbler	*Turdoides striatus*
19	Indian Pitta	*Pitta brachyura*
20	Purple-rumped Sunbird	*Nectarinia zeyloncia*
21	Indian Roller	*Coracias benghalensis*
22	Indian Blackbird	*Turdus simillimus*
23	Black-headed Oriole	*Oriolus xanthornus*

Table 48: List of Mammals in Sawantwadi Forest Division as per the Forest Working Plan

SN	Local name	Zoological name
1	Leopard	*Panthera pardus*
2	Sambar	*Rusa unicolor nigra (Syn. Cervas unicolor)*
3	Wolf	*Canis lupus*
4	Hyaena	*Hynaena hyaena*
5	Aswal	*Ursus arctos*
6	Bhekar	*Muntijak vaginalis*
7	Nilgai	*Boselaphus tragocamelus*
8	Ran dukkar	*Sus oristastu*
9	Kolha	*Vulpes vulpes*
10	Khokad	*Canis aureus*
11	Mongooses	*Herpestes edwardsic*
12	Sayal	*Hystrix indica*
13	Hare	*Lepus ruficaudatus*
14	Baul	*Felis chaus*
15	Kalindri	*Paradoxurus hermaphroditus*
16	Makad	*Macaca radiata*
17	Wanar	*Presbytis entellus*
18	Gaur	*Bos gaurus*
19	Indian Giant Squirral	*Ratufa indica*
20	Indian Muntjac	*Muntiacus muntjack*

Appendix 8.: Attendance Sheet for Stakeholder Consultation held at Oros Budruk and Ranbambuli Village



Community Consultation Attendance Sheet

Project	Construction of 500 bedded Hospital and Government Medical College at Sindhudurg, Maharashtra						
District	Sindhudurg	Taluka	Kudal	Block/Ward No		GP/MC	
Settlement	Oros Bk	PS/Thana		Coordinate	16.1298892 73.7026787	Venue	Vitthal Rakhumai Mandir Campus
Date	07 March 2024	Time	5.30 pm	Total No. of Participants	Male: 18	Female: 16	Total: 34

Sl. No.	Name	Age	Gender	Caste	Occupation	Contact Details	Signature
1)	Arvind Sawant	65	M	Hindu	Retired	8928266960	
2)	Suresh Vangade	69	M	Hindu	— " —	9869166863	
3)	Shankar Bhogale	66	M	Hindu	— " —	9322495751	
4)	Amey Mete	22	M	Hindu	Student		
5)	Dattaram Mahadeo	71	M	Hindu	Medical practice	9860810654	
6)	Sunil Vaydye	54	M.	Hindu	farmer	9422373184	
7)	Vasant Charan	65	M	Hindu	Retire	9766992898	
8)	Sakshi Kocharekar	46	F	Hindu	Housewife	9420130851	
9)	Sampada Bakarkar	64	F	Hindu	Retired	9404345692	
10)	Seema Masoeker	58	F	Hindu	Retire	9730427301	
11)	Tiparna Sawant	60	F	Hindu	Housewife	8010605128	
11A)	Sulochana Parkar	71	F	Hindu	housewife		S.S. Parkar
12)	Rekha Chougule	53	F	Hindu	Housewife	9850858462	

Community Consultation Attendance Sheet

Project	Construction of 500 bedded Hospital and Government Medical College at Sindhudurg, Maharashtra							
District	Sindhudurg	**Taluka**	Kudal	**Block/Ward No**		**GP/MC**		
Settlement	Oros BK	**PS/Thana**		**Coordinate**	16.12988892 73.7028787	**Venue**	Vitthal Rakhumai Campus	
Date	07 March 2024	**Time**	5.30 pm	**Total No. of Participants**		**Male**	**Female**	**Total**
						18	16	34

Sl. No.	Name	Age	Gender	Caste	Occupation	Contact Details	Signature
13	Rangrao Parab	50	F	Hindu	Housewife		R.R. Parab
14	Vidya Patil	51	F	Hindu	Housewife	8087831922	Vpatil
15	Rajani Bakade	47	F	Hindu	Housewife	9423683967	(R.R.) Bakade
16	Varsha Saykar	33	F	Hindu	Teacher	8857828827	(H) Saykar
17	Somnath Saykar	33	M	Hindu	Private	8857828827	(H) Saykar
18	Vinaya Charan	56	F	Hindu	Housewife	9769992898	V. Charan
19	Prabha Bhagde	60	F	Hindu	Housewife		P. Bhagde
20	Anil Shridhar Charan	50	M	Hindu	service	9422874621	Anil Charan
21	Anuja Anil charan	46	F	—	—	—	Anuja
22	Rupali Rajesh Chamar	38	F	Hindu	service	9823598137	Rupali
23	Rajesh Bhamollkar	43	M	Hindu	service	9823927137	Rajesh
24	Priya Pawar	30	F	Hindu	Service	9404841115	Priya
25	Sanjay Khotaleshar	55	M	Buddhist	Service	9423779536	Sanjay
26	Neha Kelushkar	34	F	Hindu	Journalist	9422088813	Kelushkar
27	Ramachandra S. Manerikar	70	M	Hindu	Retired	9422231862	

Community Consultation Attendance Sheet

Project	Construction of 500 bedded Hospital and Government Medical College at Sindhudurg Maharashtra							
District	Sindhudurg	**Taluka**	Kudal		**Block/Ward No**		**GP/MC**	
Settlement	Oros Bk	**PS/Thana**			**Coordinate**	16.129892 73.702787	**Venue**	Vitthal Rakhumai Campus
Date	07 March 2024	**Time**	5.30pm		**Total No. of Participants**	**Male** 18	**Female** 16	**Total** 34

Sl. No.	Name	Age	Gender	Caste	Occupation	Contact Details	Signature
28)	Sanjay Dour	50	M	Hindu	service	7350[illegible] 555	
29	श्री. यादव एन. सी	39	M.	Hindu	Service	9420 739334	
30	श्री. संतोषी अनि	56	M	Hindu	Service	9673259448	
31	Vikas Badakane	37	M	Hindu	Service	7218242340	
32	Arvind Kambale	27	M.	Hindu	Service	9022009468	
33	Prakash Badvane	36	M.	Hindu	Service	9689523492	

Community Consultation Attendance Sheet

Project	Construction of 500 bedded Hospital and Government Medical College at Sindhudurg, Maharashtra						
District	Sindhudurg	Taluka	Kudal	Block/Ward No		GP/MC	
Settlement	Ranbambuli	PS/Thana		Coordinate	16.1212217 73.6869117	Venue	Gram panchayat office Ranbambuli
Date	07 March 2024	Time	11.30 am	Total No. of Participants	Male: 10	Female: 8	Total: 18

Sl. No.	Name	Age	Gender	Caste	Occupation	Contact Details	Signature
1	Samrudhi Masurkar	38	F				
2	Parshuram Parab	50	M				
3	Subhash Bambulkar	43	M				
4	Amar Talekar		M				
5	Vandana Bambulkar	75	F				
6	Riya Kadam	40	F				
7	Suman Parab	59	~~M~~ F				Suman S. Parab
8	Pranali Ausare	36	F				
9	Anjali Kadam	45	F				
10	Sahil Kavale	38	M				
11	Baburao Mangaonkar	53	M		9049933503		
12	Janardhan Gavhankar	65	M		9420304472		J.S.G.
13	Ashok Parab	77	M		9422394379		
14	सुनंदा देविदास सावंतवाड	57	F				सुनंदा देविदास सावंतवाड

Community Consultation Attendance Sheet

Project	Construction of 500 bedded Hospital and Government Medical College at Sindhudurg Maharashtra							
District	Sindhudurg	Taluka	Kudal		Block/Ward No		GP/MC	
Settlement	Ranbambuli	PS/Thana			Coordinate	16.1212217 73.68.69117	Venue	Gramponchayat office Ranbambuli
Date	07 March 2024	Time	11.30 am		Total No. of Participants	Male: 10	Female: 8	Total: 18

Sl. No.	Name	Age	Gender	Caste	Occupation	Contact Details	Signature
15	Darshan B. Hindlekar	42	M	OBC			
16	Dhanan Bobhate	26	F	OBC			Dhanan Bobhate.
17	Bharat parab	49	M	open			BS Parab.
18	Gaurav Ghadigaonkar	27	M	open			Ghadigaonkar

Appendix 9: Comparison Between Indian and International Environmental Standards

Comparison Between Indian Ambient Air Quality Standards and International Standards (WHO)

Ambient Air Quality Standards Parameter	Location	India Ambient Air Quality Standard-2009 (µg/m3)	WHO Air Quality Guidelines (µg/m3) recommended 2021	Applicable Per ADB SPS (µg/m3)
PM10	Industrial Residential, Rural and Other Areas	60 (Annual) 100 (24-hr)	15 (Annual) 45 (24-hr)	15 (Annual) 45 (24-hr)
	Sensitive Area	60 (Annual) 100 (24-hr)	15 (Annual) 45 (24-hr)	15 (Annual) 45 (24-hr)
PM25	Industrial Residential, Rural and Other Areas	40 (Annual) 60 (24-hr)	5 (Annual) 15 (24-hr)	5 (Annual) 15 (24-hr)
	Sensitive Area	40 (Annual) 60 (24-hr)	5 (Annual) 15 (24-hr)	5 (Annual) 15 (24-hr)
SO2	Industrial Residential, Rural and Other Areas	50 (Annual) 80 (24-hr)	40(24-hr)	50 (Annual) 40 (24-hr)
	Sensitive Area	20 (Annual) 80 (24-hr)	40(24-hr)	20 (Annual) 40 (24-hr)
NO2	Industrial Residential, Rural and Other Areas	40 (Annual) 80 (24-hr)	10(Annual) 25 (24-hr)	10(Annual) 25 (24-hr)
	Sensitive Area	30 (Annual) 80 (24-hr)	10(Annual) 25 (24-hr)	10(Annual) 25 (24-hr)
CO	Industrial Residential, Rural and Other Areas	2,000 (8-hr) 4,000 (1-hr)	4000 (24-hr)	2,000 (8-hr) 4,000 (1-hr) 4,000 (24-hr)
	Sensitive Area	2,000 (8-hr) 4,000 (1-hr)	4000 (24-hr)	2,000 (8-hr) 4,000 (1-hr) 4,000 (24-hr)
Ozone (O3)	Industrial Residential, Rural and Other Areas	100 (8-hr) 180 (1-hr)	100 (8-hr) 60 (peak season)	100 (8-hr) 60 (peak season)
	Sensitive Area	100 (8-hr) 180 (1-hr)	100 (8-hr) 60 (peak season)	100 (8-hr) 60 (peak season)
Lead (Pb)	Industrial, Residential, Rural and Other Areas	0.5 (Annual) 1.0 (24-hr)		0.5 (Annual) 1.0 (24-hr)
	Sensitive Area	0.5 (Annual) 1.0 (24-hr)		0.5 (Annual) 1.0 (24-hr)
Ammonia (NH3)	Industrial Residential, Rural and Other Areas	100 (Annual) 400 (24-hr)		100 (Annual) 400 (24-hr)
	Sensitive Area	100 (Annual) 400 (24-hr)		100 (Annual) 400 (24-hr)
Benzene (C6H6)	Industrial Residential, Rural and Other Areas	5 (Annual)		5 (Annual)
	Sensitive Area	5 (Annual)		5 (Annual)
Benzo(o)pyrene (BaP) particulate phase only	Industrial Residential, Rural and Other Areas	0.001 (Annual)		0.001 (Annual)

Ambient Air Quality Standards Parameter	Location	India Ambient Air Quality Standard-2009 (µg/m3)	WHO Air Quality Guidelines (µg/m3) recommended 2021	Applicable Per ADB SPS (µg/m3)
	Sensitive Area	0.001 (Annual)		0.001 (Annual)
Arsenic (As)	Industrial Residential, Rural and Other Areas	0.006 (Annual)		0.006 (Annual)
	Sensitive Area	0.006 (Annual)		0.006 (Annual)
Nickel (Ni)	Industrial Residential, Rural and Other Areas	0.02 (Annual)		0.02 (Annual)
	Sensitive Area	0.02 (Annual)		0.02 (Annual)
Note: The values applicable as per ADB SPS, if not followed shall be supported with relevant justification.				

Comparison Between Indian Noises Level Standard and International Standards (WHO)

Receptor/ Source	India National Noise Level Standards (dBA)		WHO Guidelines Value For Noise Levels Measured Out of Doors (One Hour LAq in dBA)		Applicable Per ADB SPS dBA	
	Day	Night	07:00 – 22:00	22:00 – 07:00	Day	Night
Industrial area	75	70	70	70	70	70
Commercial area	65	55	70	70	65	55
Residential Area	55	45	55	45	55	45
Silent Zone	50	40	55	45	50	40
Note: The values applicable as per ADB SPS, if not followed shall be supported with relevant justification.						

Comparative analysis of Drinking/Ground water standards for Selective (indicative) Parameters

Parameter	Unit	Acceptable Limit (IS 10500:2012)[91]	Standard limits as per WHO guidelines[92]	Applicable Standards as per ADB SPS
Turbidity	NTU	1	-	1
pH		6.5-8.5	-	6.5 – 8.5
Color	Hazen units	5	-	5
Taste and Odor		Agreeable		Agreeable
TDS	mg/l	500	No health-based guideline value is proposed	500
Iron	mg/l	0.3	No health-based guideline value is proposed	0.3
Manganese	mg/l	0.1	0.4	0.1

[91] https://cpcb.nic.in/wqm/BIS_Drinking_Water_Specification.pdf
[92] https://cpcb.nic.in/who-guidelines-for-drinking-water-quality/

Parameter	Unit	Acceptable Limit (IS 10500:2012)[91]	Standard limits as per WHO guidelines[92]	Applicable Standards as per ADB SPS
Arsenic	mg/l	0.01	0.01	0.01
Cadmium	mg/l	0.003	0.003	0.003
Chromium	mg/l	0.05	0.05	0.05
Cyanide	mg/l	0.05	0.07	0.05
Fluoride	mg/l	1	1.5	1
Lead	mg/l	0.01	0.01	0.01
Ammonia	mg/l	0.5	1.5	0.5
Chloride	mg/l	250	200 - 300	250
Sulphate	mg/l	200	No health-based guideline value has been derived	200
Nitrate	mg/l	45	50	45
Copper	mg/l	0.05	2	0.05
Total Hardness	mg/l	200	-	200
Calcium	mg/l	75	-	75
Zinc	mg/l	5	No health-based guideline value is proposed	5
Mercury	mg/l	0.001	0.006	0.001
Aluminum	mg/l	0.03	-	0.03
Residual Chlorine	mg/l	0.2	-	0.2
E-coli	MPN/100ml	Must not be detectable in nay 100 ml sample	-	Must not be detectable in any 100 ml sample
Total Coliform	MPN/100ml		-	

Comparative analysis of wastewater discharge standards

Effluent Levels for Health Care Facilities		IFC EHS Guideline Value	BMW Rules, 2016 Permissible Limits	EPA, 1986General Standards for discharge to Public Sewage	NGT order 1069/2018 dated 30 April 2019 (Mega and Metropolitan Cities Discharge Standard for STP)
Parameters	Units				
pH	S.U.	6 - 9	6.5-9.0	5.5 to 9.0	5.5-9.0
Biochemical oxygen demand (BOD)	mg/L	50	30	350	*10*
Chemical oxygen demand (COD)	mg/L	250	250	-	*50*
Oil and grease	mg/L	10	10	20	
Total suspended solid (TSS)	mg/L	50	100	600	*20*
Cadmium (Cd)	mg/L	0.05	-	1.0	

Effluent Levels for Health Care Facilities		**IFC EHS** Guideline Value	**BMW Rules, 2016** Permissible Limits	**EPA, 1986General Standards** for discharge to Public Sewage	**NGT order 1069/2018 dated 30 April 2019** (Mega and Metropolitan Cities Discharge Standard for STP)
Chromium (Cr)	mg/L	0.5	-	2.0	
Lead (Pb)	mg/L	0.1	-	1.0	
Mercury (Hg)	mg/L	0.01	-	0.01	
Chlorine, total residual	mg/L	0.2	-	-	
Phenols	mg/L	0.5	-	5.0	
Total coliform bacteria	MPN/ 100ml	400	-		
Polychlorinated dibenzodioxin and dibenzofuran (PCDD/F)	Ng/L	0.1	-	-	
Temperature increase	°C	<3	-	-	
Bio Assay Test	-	-	90% survival of fish after 96 hours in 100% effluent	90% survival of fish after 96 hours in 100% effluent	

Appendix 10. Template for Environmental Monitoring Report

Environmental Monitoring Report

Semiannual Report {Insert Number}

Reporting Period {From Month Year to Month Year}Date {Month Year}

IND: Title of the Project

{Example: India: Maharashtra Tertiary Care and Medical Education Sector Development Program}

Prepared by {Consultant and/or Implementing Agency} for the {Executing Agency} and for theAsian Development Bank

Environmental Safeguards Monitoring Report

{Red text serves as guide for report preparation, please delete it when the report is finalized}

TITLE

LIST OF ABBREVIATIONS {All abbreviations used in the report should be listed here as wellas being spelt out in full the first time they appear in the report}

TABLE OF CONTENTS

EXECUTIVE SUMMARY {Maximum two-page summary following table like the sample below, ifnecessary cross reference the relevant section of the main report for details to keep summary succinct}

Project Name	
Executing Agency	
Implementing Agency	
Environment Safeguards Categorization	
Environment Safeguards Documentation	EARF/EIA/IEE/Existing Facilities CAP/EMP
Project Stage Obtained	Design/Pre-Construction/Construction/Commissioning/O&M
Detailed Design Required Post-Approval	Yes/No if yes include remarks on status of design progress (%) and if more than one design package, provide details if any differences between the status
Contract(s) Awarded	Yes/No if more than one contract package, provide details
Bidding Document(s) Include EMP Cleared by ADB	Yes/No if more than one contract package, provide details if any difference between the status
Contract(s) Awarded Include EMP Cleared by ADB	Yes/No if more than one contract package, provide details if any difference between the status
National Environment, Health and Safety Clearance(s) Obtained	Yes/No/NA provide details if any clearances are outstanding or there is any difference between the status of contract packages, use NA if any clearances not yet required
Contractor(s) Given Access to Site	Yes/No if more than one contract package, provide details if any difference between the status
Construction Progress (%)	If more than one contract package, provide details if any difference between the status
Unanticipated Impacts including Change of Scope or Design	Yes/No if yes, provide brief details with how the IEE and EMP updated as required

Number of Site Inspections and Audits Undertaken by Environment Safeguards Staff in Reporting Period	
Corrective Action Required from Previous Reporting Period	Yes/No/NA use NA if this is the first project reporting period
Outstanding Corrective Action this Reporting Period	Yes/No/NA if yes, provide bulleted summary of the key actions still required, use NA if the response to above is No or NA
Non-Compliances Recorded this Reporting Period	Yes/No if yes, provide bulleted summary of the key non-compliances recorded
Corrective Action Required	Yes/No if yes, provide bulleted summary of the key actions to be taken in response to non-compliances including timeline andbudget
Number of Health and Safety Incidents	Provide brief details including how they were responded to
GRM Functional	Yes/No briefly elaborate on set up if differs to description in IEE/EMP
Number of Unresolved Grievances from Prior Reporting Period	
Number of Grievances Received in Reporting Period	
Number of Grievances Resolved this Reporting Period	
Numberof Grievances Still Outstanding	Provide brief details with timeline for resolution
Number of Grievances referred to Court of Law	Provide brief details
Number of Grievances referred to the Accountability Mechanism	Provide brief details

Introduction

1.1 Brief Project Description

{Maximum two pages to succinctly convey who the executing and implementing agencies are, the project outputs, construction works involved, details of contract packages, details of construction camps and other related facilities, national and ADB environmental safeguards project categorizations, and the environment safeguard documents (dates) applicable to the project}

{Include maps and plans showing the project site locations and project area of influence}

{Include table and/or organogram of environmental safeguards staffing and relationships between executing and implementing agencies, consultants, contractors, subcontractors, lenders, etc.}

1.2 Project Progress Status and Implementation Schedule

{Describe the implementation stage reached (design, pre-construction, construction, commissioning or O&M) and the % progress, main project activities and milestonesachieved during the reporting period, including bidding documents issued and contracts awarded during the reporting period etc. No need to repeat progress information included in previous monitoring reports if no change, cross reference the previous monitoring reportsif needed}
{Highlight any unanticipated impacts in relation to change in the project scope, locations ofcomponents, construction methods, and/or implementation schedule during the reporting period, if none confirm this.}
{Highlight any changes in the project organization and environmental safeguards staffing during the reporting period, if none confirm this}
{Report on any unanticipated impacts and updates to IEE/EMP that were required during the reporting period, status of delivery of documents, required amendments, consultation and disclosure undertaken etc.}
{The project Gantt chart may be included}

{Include a simplified table like the sample below to report progress}

Project Component/Stage	Target Completion Date {Revised Target Date, if delayed}	Progress Status {not yet started; ongoing; completed}	Percent Completed	Remarks
Medical college Component (construction phase)				
	Example for reporting period Jul-Dec 2022			
Contract award	31 Jan 2022	Completed	100%	Contract awarded to XYZ contractor, copy of EMP included
Construction (site clearance, earthworks, civil works, installation of equipment	31 Mar 2022 (original target completion was 31 Dec 2018)	Ongoing	85%	There was a delay in the delivery of

1.0 Compliance to National Regulations and International Agreements

{Status of compliance and further action to ensure ongoing compliance; if there is partial or no compliance recommendations for corrective action are required. Provide explanations of any instances where the requirements of regulations or agreements were breached along with detailsof responses taken to rectify the breach once identified. Include all the applicable National Regulations and International Agreements following the sample table below}

National Regulation or International Agreement	Compliance Requirements under the Regulation or Agreement including any Environmental Clearances Required	Compliance Status {complied; partially complied; not complied; still ongoing or n/a at current stage of the project}	Remarks {provide details (evidence) to show how compliance was achieved; or explain the corrective action to be taken if there was non-compliance including timeline and budget}

2.0 Compliance to Environmental Covenants from the ADB Loan Agreement

{Status of compliance and further action to ensure ongoing compliance; if there is partial or no compliance recommendations for corrective action are required. Provide explanations of any instances where covenants were breached along with details of responses taken to rectify the breach once identified. Include all the applicable Loan Agreement covenants on environment following the sample table below}

Schedule #, Para. #	Covenant	Compliance Status {complied; partially complied; not complied; still ongoing or n/a at current stage of the project}	Remarks {provide details (evidence) to show how compliance was achieved; or explain the corrective action to be taken if there was non-compliance including timeline and budget}

3.0 Compliance to Environmental Assessment and Review Framework

{Status of compliance and further action to ensure ongoing compliance; if there is partial or no compliance recommendations for corrective action are required. Provide explanations of any instances where tasks allocated to the executing or implementing agency and any consultants have not been undertaken along with details of responses taken to rectify the situation once identified. Include all applicable organizations with responsibility for environmental safeguards following the sample table below}

Organization	Tasks	Compliance Status {complied; partially complied; not complied; still ongoing or n/a at current stage of the project}	Remarks {provide details (evidence) to show how compliance was achieved; or explain the corrective action to be taken if there was non-compliance including timeline and budget}
Executing Agency			
Implementing Agency			
Consultants …			
Contractors			

4.0 Compliance to Contract

{Status of compliance and further action to ensure ongoing compliance; if there is partial or no compliance recommendations for corrective action are required. Provide explanations of any instances where tasks

allocated to the contractor have not been undertaken along with details ofresponses taken to rectify the situation once identified. Include all contract packages and provisions relating to environment, health and safety management following the sample table below}

Contract Package	Contract Provisions	Compliance Status {complied; partially complied;	Remarks {provide sufficient details (evidence) to show how compliance was achieved; or
		not complied; still ongoing or n/a at current stage of the project}	explain the corrective action to be taken if there was non-compliance including timeline and budget}
Package 1	Clause xx: Environment Protection	Partially complied	Provide details, if given in EMP compliance table just refer the table
Package 2	Clause xx EMP	Partially complied	Provide details, if given in EMP compliance table just refer the table

5.0 Compliance to Environmental Management Plan and Corrective Action Plan (if any)

{With reference to the EMP (design, pre-construction, construction or operation as applicable in a particular reporting period) of the project, include a table following sample table below with the compliancestatus during the reporting period, with sufficient details (evidence) to show how compliance was achieved, or corrective action to be taken if there was non-compliance including timeline and budget}

{Flag if previous environmental monitoring report(s) included corrective action plan, if it did details of that corrective action plan should be incorporated into the EMP table and compliance status reported}

{Provide explanations of any instances where performance standards were temporarily exceeded during the reporting period, along with details of any response taken to rectify the exceedance once identified, even if at the end of the reporting period the project is deemed as being compliant}

{Copies of clearances, CEMP, construction method statements, and other documentation produced in accordance with EMP during the reporting period should be included as an appendix}

Item #	Environment Management Measures	Prior Corrective Action, if any	Compliance Status {complied; partially complied; not complied; still ongoing or n/a at current stage of the project}	Remarks {provide sufficient details (evidence) to show how compliance was achieved; or explain thecorrective action to be taken if there was non-compliance includingtimeline and budget}

Item #	Management measures as per CAP drawn as part of audit of existing facilities, if any	Prior Corrective Action	Compliance Status {complied; partially complied; not complied; still ongoing or n/a at current stage of the project}	Remarks {provide sufficient details (evidence) to show howcompliance was achieved; or explain thecorrective action to be taken if there was non- compliance including timeline and budget}

6.0 Environmental Safeguards Capacity Building

{With reference to the EMP capacity development plan summarize trainings for the executing and implementing agencies, contractors, and subcontractors, and other activities completed. Include as appendices the training agenda, attendance sheets, andphotos. If no trainings or other activities in reporting period, please confirm. Copies of training records related to EMP during the reporting period should be included as an appendix}

Trainings	Number and Position of Participant/s	Location/s and Date/s	Remarks

7.0 Environmental Safeguards Inspection and audits

{Site inspections and audits completed summarize the number and type of site visits, persons involved, the issues covered, and status of compliance with them, the number ofnon-compliance notices given out to the contractor as a result of the site visit, and the checklists/reporting format used (sample of checklists and reports to be included as an appendix)}

Date	Type and Purpose of Visit	Location/s Visited	EA, IA, Consultant Staff Participating	Remarks

8.0 Quantitative Environmental Monitoring

{Environmentalmonitoringresult – summarize in a table the reporting period's quantitative monitoring activities and data obtained in accordance with the EnvironmentalMonitoring Plan (EMoP) of the project. Provide explanations of any instances where performance standards were exceeded along with details of responses taken to rectify theexceedance once identified}

Typically, this section will include the results of: Noise and

vibration surveys –
Water quality surveysAir quality surveys
–

Flora and fauna surveys etc.
{Indicate the monitoring locations using a map or plan, dates, times, duration of samples as applicable, weather conditions as applicable, parameters measured, equipment used,standards, tests, and limits used etc.}
{Corrective actions with timeline and budget are required to ensure any exceedances willbe prevented in the future}
{Graphs can be used in this section to show trends; however, large tables of data or multiple graphs should be attached as an appendix.
{Calibration and QA certifications of monitoring equipment and laboratories analyzing samples should be included as an appendix}

9.0 Occupational and Community Health and Safety Monitoring

{Health and safety monitoring results – summarize the reporting period's health and safety activities and data obtained in accordance with the Environmental Monitoring Plan (EMoP) of the project. Provide explanations of any instances where performance standards wereexceeded along with details of responses taken to rectify the exceedance once identified}

{Corrective actions with timeline and budget are required to ensure any exceedances willbe prevented in the future}

{Include the occupational and community trainings/drills/inspections conducted during thereporting period following the sample table below. Include as appendices the training/drill/inspection agenda, attendance sheets, and photos. If no trainings/drills/inspections, please confirm}

Trainings/Drills/ Inspections	Number and Position of Participant/s	Location/s and Date/s	Remarks
Example: Fire Drill	50 Laborers	Construction Camp, 15 Aug 2018	Participants safely evacuated the site …

{If there was any near-miss or accident, illness, or other occupational or community healthand safety related incident during the reporting period (or a previously reported incident with ongoing rectification) report following the sample table below. Include as appendiceswork safety checklists, incident reports, and other relevant supporting documents. If no incidents, please confirm}

	Number and Position of Person/s Involved	Location/s and Date/s of Incident	Detailed Description of Incident- Attach root cause analysis report	Time-bound Corrective Action
Fatality				
Non-fatal Injury (Lost Time)				
Non-fatal Injury (Minor)				
Near-miss				

Illness				
Other Incidents				

10.0 Meaningful Consultation and Grievance Redress

{Meaningful consultation report on any ongoing consultation undertaken, and main issues raised by consultees; detailed consultation records should be included as an appendix. If no ongoing consultation, please confirm}

Date		Sub Project and Venue			
Sl.no	Participants Name	Occupation	Gender	Issues raised by participants	Response Given by EA/PMC/Contractors

{Include a brief description of the GRM, provide a flowchart, list of grievance redress committee members and any trainings they have received}

{If there was any grievance or complaint, regardless informal or minor, during the reporting period(or previously reported complaint with ongoing rectification) provide the corrective action taken following the sample table below. Detailed grievance records and response reports should be included as an appendix}

Complainant's name & contact details	Date/s of Complaint	mode of communication to EA/ADB	Description of Complaint	Resolution details	Date of resolution	Mode of communication to complainant

11.0 Compliance to recommendations of Previous reporting period EMR

Non-compliance identified in previous EMR	Corrective Action recommended in previous EMR	Compliance status	Continued noncompliance, if any (please add this to the current EMR's recommendation as continued NCs)

12.0 Conclusions and Recommendations

{Summarize the project's environmental performance during the reporting period based on the previous sections and, if any non-compliance identified, provide detailed recommendations including

responsibilities, timeliness and budget for the preparation and completion of correctiveaction}

{If non-compliance is major or not readily addressed then a separate corrective action plan mayneed to be prepared. For minor and readily addressed non-compliances the corrective action plan can be incorporated into this final section of the environmental monitoring report following the sample table below}

Non-compliance	Corrective Action to be Taken	Responsibility	Timeline	Budget

APPENDICES

Photographs {Include relevant photographs of the project site and project area of influence taken during the reporting period to provide evidence of compliance and/or non-compliance. Foreach photo, provide a caption with description of what it illustrates, accurate location, and date taken}

Supporting Documents

{E.g. Maps and plans, Sample checklists and reports Clearances and documentation Training records, Detailed monitoring data, laboratory results etc.Calibration and QA certificates,

Consultation records, Meeting agendas and attendance records,Grievance records,

Environment, health and safety reports etc}

Appendix 11. Environmental Clearance

सत्यमेव जयते

File No: SIA/MH/INFRA2/486002/2024
Government of India
Ministry of Environment, Forest and Climate Change
(Issued by the State Environment Impact Assessment Authority(SEIAA), MAHARASHTRA)
***

Dated **03/01/2025**

To,

Swapnil Arun Khule
Swapnil Arun Khule
Govt Medical Hospital, Oras, Sindhudurg, Oras, SINDHUDURG, MAHARASHTRA, 416812
sindhudurghospital@gmail.com

Subject: Grant of EC under the provision of the EIA Notification 2006-regarding.

Sir/Madam,

This is in reference to your application for Grant of EC under the provision of the EIA Notification 2006-regarding in respect of project Construction of Hospital and Medical college at Survey no 65, Government Medical College, Oras, Sindhudurg by Dr. Manoj Joshi (Dean) submitted to Ministry vide proposal number SIA/MH/INFRA2/486002/2024 dated 05/07/2024.

2. The particulars of the proposal are as below :

(i) EC Identification No.	EC24C0000MH5188438N
(ii) File No.	SIA/MH/INFRA2/486002/2024
(iii) Clearance Type	EC
(iv) Category	B2
(v) Project/Activity Included Schedule No.	8(a) Building / Construction
(vii) Name of Project	Construction of Hospital and Medical college at Survey no 65, Government Medical College, Oras, Sindhudurg by Dr. Manoj Joshi (Dean)
(viii) Name of Company/Organization	Swapnil Arun Khule
(ix) Location of Project (District, State)	SINDHUDURG, MAHARASHTRA
(x) Issuing Authority	SEIAA
(xii) Applicability of General Conditions	no
(xiii) Applicability of Specific Conditions	no

3. In view of the particulars given in the Para 1 above, the project proposal interalia including Form-1(Part A and B) were submitted to the Ministry for an appraisal by the State Environment Impact AssessmentAuthority(SEIAA) Appraisal Committee (SEIAA) in the Ministry under the provision of EIA notification 2006 and its subsequent amendments.

4. The above-mentioned proposal has been considered by State Environment Impact AssessmentAuthority(SEIAA) Appraisal Committee of SEIAA in the meeting held on 30/09/2024. The minutes of the meeting and all the Application and documents submitted [(viz. Form-1 Part A, Part B, Part C EIA, EMP)] are available on PARIVESH portal which can be accessed by scanning the QR Code above.

5. The brief about configuration of plant/equipment, products and byproducts and salient features of the project along with environment settings, as submitted by the Project proponent in Form-1 (Part A, B and C)/EIA & EMP Reports/presented during SEIAA are annexed to this EC as Annexure (1).

6. The SEIAA, in its meeting held on 30/09/2024, based on information & clarifications provided by the project proponent and after detailed deliberations recommended the proposal for grant of EC under the provision of EIA Notification, 2006 and as amended thereof subject to stipulation of specific and general conditions as detailed in Annexure (2).

7. The SEIAA has examined the proposal in accordance with the Environment Impact Assessment (EIA) Notification, 2006 & further amendments thereto and after accepting the recommendations of the State Environment Impact AssessmentAuthority(SEIAA) Appraisal Committee hereby decided to grant EC for instant proposal of M/s. Swapnil Arun Khule under the provisions of EIA Notification, 2006 and as amended thereof.

8. The Ministry reserves the right to stipulate additional conditions, if found necessary.

9. The EC to the aforementioned project is under provisions of EIA Notification, 2006. It does not tantamount to approvals/consent/permissions etc. required to be obtained under any other Act/Rule/regulation. The Project Proponent is under obligation to obtain approvals /clearances under any other Acts/ Regulations or Statutes, as applicable, to the project.

10. This issues with the approval of the Competent Authority.

Annexure I

Specific EC Conditions for (Building / Construction)

1. Specific Condition

<table>
<tr><th>S. No</th><th>EC Conditions</th></tr>
<tr><td>1.1</td><td><u>During discussion following points emerged</u>:
Conditions:
<table>
<tr><th>Sr. No.</th><th>Conditions</th></tr>
<tr><td></td><td>PP to obtain IOD/IOA/Concession Document/Plan Approval or any other form of documents as applicable clarifying its conformity with local planning rules and provisions as per the Circular dated 30.01.2014 issued by the Environment Department, Govt. of Maharashtra showing all required RG area as per prevailing Hon'ble Supreme Court Order</td></tr>
<tr><td></td><td>PP to obtain following NOCs (a) Final Water Supply NOC; (b) Sewer Connection NOC (c) C&D Waste Management; (d) Biomedical Waste Authorization and membership with facility for treatment and disposal of biomedical waste (e) Storm Water Drain; (g) Tree NOC (h) Building Plan approval. The concern planning authority shall not issue occupation certificate unless PP obtained necessary NOC from the competent authority</td></tr>
<tr><td></td><td>PP to provide adequate space for parking of emergency vehicles on site as per prevailing rules and regulations and submit revised parking statement a plan.</td></tr>
<tr><td></td><td>PP to ensure that no natural water streams shall be diverted, disturbed without permission of competent authority.</td></tr>
<tr><td></td><td>PP to design storm water drains considering maximum rain fall in the area so as to reduce</td></tr>
</table></td></tr>
</table>

S. No	EC Conditions
	unforeseen flooding situation.
	PP to provide separate entry and exit for biomedical waste vehicles.
	The single use plastic be banned in the hospital area as per various resolutions issued by the Government
	PP to obtain hazardous waste facility membership for disposal of hazardous waste generated from the Effluent Treatment Plant.
	PP to complete tree plantation within the site during construction phase.
	PP to dispose all e-waste as per E-Waste Management Rules, 2016 and 2022 amended from time to time.
	Decision: - In view of above discussion, SEAC-2 decided to recommended the proposal for the grant of prior Environmental Clearance to the SEIAA subject to compliance of above points.

Annexure 2

Details of Products & By-products

Name of the product /By-product	Product / By-product	Quantity	Unit	Mode of Transport / Transmission	Remarks (eg. CAS number)
Number of Beds	Number of Beds	500	Nos.	NA	NA
Number of hostel	Number of hostel	2	Nos	NA	NA

STATE LEVEL ENVIRONMENT IMPACT ASSESSMENT AUTHORITY

No. SIA/MH/INFRA2/486002/2024
Environment & Climate
Change Department
Room No. 217, 2nd Floor,
Mantralaya, Mumbai- 400032

To
Dr. Manoj Joshi (Dean),
Government Medical College,
Oras, Sindhudurg.

Subject : Environmental clearance for Construction of Hospital and Medical college at Survey no 65, Government Medical College, Oras, Sindhudurg by Dr. Manoj Joshi (Dean)

Reference : Application no. SIA/MH/INFRA2/486002/2024

This has reference to your communication on the above-mentioned subject. The proposal was considered by the SEAC-2 in its 231st meeting under screening category 8 (a) B2 as per EIA Notification, 2006 and recommend to SEIAA. Proposal then considered in 283rd (Day-1) meeting of State Level Environment Impact Assessment Authority (SEIAA) held on 30th September, 2024.

2. Brief Information of the project submitted by you is as below:-

1.	Proposal Number	SIA/MH/INFRA2/486002/2024	
2.	Name of Project	Construction of Hospital and Medical college at Survey no 65, Government Medical College, Oras, Sindhudurg by Dr. Manoj Joshi (Dean)	
3.	Project category	8a B2	
4.	Type of Institution	Government	
5.	Project Proponent	**Name**	Dr. Manoj Joshi, Dean
		Regd. Office address	Survey no. 65, Government Medical College, Oras, Sindhudurg
		Contact number	9422873028
		e-mail	sindhudurghospital@gmail.com
6.	Consultant	VK:e environmental, Pune	
7.	Applied for	New Environmental Clearance	
8.	Location of the project	Survey no. 65, Government Medical College, Sindhudurg 416812	
9.	Latitude and Longitude	Latitude: 16°7'0.90"N Longitude: 73°41'25.02"E	
10.	Total Plot Area (m2)	82,052	
11.	Deductions (m2)	2,408	
12.	Net Plot area (m2)	79,644	
13.	Ground coverage (m2) & %	13,380 (16.79% of net plot area)	
14.	FSI area (m2)	Total – 1,10,647.39	
15.	Non-FSI area (m2)	Total – 16,896.62	

16.	Proposed TBUA (FSI + Non FSI) (m2)			Total – 1,27,544.01			
17.	FSI area (m2) approved by Planning Authority till date			--			
18.	Earlier EC details with Total Construction area, if any.			NA			
19.	Construction completed as per earlier EC/ without EC (FSI + Non FSI) (m2)			TBUA – 18,600 m2 existing on site			
20.	Previous EC/ Existing building			Proposed Configuration			
	Building Name	**Configuration**	**Height (m)**	**Building Name**	**Configuration**	**Height (m)**	**Remark for modification/ Change**
				Main Hospital Building	G+2	10.5	Existing and will be retained
				Ayush Building	G+1	6	
				Nursing College	G	3	
				Main Hospital Building	G+8	38.40	Proposed buildings
				Medical College	G + 6	28.9	
				Student Hostel building (Girls)	G + 7	27	
				Student Hostel building (Boys)	G + 7	27	
				Dean Bungalow	G	4.05	
				Mortuary	G + 1	7.05	
				Animal House	G	4.4	
21.	Total number of tenements & Shops			**Existing:** Hospital– 1 no. (total beds- 200 nos.) Ayush Building: 1 no. Nursing college: 1 no. **Proposed:** Proposed Hospital building: 1 no. (total beds – 300 nos.) Medical college: 1 no. Hostels: 2 nos. (Boy's hostel and Girl's hostel) Dean bunglow – 1 nos. Mortuary: 1 no. Animal house: 1 no.			
22.	Total Population			**Existing:** Hospital: 1,267 nos. Ayush Building: 469 nos. Nursing College: 174 nos. **Proposed:** Hospital: 2,080 nos. Medical college: 996 nos. Hostel (Girls & Boys): 476 nos. Dean Bungalow: 5 nos.			

		Total: 5,467 nos.			
23.	Total Water Requirements CMD	**Dry Season (CMD)**		**Wet Season (CMD)**	
		Fresh Water	376	Fresh Water	376
		Recycled water Flushing	144	Recycled water Flushing	144
		HVAC	200	HVAC	200
		Recycled water Gardening	210	Recycled water Gardening	00
		Total Water Requirement	930	Total Water Requirement	720
		Wastewater generation	492	Wastewater generation	492
24.	Under Ground Tank (UGT) location	UGT Fire tank- 700 KLD OHWT Fire Tank- 170 KLD			
25.	Source of water	Sindhudurg Nagari Pradhikaran			
26.	Sewage Generation CMD & % of sewage discharge in sewer line	492 KLD			
27.	STP Capacity & Technology	2 STPs of total capacity of 530 KLD MBBR technology			
	ETP capacity	3 ETPs of total capacity of 70 KLD Neutralization and physico-chemical treatment technology			
28.	STP Location				
29.	Solid Waste Management during Construction Phase	**Type**	**Quantity (kg/d)**	**Treatment / disposal**	
		Dry waste:	37.5	Will be handed over to Authorized vendor	
		Wet waste:	25	Will be handed over to Authorized vendor	
		Construction waste	The construction waste generated during construction shall be segregated, reused on site and surplus shall be led to scrap dealers for recycling.		
30.	Total Solid Waste Quantities with type during Operation Phase & Capacity of OWC to be installed	**Type**	**Quantity (kg/d)**	**Treatment / disposal**	
		Dry waste:	925	Handed over to authorize recycler for further handling & disposal purpose.	
		Wet waste:	1013	Will be operated in OWC	
		Biomedical waste	750 (500 x 1.5 kg/day)	Handed over to authorize recycler for further handling & disposal purpose.	
		E-Waste	22	Will be handed over to authorized vendor	
		STP Sludge (dry)	79	Will be operated in OWC	
31.	R.G. Area in sq.m	Required green area		21,410.40 (40% of the Net plot area)	
		RG provided on Mother		21,578.53 sq.m	

		earth	
		Existing trees on plot:	439
		Number of trees to be retained	279
		Number of trees to be cut:	160
		Number of trees to be transplanted:	00
		Number of trees to be planted:	Total 2,595 nos. (On site – 2,410 nos. and off site - 185 nos.)
		Total Nos. of trees after development	2,595 nos.
32.	Power requirement:	During operation phase	
		Connected load	8,625 KW
		Demand load	4,758 KW
33	Energy Efficiency	a) Total Energy saving (%); Total Energy saving -21.66 % b) Solar energy (%): 5% of demand load i.e (237.88 kW) due to Solar PV	
34.	D.G. set capacity	750 KVA x 8 nos.	
35.	No. of 4-W & 2-W Parking with 25% EV	4 wheeler – 658 nos. 2 wheeler – 4036 nos.	
36	No. & capacity of Rain water harvesting tanks /Pits	Total no of Recharge Pit - 10 nos Surface Runoff pits – 7 nos. Rooftop Runoff pits – 3 nos. Dimension: Surface – 2 x 1.5 x 2 m Terrace – 2 x 2 x 1.9 m 0.160- diameter and 60-meter depth	
37.	Project Cost in (Cr.)	483 Cr	
38.	EMP Cost	a) Construction Phase: 1. Capital Cost: Rs. 33,35,436/- 2.O& M Cost: Rs. 37,55,700/- b) Operation Phase: 1.Capital Cost: Rs. 14,32,92,328.33/- 2.O& M Cost: Rs. 2,25,29,741.42/-	
39.	CER Details with justification if any….as per MoEF&CC circular dated 01/05/2018	-	
40.	Details of Court cases / litigations w.r.t. the project and project location, if any.	No court cases against project/land as informed by Project proponent	

3. Proposal is a new construction project. Proposal has been considered by SEIAA in its 283rd (Day-1) meeting held on 30th September, 2024 and decided to accord Environment Clearance to the said project under the provisions of Environment Impact Assessment Notification, 2006 subject to implantation of following terms and conditions-

Specific Conditions:

A. SEAC Conditions-

1. PP to obtain IOD/IOA/Concession Document/Plan Approval or any other form of documents as applicable clarifying its conformity with local planning rules and provisions as per the Circular dated 30.01.2014 issued by the Environment Department, Govt. of Maharashtra showing all required RG area as per prevailing Hon'ble Supreme Court Order
2. PP to obtain following NOCs (a) Final Water Supply NOC; (b) Sewer Connection NOC (c) C&D Waste Management; (d) Biomedical Waste Authorization and membership with facility for treatment and disposal of biomedical waste (e) Storm Water Drain; (g) Tree NOC (h) Building Plan approval. The concern planning authority shall not issue occupation certificate unless PP obtained necessary NOC from the competent authority
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4. PP to ensure that no natural water streams shall be diverted, disturbed without permission of competent authority.
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6. PP to provide separate entry and exit for biomedical waste vehicles.
7. The single use plastic be banned in the hospital area as per various resolutions issued by the Government
8. PP to obtain hazardous waste facility membership for disposal of hazardous waste generated from the Effluent Treatment Plant.
9. PP to complete tree plantation within the site during construction phase.
10. PP to dispose all e-waste as per E-Waste Management Rules, 2016 and 2022 amended from time to time.

B. SEIAA Conditions-

1. PP has provided mandatory RG area of 21410.40 m2 on mother earth without any construction. Local planning authority to ensure the compliance of the same.
2. PP to keep open space unpaved so as to ensure permeability of water. However, whenever paving is deemed necessary, PP to provide grass pavers of suitable types & strength to increase the water permeable area as well as to allow effective fire tender movement.
3. PP to achieve at least 5% of total energy requirement from solar/other renewable sources.
4. PP Shall comply with Standard EC conditions mentioned in the Office Memorandum issued by MoEF& CC vide F.No.22-34/2018-IA III dt.04.01.2019.
5. SEIAA after deliberation decided to grant EC for-FSI- 86,337.61 m2, Non FSI-16,896.62 m2, total BUA- 1,03,234.23m2. (Plan approval No-1136, dated-05.08.2024 received from ADTP Sindhudurg) (Restricted as per approval)

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closely monitored during construction phase. Adequate measures should be made to reduce ambient air and noise level during construction phase, so as to conform to the stipulated standards by CPCB/MPCB.

XVIII. Diesel power generating sets proposed as source of backup power for elevators and common area illumination during construction phase should be of enclosed type and conform to rules made under the Environment (Protection) Act, 1986. The height of stack of DG sets should be equal to the height needed for the combined capacity of all proposed DG sets. Use low sulphur diesel is preferred. The location of the DG sets may be decided with in consultation with Maharashtra Pollution Control Board.

XIX. Regular supervision of the above and other measures for monitoring should be in place all through the construction phase, so as to avoid disturbance to the surroundings by a separate environment cell /designated person.

B) Operation phase:-

I. a) The solid waste generated should be properly collected and segregated. b) Wet waste should be treated by Organic Waste Converter and treated waste (manure) should be utilized in the existing premises for gardening. And, no wet garbage will be disposed outside the premises. c) Dry/inert solid waste should be disposed of to the approved sites for land filling after recovering recyclable material.

II. E-waste shall be disposed through Authorized vendor as per E-waste (Management and Handling) Rules, 2016.

III. a) The installation of the Sewage Treatment Plant (STP) should be certified by an independent expert and a report in this regard should be submitted to the MPCB and Environment department before the project is commissioned for operation. Treated effluent emanating from STP shall be recycled/ reused to the maximum extent possible. Treatment of 100% grey water by decentralized treatment should be done. Necessary measures should be made to mitigate the odour problem from STP. b) PP to give100 % treatment to sewage /Liquid waste and explore the possibility to recycle at least 50 % of water, Local authority should ensure this.

IV. Project proponent shall ensure completion of STP, MSW disposal facility, green belt development prior to occupation of the buildings. As agreed during the SEIAA meeting, PP to explore possibility of utilizing excess treated water in the adjacent area for gardening before discharging it into sewer line No physical occupation or allotment will be given unless all above said environmental infrastructure is installed and made functional including water requirement.

V. The Occupancy Certificate shall be issued by the Local Planning Authority to the project only after ensuring sustained availability of drinking water, connectivity of sewer line to the project site and proper disposal of treated water as per environmental norms.

VI. Traffic congestion near the entry and exit points from the roads adjoining the proposed project site must be avoided. Parking should be fully internalized and no public space should be utilized.

VII. PP to provide adequate electric charging points for electric vehicles (EVs).

VIII. Green Belt Development shall be carried out considering CPCB guidelines including selection of plant species and in consultation with the local DFO/ Agriculture Dept.

IX. A separate environment management cell with qualified staff shall be set up for implementation of the stipulated environmental safeguards.

X. Separate funds shall be allocated for implementation of environmental protection measures/EMP along with item-wise breaks-up. These cost shall be included as part of the project cost. The funds earmarked for the environment protection measures shall not be diverted for other purposes.

XI. The project management shall advertise at least in two local newspapers widely circulated in the region around the project, one of which shall be in the Marathi language of the local concerned within seven days of issue of this letter, informing that the project has been accorded environmental clearance and copies of clearance letter are available with the Maharashtra Pollution Control Board and may also be seen at Website at parivesh.nic.in

XII. A copy of the clearance letter shall be sent by proponent to the concerned Municipal Corporation and the local NGO, if any, from whom suggestions/representations, if any, were received while processing the proposal. The clearance letter shall also be put on the website of the Company by the proponent.

XIII. The proponent shall upload the status of compliance of the stipulated EC conditions, including results of monitored data on their website and shall update the same periodically. It shall simultaneously be sent to the Regional Office of MoEF, the respective Zonal Office of CPCB and the SPCB. The criteria pollutant levels namely; SPM, RSPM, SO2, NOx (ambient levels as well as stack emissions) or critical sector parameters, indicated for the project shall be monitored and displayed at a convenient location near the main gate of the company in the public domain.

C) General EC Conditions:-

I. PP has to strictly abide by the conditions stipulated by SEAC& SEIAA.

II. If applicable Consent for Establishment' shall be obtained from Maharashtra Pollution Control Board under Air and Water Act and a copy shall be submitted to the Environment department before start of any construction work at the site.

III. Under the provisions of Environment (Protection) Act, 1986, legal action shall be initiated against the project proponent if it was found that construction of the project has been started without obtaining environmental clearance.

IV. The project proponent shall also submit six monthly reports on the status of compliance of the stipulated EC conditions including results of monitored data (both in hard copies as well as by e-mail) to the respective Regional Office of MoEF, the respective Zonal Office of CPCB and the SPCB.

V. The environmental statement for each financial year ending 31st March in Form-V as is mandated to be submitted by the project proponent to the concerned State Pollution Control Board as prescribed under the Environment (Protection) Rules, 1986, as amended subsequently, shall also be put on the website of the company along with the status of compliance of EC conditions and shall also be sent to the respective Regional Offices of MoEF by e-mail.

VI. No further Expansion or modifications, other than mentioned in the EIA Notification, 2006 and its amendments, shall be carried out without prior approval of the SEIAA. In case of deviations or alterations in the project proposal from those submitted to SEIAA for clearance, a fresh reference shall be made to the SEIAA as applicable to assess the adequacy of conditions imposed and to add additional environmental protection measures required, if any.

VII. This environmental clearance is issued subject to obtaining NOC from Forestry &

Wild life angle including clearance from the standing committee of the National Board for Wild life as if applicable & this environment clearance does not necessarily implies that Forestry & Wild life clearance granted to the project which will be considered separately on merit.

4. The environmental clearance is being issued without prejudice to the action initiated under EP Act or any court case pending in the court of law and it does not mean that project proponent has not violated any environmental laws in the past and whatever decision under EP Act or of the Hon'ble court will be binding on the project proponent. Hence this clearance does not give immunity to the project proponent in the case filed against him, if any or action initiated under EP Act.

5. This Environment Clearance is issued purely from an environment point of view without prejudice to any court cases and all other applicable permissions/ NOCs shall be obtained before starting proposed work at site.

6. In case of submission of false document and non-compliance of stipulated conditions, Authority/ Environment Department will revoke or suspend the Environment clearance without any intimation and initiate appropriate legal action under Environmental Protection Act, 1986.

7. Validity of Environment Clearance: The environmental clearance accorded shall be valid as per EIA Notification, 2006, amended from time to time.

8. The above stipulations would be enforced among others under the Water (Prevention and Control of Pollution) Act, 1974, the Air (Prevention and Control of Pollution) Act, 1981, the Environment (Protection) Act, 1986 and rules there under, Hazardous Wastes (Management and Handling) Rules, 1989 and its amendments, the public Liability Insurance Act, 1991 and its amendments.

9. Any appeal against this Environment clearance shall lie with the National Green Tribunal (Western Zone Bench, Pune), New Administrative Building, 1st Floor, D-Wing, Opposite Council Hall, Pune, if preferred, within 30 days as prescribed under Section 16 of the National Green Tribunal Act, 2010.

Pravin Darade
(Member Secretary, SEIAA)

Copy to:

1. Chairman, SEIAA, Mumbai.
2. Secretary, MoEF & CC, IA- Division MOEF & CC
3. Member Secretary, Maharashtra Pollution Control Board, Mumbai.
4. Regional Office MoEF & CC, Nagpur
5. District Collector, Sindhudurg.
6. Regional Officer, Maharashtra Pollution Control Board, Kolhapur.

Appendix 12. Labour License and Insurance

Your Service is Our Duty

सत्यमेव जयते

Form VI
[See rule 25 (1)]

GOVERNMENT OF MAHARASHTRA
OFFICE OF LICENSING OFFICER RATNAGIRI

Licence No.- **2510500110051696** ApplicationID -**100027722501**

Dated - 03/06/2025 **Fee Paid Rs.** 45059.00

Licence

LICENCE is hereby granted to **VASCON ENGINEERS LIMITED VASCON WEIKFIELD CHAMBERS, PUNE NAGAR ROAD, OPP. HAYYAT REGENCY HOTEL, VIMAN NAGAR, PUNE (MUNICIPAL CORPORATION.), PUNE CITY, PUNE, MAHARASHTRA, 411014** under Section 12 (2) of the Contract Labour (Regulation and Abolition) Act, 1970 in respect of the registered establishment No.PW/KN/AB/TC/7176

Name - **SINDHUDURG GOVERNMENT MEDICAL COLLAGE**

Address - GOVERNMENT MEDICAL COLLAGE HOSPITAL, GOV. MEDICAL COLLAGE HOSPITAL, ORAS BK, ORAS BK., KUDAL, SINDHUDURG, MAHARASHTRA, 416812

of which **SINDHUDURG GOVERNMENT MEDICAL COLLAGE** is the Principal Employer subject to the condition specified in Annexure.

The Licence shall remain in force till **31/01/2026**

Sd/-
Licensing Officer
Under Contract Labour (R & A) Act,1970

Date :03/06/2025

ANNEXURE

The licence is subject to the following conditions :-

i) The licence shall be non-transferable.

ii) The number of workmen employed as contract labour in the establishment shall not, on any day, exceed 80.00 EIGHTY

iii) Except as provided in the rules, the fees paid for the grant, or as the case may be, for renewal of the licence shall be non-refundable.

iv) a) The rates of wages payable to the workmen by the contractor shall not be less than the minimum rates of wages fixed under the Minimum Wages Act, where that Act applies, where the rates have been fixed by agreement, settlement or award, shall not be less than the rates so fixed and where rates have been fixed under the Minimum Wages Act and under any agreement, settlement or award the rates shall not be less than the higher of the two rates.

b) Where the workmen employed by the contractor perform the same kind of work as the workmen or a class of workmen directly employed by the principal employer, the rates of wages payable to the workmen by the contractor shall be the rates payable to the workmen directly employed by the principal employer doing the same kind of work.

c) In any other case, the rates of wages shall be such as may be specified in this behalf by the Commissioner of Labour.

(v) a) The hours of work and other conditions of service of the workmen of the contractor shall be in accordance with the provisions of the Minimum Wages Act, where that Act applies and where any agreement, settlement or award is in force, in accordance with the provisions of the said agreement, settlement or award; and where in any employment the Minimum Wages Act applies and there is also in force any agreement, settlement or award, the conditions of service shall be governed by provisions which are more beneficial to the workmen.

b) In other cases where the workmen employed by the contractor perform the same kind of work as the workmen directly employed by the principal employer of the establishment, the hours of work and other conditions of service of the workmen of the contractor shall be the same as applicable to the workmen directly employed by the principal employer of the establishment.

c) In case not falling under sub-clause (a) or (b) the hours of work and other conditions of service of the workmen of the contractor shall be such as may be specified by the Commissioner of Labour.

Explanation - While determining the wages, hours of work and other conditions of service under sub-clause (c) of clause (iv) and sub-clause (c) of clause (v), the Commissioner of Labour shall have due regard to the wages, hours of work and other condition of service obtained in similar employments.

(vi) a) In every establishment, where twenty or more women are ordinarily employed as contract labour there shall be provided and maintained by the contractor a room or rooms for the use of children under the age of six years as may be required by the Commissioner of Labour and the standard of construction, scale of accommodation and the facilities shall be such as may be specified by the Commissioner of Labour:

Provided that, where the principal employer is required under the Factories Act and the Rules thereunder to provide and maintain a creche or other alternative arrangements for the use of children of women employees directly employed by him any arrangements made by the contractor with the principal employers for the use of the creche (or other alternative arrangements in lieu of creche) by the children under the age of six years of the female workmen employed by the contractor, shall be considered as the compliance of the provisions of this clause:

Provided further that, such arrangements are according to the standard prescribed in the Factories Act and the Rules framed thereunder.

b) In other cases, there shall be provided and maintained a room or rooms for the use of children under the age of six years, as may be specified by the Commissioner of Labour.

vii) The contractor shall provide other essential amenities for contract labour employed in accordance with the Maharashtra Contract Labour (Regulation and Abolition) Rules, 1971.

viii) The licensee shall notify any change in the number of workmen or the conditions of work to the licensing officer.

"बालकामगार कामावर ठेवणे गुन्हा आहे"

Reference No.: W444193103
Date: Jul 17, 2025

Dispatch Advice Letter

Dear Sir/Madam,

We value your relationship with ICICI Lombard General Insurance Company Limited and thank you for choosing us as your preferred insurance provider.

Please find attached herewith 4010/400514898/00/000 which has been issued based on the details furnished to us on 17-Jul-2025 as per attached format by the following insured:

VASCON ENGINEERS LTD
VASCON WEIKFIELD CHAMBERS, 1ST FLOOR, VIMAN NAGAR
PUNE
PUNE
MAHARASHTRA - 411014

Please go through the details as furnished in the format and also as provided in the policy document to ensure that they are in order. If you feel that there are any discrepancies/variations, please write to us immediately for the necessary changes/rectification. In the absence of any communication from you in this regard within a period of 15 days of receipt of this letter, we would understand that you have accepted the contents and the coverage to be in accordance with your application.

Your original policy will be handed over to you shortly by your Relationship Manager/ Agent/ Broker. In case you don't receive it within 10 days, please mail us at info@icicilombard.com stating the policy number.

Thank you once again and look forward to a lasting relationship.

Authorised Signatory

ICICI Lombard General Insurance Company Ltd.

Reference No.: W444193103
Date: Jul 17, 2025

VASCON ENGINEERS LTD
VASCON WEIKFIELD CHAMBERS, 1ST FLOOR, VIMAN NAGAR
PUNE
PUNE
MAHARASHTRA - 411014

Risk Assumption Letter

Dear Sir/Madam,

We value your relationship with ICICI Lombard General Insurance Company Limited and thank you for choosing us as your preferred insurance provider.

Please find attached herewith Policy No. 4010/400514898/00/000 which has been issued based on the details furnished to us on 17-Jul-2025

Please go through the details as furnished in the format and also as provided in the policy document to ensure that they are in order. If you feel that there are any discrepancies/variations, please write to us immediately for the necessary changes / rectification. In the absence of any communication from you in this regard within a period of 15 days of receipt of this letter, we would understand that you have accepted the contents and the coverage to be in accordance with your application.

Thank you once again and look forward to a lasting relationship.

Authorized Signatory

ICICI Lombard General Insurance Company Ltd.

ICICI Lombard
Nibhaye Vaade

EMPLOYEE'S COMPENSATION INSURANCE

Part 1 of the POLICY SCHEDULE

Policy No.	4010/400514898/00/000
Issued at:	PUNE SOHRAB HALL
Name of the Insured:	VASCON ENGINEERS LTD
Address of the Insured:	VASCON WEIKFIELD CHAMBERS, 1ST FLOOR, VIMAN NAGAR, PUNE, PUNE, MAHARASHTRA - 411014
Period of Insurance:	From: 17-Jul-2025 00:00 Hours To Midnight of 16-Jul-2026
Total Sum Insured:	₹ 2,70,00,000.00
UIN:	IRDAN115CP0017V02201920
Intermediary Details:	Intermediary Code: 200488883568
	Intermediary Name: G SUNDARAM
	Intermediary Contact: 9820819410
	Intermediary E-mail ID: sundaramsinsurance@gmail.com
HR Details	HR Contact Number: 9028730174
	HR Email Address: sundarams@vascon.com

1.Premium Calculations:	
Premium	₹ 2,69,885.00
Stamp Duty	₹ 135.00
CGST	₹ 24,289.65
SGST	₹ 24,289.65
IGST	₹ 0.00
UGST	₹ 0.00
Total GST	₹ 48,579.00
Total Premium*	₹ 3,18,599.00

*Premium value mentioned above is inclusive of taxes applicable

2. No. of lives: 150

3.Details of employees to be insured:

Estimated Number of Employees	Occupation of Employees	Estimated Total Salaries Wages and other money earnings	Estimated Total Earnings for the Policy Duration	Place or Places of Employment	Industry Classification	Sub Industry Classification	Risk Classification Code
150	Skilled Workers	15000	27000000	GOVERNMENT MEDICAL HOSPITAL, COLLEGE, HOSTEL, SINDHUDURG--A/P . ORAS ,TAL. KUDAL DIST. SINDHUDURG------ MAHARASHTRA--SINDHUDURG--416520	Builders - construction incl civil constructions	NA	46
Total: 150			Total : ₹ 27000000				

ICICI Lombard
Nibhaye Vaade

4. Scope of cover

Main Coverage:	EC Liability Cover Table 'A'
Extensions	
Per Person Limit Only	Medical Extension is covered upto ₹5,00,000.00 per person for the policy period

Coverages:	
1	Builders - construction incl civil constructions:
2	Entry age limit:As per WC Act
3	Medical Extension is covered upto INR. 500000 per person for the policy period.
4	Nil Claims in Expiring policy
5	No. of lives: 150
6	Policy for Table A only
7	Policy is issued on unnamed basis.
8	Risk Classification code: 46
9	Sub Contractors are Covered
10	Risk Location Address:Government Medical Hospital, College, Hostel, Sindhudurg,A/p. Oras ,Tal. Kudal Dist. Sindhudurg,SINDHUDURG,416520,MAHARASHTRA,INDIA,,

Exclusions:	
1	ANY EMPLOYMENT COMPENSATION IN EXCESS OF THE ACTUAL SUM INSURED FOR WORKMEN COMPENSATION ORDINANCE (NOT TO APPLY IN RESPECT OF COMMON LAW AWARDS).
2	UNDERGROUND AND/OR UNDERWATER MINES AND/OR UNDERGROUND SERVICES IN CONNECTION THEREWITH. HOWEVER, THIS EXCLUSION SHALL ONLY APPLY WHERE MORE THAN 20 PEOPLE ARE WORKING AT THE SAME LOCATION AT ANY ONE TIME.
3	SUBAQUEOUS WORK (UNDERWATER WORK).
4	QUARRIES, WHERE EXPLOSIVES ARE USED.
5	CONTRACTORS ENGAGED EXCLUSIVELY IN WRECKING OR DEMOLITION OF BUILDING AND/OR SCRAP METAL MERCHANTS.
6	AIRCRAFT CREWS IN RESPECT OF FLIGHT RISK. HOWEVER, THIS EXCLUSION SHALL NOT APPLY TO AIRCRAFT WHICH ARE SET ASIDE FOR NON FARE PAYING EXECUTIVE USE AND WHICH ARE CREWED BY SIX PERSONS OR LESS.
7	SHIP CREWS OTHER THAN ON INLAND VESSELS OR ON VESSELS OPERATING WITHIN TERRITORIAL WATERS. HOWEVER, THIS EXCLUSION SHALL NOT APPLY TO A VESSEL CREWED BY SIX PERSONS OR LESS.
8	FIRE BRIDGES OTHER THAN THOSE FORMED PRIVATELY FOR LOSS PREVENTION PURPOSES.
9	SERVICE IN ANY KIND OF ARMED FORCES (INCLUDING, BUT NOT LIMITED TO MILITARY, POLICE, SECURITY SERVICES).
10	OPERATION OF RAILWAYS, OTHER THAN SIDINGS.
11	EMPLOYEES EMPLOYED ON A PERMANENT BASIS IN USA AND/OR CANADA.
12	PROFESSIONAL SPORTS TEAM.
13	FIRE CRACKERS MANUFACTURING ACTIVITY
14	LOSSES SUFFERED IN THE COURSE OF MANUFACTURING AND /OR SUPPLYING AND/OR PRODUCING STORING, FILLING, BREAKING DOWN, TRANSPORTING:- (A) FIREWORKS, AMMUNITION, FUSES, CARTRIDGES, POWDER, NITRO-GLYCERINE, OR ANY EXPLOSIVES. (B) GASES AND/OR AIR UNDER PRESSURE IN CONTAINERS. (C) BUTANE, METHANE, PROPANE, AND OTHER LIQUEFIED GASES. (D) CELLULOID AND PYROXYLIN. (E) PETROCHEMICALS AND ALSO CHEMICALS OF A TOXIC (AS DEFINED UNDER INDIA?S PUBLIC LIABILITY ACT 1991), NOXIOUS, EXPLOSIVE AND/OR HIGHLY FLAMMABLE NATURE. (F) ASBESTOS AND/OR ASBESTOS PRODUCTS. (IT IS UNDERSTOOD AND AGREED, HOWEVER, THAT THE STORAGE, TRANSPORT AND/OR HANDLING IF ANY OF THE SUBSTANCES ABOVE MENTIONED OTHER THAN F) WHICH IS MERELY INCIDENTAL TO THE OPERATION AND/OR TRADE OF THE INSURED NOT OTHERWISE EXCLUDED, IS COVERED.)
15	LOSSES SUFFERED ON OR IN CONNECTION WITH OFFSHORE RIGS.
16	ANY COMPENSATION IN MEDICAL EXTENSION EXPENSES IF THE INJURED IS HOSPITALIZED FOR MORE THAN 12 MONTH DUE TO AN ACCIDENT AS PER THE COVERAGE OPTED IN WC POLICY
17	PANDEMICS/EPIDEMICS AS DECLARED BY WHO AND / OR GOVERNMENT OF INDIA

Nature of work/activity	
Policy type:	Unnamed

Entry age limit	As per EC Act
Policy cover	Table A

Subject otherwise to terms and conditions of Employee's Compensation Insurance Policy

Signed for and on behalf of the ICICI Lombard General Insurance Company limited, at Mumbai on this date Jul 17, 2025. The Policy shall stand cancelled ab initio in the event of nonrealization of premium.

Authorised Signatory

ICICI Lombard General Insurance Company Ltd.

Click here or scan the QR code to view the Customer Information Sheet (CIS). It provides an overview of the policy features, service and claim processes, as well as other important terms.

GSTIN Reg. No: 27AAACI7904G1ZN

IL GIC GSTIN Address: 414, ICICI LOMBARD HOUSE, VEER SAVARKAR MARG, NEAR SIDDHI VINAYAK TEMPLE MAIN GATE, PRABHADEVI, MUMBAI, 400025, MAHARASHTRA

HSN/SAC code: 997139 GENERAL INSURANCE SERVICES

The stamp duty of ₹ 135 paid in cash or by demand draft or by pay order, vide Reciept/challan no. CSD112025527 dated Jan 30, 2025.

Scan here for the Policy Terms and Conditions

ICICI Lombard
Nibhaye Vaade

TAX INVOICE

(ORIGINAL FOR RECIPIENT)

Name of the Customer : VASCON ENGINEERS LTD
Address of the Customer : VASCON WEIKFIELD CHAMBERS, 1ST FLOOR, VIMAN NAGAR PUNE INDIA MAHARASHTRA PUNE PIN - 411014 - 411014
GSTIN/ Unique Id of registered recipient : 27AAACV1249F1ZI

Invoice Number	1007251295307	ICICI LOMBARD GENERAL INSURANCE COMPANY LIMITED	
Policy Number	4010/400514898/00/000	**Bill from Address (IL GSTIN Address)**	Third floor,Plot no 246 Manikchand Ikon, C wingBund Garden Pune, District Pune Pin code 411001 Maharashtra, Maharashtra, 411001
Invoice Date	17/07/2025	**GSTIN**	27AAACI7904G1ZN

Sr. No	Particulars	PAN	SAC Code of service	Amount (₹)
1	GENERAL INSURANCE SERVICES	AAACI7904G	997139	269885

Total value of services (Premium Value without Tax) (₹)	269885

Sr No.	Applicable taxes	Rate of applicable taxes (%)	Tax Amount (₹)
1	CGST	9	24289.65
2	SGST	9	24289.65
3	IGST	0	0
4	UTGST	0	0
Total Tax Amount (₹)			48579.3
Whether tax payable under reverse charge?			No
Tax payable by the receiver (₹)			0
Total Premium inclusive Tax (₹)			318464.3

Place of Supply: MAHARASHTRA

We hereby declare that though our aggregate turnover in any preceding financial year from 2017-18 onwards is more than the aggregate turnover notified under sub-rule (4) of rule 48, we are not required to prepare an invoice in terms of the provisions of the said sub-rule.

Appendix 13. Consent to Operate

MAHARASHTRA POLLUTION CONTROL BOARD

Tel: 0231-2652952
0231-2660448
Fax: 0231-2652952
Website: http://mpcb.gov.in
Email: rokolhapur@mpcb.gov.in

Maharashtra Pollution Control Board, Udyog Bhavan Building, Near Collectarate Office, Kolhapur - 416 002

ORANGE/S.S.I (O90A)/ Rev. ORANGE/I.S./(36)
No:- Format1.0/RO/UAN
No.0000250304/CO/2507003584

Date: 29/07/2025

To,
M/s Vascon Engineers Limited,
1/B/4,Kudal,
Tal Kudal, Dist Sindhudurg.

LiFE Lifestyle for Environment
Your Service is Our Duty

Sub: Grant of first Consent to Operate

Your application No.MPCB-CONSENT-0000250304 Dated 11.06.2025

For: grant of Consent to Operate under Section 26 of the Water (Prevention & Control of Pollution) Act, 1974 & under Section 21 of the Air (Prevention & Control of Pollution) Act, 1981 and Authorization under Rule 6 and Rule 18(7) of the Hazardous & Other Wastes (Management & Transboundary Movement) Rules 2016 is considered and the consent is hereby granted subject to the following terms and conditions and as detailed in the schedule I, II, III & IV annexed to this order:

1. **The consent to operate is granted for a period up to 31/12/2026**
2. **The capital investment of the project is Rs.0.9279 Crs. (As per C.A Certificate submitted by industry)**
3. **Consent is valid for the manufacture of:**

Sr No	Product	Maximum Quantity	UOM
Products			
1	Ready Mix Concrete (Captive)	1500	m3/month

(Only captive utilization towards construction of Govt. Medical College is permitted. No commercial use of RMC plant is allowed. RMC plant should be in project premises)

4. **Conditions under Water (P&CP), 1974 Act for discharge of effluent:**

Sr No	Description	Permitted (in CMD)	Standards to	Disposal Path
1.	Trade effluent	0	As per Schedule-I	Not Applicable
2.	Domestic effluent	0.4	As per Schedule-I	

5. **Conditions under Air (P& CP) Act, 1981 for air emissions:**

Sr No.	Stack No.	Description of stack / source	Number of Stack	Standards to be achieved
1	1	NA	0	As per Schedule -II

6. **Non-Hazardous Wastes:**

Sr No	Type of Waste	Quantity	UoM	Treatment	Disposal
1	Waste Concrete Material	30	MT/Day	Reuse	Reuse

Solid waste from transit mixture washing, muck (debris/sludge) generated from RMC shall either be reused through recovery unit/ Reclaiming system OR disposed off at a designated approved site by local body, for debris / construction waste.

7. **Conditions under Hazardous & Other Wastes (M & T M) Rules 2016 for Collection, Segregation, Storage, Transportation, Treatment and Disposal of hazardous waste:**

Sr No	Category No./ Type	Quantity	UoM	Treatment	Disposal
NA					

8. Operation of RMC plant shall be in daytime only. The Day time is reckoned in between 6 a.m. and 6 p.m. i.e. from sun rise to sunset.
9. The Board may make the standards stringent for the RMC/batching plants located within Corporation areas.
10. Captive plants shall carryout ambient air quality monitoring twice in a week for 24 hours.
11. The industry shall comply with the siting criteria as per RMC Notification dtd 16.10.2016.
12. The entire RMC Plant should be enclosed.
13. Industry shall provide covering at all the emission generating points.
14. Industry shall carry out monitoring of ambient air quality twice in a week for 24 hours at windward & lean ward direction and submit the data to Board office on monthly basis.
15. The Board reserves the right to review, amend, suspend, revoke this consent and the same shall be binding on the industry.
16. The RMC plants where the norms are not followed and the technology is old (Star type) shall be discarded within 1 year. Existing RMC plant shall implement the suggested guidelines within a year. The renewal of Maharashtra Pollution Control Board's consent shall be considered only after implementation of new guidelines. The RMC's having valid consent of Maharashtra Pollution Control Board shall amend their consent in compliance with guideline within a year
17. Operation of RMC plant shall be in day time only. However in notified MIDC area, notified industrial parks, outside corporation area timing are not applicable. The Day time shall mean from 6 a.m. to 10 p.m.
18. The industry strictly follows the Guidelines for Ready Mix Concrete Plant (RMC) for sitting criteria of RMC Plant in the State of Maharashtra as per notification dated 7/11/2016.
19. This consent should not be construed as any exemption from obtaining necessary NOC from other Govt. agencies / local bodies as may deemed fit necessary.

20. The applicant shall obtain permission of DISH.
21. The applicant shall not use ground water without permission of CGWA.
22. The applicant shall make an application for renewal of consent 120 days prior to date of expiry of the consent. (Operate/Renewal)

This consent is issued on the basis of information/documents submitted by the Applicant/Project Proponent, if it has been observed that the information submitted by the Applicant/Project Proponent is false, misleading or fraudulent, the Board reserves its right to revoke the consent & further legal action will be initiated against the Applicant/Project Proponent.

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Signed by: Mr. Nikhil N. Gharat
Regional Officer
For and on behalf of,
Maharashtra Pollution Control Board
rokolhapur.sro@mpcb.gov.in
2025-07-29 20:08:30 IST

Received Consent fee of -

Sr.No	Amount(Rs.)	Transaction/DR.No.	Date	Transaction Type
1	10000.00	TXN2506002700	13/06/2025	Online Payment
2	6945.00	TXN2507001904	09/07/2025	Online Payment

Copy to:

1. Sub-Regional Officer, MPCB, Ratnagiri
- They are directed to ensure the compliance of the consent conditions.
2. Chief Accounts Officer, MPCB,Sion, Mumbai

SCHEDULE-I

Terms & conditions for compliance of Water Pollution Control:

1. A] Generation - As per your application the treated effluent generation is Nil.
   B] Treatment - NA
   C] Disposal - NA

2. A] As per your application, you have provided Septic Tank followed by Soak pit for the treatment of 0.4 CMD of sewage.

   B] The Applicant shall operate the sewage treatment system to treat the sewage so as to achieve the following standards.

Sr.No	Parameters	Standards (mg/l)	
1	Suspended Solids	Not to exceed	50
2	BOD 3 days 27°C	Not to exceed	30
3	COD	Not to exceed	100

   C] The treated sewage shall be recycled for secondary purposes to the maximum extent and remaining shall be discharged on land for gardening within premise after confirming above standards. In no case, sewage shall find its way for gardening / outside factory premises.

3. The Board reserves its rights to review plans, specifications or other data relating to plant setup for the treatment of waterworks for the purification there of & the system for the disposal of sewage or trade effluent or in connection with the grant of any consent conditions. The Applicant shall obtain prior consent of the Board to take steps to establish the unit or establish any treatment and disposal system or an extension or addition thereto.

4. The industry shall ensure replacement of pollution control system or its parts after expiry of its expected life as defined by manufacturer so as to ensure the compliance of standards and safety of the operation thereof.

5. The Applicant shall comply with the provisions of the Water (Prevention & Control of Pollution) Act, 1974 and as amended, by installing water meters and other provisions as contained in the said act:

Sr. No.	Purpose for water consumed	Water consumption quantity (CMD)
1.	Industrial Cooling, spraying in mine pits or boiler feed	15.00
2.	Domestic purpose	0.50
3.	Processing whereby water gets polluted & pollutants are easily biodegradable	1.00
4.	Processing whereby water gets polluted & pollutants are not easily biodegradable and are toxic	0.00
5.	Gardening	0

6. The Applicant shall provide Specific Water Pollution control system as per the conditions of EP Act, 1986 and rule made there under from time to time/ Environmental Clearance/ CREP guidelines.

SCHEDULE-II

Terms & conditions for compliance of Air Pollution Control:

1. As per your application, you have provided the Air pollution control (APC) system and erected following stack (s) to observe the following fuel pattern:

Stack No.	Source	APC System provided/proposed	Stack Height(in mtr)	Type of Fuel	Sulphur Content(in %)	Pollutant	Standard
1	Na		0.00	Na 0 -- NA--	-	Na	-

2. The Applicant shall provide Specific Air Pollution control equipments as per the conditions of EP Act, 1986 and rule made there under from time to time/ Environmental Clearance / CREP guidelines.
3. The Applicant shall obtain necessary prior permission for providing additional control equipment with necessary specifications and operation thereof or alteration or replacement/alteration well before its life come to an end or erection of new pollution control equipment.
4. The Board reserves its rights to vary all or any of the condition in the consent, if due to any technological improvement or otherwise such variation (including the change of any control equipment, other in whole or in part is necessary).
5. The applicant shall install a comprehensive control system consisting of control equipments as is warranted with reference to generation of emission and operate and maintain the same continuously so as to achieve the level of pollutants to the following standards:

6. Control Equipment:

a. In-house measures :-

1. All material transfer points should be covered.
2. The dust containment system shall be provided incorporating either of the following:

   i) Barricading all around the periphery of the plot boundary of height minimum 20 feet or 5 feet above free fall air emission area. Whichever is height with tin sheets same may extend above with netion clothing whenever required.

   ii) Water sprinkling/Chemical dust stabilizing agent spraying system along the periphery inside the premises of RMC.

   iii) Tree plantation along the periphery inside boundary of the RMC premises having minimum width of 5 meters, on all sides. The foliage of the trees shall adequately cover area upto about 20m height.
3. Internal work area shall be, cement concreted/Asphalted
4. Daily cleaning / Removal of dust accumulation inside the plant (dry/wet) shall be carry out with industrial vacuum cleaner.
5. Two level type washing facility shall be provided at entry and exit points, for transit mixture vehicle.

b. Raw material storage & handling:-

1. Storage silos of cement & fly-ash shall be adequate capacity of dust Collection system such as multi – cyclone followed by bag house assembly.
2. Handling of Cement, sand, fly ash and aggregates shall be carried out with mechanical closed system only.
3. Manual operations shall be permitted only in a closed shed, equipped with dust control system at the loading point as well as roof top secondary dust control system.
4. All Conveyor belts of Sand, aggregate shall be covered with tin sheets and at points dust collection system to be installed to avoid secondary fugitive emissions.
5. Mixing section of cement, aggregate & sand shall be equipped with adequate capacity dust collection system, such as multi-cyclone followed by bag houses, so as to limit dust emissions.
6. Storage area of sand & aggregates shall be equipped with roof top water sprinkler system.
7. The production plant shall be interlocked with air pollution control system.
8. Alternative power supply system should cover both the production and Air Pollution control system.
9. Industry shall provide treatment facility industrial effluent.
10. Industry shall provide disposal facility for treated effluent.
11. Industry shall provide disposal facility for solid waste.
12. Industry shall provide proper exhaust system in the premises.

c. Ambient air quality as a distance of 10 mtr form source or the plant boundary whichever is nearer, shall meet the following standards

Particulate Matter PM 10	Not to Exceed	100 ug/m3
Particulate Matter PM 2.5	Not to Exceed	60 ug/m3

d. Solid waste treatment and disposal:

Solid waste from transit mixture washing, muck (debris/sludge) generated from RMC shall either be reused through recovery unit/ Reclaiming system OR disposed off at a designated approved site by local body, for debris / construction waste. Industry shall comply with following additional conditions:

1. The RMC plants where the norms are not followed and the technology is old (Star type) shall be discarded within 1 year. Existing RMC plant shall implement the suggested guidelines within a year. The renewal of Maharashtra Pollution Control Board's consent shall be considered only after implementation of new guidelines. The RMC's having valid consent of Maharashtra Pollution Control Board shall amend their consent in compliance with guideline within a year.
2. Operation of RMC plant shall be in day time only. However in notified MIDC area, notified industrial parks, outside corporation area timing are not applicable. The Day time shall mean from 6 a.m. to 10 p.m.
3. The industry strictly follows the Guidelines for Ready Mix Concrete Plant (RMC) for sitting criteria of RMC Plant in the State of Maharashtra as per notification dated 7/11/2016.

SCHEDULE-III
Details of Bank Guarantees:

Sr. No.	Consent (C2E/ C2O /C2R)	Amt of BG Imposed	Submission Period	Purpose of BG	Compliance Period	Validity Date
1	C2O	50000	15 days	compliance of consent conditions	continuous	30.4.2027

The above Bank Guarantee(s) shall be submitted by the applicant in favour of Regional Officer at the respective Regional Office within 15 days from the date of issue of Consent.

If the above Bank Guarantee is not submitted within stipulated period, then 12% interest will be levied as a penalty as per circular dtd 29/02/2024 No. BO/MPCB/AS(T)/Circular/B-240229FTS0122

BG Forfeiture History

Srno.	Consent (C2E/C2O/C2R)	Amount of BG imposed	Submission Period	Purpose of BG	Amount of BG Forfeiture	Reason of BG Forfeiture
NA						

BG Return details

Srno.	Consent (C2E/C2O/C2R)	BG imposed	Purpose of BG	Amount of BG Returned
NA				

SCHEDULE-IV
General Conditions:

1. The Energy source for lighting purpose shall preferably be LED based
2. The PP shall harvest rainwater from roof tops of the buildings and storm water drains to recharge the ground water and utilize the same for different industrial applications within the plant
3. Conditions for D.G. Set
   a) Noise from the D.G. Set should be controlled by providing an acoustic enclosure or by treating the room acoustically.
   b) Industry should provide acoustic enclosure for control of noise. The acoustic enclosure/ acoustic treatment of the room should be designed for minimum 25 dB (A) insertion loss or for meeting the ambient noise standards, whichever is on higher side. A suitable exhaust muffler with insertion loss of 25 dB (A) shall also be provided. The measurement of insertion loss will be done at different points at 0.5 meters from acoustic enclosure/room and then average.
   c) Industry should make efforts to bring down noise level due to DG set, outside industrial premises, within ambient noise requirements by proper sitting and control measures.
   d) Installation of DG Set must be strictly in compliance with recommendations of DG Set manufacturer.
   e) A proper routine and preventive maintenance procedure for DG set should be set and followed in consultation with the DG manufacturer which would help to prevent noise levels of DG set from deteriorating with use.
   f) D.G. Set shall be operated only in case of power failure.
   g) The applicant should not cause any nuisance in the surrounding area due to operation of D.G. Set.
   h) The applicant shall comply with the notification of MoEFCC, India on Environment (Protection) second Amendment Rules vide GSR 371(E) dated 17.05.2002 and its amendments regarding noise limit for generator sets run with diesel.
4. The applicant shall maintain good housekeeping.
5. The non-hazardous solid waste arising in the factory premises, sweepings, etc. be disposed of scientifically so as not to cause any nuisance / pollution. The applicant shall take necessary permissions from civic authorities for disposal of solid waste.
6. The applicant shall not change or alter the quantity, quality, the rate of discharge, temperature or the mode of the effluent/emissions or hazardous wastes or control equipments provided for without previous written permission of the Board. The industry will not carry out any activity, for which this consent has not been granted/without prior consent of the Board.
7. The industry shall ensure that fugitive emissions from the activity are controlled so as to maintain clean and safe environment in and around the factory premises.
8. The industry shall submit quarterly statement in respect of industries obligation towards consent and pollution control compliance's duly supported with documentary evidences (format can downloaded from MPCB official site).
9. The industry shall submit official e-mail address and any change will be duly informed to the MPCB.
10. The industry shall achieve the National Ambient Air Quality standards prescribed vide Government of India, Notification No. B-29016/20/90/PCI-L dated. 18.11.2009 as amended.

11. The Board reserves its rights to review plans, specifications or other data relating to plant setup for the treatment of waterworks for the purification thereof & the system for the disposal of sewage or trade effluent or in connection with the grant of any consent conditions. The Applicant shall obtain prior consent of the Board to take steps to establish the unit or establish any treatment and disposal system or an extension or addition thereto.
12. The industry shall ensure replacement of pollution control system or its parts after expiry of its expected life as defined by manufacturer so as to ensure the compliance of standards and safety of the operation thereof.
13. The PP shall provide personal protection equipment as per norms of Factory Act
14. Industry should monitor effluent quality, stack emissions and ambient air quality monthly/quarterly.
15. Whenever due to any accident or other unforeseen act or even, such emissions occur or is apprehended to occur in excess of standards laid down, such information shall be forthwith Reported to Board, concerned Police Station, office of Directorate of Health Services, Department of Explosives, Inspectorate of Factories and Local Body. In case of failure of pollution control equipments, the production process connected to it shall be stopped.
16. The applicant shall provide an alternate electric power source sufficient to operate all pollution control facilities installed to maintain compliance with the terms and conditions of the consent. In the absence, the applicant shall stop, reduce or otherwise, control production to abide by terms and conditions of this consent.
17. The industry shall recycle/reprocess/reuse/recover Hazardous Waste as per the provision contain in the Hazardous and Other Wastes (M & TM) Rules 2016, which can be recycled /processed /reused /recovered and only waste which has to be incinerated shall go to incineration and waste which can be used for land filling and cannot be recycled/reprocessed etc. should go for that purpose, in order to reduce load on incineration and landfill site/environment.
18. An inspection book shall be opened and made available to the Board's officers during their visit to the applicant.
19. Industry shall strictly comply with the Water (P&CP) Act, 1974, Air (P&CP) Act, 1981 and Environmental Protection Act, 1986 and industry specific standard under EP Rules 1986 which are available on MPCB website (www.mpcb.gov.in).
20. Separate drainage system shall be provided for collection of trade and sewage effluents. Terminal manholes shall be provided at the end of the collection system with arrangement for measuring the flow. No effluent shall be admitted in the pipes/sewers downstream of the terminal manholes. No effluent shall find its way other than in designed and provided collection system.
21. Neither storm water nor discharge from other premises shall be allowed to mix with the effluents from the factory.
22. The industry should not cause any nuisance in surrounding area.

23. The industry shall take adequate measures for control of noise levels from its own sources within the premises so as to maintain ambient air quality standard in respect of noise to less than 75 dB (A) during day time and 70 dB (A) during night time. Day time is reckoned in between 6 a.m. and 10 p.m. and night time is reckoned between 10 p.m. and 6 a.m.
24. The industry shall create the Environmental Cell by appointing an Environmental Engineer, Chemist and Agriculture expert for looking after day to day activities related to Environment and irrigation field where treated effluent is used for irrigation.
25. The applicant shall provide ports in the chimney/(s) and facilities such as ladder, platform etc. for monitoring the air emissions and the same shall be open for inspection to/and for use of the Board's Staff. The chimney(s) vents attached to various sources of emission shall be designated by numbers such as S-1, S-2, etc. and these shall be painted/ displayed to facilitate identification.
26. The industry should comply with the Hazardous and Other Wastes (M & TM) Rules, 2016 and submit the Annual Returns as per Rule 6(5) & 20(2) of Hazardous and Other Wastes (M & TM) Rules, 2016 for the preceding year April to March in Form-IV by 30th June of every year.
27. The applicant shall install a separate meter showing the consumption of energy for operation of domestic and industrial effluent treatment plants and air pollution control system. A register showing consumption of chemicals used for treatment shall be maintained.
28. The applicant shall bring minimum 33% of the available open land under green coverage/ plantation. The applicant shall submit a yearly statement by 30th September every year on available open plot area, number of trees surviving as on 31st March of the year and number of trees planted by September end.
29. The Board reserves its rights to review plans, specifications or other data relating to plant setup for the treatment of waterworks for the purification thereof & the system for the disposal of sewage or trade effluent or in connection with the grant of any consent conditions.
30. The firm shall submit to this office, the 30th day of September every year, the Environment Statement Report for the financial year ending 31st March in the prescribed FORM-V as per the provisions of Rule 14 of the Environment (Protection) (second Amendment) Rules, 1992.
31. The Applicant shall obtain necessary prior permission for providing additional control equipment with necessary specifications and operation thereof or alteration or replacement/alteration well before its life come to an end or erection of new pollution control equipment.
32. The Board reserves its rights to vary all or any of the condition in the consent, if due to any technological improvement or otherwise such variation (including the change of any control equipment, other in whole or in part is necessary).
33. The applicant shall provide facility for collection of environmental samples and samples of trade and sewage effluents, air emissions and hazardous waste to the Board staff at the terminal or designated points and shall pay to the Board for the services rendered in this behalf.

This certificate is digitally & electronically signed.

Appendix 14. Tree Felling Permission

1964] [Mah. XXXIV] Maharashtra Felling of Trees (Regulation, Act. 1964)

FO[illegible]I II

Permission under [section 3(1B)] of the Maharashtra Felling of Trees (Regulation) Act, 1964

वैध दिनांक दि. 22/2/2024
कायमचे वि° 23/9/2028

Application Register No. : 2024/TNT10236/109346

Shri/Smt./Kumari. **Adhishthata Shaskiy vaidyakiy mahavidyalay** (Hereinafter called 'the grantee') residing at: **Shaskiy vaidyakiy mahavidyalaya sindhudurga** is hereby granted permission under [section 3(1B)] of the Maharashtra Felling of Trees (Regulation) Act, 1964 to fell the tree/trees described in the Table below in the land described in that Table, subject to the condition that the grantee shall be liable to pay damages for any injury caused to the property of any person as a result of felling a tree or trees in pursuance of this permission. This permission shall be valid for a period of thirty days from the date on which it is granted.

PROFORMA

Particulars of Location (1)		Particulars of land (2)			Particulars of the trees (scheduled trees) (3)		
		Survey No	Part/Sub Part No	Area			
		1	B4	8.1456	**Species (A)**	**No. of trees existing on the land (B)**	**No. of trees to be thinned/felled (C)**
					Teak (Sag)	52	21
					Syzijium cumini (Jambhul)	11	5
					Any other Species	413	0
(A) District	Sindhudurg	1	B4	8.1456	**Species (A)**	**No. of trees existing on the land (B)**	**No. of trees to be thinned/felled (C)**
					Teak (Sag)	52	21
					Syzijium cumini (Jambhul)	11	5
					Any other Species	413	0
(B) Taluka	Kudal	1	B4	8.1456	**Species (A)**	**No. of trees existing on the land (B)**	**No. of trees to be thinned/felled (C)**
					Teak (Sag)	52	21
(C) Village	Oros						

	Syzijium cumini (Jambhul)	11	5
	Any other Species	413	0

Total area of the Land 24.4368

Mandatory Condition: The applicant will plant 20 no. of perennial woody trees in ensuing plantation season in the same survey no. or in the vicinity. **Additonal Conditions imposed byTree Officer to accord tree felling permission:** No **Date :** 25/11/2024 **Place :** Oros **Signature of the Tree Officer**

Seal of the Tree Officer granting permission

रेंज कुडाळ इ.क्र.२२|२०२४-२५
कडावल दि० २३|१२|२०२४

वृक्ष अधिकारी
कडावल