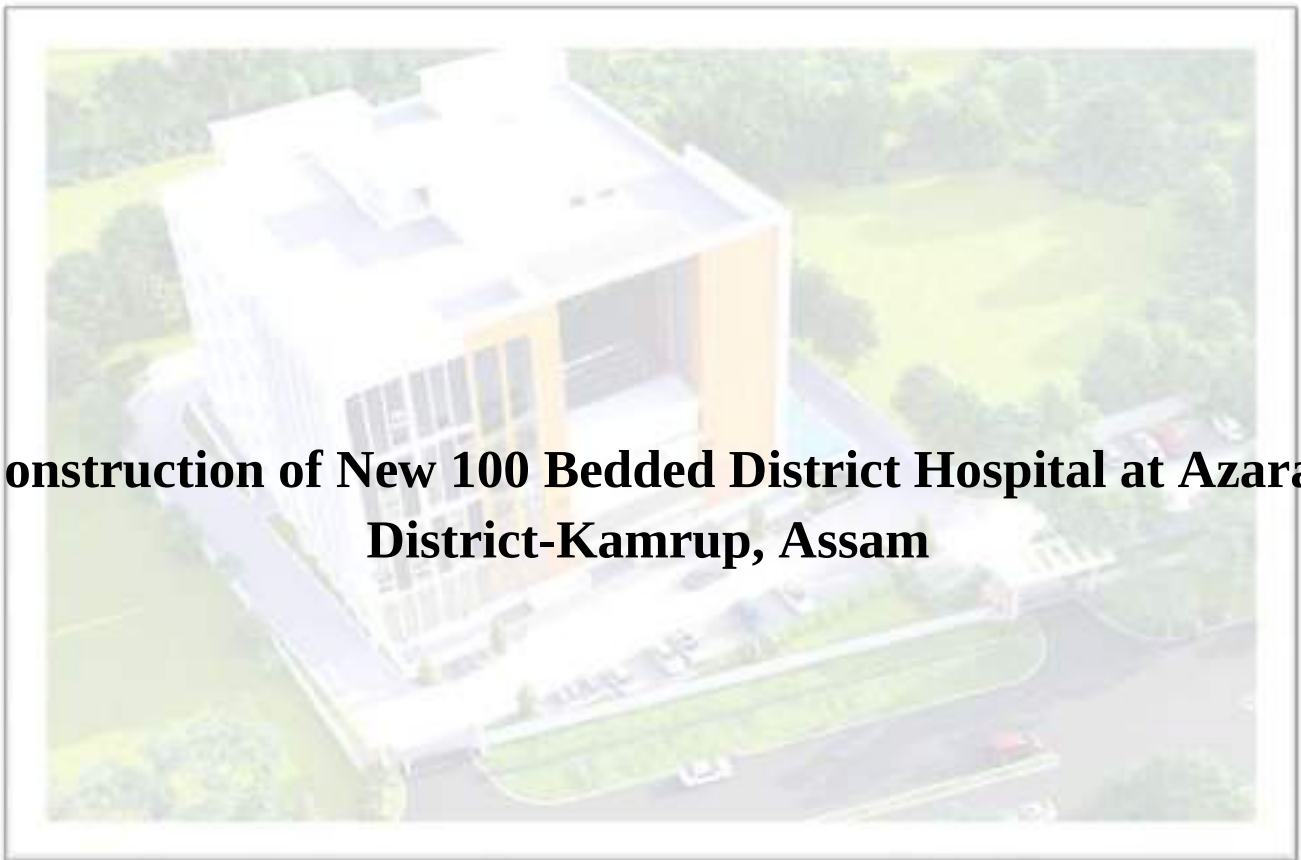


**Environmental and Social Impact Assessment
(ESIA)
&
Environmental and Social Management Plan
(ESMP)**

for



**Construction of New 100 Bedded District Hospital at Azara,
District-Kamrup, Assam**

**Assam State Secondary Health Care Initiative for Service
Delivery Transformation Project (ASSIST)**

**Assam Health Infrastructure Development & Management Society (AHIDMS),
Medical Education & Research Development,
Govt. of Assam**

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LIST OF ABBREVIATIONS

AAAS-	Atal Amrit Abhiyan Society
AHIDMS-	Assam Health Infrastructure Development and Management Society
AHU-	Air Handling Unit
AMSCL-	Assam Medical Supply Corporation Limited
ANC-	Antenatal Care
ANM-	Auxiliary Nursing Midwifery
ASHA-	Accredited social health activist
ASSIST-	Assam State Secondary Healthcare Initiative for Service Delivery Transformation
AQM-	Automated Quality Management
BEE-	Bureau of Energy Efficiency
BMWM-	Biomedical Waste Management
BIS-	Bureau of Indian Standards
BPL-	Below Poverty Line
BSC-	Bio-safety Cabinet
CBWTF-	Common Bio-medical Waste Treatment Facility
C&D-	Construction and Demolition
CDC-	Centers for Disease Control and Prevention
CHC-	Community Health Centre
CMNND-	Communicable, Maternal, Neonatal and Nutritional Diseases
CPCB-	Central Pollution Control Board
CFL-	Compact Fluorescent Lamp
CTF-	Common Treatment Facility
DG-	Diesel Generator
DH-	District Hospital
DHS-	District Health Society
DHFW-	Departments of Health and Family Welfare
DoHFW-	Department of Health & Family Welfare
DME-	Durable medical equipment
DPR-	Detailed Project Report
EAP-	Employee Assistance Program
ECBC-	Energy Conservation Building Code
ECG-	Electrocardiogram

ECoP- Environmental Code of Practices

EHS- Environment Health and Safety

EMP- Environment Management Plan

ESIA- Environment and Social Impact Assessment

ESMP- Environment and Social Management Plan

ESMF- Environmental and Social Management Framework

ESS- Environmental and Social Standards

EPA- Environmental Protection Agency

ETP- Effluent Treatment Plan

FAAMCH- Fakhruddin Ali Ahmed Medical College and Hospital, Assam

FRU- First Referral Unit

FPIC- Free, Prior & Informed Consent

GBV- Gender Based Violence

GLS- General Lighting Service

GoA- Government of Assam

GOI- Government of India

GRM- Grievance Redressal Management

HAI- Health care-associated infections

HCF- Health Care Facility

HIV- Human Immunodeficiency Viruses

HRH- Human Resources for Health

HQ- Head Quarters

H&S- Health and Safety

IGBC- Indian Green Building Council

IHD- Ischemic Heart Disease

IRC- Indian Road Congress

IP- Indigenous Peoples

IPA- Internal Performance Agreement

IPC- Infection Prevention and Control

IPHS- Indian Public Health Standards

IPP- Indigenous Peoples Plan

IPPF- Indigenous Peoples Policy Framework

IS- Indian Standard

JCB- Joseph Cyril Bramford

LED- Light Emitting Diode

LMO- Liquid Medical Oxygen

MCH- Maternal and Child Health

MHA- Ministry of Home Affairs

MMR- Maternal Mortality Rate

MoEF& CC- Ministry of Environment, Forest & Climate Change

MoHFW- Ministry of Health and Family Welfare

MoU- Memorandum of understanding

NAAQS- National Ambient Air Quality Standards

NBC- National Building Codes

NBCC- National Buildings Construction Corporation Ltd

NBSU- Newborn Stabilization Unit

NCD- Non-Communicable Diseases

NDMA- National Disaster Management Authority

NFHS- National Family Health Survey

NGO- Non Government Organization

NH- National Highway

NHM- National Health Mission

NICU- Neonatal intensive care unit

NOC- No Objection Certificate

NQAS- National Quality Assurance Standards

OHS- Occupation and Health Safety

O &M- Operation and Maintenance

OPD- Out Patient Department

ORT- Oral Rehydration Therapy

OT- Operation Theatre

PDO- Project Development Objective

PCU- Passenger Car Unit

PHC- Primary Health Centre

PM- Particulate Matter

PMU- Project Management Unit

PPE- Personal Protective Equipment

PUC- Pollution under control certificate

PwD- Person with a Disability

PWD- Public Works Department

RCC- Reinforced Cement Concrete

RMC- Ready Mix Concrete

RNTCP- Revised National Tuberculosis Control Programme

RTO- Regional Transport Office

RWH- Rain Water Harvesting

SC- Sub Centre

SDH- Sub-District Hospital

SEA/SH- Sexual exploitation and abuse/Sexual harassment

SEMP- Site Specific EHS Plan

SEP- Stakeholder Engagement Plan

SH- State Highway

SMACNA- Sheet Metal and Air Conditioning Contractors' National Association

SMP- Social Management Plan

STD- Sexually Transmitted Diseases

STP- Sewage Treatment Plant

SNCU- Special Newborn Care Unit

SPCB- State Pollution Control Board

SPMU- State Project Management Unit

SOP- Standard Operating Procedures

SC-ST- Scheduled Caste Scheduled Tribe

SS- Social Security

ToR- Terms of Reference

TSSU- Theatre Sterile Supply Unit

UNESCO- United Nations Educational, Scientific and Cultural Organization

USG- Ultrasound or Sonogram or Ultrasonogram

UT- Union Territory

WHO- World Health Organization

EXECUTIVE SUMMARY

EXECUTIVE SUMMARY

1. Introduction

Government of Assam (GoA) is implementing World Bank assisted “Assam State Secondary Health Care Initiative for Service Delivery Transformation Project (ASSIST)” Project under Assam Health Infrastructure Development & Management Society (AHIDMS), Medical Education and Research Department, GoA with an objective to initiate improvement in the quality and delivery of health care system in the state. And under this project, 100 to 200 Bedded District Hospitals (DHs) are going to be constructed in 10 Districts of the state.

One of the proposed site is Azara in the Kamrup Metropolitan district of the state where a new 100 Bedded District Hospital is proposed to be constructed at the premise of Azara CHC. It has been envisioned that the proposed DH at Azara will come a long way in fulfilling the gap in providing secondary health care services to the people of the area.

2. Project Description

The proposed project involves construction of 100 bedded District Hospital at the premise of Azara Primary Health Center situated at 26°7'27.39"N, 91°37'1.84"E, The proposed DH covers an area of 15,566 square meters which will house all the necessary contemporary facilities as per IPHS, 2022 norms which will further be human centric and GRIHA compliant.

3. Environment and Social Impact Assessment (ESIA)

The baseline environment and social attributes of the proposed site and the vicinity has been assessed to identify possible impacts of construction of DH on the same.

The screening of environmental parameters showed that all the results are within norms and thereby it can be derived that impacts arising during the construction works of the proposed project is not likely to have any major impact on the environment. However site issues may occur which includes disturbance to top soil and existing green cover of the site, soil erosion and contamination, flooding due to surface runoff and water contamination, air pollution due to dust and smoke, noise pollution due to vibrations and noise coming out of construction activity.

Likewise social issues may occur at site which includes risks related to community health and safety, public inconveniences and disruption of medical service at Azara CHC due to construction activity, conflict between migrant workforce and local, risks of Gender based violence and SEA/SH at site and its vicinity and occupational health and safety of labors at site.

4. Environmental and Social Mitigation Measures (ESMP)

The ESMP has been prepared considering the identified risks and impacts of construction of proposed DH at Azara along with the name of agency/department that is responsible for the mitigation action in a specified time period starting from the pre-construction period to construction and operation period.

As a part of mitigation measures, there is a need to obtain Consent/ Permit/ Clearance/ No Objection Certificate (NOC), etc. for establishment of new DH, RMC/ Batching Plant, Labor Camp, Storage for construction materials, tree felling, use of vehicles and equipment, connections of water supply, electricity etc. by the Contractor who is assigned with the task of construction DH at Azara.

The mitigation measures are planned against the identified environmental and social risks of the pre-construction and construction period of proposed project at Azara. Proposed mitigation measures aims to protect, prevent and minimize environmental issues of disturbance of land, water, soil and air arising out of construction activity at site and surrounding areas. Further, the mitigation measures addressing the social issues will minimize and prevent risks to community health and safety, occupational health and safety of labors, and inconveniences and disturbance to public. The measures will also address road safety, stakeholder engagement for awareness and involvement in the project and prevent or mitigate Risks of SEA/SH to community members, particularly women and children by contractors' workers during construction period, workplace sexual harassment at project site (consultants and contractors staff & laborers)

5. Stakeholder Engagement

World Bank's ESS10 recognizes that effective engagement with the stakeholders can significantly improve the project outcomes and their sustainability through better community acceptance and ownership, enhance the environmental and social sustainability of the project, and hence make a significant contribution to successful project implementation.

In view of the above, Stakeholder engagement through talks, interviews, and public meetings with the stakeholders were conducted for assessing their views and opinions on the project at Azara. Suggestions of important stakeholders have been considered as inputs for preparation of the ESIA-ESMP. Site inspections that were required to confirm the information gathered have been carried out.

6. Alternatives

To implement the project at Azara, State Government of Assam has provided the land i.e. land of Azara CHC, so no alternate locations were explored for the project. The best building materials and technologies that are appropriate for the project site and surrounding environment will be used.

7. Conclusion and Recommendations

Based on the ESIA-ESMP findings, it has been determined that there are no major negative effects of the planned project. However the proposed project shall have temporary negative impacts during the project construction period, which shall be reversed during the project operation. The report's objectives are in line with World Bank Safeguard Policies and Governmental (India and Assam) regulatory requirements.

It is recommended that the project implementing agency to Obtain all statutory clearances before start of activities and ensures that conditions/provisions are incorporated in the detailed design. ESIA-ESMP should be included in contract documents, Commitment from contractors to protect the environment and the people from any impact during project implementation.

CHAPTER-1

INTRODUCTION AND BACKGROUND

1-INTRODUCTION AND BACKGROUND

1.1 Background

State of Assam interwoven by mountains, valleys and two major river systems (Brahmaputra and Barak) is in the eastern most part of India between 24°.07' N to 28°00' N Latitude and 89°.42' E to 96°.02'E Longitude. At present, Assam has 35 administrative districts. As per the Census 2011, the total population of Assam is 31,205,576 of which 15,939,443 are males while female are 15,266,133. Thus, the population of Assam forms 2.58 percent of the population of India in 2011. Assam is one of the highest maternal mortality rate (MMR) states, with around 205 deaths per 100000 live births in 2017-19(*Office of the Registrar General, India*). Low ANC Coverage in Cachar, Bongaigaon, South Salmara Mancachar, Kokrajhar, and Increased Prevalence of anemia in women aged 15-49 years. Neonatal mortality rate and Still Birth (per 1,000 live births) rates have significantly decreased with the life expectancy at birth also improved (66.9) though it is below the national average of 69.4 years. The proportion of communicable, maternal, neonatal, and nutritional diseases (CMNND) contribute to 34.06% of total disease burden. Further, the burden of non-communicable diseases (NCDs) is growing in Assam.

The Assam State Government is planning to construct 100 to 200 Bedded District Hospitals (DHs) in 10 Districts of the state under “Assam State Secondary Health Care Initiative for Service Delivery Transformation Project (ASSIST)” Project. One of the proposed site is Azara in the Kamrup Metropolitan district of the state where a new 100 Bedded District Hospital is proposed to be constructed at the premise of Azara CHC-FRU.

1.2 Requirement of New District Hospital

The Area is one of the major districts of Assam however it is worth noting that there is a high shortage of public healthcare services. The Public health facilities are predominant health service providers. Public healthcare services are provided by Notboma Primary Health Centre, North Guwahati Block PHC, Sualkuchi PHC & FRU, Pandu First Referral Unit (FRU), An Annex of Guwahati Medical College & Hospital, Mirza Community Health Centre, Borjhar Public Health Center, Bijohnagar Uparhali PHC Hospital, Primary Health Sub Center Nargaon, Primary Health Sub Center Mairapurare available at a distance of 15 km, but the facilities provided by those are not sufficient.

The proposed new District Hospital will come a long way in providing advanced health care services to the people of the locality as well as areas like Notboma, Borjhar, Uparhali, Mirza, Nargaon, Mairapur etc.

Azara CHC-FRU is one of the oldest public health care facility not only in the district but also in the entire state of Assam. Most of the patients who visit the CHC-FRU are related to Obstetric cases coming from the nearby areas. Currently housed in an old Assam type House, the CHC is providing health care services to a good number of patients. But the services are not adequate in terms of facilities, manpower, space, infrastructure) and equipment. Currently the PHC is housed in old Assam type Houses of ground structure which is very old, which will be upgraded to new 100 Bedded District Hospital with modern facilities and infrastructure.

1.3 Objective to undertake the Environmental and Social Impact Assessment (ESIA) and Environmental and Social Management Plan (ESMP) and its necessity

The Objective of the consulting assignment is to develop site specific architectural and engineering designs for construction of district hospital of Azara as per the IPHS standards and patient movement, interior design complying with human-centric design philosophy in the proposed hospital, develop specifications for the works and estimate the costs for development of the Hospital.

GoA is committed to carry out the project in accordance with World Bank's Environmental and Social Standards (ESSs) and Environmental and Social Commitment Plan (ESCP), is a part of the Legal Agreements. Under ESS 1 i.e. Environmental and Social Assessment, ASSIST commits adoption of the site-specific ESIA and ESMP for the respective subproject. Once adopted, ESIA and ESMP will be implemented throughout Project implementation period i.e. pre-construction, construction and operation phase.

1.4 Objectives of Environmental and Social Impact Assessment (ESIA)

- Assessment of legislative, institutional and policy frameworks and guidelines relevant to the project
- Environment and social baseline
- Anticipated environmental and social impacts & mitigation measures
- Institutional capacity building
- Monitoring program and project benefits
- Identify potential environmental and social risks arising out of the proposed schemes
- Recommend ways in which such risks could be mitigated or managed by the project, including recommendations to carry out projects specific environment and social management plans (ESMP)
- Provide inputs into the detailed design of the project
- To study the socio-economic status of the people living in the study area and impact of the project on socio-economic environment in the study area.
- To evaluate and recommend the community development measures proposed to be taken up by the project authorities if any.

1.5 Objectives of Environmental and Social Management Plan (ESMP)

- Identifying potential adverse and beneficial environmental and social impacts of the Project along with the extent of short- and long-term effects
- Developing a set of mitigation and enhancement measures for the adverse and beneficial impacts and define the roles of personnel in charge
- Specifying actions which would help in mitigation of the environmental impact of the project along with ensuring what safety measures should be followed during the occurrence of an emergency.

1.6 Methodology for ESIA-ESMP

An Environmental and Social Impact Assessment (ESIA) & Environmental and Social Management Plan (ESMP) is a decision-making tool to ensure that the project design and implementation are environmentally and socially sound and sustainable. During the implementation phase, environmental and social management plans will provide guidance for

executing the mitigation, enhancement and monitoring measures. The key steps/methods taken for preparing for this ESIA-ESMP are:

- Desk Review
- Scoping
- Baseline data collection and its analysis
- Collection of primary and secondary socio-economic data for the assessment of Socio-economic environment
- Screening and identification of Environmental and Social risk and impacts;
- Analysis of Alternatives
- Stakeholder engagement
- Assessment of impacts and identification of mitigation measures
- Reporting and disclosure

CHAPTER-2

PROJECT DESCRIPTION

2-PROJECT DESCRIPTION

2.1 Location of District Hospital

The site is located in Azara, Kamrup, Assam. Presently the proposed site is occupied by Azara Primary Health Centre. The site is surrounded by Montessori Play School (252 m) in north direction, Lower primary school, Mirzapur (1300 m) in west direction, Deepor Beel (800 m) in east direction and Shree Mahamaya temple (453 m) in south direction.

The Geographical Location is **26°7'27.39"N, 91°37'1.84"E**.

The Google image of the project site is given in **Figure 2.1**

Table 2.1: Site Surroundings Related To Study Area within 15 Kms

S. No.	Particulars	Details
1.	Nearest National /State Highway	NH-17:10 m
2.	Nearest Railway Station	Azara Railway Station: 2.5 Km
3.	Nearest Airport	LGBI Airport, Guwahati: 3.5 Km
4.	Nearest Town/ City/Village	Within Guwahati
5.	Nearest Water Body	Deepor Beel: 800 m
6.	Nearest School	Montessori Play School: 252 m
7.	Nearest Hospital	Garal PHC: 1.834 km
8.	Nearest Fire Station	Mirza, Guwahati Fire Station: 8.8 km
9.	Site Topography	Almost Flat topography
10.	Archaeologically Important Site	Chatrakar Temple: 16.105 km
11.	National Parks/ Wildlife Sanctuaries	None
12.	State Boundary	Meghalaya State Boundary: 10.721 km
13.	Seismicity	Zone –V, as per BIS,2016



Figure 2.1: Google image of the project site

2.2 Existing Site Situation

Presently Azara 30 bedded Rural Hospital (F.R.U.) exists at the site which is catering the medical needs of the local people. The existing site photographs of the project site are given in **Figure 2.2.**

Azara 30 bedded Rural Hospital (F.R.U.) Departments assessed are –

1. Out- patient department
2. In-patient department
3. Dental OPD
4. Post Natal ward
5. Post-operative ward
6. NBSU
7. Labor Room
8. CBNAAT/TU (RNTCP)
9. Cold chain/ Vaccine Room
10. Pharmacy
11. Registration Counter
12. Observation Room
13. Operation Theatres
14. X-Ray Room
15. Ante Natal Room
16. Biomedical waste disposal through sharp pits and deep burial
17. Waste water disposal including liquid waste through pipeline within the campus
18. Color-coded dustbins segregate different types of solid waste



Figure 2.2: Existing site photographs of the project site

2.3 Proposed Project Details/Components

The components of proposed district Hospital are: Emergency Unit, OPD, Laboratory, Medical Store, Obstetrics Critical Care Unit, OPD Consultation Room, SNCU & NICU, and Paying Cain Complex, waiting area with public toilets, Day care, Rehabilitation Centre, Nursing Station, Burn Unit, HDU Ward, OT Complex, Blood Bank, Mortuary, Services and Laundry etc. The details of Facilities-proposed in 100 bedded District Hospital are given separately in **Annexure-II**.

2.4 Area Statement

The total built-up area of proposed project is 15,566 Sq. m; the detailed area statement is given in **Annexure III**.

2.5 Other Project requirements

2.5.1 Water Requirement: The total water requirement as per NBC-2016 of the proposed project is 67 KLD. Out of this 46 KLD is fresh water demand and 21 KLD is for flushing water demand. The available source of water at project location is bore well (with overhead water storage structure) and ring well (closed and non-functional) located within the site. Further, drinking water for existing Rural Hospital (FRU) is made available through R.O. system in the premises. The total sewage generated will be 54 KLD. The waste water will be treated in the STP of 65 KLD capacity and ETP of 10 KLD (for treatment of used water from Laboratory, O.T). Total treated water available for reuse will be 43 KLD, which will be used in Flushing, DG set cooling, Filter Backwash and Horticulture. The detailed water requirement along with water balance is attached as **Annexure XIII**.

2.5.2 Power requirement: The power requirement for the proposed project is 1250 KVA. The two DG sets of 625 KVA capacity is proposed to install as 100% power backup. Power factor for Transformer considered is 0.95 and loading factor is 0.80. Minimum capacity of Transformer shall be 2 x 630 KVA. However for future load, additional transformer space as well as HT/LT Panel space shall be provided as per Engineer-in-charge.

2.6 Volume of Civil Works

At present no civil works has been done for proposed DH only geotechnical investigation has been done till date. Civil work will be done according to the DPR and sanction drawings.

CHAPTER-3

LEGAL AND INSTITUTIONAL FRAMEWORK

3-LEGAL AND INSTITUTIONAL FRAMEWORK

3.1 Introduction

This Chapter outlines and provides a review of existing policies, legislations, and regulations. It identifies the requirements that guide the implementation of the ESIA. There are several relevant Indian Acts and Regulations that are relevant to this project. Also, as this Project is being financed by the World Bank, its guidelines are paramount and are discussed. There must be harmony between both sets of frameworks, but should there be any discrepancies between these, the guidelines of the World Bank shall supersede those of the country.

3.2 Environmental and Social Standards of World Bank and Indian National and State Regulations

3.2.1 The World Bank's Environmental and Social Standards (ESS)

The World Bank's Environmental and Social Standards (ESSs) is cornerstone to its support to sustainable development. The Environmental and Social Standards set out the requirements for ASSIST project relating to the identification and assessment of environmental and social risks and impacts associated with project through Investment Project Financing. The objective of these policies is to prevent and mitigate undue harm to people and their environment in the development process. Any project that is likely to pose any form of adverse environmental impact will trigger the relevant ESSs. The ESSs relevant to this project are given in **Table 3.1** as follows:

Table 3.1 Environment & Social Standard relevant to the project

S.No.	Environment & Social Standard	Relevance
1.	ESS1: Assessment and Management of Environmental and Social Risks and Impacts	Yes
2.	ESS2: Labor and Working Conditions	Yes
3.	ESS3: Resource Efficiency and Pollution Prevention and Management	Yes
4.	ESS4: Community Health and Safety	Yes
5.	ESS5: Land Acquisition, Restrictions on Land Use and Involuntary Resettlement	No
6.	ESS6: Biodiversity Conservation and Sustainable Management of Living Natural Resources	No
7.	ESS7: Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities	Yes
8.	ESS8: Cultural Heritage	Yes
9.	ESS9: Financial Intermediaries	No
10.	ESS10: Stakeholder Engagement and Information Disclosure	Yes

3.2.2 Environmental, Health, Safety and Social Regulations (Acts/Law) applicable to the Project are:

Indian National Regulations and State Specific Laws and Regulations:

- ✓ The Constitution of India (especially, Articles 15, 16 and 46)
- ✓ Biomedical Waste (Management and Handling) Rules 2016, as amended up to 2019
- ✓ E-Waste (Management and Handling) Rules 2011 as Amendment up to 2018
- ✓ Hazardous Waste (Management, Handling and Trans-boundary Movement) Rules 2008
- ✓ Hazardous and Other Wastes (Management and Trans boundary Movement) Amendment Rules, 2016
- ✓ Plastic Waste Management Rules 2016
- ✓ The Epidemic Diseases Act 1897
- ✓ The Water (Prevention & Control of Pollution) Act 1974
- ✓ The Air (Prevention & Control of Pollution) Act 1981
- ✓ Environment Protection Act (and Rules), 1986 and 1996 Environment (Protection) Second Amendment Rules 2002
- ✓ The Water (Prevention and Control of Pollution) Cess Act, 1977 Rules framed under the water (Prevention & Control of Pollution) Act, 1974 (Assam) Rules 1977
- ✓ CPCB Guidelines for BMW Incinerators (2003)
- ✓ Draft Guidelines for Biomedical Waste Incinerator, 2017
- ✓ Revised guidelines for Common Biomedical Waste Treatment Facilities (2016)
- ✓ The Assam Air (Prevention and Control of Pollution) (Amendment) Rules 2010
- ✓ Noise (Regulation and Control) Rules, 2000 amended in 2010
- ✓ National Disaster Management Act, 2005
- ✓ Solid waste management rules, 2016
- ✓ The Epidemic Diseases (Amendment) Ordinance, 2020
- ✓ Construction and demolition wastes management rules, 2016
- ✓ Guidance note on Liquid Medical Oxygen (LMO) Storage Tanks, April 2021
- ✓ Maternity Benefit Act, 1961 and Assam Rules, 1965
- ✓ Child Labor (Prohibition and Regulation) Act, 1986 and Assam (Amendment) Rules, 2017
- ✓ Contract Labor (Regulation and Abolition) Act, 1970 and Assam Rules 1971
- ✓ Building and Other Construction Workers (Regulation of Employment and Conditions of Service) Act, 1996 and Assam Rules, 2007
- ✓ Inter State Migrant Workmen's (Regulation of Employment and Conditions of Service) Act, 1979 and Assam Rules 1981
- ✓ Equal Remuneration Act, 1976
- ✓ Minimum Wages Act, 1948 and Assam Rules, 1952
- ✓ Payment of Wages Act, 1936 and Assam Rules, 1937
- ✓ Employees' Compensation Act, 1923
- ✓ Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement (RFCTLARR) Act, 2013 and Assam Rules, 2015
- ✓ Scheduled Caste and the Scheduled Tribes (Prevention of Atrocities) Act, 1989 and Rules, 1995
- ✓ Rights of Persons with Disabilities (PwD) Act, 2016

- ✓ Sexual Harassment of Women at Workplace Prevention, Prohibition, and Redressal Act, 2013
- ✓ Right to Information Act, 2005
- ✓ Assam Scheduled Castes and Scheduled Tribes (Reservation of Posts in Services) Act, 1978
- ✓ Settlement Rules under Assam Land and Revenue Regulation, 1886.

The details about provisions, Agency responsibility, Key provisions and relevance to project is summarized in *Chapter 3 of ESMF*. The link is attached here: https://ahidms.assam.gov.in/sites/default/files/public_utility/Environmental%20and%20Social%20Management%20Framework%20ASSIST_PMU.pdf

CHAPTER-4

BASELINE ENVIRONMENTAL AND SOCIAL DATA

4-BASELINE ENVIRONMENTAL AND SOCIAL DATA

4.1 Physical Environment

(a) Project Site- Azara: Azara is a locality in the western part of Guwahati, Kamrup Metropolitan district of Assam. The proposed location of the District Hospital is in the plot of Azara CHC-FRU located adjacent to NH-17 road.

The site location, description and topography can be seen with the help of the 500 m and 5 km buffer map of the project site as given in **Figure 4.1 & 4.2** below.

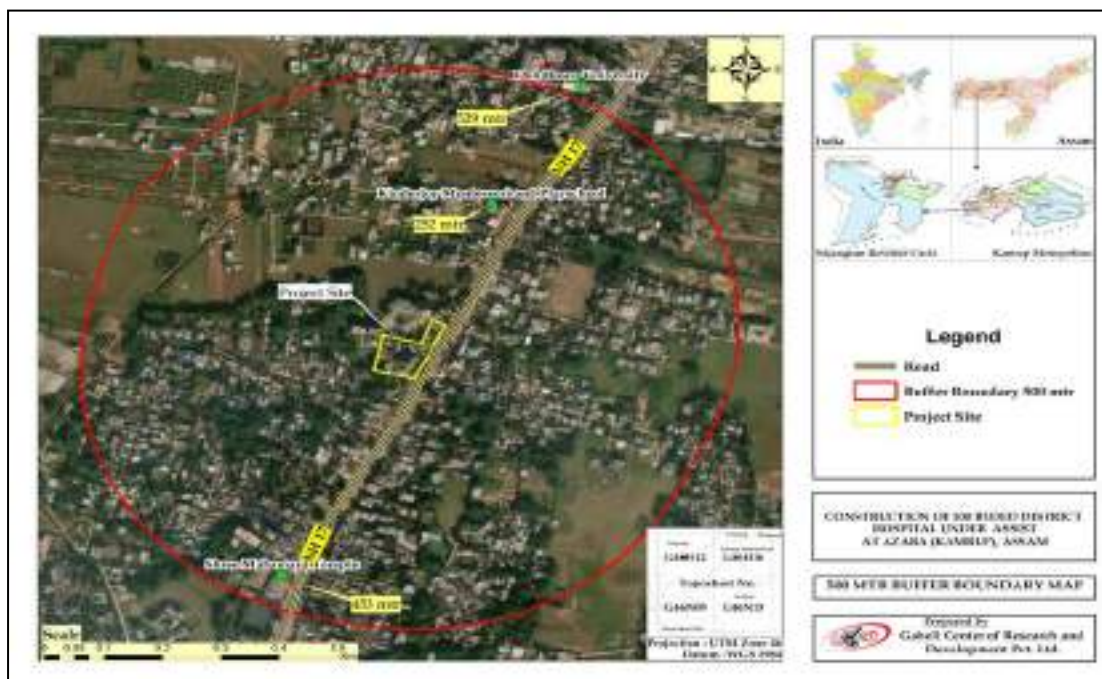


Figure 4.1: 500 m buffer map of the project site

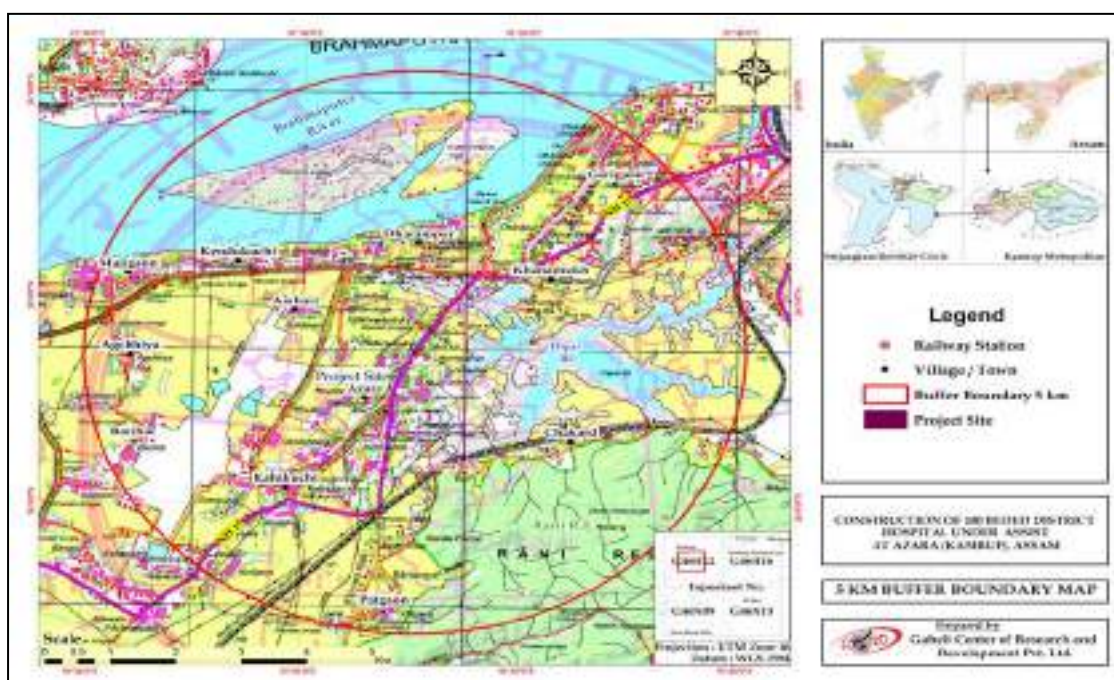


Figure 4.2: 5 Km buffer map of the project site

4.2 Climate: The climate of the area has been classified as sub-tropical humid with heavy rainfall, hot summer and high humidity. Average temperature ranges from 12 to 38°C during the year. In winter, temperature ranges from 15 to 25°C during day and 8 to 15°C during night. The summer temperature ranges from 25 to 38°C during day and 15 to 25°C during night. Average annual rainfall of the district is 1752 mm and co-efficient of variation is 15.3%. The annual normal rainfall of the district as compiled from IMD data is 2125.4 mm with 96.5 rainy days. (Source: <https://kamrup.assam.gov.in/about-district/district-glance>)

4.2.1 Rainfall

The rainfall data for the district was sourced from Customized Rainfall Information System (CRIS) Hydromet division, India Meteorological Department (IMD). The data was collected for 5 years i.e. 2016-2020. The data is presented in **Table 4.1**.

Table 4.1: Rainfall Data (in mm)

	2016	2017	2018	2019	2020
January	21.3	0	0.9	0.2	30
February	4.5	10.4	1.4	13.7	15.1
March	25	62.8	52.4	35.5	33.8
April	210.7	301.5	107.8	188.9	217.1
May	239.3	168.4	193.8	352.8	351.9
June	377.6	348.7	259.1	183.4	479.6
July	293.1	374.5	135.6	248.5	319.5
August	102.6	211.6	257.5	211.5	183.1
September	67.7	153.5	160.7	282.9	263.9
October	74	111.2	11.2	154.6	61.9
November	0.2	1.6	4.7	20.5	0
December	1.6	0.1	22.9	0.1	0
Average	118.13	145.36	100.67	141.05	162.99
Min	0.2	0	0.9	0.1	0
Max	377.6	374.5	259.1	352.8	479.6

4.2.2 Earthquake

As per the plate tectonics, Assam is in the eastern-most projection of the Indian Plate, where the plate is thrusting underneath the Eurasian Plate creating a subduction zone and the Himalayas. This led the state of Assam fall under the seismic zone V making the entire State prone to earthquake of moderate to very high intensity. The State has experienced two major earthquakes in the year 1897 and 1950. The intensities of these two earthquakes were 8.7 and 8.5 on the Richter scales respectively.

(<https://asdma.gov.in/hazardous.html#:~:text=This%20led%20the%20state%20of,the%20year%201897%20and%201950.>)

4.2.3 Flood Scenario

Based on the data available as per District Disaster Management Plan, Kamrup Metropolitan for Azara area, In the year 2020 & 2021- 9 number of villages were affected by floods however no households were affected, no death of person were reported and no cattle were affected during that time period. (Source: *District Disaster Management Plan 2022, Kamrup Metropolitan*)

The high flood line (HFL) of Brahmaputra River is 68.19 m and the danger level of Brahmaputra River is 67.00 m. In the Geotechnical Investigation Report, the existing water level in the proposed DH was 5.50 m. The lowest contour of the proposed DH is 98.50 m and highest is 100.25 m. HFL

of area is below the existing site level. As there is a drain which is passing along the site in east direction near to road. However, in rainy season, there is no problem of water logging due to it as per records and talks with locals. The supporting flood data is given in **Annexure XVIII**. The adequate measures which will be taken regarding flooding point of view i.e. plinth level of proposed DH will be considered higher than the flood level and cantilever retaining walls are also proposed to minimize the risk of water logging.

4.3 Baseline Environment Data

Base line attributes like ambient air, water, meteorology, noise, and soil were collected on 29.11.2023. Secondary data was also collected from various government department as well as local people. Methodology adopted in this study is as follows:

4.3.1 Soil Environment

The composite soil samples were collected from the study area analyzed for characterization. The locations of the monitoring sites are depicted in the **table 4.2** within the study area of the proposed project. The sample was collected by driving an auger into the soil. The present study on the soil quality establishes the baseline characteristics and identifies the incremental concentrations if any, due to the proposed project. The objective of the sampling are:

- To determine the baseline soil characteristics of the study area;
- To determine the impact of proposed activity on soil characteristics and;
- To determine the impact on soil more importantly agriculture production point of view.

The test results for soil sampling locations are provided below and map showing the monitoring location is given in **Figure 4.3** and monitoring photographs are given in **Annexure XVII**.

Table 4.2: Soil Sampling Locations

S. No	Location of monitoring	Distance from site (km)	Latitude	Longitude
1	Project site	--	26°07' 27.85" N	91°37'0.63" E
2	Garal Village	1.900	26°08' 22.58" N	91°36'26.86" E

Soil Analysis

Result obtained is compared with the standard soil classification as given in Agriculture Handbook. Two numbers of soil samples have been collected within study area and analyzed for physical and chemical properties. Samples collected from identified locations indicate that the pH value is ranging between 6.33 to 6.43 which shows that the soils in the study area slightly acidic in nature. Specific Conductivity were found within 516 to 519 $\mu\text{mhos/cm}$ and moisture of the soil samples collected were found to be ranging from 26.3 % to 27.1 %. Organic matter in these soil samples was found between 0.56% to 0.57%. Available Nitrogen value ranging from 88 to 90 mg/kg & available phosphorus varies from 11.7 to 12.2 mg/kg. The Environment Monitoring Report for soil quality analysis has been attached as **Annexure XII**.

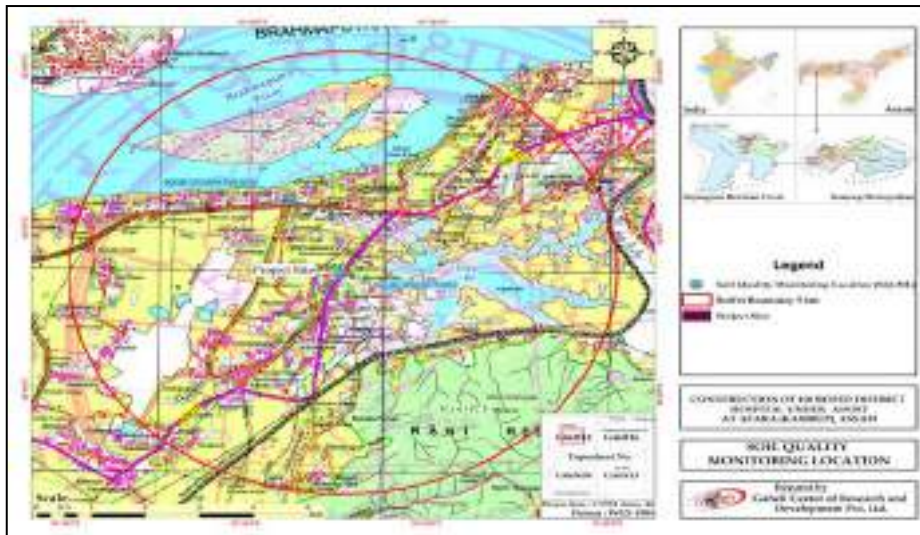


Figure 4.3: Map Showing the Soil Quality Locations

4.3.2 Ambient Air Quality

The ambient air quality at selected 05 locations was carried out as per Indian standards guidelines and monitoring stations was selected as per CPCB manual. The location of the monitoring stations with reference to the proposed project is given in the **table 4.3** and map showing the monitoring locations are given in **Figure 4.4**. Monitoring photographs are given in **Annexure XVII**.

Table 4.3: Ambient Air Monitoring Stations

S.No	Location of monitoring	Distance from site (km)	Coordinates	Criteria
1	Project site	--	26°07' 27.39" N 91°37'1.84" E	Core zone
2	Near Project site	0.009	26°07' 28.68" N 91°37'3.95" E	Commercial
3	Chandraprabha High School	0.577	26°07' 09.71" N 91°36'53.55" E	Sensitive receptor
4	Mahamaya Durga Temple	0.438	26°07' 14.22" N 91°36'54.70" E	Sensitive receptor
5	Garal village	1.849	26°08' 20.84" N 91°36'27.23" E	Residential

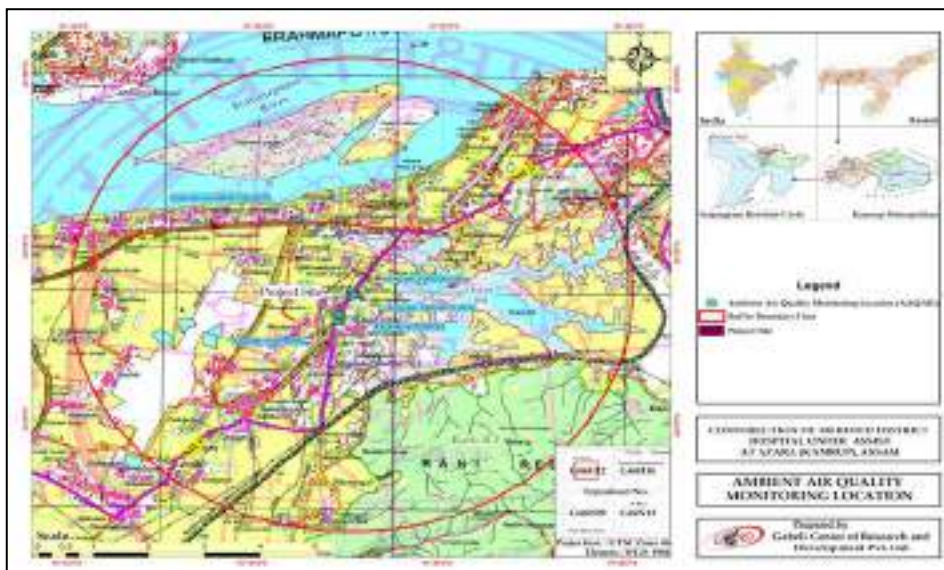


Figure 4.4: Map Showing the Ambient Air Quality Locations

4.3.2.1 Ambient Air Quality Monitoring Inference

All the measured parameters were found below the standards prescribed by CPCB, New Delhi. The Environment Monitoring Report for Ambient Air Quality has been given in **Annexure XII**.

S. No.	Particulars	Min ($\mu\text{g}/\text{m}^3$)	Max ($\mu\text{g}/\text{m}^3$)	Applicable limits($\mu\text{g}/\text{m}^3$)
1.	PM _{1.0}	11.0	24.0	-
2.	PM _{2.5}	15.0	32.0	60
3.	PM ₁₀	17.0	37.0	100
4.	SO ₂	5.2	6.3	80
5.	NO ₂	6.5	8.9	80

4.3.3 Noise Level in the Study Area

A preliminary reconnaissance survey was undertaken to identify the major noise generating sources in the area. The noise survey was conducted on 11.10.2023, to assess the background noise levels in different zones viz. industrial, commercial, and residential and silence zones.

The sampling locations for noise are confined to residential, commercial, and sensitive areas; however, no industrial area is present within the study area.

The baseline noise levels have been monitored at 05 locations within the study zone. Locations were identified for assessment of existing noise level status, keeping in view the land use pattern, industrial area, Silence Zone, residential areas in villages etc., if available within the study area. The day levels have been monitored during 6.00 AM to 10.00 PM and night noise levels, during 10.00 PM to 6.00 AM. The noise monitoring stations are shown in the **table 4.4** and map showing the monitoring locations are given in **Figure 4.5**. Monitoring photographs are given in **Annexure XVII**.

Table 4.4: Noise Quality Monitoring Locations

S.No	Location of monitoring	Zone	Latitude	Longitude
1	Project site	Silence zone	26°07' 27.65 N	91°37'01.09" E
2	Near Project site	Commercial area	26°07' 28.61" N	91°37'03.91" E
3	Chandraprabha High School	Silence zone	26°07' 09.72" N	91°36'53.43" E
4	Mahamaya Durga Temple	Silence zone	26°07' 14.38" N	91°36'54.77" E
5	Garal village	Residential area	26°08' 20.53" N	91°36'27.21" E

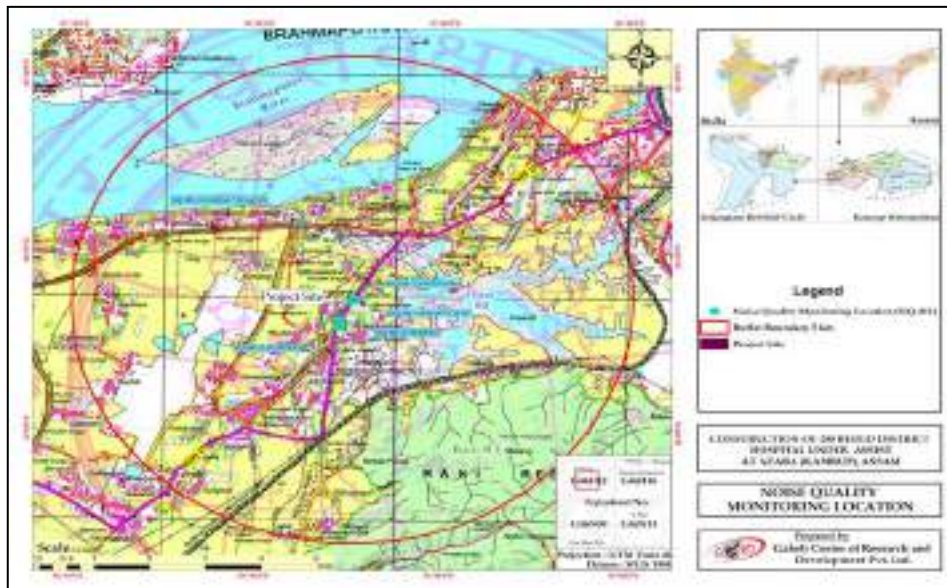


Figure 4.5: Map Showing the Noise Quality Locations

4.3.3.1 Interpretation and conclusion

Generally, noise levels in public places like temples and community hall have higher values in day time. In the study area, higher Noise level of 64.1 dB (A) was recorded during day time at near project site (commercial area) & lower Noise level of 37.3 dB (A) was recorded during night time at Chandraprabha High School. The Environment Monitoring Report for noise quality has been given in **Annexure XII**.

It was observed from the noise monitoring results that the noise levels near project site and the surrounding were on the higher side due to close proximity of the site to shops, showrooms and NH-17. However, results are within the noise standards prescribed by CPCB for residential, sensitive, and industrial areas.

4.3.4 Water

To analyze the surface and ground water quality of study area, sampling was carried out on 29.11.2023 for primary data. Sampling of surface and ground water was collected as per IS 3025 Part I. Water quality assessment is one of the essential components of Baseline study. Such assessment helps in evaluating the existing health of water body and suggesting appropriate mitigation measures to minimize the potential impact from proposed project.

4.3.4.1 Water Monitoring Sampling Locations

Ground water and Surface have been collected from the study area. The water sampling locations are provided in the **table 4.5** and monitoring photographs are given in **Annexure XVII**. Map showing the monitoring locations are given in **Figure 4.6**.

Table 4.5: Water Monitoring Sampling Locations

S. No.	Sampling Locations	Latitude	Longitude
1.	Project Site (Ground Water)	26°07' 28.56" N	91°37'03.48" E
2.	Garal Village (Ground Water)	26°08' 21.34" N	91°36'26.61" E
3.	Deepor Beel (Surface Water)	26°08' 11.25" N	91°37'36.26" E

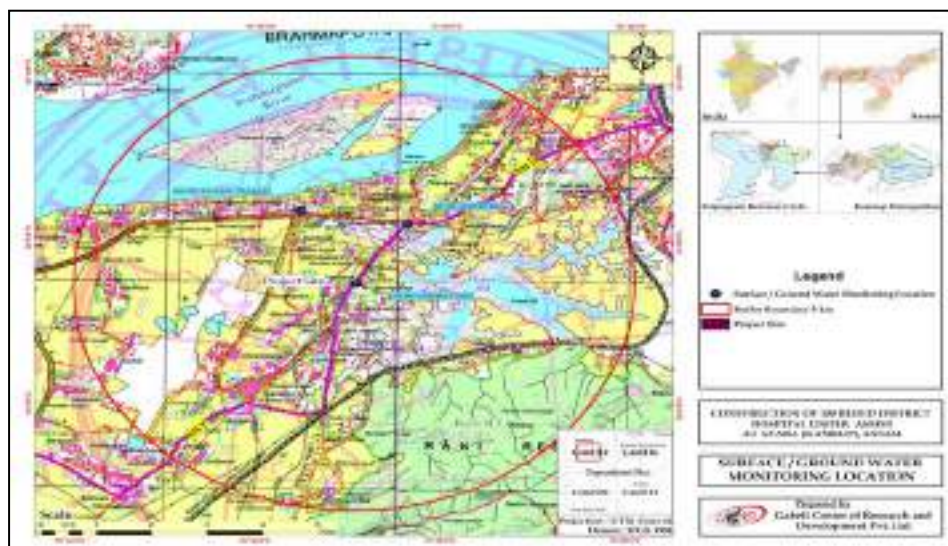


Figure 4.6: Map Showing the Surface/Ground Water Monitoring Locations

4.3.5 Ground Water Level

Average Ground water level data of the district is sourced from India Water Resources Information System (India-WRIS). The data is presented in **table 4.6** and **figure 4.7** below:

Table 4.6: Year wise Average Ground water level in the district

S. No.	Year	Average Ground water level (m)
1.	2018	2.6
2.	2019	2.54
3.	2020	2.05
4.	2021	2.39
5.	2022	2.3
6.	2023	3.91

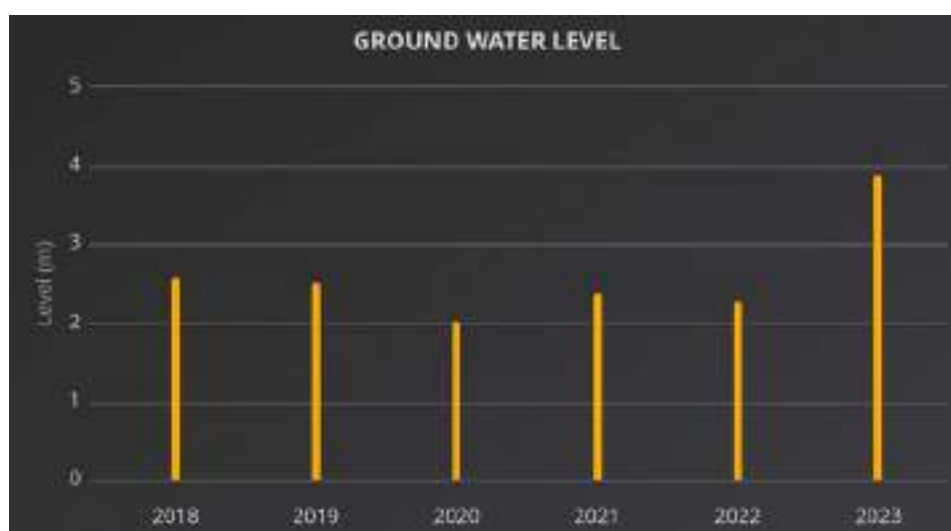


Figure 4.7: Year wise Average Ground water level in the district

4.3.6 Surface and Ground Water Quality

The available source of water at project location is bore well (with overhead water storage structure) and ring well (closed and non-functional) located within the site. Further, drinking water for existing Rural Hospital (FRU) is made available through R.O. system in the premises.

For the proposed New District Hospital, new bore well water structure with treatment facility will be provided with in the hospital premises.



Figure 4.8: Source of Water at Project site

4.3.7 Inference- Surface Water

Surface water samples were collected and analyzed and compared with Indian standard. TDS was found to be 170 mg/l, pH value was found to be 7.33 which imply that water is non acidic in nature. Total hardness was found to be 96.6 mg/l. It is seen that the physicochemical analysis of other parameters like Iron and fluoride were found within the desirable limit. The overall surface water quality of the available sources within the study area was found to be good physico-chemically with respect to all the parameters. There is no organic load observed in the sources monitored indicating no pollution load in the source.

4.3.7.1 Inference- Ground Water

The analysis results indicate that the pH for the ground water of the study area is 7.01-7.79. The TDS (Total Dissolved Solids) were found to be 100-110 mg/L which is lesser than the desired limit of 500mg/L as well as within permissible limit of 2000 mg/l. Total Hardness was also found to be 4.2-14.7 mg/L. Fluoride content was 0.020-0.032 mg/L. It is seen that the physicochemical analysis of other parameters like iron and fluoride were found within the permissible limit of IS (10500:2012).

4.3.8 Data of inflow of patients in the existing facilities

Based on records and data provided by the Hospital Authorities for the month of November 2023, it was found that:

- About 300 patients were visiting the OPD per day, IPD was 5-6 patients per day and about 30-35 deliveries per month were taking place.
- The Labor room records also included information such as age, address of patient, type of delivery, delivery outcome, Gestation (full term or premature), weight and gender of baby, complications, Hbgms %, blood group, Gravida/Parity/abortion/living children etc. On the basis of this record, it was analyzed that average age of patient during sample period was found to be 26 years and all the babies delivered were normal and alive. No high risk pregnancies are generally observed. G3P2 and G2P1 Gravida/Parity/abortion/living children was prevalent.
- Child Immunization Services are provided by the hospital which includes vaccinations of BCG, OPV-1&2, PCV-1, Pentavalent 1, 2 & 3, IPV-1, RVV-1, 2& 3, vitamin A (A1-A9)

etc. Every month about 30-35 infants and children get vaccinated for immunity against potentially life-threatening diseases.

The extracts of patient inflow data received from hospital is given in **Annexure IV**.

4.3.9 Biological Environment

The Biological Study was undertaken which comprises of primary and secondary data collection gathered during field survey and from records of Forest Dept. and published literatures.

4.4. Flora

Vegetation observed during site visit- The common trees observed are Gulmohar (*Delonix regia*), Banyan tree (*Ficus benghalensis*), Siris (*Albizia sp.*), Bakain (*Melia azedarach*), Kadamba (*Bauhinia malabarica*), Bakain (*Melia azedarach*), Sissoo (*Dalbergia sissoo*), Imli (*Tamarindus indica*), Rubber tree (*Ficus elastica*), Amaltas (*Crassia fistula*), Semal (*Bombax ceiba*), Jamun (*Eugenia jambolana*), Coconut (*Cocos nucifera*) and Bamboo etc. The herbs and shrubs observed in the area are Lantana (*Lantana camara*), Pragmites (*Pragmites karkar*), Congress grass (*Parthenium hysterophorus*), Dub grass (*Cynodon dactylon*), jimson weed (*Datura stramonium*), Barnyard grass (*Echinochloa crus galli*), Johnson grass (*Sorghum halepense*), Echinochloa, Chick weeds (*Ageratum conyzoides*) and Green giant (*Alocasia sp.*).

4.4.1 Fauna

The common fauna species observed are: Gilahri (*Funambulus pennant*), Chuha (*Bandicota abangalensis*), Nevala (*Herpestes sedwardsi*), Langur (*Presbytis entellus*), Bandar (*Macaca mulatta*), Chamgadam (*Cynopterus sphinx*), Bamboo Rat (*Rhizomys pruinosus*), dog (*Canis lupus familiaris*), Sheep (*Ovis Aries*), Cow (*Bos taurus*) etc.

The detailed list of flora and fauna is given in **Annexure V**.

4.4.2 Socio-Economic Characteristics

4.4.3 Description of the study area

In conducting the ESIA, area within 5 km radius from the “Project Site” is considered as the “Study Area”. The proposed project covers 9 Villages and 6 towns of Kamrup District in Assam State.

4.5 The salient features of the study area includes –

1. Total population of study area is **4, 91,240**. The percentages of male & female population are 51.81% & 48.19% respectively with sex ratio (number of Females per thousand Male) of the study area is 930.
2. Total household in the study area are **1, 14,157** with a family size of 4.
3. Total number of literates in the study area is **4, 05,428** (82.53%).
4. Sex ratio (number of Females per thousand Male) of the study area is **930** which shows that male population is same in the study area as compared with the female population.
5. Out of the total population, Scheduled Caste population in the study area is **34,866** (7.10%) and Scheduled Tribe population is **18,085** (3.68%).
6. Child population (0-6 years) in the study area is **44,528** which is 9.06% of the total Population out of which **23,044** (4.69%) is boys population and **21,484** (4.37%) is girls population.

4.5.1 Social Structure

a) The Schedule Caste:

The total number of Schedule caste within the study area is approximately **34866** which is 7.10% of total population with 17722 (3.61%) Male and 17144 (3.49%) are female. The graphical representation is given below.

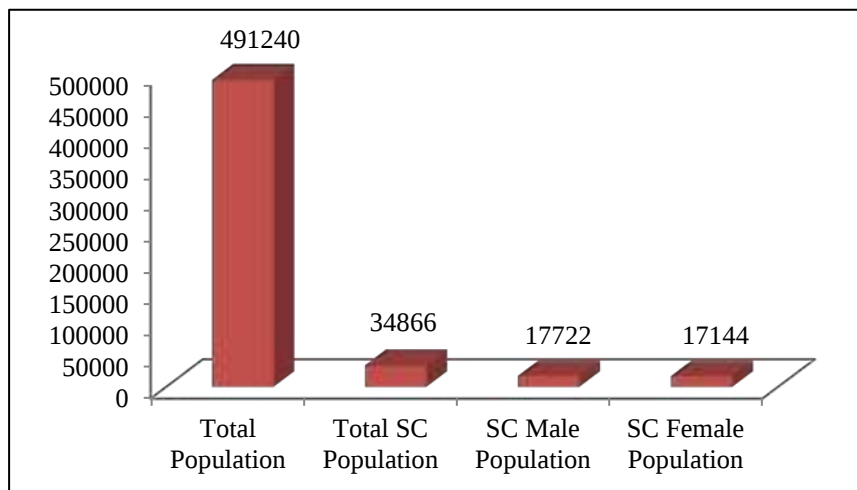


Figure 4.9: Graph Showing Schedule Caste Structure of the Study Area

b) The Schedule Tribe:

The Schedule Tribe (ST) population within the study Area is **18085** (3.68%) of the total population with 9291 (1.89%) Males and 8794 (1.79%) Females. Detailed status of social structure and their graphical representation for the same is given below –

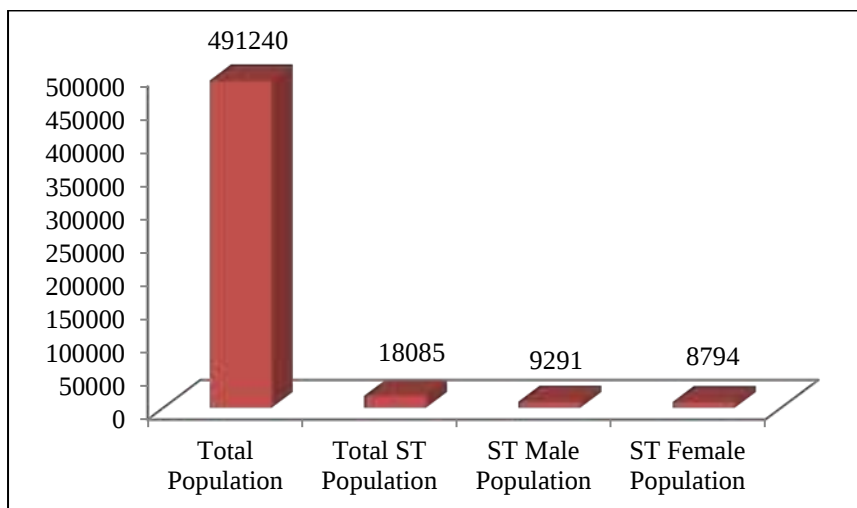


Figure 4.10: Graph Showing Schedule Tribe Structure of the Study Area

c) Literacy

The total number of literates within the study area is approximately **405428** which are 82.53% of total population. Male literacy rate of the study area is 217201 (53.57%) and female literacy rate is 188227 (46.43%). Detailed status of literacy is given below. Graphical structure of the literacy & illiteracy structure of the area is as follows:

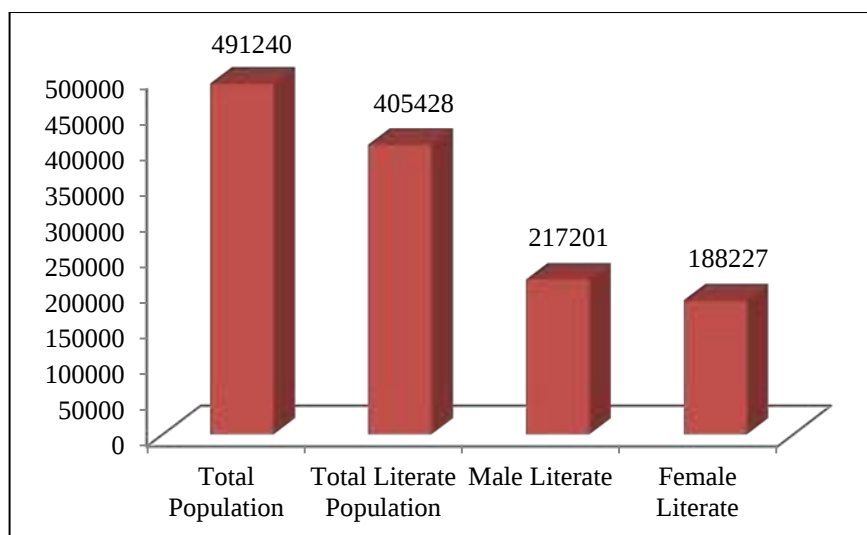


Figure 4.11: Graph showing Literacy Structure of the Study Area

d) Illiteracy

The total number of illiterates within the study area is approximately **85812** which are 17.47% of total population. Male Illiteracy in the study area is 37328 (43.50%) and female Illiteracy is 48484 (56.50%). Graphical representation for the same is given below:

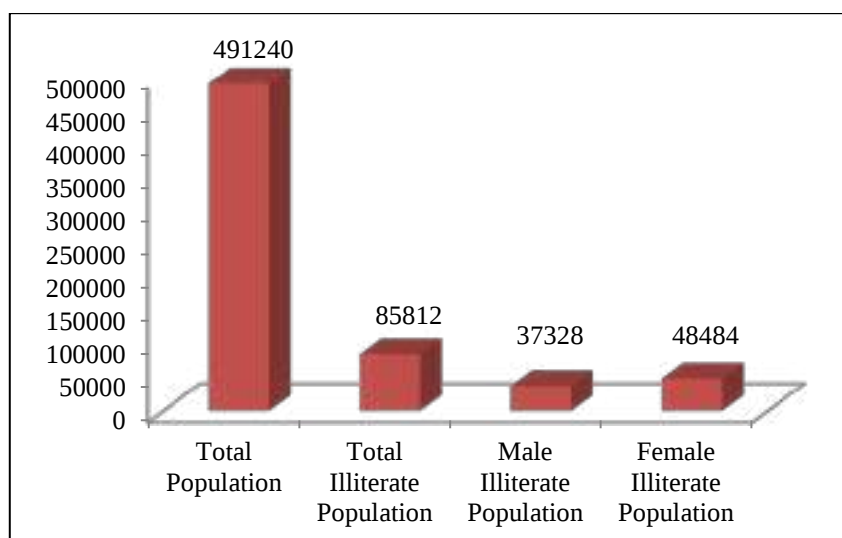


Figure 4.12: Graph showing Illiteracy structure of the Study area

The details of Demographic Structure of the Study Area is given in **Annexure VI**.

4.5.2 Occupational Structure

“Occupational Structure” of the population in the ‘Study Area’ has been studied with reference to the total workers and non-workers. Further total workers grouped into two categories “main workers” and “marginal workers”.

4.5.3 Total workers

“Work” is defined as participation in any economically productive activity with or without compensation, wages or profit; such participation may be physical and/or mental in nature.

The number of total workers in the study area is approximately **1, 89,684** (38.61%) out of which 148898 (78.50%) are male and 40786 (21.50%) are female workers.

Total workers further divided into main workers and marginal workers –

(i) Main Workers

The workers who had worked for the major part of the reference period (i.e. 6 months or more) are termed as “Main Workers”. Total number of main workers in the Study Area is approximately 164398 persons, which is 86.67% of total workers and 33.47% of total population.

(ii) Marginal Workers

Marginal Workers are those workers, who are engaged in some work for a period of less than six months, during the reference year prior to the census survey. Total number of marginal workers in the Study Area is approximately 25286 persons which, is 13.33% of the total workers and 5.15% of total population.

4.6 Non Workers

The non-workers include those engaged in unpaid household duties, students, retired persons, dependents, beggars etc. More than half 63375(61.39%) of population is not working. 35.03% of male population and 64.97% is female population are non-workers.

The percent distribution of Occupational pattern within the study area is given in the table below. Occupation structure of each village in the study area is tabulated below and the graphical representation has also been provided.

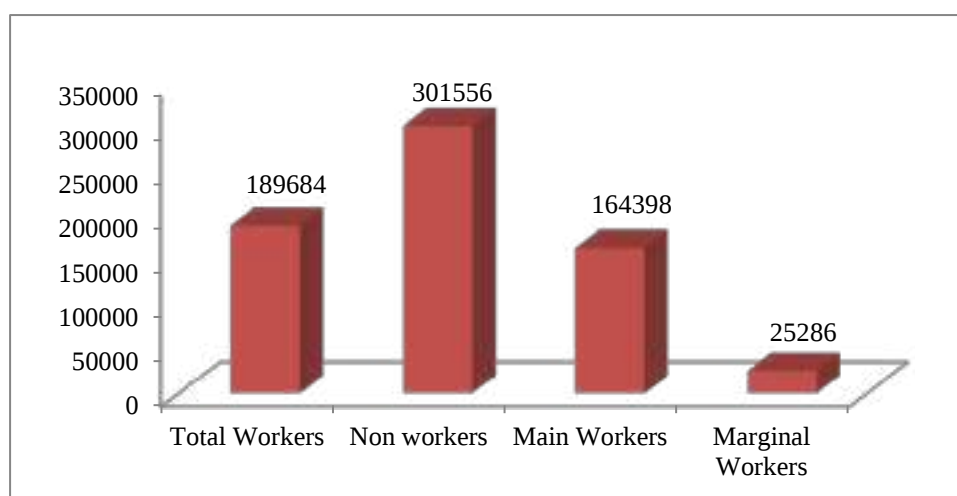


Figure 4.13: Occupational Pattern in the Study Area

The details of Occupational Pattern of the Study Area is given in **Annexure VII**.

CHAPTER-5

ENVIRONMENT AND SOCIAL RISKS AND IMPACTS

5. ENVIRONMENT AND SOCIAL RISKS AND IMPACTS

5.1. Introduction

This Chapter identifies and discusses both positive and negative impacts associated with the proposed project. Screenings of potential environmental impacts are categorized into three categories considering project phases: pre-construction impacts, construction impacts and operations and maintenance impacts.

Screening of environmental impacts has been assessed on the basis of screening format for Environment & Social Risks/Impacts as given in ASSIST-ESMF (Jan-Feb 2023), baseline data collected through primary as well as secondary sources and stakeholder consultations.

5.1.1. Pre-Construction Impacts

i. Consents, permits, clearances, no objection certificate (NOC), etc.

All the consents, permits, clearances, and NOCs should be obtained before start of construction activities. Failure to obtain necessary consents, permits, NOCs, etc. can result to design revisions and/or stoppage of works. Suggestive list of consents, permits, NOCs etc. required before construction works are given in table below:

Table 5.1: Suggestive lists of consents, permits, NOCs

S.No	Construction Activity	Statute under which Clearance is Required	Responsibility
1	Establishment of new 100 bedded DH /Temporary Labor camps / storage of construction materials batching plant etc.	Pre establishment permission (consents, authorization) from Assam Pollution Control Board.	Contractor
2	Tree Cutting (if required)	Assam State forest department	Contractor
3	RMC/Batching plants (if required)	Consent to establish and consent to operate under Water and Air Act, 1981 from ASPCB	Contractor
4	Use of vehicles and equipment	Pollution under control certificate (PUC) form RTO	Contractor
5	Temporary water supply and Electrical Connections for work site and camps during construction phase	Concerned local state department	Contractor
6	Labor License	Concerned local / state department	Contractor

ii. Other activities

Table 5.2: Pre-Construction Activities and its Anticipated Risk

S. No	Pre-Construction Activity	Anticipated Risk/Impacts
1.	Site clearance	- Azara CHC along with old staff quarters and office room exist in the site of proposed DH. These structures may required to be demolished for construction of new DH at the site. - Presently, 4-5 electric poles, 1 ring well, 1 bore well (with

		overhead water storage structure) exist at site. Some of them may be shifted or demolished. At present, 40-45 trees are present at the proposed DH site. 30-35 trees will be retained and rest will be cut
2.	Site Selection	Selection of proper sites for Construction worker camps, stockpile areas, storage areas and sources of materials safeguarding environmental and social concerns governing the same.
3.	Debris disposal	Prior to the commencement of works, contractor shall identify a debris disposal site (possibly near to project site) in consultation with local body and implementing agency. It will prevent impending soil and water pollution to be caused by construction activities. Further, Asbestos is not a part of debris disposal site as there is no generation of asbestos at the site.
4	Consultations	- Lack of awareness on the project among community may restrict public participation in decision making - Lack of knowledge on the facilities to be provided by the proposed DH at their own neighborhood will prevent them from availing the facilities. - Lack of prior intimation of the demolition and construction activities may lead to health hazards caused by probable air, water and noise pollution.

5.1.2. Construction Phase Impacts

Table 5.3: Construction Activities and its Anticipated Risk

S. No	Concerns	Anticipated Risk
1.	Demolition of existing structures	Generation of noise and dust emissions. Demolition materials may be scattered and thrown away in a manner that may cause hindrance to neighborhood and in the access routes
2.	Ground Water	Ground water contamination and Ground water depletion due to construction works and machine operations
3.	Surface Water	Temporary flooding at site and nearby areas and contamination of the surface water bodies in and around site
4.	Ambient Air Quality	Dust Emissions (PM), SO ₂ , NO ₂ and CO from construction activities, Vehicular movement, DG sets
5.	Noise and visual impacts	Environmental noise can cause Hearing impairment, hypertension, and ischemic

		heart disease (IHD), annoyance and sleep disturbances. Noise exposure may also cause birth defects
6.	Land Environment	Loss of topsoil , soil erosion , and soil contamination due to construction activities
7.	Waste Management	Water pollution, emissions and soil degradation
8.	Storm Water Management	Poor sanitation, drainage problem which results in water running over roads and water logging.
9.	Hazardous material storage and waste handling & disposal	Storage and handling of hazardous substances: substances that may harm people or the environment shall be handled and stored in a way that prevents accidental release.
10.	Energy Efficiency	Loss of natural resources
11.	Fire Fighting	Loss of Life and Property

5.1.3 Operation Phase Impacts

The project has positive impact on the society as provider of health care services to the local people. This will alleviate the overall health status of the local people in terms of affordable health care services.

During the operational phase, various impacts relating to the functioning of the healthcare facilities supported under the project are summarized below:

Table 5.4: Anticipated Risk during operation phase

S. No	Concerns	Anticipated Risk
1.	Consent to Operate under Air & Water Act	Violations to applicable environment norms, which overall affects the start of operations of proposed project.
2.	Authorization for Handling, Storage, Treatment of BMW under BMW Rules	Violations to applicable environment norms, which overall affects the start of operations of proposed project.
3.	Air Pollution	Emissions from vehicular movement and functioning of DG sets are envisaged.
4.	Water	Risk of Ground water contamination is envisaged.
5.	Solid waste	Risk of Improper solid waste generation is envisaged.
6.	Infection control	Improper handling and disposal
7.	Occupational Health and Safety	Health, Hygiene and Safety of employees
8.	Life and fire safety	Loss of Life and Property

The Environment Health and Safety (EHS) committee assisted by other members of healthcare facility will be formed which will do the best to minimize the environment and social risk.

5.2 Social Risks

The social risks are rated as **Moderate** considering the up gradation, repair and renovation and infrastructure improvement as well as activities related to systems improvement. The anticipated risks include:

1. Temporary disruption/delay of health services due to change in location of existing medical facilities (to nearby areas) during construction of the District Hospital
2. Temporary relocation of staff accommodation.
3. The site is located at a public thoroughfare adjacent to national highway. Hence addressing Community Health and Safety during construction is important to prevent sickness, injury and accidents of local people arising out of the construction activities at the site.
4. In the construction phase, approx. 50 workers (preferably local) including both skilled and unskilled workers will be engaged at site. The workers for civil construction (on contract basis- on payroll of construction agency will be employed for the period of one year initially; later on, contract will be extended further. Several workers including casual laborers, plumbers, and engineers are expected to work on the site. Occupational Health and Safety of the workers is utmost essential as it could prevent risks of injuries and accidents, health, hygiene and safety of workers. Public inconveniences due to disruption of supply of power, water or sanitation facilities due to site clearance or project execution activities.
5. Potential conflict between migrant workforce and local may took place
6. Chances of finding archaeological /cultural artifacts
7. Loss of agricultural productivity
8. Issues and concerns of Road safety to patients and hospital staff, pedestrians and community, disturbance to patients from noise and any trespassing by workers
9. During construction phase, probable incidents of gender based discrimination in employment and Sexual Exploitation and Abuse/ Sexual Harassment (SEA/SH) of women workers at site (consultants and contractors staff & laborers) as well as in the community in and around may take place.

5.3. Road Safety and Traffic Measures

The proposed DH site of Azara is adjacent to national highway and surrounded by residential as well as commercial area. However the proposed site is a closed premise bounded by distinct wall and gate. Separate routes for transportation of vehicles for construction are planned in the site to avoid public inconveniences the road will be metaled and regularly water will be sprinkled during construction activities. During construction, transportation during busy traffic hours will be avoided and time schedules will be prepared for transportation of construction materials in consultation with the authorities concerned.

CHAPTER-6

STAKEHOLDER ENGAGEMENT

CHAPTER 6-STAKEHOLDER ENGAGEMENT

6.1. Introduction

Stakeholder Engagement is a process made to involve the public as stakeholders in project preparation through consultations and focus group discussion meetings. Stakeholder Engagement seeks to provide a transparent engagement and open communication between and among the project stakeholders to maximize participation and inclusion for project design, implementation, monitoring and evaluation; enhance project acceptance and improve the environmental and social sustainability.

The main objectives of undertaking these consultations are dissemination of information to build awareness among stakeholders and inform them about the objective, the adverse and positive impacts, design aspects of the project and discuss about the training requirements to enhance their skills and livelihood options.

6.2 Key Stakeholders

(i) **Affected Parties** are impacted or likely to be impacted directly or indirectly, positively or adversely, by the Project.

The Stakeholder engagement with affected parties such as patients, healthcare workforce and social activist (influencer) was undertaken.

(ii) **Interested Parties** may have an interest in the Project. They include individuals or groups whose interests may be affected by the Project and who have the potential to influence the Project outcomes in any way.

The Stakeholder engagement with interested parties such as social activist (influencer), ASHA workers was undertaken.

(iii) **Vulnerable Groups** include:

- Patients: Elderly, persons with disabilities, persons below poverty line, female and minor patients at heightened risk of gender-based violence, ethnic minorities, LGBTQI.
- Communities affected by the construction activities: Scheduled tribes (ST), scheduled castes (SC), and communities living in remote and hilly locations, female headed households, illiterate and poor population.

6.3. Methods of Stakeholder Engagement

Different tools were employed in interviews conducted and discussions ranged from informal and undirected to formal and directed.

6.3.1. Stakeholder Consultation

As part of the ESIA process, the project team has undertaken consultation with the stakeholders of the project to understand their expectations from the proposed project. The main objective of the stakeholder consultation is to develop an understanding and awareness on the project among the different stakeholders, assess the level of stakeholder interest and support for the project, and to ensure that appropriate measures for mitigating environmental and social risks and impacts are disclosed to stakeholders in a timely, understandable, accessible and appropriate manner.

6.3.2 Stakeholder engagement Meeting

Stakeholder engagement meeting for the proposed DH has been conducted on 29.11.2023 at Azara 30 bedded rural hospital (FRU), Azara, Kamrup, Assam. The meeting was attended by 18 people

including (i) SDM&HO, Azara (ii) DNO, AYUSH, Representative of Joint Director, Kamrup, Assam (iii) Dy. Superintendent, Rural Hospital (FRU) Azara (iv) Block Program Manager, Azara BPHC (v) health workers (vi) locals (vii) patients (viii) local chemist representative (ix) social activist (influencer) (x) Accredited Social Health Activist (ASHA) Workers. The attendance sheet is given in **Annexure VIII**. The photographs of stakeholder engagement are given in **figure 6.1**.



Figure 6.1: Photographs of stakeholder engagement

6.3.3 Information, Education and Communication (IEC)

The Information, Education & Communication (IEC) aims to create awareness and disseminate information regarding the benefits available under various schemes/programmes through banner, leaflets, posters, announcements, newspaper, notices, signages, social media etc. The aim of such advertisements is to encourage people to adopt positive behavior, raise awareness and disseminate information regarding availability and access to quality healthcare

provided by the Government. Snippets of incorporation of IEC in the Azara CHC-FRU are shown in the figure below:



Figure 6.2: Banners and posters displayed Azara CHC-FRU

6.3.4. Outcome of the stakeholder Consultation

During stakeholder consultation, dissemination of information for building awareness about the project was discussed. The outcome of the meeting was that there is inadequate facility present for Cesarean section cases, as presently they have to go to Guwahati Medical College & Hospital (GMCH) which is far away from the existing PHC.

All the stakeholders support the proposed development of District Hospital project. A few Local patients wants additional facilities for Labor patients, Medical officer and other doctors suggested that there should be proper speed breakers and barricading near hospital to prevent accidents and manage traffic during peak hours as the site is located at close vicinity to NH-17. The proposed project will cater to all the concerns of stakeholder once it gets start functioning. The key suggestion given by stakeholder are presented in table below:

Table 6.1: Key issues and suggestions of different Stakeholders

S. No.	Stakeholders	Commitment made during the Stakeholder Engagement meeting
1.	Medical Officer	• Dr. Dharendra Kr. Das, Deputy Superintendent, is the representative of the Rural Hospital (FRU) Azara. • He supports the proposed project. • He ensured safe disposal of biomedical waste will be done and in operation phase, an agreement with Fresh Air (CBMWTF), Guwahati will be done for disposal of BMW. Present mode of BMW disposal is through Sharp pits and Deep Burial at the site. • They will ensure all the activities related to healthcare facilities are followed. • There will no discrimination on the basis of gender, age, and color. • Also he suggested, as the project is located at a close vicinity to NH-17, the doctors suggested for proper speed breakers and barricading near hospital to prevent accidents and manage traffic during peak hours.
2.	Contractor	• Discussed about the project components and site wise details • Equal wages will be given without discrimination on the basis of gender, age and color • Temporary labor camp will be provided with crèche for children (proposed). • To provide the basic facilities like safe drinking water, mobile toilets, LPG for cooking, firewood from local market and mobile STP/septic tank. • Fencing of the project during construction phase • Green net covering for loose building material will be done and C&D waste will be recycled and reused within site. • Hospital Authorities will appoint the contractor and he will abide by the applicable norms during construction phase of the project.
3.	Architect	• Provision of ramps, separate Washroom facilities for people with special needs, Common public spaces and reserved parking spaces for Handicapped. • Selection of local & indigenous plant species for greenbelt development. • Use of energy saving appliances and fixtures.

		• Provision of Dual plumbing, Rain Water Harvesting and use of solar energy • Adequate parking provision for smooth traffic movement • Solid waste management through on site Organic Waste Converter • Waste water treatment through on-site STP and ETP
4.	Locality within 100 m from the hospital building	• Mr. Pramod Kalita (Kamrup) and Banamali Das (Azara Gosaipara) attended the consultation meeting. • They supported the proposed project and believed that the project would greatly help in development of the area and significantly change health standard of the locals.
5.	Pharmacist, Reliable Pharmacy, Azara, Guwahati	• Pharmacist of Reliable Pharmacy, Azara, Guwahati supports the project. • He has given NOC in the support of the project and given in Annexure VIII.
6.	Unicare Multispecialty Clinic and Diagnostic centre (Diagnostic Lab)	• Mr. Sariful Islam from a Unicare Multispecialty Clinic and Diagnostic centre has no objection from the proposed project and supports it. • He has given NOC in the support of the project and given in Annexure VIII.
7.	Others/NGO/ASHA Workers/ social worker/influencer	• Mrs. Labanya Das Medhi, Ms. Asida Begum Health activist, ASHA discussed on the benefits of the project and supported it. • They suggested for inclusion of restrooms (beds) with drinking water and sanitation facility for ASHA workers. • Mr Gopal Charan Das a prominent social influencer of the area was a part of the Stakeholder Meeting. He was fully supporting the upcoming project and ensures the full cooperation of the local people in it.

8.	Patients (Vulnerable Group)	- Mr. Pramod Kalita attended the Stakeholder Engagement meeting under vulnerable group (patient). - He was happy with the services available at the hospital and was in support of the up gradation of existing facility to proposed DH. - Various Pregnant women, Elderly patients and Patients with Disabilities were interacted and informed about various ongoing Govt. Insurance Schemes such as Pradhan Mantri Jan Arogya Yojana (PM-JAY) and Janani Suraksha Yojana (JSY).
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6.4. Cost for implementation of IEC, Community meetings and Awareness & Training

The budget for the same has been allocated and mentioned under **table 6.2** given below:

Table 6.2: Cost for implementation of IEC, Community meetings and Awareness & Training

S. No.	Particular	Stage	Total Cost INR
1.	IEC Development (Banner, Leaflets, posters, announcement costs, new paper Notices, signage, etc.)	Pre-Construction, Construction and facility operation phase	1,00,000/-
2.	Community meetings in nearby locations	Construction	50,000/-
3.	Awareness & training programs with Stakeholders	Construction	2,00,000/-
Total			3,50,000/-

CHAPTER-7

ENVIRONMENT AND SOCIAL MANAGEMENT PLAN (ESMP)

7- ENVIRONMENT AND SOCIAL MANAGEMENT PLAN (ESMP)

7.1 Environment and Social Management Plan: Introduction

The objective of ESMP is to manage and monitor environmental and social impacts during the **pre-construction, construction and operation phase** of the proposed project. To attain this, the ESMP identifies possible adverse impacts from the proposed project activities and outlines mitigation measures required to reduce the likely negative effects on the built, natural and social environment.

ESMP is covering the following parameters-

1. Legal Consents, permits, clearances, NOCs, etc. required before the commencement of the project.
2. Existing condition of Air Environment, Noise Environment, Water Environment (Ground water/ Surface Water) and Biological Environment and impact induced on these during the Pre-construction, Construction and Operational Phases.
3. Community Health and Safety, Labor welfare, Occupational Health & Safety, Transportation and Vehicle Movement, Socio-economic condition during and after commencement of the project.
4. Key areas/activities/concerns resulting in adverse environmental and social impacts and its mitigation measures including impacts, operating procedure and agencies that would be responsible.
5. Estimation of potential environmental and social impacts and their mitigation measures given in **Table 7.1.** below:

Table 7.1(i): Environmental and Social Risks/Impacts assessment and Mitigation Measures during Pre-Construction Phase

Key Area/Activities/Concerns	Potential E&S Risks and Impacts	Proposed Mitigation Measures	Responsibilities
Consent to Establish from Assam State Pollution Control Board, Land ownership documents from Government of Assam, tree cutting permission from Assam State Forest Department.	Non availability of the necessary consents or permits can result in stoppage of further processing of works.	➤ Ensure availability of necessary consents, clearances and permits, land compensation, design, engineering, equipment, material, construction, erection, testing & commissioning.	Contractor, Joint Director, DH& Project In-charge
Site Clearance	Presently, 4-5 electric poles, 1 ring well, old staff quarters, office room and 40-45 trees are present and they may possess the risk during the development of new building structures.	➤ Electric poles will be shifted within the site to a safe place under the guidance of a concerned person. ➤ Ring well will be closed as it is an old structure. ➤ Staff quarters will be temporarily shifted to nearby town area within 1.0 to 2.0 Km. ➤ 30-35 trees will be retained and rest will be cut. ➤ Use barriers to protect tree trunks from mechanical injuries caused by construction equipment. ➤ Maintain a regular watering schedule to support tree health throughout the construction process, especially during dry periods. ➤ Regularly monitor the condition of	Contractor, Joint Director, DH & Project In-charge

		protected trees and adjust protection measures as needed to respond to potential stress or damage. ➤ Mark and provide sign boards in order to prevent any mishap.	
Archeology and Cultural Heritage	Not within 5 km Radius of the study area; A historical type Structure Chatrakar Temple is located at a distance of 16.105 km.	➤ The proposed District Hospital Project will be implemented within the assigned boundaries which is not considered archeological or cultural heritage site nor at a close vicinity to the project; therefore, no impact expected from this component.	NA
Site Selection	Selection of site for Construction worker camps, stockpile areas, storage areas, sources of materials	➤ For establishing temporarily workers camp, the priority should be to locate these near the subproject sites. ➤ The temporary workers camp, storage of fuel and lubricants should be avoided near any water body, at land being used for production of crops, near to any sensitive area. ➤ Prior permission is required from concerned agency for establishing workers camps, stockpile areas, storage areas. ➤ Verify the suitability of all material sources and to obtain the approval of applicable department and local revenue administration.	Contractor, Joint Director, DH & Project In-charge

Debris disposal	Prior to the commencement of works, contractor shall identify a debris disposal site (possibly near to project site) in consultation with local body and implementing agency.	➤ The site shall be selected preferably from barren, infertile lands. ➤ Prepare a construction and demolition waste management plan in preconstruction phase for safe disposal (no asbestos generation). ➤ As the proposed DH is surrounded by residential area, at the time of selecting the disposal site minimum distance criteria will be followed and minimum 800 m (Deepor Beel) away from sensitive locations like hospitals, religious places, ponds/lakes or other water bodies.	Contractor, Joint Director, DH & Project In-charge
Stakeholder Engagement	Lack of awareness on the project among community may restrict them from participating in decision making and knowing about the facilities to be provided by the proposed DH at their own neighborhood thereby preventing them from availing the facilities. Further lack of prior intimation of the demolition and construction activities may lead to health hazards caused by probable air, water and noise pollution.	• Prior intimation to the public about the time and the duration of the utility disruption through concerned agency. • Stakeholder consultation for ○ allowing them to participate in decision making for the proposed DH ○ making people aware of the proposed DH and the facilities to be provided by the DH at specific intervals with representation from all the sections of the community in and around the proposed site including women members of the community. ○ responding to their queries regarding, proposed DH, construction activity etc..	Contractor, Joint Director, DH & Project In-charge

Table 7.1(ii): Environmental and Social Risks/Impacts assessment and Mitigation Measures during Construction Phase

Key Area/Activities/Concerns	Potential E&S Risks and Impacts	Proposed Mitigation Measures	Responsibilities
Disruption of Health services at CHC	Temporary disruption/delay of health services due to change in location of existing medical facilities (to nearby areas) during up gradation of PHC and renovation and construction of District Hospital.	There will be no delay in health services at the site, as OPD services (emergency services) will be continued from a part of existing FRU building for approximately 6 months, then these services will be moved to mini Garal PHC (1.834 km). Major OT and NBSU will be shifted to Rani CHC. So no major problem in this regard.	Project In-charge
Relocation of Staff Accommodation	Temporary relocation of staff accommodation	Staff members of hospital will be temporarily shifted to nearby town area within 1.0 to 2.0 Km area of the site as discussed in the stakeholder engagement meeting.	Project In-charge
Demolition of brick wall/ existing structures	Noise, dust, disruption of the neighborhood, underground or overhead services (if any) etc.	➤ Structures to be demolished should be wetted through water sprinkling to reduce dust emission. ➤ C&D rules and mitigation measures should be displayed at the project site. ➤ Green net fencing (3m high) all around the site. ➤ The location of any underground or overhead services (water, electricity, gas, etc.) ➤ Appropriate site for storage and disposal of demolished materials (properly	Contractor

Key Area/Activities/Concerns	Potential E&S Risks and Impacts	Proposed Mitigation Measures	Responsibilities
		covered) ➤ All the safety measures such as providing appropriate Personal Protective Equipment (PPE) should be adopted during demolition activities. ➤ Development of greenbelt in and around project site. ➤ A Management Plan for Construction and Demolition waste is prepared and attached as Annexure- I.	
Ground Water	➤ Ground Water Contamination ➤ Ground Water Depletion	➤ Waste water generating at the project site will be disposed of in the septic tanks/soak pits conforming to CPCB/ASPCB norms. ➤ Waste water generated will be treated in a STP in operational phase. ➤ Disposal of liquid waste from Labs, blood bank, O.Ts etc during operations phase shall be disposed through proposed ETP in operational phase. ➤ Will use the available water more efficiently. ➤ Will use Re-cycled water ➤ Use of Water Efficient fixtures like flow regulators & dual flushing cisterns ➤ Provision of RWH pits to collect rain water for ground water recharge.	Contractor and Project In-charge

Key Area/Activities/Concerns	Potential E&S Risks and Impacts	Proposed Mitigation Measures	Responsibilities
Surface Water	Surface water contamination	➤ Curing will be done by spraying water to reduce run-off. ➤ It will be ensured that surface water runoff will be disposed through proper drainage channel to minimize the contamination risk. ➤ Rain water harvesting	Contractor
Ambient Air Quality	Dust Emissions (PM), SO ₂ , NO ₂ and CO from Construction activities, Vehicular movement, DG sets	➤ Water sprinkling will be carried out. ➤ Regular sweeping of construction site ➤ Construction material & debris carrying vehicles will be covered. ➤ Regular monitoring of emissions and control measures will be taken to reduce the emission levels. ➤ Use of low sulfur diesel. ➤ Regular maintenance and servicing of vehicles. ➤ Stack height of DG set as per CPCB standards ➤ Use of low sulfur diesel ➤ Developing of Green belt ➤ All vehicles must carry Pollution under Control Certificate. ➤ All transportation/vehicle movements for material transport shall be carried out during 10.00 pm to 6.00 am ➤ All the material shall be properly covered	Contractor in consultation with hired consultant (environment monitoring)

Key Area/Activities/Concerns	Potential E&S Risks and Impacts	Proposed Mitigation Measures	Responsibilities
		at site as well as during transportation so that the dust cannot get airborne ➤ Hard barricading shall be provided around the construction site ➤ Regular ambient air monitoring (twice a year)	
Noise and visual impacts	➤ Environmental noise can cause Hearing impairment, hypertension, and ischemic heart disease (IHD), annoyance and sleep disturbances. Noise exposure may also cause birth defects	➤ Construction activities involving high level noise generation will be restricted to day time only. ➤ Provision of ear muffs to workers. ➤ Use of machinery of modern make meeting the noise standards ➤ Development of green belt. ➤ DG sets will be provided with acoustic enclosures and will be placed in a room to reduce noise level. ➤ Proper traffic management & circulation. ➤ Honking will be prohibited in the premises. ➤ All vehicles will carry PUC. ➤ Regular ambient noise monitoring and work site noise monitoring	Contractor
Land Environment	Soil Contamination	➤ Construction debris will be used for leveling or sent to authorized site or disposal ➤ Proper work management to avoid spillage	Contractor

Key Area/Activities/Concerns	Potential E&S Risks and Impacts	Proposed Mitigation Measures	Responsibilities
		➤ Excavated topsoil will be re-used for landscaping in the project area.	
Waste Management	Water pollution, emissions and soil degradation	➤ Estimation of waste generated, on site handling, storage and processing, collection, transfer and transport, processing and recovery & disposal through following methods. ➤ Installation of STP for domestic effluent and ETP for liquid BMW separately. ➤ Garbage chute system/color coded bins for segregation of waste for both domestic and biomedical waste. ➤ Organic Waste Compost Machine for 100 Kg/Day Waste per Day will be installed.	Contractor in consultation with Architect
Storm Water Management	Poor sanitation, drainage problem which results in water running over roads and water logging.	➤ Re-establish the drainage pattern to the extent practicable. ➤ Provision of dual plumbing system/ two pipe (stack) system and use of zero liquid discharge technology. Water balance chart is attached in Annexure XIII. ➤ The rain water to be diverted using rainwater pipes to the drainage network. ➤ The entire site storm water to be diverted into the rainwater harvesting well for recharging the aquifer and the surplus will be connect to the municipal drain.	Contractor in consultation with Architect
Transportation and Vehicle	Increase in volume of traffic	➤ Proper Traffic Management & circulation	Contractor and Project In-

Key Area/Activities/Concerns	Potential E&S Risks and Impacts	Proposed Mitigation Measures	Responsibilities
Movement		with adequate lighting and signage system. ➤ Provision of adequate parking spaces as per Norms. ➤ Trained and qualified drivers/operators. ➤ Separate routes for the movement of machineries and vehicles away from the patients/visitors route. ➤ Regular checks and inspections for the ambulances and other vehicles. ➤ Traffic Survey was conducted near the vicinity of the project and details of survey forms and its analysis are given in Annexure-X.	charge
Hazardous material storage and waste handling & disposal (no asbestos generated)	Storage and handling of hazardous substances: substances that may harm people or the environment shall be handled and stored in a way that prevents accidental release.	➤ Drip trays shall be placed under leaking under vehicles and other equipment to prevent spills of hydrocarbons reaching the soil or watercourses. ➤ Storage of hazardous substances shall have secondary containment, so that leaking liquids can be contained in the event of a failure. Secondary containment should ideally have a capacity of at least 110% of the holding capacity of the primary storage. ➤ To avoid leaks, proper funnels should be used when decanting to other containers.	Contractor and Project In-charge

Key Area/Activities/Concerns	Potential E&S Risks and Impacts	Proposed Mitigation Measures	Responsibilities
		It is recommended to use a hand pump rather than a funnel and smaller containers for frequent/routine transfers from one container to another (or to a vehicle tank). ➤ Disposal of waste from site must only be carried out as per the applicable rules and regulations in an authorized and licensed areas / facilities.	
Occupational Health and Safety	➤ Workers Injuries ➤ Health, Hygiene and Safety of Workers during construction activities	➤ Comply with the labor laws. ➤ Provide training on health and safety to all the workers. ➤ Ensuring all workers are provided with personal protective equipment's like helmet, gumboot, safety belt, gloves, nose mask and ear plugs. ➤ Provision of harness, lifts etc. for workers working on heights ➤ Ensuring that qualified first-aid is provided along with a First-Aid Room at Site. ➤ Provide medical insurance coverage for workers. ➤ Provide worker's accommodation which may include Provision of fuel for cooking, proper & hygienic lodging/living facility, proper toilets & bathroom, liquid and solid waste management facilities for	Contractor and Project In-charge

Key Area/Activities/Concerns	Potential E&S Risks and Impacts	Proposed Mitigation Measures	Responsibilities
		workers and safety measures in labor camps ➤ No child labor will be employed. ➤ Emergency Readiness Plan to be displayed at a prominent site ➤ Training to workers on emergency readiness. ➤ During construction activities local's workers will be preferred. ➤ Adequate training through regular awareness programme for safe working at construction site, mock drills, use PPE kits, dust masks, basic amenities for workers. ➤ Occupational Health and Safety Plan is attached as Annexure XIV.	
Community Health and Safety	➤ Injury, accidents and sickness of workers and local people ➤ Restricted movement of visitors within the facility premises	➤ Organizing regular health check-ups and creating awareness about diseases like on communicable diseases like COVID, Tuberculosis, HIV and STDs. ➤ Alternative and safe routes for patients flow. ➤ Mandatory deployment of security personnel at site specifically at high risk zones ➤ Scheduling of fixed time for movement of vehicles carrying construction	Contractor and Medical In-charge

Key Area/Activities/Concerns	Potential E&S Risks and Impacts	Proposed Mitigation Measures	Responsibilities
		machineries and materials in consultation with the authority of existing CHC to ensure safe movement of passersby. ➤ Construction area to be properly hard barricaded and safety signage's viz. "No entry for public"; "Work is going on, be careful"; "Area for reinforcement", "Construction Zone", etc and also important signage's indicating diversion, danger signs at appropriate locations are to be installed during construction. ➤ 24×7 security in and around project a	
Employment	Employment generation during construction phase and operation phase.	➤ Demand for skilled, semi-skilled and unskilled workers during construction period. ➤ Employment opportunities will be generated. ➤ Equal and minimum wages as per govt. norms will be provided.	Contractor
Energy Efficiency	Loss of natural resources	➤ Use energy efficient measures as per DPR such as Water Efficient fixtures, STP treated water after regular testing shall be used for, flushing & landscape irrigation, Rain water harvesting system, Pressure reducing device, Sprinkler Irrigation etc.	Architect and Contractor
Fire Fighting	Loss of Life and Property	➤ Provision of Fire extinguisher system at site.	Architect and Contractor

Key Area/Activities/Concerns	Potential E&S Risks and Impacts	Proposed Mitigation Measures	Responsibilities
		➤ Staff should be trained to handle emergency situations like firefighting and should be responsible to contact the emergency personnel in case of any emergency. ➤ Provision of Fire Alarm System fire buckets, fire extinguishers, fire pumps, fire proof enclosures etc. ➤ Storage of raw water in underground fire water tanks has been provided for hospital building.	
Stakeholder Engagement	Lack of prior intimation of the demolition and construction activities may lead to health hazards caused by probable air, water and noise pollution. Community health and safety concerns	• Prior intimation to the public about the time and the duration of the utility disruption through concerned agency. • Stakeholder consultation for ➤ responding to the queries of community regarding, proposed DH, construction activity etc. ➤ making community aware that all safety measures in terms of air pollution, noise pollution, water pollution, community health and safety will be undertaken in the construction phase.	Contractor, Joint Director, DH & Project In-charge

Table 7.1(iii): Environmental and Social Risks/Impacts assessment and Mitigation Measures during Operation Phase

Key Area/Activities/Concerns	Potential E&S Risks and Impacts	Proposed Mitigation Measures	Responsibilities
Consent to Operate, Authorization under BMW Rules 2016, Land ownership documents, Fire NOC	Non availability of the necessary consents, authorization or permits can result in closure of the facility by concerned authority.	➤ Ensure availability of consent to establish and consent to operate under Water Act 1974 and Air Act 1981, Authorization under BMW Rules 2016/2018 from PCBA, other necessary clearances, Licenses and permits	Contractor, Hospital Authority, Azara DH & Project In-charge
Flora and Fauna	Deforestation and loss of vegetation cover (if happened post construction phase).	➤ Development of thick green belt with local and indigenous species in consultation of forest department ➤ To maintain the aesthetic beauty of the site.	Contractor, Hospital Authority, Azara DH & Project In-charge
Ground Water	➤ Ground Water Contamination ➤ Ground Water Depletion	➤ Dual plumping system is proposed in the project. ➤ Waste water generated to be treated and reused in STP during operational phase. ➤ Use of Water Efficient fixtures like flow regulators & dual flushing cisterns	Hospital Authority, Azara DH & Project In-charge
Surface Water	Surface water contamination	➤ It will be ensured that surface water runoff will be disposed through proper drainage channel to minimize the contamination risk. ➤ Regular maintenance of rain water harvesting system	Hospital Authority, Azara DH & Project In-charge
Ambient Air Quality	Emissions from vehicular movement and operation of DG sets	➤ Water sprinkling will be carried out to reduce emission ➤ Regular monitoring of emissions and control measures will be taken to reduce	Hospital Authority, Azara DH & Project In-charge

		the emission levels. ➤ Use of low sulfur diesel. ➤ Acoustic enclosures ➤ Greenbelt development	
Noise and visual impacts	➤ Environmental noise can cause Hearing impairment, hypertension, and ischemic heart disease (IHD), annoyance and sleep disturbances. Noise exposure may also cause birth defects	➤ DG sets will be provided with acoustic enclosures and will be placed in a room to reduce noise level. ➤ Proper traffic management & circulation. ➤ Honking will be prohibited in the premises. ➤ All vehicles will carry PUC. ➤ Regular ambient noise monitoring and work site noise monitoring	Hospital Authority, Azara DH & Project In-charge
Waste Management	Solid Waste generation	➤ Garbage chute system/color coded bins for segregation of solid waste as well as for biomedical waste. ➤ Separate color coded bins for waste disposal i.e. green for organic waste, red for hazardous waste, brown for compostable waste, blue for recyclable waste. ➤ Organic Waste Compost Machine for 100 Kg/Day Waste per Day will be installed.	Hospital Authority, Azara DH & Project In-charge
BMW Management	Infections and Toxicity due to improper handling of bio-medical wastes	➤ The authorization for handling of BMW will be obtained from Assam State Pollution Control Board. ➤ Separate temporary storage area shall be provided inside the premises of industry for temporary storage of color coded biomedical waste bags/containers and	Hospital Authority, Azara DH & Project In-charge

		disposal to take place within 48 hrs. ➤ For safe disposal of biomedical waste, an agreement with Fresh Air (CBMWTF), Guwahati will be done for disposal of BMW before starting operation of District Hospital. Present mode of BMW disposal is through Sharp pits and Deep Burial at the site. ➤ Formation of BMW Management Committee as per BMW Rules. ➤ Details about biomedical medical waste are given in Waste management plan which is attached as Annexure IX.	
Water Management	Poor sanitation, drainage problem which results in water running over roads and water logging.	➤ Re-establish the drainage pattern to the extent practicable. ➤ Provision of dual plumbing system/ two pipe (stack) system and use of zero liquid discharge technology. ➤ The rain water to be diverted using rainwater pipes to the drainage network.	Hospital Authority, Azara DH & Project In-charge
Transportation and Vehicle Movement	Increase in volume of traffic	➤ Proper Traffic Management & circulation with adequate lighting and signage system. ➤ Provision of adequate parking spaces as per Norms. ➤ Trained and qualified drivers/operators. ➤ Separate routes for the movement of machineries and vehicles away from the patients/visitors route. ➤ Regular checks and inspections for the	Hospital Authority, Azara DH & Project In-charge

		ambulances and other vehicles.	
Occupational Health and Safety	➤ Health, Hygiene and Safety of employs	➤ Provision of PPE to healthcare workers ➤ Provision of PPE to BMW handling staff ➤ Regular immunization of the staff and waste handlers ➤ Regular Health checkup ➤ Provide training on health and safety to all the employs. ➤ Provide medical insurance coverage for employs. ➤ Emergency Readiness Plan to be displayed at a prominent site ➤ Training to employs on emergency readiness. ➤ Occupational Health and Safety Plan is attached as Annexure XIV.	Hospital Authority, Azara DH & Project In-charge

7.2. Grievance Redress Management

Key Area/Activities/Concerns	Potential E&S Risks and Impacts	Proposed Mitigation Measures	Responsibilities
Grievance Redressal	• Inconveniences caused to community by construction activities under the Project. • Community health and safety concerns in the preconstruction as well as construction period • Risks of SEA/SH to community members, particularly women and children by contractors' workers during construction period • Risks of workplace sexual harassment at project site (consultants and contractors staff & laborers) •	➤ Codes of conduct will be prepared in languages easy to understand, preferably in local language and adopted, by Contractor as well as all the workers under Contractor of the project ➤ Undertake GBV/SEA/SH risk assessment ➤ Display signage's that the project site is an area where GBV/SEA/SH is prohibited. ➤ Provide a safe and secure working environment for workers—provision of lighting around project sites, including around latrines and access routes. ➤ Provide separate and lockable toilets for female construction workers. ➤ Deliver periodic mandatory training on CoC and GBV to all workers, including contractors, subcontractors, core suppliers, and relevant consultants and clients. Discuss the same with local communities as well. ➤ Develop confidential grievance reporting, referral, and support systems for workers that would also include the option to report anonymously. ➤ Grievance Redressal Mechanism is detailed at Annexure XVI.	Contactor

CHAPTER-8
ANALYSIS OF
ALTERNATIVES
(TECHNOLOGY & SITE)

CHAPTER 8- ANALYSIS OF ALTERNATIVES (TECHNOLOGY & SITE)

8.1 Introduction

This chapter includes the assessment of various options may be available for different components of the project in terms of environmental sustainability. Consideration of alternative technologies to be used in building material, energy conservation and transportation methods are addressed in this chapter. The various applicable options are thus evaluated for their suitability or availability to project site and local environment.

8.2 Building Material

Only IS approved building materials will be used for the construction. Construction material will be selected based on their thermal characteristics and the U and R values. The additional considerations are as under.

- The major materials required for construction of the project are steel, cement, bricks, metal, stones, electrical fittings, water, etc.
- All the items used in the project are as per the national building code specification.
- The basic materials used for the construction of the proposed project are cement, steel, bricks, stones, ready mix concrete, sand, plywood, hard wood, aluminum, glass etc.

The following measures is proposed to for conserving the energy

- Low energy embodied materials will be preferred.
- Energy efficient construction materials such as Autoclaved Aerated Concrete Blocks (AAC Blocks) will be used. Apart from energy efficiency, AAC Blocks are durable and a high-strength building material that has excellent insulation properties and is resistant to fire and moisture.
- Ready Mix Concrete will be used for construction of RCC structures.
- Minimizing overall waste and the transport of waste from site.
- Provision for Solar powered street lighting for common areas is planned.
- LED's, CFL bulbs, lights, and fixtures for most of the common area,
- Use of energy efficient lighting.
- All the items used in the project will be as per the National Building Code-2016 and ECBC.

8.2.1 Use of Recycled Material

Recycled materials will be used in filling of roads as well as for pavers. Also, materials with low embodied energy used in construction which will significantly result in energy savings. The total savings in terms of roads and paving may be up-to 20%. Whole Bricks received from segregation of C&D Waste will be kept separately for use. Recyclable waste construction materials will be sold to authorized recyclers and recycled into aggregates which are converted to Ready Mix Concrete (RMC), pavement blocks, kerb stones and concrete bricks. Recycled coarse aggregate will be used in construction of roads within the site.

8.2.2 Walls

8.2.2.1 Conventional Material

Redbrick for peripheral walls and AAC blocks for internal walls are used for construction. Bricks are laid in courses and numerous patterns known as bonds, collectively known as brickwork, and

laid in various kinds of cement mortar to hold the bricks together to make a durable structure. Cement mortar becomes hard when it cures, resulting in a rigid aggregate structure.

8.2.2.2 Alternatives

- **Structural Insulated Panels-** Structural Insulated Panels are modular wall sections made from foam sandwiched between two pieces of Oriented Strand Board. They're incredibly strong and energy efficient, as the foam inside the Oriented Strand Board acts not only as the web to provide strength but also as insulation.
- **Brick and block** products with waste and recycled contents (waste from coal burning plants), blast furnace slag, sewage sludge, waste wood fiber, rice husk ash, etc.
- **Concrete blocks using lime or waste wood fiber** provide reduction of waste and saves energy.

8.2.3 Roofs Conventional Material

Roofing is RCC, as it is suitable for longer spans. The constituents of RCC, i.e., cement, sand, aggregate and steel all are energy intensive materials and high-embodied energy content.

Alternatives

- **Pre-cast/aerated cellular concrete walling blocks and roofing slabs-** These are manufactured by the aerated cellular concrete manufacturing process. When used in multistoried structures, they reduce the weight, resulting in a more economical design.
- **Roofing sheets-** Corrugated roofing sheets for their reliable utility and enhanced strength, Polycarbonate roofing sheets for their insulation properties and high strength quotient and Metal roofing sheets for their high insulating capabilities can be used.

8.2.4 Roads & Open Spaces

Use of grass pavers along the roadside, parking and pedestrian areas is a solution to reduce the heat island effect. Recycled materials are being used for construction of road purpose as well as for pavers and will be followed for expansion purpose if locally available.

- **Permeable paving-**Permeable (porous) paving will be provided to control surface water runoff by allowing storm water to infiltrate the soil and return to the ground water. The traffic areas will however continue to be impermeable

Gravel/crusher fines: Loose aggregate materials from masonry wastes will be used to cover pedestrian surfaces.

- **Drainage System:** Drainage system is placed under gravels for collection of rainwater and will be collected to the sump.

8.3 Natural Hazards Prone Areas

The project falls under zone V (as per IS 1893 (Part-I):2002), as per the Seismic Zone Map of India and Assam. Zone 5 covers the areas with the highest risk of suffering earthquakes of intensity MSK IX or more significantly. Adequate measures will be adopted during operation phase of the project by proposed DH. All applicable guidelines will also be followed in this regard to ensure safety of the building.

8.4 Alternatives of Location

The State Government of Assam has allotted the required land to the project proponent for development of 100 Bedded Hospital; hence no other alternative of the location was explored.

8.5 Energy Efficiency & Renewable Energy

To promote energy conservation, it is proposed to provide the buildings with low energy consuming fixtures maximize availability of natural light and make plans in conformance to the sun's path. In the operational phase, appropriate energy conservation measures and management plan will be adopted to minimize the consumptions of non-renewable fuel. The following measures are suggested to be adopted.

- All Buildings are spaced in such a way that sunlight, natural ventilation is not disturbed due to each other.
- Buildings will be designed to have least exposed surface of glass.
- Energy efficient compact fluorescent lamps to be used as these CFL gives same illumination with less wattage compared to GLS Lamps.
- Power factor of the complete electrical system will be maintained close to unity. These will reduce electrical power distribution losses in the installation.
- Occupancy Sensor based light system to be used for rooms which detect movement within a room and automatically turn lights on or off as needed.

CHAPTER-9

RECOMMENDATIONS AND CONCLUSIONS

CHAPTER 9- RECOMMENDATIONS AND CONCLUSIONS

9.1 Recommendations

The following are recommendations applicable to the project to ensure no significant impacts:

- Obtain all statutory clearances at the earliest time possible (CTE and Tree cutting permission at first) and ensure conditions/provisions are incorporated in the detailed design
- Include this ESIA in contract documents
- Commitment from contractors to protect the environment and the people from any impact during project implementation
- Update/revise this ESIA based on detailed design and/or if there are unanticipated impacts, change in scope, alignment, or location
- Conduct safeguards induction to the contractor before start of construction works
- Contractor to submit Site Specific EHS Plan (SEMP) with final designs
- Ensure contractor appointed qualified environment, health and safety (EHS) officer prior to start of works
- Timely disclosure of information and establishment of Grievance Redressal Management (GRM)
- Effective implementation of GRM
- Strictly supervise EMP implementation
- Continuous consultations with stakeholders and grievance redress; if any
- Documentation and reporting on a regular basis as indicated in the ESMF.

9.2 Conclusions

The process described in this document has assessed the environmental impacts of all elements of the proposed construction of new 100 bedded District Hospital, Azara, Kamrup, Assam. All potential impacts were identified in relation to pre-construction, construction, and operation phases. Planning principles and design considerations have been reviewed and incorporated into the site planning and design process wherever possible as per DPR.

During the construction phase, impacts mainly arise from the construction dust, temporary shifting of staffs from existing facility/ structures, handling of building material and noise of machineries and vehicle. The social impacts due to construction activities are very limited, as there is small number of villagers/ locals residing in town, chemist shops and diagnostic centers in the vicinity.

The public participation (stakeholder engagement) was undertaken during project design ensured stakeholders are engaged during the preparation of the ESMP. The views and suggestions were taken into account in framing the ESIA-ESMP. This will make the proposed project a success in providing essential and affordable health care services.

The Environmental and Social Management Plan (ESMP) proposed in the project includes mitigation measures for identified impacts, training and capacity building activities, an environment monitoring plan to ensure that the environmental standards are maintained throughout the project construction period and a reporting plan to ensure that the project is implemented as per environmentally sound engineering and construction practices. Social Impact Assessment also considered Gender Based Violence, Gender equality, equal wages, minimum wages (as per

Government Norms), workers facilities etc. The budgetary provisions for mitigating the anticipated impacts were proposed for effective implementation of the ESMP.

The ESMP will assist the implementing agency, Architect and Contractor in mitigating the environmental and social impacts, and guide them in the environmentally sound execution of the proposed project. The ESMP will also ensure efficient lines of communication between AHIDMS, Implementing agency, architect and contractor. A copy of the ESMP will be kept on-site during the construction period at all times. The ESMP will be made binding on all sub-contractors operating on the site, and will be included in the contractual clauses. Noncompliance with, or any deviation from, the conditions set out in this document shall constitute a failure in compliance.

The project will benefit the general public including local community, patients, health care workers and visitors in District Hospital. The potential adverse environmental impacts are mainly related to the construction period and operational period, which can be minimized by the mitigation measures and environmentally sound engineering and safe construction practices.

This report presents a comprehensive environmental and social impact assessment for the proposed project. The study proposed measures for mitigating the adverse impacts while enhancing the positive ones during the phases of construction, operation & maintenance. The proposed construction works of District Hospital will bring a series of benefits to the local people such as:

- Improved Health status;
- Employment Generation during construction and operational period;
- Increased Economic Opportunity after operation of facility starts (in terms of Diagnostics, chemist and other supporting services);
- Women Empowerment;
- Providing basic infrastructure, road connectivity, clean air through thick landscaping around site.
- Overall Quality of life increases

Based on the ESIA findings, there are no significant adverse impacts of proposed project. The report's objectives are in line with World Bank Safeguard Policies and Governmental (India and Assam) regulatory requirements.

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ANNEXURE-I
Construction and Demolition
Waste Management Plan

ANNEXURE-I

Construction and Demolition Waste Management Plan

1.0 Introduction

As per the Construction and Demolition (C&D) Waste Rules 2016, “any waste comprising of building materials, debris and rubble resulting from construction, remodeling, repair and demolition of any civil structure” is classified as C&D waste.

Improper management of C&D waste impacts environment in the following ways:

- C&D waste is routinely dumped in open drains and water channels, clogging them and leading to urban flooding during rains.
- Dumping of C&D waste in wetlands, water channels and riverbeds disrupts the hydrology and destroys the aquatic ecosystem.
- Leachate and fine chemical particles from C&D waste degrade the soil, leading to land and groundwater pollution. Especially hazardous components include paints, oil and asbestos sheets.
- C&D waste is filling up existing landfills and dump-yards, resulting in the need for more landfills or alternative dumpsites.
- C&D waste usually gets mixed up with other municipal solid waste during the process of transfer or at the collection site. Once mixed, it makes composting and/or recycling of MSW highly difficult.
- C&D waste includes hazardous substances such as sharps, broken glass, boulders, broken wooden logs, rusted metal, broken ceramics, etc., which create a hazardous environment when dumped on unfenced open places.
- C&D waste dumped on streets and footpaths blocks traffic and pedestrians, frequently contributing to traffic congestion and even accidents.
- C&D waste is one of the primary sources of fugitive dust pollution.

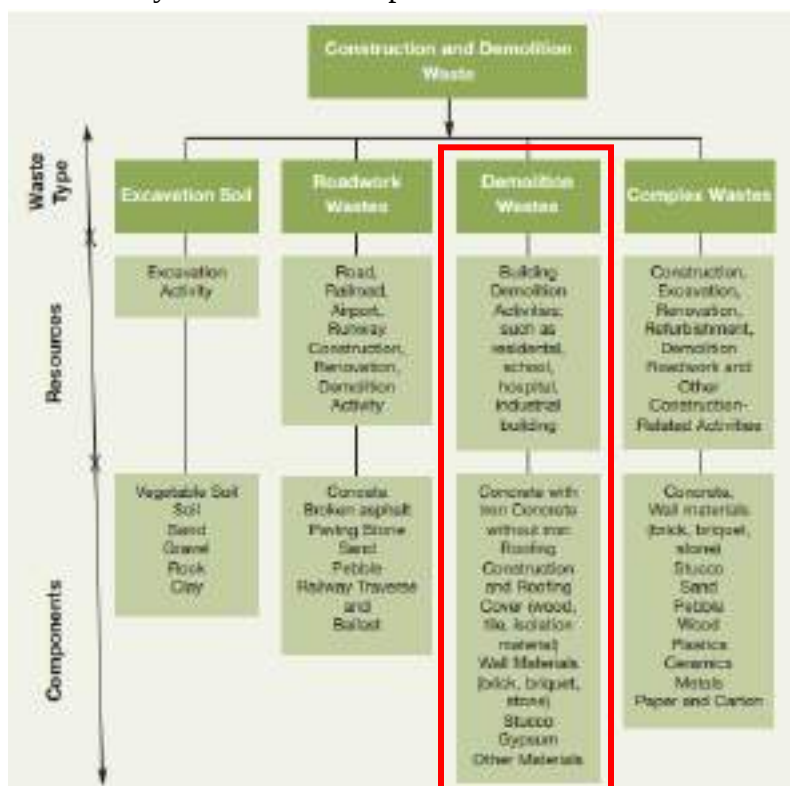
2.0 C&D Waste Management Rules, 2016

The Ministry of Environment, Forest and Climate Change (MoEFCC) notified the Construction and Demolition Management Rules in 2016.

Key highlights of the C&D Waste Management Rules, 2016:

- The Rules mandate use of recycled products in construction. Local bodies will have to utilize 10–20 per cent of material from C&D waste in municipal and government contracts for construction.
- The tipping fee for delivery of C&D waste to the recycling plant, and terms and conditions of civic body with the concessionaire may be designed to keep the price of C&D waste recycled products about 20 per cent lower than the corresponding conventional products.
- All large developers are accountable for collection and disposal of C&D waste
- Local authorities to give appropriate incentives to waste generators for salvaging, processing, and recycling, preferably in situ.

- Recycling facilities will have to be created at a safe distance from habitation with adequate buffer zone.
- Local authorities to establish a database and update it once in a year.
- All renovation projects involving demolition, even in the private sector, may be mandated to use at least 20 per cent of recycled C&D waste products.



3.0 Details regarding the Proposed Project

Presently there is an existing Rural Hospital (FRU) having 30 beds located in Azara, District Kamrup, Assam. Currently This Rural Hospital (FRU), Azara is catering the medical needs of the local people in the vicinity.

The Proposed Location of the 100 bedded District Hospital is in the plot of Rural Hospital (FRU), Azara, the land is available for the new construction activities.

4.0 Details regarding the Existing Structures in Proposed Project

The proposed project involves demolition of brick wall i.e. demolition of old existing buildings present at the site area. The staff residing in the existing buildings will be temporarily relocated within 1.0 to 2.0 km radius. Site photographs of the existing structures is given below-





Figure- Site photographs of the existing structures

Lifting of Construction & Demolition Waste from Storage bins would be manual or mechanical through JCB, Loader and dumper. Following proposals regarding Construction and Demolition waste generated at the project site would be made-

- Whole Bricks received from segregation of C&D Waste will be kept separately for internal use.
- Recyclable waste construction materials will be sold to authorized recyclers and recycled into aggregates which are converted to Ready Mix Concrete (RMC), pavement blocks, kerb stones and concrete bricks.
- Recycled coarse aggregate will be used in construction of roads within the site.
- Wood will be chipped to make particle boards, pallets or to create mulch for the protection and improvement of soil.
- Unusable and excess Construction and Demolition debris will be disposed at designated places in tune with the local and national norms. No asbsetos generation at site.
- C&D Waste mitigation measures shall be displayed prominently at the construction site for easy public viewing.

ANNEXURE-II
**List of Facilities –Proposed (100
beds District Hospital)**

ANNEXURE-II

List of Facilities –Proposed (100 beds District Hospital)

1. Ground Floor

Emergency care Unit

- Emergency Entrance Lobby, Emergency Help Desk/ Reception
- Police Post
- Triage Room with 3 No. Yellow zone beds, 2 no. Pediatrics beds, 1 Isolation bed, Toilet, Nurse's station, Cu & DU.
- Plaster and Plaster Cutting room.
- Trolley wash area/ Decontamination area.
- 3 No. Red zone beds with Nurse's Station
- Examination /Treatment Room.
- Doctor's Room
- CCMO Room with attached toilet and Medico-Legal Case
- Duty Doctor Room
- 3 No. Pre & Post Operative beds.
- Change rooms
- Emergency OT Lobby, Patient Holding Area, Emergency TSSU, OT Pharmacy, Sterile store, Dirty Utility
- 1 No. Emergency Operation theatre
- AHU Room

Outpatient Department

- OPD & MCH Entrance Lobby (Double Height), OPD & MCH Registration (3 Counters)
- Pharmacy with 3 counters and Pharmacy store
- General Public toilet, Lift Lobby and Staircase
- **Radiology** with 1 X-ray, ECG, Mobile X-ray, Dark room Printing, Dental Room,
- USG with color Doppler, Reporting Room and Radiology Waiting Area
- **Support Services (Dietary):** Cold storage, dry store, washing area, toilet and cooking area.
- 3 categories of room for BMW- Storage Rooms

2. FIRST FLOOR

Outpatient Department

- Waiting Area with Lift Lobby, public toilets, staircase
- **OPD consultation rooms:** Counseling room, NCD, Adolescent clinic, Dermatology, ENT, PAC Room, Surgery, Specialty clinics, Physiotherapy, Tele-consultation room, Wellness clinic, PFT/ECG Room, Ortho, Psychiatry, Wellness clinic, Family Medicine, Immunization/Cold chain room and patient waiting hall

- **Laboratory** with Sample collection Area, Clinical pathology Lab, Pathology lab, BSC
- Room, lab In-charge room with toilet.
- **Medical Stores**

Administrative unit

- Medical Superintendent Room with attached toilet, PA to MS, Nursing-in-charge room, Hospital manager room, Office Area with supervisor's cabins, meeting hall.
- Medical Records Department
Ward Complex

3. SECOND FLOOR

- District Early Intervention Centre: Examination room, Nourishing nutrition, Psych, Lang, Laboratory, RCG, Play Area, Hearing assessment room, sound proof audiometry, Dental examination room, Vision Assessment room, Early Interventional occupational therapy, Sensory Integration, Anthropometry.
- MCH Triage 2 beds, change rooms, Doctor's room with toilet, Delivery complex reception and Lobby, MW Room, change rooms, MW LDR Complex-3 Nos with NBCC and toilet, Isolation LDR with NBCC and toilet, Minor OT, AHU Room.
- **Obstetrics Critical Care unit:** Air lock, patient changing area, Change room, Obstetrics HDU-6 Nos., Obstetrics ICU, Isolation Room, CU room, Linen room, Toilet, Critical Equipment room, Nurse-in-charge, Therapeutic diet prep.
- **OPD Consultation room:** Gynae OPD (3 Nos.) and Ultrasound Room

4. THIRD FLOOR

- Waiting area with public toilet, lift lobby and staircase.
- Mother's & new born Ward: 16 bedded Mothers & new born ward, Nurse's Lounge, Duty doctor with toilet, Nurse's Station, patient toilet.
- **SNCU & NICU:** Triage + Radiant warmer Area, Doctor's Lounge with toilet, dirty Linen & Sluice room, pantry, out born (06 beds), In born (06 beds), 04 beds ventilator NICU, Isolation-2 Nos., Nurses station, feeding room, Point of care, AHU Room.
- Dialysis Complex: change rooms with toilets, Dialysis ward with 4 beds and nurses Station, Isolation room, Wash Area, RO Room, toilets.
- **Paying Cain complex:** 2 Nos. rooms with attached toilet, Amirah and attendant's sleeping couch, Doctor's Lounge, Nurse's Lounge, Pantry

5. FOURTH FLOOR

- Waiting area with public toilet, lift lobby and staircase.
- 8 beds Day care ward, 8 beds Nutrition Rehabilitation Centre, Treatment room, Nurse's station, CU & DU.
- General ward complex: 27 beds ward complex, Nurse's station, Treatment room, CU & DU, Duty doctor, toilets
- Paying Cain complex: 6-Nos. rooms with attached toilet, Amirah and attendant's sleeping couch, Doctor's Lounge, Nurse's Lounge, Pantry

6. FIFTH FLOOR

- Waiting area with public toilet, lift lobby and staircase.
- **Burn unit:** 04 beds ward, 2 beds Isolation, treatment room, Nurse's Station, Duty doctor,
- CU & DU, Toilet complex
- **HDU Ward:** HDU Waiting, counseling room, patient change, change room with toilet, pediatrics HDU beds-2 Nos., general HDU beds-4 Nos., 1 No. isolation bed, duty doctor with attached toilet.
- Paying Cabin complex: 6-Nos. rooms with attached toilet, Amirah and attendant's sleeping couch, Doctor's Lounge, Nurse's Lounge, Pantry.

6. SIXTH FLOOR

- Waiting area with public toilet, lift lobby and staircase.
- **OT Complex:** Change rooms (Doctor's, nurse's and staff change), Trolley exchange area, 2 No. pre operative and post Operative ward, Nurse's station, Toilet, Doctor's room, Nurse's room, Airlock, Sterile corridor, patient Holding area, Scrub Area, sterile store, Operation Theatre-2 Nos., TSSU, AHU rooms, Dirty Corridor.
- **Blood bank:** Reception with waiting area, Testing & Counselling, Donor's room, refreshment area, laboratory, Doctor's room, Sterilization cum washing area, components separation room, blood storage room.
- **Central Sterile Supply Department.**

8. BASEMENT FLOOR

- **Mortuary:** Waiting area, Reception, Police Post, X-Ray Room, Body viewing Area, Body Storage.
- **Services:** UGT and Gas manifold.
- **Laundry**
- **STP and ETP (Liquid waste treatment of O.T/Blood Bank)**

****Solid Waste disposal and Hazardous waste disposal with collection system is on the ground floor.**

ANNEXURE-III
**Area Statement of the proposed
project**

ANNEXURE –III**Area Statement of the proposed project**

	Main District Hospital (B+G+6)	Gas Manifold (G)	ESS Block (G)
Floor height (m)	4.05	3.6	3.6
Ground floor	1880	57	250
First floor	1668		
Second floor	1887		
Third floor	1784		
Fourth floor	1784		
Fifth floor	1784		
Sixth floor	1784		
Terrace floor			
Basement	2688		
Total	15259	57	250
Grand Total Area in Sq.m	15566		
Total Beds	100	Beds	

ANNEXURE-IV

**Extracts of Patient inflow data
received from the hospital**

Extracts of Patient inflow data received from the hospital

The image shows a handwritten ledger page, likely from a 19th-century account book. The page is titled "RECEIPTS" in the upper right corner. It features a grid of columns and rows, with handwritten entries in cursive script. The columns are headed with "Date", "Particulars", and "Amount". The entries are organized into several rows, with some entries spanning multiple columns. The paper is aged and shows signs of wear, including stains and a large shadow cast across the middle. The handwriting is in dark ink, and the overall appearance is that of a historical document.

[illegible]

ANNEXURE-V

List of Flora and Fauna found during site visit

ANNEXURE-V
List of Flora and Fauna found during site visit

1. List of Flora found during site visit

S. No.	Scientific Name	Local Name
TREES		
1	<i>Acacia auriculiformis</i>	Akashmoni
2	<i>Acacia catechu</i>	Khair
3	<i>Acacia nilotica</i>	Babul
4	<i>Adina cordifolia</i>	Karam
5	<i>Aeglemarmelos</i>	Bel
6	<i>Albizzialebbek</i>	Siris
7	<i>Albizziaodoratissima</i>	Jung siris
8	<i>Albizziaprocera</i>	Safed siris
9	<i>Anogeissuslatifolia</i>	-
10	<i>Areca catechu</i>	Supari
11	<i>ArtocarpusHitrophyllum</i>	Kathal
12	<i>Azadirachtaindica</i>	Neem
13	<i>Bauhinia variegata</i>	Kachnar
14	<i>Bischofiajavanica</i>	Uraim
15	<i>Bombaxceiba</i>	Semal
16	<i>Boswelliaserrata</i>	Salia
17	<i>Buchnanialanzan</i>	Piar
18	<i>Buteamonosperma</i>	Palas
19	<i>Cassia fistula</i>	Dharanj/Amaltash
20	<i>Cocusnucifera</i>	Nariyal
21	<i>Cordiadicotma</i>	Bahuar
22	<i>Dalbergiasissoo</i>	Sheesham
23	<i>Delonixregia</i>	Gulmohar
24	<i>Eugenia jambolana</i>	Jamun
25	<i>Ficusbengalensis</i>	Bar
26	<i>Ficuselastica</i>	Ruber
27	<i>Ficusreligiosa</i>	Pipal
28	<i>Gmelinaarborea</i>	Gamhar
29	<i>Holopteleaintegrifolia</i>	Chilbil
30	<i>KydiacalycinaRoxb.</i>	Puda
31	<i>Lagerstoemiaparviflora</i>	Sida/Dauli
32	<i>Mangiferaindica.</i>	Aam
33	<i>Phoenix sylvestric</i>	Khajur
34	<i>Pongamiapinnata</i>	Kranj
35	<i>Pterocarpusmarsupium</i>	Piasal
36	<i>Schimawallichii</i>	Ghugra
37	<i>Shorearobusta</i>	Sal/ Sakhua
38	<i>Stereospermumprsonatum</i>	Paruli
39	<i>Tectonagrandis</i>	Saguan

40	<i>Terminaliaarjuna</i>	Arjun
41	<i>Terminaliabellirica</i>	Bahera
42	<i>Terminaliatomentosa</i>	Asan
43	<i>Toona ciliate</i>	Pooma
44	<i>Zizyphusmauritiana</i>	Ber
SHRUBS		
1	<i>Asparagus racemosus</i>	Satawar
2	<i>Agave americana</i>	Rambas
3	<i>Calotropisgigantea</i>	Akaon
4	<i>Carissa carandas</i>	Kanwar
5	<i>Cannabis sativa</i>	Bhang
6	<i>Casiaalata</i>	-
7	<i>Catharanthusroseus</i>	-
8	<i>Datura metal</i>	Dhatura
9	<i>Dichrostachyscinerea</i>	-
10	<i>Cyperusrotundus</i>	-
11	<i>FlacourtiaRamontchi</i>	Salpani
12	<i>Indigoferapulchela</i>	Jirhul
13	<i>Ipomoea carnea</i>	-
14	<i>Lantana camara</i>	Putus
15	<i>Phoenix acaulis</i>	Khejur
16	<i>Randiadumetorum</i>	Mowar
17	<i>Thespesia lampas</i>	Ban kapasi
18	<i>Vitexnegundo</i>	Sindwar
19	<i>Bougainvillea spectabilis</i>	Voganvila
20	<i>Zizyphusoenoplia</i>	-
21	<i>Ricinuscommunis</i>	Arandi
22	<i>Rosa rubiginosa</i>	Rosa
HERBS		
1	<i>Achyranthesaspera</i>	Chirchiri
2	<i>Aervalanata</i>	-
3	<i>Ageratum conyzoides</i>	-
4	<i>Alternantherasessilis</i>	-
5	<i>Boerhaviadiffusa</i>	-
6	<i>Cassia tora</i>	Chakor
7	<i>Elephantopusscaber</i>	-
8	<i>Euphorbia hirta</i>	-
9	<i>Hygrophilaspinoso</i>	-
10	<i>Justiciaproculbens.</i>	-
11	<i>Leonotisnepataiefolia</i>	-
12	<i>Mimosa pudica</i>	-
13	<i>Partheniumhisterophorus.</i>	-
14	<i>SidaacutaBurm.</i>	-
15	<i>Sidarhombifolia</i>	-
16	<i>Solanumnigrum</i>	Makoi

17	<i>Solanum surattense</i>	-
18	<i>Sphaeranthus indicus</i>	-
19	<i>Tridax procumbens</i>	-
20	<i>Xanthium strumarium</i>	-
GRASSES AND CLIMBERS		
1	<i>Vetiveria zizanioides</i>	Khus-Khus
2	<i>Apludavaria</i>	Dudhiasauri
3	<i>Arundinella setosa</i>	Jharu/Motaminjhar
4	<i>Bambusa arundinacea</i>	Bara bans
5	<i>Cymbopogon martini</i>	-
6	<i>Cynodon dactylon</i>	Dhoob
7	<i>Dendrocalamus strictus</i>	Bans/Bamboo
8	<i>Eulaliopsis binata</i>	-
9	<i>Heteropogon contortus</i>	Kher/Sauri
10	<i>Imperata cylindrical</i>	-
11	<i>Saccharum munja</i>	Munj
12	<i>Mukiamaderaspatana</i>	Bilari
13	<i>Abrus precatorius</i>	Karjani
14	<i>Acacia pinnata</i>	Arar
15	<i>Butea parviflora</i>	Cihut

2. List of Fauna found during site visit

S. No.	Scientific Name	Local Name/Common Name
MAMMALS		
1	<i>Funambulus pennant</i>	Gilahri
2	<i>Bandicota bengalensis</i>	Chuha
3	<i>Herpestes edwardsi</i>	Nevala
4	<i>Presbytis entellus</i>	Langur
5	<i>Macaca mulatta</i>	Bandar
6	<i>Cynopterus sphinx</i>	Chamgadam
7	<i>Rhizomys pruinosus</i>	Bamboo Rat
8	<i>Canis lupus familiaris</i>	Dog
9	<i>Ovis Aries</i>	Sheep
10	<i>Bos taurus</i>	Cow
AMPHIBIANS AND REPTILES		
1	<i>Rana tigrina</i>	Frog
2	<i>Naja naja</i>	Binocellate cobra
3	<i>Bungarus coeruleus</i>	Common Krait
4	<i>Ptyas mucosus</i>	Rat snake
5	<i>Calotes versicolor</i>	Forest Lizard
6	<i>Hoplobatrachus tigerinus</i>	Indian bull frog
7	<i>Viper russelli</i>	Russell's Viper
8	<i>Chameleon zeylanicus</i>	Indian chameleon
AVIFAUNA		
1	<i>Corvus splendens</i>	House Crow

2	<i>Dicrurusmacrocerus</i>	Black Drongo
3	<i>Passer domesticus</i>	Sparrow
4	<i>Streptopeliachinensis</i>	Spotted Dove
5	<i>Centropussinensis</i>	Greater Coucal
6	<i>Acridotherestrictis</i>	Common Myna
7	<i>Saxicoloidesfulicata</i>	Indian Robin
8	<i>Bubulcus ibis</i>	Cattle Egret
9	<i>Venetlusindicus</i>	Lapwing
10	<i>Anasplatyrhyncos</i>	Duck

ANNEXURE-VI
**Demographic Structure of the
Study Area**

ANNEXURE-VI
Demographic Structure of the Study Area

(a) Demographic Structure of the Study Area

S. No.	Name	No_HH	TOT_P	TOT_M	TOT_F	Sex Ratio	P_06	M_06	F_06	Sex Ratio
1	Agcia	325	1410	703	707	1006	117	63	54	857
2	Azara (CT)	2002	8780	4454	4326	971	792	394	398	1010
3	Barjhar	652	3322	2205	1117	507	231	122	109	893
4	Char Majir N.C.	0	0	0	0	0	0	0	0	0
5	Dharapur (CT)	1796	8095	4117	3978	966	727	388	339	874
6	Garal (CT)	973	4400	2239	2161	965	372	215	157	730
7	Garbhanga N.C.	562	2497	1300	1197	921	414	211	203	962
8	Guwahati (M Corp. + OG) (Part)	100947	433771	224424	209347	933	39059	20110	18949	942
9	Jogipara	1065	4482	2249	2233	993	394	221	173	783
10	Kahikuchi (CT)	2522	9917	5130	4787	933	1078	601	477	794
11	Kendukuchi	200	863	450	413	918	90	47	43	915
12	MajirGaon (CT)	1083	4774	2440	2334	957	354	190	164	863
13	MikirparaChokardoi	609	2802	1409	1393	989	262	138	124	899
14	Mirzapur	737	3355	1677	1678	1001	314	152	162	1066
15	Pat Gaon	684	2772	1732	1040	600	324	192	132	688
		114157	491240	254529	236711	930	44528	23044	21484	932

(b) Demographic Structure of the Study Area

S. No.	Name	P_SC	M_SC	F_SC	P_ST	M_ST	F_ST	P_LIT	M_LIT	F_LIT	P_IL	M_IL	F_IL
1	Agcia	0	0	0	1	1	0	1173	608	565	237	95	142
2	Azara (CT)	1483	724	759	101	43	58	7074	3756	3318	1706	698	1008
3	Barjhar	79	47	32	60	40	20	2862	2010	852	460	195	265

4	Char Majir N.C.	0	0	0	0	0	0	0	0	0	0	0	0
5	Dharapur (CT)	195	103	92	33	18	15	6587	3506	3081	1508	611	897
6	Garal (CT)	144	70	74	4	2	2	3610	1913	1697	790	326	464
7	Garbhanga N.C.	26	18	8	365	193	172	1407	815	592	1090	485	605
8	Guwahati(M Corp. + OG) Part	30514	15526	14988	16065	8232	7833	359580	192052	167528	74191	32372	41819
9	Jogipara	232	109	123	79	37	42	3569	1851	1718	913	398	515
10	Kahikuchi (CT)	834	435	399	311	171	140	7905	4219	3686	2012	911	1101
11	Kendukuchi	0	0	0	0	0	0	675	374	301	188	76	112
12	MajirGaon (CT)	221	116	105	1	0	1	4016	2125	1891	758	315	443
13	MikirparaChokar doi	957	476	481	167	76	91	2155	1150	1005	647	259	388
14	Mirzapur	109	54	55	18	10	8	2661	1403	1258	694	274	420
15	Pat Gaon	72	44	28	880	468	412	2154	1419	735	618	313	305
		34866	17722	17144	18085	9291	8794	405428	217201	188227	85812	37328	48484

(Source: As per Census Data, 2011)

ANNEXURE-VII
**Occupational Pattern of the
Study Area**

ANNEXURE –VII Occupational Pattern of the Study Area

(a): Occupational Pattern of the Study Area

S. No.	Particulars	Number of workers in the study area				
		Total	Male	Male %	Female	Female %
1	Total Workers	189684	148898	78.50	40786	21.50
2	Non-Workers	301556	105631	35.03	195925	64.97
3	Main Workers	164398	135136	82.20	29262	17.80
4	Marginal Workers	25286	13762	54.43	11524	45.57

(Source: As Per Census Data, 2011)

(b): Occupation Structure of Each Village in the Study Area

S. No.	Name	Total Workers			Main workers			Marginal Workers			Non-Workers		
		Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female
1	Agcia	543	398	145	399	323	76	144	75	69	867	305	562
2	Azara (CT)	2786	2396	390	2475	2144	331	311	252	59	5994	2058	3936
3	Barjhar	1800	1672	128	1647	1559	88	153	113	40	1522	533	989
4	Char Majir N.C.	0	0	0	0	0	0	0	0	0	0	0	0
5	Dharapur (CT)	2623	2255	368	2260	2010	250	363	245	118	5472	1862	3610
6	Garal (CT)	1435	1249	186	1226	1073	153	209	176	33	2965	990	1975
7	Garbhanga N.C.	1120	723	397	784	642	142	336	81	255	1377	577	800
8	Guwahati (M Corp. + OG) (Part)	169336	131842	37494	146944	119790	27154	22392	12052	10340	264435	92582	171853
9	Jogipara	1392	1173	219	1158	1001	157	234	172	62	3090	1076	2014
10	Kahi Kuchi (CT)	3356	2720	636	3012	2592	420	344	128	216	6561	2410	4151
11	Kendukuchi	315	252	63	261	235	26	54	17	37	548	198	350
12	Majir Gaon (CT)	1528	1335	193	1352	1211	141	176	124	52	3246	1105	2141
13	Mikirpara	1074	803	271	812	686	126	262	117	145	1728	606	1122

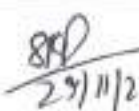
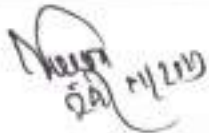
	Chokardoi												
14	Mirzapur	1058	907	151	875	764	111	183	143	40	2297	770	1527
15	Pat Gaon	1318	1173	145	1193	1106	87	125	67	58	1454	559	895
		189684	148898	40786	164398	135136	29262	25286	13762	11524	301556	105631	195925

(Source: Census Data, 2011)

ANNEXURE-VIII
**Stakeholder Consutation-
Attendance sheeet & NOCs**

Stakeholder Consultation Meeting (attendance sheet)
Proposed District Hospital Azara, (Kamrup), Assam

[Date: 29.11.2023 ; 01:20pm.]

S.No	Name of Person	Designation	Signature
1.	Dr KH. JITENDRO SINGH	SDM & HO AZARA BPHC	
2	Gopal Ch Dm	Social Influencer	
3	Dr Arakinda Das Joint Director of Health Services	DNO, AYUSH DM. Representative of Joint Director, Kamrup	
4	Dr. S. K. Das	Dr. Suptd. BPHC	
5.	Jugamita Saikia	Block Program Manager, Azara BPHC	Jugamita 29/11/23.
6.	Dr. Ganesh K. Das	Sp. MD	 29/11/23
7	DR SMRITI BORAHMANI	Dental Surgeon	29/11/23
8.	Dr. Kanchari K. Das	Sp. M.O	 29/11/23
9.	Dr. Kharendra Mohan	SDMO (A)	 29/11/23
10	Asida Begum	S/N	 29/11/23

S.No	Name of Person	Designation	Signature
11	Mrs Babita Das	S.N	
12	Shri Banamali Das (Local Body)	Ayaka Goswami	
13	Pranab Kalita (Kamrup)	Present Attendand	P. Kalita
14	Monisul Kakoty	Chemist	
15	Lobanya Das media	ASHA	Lobangmi
16	Md. Saiful Islam	LAB TECH	
17	Anshul K. Sharma	GEL, Delhi	
18	Gaurav Jatar	GEL, Delhi	

STOCKHOLDER CONSULTANT FORM

Name of the project: Proposed District Hospital, Azara (Kamrup), Assam

Location of the project: Azara (Kamrup), Assam

Date of Meeting: 29/11/2023

S. No	Stakeholders	Represented by	Roles/responsibility	Social Impact and tasks	Commitment checklist	Commitments/remarks	Environmental impact and Tasks	Commitment checklist	Commitments/remarks
1	Medical in charge	Dr. Dhiman Das K. Das	Post construction	Governance and oversee activities of Healthcare facility	1.	During operation phase take up how he made use of 'Fresh Air'.	Safe disposal of BMW	Measures to contain BMW	During operation phase a few up air be made use of 'Fresh Air'.

29/11/2023

Deputy Superintendent
Azara CHC, Kamrup (Assam)

Name of the project: Proposed District Hospital, Azova (K&MMP), Assam

Location of the project: *A302a (Kornrup), Agassiz.*

Date of Meeting: 29 | 11 | 2023

S. No	Stakeholders	Represented by	Roles/ responsibility	Social Impact and tasks	Commitment checklist	Commitments/ remarks	Environmental impact and Tasks	Commitment checklist	Commitments/ remarks
1	Contractor	Not yet assigned	During construction phase	Gender equality	1. ☒ Wage equality 2. ☒ Temporary labor camps 3. ☒ Fuel for cooking food for labors 4. ☒ Creche for children		Dust mitigation measures (green nets, fencing, water sprinkling) C & D waste Regular environmental monitoring (Air, noise, water, soil)	1. ☒ Fencing of the project site 2. ☒ Green net covering for loose building materials 3. ☒ Mobile Toilets 4. ☒ Safe drinking water 5. ☒ Mobile STP/soak pits.	

(P.A.Dan)
29/11/23.

STOCKHOLDER CONSULTANT FORM

Name of the project: Proposed District Hospital, Azara (Kamrup), Assam

Location of the project: Azara (Kamrup), Assam

Date of Meeting: 29/11/2023

S. No	Stakeholders	Represented by	Roles/ responsibility	Social Impact and tasks	Commitment checklist	Commitments/remarks	Environmental impact and Tasks	Commitment checklist	Commitments/remarks
4	Local body	Gopal Ch. Das	During and post construction phase	Supervision	Tax collection Solid waste collection Disposal of C & D waste	D.K.			D.K.

Gopal Ch. Das

STOCKHOLDER CONSULTANT FORM

Name of the project: *Proposed District Hospital, Azara (Kamrup), Assam*

Location of the project: *Azara (Kamrup), Assam*

Date of Meeting: *29/11/2023*

S. No	Stakeholders	Represented by	Roles/responsibility	Social Impact and tasks	Commitment checklist	Commitments/remarks	Environmental impact and Tasks	Commitment checklist	Commitments/remarks
3	Locality within 100 m from the hospital building		During Pre and post construction phase	1. Easy accessibility and affordability of the medical facility 2. Employment generation	1. Hospital at doorstep 2. Opening of hospital supportive activities 3. Preference will be given to locals for employment 3. Sourcing of local, organic and sustainable grown food	<i>No objection</i>	1. Greenbelt development 2. Clean environment 3. Disposal of waste	1 local & indigenous plant species 2. Energy Conservation 3. Waste reduction 4. Deploy electricity vehicle for hospital use	<i>no objection</i>

Banash
Banash Das

To,
SDMO,
AZARA, CHC.

I, being the proprietor of Reliable Pharmacy situated opposite the Azara CHC have no objection in the construction of a 100 bedded community hospital here.

Thanking You
Monotpal Kakoty

Owner
Reliable Pharmacy,
Azara, Ghy-17



NO OBJECTION CERTIFICATE

I would hereby certify that Unicare Multispeciality Clinic and Diagnostic Centre, Azara, Guwahati 17 has got no objection to the Construction of the 100 bedded District Hospital, Azara opposite to our premises.

Proprietor,

Unicare Multispeciality Clinic and Diagnostic Centre,

Azara, Guwahati 17


UNICARE MULTISPECIALITY CLINIC
& DIAGNOSTIC CENTRE

Proprietor

ANNEXURE-IX
Waste Management Plan

ANNEXURE IX

Waste Management Plan

(During construction and post construction phase)

1.0 SOLID WASTE GENERATION

Solid waste will be generated both during construction and post construction phase. The expected to be generated during the construction phase will comprise of excavated materials, used bags, bricks, concrete, MS rods, tiles, wood etc. The following steps are proposed to be taken for proper management of solid waste:

- Construction yards are proposed for storage of construction materials.
- The excavated materials such as topsoil and stones will be stacked in a safe place for reuse during later stages of construction.
- Excavated top soil will be stored in temporary constructed soil bank and will be reused for landscaping.
- Remaining soil will be utilized for refilling, road construction and rising of site level at various locations or selling to outside agency for their use.

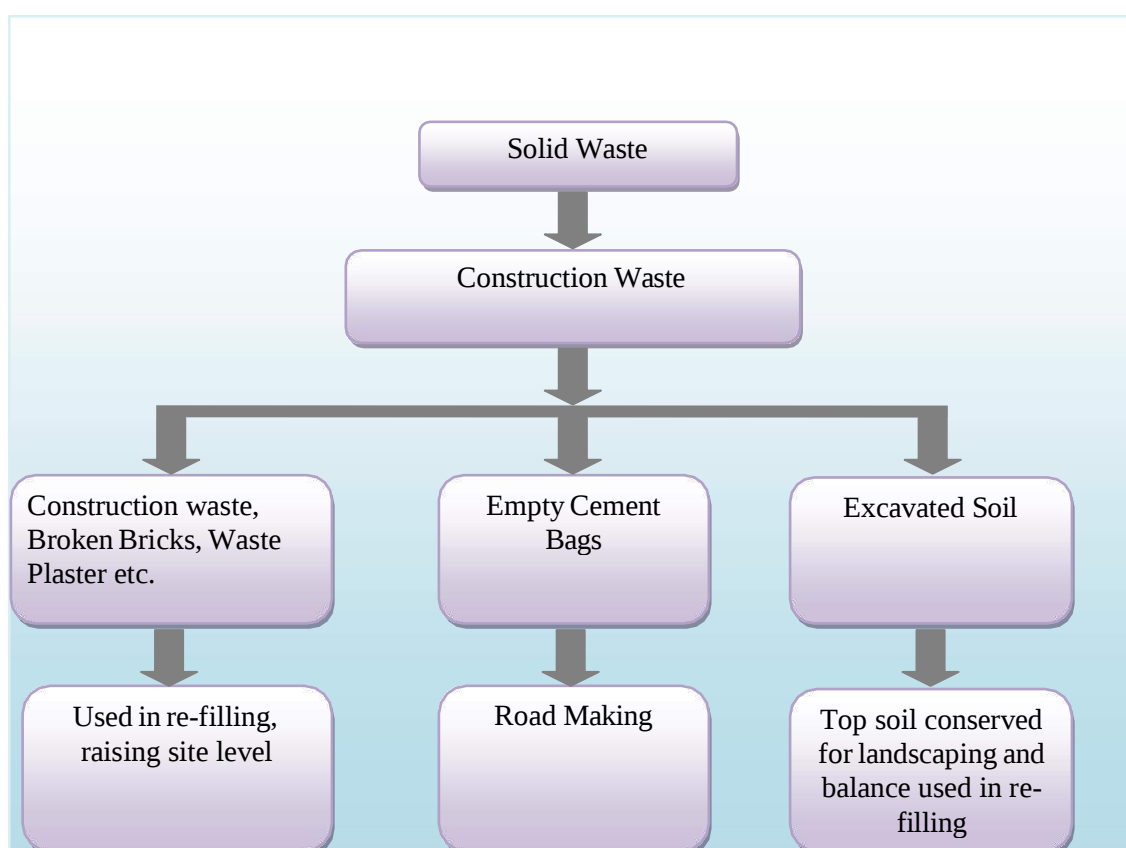


Figure 1: Solid Waste Management Scheme (Construction Phase)

1.2 TYPES OF CONSTRUCTION WASTE

Based on the type of material, construction waste can be classified into the following types:

Concrete, Bricks, Tiles and Ceramics

Concrete, Bricks Tiles & Ceramics and Concrete, bricks, tiles and ceramics in mixtures, containing no hazardous substances (Non-Hazardous Waste)

Concrete, Bricks, Tiles & Ceramics (alone or in mixtures containing hazardous substances) – Hazardous Waste

Wood, Glass & Plastic

Untreated Wood, Waste, Uncontaminated Glass, Plastic (Excluding Packaging Plastic):

Non-Hazardous Waste

Treated Wood (Alone or in Mixtures Containing Hazardous Substances), Treated Glass (Alone or in Mixtures Containing Hazardous Substances) and Treated Plastic (Alone or in Mixtures Containing Hazardous Substances) – Hazardous Waste

Metallic Waste (Includes Electrical Wires and Cable)

Copper, Brass, Bronze, Lead, Iron, Steel, Tin, Mixed Metals- Non Hazardous

Metals Containing Hazardous Substances, Cables containing Oil & Cables containing Coal Tar – Hazardous Waste

Soil, Contaminated Soil, Stones & Dredging Spoil

Soil containing hazardous substances, Stones containing hazardous substances and Dredging Spoil containing hazardous substances – Hazardous Waste

Other Soil and Other Stones and Other Dredging Spoil – Non-Hazardous Waste

Gypsum

Gypsum Materials – Non-Hazardous Waste

Other Gypsum Materials containing hazardous substances- Hazardous Waste

Insulation, Fiber Glass & Asbestos

Insulation Containing Asbestos (if any), Fiberglass, FRP and Other Construction Materials – Hazardous Waste

Other Insulation Containing Hazardous Substances and Other Insulation Materials – Non Hazardous Waste.

****Disposal is planned through handing over such waste (if generated at the site) to registered HW-recycler with State Pollution Control Board, Assam.**

Cement

Unused Cement and Unset Cement – Hazardous Waste

Paints & Varnishes

Paint Cans Paint Remover Varnish Remover Organic Solvents and Other Hazardous Substances.

**Disposal is planned through handing over such waste (if generated at the site) to registered HW-recycler with State Pollution Control Board, Assam.

Adhesives & Sealants

Adhesive Containers and Sealant Containers – Hazardous Waste

**Disposal is planned through handing over such waste (if generated at the site) to registered HW-recycler with State Pollution Control Board, Assam.

1.3 COLLECTION AND SEGREGATION OF WASTE

1. The local vendors will be hired to provide separate colored bins for dry recyclables and Bio-Degradable waste.
2. For waste collection, adequate number of colored bins (Green, Blue and dark grey bins separately for Bio-degradable and Non Bio-degradable) are proposed to be provided at strategic locations of the area.
3. Litter bins will also be provided in open areas like parks etc.

❖ **Treatment of waste**• **Bio-Degradable wastes**

1. Bio-degradable waste will be subjected to Organic Waste Converter and 20% of the subjected waste will be used as manure.
2. STP sludge is proposed to be used for horticultural purposes as manure.
3. Horticultural Waste is proposed to be composted and will be used for gardening purposes.

• **Recyclable wastes**

- i. The cropped grasses will be spread on the green area. It will act as manure after decomposition. Recyclable wastes like paper, plastic, metals etc. will be sold to recyclers.

❖ **Disposal of Recyclable And Non-Recyclable Wastes**

Recyclable and non-recyclable wastes will be disposed through Govt. approved agency. Hence, the Municipal Solid Waste Management will be conducted as per the guidelines of Municipal Solid Wastes (Management and Handling) Rules, 2000. A Solid waste management Scheme is depicted in the following figure for the proposed Project.

❖ **The Hazardous waste Management**

The Hazardous waste will be managed/ disposed according to *Hazardous and Other Wastes (Management and Tran boundary Movement) Rules, 2016*.

For the management of hazardous and other wastes, an occupier shall follow the following steps, namely:-

- (a) Prevention;
- (b) Minimization;

- (c) Reuse,
- (d) Recycling;
- (e) Recovery, utilization including co-processing;
- (f) Safe disposal according to waste generation (category wise) as per rules in accordance with norms of State Pollution Control Board, Assam.

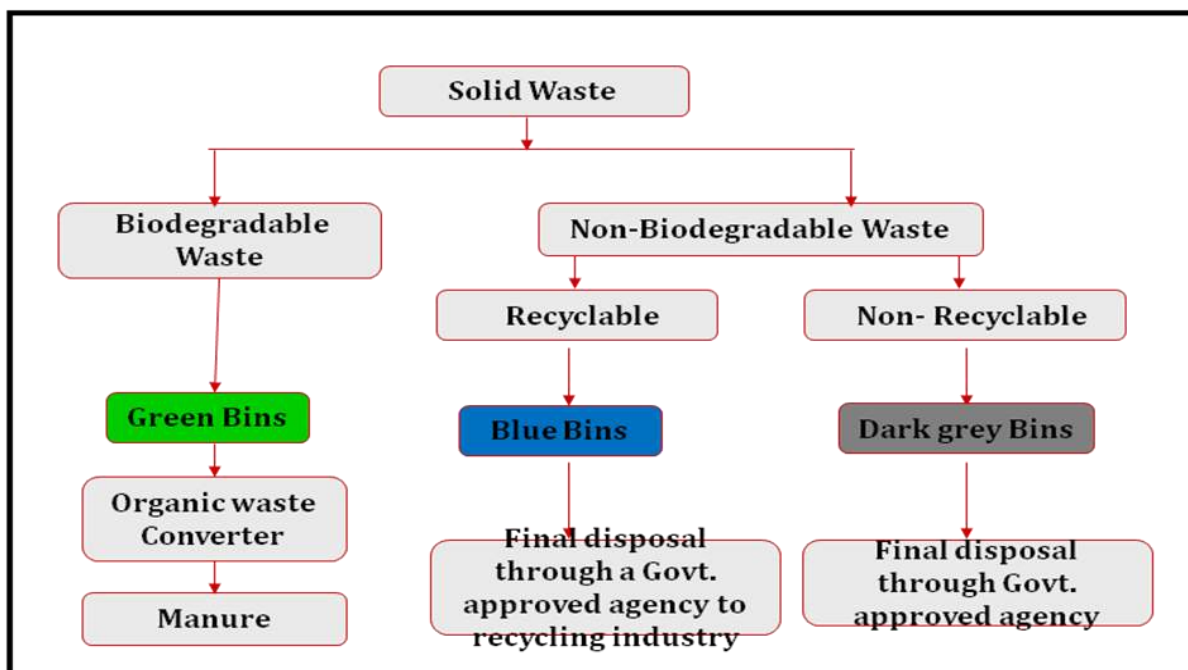


Figure 2: Solid Waste Management Scheme (Operational Phase)

1.4 Biomedical Waste Biomedical Waste Management

1.4.1 Introduction

Biomedical waste management (BMWM) Plan is a management tool for effective management of BMW and associated risks on health functionaries and communities. Biomedical waste management is an essential requirement for compliance to the Biomedical Waste Management Rules, 2016 and for managing environmental, occupational health and safety, community safety aspects and their impacts. This plan is being prepared for Azara New District Hospital (proposed) which is being upgraded from Rural Hospital (FRU). Proposed New District Hospital (proposed) located in Azara, Kamrup, Assam. The Geographical Location of health care facility is 26°7'28.06"N, 91°37'1.82"E

1.4.2 Project specific waste generation details

For calculating biomedical waste generated from the proposed district hospital first we have to calculate solid waste, which is summarized as follows in below table:

Table 1: Calculation of Solid Waste Generation

S. No.	Category	Kg per capita per day	Waste generated (kg/day)
1	Patients	100 @ 1.5 kg/day	150.0
2	Staff	50 @ 0.25 kg / day	12.5
3	Visitor +OPD	1500 @ 0.025 kg /day	37.5
4.	Landscape waste (740.5 m ²)	0.18 @ 0.2 kg/acres	0.036
Total Solid Waste Generated			200.036 KG/Day or say 200 kg/day

Total Waste generated per day: 200.0 kg/day

S. No	Waste	Quantity Kg/day	Percentage
1	Biomedical waste	37.5	**Estimated generation of total waste @1.5 kg/bed : 100* 1.5 = 150 kg/day Estimated generation of bio-medical waste @ 25% of the total waste generated : 37.5 kg/day
Rest remaining MSW 162.5 kg/day			
2	Bio degradable waste	81.25	50
3	Non-bio degradable	65.0	40
4	Recyclable waste	16.25	10

****Source:** CPHEEO Manual Ministry of Urban Development (MoUD), Government of India (May 2000) on municipal solid waste management 2000 under **Chapter VII- Biomedical waste (Page -34)**

1. Following arrangements will be made at the site in accordance to Municipal Solid Wastes (Management and Handling) Rules, 2000
2. Total Bio medical waste is 25% of total solid waste generated from hospital block i.e. **37.5 kg/day.**

Category	Type of Waste	Estimated Generated Quantity	
		%	kg/day
Yellow	(a) Human Anatomical Waste	75.0	28.125
	(b) Animal Anatomical Waste		
	(c) Soiled Waste		
	(d) Expired or Discarded Medicines		
	(e) Chemical Solid Waste		
	(f) Chemical Liquid Waste		
	(g) Discarded linen, mattresses, beddings Contaminated with blood or body fluid.		
	(h) Microbiology, Biotechnology and other clinical laboratory waste		
Red	Contaminated Waste (Recyclable)	10.0	3.75
White (Translucent)	Waste sharps including Metals	8.0	3.0
Blue	Glassware	7.0	2.625
	Metallic Body Implants		
Total			37.5

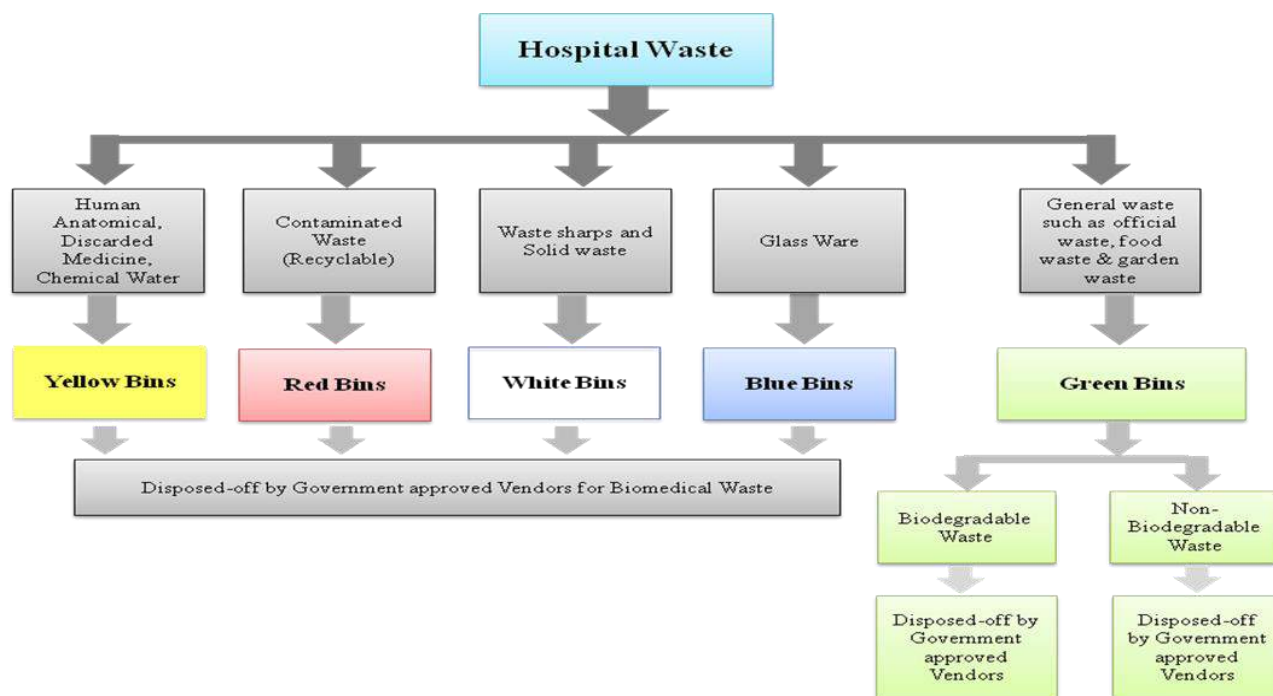


Figure 3: BMW Waste Management Scheme (Operation Phase)

1.4.3 Organization arrangement at Facility level for Biomedical waste Management and disposal

A Bio Medical Waste Management Committee will be formed in the proposed facility. The indicative composition of such committee is given below:

- ❖ SMO/ CMO/ Medical Superintendent (Chairperson)
 - ❖ District Quality Consultant/ District BMW Officer (Invitee Members)
 - ❖ Quality Manager
 - ❖ Hospital Infection Control Nurse/ Officer
 - ❖ Nursing in-charge
 - ❖ Medical Officer (Surgery)
 - ❖ Medical Officer (Emergency)
 - ❖ Medical Officer (Gynae & Obs) Microbiologist/ Pathologist
 - ❖ OT Nurse / Technician/ Assistant
 - ❖ Lab Technician
 - ❖ Blood Bank/Storage Unit Technician
 - ❖ Housekeeping in-charge
 - ❖ Pharmacist
- ✓ The Committee shall meet once in every six months and the record of the minutes of the meetings of this committee shall be submitted along with the annual report to the

Pollution Control Board

- ✓ The function of such committee is to ensure that bio-medical wastes shall be segregated at source, and disposed of safely, legally, and in compliance with all applicable regulations by the Assam Pollution Control Board.
- ✓ HCFs should submit the annual report
- ✓ To maintain all record for operation of incineration, hydro or autoclaving etc., for a period of five years;
- ✓ HCFs may have a dedicated budget for BMW as a part of annual budget of the health care facilities. Such budget must include recurring and non- recurring costs expected to be incurred by HCFs, related to Bio Medical Waste Management

1.4.4 Training and capacity building

Based on the identified needs, training plan for awareness and training on BMW management covering district health facilities will takes place. The training sessions will be designed for specific groups of workers.

1.4.5 Implementation of waste management in health facilities

Waste management is the implementation plan covers details of options and mitigative measures to be implemented covering entire cycle of different types of BMW at facility level including special provisions for meeting requirements during outbreaks, including following according to BMW rules:

- Generation of waste
- Segregation
- Handling and storage within the facilities
- On-site treatment of wastes e.g., disinfection, microwaving, incineration, deep burials etc.
- Transportation to external facilities
- End treatment
- Final disposal
- Compliance status

Presently at exiting rural Hospital (FRU), Azara, Kamrup there is deep burial pit and sharp pit facility which exists at site for Yellow (a), (b) and (c) wastes namely human anatomical, animal anatomical and soiled Waste and sharps (white). This is being treated as per norms.

Effort will be made to make a tie up Fresh Air (CBMWTF), Guwahati, for disposal of BMW. Necessary agreement and authorization for BMW will be taken from CBMWTF/ASPCB before the start of such activity

1.4.6 Treatment and Disposal of BMW as per rules as follows:

Type of Waste	Type of Bag or Container to be used	Treatment and Disposal options
Human or Animal anatomical waste	Yellow colored non-chlorinated plastic bags	Incineration or Plasma Pyrolysis or deep burial
Soiled Waste		Incineration or Plasma Pyrolysis or deep burial* In absence of above facilities, autoclaving or micro-waving/hydroclaving followed by shredding or mutilation or combination of sterilization and shredding. Treated waste to be sent for energy Recovery.
Expired or Discarded Medicines (Pharmaceutical waste like antibiotics, cytotoxic drugs including all items contaminated with cytotoxic drugs along with glass or plastic ampoules, vials etc.)	Yellow colored non-chlorinated plastic bags	Expired cytotoxic drugs and items contaminated with cytotoxic drugs to be returned back to the manufacturer or supplier for incineration at temperature >1200 °C or to common bio-medical waste treatment facility or hazardous waste treatment, storage and disposal facility for incineration at >12000°C Or Encapsulation or Plasma Pyrolysis at >12000°C. All other discarded medicines shall be either sent back to manufacturer or disposed by incineration.
Chemical Waste (Chemicals used in production of biological and used or discarded disinfectants)	Yellow colored non-chlorinated plastic bags	Disposed of by incineration or Plasma Pyrolysis or Encapsulation in hazardous waste treatment, storage and disposal facility.

Chemical Liquid Waste : Liquid waste generated due to use of chemicals in production of biological and used or discarded disinfectants, Silver X-ray film developing liquid, discarded Formalin, infected secretions, aspirated body fluids, liquid from laboratories and floor washings, cleaning, house-keeping and disinfecting activities etc.	Separate collection system leading to effluent treatment system	After resource recovery, the chemical liquid waste shall be pre-treated before mixing with other wastewater. The combined discharge shall conform to the discharge norms given in Schedule III.
Discarded linen, mattresses, beddings contaminated with blood or body fluid, routine mask and gown	Non-chlorinated yellow plastic bags or suitable packing material	Non- chlorinated chemical disinfection followed by incineration or Plasma Pyrolysis or for energy recovery. In absence of above facilities, shredding or mutilation or combination of sterilization and shredding. Treated waste to be sent for energy recovery or incineration or Plasma Pyrolysis.
Microbiology, Biotechnology and other clinical laboratory waste (Blood bags, Laboratory cultures, stocks or specimens of micro-organisms, live or attenuated vaccines, human and animal cell cultures used in research, industrial laboratories, production of biological, residual toxins, dishes and devices used for cultures)	Autoclave or Microwave Hydroclave plastic bags or containers	Pre-treat to sterilize with non-chlorinated chemicals on-site as per World Health Organization (WHO) guidelines on Safe management of wastes from health care activities and WHO Blue Book, 2014 and then sent for Incineration.

Contaminated Waste (Recyclable) (a) Wastes generated from disposable items such as tubing, bottles, intravenous tubes and sets, catheters, urine bags, syringes (without needles and fixed needle syringes and vaccutainers with their needles cut) and gloves.	Red coloured non-chlorinated plastic bags or containers	Autoclaving or micro-waving/ hydroclaving followed by shredding or mutilation or combination of sterilization and shredding. Treated waste to be sent to registered or authorized recyclers or for energy recovery or plastics to diesel or fuel oil or for road making, whichever is possible. Plastic waste should not be sent to landfill sites.
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 includes both used, discarded and contaminated metal sharps)	Puncture proof, Leak proof, tamper proof containers	Autoclaving or Dry Heat Sterilization followed by shredding or mutilation or encapsulation in metal container or cement concrete; combination of shredding cum autoclaving; and sent for final disposal to iron foundries (having consent to operate from the State Pollution Control Boards or Pollution Control Committees) or sanitary landfill or designated concrete waste sharp pit.
Glassware: Broken or discarded and contaminated glass including medicine vials and ampoules except those contaminated with cytotoxic wastes.	Puncture proof and leak proof boxes or containers with blue colored marking	Disinfection (by soaking the washed glass waste after cleaning with detergent and Sodium Hypochlorite treatment) or through autoclaving or microwaving or hydroclaving and then sent for recycling.
Metallic Body Implants	Puncture proof and leak proof boxes or containers with blue colored marking	

1.4.7 Resources and tools for BMW management

Effective management of wastes such as sharps and infectious wastes cannot be achieved without provision of safety to waste handlers and proper equipment for storage and transportation of wastes. Therefore, necessary occupational safeguards will be taken into account for waste collection bags, trolleys, needle cutters, personal protective equipment, disinfectants etc.

1.4.8 Occupational health and safety provisions to be implemented at health facilities covering:

- Infection, prevention and Control (IPC) protocols for biological hazards, with special emphasis for high-risk infectious diseases agents for health sector workers e.g., MERS, SARSCov2, Ebola etc.
- Safe work practices for hazardous works e.g., handling sharps, cytotoxic drugs, radiation work, environmental sanitation, etc.
- Preventive immunization of health workers against Hepatitis B
- Availability of Post Exposure Prophylaxis against HIV infections.

1.4.9 Supervision of BMW implementation by Nodal officer (qualified medical practitioner) / members of Waste Management Committee are required, covering following minimum aspects:

- Segregation of waste into appropriate bags and bins.
- Availability and use of needle cutters, waste collection and transportation materials etc.
- Availability and use of personal protective gears by waste handlers.
- Regular environmental cleaning e.g., cleaning of walls, surfaces and equipment etc by housekeeping staff.
- Regular transport of biomedical wastes from wards / clinics to central wastes storage area (if present) or to deep burial site / common treatment facility and quantities of wastes disposed.

1.4.10 Monitoring and evaluation mechanism

Monitoring and evaluation mechanisms with role and responsibilities and resources available for carrying out activities will be developed for the proposed project. The monitoring activities and organization will be aligned to the Quality Assurance activities for patient safety.

ANNEXURE-X

Traffic survey

Traffic Survey for Proposed Project
District Hospital at Azara, Kamrup, Assam
Classified Traffic Volume Count Survey

Road: NH-17
 Location: Near site
 Direction From: NH-17
 Weather: Fine

to Hospital (Survey point 05)

Name of Examiner: Nanneet
 Shift No: 1
 Date & Day: 29.11.2023 Wednesday
 Sheet No: 1

Time Period	Motorised Vehicles																	Non-Motorised Vehicles			
	Car/Jeeep/ Van/other than taxi	Taxi	Auto Rickshaw (3W)	Two Wheeler	Tata Magic/ Shared Auto	Bus					Goods Vehicle					Agri. Tractor		Animal Haul Drawn	Cycle		Others
						Mini Bus	GSRTC Bus	Govt. Inter City Bus	Private Bus	School Bus	Mini LCV	LCV	2-Axe(Truck)	3-Axe(Truck)	BAV(Truck/Trol ly)	Tractor	Tractor Electric				
08:00 to 09:00																					
09:00 to 10:00																					
10:00 to 11:00																					
11:00 to 12:00																					
Total	346	178	58	246	93	13	48	16	60	13	79	83	26	39	51	3	7	4	41	0	0

Checked by:

Time

Traffic Survey for Proposed Project
District Hospital at Azara, Kamrup, Assam
Classified Traffic Volume Count Survey

Road: **NH-17**
 Location: **Near Site**
 Direction From: **NH-17**
 Weather: **Sun**

Hospital (Survey point 02)

Name of Examiner: **Narveet**
 SMT No: **24.11.2023**
 Date & Day: **wednesday**
 Sheet No: **1**

Time Period	Motorised Vehicles																Non-Motorised Vehicles				
	Car/Jeep/ Van (other than taxi)	Taxi	Auto Rickshaw (SW)	Two Wheeler	Tate Magir/ Shared Auto	Bus					Goods Vehicle					Agt. Tractor		Animal Hoad Drawn	Cycle	Others	
						Mini Bus	OSRTC Bus	Govt. Inter City Bus	Private Bus	School Bus	Mini LCV	LCV	2-Axle(Truck)	3-Axle(Truck)	Heavy(Truck/Trol ly)	Tractor	Tractor &Trolley				
																					
12.00 to 1.00	 	 	 	 	 	 	 	 	 	 	 	 	 	 	 	 	 	 	 		
1.00 to 2.00	 	 	 	 	 	 	 	 	 	 	 	 	 	 	 	 	 	 	 		
2.00 to 3.00	 	 	 	 	 	 	 	 	 	 	 	 	 	 	 	 	 	 	 		
3.00 to 4.00	 	 	 	 	 	 	 	 	 	 	 	 	 	 	 	 	 	 	 		
Total	264	133	62	207	64	11	38	9	47	20	70	61	13	24	2	0	1	0	24	0	0

Checked by:

Time

Traffic Survey for Proposed Project
District Hospital at Azara, Kamrup, Assam
Classified Traffic Volume Count Survey

Road: **NH-17**
 Location: **Near site**
 Direction From: **NH-17**
 Weather: **Sun**

To: **Hospital (Survey point 01)**

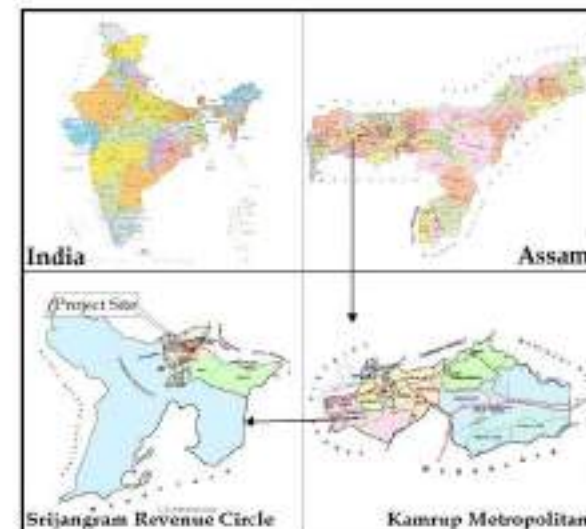
Name of Enumerator: **Nawneet**
 Shift No.:
 Date & Day: **29.11.2023 Wednesday**
 Sheet No.: **1**

Time Period	Motorised Vehicles																	Non-Motorised Vehicles				
	Car/Jeep/Van (other than taxi)	Taxi	Auto Rickshaw (2W)	Two Wheeler	Tata Magic/Shared Auto	Bus					Goods Vehicle					Agricultural		Animal/Hand Drawn	Cycle		Others	
						Mini Bus	DSRTC Bus	Govt. Intell. City Bus	Private Bus	School Bus	Mini LCV	LCV	2-Axle (Truck)	3-Axle (Truck)	MV (Truck/Trailer)	Tractor	Tractor & Trailer					
																						
01 = 00																						
00 = 00																						
00 = 00																						
00 = 00																						
Total	372	107	76	247	83	18	46	55	40	7	81	69	32	24	15	2	4	3	32	0		

Checked by:

Time

Road:		NH 17		Name of Enumerator:		Navreet		District Hospital at Azara, Kamrup, Assam														
Location:		Near Site		Shift No:		1																
Direction from:		From NH-17 towards Hospital (Survey Point 01)		Date & Day:		29.11.2023 Wednesday																
Weather:		Fine		Sheet No:		1																
Time Period:	Motorised Vehicles																		Non-Motorised Vehicles			
	Car/Jen/ Van (other than taxi)	Taxi	Auto Rickshaw (3W)	Two Wheeler	Tata Magic/ Starred Auto	Mini Bus	ARTC Bus	Govt. Inter City Bus	Private Bus	School Bus	Mini LCV	LCV	2- Axle (Tru ck)	3- Axle (Truck)	MAV (Truck/Trol ley)	Agri. Tractor	Tractor & Trolley	Animal/ Hand Drawn	Cycle		Others	
Time Period:																						
Total 8:00:00 AM to 08:00:00 PM	982	498	196	700	240	42	132	36	147	40	230	213	71	87	28	5	12	7	97		3763	
PCU Conversion	1	1	1	0.5	1.5	3	1	3	3	3	1.5	1.5	3	4.5	4.5	1	4.5	4	0.5	2	0	
Sectoral PCU	982	498	196	350	360	126	396	108	441	120	345	319.5	213	391.5	126	15	54	28	48.5	0	0	
Total PCU	5117.5	Based on IRC 64 - 1990																				
08:00:00 AM to 09:00:00 AM	104	56	18	60	31	6	11	6	16	7	21	23	8	9	3	1	4	3	12			
09:00:00 AM to 10:00:00 AM	95	49	13	66	25	4	10	5	18	5	22	20	7	11	4	2	2	1	11			
10:00:00 AM to 11:00:00 AM	85	34	16	61	19	2	14	2	11	1	19	21	5	10	1	0	1	0	10			
11:00:00 AM to 12:00:00 PM	62	39	11	59	18	1	13	3	15	0	17	19	6	9	3	0	0	0	8			
12:00:00 PM to 1:00:00 PM	67	31	12	51	15	3	11	3	13	1	16	15	3	6	1	0	0	0	6			
1:00:00 PM to 2:00:00 PM	61	38	15	49	17	1	8	2	18	8	18	17	4	5	1	0	1	0	4			
2:00:00 PM to 3:00:00 PM	65	29	18	54	17	5	10	1	9	6	17	16	2	7	0	0	0	0	6			
3:00:00 PM to 4:00:00 PM	71	35	17	53	15	2	9	3	7	5	19	11	4	6	0	0	0	0	8			
4:00:00 PM to 5:00:00 PM	77	43	22	61	22	5	12	4	5	4	21	14	5	5	4	1	0	1	7			
5:00:00 PM to 6:00:00 PM	97	39	24	55	26	4	6	2	9	1	23	18	9	7	6	0	2	2	9			
6:00:00 PM to 7:00:00 PM	98	27	17	62	19	2	12	2	11	1	19	21	7	4	2	1	1	0	8			
7:00:00 PM to 8:00:00 PM	103	68	13	69	16	6	15	3	15	1	18	16	11	7	3	0	1	0	8		41	
Total:	982	498	196	700	240	42	132	36	147	40	230	213	71	87	28	5	12	7	97		3763	



Legend

-  Road
-  Project Site

CONSTRUCTION OF 100 BEDED DISTRICT
HOSPITAL UNDER ASSIST
AT AZARA (KAMRUP), ASSAM

TRAFFIC STUDY MAP

Prepared by
Gaheli Center of Research and
Development Pvt. Ltd.

Traffic Study

Vehicular Traffic Density

Traffic study was carried out as primary data to know the existing traffic density. Traffic survey forms are attached as **Annexure**.

Incremental pollution load as per IRC 64 has been calculated to estimate the level of services (LOS). Traffic study was conducted at the following survey point:

1. From NH-17 towards Hospital

Then depending on the capacity of the road, the number of vehicles that will be added to the present scenario will be compared to the carrying capacity as recommended by Indian Road Congress (IRC). The existing volume of traffic and, the Level of Service are given below:

Traffic data was collected from the following points.

1. NH17 near site towards Hospital (3763- Vehicle Count)

The road is divided 2 lane (NH17) with RoW = 15.5 Meters.



Traffic Survey Photographs

Survey hours: 8.00 am to 8.00 pm

Vehicle Count in PCU = 5117.5

1: From NH-17 towards Hospital (5117.5–PCU)

Total accommodative capacity of the NH17, IRC: 64 – 1990 is 15,000 PCU.

Carrying capacity, NH17 = Volume /Capacity = 5117.5/ 15,000 = 0.34 (LOS – B – Very Good)

Additional Traffic load added due to proposed project:

Number of Cars: 209 PCU

Modified V/C Ratio NH17 near site

= Existing PCU + Additional PCU load of project /15,000

=5117.5+209/15,000 = 0.355

Inference: New V/C ratio near NH17 is 0.355 (LOS – B – Very Good)

Even if the entire load of project of 209 PCU (worst case scenario) is added upon, the level of service will have minimal impact and correspond to LOS – B – Very Good near NH17.

ANNEXURE-XI

Dust mitigation plan

ANNEXURE-XI

DUST MITIGATION PLAN

Introduction: In the building Construction projects, dust mitigation is one of the primary concern and which needs to be addressed properly to minimize its impacts. In the proposed project, dust mitigation measures have been proposed for different stages of the project.

The Proposed Location of the new 100 bedded District Hospital is in the plot of Azara Rural Hospital (FRU) having 30 beds-exiting located adjacent to NH-17 road. The Total Plot Area is 6687.18 Sq.m (4 Bigha 4 Katha 19.86 Lessa). The Geographical Location is 26°7'28.04"N 91°37'2.66"E.

Dust Mitigation measures proposed for the project is given below:

S. No	Project Stage	Dust generation Source	Mitigation Measures
1.	Pre-construction Stage	1. Demolition waste 2. Site Preparation 3. Vehicle Movement	1. Tarpaulin or green net should be there around the boundary of the construction site. 2. The vehicle carrying the demolition waste should be fully covered with tarpaulin sheet. 3. All vehicles including carrying construction debris of any kind should be cleaned and wheels washed. 4. All construction debris and construction material of any kind should be stored on the site and not dumped on public roads or pavements. 5. No loose soil or sand or Construction & Demolition Waste or any other construction material that causes dust shall be left uncovered. 6. Every worker working on construction site and involved in loading, unloading and

			carriage of construction material and construction debris should be provided with dust-mask to prevent inhalation of dust particle. 7. Vehicle with PUC certificate will be allowed in construction site. 8. Construction and demolition waste should be recycled on-site or transported to authorized recycling facility and due record of the same should be maintained.
2.	Construction phase	1. Construction activities 2. Vehicle Movement	1. Tarpaulin or green net should be there around the boundary of the construction site. 2. The vehicle carrying the construction and demolition waste, construction materials should be fully covered with tarpaulin sheet. 3. All vehicles including carrying construction debris of any kind and construction material should be cleaned and wheels washed. 4. All construction debris and construction material of any kind should be stored on the site and not dumped on public roads or pavements. 5. No loose soil or sand or Construction & Demolition Waste or any other construction material that causes dust shall be left uncovered. 6. Every worker working on construction site and involved in loading, unloading and

			carriage of construction material and construction debris should be provided with dust-mask to prevent inhalation of dust particle. 7. Vehicle with PUC certificate will be allowed in construction site. 8. No grinding and cutting of building materials in open area. Wet jet should be used in grinding and stone cutting. 9. Unpaved surfaces, if any and areas with loose soil should be adequately sprinkled with water to suppress dust. 10. Dust mitigation measures shall be displayed prominently at the construction site for easy public viewing.
3.	Operational phase	Vehicular movement	Water sprinkling will be done twice a week.

ANNEXURE-XII

Environment monitoring reports



Gaheli Environmental Laboratory
(A unit of Gaheli Center of Research and Development Pvt. Ltd.)
(ISO 9001:2015, 14001:2015, 18001:2007 Certified Company)



Circuit House Road, Near Parvati Orthopaedic Hospital, New Paradise Fountain Circle,
Porbandar - 360575, Gujarat, E-mail : contact@gerdindia.com, website : www.gerdindia.com
Tel : 0286-2253630, Mobile: +91-9990416608, GSTIN: 24AHCPA6690B1ZV

TEST REPORT

Report Code: GEI/A/2023/12/01-001
Issued to: Project in charge- Construction of
proposed 100 Beds District Hospital under
ASSIST at Azara, Kamrup, Assam

Issue Date : 01.12.2023
Date of Sampling : 29.11.2023

RESULTS (Ambient Air Quality Analysis)

SAMPLING DETAILS

Sample Collected by : GEL STAFF
Sampling Protocol : Portable air detector (AQM-02)
Weather Condition : Clear Sky

S.No	Location of monitoring	Parameters						Temperature °c	Humidity %
		PM10 µg/m³	PM2.5 µg/m³	PM1 µg/m³	SO2 µg/m³	NO2 µg/m³			
1.	Project site	17	15	11	5.2	8.6		30	50
2.	Near Project site	37	32	24	6.3	8.9		28	52
3.	Chanchaprabha High School	27	24	18	5.9	7.8		27	55
4.	Mahannaya Temple Durgu	35	31	23	6.1	8.7		28	56
5.	Garal village	27	24	18	5.8	6.5		26	60
	NAAQS	110	60	—	80	80		—	—

****End of Report****



Authorized Signatory

Varsha Pandey
(Managing Director)

Serial No.: 8990



Dispatch Date: 01.12.2023

Dispatch No.: 8990



Gaheli Environmental Laboratory
(A unit of Gaheli Center of Research and Development Pvt. Ltd.)
(ISO 9001:2015, 14001:2015, 18001:2007 Certified Company)

Circuit House Road, Near Parwani Orthopaedic Hospital, New Paradise Fountain Circle,
Porbandar - 360575, Gujarat, E-mail : contact@gelindia.com, website : www.gelindia.com
Tel : 0286-2253630, Mobile: +91-9990416608, GSTIN: 24AHCPA6690R1ZV



TEST REPORT

Sample Description: Ambient Noise

Report Code: GEL/N/2023/12/01-001
Issued to: Project in charge- Construction of
proposed 100 Beds District Hospital under
ASSIST at Azara, Kamrup, Assam

Issue Date : 01.12.2023
Date of Sampling : 29.11.2023
Sample Collected by : GEL STAFF

RESULTS

(Ambient Noise Quality Analysis)

S. No.	Date	Location	Zone	Limit for As Per EPA, 1986 ; Leq, dB (A)		Observed Value Leq, dB (A)	
				Day Time*	Night Time**	Day Time*	Night Time**
1.	29.11.2023	Project site	Silence zone	50	40	48.5	38.3
2.	29.11.2023	Near Project site	Commercial area	65	55	64.1	52.4
3.	29.11.2023	Chandraprabha School	High Silence zone	50	40	48.7	37.3
4.	29.11.2023	Mahamaya Temple	Durga Silence zone	50	40	48.4	37.8
5.	29.11.2023	Garal village	Residential area	55	45	52.8	43.6
* Day Time			6.00 a.m. to 10.00 p.m.				
**Night Time			10.00 p.m. to 6.00 a.m.				

****End of Report****



Authorized Signatory
Varsha Pandey
Varsha Pandey
(Managing Director)

Serial No.: 8991



Dispatch Date: 01.12.2023

Dispatch No.: 8991



Gaheli Environmental Laboratory

(A unit of Gaheli Center of Research and Development Pvt. Ltd.)

(ISO 9001:2015, 14001:2015, HASAS 18001:2007 Certified Company)

Circuit House Road, Near Parwani Orthopaedic Hospital, New Paradise Fountain Circle,
Porbandar - 360575, Gujarat, E-mail - contact@geldindia.com, website - www.geldindia.com
Tel : 0286-22536311, Mobile: 191-999416608, GSTIN: 24AHCPA6690B1ZV



TEST REPORT

Report Code: GEL/S/2023/12/01-001

Issued to: Project in charge- Construction of
proposed 100 Beds District Hospital under
ASSIST at Azara, Kamrup, Assam

Issue Date : 01.12.2023

Sample Collected by : Anrit Kr

Sample Collected on : 29.11.2023

Sampling Protocol : GEL/LAB/SOP/SOIL/01

Sample Quantity : 1 kg

Sample Packing : Zip Polybag

Sample Description: Soil (Project Site) and Garal village

RESULTS

(Soil Quality Analysis- Project Site, near village-Garal)

S. No.	Parameters	Units	Test Method	SQ1	SQ2
				Project Site	Garal Village
1	Texture	-	GEL/LAB/SOP/SOIL/22	Sandy Loam	Sandy Loam
	Sand	%		60	58
	Silt	%		29	31
	Clay	%		11	11
2	*Color	-	GEL/LAB/SOP/SOIL/07	Greyish to Brownish	Greyish to Brownish
3	pH (1:2 Suspension)	-	IS 2720 (P-26): 1987, RA 2011	6.43	6.33
4	Specific Conductivity	$\mu\text{mhos/cm}$	IS 14767: 2000, RA 2016	519	516
5	Moisture	%	IS 2720(Part-2): 1973, RA 2015	27.1	26.3
6	Exchangeable Potassium	mg/kg	GEL/LAB/SOP/SOIL/07	8.5	7.8
7	Exchangeable Sodium	mg/kg	GEL/LAB/SOP/SOIL/06	22.7	21.2
8	Exchangeable Calcium	mg/kg	GEL/LAB/SOP/SOIL/08	312	315
9	Exchangeable Magnesium	mg/kg	GEL/LAB/SOP/SOIL/08	84.2	84.0
10	Porosity	%	GEL/LAB/SOP/SOIL/20	35.5	33.0
11	Organic Matter	%	IS 2720 (P-22): 1972, RA 2010	0.57	0.56
12	Phosphorous	mg/kg	GEL/LAB/SOP/SOIL/10	12.2	11.7



Authorized Signatory

(Signature)
Vandana Pandey
(Managing Director)

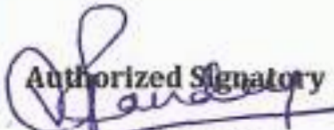
Serial No.: 8992



Dispatch Date: 01.12.2023

Dispatch No.: 8992




Authorized Signatory

Varsha Pandey

Serial No.: 8993

Dispatch Date: 01.12.2023

Dispatch No.: 8993

DISTRICT LEVEL LABORATORY (PHED), KAMRUP

Address: Bamunimaidam, Guwahati 21

Email ID: phe.kamrup@gmail.com, Ph No: 0361-225641

Test Report

UID No.: TC977623000000623F

Issue Date: 12/12/2023

Customer Reference No: KDLL/23/51

Issue No: 51

Customer Name & Address: Gaheli Environmental Laboratory, North West Delhi

Sample collected on dated: 29/11/2023

Sample Collected by: Gaurav Jaiswal

Sample Location: Azara CHC Project Site

Date of Analysis started: 01/12/2023

Temp: 25.5°C Humidity: 64%

Test Sample: Drinking Water

Customer Contact No: 9818736012

Sample received on dated: 01/12/2023

Quantity: 1000 ml

Sample Condition: Good Condition at 4°C

Dated of analysis completed: 02/12/2023

RES ULTS

Sr. No.	Parameter	Protocol Used	Results	IS: 10500:2012(Second Revision)		Unit
				Desirable limit	Max. Permissible limit (in absence better alternate source)	
1	Colour	IS: 3025 (Part 4)	≤6	5	15	Hazen
2	Taste	IS: 3025 (part 8)	Agreeable	Agreeable	Agreeable	NTU
3	Turbidity	IS: 3025 (Part 10)	0	1	5	pH unit
4	pH	IS: 3025 (Part 11)	7.01	6.5 – 8.5	No relaxation	mg/L
5	TDS	IS: 3025 (Part 16)	110	500	1000	mg/L
6	Chloride	IS: 3025 (Part 32)	16.37	250	600	mg/L
7	Total Alkalinity	IS: 3025 (Part 23)	4.2	200	600	mg/L
8	Total Hardness	IS: 3025 (Part 21)	50.4	200	600	mg/L
9	Calcium (as Ca)	IS: 3025 (Part 40)	15.15	75	200	mg/L
10	Magnesium	APHA (24th ed) 3500 Mg B	8.56	30	100	mg/L
11	Total Iron	APHA 3500 (24th Ed) Fe B	0.26	1	No relaxation	mg/L
12	Arsenic	APHA 3500 (24th Ed) As B	-	0.01	No relaxation	mg/L
13	Free Residual Chlorine	IS 3025(Part 26)	-	0.2	1	mg/L
14	Fluoride	APHA (24rd Ed) 4500 F	0.020	1	1.5	mg/L
15	Nitrate	APHA (24rd Ed) 4500	9.120	45	No relaxation	mg/L
16	Sulphate	IS 3025 (Part 24)	19.412	200	400	mg/L
17	Odour	IS 3025 (Part 5)	Agreeable	Agreeable	Agreeable	

Notes:

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END OF TEST REPORT

Authorized By,



Nova Deka
Quality Manager
Kamrup DLL

QUALITY MANAGER
DLL(NABL), PHED, ASSAM
Bamunimaidam, Guwahati-21

LABORATORY (PHED), KAMRUP

Address: Bamunimaidam, Guwahati 21

Email ID: phe.kamrup@gmail.com, Ph No: 0361-225641**Test Report**

Report No: 72

Sample ID No: 823

Sample Description: Drinking Water (Handpump)

Sample Type: Water

Sample collected on dated: 29/11/2023

Sample collected by: Gaurav Jatav

Sample location: Azara CHC Project site

Date of Analysis started: 01/12/2023

Issue date: 12/12/23

Issued to: Gaheli Environmental Laboratory

Temperature: 26.2°C Humidity: 60%

Sample Condition: Good Condition at 4°C

Sample quantity: 100 ml

Sample received on dated: 01/12/2023

Date of Analysis completed: 03/12/2023

Sl No	Parameter	Results	Desirable limit	Max. Permissible Limit (in absence better alternate source)	Unit
1.	Total Coliform	Absent	No coliform organism/100ml	No organism/100ml	CFU/100ml
2.	Faecal Coliform	-	No coliform organism/100ml	No organism/100ml	CFU/100ml

Notes

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.....END.....

Authorized signatory


Nova Deka
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BAMUNIMADAM, GUWAHATI-21

DISTRICT LEVEL LABORATORY (PHED), KAMRUP

Address: Bamunimaidam, Guwahati 21

Email ID: phe.kamrup@gmail.com, Ph No: 0361-225641

Test Report

UID No.: TC977623000000824F

Issue Date: 12/12/2023

Customer Reference No: KDLL/23/52

Issue No: 52

Customer Name & Address: Gaheli Environmental Laboratory, North West Delhi

Sample collected on dated: 29/11/2023

Sample Collected by: Gaurav Jatai

Sample Location: Garal PHC Project Site

Date of Analysis started: 01/12/2023

Temp: 25.5°C Humidity: 64%

Test Sample: Drinking Water

Customer Contact No: 9818736012

Sample received on dated: 01/12/2023

Quantity: 1000 ml

Sample Condition: Good Condition at 4°C

Dated of analysis completed: 02/12/2023

RES ULTS

Sr. No.	Parameter	Protocol Used	Results	IS: 10500:2012(Second Revision)		Unit
				Desirable limit	Max. Permissible limit (in absence better alternate source)	
1	Colour	IS: 3025 (Part 4)	≤6	5	15	Hazen
2	Taste	IS: 3025 (part 8)	Agreeable	Agreeable	Agreeable	NTU
3	Turbidity	IS: 3025 (Part 10)	6	1	5	pH unit
4	pH	IS: 3025 (Part 11)	7.79	6.5 - 8.5	No relaxation	mg/L
5	TDS	IS: 3025 (Part 16)	100	500		mg/L
6	Chloride	IS: 3025 (Part 32)	15.59	250	1000	mg/L
7	Total Alkalinity	IS: 3025 (Part 23)	14.7	200	600	mg/L
8	Total Hardness	IS: 3025 (Part 21)	46.2	200	600	mg/L
9	Calcium (as Ca)	IS: 3025 (Part 40)	13.46	75	200	mg/L
10	Magnesium	APHA (24th ed) 3500 Mg B	7.95	30	100	mg/L
11	Total Iron	APHA 3500 (24th Ed) Fe B	3.46	1	No relaxation	mg/L
12	Arsenic	APHA 3500 (24th Ed) As B	-	0.01	No relaxation	mg/L
13	Free Residual Chlorine	IS 3025 (Part 26)	-	0.2	1	mg/L
14	Fluoride	APHA (24rd Ed) 4500 F	0.032	1	1.5	mg/L
15	Nitrate	APHA (24rd Ed) 4500	9.008	45	No relaxation	mg/L
16	Sulphate	IS 3025 (Part 24)	20.102	200	400	mg/L
17	Odour	IS 3025 (Part 5)	Agreeable	Agreeable	Agreeable	

Notes:

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END OF TEST REPORT

Authorized By,

Nova Deka
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Kamrup DLLQUALITY MANAGER
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Bamunimaidam, Guwahati-21

LABORATORY (PHED), KAMRUP
Address: Bamunimaidam, Guwahati 21
Email ID: phe.kamrup@gmail.com, Ph No: 0361-225641

Test Report

Report No: 73

Sample ID No: 824

Sample Description: Drinking Water (Handpump)

Sample Type: Water

Sample collected on dated: 29/11/2023

Sample collected by: Gaurav Jatav

Sample location: Garal PHC Project site

Date of Analysis started: 01/12/2023

Issue date: 12/12/23

Issued to: Gaheli Environmental Laboratory

Temperature: 28.2°C Humidity: 60%

Sample Condition: Good Condition at 4°C

Sample quantity: 100 ml

Sample received on dated: 01/12/2023

Date of Analysis completed: 03/12/2023

Sl No	Parameter	Results	Desirable limit	Max. Permissible Limit (in absence better alternate source)	Unit
1.	Total Coliform	Absent	No coliform organism/100ml	No organism/100ml	CFU/100ml
2.	Faecal Coliform	-	No coliform organism/100ml	No organism/100ml	CFU/100ml

Notes

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.....END.....

Authorized signatory


Nova Dekka
Quality Manager
Kamrup DLL

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DLL(NABL), PHED, ASSAM
Bamunimaidam, Guwahati-21

Test Report

UID No.: TC9776230000008245	Issue Date: 12/12/2023
Customer Reference No: KDLL/23/53	Temp: 25.5°C Humidity: 64%
Issue No: 53	Test Sample: Drinking Water
Customer Name & Address: Gaheli Environmental Laboratory, North West Delhi	Customer Contact No: 9818736012
Sample collected on dated: 29/11/2023	Sample received on dated: 01/12/2023
Sample Collected by: Gaurav Jataw	Quantity: 1000 ml
Sample Location: Rani, Deepor Beel Near Project Site	Sample Condition: Good Condition at 4°C
Date of Analysis started: 01/12/2023	Dated of analysis completed: 02/12/2023

RES ULTS

Sr. No.	Parameter	Protocol Used	Results	IS: 10500:2012 (Second Revision)		Unit
				Desirable limit	Max. Permissible limit (in absence better alternate source)	
1	Colour	IS: 3025 (Part 4)	≤6	5	15	Hazen
2	Taste	IS: 3025 (part 8)	Agreeable	Agreeable	Agreeable	
3	Turbidity	IS: 3025 (Part 10)	0	1	5	NTU
4	pH	IS: 3025 (Part 11)	7.33	6.5 – 8.5	No relaxation	pH unit
5	TDS	IS: 3025 (Part 16)	170	500		mg/L
6	Chloride	IS: 3025 (Part 32)	26.51	250	1000	mg/L
7	Total Alkalinity	IS: 3025 (Part 23)	23.1	200	600	mg/L
8	Total Hardness	IS: 3025 (Part 21)	96.6	200	600	mg/L
9	Calcium (as Ca)	IS: 3025 (Part 40)	33.66	75	200	mg/L
10	Magnesium	APHA (24th ed) 3500 Mg B	15.29	30	100	mg/L
11	Total Iron	APHA 3500 (24th Ed) Fe B	0.62	1	No relaxation	mg/L
12	Arsenic	APHA 3500 (24th Ed) As B	-	0.01	No relaxation	mg/L
13	Free Residual Chlorine	IS 3025 (Part 26)	-	0.2	1	mg/L
14	Fluoride	APHA (24rd Ed) 4500 F	0.029	1	1.5	mg/L
15	Nitrate	APHA (24rd Ed) 4500	8.014	45	No relaxation	mg/L
16	Sulphate	IS 3025 (Part 24)	20.416	200	400	mg/L
17	Odour	IS 3025 (Part 5)	Agreeable	Agreeable	Agreeable	

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END OF TEST REPORT

Authorized By,



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LABORATORY (PHED), KAMRUP

Address: Bamunimaidam, Guwahati 21

Email ID: phe.kamrup@gmail.com, Ph No: 0361-225641**Test Report**

Report No: 74
Sample ID No: 825
Sample Description: Surface Water
Sample Type: Water
Sample collected on dated: 29/11/2023
Sample collected by: Gaurav Jatav
Sample location: Rani, Deepar Lake Near Project site
Date of Analysis started: 01/12/2023

Issue date: 12/12/23
Issued to: Gaheli Environmental Laboratory
Temperature: 26.2°C Humidity: 60%
Sample Condition: Good Condition at 4°C
Sample quantity: 100 ml
Sample received on dated: 01/12/2023
Date of Analysis completed: 03/12/2023

Sl No	Parameter	Results	Desirable limit	Max. Permissible Limit (in absence better alternate source)	Unit
1.	Total Coliform	Present	No coliform organism/100ml	No organism/100ml	CFU/100ml
2.	Faecal Coliform	-	No coliform organism/100ml	No organism/100ml	CFU/100ml

Notes

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END

Authorized signatory


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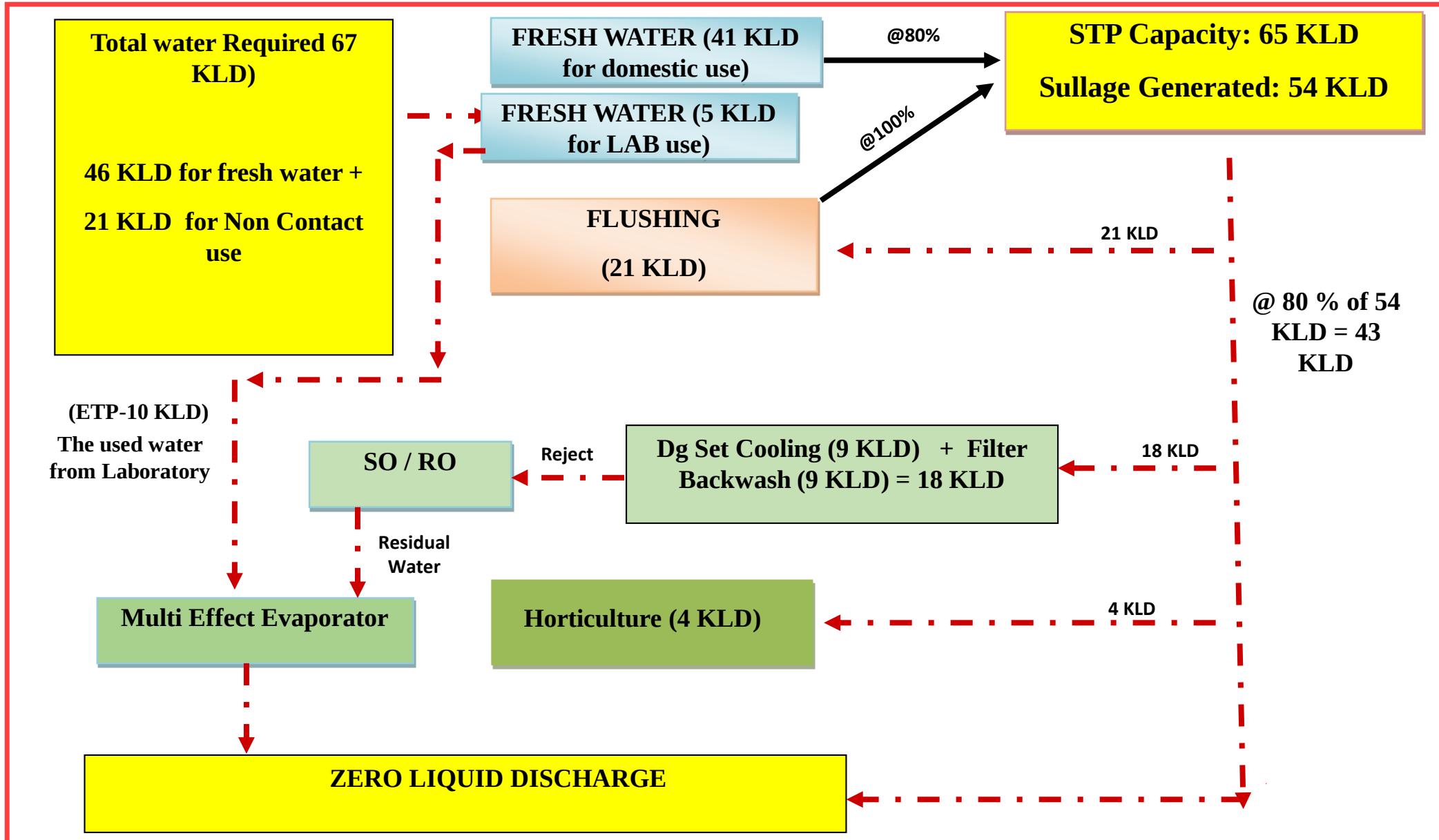
ANNEXURE-XIII

Water requirement

WATER REQUIREMENT CALCULATION

S. No	Description	No of Occupancy	Consumption Litres per Head/ day NBC, 2016 -BIS	Total /Litres per Head/ day /KLD	Fresh water (KLD)	Non contact use (KLD)
1.	Number of beds	100	450 LPH/D (300 fresh + 150 Non contact water)	45000 LPH/D or 45.0 KLD	30.0	15.0
2.	OPD	1000	15 LPH/D (10 fresh + 5 Non contact water)	15000 LPH/D or 15.0 KLD	10.0	5.0
3.	Labs, Operation Theaters & Labour Rooms Etc.	--	5,000 LPH/D or 5 KLD	5 KLD	5.0	--
4.	Mortuary and Gas Manifold	32	45 (25 fresh + 20 Non contact water)	1440 LPH/D or 1.44 KLD	0.80	0.64
5.	DG Set	1250 KVA	0.9 *KVA * 8 HOURS	90000 LPH/D or 9.0 KLD	--	--
6.	Horticulture	741 Sqm	5 sqm/litre	4 KLD	--	--
7.	Filter Backwash	--	--	9000 LPH/D or 9.0 KLD	--	--
Total Water (in KLD)					40.8 Say 46 KLD	20.64 Say 21 KLD

WATER BALANCE DIAGRAM



ANNEXURE-XIV
**Occupational Health and Safety
Plan**

ANNEXURE-XIV

Occupational Health and Safety Plan

1.0 Introduction: An Occupational Health and Safety (OHS) Plan is a comprehensive approach aimed at ensuring the safety and health of workers working at the site. The plan sets out processes and practices to help prevent injuries, illnesses, and fatalities on the job.

Its emphasis is on proactive measures to identify and manage workplace hazards, thereby reducing risks.

2.0 Purpose of an Occupational Health and Safety Plan: The purpose of an Occupational Health and Safety Plan is the prevention of workplace injuries, illnesses, and fatalities. Here are the main objectives and purposes of an OHS Plan:

Protection of Workers: At its core, the primary purpose of an OHS Plan is to protect employees and other individuals at the workplace from potential hazards that could harm them physically, mentally, or emotionally.

Compliance with Legislation: An OHS Plan helps ensure that the project is compliant with these regulatory requirements.

Identification of Hazards: The plan provides a systematic approach to identifying potential dangers in the workplace, from machinery operations during construction phase to health hazards exposure during operational phase.

Risk Management: Beyond identifying hazards, the plan outlines measures to assess, prioritise, and mitigate risks associated with these hazards.

Emergency Preparedness: The plan ensures that there are protocols in place to handle unexpected events, such as fires, chemical spills, or natural disasters, thereby reducing potential harm.

Promotion of a Safety Culture: A well-documented and communicated OHS Plan fosters a culture where safety is valued and prioritised, encouraging workers at all levels to participate actively in safety initiatives.

Reduction in Economic Costs: Injuries, illnesses, and accidents can be expensive in terms of medical costs, compensation, lost workdays, and reduced productivity. An OHS Plan helps reduce these economic impacts.

Continuous Improvement: The plan provides mechanisms for regular reviews, audits, and feedback, facilitating a process of ongoing improvement in safety standards and practices.

Training and Awareness: The OHS Plan ensures that employees are adequately trained and aware of potential workplace hazards and know how to protect themselves.

Clear Communication: It sets clear lines of communication regarding safety concerns, reporting mechanisms, and responsibilities, ensuring that everyone knows what's expected of them.

3. OHS Provisions for the proposed project: As the proposed project plans major infrastructure construction in the form of developing new district hospital and refurbishment

of the existing ones. So, comprehensive OHS provisions to protect health and safety of the labour workforce will be provided on construction site. These provisions shall incorporate in Construction Contracts by the construction agency and monitored by health facilities officials in a systematic manner.

3.1 Construction phase: The contractor will manage construction related workplace occupational health and safety, community health and safety risks. Occupational health and safety measures as given below will be implemented:

- PPE will be provided to all workers along with provision of onsite toilet and washing facilities, potable drinking, waste and rest areas, First -Aid room at site.
- Cordoning off areas under construction and provide hazards communication signage to warn of ongoing construction works and prevent nuisance of dust etc. to the health workers and community.
- Providing Safety signs that will allow management to warn and raise health and safety awareness for employees and visitors. Appropriately place them around the site where necessary.
- Workers will be made familiar with the construction site safety tips and different signs: prohibition signs, mandatory signs, warning signs, safe condition signs, and fire fighting equipment signs.
- Often, accidents occur due to the misuse of a tool or equipment. Using makeshift tools will be avoided. Instead, the correct tool to get the job done quicker and safer will be used.
- Pre-checks on tools and equipment will be done before commencing work and it will be ensured that tools and equipment to be used are free of defect or damage.
- Training will be given to workers to report defects and near misses on site as soon as they notice them. The sooner issues get reported, the fewer chances of them worsening and causing accidents or further damage.
- Planning and implementing the awareness sessions for workers and community on health and safety hazards and risks and their role in their management including their responsibilities.

3.2 Operational Phase: Occupational Health and safety provisions like regular Immunizations, health screening, post exposure prophylaxis and use of personal protective devices etc. for health care providers will be provided to reduce occupational

hazard during operational phase. Further details related to hospital infection and its prevention measures are provided separately under *Annexure XIX Hospital Infection Prevention and Control Plan*.

4.0 Monitoring and evaluation:

Safety & Occupational Health issues will periodically monitor and reviewed at all relevant levels, including the highest levels will be done. This will ensure continual improvement for District hospital which helps in minimize occupational health and safety issues.

ANNEXURE-XV
Worker site Management Plan

ANNEXURE-XV

Worker site Management Plan

1.0 Introduction

The Worker site Management Plan sets out the Program's approach to meeting national requirements as well as objectives of the World Bank's Environmental and Social Framework, specific objectives of Environmental and Social Standard 2: Labor and Working Conditions (ESS2) and Standard 4: Community Health and Safety (ESS4).

2.0 Assessment of Key Potential Labor Risks

The safety and health risks to which the workers and staff may be exposed from any project-related activities will be assessed. The ability to prevent or eliminate such risks or, if the risk cannot be controlled or eliminated, measures to protect workers and staff from exposure will be explored. Though, given the small-scale construction works, no major risks are envisaged.

Potential risks that may arise from the nature of activities to be undertaken include:

1. Employment practice that are not compliant with either labor law or ESS 2. For example, not providing written documents of assignments, wages not proportionate with tasks performed, or industry standards, excess workload without provision of adequate rests and leisure, lack of hygiene facilities, discrimination towards women and labor with disability, unlawful termination, and withholding of benefit, etc.
2. Lack of Occupational Health and Safety (OHS) practice and procedures during construction and operation resulting in unsafe work environment.
3. Short and long-term effects on health due to over exposure to dust, noise levels, and exposure to chemicals /hazardous wastes.
4. Absence or inadequate or non-responsive emergency response mechanism for rescue of workforce, during natural calamities like cloud bursts, landslides, disasters due to earthquake/floods/fire outbreak, etc.
5. Lack of adequate sanitation and health facilities at the work sites.
6. Community health and safety issues, especially, rise of communicable diseases, including Malaria and Cholera to the workforce and staff.
7. The conduct of hazardous work, such as working at heights or in confined spaces, use of heavy machinery, or use of hazardous materials.
8. Generation of solid, liquid and fecal wastes, especially around labor camps and toilet area.
9. Rise of incidence of Gender-Based Violence GBV (Sexual Harassment, Sexual Exploitation, and Abuse, Rape and Discrimination) emanating from the labors.
10. Increased competition over resources due to influx of labor; labor conflicts and work conditions.
11. Other project related risk may include of child and forced labor and use of unscrupulous labor practice, and denial for workers' rights to form workers organizations, etc. (particularly for unskilled construction workers/labor), etc.

3.0 Mitigation and its Measures

1. There is a need to demarcate the risk zones. Proper signage for notifying the zones will be placed, and awareness regarding the same will be created among the most impacted workers and staff.
2. Procedure and guidelines will be defined as per best industry practices and legislative requirements applicable for task-specific hazard prevention and safety,
3. Provision of first aid room with necessary first aid items and on-call first aid providers/attendees
4. Avoiding and minimizing the use and release of hazardous materials; for example, non-hazardous materials can substitute asbestos in building materials. Preventing uncontrolled releases of hazardous materials to the environment, e.g., paint, oils, etc.
5. Hazard communication and training programs to prepare workers to recognize and respond to workplace chemical hazards.
6. Provide appropriate Personal Protective Equipment (PPE) to workers.
7. Use of dust control methods such as covers, water suppression on loose materials and surfaces, or increased moisture content for open materials storage piles to reduce particulate matter and dust exposure.
8. Provisions will be made to provide a clean and hygiene eating place and safe drinking water at the workplace along with quarterly testing of drinking water. Similarly, an adequate provision will be made for clean and separate toilets for men and women with sewage treatment (Mobile STP).
9. About 75 percent of the contract workers are anticipated to be men, and women's participation is around 25 percent. The women labor force not only face GBV/SEA/SH in their respective homes, but their numerical inferiority at the workplace further marginalizes their situation and accentuates the chances of GBV/SEA/SH at the work sites. The Contractors are expected to prevent such a situation by developing Codes of Conduct (CoCs- Annex 3) for their workers. This needs to be continuously reinforced through positive action and trainings. The Code of Conduct will highlight the positive behavior to be demonstrated by their workers, including maintaining harmonious relations with the local communities. The CoCs will include all persons employed by the contractor, including sub-contractors and suppliers, to acceptable standards of behavior in its applicability. The CoCs will have sanctions for non-compliance, including non-compliance with specific policies related to gender-based violence, sexual exploitation, and sexual harassment (e.g., termination). The CoC will be written in plain language and signed by each worker.
10. Salary and other emoluments will conform to the Rules and Regulations issued by the Department of Personnel and Training (DoPT), GoI.
11. The Direct workers at the DHE will work as per State Government Rules, which will follow the relevant notification by the Department of Personnel and Training, GoI. The work hours for contracted workers will not be more than 48 hours per week and 9 hours per day. Any contract or community workers made to work over the same will be entitled to overtime pay per building and other construction workers act, 1996.

ANNEXURE-XVI

Grievance Redressal Mechanism

ANNEXURE-XVI

Grievance Redressal Mechanism

1.0 Introduction

Grievance Redressal Mechanism (GRM) shall be established to receive, assess and facilitate the resolution of affected persons' concerns, objections, and grievances about the social and environmental performance at project level. The main aim of GRM is to provide a time-bound and transparent mechanism to voice, influence and resolve social and environmental concerns related to the project. This system has been purely designed for stakeholders such as aggrieved parties, project affected people, employees, labor, contractor, workers etc. The GRM is anchored on the five principles to guide in facilitating and resolving concerns and grievances:

- **Transparency:** The GRM encourages comments and feedback (negative and positive) to improve the project. The community must be aware of all complaints, grievances and problems reported, must be involved in their solution and must be kept informed on progress made in resolving grievances.
- **Socially Inclusive:** The whole community is given the opportunity to raise concerns and the right to be accorded a response. The GRM provides an accessible, inclusive, gender-sensitive and culturally appropriate platform for receiving and facilitating resolution of affected persons' grievances related to the project.
- **Simple and Accessible:** Procedures to file complaints and seek solutions are to be kept simple and easy to understand by the affected people, most specially the non-literate, and their communities.
- **Anonymity and Security:** To remain accessible, open and trusted, the GRM must ensure that the identities of those filing complaints are kept confidential. This encourages people to openly participate.
- **Institutional Outreach:** Through the GRM, the project can strengthen channels of communication and mechanisms for grievance redressed or solution at the community/project area level.

The possible grievances of the community envisaged, and which could be entertained/addressed through this project include:

- Community development, employment and other issues
- Risks to community, health & safety (e.g. traffic, risk during construction of tower or stringing of conductor)
- Accidents (e.g. involving livestock, or other property including community property)
- Unethical Behaviors such as GBV, Sexual Exploitation and Abuse (SEA)/ Sexual Harassment (SH)

- Noise/dust/air emissions or any other impact on environment caused by project or sub-contractors
- Demand for development interventions in the community
- Issues owing to behavior of the security personnel and general attitude of the local community
- Issues related to cultural conflicts or opportunity conflict owing to presence of migrant workers in the community or in the nearby areas
- Any attempts to conceal the above

2.0 Gender Based Violence, Sexual Exploitation and Abuse (SEA)/ Sexual Harassment (SH) Guidance

The construction of district hospital might draw laborers from outside the state or from neighboring districts, posing a risk to the host communities. Similarly, the project will finance the recruitment and deployment of the health workforce, which may exacerbate the risks of sexual harassment, gender based discrimination and violence and sexual abuse in the workplace.

To address the risk of SEA/SH, it is important to build capacity of all project personnel and health care professionals by sensitizing them to Gender Based Violence(GBV), sexual exploitation and abuse (SEA) and sexual harassment (SH) issues and measures as part of their training, and address mandatory provisions of “*The Sexual Harassment of Women at Workplace (Prevention, Prohibition and Redressal) Act, 2013*’. Additionally, HR policies of health institutions will be strengthened under the project laying out zero tolerance for SEA/SH at the workplace. Staff of implementing agencies, line departments including contract workers will also be subject to and trained on codes of conduct, for interacting with co-workers, beneficiaries, and local communities.

3.0 Workers’ Code of Conduct

1. Carry out his/her duties competently and diligently.
2. Comply with this code of conduct and all applicable laws, regulations, and other requirements, including requirements to protect the health, safety, and well-being of other personnel and any other person.
3. Maintain a safe working environment including by:
 - a) Ensuring that workplaces, machinery, equipment, and process under each person’s control are safe and without risk to health
 - b) Wearing required personal protective equipment
 - c) Using appropriate measures relating to chemical, physical and biological substances and agents; and
 - d) Following applicable emergency operating procedures.

4. Report work situations that he/she believes are not safe or healthy and remove himself/ herself from a work situation which he/she reasonably believes presents an imminent and serious danger to his/her life or health.
5. Treat other people with respect, and not discriminate against specific groups such as women, people with disabilities, migrant workers, or children.
6. Not engage in sexual harassment, which means unwelcome sexual advances, requests for sexual favors, and other verbal or physical conduct of a sexual nature with other Employers Personnel.
7. Not engage in sexual exploitation, which means any actual or attempted abuse of a position of vulnerability, differential power, or trust, for sexual purposes, including, but not limited to, profiting monetarily, socially, or politically from the sexual exploitation of another.
8. Not engage in sexual abuse, which means that actual or threatened physical intrusion of a sexual nature, whether by force or under unequal or coercive conditions.
9. Complete relevant training courses that will be provided related to the environmental and social aspects of the contract, including on health and safety matters, sexual exploitation and abuse, and sexual harassment.
10. Report violations of this code of conduct; and
11. Not retaliate against any person who reports violations of this code of conduct.

4.0 Functioning of GRM

All complaints and concerns will be addressed through a transparent, gender responsive, culturally appropriate process and will be readily available to the aggrieved party at no cost and without retribution.

The following channels should be established to receive inquiries/comments and concerns /grievances:

- Toll free phone number
- Email, On-line form
- Regular post/mail
- Suggestion box/Walk-ins etc.

5.0 Grievance Redressal Cell

If any person observes behavior that he/she believes may represent a violation of this code of conduct, or that otherwise concerns him/her, he/she raise the issue promptly to the (a) Personnel designated as a grievance Redressal officer by the contractor, or the (b) Grievance Redressal Cell constituted by the contractor as mandated by Sexual Harassment of Women at Workplace (Prevention, Prohibition and Redressal) Act, 2013. The Grievance Redressal Cell will conduct a meeting in the first week of every month to hear the grievances. All the complaints will be forwarded to the concerned department/officials within 15 days from the date of receiving the

complaints. The issues resolved/addressed by concerned officials within 45 days from the receipt of the complaints.

Also, CTGRAMS (Centralized TEQIP Grievance Redress and Monitoring System) is the platform based on web technology set-up under the technical support project, TEQIP-III. The system was made accessible to all project-affected people through the portal, e-mail, phone, text messages, and complaint boxes. This portal also facilitated tracking grievances through the system-generated unique registration number (URN). Under TEQIP-III, it had a multi-tier system to redress the complaints. Level 1 was the institution level, Level 2 was - State level, and Level 3 was MoE. The same portal will be used in MERITE implementation.

6.0 Sample Grievance Registration Form

Date	Place of registration	Project Town			
		Project:			
Contact information/personal details					
Name		Gender	* Male * Female	Age	
Home address					
Place					
Phone no.					
E-mail					
Complaint/suggestion/comment/question Please provide the details (who, what, where, and how) of your grievance below:					
If included as attachment/note/letter, please tick here:					
How do you want us to reach you for feedback or update on your comment/grievance					
FOR OFFICIAL USE ONLY					
Registered by: (Name of official registering grievance)					
Mode of communication: Note/letter E-mail Verbal/telephonic					
Reviewed by: (Names/positions of officials reviewing grievance)					
Action taken:					
Whether action taken disclosed:		Yes No			
Means of disclosure:					

ANNEXURE-XVII
Monitoring Photographs

ANNEXURE XVII Monitoring Photographs



Project Site



Garal Village

Soil Monitoring Photographs



Project Site



Near Project Site



School



Temple



Garal Village

Ambient Air Quality Monitoring Photographs



Project Site



Near Project Site



School



Temple



Garal Village

Noise Monitoring Photographs



Project Site-GW



Garal Village-GW

Deepor Beel-SW

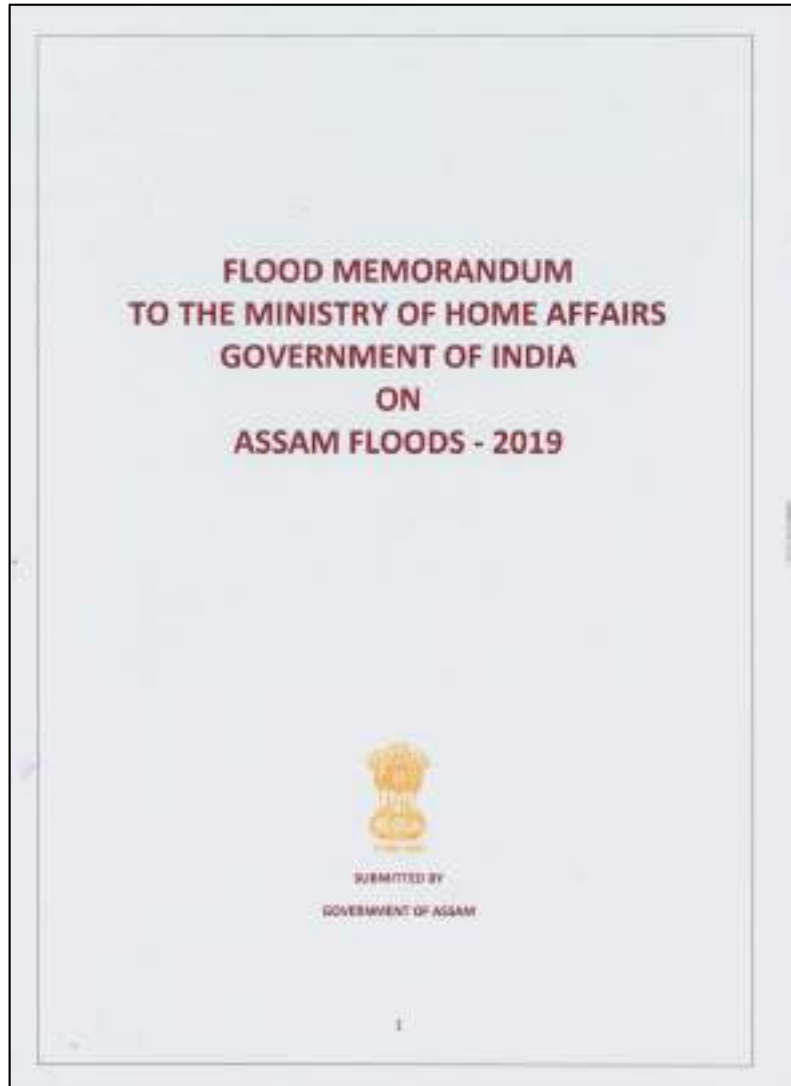
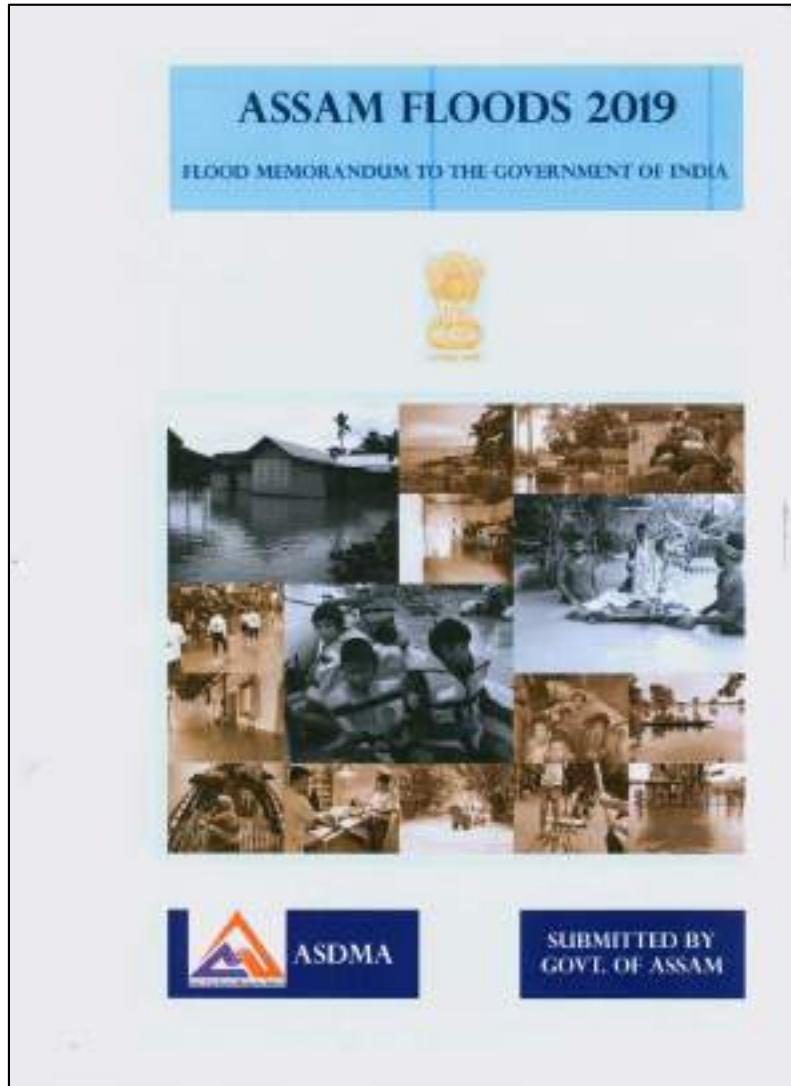


Water Monitoring Photographs

ANNEXURE-XVIII

Flood Data

ASSAM FLOODS DATA



ASSAM FLOODS DATA

List of Villages declared by the Government of Assam as affected villages by Flood and Landslide in 2019 Vide No. ASDMA/16/2018/20 dated 29th July 2019

Sl No	Name of District	Name of Revenue Circle	No of Villages affected during and after peak flood 2019	Total no of villages in the Revenue Circle
1.	Dimaas	Imari	212	341
2.	Dimaas	Teedibangson	132	395
3.	Dimaas	Chenmai	36	103
4.	Dimaas	Gogomukh	64	174
5.	Lakhimpur	Howradia	40	139
6.	Lakhimpur	North Lakhimpur	89	229
7.	Lakhimpur	Shepura	44	169
8.	Lakhimpur	Norankidpur	80	204
9.	Lakhimpur	Nalbari	24	114
10.	Lakhimpur	Kadem	8	124
11.	Lakhimpur	Thakulthana	10	167
12.	Buwameth	Hakari	52	193
13.	Buwameth	Golpur	66	242
14.	Buwameth	Buwameth	30	156
15.	Buwameth	Netpur	11	103
16.	Serisaur	Netpur	54	83
17.	Serisaur	Thaimara	11	116
18.	Serisaur	Chokkajuli	39	153
19.	Serisaur	Tenali	41	131
20.	Serisaur	Charisaur	3	135
21.	Darrang	Chingai	60	114
22.	Darrang	Nauphar	32	93
23.	Darrang	Margolal	55	165
24.	Darrang	Dehuphar	67	93
25.	Malbari	Chogapuri	11	66
26.	Malbari	Tiba	36	14
27.	Malbari	Pachin Malbari	53	54
28.	Malbari	Kamukuchi	28	23
29.	Malbari	Nahari	33	88
30.	Malbari	Barling	31	50
31.	Malbari	Barukhri	60	124
32.	Bokso	Chomrai	34	94
33.	Bokso	Begunpara	8	46
34.	Bokso	Bokso	37	106
35.	Bokso	Bokso	6	85
36.	Bokso	Barona	4	67
37.	Bokso	Tamulaur	21	188
38.	Barpeta	Barpeta	78	78
39.	Barpeta	Kogachia	308	108
40.	Barpeta	Barpeta	140	145
41.	Barpeta	Boghri	141	142
42.	Barpeta	Barnagar	27	110
43.	Barpeta	Barthabari	118	120

44.	Barpeta	Chinga	68	72
45.	Barpeta	Bisul	116	85
46.	Chirang	Bengali	11	87
47.	Chirang	Subi	8	143
48.	Chirang	Rani	24	254
49.	Dhuli	Dhuli	29	104
50.	Dhuli	Korandur	12	80
51.	Dhuli	Bhokpara	140	196
52.	Dhuli	Arhani	159	124
53.	Dhuli	South Salamura	164	164
54.	Dhuli	Goltaguri	92	102
55.	Dhuli	Aganai	39	58
56.	Dhuli	Chupar	18	135
57.	South Salamura	Manchak	20	115
58.	South Salamura	South Salamura	30	37
59.	Golpara	Balpara	54	235
60.	Golpara	Mata	58	156
61.	Golpara	Lakhpari	112	172
62.	Golpara	Kangali	11	125
63.	Golpara	Thakri	1	67
64.	Kamrup	Gardman	48	78
65.	Kamrup	Nagarkera	27	27
66.	Kamrup	Changach	1	97
67.	Kamrup	Kamrupar	11	143
68.	Kamrup	Haji	24	137
69.	Kamrup	Chamara	68	60
70.	Kamrup	North Sorsathi	6	36
71.	Kamrup	Wabhabari	26	190
72.	Kamrup	Kanga	18	86
73.	Kamrup	Kayal	9	28
74.	Kamrup-Mitra	Chandrapur	19	45
75.	Kamrup-Mitra	Doraguri	19	148
76.	Kamrup-Mitra	Gowabari	8	55
77.	Kamrup-Mitra	Jamir	14	26
78.	Kamrup-Mitra	Digpur	12	56
79.	Morigaon	Morigaon	152	177
80.	Morigaon	Bhanganagar	26	62
81.	Morigaon	Loharighat	35	103
82.	Morigaon	Morigaon	111	162
83.	Morigaon	Bhokkhatra	7	65
84.	Hojai	Hojai	84	103
85.	Hojai	Luma	8	162
86.	Hojai	Dakshin	13	108
87.	Majuli	Majuli	78	142
88.	Dibrugarh	Chabua	18	106
89.	Dibrugarh	Dibrugarh West	68	177
90.	Dibrugarh	Dibrugarh East	10	112
91.	Dibrugarh	Maran	19	290

ANNEXURE-XIX
**Hospital Infection Prevention
And Control Plan**

ANNEXURE-XIX

HOSPITAL INFECTION PREVENTION AND CONTROL PLAN

1.0 Introduction: Health care-associated infections (HAIs) are preventable with correct infection prevention and control (IPC) practices. This IPC guideline will ensure a safe working environment for the health care providers and patients.

2.0 Cause of Infections: The most important HAIs are

- Urinary tract infections, pneumonia, and diarrhea
- Infections following surgery or invasive medical procedures
- Maternal and newborn infections

The organisms causing most HAIs come from the patient's own body (endogenous flora). They also can come from contact with staff (cross-contamination), contaminated instruments and needles, and the environment (exogenous flora). Key contributing factors are:

- Inadequate standards and practices for operating blood transfusion services
- Increasing use of invasive medical devices (e.g., mechanical ventilators, urinary catheters, and central intravenous lines) without proper training or laboratory support
- Use of contaminated intravenous fluids
- Antibiotic resistance due to overuse of broad spectrum antibiotics
- Unsafe and frequently unnecessary injections

3.0 Prevention from the Infection: Most of these infections can be prevented with readily available, relatively inexpensive strategies by:

- Adhering to recommended infection prevention practices, especially hand hygiene and wearing gloves.
- Paying attention to well-established processes for decontamination and cleaning of soiled instruments and other items, followed by either sterilization or high-level disinfection
- Improving safety in operating rooms and other high-risk areas where the most serious and frequent injuries and exposures to infectious agents occur.
