Environmental, Social, Health and Safety Requirements

1. Environmental and Social Impact Assessment Studies has been prepared under the Project and as a part of these studies Environmental and Social Management Plan (ESMP) has been prepared as a safeguards instrument for mitigating and managing environmental and social impacts throughout the project implementation and is included in the ESIA Report of the project. As part of the ESMP, a Model Code of Conduct (CoC) for Contractor's Personnel on general issues, a CoC on SEA and SH and also a supplementary Code of Conduct (ESHS) that will apply to the Contractor's employees and subcontractors have also been included in the bidding documents in **Annexure-ESHS-I** to ensure compliance with the Environmental, Social, Health and Safety (ESHS) obligations including compliance with the applicable Laws/Rules/Regulations for protection of environment, public health and safety. The contractor, within 14 days of issue of Letter of Acceptance, shall submit supplementary ESHS Code of Conduct, the Model CoC together with CoC on SEA, SH and human trafficking(HT) and SH for Contractor's Personnel as stated above and an outline on implementation and monitoring of the ESHS Code of Conduct as a whole, including proposed measures to be adopted by the contractor in case of any breaches to the Code of Conduct.

The contractor is required to prepare and submit its own ESHS- MSIP in a comprehensive Contractor's Environmental and Social management plan (C-ESMP), within 14 days of Letter of Acceptance, including waste management plan, management plan for construction related issues, traffic management plan, contractor's code of conduct, SEA/SH/HT action plan, and construction workers camp management plan, site restoration plan, environmental quality parameters monitoring plan, emergency preparedness plan, COVID-19 control management plan, dolphin conservation plan etc. for which general guidelines are attached in **Annexure-ESHS- IV to XI**. In case of any additional impact not covered under the ESMP, site-specific mitigation measures shall be suggested separately in the Contractor's ESHS-MSIP. Further to above, in case of any unforeseen impact arising during construction stage suitable mitigation measures shall be taken by contractor within the scope of the approved Environmental and Social Management Framework (ESMF).

The Contractor also needs to consult ESIA Report for this purpose which shall be a part of this contract. Contractor to review and update ESHS-MSIP every six months. Failure to do this is a breach of contract.

2. Monitoring and Reporting Requirement

Contractors are responsible for compliance to CoC (ESHS) and implementation of Contractor's ESHS-MSIP. The Employer's Engineer will be responsible for supervising the adherence to the CoC and Contractor's ESHS-MSIP.

The Contractor will prepare monthly progress report on adherence to CoC (ESHS) and Contractor's ESHS-MSIP which should be submitted to the Employer's Engineer.

3.Non-permissible Activities

Certain activities triggering adverse impacts of critical nature are not permitted under this Project. Detailed list of such non-permissible activities has been shown in Annexure ESHS-II

4. **Applicable Acts/ Rules/ Notifications**

The Contractor shall take all precautions for safeguarding the environment during the course of the construction of works. He shall abide by all rules, regulations and laws in force governing pollution and environmental protection including labour welfare, health and safety that are applicable to the area where the works are situated as per Contractor's ESHS-MSIP. The Contractor shall take all measures to conserve the environment and aquatic biodiversity of the terminal site and its surrounding areas. Specific dolphin conservation measures including maintenance of 'No Construction Period' during the breeding season of dolphins to be maintained. Annexure- on Dolphin Conservation measures shall be implemented by the Contractor.

4.1 **Regulatory Clearance Requirement**

Prior permission from various Regulatory/ Other Authorities are to be taken for different activities to be carried out during project implementation. List of activities for which permission need to be obtained from different entities are given in Annexure ESHS-III.

Contractor's ESHS-MSIP Implementation Arrangements

Implementing Contractor, or a nominated agent or Sub-Contractors, has the responsibility of establishing and maintaining contact with the Employer's Engineer and keeping him informed of construction activities likely to affect local environmental and social conditions. This may include regular and frequent reporting and attendance at meetings at the request of the Employer's Engineer. The Contractor and any agents or Sub-Contractors will be contractually required to comply with the requirements as specified in CoC and Contractor's ESHS-MSIP.
The Contractor will be responsible for adherence to the following during the construction period:

- Environment Management Plan for proposed Terminal Project (Construction Phase) – Refer Annexure ESHS-XII
- Cultural Heritage Management Plan (CHMP)- Annexure ESHS-XIII
- Environmental and Social Trainings to be conducted by the Contractors - Refer Annexure ESHS-XIV
- Environmental Codes of Practice (ECoPs) & other Plans to be followed by the Contractor - Refer Annexure ESHS-XV
- Environmental Monitoring Plan during Construction Phase - Refer Annexure ESHS-IX
- Contractor shall prepare Aquatic Management Plan with special emphasis on Dolphin conservation as per Annexure ESHS- XVI and execute it during the construction stage.
- Social Document - Refer Annexure ESHS-XVII

The Contractor will be responsible for adherence to CoC and implementation of the Contractor's ESHS-MSIP, including workplace safety, and will ensure adequate resources throughout the project implementation period. Contractor's responsibility to review and revise the MSIP every 6 months.
Each implementing contractor will appoint an Environment, Social, Health and Safety (ESHS) officer who will primary be responsible for compliance of workers' ESHS aspects at Camp as well as work site. He will also be responsible for implementation of ESHS measures for different kind of allied project activities like material transportation, vehicular movement and etc. Summary of ESHS compliance and monitoring report shall also be included in "Monthly compliance and monitoring report on ESMP implementation" submitted by contractors to the Employer's Engineer.

The contractor will also engage a Social Specialist, subject to the condition stipulated in the requirement of "Key Personnel" to ensure compliance with the CoC, relevant provisions of ESMP & adherence to the contractor's ESHS-MSIP, and handle/address the issues related to sexual exploitation and abuse & sexual harassment and human trafficking caused /suffered by contractor's personnel including workforce and related grievances of the workforce as well as the community.

6.0 Payment for ESHS Requirement

The Contractor has to ensure adherence to CoC and successful implementation of Contractor's ESHS-MSIP including Sexual Exploitation and Abuse (SEA) / sexual harassment (SH), human traffiicng (HT) requirements. For implementation of the activities not covered under the above, the contractor shall make the necessary provisions within his quoted rates and no additional payment will be made on this account.

Annexure ESHS-I

Model Code of Conduct (ESHS) for Contractor's Employees and Sub-contractors

Introduction

This Code of Conduct will oblige all Contractor's Personnel (including sub-contractors and day workers) to abide by following practices, as a minimum. Additional obligations may be imposed during project implementation to respond to particular concerns of the region, the location and the project sector or to specific project requirements. Contractor may also impose any additional or strengthen code of conduct on his workers/ staff.

The Code of Conduct should be written /translated in a language comprehensible by each worker signing it to indicate that they have:

- received a copy of the code;
- had the code explained to them;
- acknowledged that adherence to this Code of Conduct is a condition of employment; and understood that violations of the Code can result in serious consequences, up to and including dismissal, or referral to legal authorities.

A copy of the code of conduct will be displayed at prominent locations easily accessible to the community and project affected people. Name and contact number of the authorised representative of the contractor competent to attend the grievances of the local community or project affected persons should also be provided on the display board, in languages comprehensible to the local community, Employer's Engineer's Personnel, and Employer's Personnel.

2.0 Model Code of Conduct (ESHS)

2.1 None of Employees of the Contractor and the Subcontractor shall be involved in the following activities:

- Burning of vegetation waste in open space.
- Unauthorized storage of inflammable substances or harmful non-desired chemical/ pesticide in labour camp or work site.
- Harm or disturbance (including hunting/ poaching) to any endangered or threatened species like dolphins, Fishing Cat, Mongoose, Asian Small Clawed Otter, Fresh Water Turtles/Terrapins, Jungle Cat, Jackal, Monitor Lizard, King Cobra, White-eyed Pochard, etc., or plant species Ficus religiosa (a culturally significant tree).
- Harm or disturbance to any culturally significant site.
- Unauthorized removal of timber.
- Disposal of solid or liquid wastes in river/canal, water bodies, streams, etc
- Illicit or criminal activities including sexual harassment of women or children (prohibit use of language or behavior, in particular towards women and/or children, that is inappropriate, harassing, abusive, sexually provocative, demeaning or culturally inappropriate).
- Violence including sexual and/or gender-based violence (for example acts that inflict physical, mental or sexual harm or suffering, threats of such acts, coercion, and deprivation of liberty
- Exploitation including Sexual Harassment, which means unwelcome sexual advances, requests for sexual favors, and other verbal or physical conduct of a sexual nature with other Contractor's or Employer's Personnel. Sexual Harassment, means unwelcome sexual advances, requests for sexual favors, and other verbal.
- Sexual Exploitation as detailed in Attachment-1, which means any actual or attempted abuse of 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;
- Sexual Abuse, which means the actual or threatened physical intrusion of a sexual nature, whether by force or under unequal or coercive conditions;
- Any form of sexual activity with individuals under the age of 18.
- Use of illegal substances and consumption of intoxicating materials

- Discrimination in dealing with the local community (including vulnerable and disadvantaged groups), Employer Engineer's Personnel, Employer's Personnel and also among themselves on the basis of family status, ethnicity, race, gender, religion, language, marital status, age, disability (physical and mental), sexual orientation, gender identity, political conviction or social, civic, or health status
- Open defecation
- Retaliation against workers who report violations of the Code, if that report is made in good faith.
- Fishing practice at the worksite on riverbed, and also in local or community ponds.
- Not be involved in any way with the process of human trafficking; including not withholding of information regarding or non-reporting of any incident of human trafficking in relation to any process or activity carried out by the project personnel.
- Work in a safe manner or as prescribed in the work processes so that it does not cause harm to himself and also jeopardise the safety of fellow workers. Do not involve in any foul play and tamper with any safety equipment
- -Use the PPE as indicted in the work procedures. Move out of any unsafe act / condition and alert fellow workers about the same. Report / Alert any unsafe act or condition immediately to the supervisor.
- -Stop work, till the time the conditions have been assessed and the workers return safety

2.2 Corona Virus (COVID-19)

- Physical distancing at least 1 meter.
- Wash hands often with soap and water for at least 20 seconds. Use an alcohol-based hand sanitizer that contains at least 60 percent alcohol if soap and water are not available.
- Wear face masks/ coverings.
- Avoid touching eyes, nose and mouth with unwashed hands.
- Avoid close contact with people who are sick.
- Stay home when sick.
- Cover cough or sneeze with a tissue, then throw the tissue in the trash.
- Clean and disinfect frequently touched objects and surfaces.
- If someone sick, should stay in isolation and avoid contact with other people as much as possible to keep from spreading your illness to others.

Further details on COVID-19 protocol are given in **Annexure-ESHS-XI**

2.3. The Code of Conduct (ESHS) shall ensure:

- Compliance with applicable laws, rules, regulations, consent conditions and the measures specified in the Contractor's ESHS-MSIP
- Compliance with applicable health and safety requirements to protect the Contractor's own employees or subcontractors (e.g. by wearing prescribed personal protective equipment at worksites or during undertaking any activity in relation to execution of work), local community (including vulnerable and disadvantaged groups), Employer Engineer's Personnel and the Employer's Personnel (e.g. taking all precautions to prevent avoidable accidents and promptly reporting to the Engineer/Employer on any accident that might have occurred at worksite)

- To reduce the impact of COVID-19 outbreak conditions on construction and civil projects, Contractors should develop a plan for COVID-19 pandemic and any infectious disease epidemics that may arise in the future. i.e. Preparedness, prevention, mention essential project operations in case of an outbreak at construction sites; and communications like develop standardized messages, procedures and tools for stakeholders under the management of the Contractors (e.g. subcontractors, suppliers, community workers).

- Compliance with any waste produced during the care of COVID-19 suspected or confirmed infected workers in the medical clinic should be treated as biohazard waste. Treatment of biohazard waste is typically by autoclaving or incineration. Where autoclaving and/or incineration equipment not available within the project, the Contractors should engage with external service provider, local hospital, or health clinic to ensure biohazard waste is properly disposed.

- Compliance with training of workers and staff on site on the signs and symptoms of COVID-19, how it is spread, how to protect themselves (including regular hand washing and Physical distancing) and what to do if they or other people have symptoms.

- Ensure hand washing facilities supplied with soap, disposable paper towels and closed waste bins exist at key places throughout site, including at entrances/exits to work areas; where there is a toilet, canteen or food distribution, or provision of drinking water; in worker accommodation; at waste stations; at stores; and in common spaces. Where hand washing facilities do not exist or are not adequate, arrangements should be made to set them up. Alcohol based sanitizer (if available, 60-95% alcohol) can also be used.

- Each worker shall be given a mask and gloves and they carry personal water bottles. Body temperature of each worker is measured daily and a chart of the same is maintained at the camp. A qualified doctor visits the site periodically for health check-ups. Each worker has been given a space of approximately 5 sq. m. Not more than three workers are allowed in one room. So far, there have been no cases of infection in any of the camps.

- Inform local community, members of the local community before initiation of work as well as during project implementation period. Conduct Public consultation to maintain community integrity and social links.
- Regular interaction with the local community, members of the local community before initiation of work as well as during project implementation period. Public consultation to maintain community integrity and social links.
- Convey attitude of respect to affected person as well as regional culture and traditions .
- Protection of children (persons less than 18 years of age) (including prohibitions against sexual activity or abuse, or otherwise unacceptable behaviour towards children, limiting interactions with children, and ensuring their safety in project areas)
- Use specified sanitary facilities provided by their employer and not open areas
- Avoidance of conflicts of interest (such that benefits, contracts, or employment, or any sort of preferential treatment or favours, are not provided to any person with whom there is a financial, family, or personal connection)
- Respecting reasonable work instructions (including regarding environmental and social norms)
- Protection and proper use of property (for example, to prohibit theft, carelessness or waste)
- Duty to report violations of this Code.
- Store chemicals appropriately with proper labelling and promptly inform to relevant agencies on accidental spill or incident

2.4. Required Conduct

Contractor's Personnel shall:

- carry out his/her duties competently and diligently;
- comply with the Model Code of Conduct and all applicable laws, regulations and other requirements, including requirements to protect the health, safety and well-being of other Contractor's Personnel and any other person;
- maintain a safe working environment including by:ensuring that workplaces, machinery, equipment and processes under each person's control are safe and without risk to health;

- wearing required personal protective equipment; using appropriate measures relating to chemical, physical and biological substances and agents; and following applicable emergency operating procedures.
- 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;
- treat other people with respect, and not discriminate against specific groups such as women, people with disabilities, migrant workers or children;
- complete relevant training courses that will be provided related to the environmental and social aspects of the Contract, including on health and safety matters, and Sexual Exploitation, and Abuse (SEA) and Sexual Harassment (SH); report violations of this Code of Conduct; andnot retaliate against any person who reports violations of this Code of Conduct, whether to us or the Employer, or who makes use of the grievance mechanism for Contractor's Personnel or the project's Grievance Redress Mechanism.

1.5. Raising Concerns

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 should raise the issue promptly. This can be done in either of the following ways:
The person's identity will be kept confidential, unless reporting of allegations is mandated by the country law. Anonymous complaints or allegations may also be submitted and will be given all due and appropriate consideration. We take seriously all reports of possible misconduct and will investigate and take appropriate action. We will provide warm referrals to service providers that may help support the person who experienced the alleged incident, as appropriate.

There will be no retaliation against any person who raises a concern in good faith about any behavior prohibited by this Code of Conduct. Such retaliation would be a violation of this Code of Conduct.
2.6. Consequences of violating the Code of Conduct
Any violation of this Code of Conduct by Contractor's Personnel may result in serious consequences, up to and including termination and possible referral to legal authorities.

ATTACHMENT 1 TO THE CODE OF CONDUCT FORM
BEHAVIORS CONSTITUTING SEXUAL EXPLOITATION AND ABUSE (SEA) AND BEHAVIORS CONSTITUTING SEXUAL HARASSMENT (SH)

The following non-exhaustive list is intended to illustrate types of prohibited behaviors:

Examples of sexual exploitation and abuse include, but are not limited to:
- A Contractor's Personnel tells a member of the community that he/she can get them jobs related to the work site (e.g. cooking and cleaning) in exchange for sex, trafficking of women and chidren for sexual exploitation, forced labour and child labour.
- A Contractor's Personnel that is connecting electricity input to households says that he can connect women headed households to the grid in exchange for sex, trafficking of women and chidren for sexual exploitation, forced labour and child labour.
- A Contractor's Personnel rapes, or otherwise sexually assaults a member of the community.
- A Contractor's Personnel denies a person access to the Site unless he/she performs a sexual favor, trafficking of women and chidren for sexual exploitation, forced labour and child labour.
- A Contractor's Personnel tells a person applying for employment under the Contract that he/she will only hire him/her if he/she has sex with him/her.
- Examples of sexual harassmentin a work context
- Contractor's Personnel comment on the appearance of another Contractor's Personnel (either positive or negative) and sexual desirability.

- When a Contractor's Personnel complains about comments made by another Contractor's Personnel on his/her appearance, the other Contractor's Personnel comment that he/she is "asking for it" because of how he/she dresses.
- Unwelcome touching of a Contractor's or Employer's Personnel by another Contractor's Personnel.
- A Contractor's Personnel tells another Contractor's Personnel that he/she will get him/her a salary raise, or promotion if he/she sends him/her naked photographs of himself/herself.

Annexure-ESHS-II

List of non-permissible activities under the Contract

- Any activity located within a notified Eco Sensitive Zone (ESZ) is prohibited from being implemented;
- Any activity that converts or leads to conversion and/or degradation of significant areas of critical natural habitats (areas officially protected) and/or other natural habitats (including wetlands of significance) and designated forest areas;
- Any activity that promotes or supports pesticides that are banned by the Government of India;
- Any activity that promote or support pesticides that are in Classes Ia, Ib and II of the WHO classified pesticides by hazard;
- Any activity that involves construction within 100 meters from an archeological site/monument.
- Any activity that involves use of Asbestos Containing Materials (e.g., AC pipes for irrigation, AC sheets for roof);
- Any activity that violates the provisions of applicable National and Assam State laws;

Annexure- ESHS-III
List of Regulatory Clearance Requirements

Table ESHS-1: List of regulatory clearance requirements

Sl. No.	Clearance Required	Applicable Regulation	Issuing Authority	Requirement	Responsibility
1	Consent to Establish (CtE) and Operate (CtO)	Water (Prevention and Control of Pollution) Act, 1974 and Air (Prevention and Control of Pollution) Act, 1981	ASPCB	Consent shall be obtained before commencement of construction work for the plant and machinery, i.e. (Batching Plant, Crusher, and Diesel Generator greater than 15 KVA) required for the project.	Contractor
2	Tree Cutting	Assam Trees (Protection and Conservation in Non-Forest Areas) Act, 2006 and Rules, 2007	State Forest Department / DFO)	Permission shall be obtained before felling of tree exceeding GBH 50 cm.	Employer
3	Storing and dumping of C&D waste, Desilted material and Vegetation waste material		Local GP or authority	Temporary storing or dumping of waste material (C&D waste, Desilted material)	Contractor
4	Ex Extraction of boulders from quarry		State Government	For construction works	Contractor
5	Pollution Under Control Certificate	Motor Vehicles Act, 1988	State Transport Authority	Vehicles and machineries shall comply with the Motors Vehicle act and submit pollution under control (PUC) certificate	Contractor
6	Permission for drawing water from river / ground water		State Government	For construction and domestic use	Contractor

Annexure- ESHS-IV

Waste Management Plan (C&D waste, vegetation waste, hazardous waste)
Construction and Demolition (C&D) Waste Management Plan:

Construction and demolition activity lead to generation of solid wastes, which include sand, gravel, concrete (with or without reinforcement), stone, bricks, wood, metal, glass, plastic, paper etc. Temporary storage, identification of dumping sites, timely disposal of demolition's rubble, cost involvement for transportation and disposal and above all growing concern about pollution and environmental deterioration will be matters of concern during demolition work. Contractor shall prepare C&D waste management plan detailing location for temporary storage, reutilization plan and mitigation measures to minimize or eliminate any adverse impact.

All generated construction and demolition waste material will be stored temporarily in storage areas till reutilization, which may generally be considered as the continuous strip of govt. land available on the countryside toe of embankment or canal bank (approximate width 5.0 m). Private lands may have to be arranged by the contractor on payment of required crop compensation or premium as the case may be, on very rare occasion.

B. Vegetation Waste Management Plan:

B.1: Vegetation waste will be generated due to weed cleaning and cutting of shrub located in the project area. Many other bush, shrub, terrestrial weed also will be cleared during the process of cleaning of active work zone. Big as well as small size tree will be auctioned after felling, if required at a later stage. However, residual material like Leaves, Twigs & Bough, Branch, Shrub Stem, Stumps, Roots and Wood Chips will form vegetation waste due to weed cleaning operation.

B.2: All generated vegetation waste including water hyacinth will be stored temporarily in storage areas. Contractor, as a component of his ESHS-MSIP shall prepare vegetation waste management plan and accordingly dispose it.

C. Hazardous Waste Management Plan:

C.1: All hazardous waste material shall be stored in double lining container and disposed of in an authorised disposal facility (TSDF site) authorized by Assam State Pollution Control Board.

C.2: However, contractor shall prepare quantify such waste and prepare hazardous waste management plan in accordance with the guidelines stated below
Guideline for developing Hazardous Waste Management Plan

Listing down plant and machineries to be deployed; listing down oil and lubricants to be used; source of oil/ lubricant purchase source
Plan for purchase and storing; frequency of purchase; quantity of purchase at a time;
Identification of activity involving use or generation of hazardous waste;
Identification of impact on environment and health; proposed mitigation measures to minimize or restrict any adverse effect; Safe handling mechanism of hazardous waste;
Disposal mechanism of hazardous waste

C.3 Mitigation measures to be followed for handling Hazardous Waste by contractor:

- Oil inception chamber shall be provided at vehicle parking and repairing site.
- Regular maintenance of plant, machineries, vehicle shall be done to eliminate oil leakage or dripping.
- Bulk purchase and storing of oil/ lubricants/ coal tar shall be avoided.
- Oil/ lubricant/ waste oil shall be stored separately in double layered container.

- Generated oil shall be stored in double layered container and sold to authorized recycler; at any circumstances, waste shall not be thrown to river/ canal/ waterbody or agricultural field.

Annexure- ESHS-V

Management Plan for Construction Related Issues

Table ESHS-2: Construction related issues management plan

Issues/ Expected Impact	Mitigation Measures	Implementing Entity
Workers safety and hygienic conditions		
Occupational Health and Safety (OHS) issues	Regular OHS trainings (Monthly) to construction staff. Organize Health camps on half yearly basis.	Contractor
	Providing appropriate Personal Protective Equipment (PPE) such as safety boots, rain coats, hand gloves, earplugs and nose masks to the working personnel and enforcing the use of these PPEs.	Contractor
	Making provision of first aid facilities and emergency vehicle. However, major cases will be referred to the nearest hospital or health centre.	Contractor
	Obligatory insurance of contractor's staff and laborers against accidents.	Contractor
	Contingency measures in case of accidents;	Contractor
	Making provision of primary medical care in case of sickness (specifically snake bites) and accidents.	Contractor
	Periodic health-check-ups (quarterly) of all laborers employed at the project site;	Contractor
	Providing safe drinking water supply and sanitation at the working places.	Contractor
Parking / repair of machinery and equipment		
Soil and water contamination with oil / grease spills	Restriction on repair of vehicles and equipment on working sites without impermeable top soil cover at the repairing site.	Contractor
	Avoiding washing of vehicles near the canal or river.	
	Ensuring proper storage and disposal of used oil etc.	
	Adoption of good housekeeping practices at workshop areas.	
	Avoiding waste oil spill into soil and adjoining water source.	
	Appropriate arrangements such as usage of concrete base and drip pans to avoid spills during fuelling/oil change.	
	Collection of used oil, lubricants, cleaning materials, etc. from the maintenance of vehicles and machinery in holding tanks and removal from site by a specialized oil recycling company for disposal at an approved hazardous waste site.	Contractor
Issues/ Expected Impact	Mitigation Measures	Implementing Entity
Procurement		
Construction material	Procurement of all construction material from authorized vendors having required permission.	Contractor
Construction works		

Noise pollution	Use of PPEs such as earplugs and earmuffs by the workers; avoid night time activity.	Contractor
Land degradation; soil erosion; pooling of water and drainage problem	Temporary stacking in identified locations with preventive measures (covering, sprinkling water etc.)	Contractor
	Disposal of demolished / excavated materials, after reuse, as per the plan.	Contractor
Health impact during metal work (cutting and welding) and handling of metal scrap	Ensuring use of PPEs such as welding helmet, hand goggles, Respirators specially during cutting and welding operation	Contractor
	Enforcing wearing fire/flame resistant cloth and aprons during cutting and welding operation	Contractor
	Ensuring use of hand and forearm protecting leather gloves; safety goggles; steel-toed safety shoes; and upper foot guards to protect the instep area from impact or compression.	Contractor
Soil & Water contamination	Using techniques as berming or diversion during construction to limit the exposure of disturbed sediments to moving water.	Contractor
	Avoiding discharge of waste effluents to the nearby canal/ river.	Contractor
	Collection of wastewaters in a conservancy tank and removal from site on regular basis.	Contractor
	Safe disposal/sealing of wastewater collection tanks and septic tanks on completion of works.	Contractor
construction material waste	Remove any left-over construction material/wastes from the construction sites.	Contractor
Accident risks	Provision of PPEs; Provision of first aid kits and emergency vehicle.	Contractor
Loss of top soil	Preservation of top soil and reuse in slope or bank stabilisation/turfing activities. Distributing excess (if any) to farmers for use in the agricultural lands.	Contractor/ Employer's Engineer
Stripping, impact of stocking of construction material on agricultural field top soil	Storing of excavated material on agricultural field shall be avoided to the extent possible;	Contractor
	Providing tarpaulin lining to arrest any kind of leaching from stored excavated material on agricultural field.	Contractor
Issues/ Expected Impact	Mitigation Measures	Implementing Entity
	Providing safe temporary routes for local people to access their farms during the construction period.	Contractor
	Compensating for crop and otherwise for temporary occupation of farmland;	Contractor
Use of water for construction and consumption		
Conflict with local water demand	Making own arrangements for meeting water required for construction ensuring that water availability and supply to nearby communities remain unaffected.	Contractor
Storage, handling and transport of chemical/ hazardous materials		
	Provision of double containment for storage of hazardous material (if any).	Contractor

Work safety and human health risks	Storing chemicals appropriately and with labeling	Contractor
	Promptly informing any accidental spill or incident to the concerned Authority.	Contractor
	Providing a report explaining the reasons for the spill or incident, remedial action taken, consequences/damage from the spill, and proposed corrective actions.	Contractor
Work site sanitation		
Unhygienic construction site environment may have health impact on public and workers	Providing waste bins on site for collection and disposal of plastic waste, cans and food waste. These bins shall be frequently emptied at approved dump sites.	Contractor
	Regular removal and disposal of construction waste such as metal scrap, wood chippings, rubber seals, nails, etc. as per management plan.	
	Providing temporary toilet facilities at the construction sites for use by the construction workers. The workers will be educated against open defecation or "free range" defecation.	
	Providing potable water to workers at all time.	
	Appropriately and immediately covering trenches and/or excavations after they have served their purpose to prevent accidents and collection of stagnant water, which could serve as a breeding ground for disease causing vectors.	
Environmental damage during flood		
Environmental damage from accidental release	Finding alternative material handling sites that is located above flood plain, if possible.	Contractor
	Maintaining design features, such as drainage structures, during	
Issues/ Expected Impact	Mitigation Measures	Implementing Entity
of toxic, infectious, or otherwise harmful material from construction site during flooding	construction and operation.	
	Avoiding constructing sanitation or other facilities that stores harmful materials at floodprone areas.	
	Choosing dry sanitation options or closed disposal systems, instead of wet ones such as septic tanks or detention ponds.	
Operation and movement of machinery and equipment including DG set		
Deterioration of air quality due to exhaust gases and dust emissions	Ensuring that excavators, tractors and other machinery hired for excavation and land levelling and development works are in good condition and are well serviced, and the operators are experienced and well trained. Good conditioned and well-maintained equipment will reduce frequent breakdowns, noise nuisance and smoke emissions which could affect the operators' and other workers' health and safety.	Contractor
	Proper engine tuning of machinery/equipment/ transport vehicle to avoid the exhaust emissions;	Contractor

	Protection of the exposed soil and material stockpiles against wind erosion and selection of the location of stockpiles in consideration of the prevailing wind directions and locations of sensitive receptors.	Contractor
	Water sprinkling at dust prone areas particularly at work sites near the communities.	Contractor
	prohibiting burning of waste or construction materials or cleared vegetation on site.	Contractor
	Setting up of construction material handling unit at minimum 500 m away from residential areas.	Contractor
	Covering material loads during transportation to prevent the scattering of soil, sand, materials' dust.	Contractor
Noise from vehicles, compaction rollers, concrete mixers and construction equipment	Ensuring valid Pollution Under Control (PUC) certificate for all vehicles and machineries.	Contractor
	Use of noise reduction devices; regular inspection, maintenance and lubrication of the construction vehicle and equipment.	Contractor
	Use muffles (silencers) in vehicles to minimize noise;	Contractor
	Avoiding or minimizing transportation though or material processing near community areas.	Contractor
	Avoid night time traffic particularly near communities.	Contractor
Transportation of construction material		
Issues/ Expected Impact	Mitigation Measures	Implementing Entity
Chance of accidents	Material transport in closed containers or covered with canvas (Tarpaulin) sheets.	Contractor
	Restricting vehicle speeds to 20km/h near habitations / settlements	
Damage to access roads/ infrastructure	Repairing of damaged roads/ infrastructure with full satisfaction of local community.	Contractor
Accident risks	Public consultation to maintain community integrity and social links;	Contractor
	Public awareness campaigns through displaying sign board at site and haulage routes;	
	Using warning signs at vantage points to indicate ongoing works. The contractor will guard all construction site including canals and drains with caution tapes.	
	Restriction on movement of machinery on the designated haulage routes for transportation of materials;	
	Ensuring that all haulage trucks comply with the approved speed limit of 20km/hr within the communities along the haulage road;	
	Adjusting haul times to ensure trucks do not move to the communities during mornings when school children may be crossing the road to school and during closing time.	

	Enforcing proper security at the project site during works to limit entry of unauthorized persons, non- working persons, particularly children to the project site;	
	Adequate signage to manage traffic at sites, haulage and access roads;	
Road impacts and traffic issues, Obstruction of access ways to communities		
Mobility inconvenience to the local community	Providing safe alternative access routes for access ways that are obstructed during construction works.	Contractor
	Providing sirens in vehicles to avoid any collision with human/animals	Contractor
	Erecting Sign posts at vantage points to manage traffic, guide community members through safe alternative access ways during construction works.	Contractor
	Repairing and maintaining damaged sections of the road located at project site throughout the construction period.	Contractor
Issues/ Expected Impact	Mitigation Measures	Implementing Entity
Mobility inconvenience to the local community	Ensuring good condition of all haulage trucks hired/contracted to prevent breakdowns on roads. Not allowing parking of the vehicle in areas which may create inconvenience in mobility such as blind turning point or meeting point of village road with the embankment.	Contractor
Workforce, Camps and Site Management	Identify location for establishment of camp site and obtain permission from local GP.	Contractor
	Setting up of Workers 'camps at least 200 m away from schools and health care centres with proper arrangement of suitable and comfortable accommodations and safe portable water in the camps. These are to be maintained in clean and sanitary conditions.	Contractor
	Not setting up Site offices, workers' camps, mixing stations, and workshops within 100m from any water courses, 300 meters of existing residential area.	Contractor
	Engaging Safety and Environmental officer for environmental and safety issues including training for workers.	Contractor
	Providing Septic tank toilets at all construction camp areas where there will be concentration of labour, with separate toilet block for male and female.	Contractor
	First aid boxes shall be provided in each construction camp site.	Contractor
Chance of finding Archaeological property	While excavating or dismantling any structure, if any fossils, coins, articles of value / antiquity and remains of archaeological interest discovered on the site shall be the property of the Government and shall be dealt with as per the provisions of the relevant legislation.	Contractor/ Employer's Engineer

	The Contractor shall take reasonable precautions to prevent his workforce or any other persons from damaging or removing any such articles. If any articles found shall be brought to the notice of the concerned Project Manager official and shall seek the direction of ASI before contractor recommencing the work.	

Annexure-ESHS-VI

Guidelines for preparation of Traffic Management Plan

1. Before initiation of the construction work, proper traffic management plan shall be prepared by contractor and submitted to the Engineer as a part of the Contractor's ESHSMSIP, for approval. The plan should include haulage and work site routes, traffic control devices, temporary fencing, barriers and barricades, diversion plans & detours, traffic signs and speed limits, safe passage of pedestrians and provision of access to private properties. Contingency plan in case of major road accidents shall also be provided in plan. There shall be separate signages defining the boundaries of worksite and work zone which shall allow both the workers and public to reduce the risks of accidents.

Regarding temporary impacts to local roads and traffic, contractor should consider the following while preparing traffic management plan:

- Safe alternative access routes shall be provided for access ways that are obstructed/ destroyed during construction works.
- Sign posts shall be erected at vantage points to manage traffic, guide community members through safe alternative access ways during construction works.
- Prior to construction activities, the contractor will install all signs, barriers and control devices needed to ensure the safe use of the road by traffic and pedestrians, as required by the traffic control plan;
- For segregating the construction area from the other areas an MS barricade iis required " Providing, fixing, maintaining, shifting & refixing, barricading of minimum 2.0m height at the stipulated active site of the same project site, made with angle iron frame of 50x50x5mm and GI sheet of 0.63mm thick including primer painted initially, painting, lettering & border with reflective paint at the time of every shifting, traffic diversion arrangement, safety guard, suitable lighting arrangement during night, complete in all respect till completion of the project as per technical specification and direction of Engineer-In-charge and same shall be removed and possessed by the contractor after completion of the Project.
- Signs, crossing guards and other appropriate safety features will be incorporated at road crossings and vantage points;
- Close consultation with local authorities and communities in a working area to identify optimal solutions for diversions to maintain community integrity & social links; will be made before any detours for construction or diverted public traffic are established;
- Haul routes for accessing worksites and temporary disposal sites to the extent required and feasible will be identified and coordinated with local officials; Movement of machinery on the designated haulage routes for transportation of materials will be restricted. All haulage trucks shall comply with the approved speed limit within the communities along the haulage road;
- Adjustment in haul times to ensure trucks do not move to the communities during mornings when school children may be crossing the road to school and during closing time, shall be made to the extent feasible;
- Construction vehicles will use temporary roads constructed for that purpose to minimize damage to agricultural land and local access roads. Wherever possible, rerouting of construction traffic to wider, less-restrictive road shall be preferred.
- Damaged sections of the haul roads leading to project site shall be repaired throughout the construction period. Where local roads are used, they will also be maintained periodically.
- Provision of signboards directing the drivers about the diversion and the road crossing, overpass/underpass, signage, road shoulders, relocation of school's entrance and other required action will be included in the traffic control plan by the contractor; Provision of proper safety signage at sensitive/accident-prone spots.

Providing and maintaining traffic management will require and include diversion warning, guiding and regulatory signage, channelizers and delineators, lightening etc;

- Wherever required, positioning of agile flagman with an orange vest and a helmet and a red flag 600 x 600 mm securely fastened to a staff 1 m in length will be made for guiding/managing the traffic; Contractor staff could be trained and put on the duty to manage the traffic during the construction activities taking place along the road; Secure assistance from local civic police for traffic control during the construction;

- On possibility, the movement of heavy vehicles to be restricted to the night times particularly near communities;

- Unnecessary parking and sound pollution to be strictly avoided especially when vehicles are passing through the settlements and sensitive receptor such as schools, hospital and cultural centre.

- Parking of the vehicle in areas which may create inconvenience in mobility such as blind turning point or meeting point of village road with the embankment, shall not be allowed.

- The contractor shall provide training to the drivers regarding the traffic rules and management provisions. Training records shall be maintained by the contractor. Sirens will be provided in vehicles to avoid any collision with human/animals.

- Contractor will ensure that no construction materials and debris are lying on the road. It will be collected and disposed of properly. The contractor will ensure that all haulage trucks hired/contracted are in good condition to prevent breakdowns on roads.

2. Accident Reporting on Occurrence of Accident
   In case of traffic accidents involving project vehicles & equipment, relevant information including date, location, damage, cause, and follow-up action need to be provided;

Monitoring by Project Authority

- Traffic management plan is to be vetted by the Employer's Engineer.
- Necessary permissions for traffic diversion obtained from the concerned Authorities are to be submitted to the Engineer for verification
- Traffic safety at worksites will be monitored and reviewed by the Engineer on regular basis.
- Report on the condition of the vehicles/equipment (to be given by the Environment, Health and Safety (EHS) officer engaged by Contractor on the basis of his subjective judgment) and non-routine repairs and maintenance needed to improve safety and/or environmental performance etc. will be reviewed by the Engineer on monthly basis.

Annexure- ESHS-VII

1. Labor Influx and Construction Workers Camp Management Plan

During implementation phase, worker population is likely to influx in the project area. Management of this labour influx and of issues related to the labour campsite are a critical part of environmental and social management of the project. To address the probable impact due to labour influx, and establishment of labour / workers camp, a detail camp management plan is prepared to minimise and mitigate the environment and social impact.

1. Contractor's Responsibility to Manage Labour Influx

2.1 As a part of Contractor's ESHS-MSIP, the contractor, within 14 days from the delivery of the Letter of Acceptance, shall prepare and submit Labour Influx and Workers' Camp Management Plan to the Employer's Engineer that addresses specific activities that will be undertaken to minimize the impact on the local community, including elements such as workers' code of conduct, training programs on HIV/AIDS, etc. A Workers' Camp Management Plan addresses specific aspects of the establishment and operation of workers' camps

2.2 This Labor Influx and Worker's Camp Management Plan will include:

- mandatory and repeated training and awareness raising for the workforce about refraining from unacceptable conduct toward local community members, specifically women;
- informing workers about national laws that make sexual harassment and gender based violence a punishable offence which is prosecuted;
- introducing a Worker Code of Conduct as part of the employment contract, and including sanctions for non-compliance (e.g., termination), manual scavenging, engagement with local residents, child labor, nondiscrimination, harassment of coworkers including women and those belonging to SC and STs and other minority social groups,
- contractors adopting a policy to cooperate with law enforcement agencies in investigating complaints about gender-based violence, training programs on HIV/AIDS and other communicable diseases, workers' Camp Management Plan addressing specific aspects of the establishment and operation of workers' camps provided the ULB/ Executing Agency is unable to cater to the demand for affordable housing for this additional workforce in terms of rentals, hostels, apartments etc.; and complaint handling Mechanism at the project level.

2.3 Additional measures that aim to reduce incentives to engage with the local community by providing workers with the opportunity to spend their time off away from the host community, where feasible with a small transport allowance, ideally allowing workers to regularly return for brief visits to their families, spouses and friends, or to visit nearby urban centers that provide a variety of legal social opportunities. For workers who need to travel further it may be attractive to forego weekends off in exchange for longer breaks that would allow for such home leave travel.

3.Criteria as shown in Table ESHS-3 and ESHS-4 shall be considered for selection of camp site.

Table ESHS-3: Criteria for selecting camp site

Avoidance	Preference
Lands within 300 m of residential area and 200 m of schools and health care centres; Irrigated agricultural land; Lands under village forests; Lands within 100 m of community water bodies, water sources such as rivers and also other watercourses; Low lying lands, marshy areas; Lands supporting dense vegetation Lands where there is no willingness of the landowner to permit its use.	Waste land other than Low lying lands, marshy areas; Lands belonging to owners who look upon the temporary use as a source of income; Community lands or government land not used for beneficial purposes; Private non-irrigated lands where the owner is willing; and Lands with an existing access road

4. Various management policies to be followed during site selection, facilities to be provided, Hygiene and Sanitation, Arrangements for Waste Disposal, health care management, Storage of cement & fuel, Other Safety and Security Measures have been shown in Table ESHS-4 below.

Table ESHS-4: Camp Site Management Plan

Pre-Construction Stage
Site Selection: Identify the site for construction camp in consultation with the individual owners in case of private lands and the Gram Panchayat / concerned Dept. in case of government lands. Preference should be given to uncultivated fallow land / government land during site selection; In case, no government land / fallow and unutilised govt. land is available and where use of private land is the only alternative, necessary arrangements should be worked out with the private owner of the land for setting up of facilities during the construction. The arrangement should have both facility creation and site restoration (pre-construction stage) component. The contractor shall produce No Objection Certificate from the concerned land owing/ managing authority/ person in case of setting up of Labour Camp outside the Govt. Land under possession of the Employer. A detailed layout plan should be prepared for the development of construction camp, indicating the various structures to be constructed including the temporary structures to be put up, site roads, drainage, lighting and other facilities and arrangements to be made for restoration of the original characters of land after disbandment of the camp and that should be submitted to the Project Manager. It should be ensured that there is no use of hazardous construction materials such as Asbestos Containing Materials (ACM) in the construction of the camp. Provision of free of cost temporary living in the camp site for all the workers employed by contractor for the total work period.
Facilities to be Provided at the Camp Site: The camp should have adequate space for accommodating the workers. In case of women workers and families, the accommodation units should provide adequate privacy. The camp should have all common minimum required facilities like ventilation, bed / bed roll for the workers, electricity supply, water supply, kitchen, separate toilet and bathrooms for ladies and gents, etc. Identification of potable drinking water source/s and seeking permission from local authority / GP for accessing the source. In case, potable drinking water source is not available in the vicinity, provision of water filter should be made in the camps to make water potable. Storage of drinking water should be made in cleaned / hygienic containers and should be placed at a distance of not less than 15m from any wastewater / sewage drain, toilet or other source of pollution.

Hygiene and Sanitation:
Suitable washing facility for clothes and utensils at the camp level, with mechanism for proper draining and disposal of waste water.
Separate bathing facility for male and female workers in conveniently accessible locations and shall be kept in clean and hygienic conditions.
Sanitary arrangements, latrines and urinals in every work place. The type of latrine chosen must be culturally appropriate / acceptable. The latrines must be suitable for use in shallow groundwater / flood prone areas.
Separate toilet facility for male and female works with proper sign board in language that are understood by the workers along with picture.
For 15-20 female and male workers, separate toilet provision should be made.
The latrines and urinals shall be adequately lighted and hygienic condition shall be maintained (proper cleaning and sanitisation).
Water shall be provided in or near the latrines and urinals (piped water or by storing water in drums).

Arrangements for Waste Disposal:
Disposal of sanitary wastes and excreta shall be into septic tanks. Dry sanitation (toilet) facility shall be provided at flood prone area.
Kitchen wastes (excluding solid waste) shall be disposed into soak pits. Wastewater from campsites will be discharged and disposed in a kitchen soak pit located at least 15 meters away from any waterbody.
Capacity of the pit should be at least 1.3 times the maximum volume of wastewater discharged per day.
The bottom of the soak pit should be filled with coarse gravel and the sides shored up with board, etc. to prevent erosion and collapse of the soak pit.
Solid wastes generated in the construction site shall be reused if recyclable or disposedoff in land fill sites approved by local authority.

Health Care Management:
Availability of first aid box / facilities with all recommended medicines / nonconsumables in each construction site.
An educated person in the camp site should be oriented on administering first aid treatment and the box should be placed under his/her command.
Arrangement should be made by which she/he would be available at the time of requirement.
In case of any eventuality which demand hospitalisation, transport facility should be provided using available project vehicle or immediate transportation through ambulance service to nearby health facility.
Periodic visit by a qualified medical doctor (PHC/CHC/SDH etc.) to the campsite for health check-up of workers, at least once in 15 days. A register of all health problems must be maintained by the doctor and available at the campsite.
Provision of health insurance of all workers for stipulated period of their engagement in construction sites.

Storage of Cement & Fuel:
Storage site within the camp should be at a minimum distance of 30 meter from the living area of the workers.
Liquids like oil / fuel / lubricants etc. should be stored at a height from the ground level for which a brick-based platform with sand flooring should be prepared to avoid soil and water contamination due to spillage.
Similarly, cement can be stored at a height from the ground level in a damp-proof area.

Other Safety and Security Measures Provision of fire extinguishers / Fire-fighting arrangements at the camps. Each area shall be earmarked based on fire zone category (Fire zone- 1, 2 & 3). Arrangement shall be available at each facility like living area, material storage area, hazardous building. At least one fire lift and water storage tank shall also be provided at each camp site. Display of fire station number in prominent place for easy visibility. In case the campsite has a common kitchen facility, it must be ensured that the common kitchen (and any other kitchens in the campsite) is located at least 20 m away from the living area. Only LPG stoves are to be used. Use of fuelwood stoves shall not be permitted for use in camp site. Provision of identity cards to labourers and residents of construction camps.
Construction Phase
Construction camps shall be maintained free from litter and in hygienic condition. It should be kept free from spillage of oil, grease or bitumen. Any spillage should be cleaned immediately to avoid pollution of soil, water stored or adjacent water bodies. Precautions need to be taken in construction camps are like (1) no leaching of oil and grease into water bodies or water sources, including canals take place; (2) non-disposal of wastewater into water bodies; (3) collection and appropriate disposal of solid wastes on regular basis; (4) hygienic condition of the toilet, its regular maintenance and keeping it clean and (5) availability of first-aid care provision in the camp, (6) display of emergency numbers (fire, police, ambulance, medical hospital etc,) in a common place visible to others.

Annexure- ESHS-VIII

Site Restoration Plan

- At the completion of construction, all construction camp facilities shall be dismantled and removed from the site.

- The site shall be restored to a condition in no way inferior to the condition prior to commencement of the works.
- Various activities to be carried out for site restoration are like (1) cleaning / removal of oil and fuel contaminated soil and its disposal in waste disposal areas approved by the Engineer in consultation with the Client and local authorities; (2) construction campsite shall be grassed and planted with trees as per the restoration design; (3) Sealing / filling up of soak pits and septic tanks; (4) disconnection of electricity supply; (5) disposal of all garbage in the disposal site only (site approved by local authority).

Annexure-ESHS-IX

Environmental Monitoring Programme for single Terminal during Construction Phase

Table ESHS-5: Testing details of environmental parameters

(Location to be finalized by the contractor in consultation with the Employer's Engineer)

S. No.	Aspects	Parameters to be monitored	Frequency of monitoring	Location	Responsible Agency	
1.	**River water**				**Implemented By**	**Supervised By**
	Physico-chemical parameters	pH, EC, TDS, Turbidity, Phosphates, Nitrates, Sulphates, Chlorides.	For three seasons in construction phase	7-8 sites (one sample of ground water near terminal)	Contractor	Construction Supervisor (TSSC)
			For two seasons in operation phase		Contractor	Construction Supervisor (TSSC)
	Biological parameters	Light penetration, Chlorophyll, Primary Productivity, Phytoplanktons, Zooplanktons	For three seasons in construction phase	7-8 sites	Contractor	Construction Supervisor (TSSC)
			For two seasons in operation phase		Contractor	Construction Supervisor (TSSC)
2.	**Sediments**					
	Physico-chemical parameters	Texture, pH, Sodium, Potassium, Phosphate, Chlorides, Sulphates, Hg, Pb, Fe, Cu, Zn, Cd	For three seasons in construction phase	7-8 sites	Contractor	Construction Supervisor (TSSC)
			For two seasons in operation phase		Contractor	Construction Supervisor (TSSC)
	Biological parameters	Benthic Meio-fauna, Benthic Macro-fauna	For three seasons in construction phase For two seasons in operation phase	7-8 sites	Contractor	Construction Supervisor (TSSC)
3.	**Ambient air quality**	$PM_{2.5}$, PM_{10}, SO_2 and NO_2	- For three seasons in construction phase and one season for operation phase. - Twice a week for four consecutive weeks per season. -	Sites Close to construction site(s) minimum four location	Contractor	Construction Supervisor (TSSC)
4.	**Noise Quality**	Equivalent Noise Level	During peak construction activities	Construction Site(s)	Contractor	Construction Supervisor (TSSC)
5.	**Soil Quality**	N, P, K and Heavy metals	4 samples pre-monsoon season and 4 samples post-monsoon in construction phase and one season during operation phase	At terminal and landing site	Contractor	Construction Supervisor (TSSC)

S. No.	Aspects	Parameters to be monitored	Frequency of monitoring	Location	Responsible Agency	
6.	**Dolphins study**	Assessment and presence of Dolphins, survival etc.	Once per year	At selected locations near terminal	Contractor	Construction Supervisor (TSSC)

Note:

(a) Above environmental parameters must be tested in an appropriate NABL/ MoEF& CC approved environmental laboratory in consultation with the Employer's Engineer.

Base line Environmental Parameters must be assessed by the Contractor before the commencement of the Project in consultation with the Employer's Engineer.

Noise Level to be tested as per Assam Pollution Control Board (APCB)/ GoI norms and parameters.

Annexure-ESHS-X
Emergency Preparedness Plan

The emergency causes disruption to the human, social, economic and ecological life of the society. It causes disruption, death, damage, destruction, disability, epidemic, diversion of resources and immense burden to the exchequer. Some of the disasters like cyclone, floods and droughts can be fairly predicated whereas earthquakes, landslides, flash floods and tsunami often occur suddenly. Besides mankind has also exposed itself to certain man-made disasters such as riots, accidents, fires, industrial and technological disasters and ecological disasters.

General guidelines to be followed during the Earthquake:

- Stay calm
- Ground and Ground + 2 floors can remain indoors. There could be falling debris outside
- Above Ground + 2 floors should not panic and try for staircase in organized manner.
- Take shelter under an internal doorframe, study table, bench or bed
- Keep away from mirrors, windows, overhead fittings and tall furniture
- Do not use Lifts or rush for doors in crowded areas. Stay clear
- Fire Emergency
- Fire Safety is a concern in urban and densely populated residential complex where there could be various scenarios, which lead to a fire situation. During a fire, the occupants of the entire building are exposed to two types of dangers:
- Flames and hot products of combustion
- Smoke and toxic gases which are the causes of greater number of fire deaths even at considerable distance from the seat of fire.
- Therefore, before considering fire safety in buildings the following structural requirements have to be looked at:
- Provision of adequate means of escape.
- Designing of walls and ceiling linings in buildings with regard to their flame spread and fire propagation characteristics.
- Clustering of buildings into discrete compartments separated by elements having adequate fire resistance.
- Extent of unprotected areas in external walls and the nature of roofing materials to limit to a reasonable extent the risk of fire spread from building to building.
- Provision of adequate means of access to and into the buildings for fire service appliances and personnel for the purpose of fire fighting.
- Provision of storage of adequate water for firefighting purposes and means of installing fire and life safety requirements befitting for the structure.

After reviewing all the aspects, a detailed fire safety management plan should include:

- Provision of adequate number of fire detection and alarm systems, fire hydrants, risers, hose reels, fire mains, sprinkler systems, portable fire extinguishers, escape lightning & emergency lighting systems, smoke control systems, fire fighting lift, evacuation lift for the disabled.
- Adequate fire safety provisions for hazardous chemical storage area duly approved by statutory authorities
- All flammable materials would be stacked and stored as per statutory and preventive guidelines.
- The exit requirement for fire safety would be in accordance with IS: 1644:1988

Flood

- Flood risk may occur in case of unusually heavy rain or sudden flow of water in the canal or river. Such flooding is unlikely to have catastrophic effects due to the availability of sufficient containment capacity and runoff diversion drains to handle the runoff from the probable maximum precipitation. In case of floods, the personnel should respond in accordance with the Flood Response Plan.

Cyclone

- In light of the occurance of Amphan, in case of a severe thunderstorm watch or warning and/or a cyclone shall be communicated to the site and as a preventive measure the site should be shut down as per severity and guidelines issued by the local administration.

Objectives:

- To protect and minimize the loss of lives and property/infrastructure from cyclones.
- To minimize the suffering of people due to cyclones.
- To build the capacity of all stakeholders in the project area to cope with the cyclones and promote community-based disaster management.
- Develop efficient cyclone response/relief mechanism at site.
- To ensure co-ordination by promoting productive partnership with all other agencies related to cyclone management.

Ensure necessary safety measures along the project areas:

- Review the safety measures taken by concerned dept. before the cyclone season.
- Establish continuous communication links with, Assam Disaster Management & Civil Defence Department and responsible department in the State or further verification of weather condition during the cyclone season. The said department has trained human resources to deal with complex situations where effective and speedy handling can reduce the impact of a disaster on human life and property
- Make prior arrangements with respective department so that the people can be rescued in case of cyclone event.
- Conduct awareness programs regarding the safety measures that need to be taken in case of cyclone and the meaning of the different hoisted signals.
- Take part in pre-cyclone season meetings and take all the safety measures recommended by Disaster Management & Civil Defence Department.
- Training/IEC campaign for general public of the vulnerable areas.
- Plan for re-establishment of disrupted system
- Identify available resources viz. Human, financial and equipment for cyclone.
- Identification of gaps of resources as per the need
- Process for procurement of lacking resources
- Identification of safe shelter for evacuation in cyclone prone villages/ project area and updation in the level specific plans
- Warning system in place for emergency communication in project area.
- Promote local level cyclone risk management planning through participatory approach

Site Response Team

- Site emergency response drills should be regularly delivered to the personnel. Such drills create certain mindsets and help the personnel to develop practical skills on the usage of PPE, as well as behaviour models. Rescue operations shall be carried out by the emergency rescue teams and the personnel on whose shift the accident, emergency, catastrophe or terrorist act has occurred. The project manager and EHS team can take a lead on this.

Communication Systems

An important key to effective emergency response is a communications system that can relay accurate information quickly. To do this, reliable communications equipment must be used, procedures developed, and personnel trained.

Annexure- ESHS-XI
COVID-19 OHS Protocols for Project Construction Sites

- To reduce the impact of COVID-19 outbreak conditions on construction and civil projects, it is important that Contractors develop a plan for COVID-19 pandemic and any infectious disease epidemics that may arise in the future. For Contractors who have already planned for disease pandemic outbreaks in their emergency preparedness plan, planning for COVID-19 may involve updating plans to address the specific exposure risks, sources of exposure, routes of transmission, and other unique characteristics of SARS-CoV-2. Contractors who have not prepared for pandemic events should prepare themselves and their workers as far in advance as possible of potentially worsening outbreak conditions. Lack of continuity planning can result in a cascade of failures as Contractors attempt to address challenges of COVID-19 with insufficient resources and workers who might not be adequately trained for jobs they may have to perform under pandemic conditions.
- Contractors are required to comply with the Project Health and Safety Manual. A key component of the Health and Safety Manual is the Emergency Preparedness Plan, which addresses emergency events during the life of the project. COVID-19 is an emergency event due to the novel corona virus pandemic that falls under the EPP. The Contractors are obligated to implement the EPP during this emergency event to protect the health and safety of the workers.

The objectives are as follows:

- Preparedness - undertake readiness activities to reduce the impacts on the project operations and local community during COVID-19 pandemic;
- Prevention - prevent or minimize COVID-19 outbreaks within the construction sites and potential spread to local communities;
- Maintain essential project operations in the case of an outbreak at construction sites; and
- Communications- develop standardized messages, procedures and tools for stakeholders under the management of the Contractors (e.g. subcontractors, suppliers, community workers).

Role of Contractors:
Contractors are responsible to comply with the Project OHS Management Plan, including the Emergency Preparedness Plan in which COVID-19 pandemic is classified as an emergency.

The responsibilities of the Contractors are to:

- Implement the COVID-19 OHS Protocols to protect the health and safety of project workers during this emergency crisis.
- Prepare site readiness in response to COVID-19 when restarting the project and returning to work.
- In consultation with PIU/PMU, assess the resources and capacity of site medical facilities and engage with external healthcare network to ensure adequate care for the project workers if there is an outbreak. Agree with the local or private health care service provider on the scope of services to be provided, the procedure for in-take of patients and (where relevant) any costs or payments that may be involved.
- Ensure workers, sub-contractors and suppliers are in compliant with COVID-19 OHS Protocols.

Role of Project Workers:

Project workers include contractors, subcontractors and their contracted workers; suppliers and community workers who work in the project in any capacity. The responsibilities of Project

Workers are to:

- Follow all the requirements of theCOVID-19 OHS Protocols and actively participate in the activities related to pandemic preventive measures.

- Immediately notify their Supervisor, Project Manager or Project Medical Provider if feeling ill, sick or unwell.
- Risk Assessment: The Contractors, with support from DPIU should conduct a COVID-19 risk assessment starting with the workforce. Assessing these different aspects of the workforce will help in identifying appropriate mitigation measures.
- Transmission Risk between Project Workers and Community Members: The risk of COVID-19 transmission between project workers and community members is significantly high during the pandemic and management decisions will need to be made on preventive measures as they may affect the project timelines, costs and delays.
- Return to Work Plan: Based on the risk assessment, the Contractors should be able to identify essential workers that are required on the construction sites and the non-essential workers who are able to work remotely or from home.
- Communications & Training: Workers need to be provided with regular opportunities to understand their situation, and how they can best protect themselves, their families and the community. They should be made aware of the COVID-19 OHS Protocols that have been put in place in the workplace, and their own responsibilities in implementing them.
- Preventive measures: Physical Distancing: It is an important prevention measure to minimize the spread of COVID-19, at least 1 meter physically apart will be challenging at some construction sites.
- Work Schedules/ Rotations: The Contractors should review current work processes and timings to determine if changes are needed to reduce or minimize contact between workers, recognizing that this may impact the project schedule. Contractors and PIU/PMU should work together to an agreement if this impacts the project schedule
- Shift Change: Where shift change requires the workers to clock-in, queuing in line or gathering to take place the Contractors should implement shift change procedures to ensure physical distancing.
- Travel to Work/ Travel between Sites:
- When travelling to work or between site locations, workers should travel alone if possible. If workers have no option but to share a vehicle, contractor bus or public transportation then they should:
- Journeys should be shared with the same individuals and with the minimum number of people at any one time.
- All workers should wear a face mask/ covering when travelling in a shared vehicle, contractor bus and public transportation.
- Wherever possible maintain a distance of 1 meter and avoid/ remove middle seat
- Good ventilation (i.e. keeping the windows open) and facing away from each other may help to reduce the risk of transmission.
- The vehicle should be cleaned regularly using proper PPE and standard cleaning/ disinfecting products, with particular emphasis on handles and other areas where passengers may touch surfaces.
- Personal Hygiene: Hand washing is a simple yet one of the most effective ways to prevent the spread of COVID-19
- Coughing and Sneezing: Coughing and sneezing releases droplets that contaminate air and surfaces and help to spread COVID-19. When an infected person uses their hands to block a cough or sneeze, those hands become contaminated. Need adequate measure to prevent contaminated.
- Face Masks: A “face mask” is any well-secured fabric, cloth, fabric or paper mask that covers one’s nose and mouth.
- Cleaning and Disinfection of Surfaces: Current evidence suggests that COVID-19 virus can remain viable for hours to days on surfaces made from a variety of materials. Cleaning of surfaces followed by disinfection is a best practice measure for prevention of COVID-19 in the workplace, camps and community settings.
- Personal Protective Equipment (PPE): While engineering and administrative controls are considered more effective in minimizing exposure to COVID-19, PPE may also be needed to prevent certain exposures. While correctly using PPE can help prevent some exposures, it should

not take the place of other prevention strategies (e.g. face masks/coverings, physical distancing, hand washing, coughing & sneezing etiquette).

- Biohazard & Medical Waste Management: Biohazard and medical wastes are contaminated with blood or other infectious materials. The infectious materials pose a risk of spreading disease in humans, animals and the environment. It should be noted that the SAR-CoV-2 virus that causes COVID-19 infection has been found in body fluids such as blood, respiratory (saliva, sputum, droplets, etc.), semen and faeces.
- Contractors should aware that any waste produced during the care of COVID-19 suspected or confirmed infected workers in the medical clinic should be treated as biohazard waste, and collected in designated biohazard containers or bags, treated and disposed by following relevant requirements as per ASPCB based on CPCB requirements that can be accessed here: https://cpcb.nic.in/uploads/Projects/Bio-Medical-Waste/BMW-GUIDELINES-COVID_1.pdf. Treatment of biohazard waste is typically by autoclaving or incineration. Where autoclaving and/or incineration equipment not available within the project, the Contractors should engage with external service provider, local hospital, or health clinic to ensure biohazard waste is properly disposed.
- Management of COVID-19 Outbreak: Contractor Medical Service Obligations: Given the limited scope of the project medical facilities and service capabilities, the Contractors should ensure that external healthcare network (public and private medical facilities) is available to test and to treat suspected/ infected workers if there is an outbreak or when illness escalates.

- Testing for COVID-19, Daily Health Screening, Incident Management and Reporting, COVID-19 Outbreak EPP Drills, COVID-19 information and daily Toolbox talk will adopt by the Contractors.

Annexure- XII

Environment Management Plan for Construction Phase of Terminal

Environmental Management Plan (EMP) is a plan that seeks to achieve a required end state and describes how activities that have or could have an adverse impact on the environment, will be mitigated, controlled, and monitored.

The EMP will address the environmental impacts during design, construction and operation phases of a project. Due regard must be given to environmental protection during the entire project. In order to achieve this, number of environmental specifications/ recommendations has been made. These are aimed at ensuring that the proponent/contractor maintains adequate control over the project in order to minimize the extent of impact during construction, ensuring appropriate restoration of areas affected by construction, and preventing long term environmental degradation.

Environmental impacts arising due to development activities are the key aspects on EIA study. An equally essential element of this process is to develop measures to eliminate, offset, or reduce adverse impacts to acceptable levels and enhance the beneficial ones during implementation and operation of the projects. The integration of the project planning has been done by clearly defining the environment requirements within an Environment Management Plan (EMP). The Management Action Plan aims at controlling pollution at the source of generation itself to the maximum possible extent with the available and affordable technology followed by treatment measures before they are discharged.

EMP for Pre-construction and Construction phase of the terminals are given in the ESIA Report which will guide the Contractor to prepare their C-ESMP for the terminals.

ANNEXURE-XIII

CULTURAL HERITAGE MANAGEMENT PLAN (CHMP)

1. INTRODUCTION

Cultural heritage resources play an important role, not only as historical information, but also as an economic and social asset for local communities as well as for national development. The Cultural Heritage Management Plan (CHMP) sets out measures designed to protect cultural heritage throughout the project life-cycle. The measures for implementation of this CHMP will also need to take into account the ESS 6 (Biodiversity Conservation and Sustainable Management of Living Natural Resources) that recognizes the social and cultural values of biodiversity conservation areas of which the project sites located in or nearby. In addition, for the purpose of inclusion, the CHMP will follow the provisions on Stakeholder Engagement Plan (SEP) prepared for AIWTDS Phase-II and follow the requirement as set out in the ESS 10 (Stakeholder Engagement and Information Disclosure).

The mighty river Brahmaputra decors the geography of the state and one can take a Cruise along this river with first class facilities experiencing wildlife, tradition, adventure tourism on its way. Assam is blessed with the world's largest inhabited river island Majuli, which has several satras vaishnavite monasteries, some dating back to the 16th centuries; as well as the world's smallest riverine island in the world namely Umananda Temple which was built in the 17th Century dedicated to Lord Shiva.

2. PREPARATION OF CHMP

The objective of the CHMP is to prevent any inadvertent loss of cultural heritage during project construction and operation. The development of a CHMP is to be made an integral part of the Environmental Impact Assessment process. Typically, the plan includes measures for avoiding or mitigating any adverse impacts on cultural heritage, provisions for the management of chance finds, any necessary measures for strengthening institutional capacity, a monitoring system to track the progress of these activities, and takes into account the country's overall policy framework, national legislation and institutional capabilities regarding cultural heritage.

In the case of a major subproject in a culturally sensitive area, which requires substantial archaeological investigations during project implementation, consideration should be given to instituting a program of independent monitoring and review. Whenever it is considered possible for project-related activities to encounter archaeological or paleontological sites or artefacts, the contractors should be required to follow procedures outlined by the World Bank regarding chance finds.

The assessment should rank potential impacts on heritage according to:

- The significance of the heritage
- The level of the irreversibility of the impact; and
- The extent of potential damage

3. CULTURAL HERITAGE MANAGEMENT FRAMEWORK

Cultural Heritage Management Framework (CHMF) is prepared to fulfil the World Bank's requirements prepared to fulfil the requirements for the application of the Environmental and Social Standards (ESS 6: Cultural Heritage), of the World Bank's Environmental and Social Framework (ESF) applicable to its Projects. The ESS 8 is applicable for the AIWTDS Phase-II components as the project area has heritage sites and heritage components in other part of the state. The Project will avoid supporting any subprojects in the historic sites or its buffer. Though the initially identified components do not have an impact on heritage sites or its assets, since this is an up gradation project, there may be potential impact on tangible and intangible forms of cultural heritage resources in potential project sites outside historic part or its buffer.

4. APPLICABLE NATIONAL POLICIES

The applicable policies are presented in Table-9.1.

Table-1: Applicable Policies for CHMP

S No.	Policy/ Act	Description
1	Ancient Monuments and Archaeological Sites and Remains Act 1958.	An Act to provide for the preservation of ancient and historical monuments and archaeological sites and remains of national importance, for the regulation of archaeological excavations and for the protection of sculptures, carvings and other like objects.
2	Ancient Monuments and Archaeological Sites and Remains (Amendments and Validation) Act, 2010	The act declares certain monuments/ sites as being of "national importance". Stipulates conservation of cultural and historical remains found in India. (i) 100m radius is a "prohibited" area – no construction or reconstruction. Repairs allowed. A 200m radius is a "regulated" area (structures can be constructed by archaeological officers with due sanctions from a competent authority). Protection, maintenance, and conservation managed by the Archaeological Survey of India (ASI).
3	Indian Treasure Trove Act, 1878	Promulgated to protect and preserve treasures found accidentally but had archaeological and historical value.
4	Antiquities and Art Treasure Act,1972	Effective control over moveable cultural property consisting of antiquities and art.

5 . WORLD BANK ENVIRONMENT AND SOCIAL FRAMEWORK

The applicable guidelines of World Bank for CHMP are given in Table-9.2

Table-2: Applicable World Bank Guidelines of for CHMP

S No.	Operational Policy	Description
1	ESS 8: Cultural Heritage	To protect cultural heritage from the adverse impacts of project activities and support its preservation To address cultural heritage as an integral aspect of sustainable development To promote meaningful consultation with stakeholders regarding cultural heritage To promote the equitable sharing of benefits from the use of cultural heritage

The requirements of ESS8 will apply to all interventions that are likely to have risks or impacts on cultural heritage. The applicable projects are given in table-9.3.

Table-3: Intervention involving ESS8

S. No	Criteria	Projects
a	Involves excavations, demolition, movement of earth, flooding, or other changes in the physical environment	All construction works, up gradations involving movement of the earth
b	Is located within a legally protected area or a legally defined buffer zone;	As in the case of Archaeologically protected monuments, National, State or city
c	Is located in, or in the vicinity of, a recognized cultural heritage site; or	As in the case of network laying (sewers, drains) through areas of cultural heritage importance
d	Is specifically designed to support the conservation, management, and use of cultural heritage.	As in the case of lakes, Tank development; where these have tangible, or intangible heritage value. The requirements of ESS8 apply to intangible cultural heritage only if a physical component of a project will have a material impact on such cultural heritage or if a project intends to use such cultural heritage for commercial purposes.

6. PROJECT ACTIVITIES IMPACTS AND MITIGATION MEASURES

The indicative project activities, impacts and mitigation measures for inclusion in CHMP are given in Table-9.4.

Table-4: Possible Impacts and Mitigation Measures

Stage	Activity	Impact	Mitigation Measures
Pre-Construction Phase	Site Clearance	Physical and cultural impacts of cleared material strewn around heritage features	Follow proper stacking of cleared material in areas away from heritage features and ensure site housekeeping
		Chance find of heritage feature during works and damage	Training/ instructions to workers on chance finds Discussion with informants and Site examination with user group/ communities before initiating construction activities Chance find procedures to be followed

Stage	Activity	Impact	Mitigation Measures
			Barricading the area, watch, and vigil till authorities are notified and take charge Photo documentation if allowed and directed by authorities
		Dust pollution due to the removal of cleared material from the	Dust suppression measures
	Transport and stacking of materials and Tools	Stacking of tools and material around heritage features	Follow proper covered/ safe stacking in areas away from heritage features, and ensure signage (with reflectors)
Construction and Operation Phase	Excavation or material sourcing, shifting & use of assets	Chance Find of historic/ culturally important property (idols, structures, potteries, stone tools, fossils etc.	Discussion with informants and site examination with user group/ communities before initiating construction activities Chance find procedures to be followed Barricading the area, watch and vigil till authorities are notified and take charge Photo documentation if allowed and directed by authorities
		Structural and non-structural disturbances to physical or cultural heritage features, aesthetics or users/ occupiers due to construction activities	Plan to minimize disturbances, months, time and schedule (minimize vibration, festival period, tourist visiting hours) in consultation with communities, service provider and authorities. Repairs and other supports. Arrange protection in place, or scheduled visitations, or community-sanctioned movement of sacred items if required Preserve the physical and visual context of individual or groups of historic structures by considering the appropriateness and effect of project infrastructure proposed for location within the range of sight Guard against theft and illegal trafficking of movable cultural heritage items affected by the project and will notify relevant authorities of any such activity
		Erosion and slippage affecting downstream heritage features	Proper site planning to avoid erosion, slippage Protective measures like fencing, barricading of downstream heritage features
	Transportation/ loading/ unloading of material and waste	Negative aesthetic impact due to mismanagement of material and waste in the vicinity of heritage	Proper stacking& storage of material Waste management plan

Stage	Activity	Impact	Mitigation Measures
		feature	
		Dis-coloration of Monuments due to air emissions deposition of dust on the monument	Emission control measures Dust suppression and control measures
		Accidents affecting heritage features during construction or operations	Emergency preparedness and response plan

7. FRAMEWORK FOR HERITAGE MANAGEMENT

The framework identifies the mitigations to be adopted, institutional responsibilities, and frequency of monitoring to protect the cultural resources. The framework for heritage site management is outlined in Table-9.5.

Table-9.5: Framework for Heritage Risk Management

S No.	Anticipated Risks and Impacts	Avoidance/ Mitigation/ Management Measures	Responsibility
1	Accidental Structural Damage	Prepare emergency preparedness and response plan considering potential accident scenarios.	Construction Contractor/ PIU
2	Aesthetically and functionally negative Impact	Proper stacking of material Proper storage of C & D at the worksite Waste management plan to be followed Inform communities/ users of possible disturbances and support them in minimizing these	Construction Contractor/ PIU

Annexure- XIV

Environmental and Social Trainings to be conducted by the Contractors

Contents	Participants	Responsibility	Schedule
General environmental awareness; Environmental and social sensitivityof the project influence area; Key findings of the EIA;Mitigation measures; EMP; Social and cultural values of the area.	Selected staff of AIWTDS, supervisor, and contractors/ stakeholders	Supervisor	Prior to the start of the project activities. (To be repeated as needed.)
General environmental and awareness; Environmental and social sensitivity ofthe project influence area; Mitigation measures; Community issues; Awareness of transmissible diseases; Social and cultural values.	PIU; supervisor; selected contractors' crew/General public	Supervisor	Prior to the start of thefield activities. (To be repeated as needed.)
EMP; Waste disposal;	Construction crew	Contractors	Prior to the start of the construction activities. (To be repeated as needed.)
Road/waterway safety; Defensive driving/sailing;Waste disposal; Cultural values and social sensitivity.	Drivers; boat/launch crew	Contractors	Before and during the field operations.(To be repeated as needed.)
Camp operation; Waste disposal; Natural resource conservation; Housekeeping.	Camp staff	Contractors	Before and during the field operations. (To be repeated as needed.)
Restoration requirements; Waste disposal.	Restoration teams	Contractors	Before the start of the restoration activities.
Conservation of important flora / fauna Dolphin; Cultural resources;	PIU; supervisor; selected contractors' crew	Contractors, Supervisor and E&S cell	Before and during the field operations. (To be repeated asneeded.)

Annexure-XV

Environmental Codes of Practice (ECoPs) & other Plans to be followed by the Contractor

The environmental codes of practice (ECoPs) are generic, non-site-specific guidelines. The ECoPs consist of environmental management guidelines and practices to be followed by the contractors for management of all environmental issues. The contractor will be required to follow them by preparing site-specific management plans. The ECoPs are listed below and detailed in table below-

- ECoP 1: Waste Management
- ECoP 2: Fuels and Hazardous Substances Management
- ECoP 3: Water Resources Management
- ECoP 4: Drainage Management
- ECoP 5: Soil Quality Management
- ECoP 6: Erosion and Sediment Control
- ECoP 7: Top Soil Management
- ECoP 8: Topography and Landscaping
- ECoP 9: Borrow Areas Management
- ECoP 10: Air Quality Management
- ECoP 11: Noise and Vibration Management
- ECoP 12: Protection of Flora
- ECoP 13: Protection of Fauna
- ECoP 14: Protection of Fisheries
- ECoP 15: Road Transport and Road Traffic Management
- ECoP 16: River Transport management
- ECoP 17: Construction Camp Management
- ECoP 18: Cultural and Religious Issues
- ECoP 19: Workers Health and Safety

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
ECoP 1: Waste Management		
General Waste	Soil and water pollution from the impropermanagement of wastes and excess materials from the construction sites.	The Contractor shall • Develop waste management plan for various specific waste streams (e.g., reusable waste, flammable waste, construction debris, food waste etc.) prior to commencing of construction and submit to Construction Contractor for approval. • Organize disposal of all wastes generated during construction in an environmentally acceptable manner. This will include consideration of the nature and location of disposal site, so as to cause less environmental impact. • Minimize the production of waste materials by 3R(Reduce, Recycle and Reuse) approach. • Segregate and reuse or recycle all the wastes, wherever practical. • Prohibit burning of solid waste

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
		• Collect and transport non-hazardous wastes to all the approved disposal sites. Vehicles transporting solid waste shall be covered with tarps or nets to prevent spilling waste along the route • Train and instruct all personnel in waste management practices and procedures as a component of the environmental induction process. • Provide refuse containers at each worksite. • Request suppliers to minimize packaging where practicable. • Place a high emphasis on good housekeeping practices. • Maintain all construction sites in a cleaner, tidy and safe condition and provide and maintain appropriate facilities as temporary storage of all wastes before transportation and final disposal.
Hazardous Waste	Health hazards and environmental impacts due to improper waste management practices	The Contractor shall • Collect chemical wastes in 200 liter drums (or similar sealed container), appropriately labeled for safe transport to an approved chemical waste depot. • Store, transport and handle all chemicals avoiding potential environmental pollution. • Store all hazardous wastes appropriately in bunded areas away from water courses. • Make available Material Safety Data Sheets (MSDS) for hazardous materials on-site during construction. • Collect hydrocarbon wastes, including lube oils, for safe transport off-site for reuse, recycling, treatment or disposal at approved locations. • Construct concrete or other impermeable flooring to prevent seepage in case of spills
ECoP 2: Fuels and Hazardous Goods Management		

Fuels and hazardous goods.	Materials used in construction have a potential to be a source of contamination. Improperstorage and handling of fuels, lubricants, chemicals and hazardous goods/materials on-site, and potential spills from these goods may harm the environment or health of construction workers	The Contractor shall • Prepare spill control procedures and submit the planfor Construction Contractor approval. • Train the relevant construction personnel in handlingof fuels and spill control procedures. • Store dangerous goods in bunded areas on a top ofa sealed plastic sheet away from watercourses. • Refueling shall occur only within bunded areas. • Make available MSDS for chemicals and dangerous goods on-site. • Transport waste of dangerous goods, which cannot be recycled, to a designated disposal site approved by DoE. • Provide absorbent and containment material (e.g., absorbent matting) where hazardous material are used and stored and personnel trained in the correct use. • Provide protective clothing, safety boots, helmets, masks, gloves, goggles, to the construction personnel, appropriate to materials in use.

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
		▪ Make sure all containers, drums, and tanks that are used for storage are in good condition and are labeled with expiry date. Any container, drum, or tank that is dented, cracked, or rusted might eventually leak. Check for leakage regularly to identify potential problems before they occur. ▪ Store hazardous materials above flood plain level. ▪ Put containers and drums in temporary storages in clearly marked areas, where they will not be run over by vehicles or heavy machinery. The area shall preferably slope or drain to a safe collection area in the event of a spill. ▪ Put containers and drums in permanent storage areas on an impermeable floor that slopes to a safe collection area in the event of a spill or leak. ▪ Take all precautionary measures when handling and storing fuels and lubricants, avoiding environmental pollution. ▪ Avoid the use of material with greater potential for contamination by substituting them with more environmentally friendly materials. ▪ Return the gas cylinders to the supplier. However, if they are not empty prior to their return, they must be labeled with the name of the material they contained or contain, information on the supplier, cylinder serial number, pressure, their last hydrostatic test date, and any additional identification marking that may be considered necessary.
ECoP 3: Water Resources Management		
Hazardous Materialand Waste	Water pollution from thestorage, handling and disposal of hazardous materials and general construction waste, and accidental spillage	The Contractor shall ▪ Follow the management guidelines proposed in ECoPs 1 and 2. ▪ Minimize the generation of sediment, oil and grease, excess nutrients, organic matter, litter, debris and any form of waste (particularly petroleum and chemical wastes). These substances must not enter waterways, storm water systems or underground water tables

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
Discharge from construction sites	During construction both surface and groundwaterquality may be deteriorated due to construction activities in the river, sewerages from construction sites and work camps. The construction works will modify ground cover and topography changing the surface water drainage patterns of the area including infiltration and storage of storm water. These changes in hydrological regime lead to increased rate of runoff,increase in sediment and contaminant loading, Increased flooding, groundwater contamination, and effecthabitat of fish and otheraquatic biology.	The Contractor shall • Install temporary drainage works (channels and bunds) in areas required for sediment and erosion control and around storage areas for construction materials • Install temporary sediment basins, where appropriate, to capture sediment-laden run-off from site • Divert runoff from undisturbed areas around the construction site • Stockpile materials away from drainage lines • Prevent all solid and liquid wastes entering waterways by collecting solid waste, oils, chemicals, bitumen spray waste and wastewaters from brick, concrete and asphalt cutting where possible and transport to an approved waste disposal site or recycling depot • Wash out ready-mix concrete agitators and concrete handling equipment at washing facilities off site or into approved bunded areas on site. Ensure that tires of construction vehicles are cleaned in the washing bay at the entrance of the construction site) to remove the mud from the wheels. This shall be done in every exit of each construction vehicle to ensure the local roads are kept clean
Soil Erosion and siltation	Soil erosion and dust from the material stockpiles will increase the sediment and contaminantloading of surface waterbodies.	The Contractor shall • Stabilize the cleared areas not used for construction activities with vegetation or appropriate surfacewater treatments as soon as practicable following earthwork to minimize erosion • Ensure that roads used by construction vehicles are swept regularly to remove sediment. • Water the material stockpiles, access roads and bare soils on an as required basis to minimize dust. Increase the watering frequency during periods of high risk (e.g. high winds)

Construction activities in waterbodies	Construction works in the water bodies will increasesediment and contaminantloading, and effect habitatof fish and other aquatic biology	The Contractor Shall • Dewater sites by pumping water to a sediment basin prior to release off site – do not pump directly off site • Monitor the water quality in the runoff from the siteor areas affected by dredge plumes, and improvework practices as necessary • Protect water bodies from sediment loads by silt screen or bubble curtains or other barriers • Minimize the generation of sediment, oil and grease, excess nutrients, organic matter, litter, debris and any form of waste (particularly petroleum and chemical wastes). These substances must not enter waterways, storm water systems or underground water tables. • Use environment friendly and nontoxic slurry during construction of piles to discharge into the river.

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
		▪ Reduce infiltrationof contaminated drainagethrough storm water management design ▪ Do not discharge cement and water curing used for cement concrete directly into water courses and drainage inlets
Drinking water	Groundwater at shallow depths is contaminated with arsenic and hence not suitable for drinking purposes. Depletion and pollution of groundwater resources	The Contractor Shall ▪ Pumping of groundwater shall be from deep aquifers of more than 300 m to supply arsenic free water.Safe and sustainable discharges are to beascertained prior to selection of pumps. ▪ Tube wells will be installed with due regard for the surface environment, protection of groundwater from surface contaminants, and protection of aquifercross contamination ▪ All tube wells, test holes, monitoring wells that areno longer in use or needed shall be properly decommissioned ▪ Install monitoring wells both upstream and downstream areas near construction yards and construction camps to regularly monitor the water quality and water levels. ▪ Protect groundwater supplies of adjacent lands
ECoP 4: Drainage Management		
Excavation and earth works, and construction yards	Lack of proper drainage for rainwater/liquid waste or wastewater owing to the construction activities harms environment in terms of water and soil contamination and mosquito growth	The Contractor shall ▪ Prepare a program for prevent/avoid standing waters, which Construction Contractor will verify in advance and confirm during implementation ▪ Provide alternative drainage for rainwater if the construction works/earth-fillings cut the establisheddrainage line ▪ Establish local drainage line with appropriate silt collector and silt screen for rainwater or wastewater connecting to the existing established drainage lines already there ▪ Rehabilitate road drainage structures immediately if damaged by contractors' road transports. ▪ Build new drainage lines as appropriate and required for wastewater from construction yards connecting to the available nearby recipient water bodies. Ensure wastewater quality conforms to the relevant standards provided by DoE, before it being discharged into the recipient water bodies. ▪ Ensure the internal roads/hard surfaces in the construction yards/construction camps that

		generate has storm water drainage to accommodate high runoff during downpour and that there is no stagnant water in the area at the end of the downpour. - Construct wide drains instead of deep drains to avoid sand deposition in the drains that require frequent cleaning. - Provide appropriate silt collector and silt screen at the inlet and manholes and periodically clean the

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
		drainage system to avoid drainage congestion • Protect natural slopes of drainage channels to ensure adequate storm water drains. • Regularly inspect and maintain all drainage channels to assess and alleviate any drainage congestion problem. • Reduce infiltration of contaminated drainage through storm water management design
Ponding of water	Health hazards due tomosquito breeding	• Do not allow ponding of water especially near the waste storage areas and construction camps • Discard all the storage containers that are capable of storing of water, after use or store them in inverted position
ECoP 5: Soil Quality Management		
Filling of Sites withdredge spoils	Soil contamination will occur from drainage of dredged spoils	The Contractor shall • Ensure that dredged sand used for land filling shallbe free of pollutants. Prior to filling, sand quality shall be tested to confirm whether soil is pollution free. Sediments shall be properly compacted. Top layer shall be the 0.5 m thick clay on the surfaceand boundary slopes along with grass. Side Slopeof Filled Land of 1:2 shall be constructed by suitable soils with proper compaction as per design. Slope surface shall be covered by top soils/ cladding materials (0.5m thick) and grass turfing with suitable grass. • Leaching from the sediments shall be contained to seep into the subsoil or shall be discharged into settling lagoons before final disposal. • No sediment laden water in the adjacent lands near the construction sites, and/or wastewater of suspended materials excessive of 200mg/l from dredge spoil storage/use area in the adjacent agricultural lands

Storage of Hazardous and toxic chemicals	Spillage of hazardous and toxic chemicals will contaminate the soils	The Contractor shall • Strictly manage the wastes management plans proposed in ECoP1 and storage of materials in ECoP2 • Construct appropriate spill contaminant facilities for all fuel storage areas • Establish and maintain a hazardous materials register detailing the location and quantities of hazardous substances including the storage, use of disposals • Train personnel and implement safe work practices for minimizing the risk of spillage • Identify the cause of contamination, if it is reported, and contain the area of contamination. The impact may be contained by isolating the source or implementing controls around the affected site • Remediate the contaminated land using the most appropriate available method to achieve required

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
		commercial/industrial guideline validation results.
Construction material stock piles	Erosion from constructionmaterial stockpiles may contaminate the soils	The Contractor shall • Protect the toe of all stockpiles, where erosion islikely to occur, with silt fences, straw bales or bunds
ECoP 6: Erosion and Sediment Control		
Clearing o fconstruction sites	Cleared areas and slopesare susceptible for erosion of top soils, that affects the growth of vegetation which causes ecologic alimbalance	• Reinstate and protect covered areas as soon as possible • Mulch to protect batter slopes before planting • Cover unused area of disturbed or exposed surfaces immediately with mulch/grass turfings /tree plantations
Construction activities and material stockpiles	The impact of soil erosion are (i) Increased run off and sedimentation causing a greater flood hazard to the downstream, (ii) destruction of aquatic environment in nearby lakes, streams, and reservoirs caused by erosion and/or deposition of sediment damaging thespawning grounds of fish,and (iii) destruction of vegetation by burying orgullying.	The Contractor shall • Locate stockpiles away from drainage lines • Protect the toe of all stockpiles, where erosion islikely to occur, with silt fences, straw bales or bunds • Remove debris from drainage paths and sedimentcontrol structures • Cover the loose sediments and water them if required • Divert natural runoff around construction areas priorto any site disturbance • Install protective measures on site prior toconstruction, for example, sediment traps • Control drainage through a site in protected channels or slope drains • Install 'cut off drains' on large cut/fill batter slopes tocontrol water runoff speed and hence erosion • Observe the performance of drainage structures anderosion controls during rain and modify as required.
ECoP 7: Top Soil Management		

Land clearing and earth works	Earthworks will impact thefertile top soils that are enriched with nutrients required for plant growth agricultural development.	The Contractor shall • Strip the top soil to a depth of 15 cm and store in stock piles of height not exceeding 2m. • Remove unwanted materials from top soil like grass, roots of trees and similar others. • The stockpiles will be done in slopes of 2:1 to reduce surface runoff and enhance percolation through the mass of stored soil. • Locate topsoil stockpiles in areas outside drainage lines and protect from erosion. • Construct diversion channels and silt fences around the topsoil stockpiles to prevent erosion and loss of topsoil. • Spread the topsoil to maintain the physico-chemical and biological activity of the soil. The stored top soil will be utilized for covering all disturbed area and along the proposed plantation sites • Prior to the re-spreading of topsoil, the ground surface will be ripped to assist the bunding of the

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
		soil layers, water penetration and re vegetation
Transport	Vehicular movementoutside ROW or temporary access roads will affect the soil fertility of the agricultural lands	• Limit equipment and vehicular movements to withinthe approved construction zone • Construct temporary access tracks to crossconcentrated water flow lines at right angles • Plan construction access to make use, if possible,of the final road alignment • Use vehicle-cleaning devices, for example, rampsor wash down areas
ECoP 8: Topography and Landscaping		
Land clearing andearth works	Flood plains of the existing Project area will be affectedby the construction of various project activities. Construction activities especially earthworks will change topography anddisturb the natural rainwater/flood waterdrainage as well as will change the local landscape.	The Contractor shall • Ensure the topography of the final surface of all raised lands (construction yards, approach roads, access roads, bridge end facilities, etc.) are conducive to enhance natural draining of rainwater/flood water; • Keep the final or finished surface of all the raised lands free from any kind of depression that insists water logging • Undertake mitigation measures for erosion control/prevention by grass-turfing and tree plantation, where there is a possibility of rain-cut that will change the shape of topography. • Cover immediately the uncovered open surface that has no use of construction activities with grass- cover and tree plantation to prevent soil erosion and bring improved landscaping
ECoP 9: Borrow Areas Management		
Development and operation ofborrow areas	Borrow areas will have impacts on local topography, landscaping and natural drainage	The Contractor shall • Use only approved quarry and borrow sites • Identify new borrow and quarry areas in consultation with Project Director, if required. • Reuse excavated or disposed material available inthe project to the maximum extent possible. • Store top soil for reinstatement and landscaping. • Develop surface water collection and drainage systems, anti-erosion measures (berms, re vegetation etc.) and retaining walls and gabions where required. Implement mitigation measures in ECoP 3: Water Resources Management, ECoP 6: Erosion and Sediment Control • The use of explosive should be used in as much minimum quantity as possible to reduce noise,

		vibration and dust. • Control dust and air quality deterioration by application of watering and implementing mitigation measures proposed in ECoP 10: Air Quality Management. • Noise and vibration control by ECoP 11: Noise and

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
		Vibration Management
ECoP 10: Air Quality Management		
Construction vehicular traffic	Air quality can be adversely affected by vehicle exhaust emissionsand combustion of fuels.	The Contractor shall • Fit vehicles with appropriate exhaust systems and emission control devices. Maintain these devices in good working condition. • Operate the vehicles in a fuel efficient manner • Cover haul vehicles carrying dusty materials movingoutside the construction site • Impose speed limits on all vehicle movement at theworksite to reduce dust emissions • Control the movement of construction traffic • Water construction materials prior to loading andtransport • Service all vehicles regularly to minimize emissions • Limit the idling time of vehicles not more than 2minutes
Construction machinery	Air quality can be adversely affected by emissions from machineryand combustion of fuels.	The Contractor shall • Fit machinery with appropriate exhaust systems and emission control devices. Maintain these devices in good working condition in accordance with thespecifications defined by their manufacturers to maximize combustion efficiency and minimize the contaminant emissions. Proof or maintenanceregister shall be required by the equipment suppliers and contractors/subcontractors • Focus special attention on containing the emissions from generators • Machinery causing excess pollution (e.g. visible smoke) will be banned from construction sites • Service all equipment regularly to minimize emissions • Provide filtering systems, duct collectors or humidification or other techniques (as applicable) to the concrete batching and mixing plant to control the particle emissions in all its stages, including unloading, collection aggregate handling, cement dumping, circulation of trucks and machinery inside the installations

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
Construction activities	Dust generation from construction sites, material stockpiles and access roads is a nuisance in the environment and can be a health hazard	▪ Water the material stockpiles, access roads and bare soils on an as required basis to minimize the potential for environmental nuisance due to dust. Increase the watering frequency during periods ofhigh risk (e.g. high winds). Stored materials such as gravel and sand shall be covered and confined to avoid their being wind-drifted ▪ Minimize the extent and period of exposure of the bare surfaces ▪ Reschedule earthwork activities or vegetation clearing activities, where practical, if necessary toavoid during periods of high wind and if visible dustis blowing off-site ▪ Restore disturbed areas as soon as practicable by vegetation/grass-turfing ▪ Store the cement in silos and minimize the emissions from silos by equipping them with filters. ▪ Establish adequate locations for storage, mixing and loading of construction materials, in a way that dust dispersion is prevented because of such operations ▪ Crushing of rocky and aggregate materials shall be wet-crushed, or performed with particle emission control systems
ECoP 11: Noise and Vibration Management		
Construction vehicular traffic	Noise quality will be deteriorated due to vehicular traffic	The Contractor shall ▪ Maintain all vehicles in order to keep it in good working order in accordance with manufactures maintenance procedures ▪ Make sure all drivers will comply with the traffic codes concerning maximum speed limit, driving hours, etc. ▪ Organize the loading and unloading of trucks, and handling operations for the purpose of minimizing construction noise on the work site

Construction machinery	Noise and vibration mayhave an impact on people, property, fauna, livestockand the natural environment.	The Contractor shall • Appropriately site all noise generating activities to avoid noise pollution to local residents • Use the quietest available plant and equipment • Modify equipment to reduce noise (for example, noise control kits, lining of truck trays or pipelines) • Maintain all equipment in order to keep it in good working order in accordance with manufactures maintenance procedures. Equipment suppliers and contractors shall present proof of maintenance register of their equipment. • Install acoustic enclosures around generators to reduce noise levels. • Fit high efficiency mufflers to appropriate construction equipment • Avoid the unnecessary use of alarms, horns and

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
		sirens
Construction activity	Noise and vibration mayhave an impact on people, property, fauna, livestockand the natural environment	The Contractor shall • Notify adjacent landholders prior any typical noiseevents outside of daylight hours • Educate the operators of construction equipment on potential noise problems and the techniques to minimize noise emissions • Employ best available work practices on-site to minimize occupational noise levels • Install temporary noise control barriers where appropriate • Notify affected people if major noisy activities willbe undertaken, e.g. pile driving • Plan activities on site and deliveries to and from site to minimize impact • Monitor and analyze noise and vibration results and adjust construction practices as required. • Avoid undertaking the noisiest activities, where possible, when working at night near the residential areas
ECoP 12: Protection of Flora		
Vegetation clearance	Local flora are important to provide shelters for the birds, offer fruits and/or timber/fire wood, protect soil erosion and overall keep the environment very friendly to human-living. As such damage to flora haswide range of adverse environmental impacts.	The Contractor shall • Reduce disturbance to surrounding vegetation • Use appropriate type and minimum size of machine to avoid disturbance to adjacent vegetation. • Get approval from supervision consultant for clearance of vegetation. • Make selective and careful pruning of trees where possible to reduce need of tree removal. • Control noxious weeds by disposing of at designated dump site or burn on site. • Clear only the vegetation that needs to be cleared in accordance with the plans. These measures are applicable to both the • construction areas as well as to any associated activities such as sites for stockpiles, disposal of fill and construction of diversion roads, etc. • Do not burn off cleared vegetation – where feasible, chip or mulch and reuse it for the rehabilitation of affected areas, temporary access tracks or landscaping. Mulch provides a seed source, can limit embankment erosion, retains soil moisture and nutrients, and encourages re-growth and protection from weeds.

		• Return topsoil and mulched vegetation (in areas of native vegetation) to approximately the same areaof the roadside it came from. • Avoid work within the drip-line of trees to prevent damage to the tree roots and compacting the soil.

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
		▪ Minimize the length of time the ground is exposed or excavation left open by clearing and re-vegetate the area at the earliest practically possible. ▪ Ensure excavation works occur progressively and re-vegetation done at the earliest ▪ Provide adequate knowledge to the workers regarding nature protection and the need of avoid felling trees during construction ▪ Supply appropriate fuel in the work caps to prevent fuel wood collection
ECoP 13: Protection of Fauna		
Construction activities	The location ofconstruction activities canresult in the loss of wild life habitat and habitat quality,.	The Contractor shall ▪ Limit the construction works within the designated sites allocated to the contractor ▪ check the site for animals trapped in, or in danger from site works and use a qualified person to relocate the animal
	Impact on migratory birds, its habitat and its active nests	The Contractor shall ▪ Not be permitted to destruct active nests or eggs of migratory birds ▪ Minimize the tree removal during the bird breeding season. If works must be continued during the bird breeding season, a nest survey will be conducted bya qualified biologist prior to commence of works to identify and located active nests ▪ Minimize the release of oil, oil wastes or any other substances harmful to migratory birds to any waters or any areas frequented by migratory birds.
Vegetation clearance	Clearance of vegetation may impact shelter, feeding and/or breeding and/or physical destruction and severing of habitat areas	The Contractor shall ▪ Restrict the tree removal to the minimum required. ▪ Retain tree hollows on site, or relocate hollows, where appropriate ▪ Leave dead trees where possible as habitat for fauna ▪ Fell the hollow bearing trees in a manner which reduces the potential for fauna mortality. Felled trees will be inspected after felling for fauna and ifidentified and readily accessible will be removed and relocated or rendered assistance if injured. After felling, hollow bearing trees will remain unmoved overnight to allow animals to move of their own volition

Construction camps	Illegal poaching	▪ Provide adequate knowledge to the workersregarding protection of flora and fauna, and relevant government regulations and punishments for illegalpoaching
Construction activities in River	The main potential impacts to fisheries are hydrocarbon spills and leaks from riverine transport and disposal of wastes into the river	The Contractor shall ▪ Ensure the riverine transports, vessels and ships are well maintained and do not have oil leakage to contaminate river water. ▪ Contain oil immediately on river in case of accidental spillage from vessels and ships and in

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
		this regard, make an emergency oil spill containment plan to be supported with enough equipment, materials and human resources • Do not dump wastes, be it hazardous or non-hazardous into the nearby water bodies or in the river
Construction activities on the land	The main potential impacts to aquatic flora and fauna River are increased suspended solids from earthworks erosion, sanitary discharge from work camps, and hydrocarbon spills	The Contractor shall • follow mitigation measures proposed in ECoP 3 : Water Resources Management and EC4: Drainage Management
	Filling of ponds for site preparation will impact the fishes.	The Contractor shall • Inspect any area of a water body containing fish thatis temporarily isolated for the presence of fish, and all fish shall be captured and released unharmed in adjacent fish habitat • Install and maintain fish screens etc. on any water intake with drawing water from any water body that contain fish
ECoP 14: Protection of Fisheries		
Construction activities in River	The main potential impacts to fisheries are hydrocarbon spills and leaks from riverine transport and disposal of wastes into the river	The Contractor shall • Ensure the riverine transports, vessels and ships are well maintained and do not have oil leakage to contaminate river water. • Contain oil immediately on river in case of accidental spillage from vessels and ships and in this regard, make an emergency oil spill containment plan to be supported with enough equipment, materials and human resources • Do not dump wastes, be it hazardous or non-hazardous into the nearby water bodies or in the river
Construction activities on the land	The main potential impacts to aquatic flora and fauna River are increased suspended solids from earthworks erosion, sanitary discharge from work	The Contractor shall • follow mitigation measures proposed in ECoP 3 : Water Resources Management and EC4: Drainage Management

	camps, and hydrocarbon spills	
	Filling of ponds for site preparation will impact the fishes.	The Contractor shall • Inspect any area of a water body containing fish that is temporarily isolated for the presence of fish, and all fish shall be captured and released unharmed in adjacent fish habitat

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
		▪ Install and maintain fish screens etc. on any water intake with drawing water from any water body that contain fish
ECoP 15: Road Transport and Road Traffic Management		
Construction vehicular traffic	Accidents and spillage offuels and chemicals	The Contractor shall ▪ Prepare and submit a traffic management plan to the Construction Contractor for his approval at least 30 days before commencing work on any project component involved in traffic diversion and management. ▪ Include in the traffic management plan to ensure uninterrupted traffic movement during construction: detailed drawings of traffic arrangements showing all detours, temporary road, temporary bridgestemporary diversions, necessary barricades, warning signs / lights, and road signs. ▪ Provide signs at strategic locations of the roads complying with the schedules of signs contained in the IWT Traffic Regulations. ▪ Install and maintain a display board at each important road intersection on the roads to be used during construction, which shall clearly show the following information in Assam: ▪ Duration of construction period ▪ Period of proposed detour / alternative route ▪ Suggested detour route map ▪ Name and contact address/telephone number of theconcerned personnel ▪ Name and contact address / telephone number ofthe Contractor ▪ Inconvenience is sincerely regretted. ▪ Restrict truck deliveries, where practicable, to daytime working hours. ▪ Restrict the transport of oversize loads. ▪ Operate road traffics/transport vehicles, if possible,to non-peak periods to minimize traffic disruptions. ▪ Enforce on-site speed limit
ECoP 16: River Transport management		

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
Construction activities in River	The presence of construction and dredgingbarges, pipe lines and other constructi onactivities in the river can cause hindrance and risks to the river traffic.	The Contractor shall • Not obstruct other normal riverine transport while doing riverine transport and works • Identify the channel to be followed clearly using navigation aids such as buoys, beacons, and lighting • Provide proper buoyage, navigation lights and markings for bridge and dredging works to guide the other normal riverine transport • Keep regular and close contacts with Assam Inland Water Transport Authority (AIWTDS) regarding their needs during construction of the project • Plan the river transport and transportation of large loads in coordination with AIWTDS to avoid trafficcongestions. • Provide signage for river traffic conforming to theAIWTDS requirements • Position the dredge and pipeline in such a way that no disruption to the channel traffic will occur
	Accidents	The Contractor shall • Prepare an emergency plan for dealing with accidents causing accidental sinking of the vessels and ships • Ensure sufficient equipment and staffs available to execute the emergency plans • Provide appropriate lighting to barges and construction vessels
ECoP 17: Construction Camp Management		
Siting and Location of construction camps	Campsites for construction workers are the important locations that have significant impacts such as health and safety hazards on	The Contractor shall • Locate the construction camps at areas which are acceptable from environmental, cultural or social point of view. • Consider the location of construction camps away from communities in order to avoid social conflict in using the natural resources such as water or to avoid the possible adverse impacts of the construction camps on the surrounding communities. • Submit to the Construction Contractor for approval a detailed layout plan for the development of the construction camp showing the relative locations of all temporary buildings and facilities that are to be constructed together with the location of site roads, fuel storage areas (for use in power supply generators), solid waste management and dumping locations, and

		drainage facilities, prior to the development of the construction camps. • Local authorities responsible for health, religious and security shall be duly informed on the set up of camp facilities so as to maintain effective surveillance over public health, social and security matters.

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
Construction CampFacilities	Lack of proper infrastructure facilities, such as housing, water supply and sanitation facilities will increase pressure on the local services and generate substandard living standards and health hazards.	Contractor shall provide the following facilities in the campsites • Adequate housing for all workers • Safe and reliable water supply. Water supply from deep tube wells of 300 m depth that meets the national standards • Hygienic sanitary facilities and sewerage system. The toilets and domestic waste water will be collected through a common sewerage. Provideseparate latrines and bathing places for males and females with total isolation by wall or by location.The minimum number of toilet facilities required is one toilet for every ten persons • Treatment facilities for sewerage of toilet and domestic wastes • Storm water drainage facilities Both sides of roadsare to be provided with shallow v drains to drain off storm water to a silt retention pond which shall be sized to provide a minimum of 20 minutes retention of storm water flow from the whole site. Channel all discharge from the silt retention pond to natural drainage via a grassed swale at least 20 meters in length with suitable longitudinal gradient. • Paved internal roads. Ensure with grass/vegetation coverage to be made of the use of top soil that thereis no dust generation from the loose/exposed sandy surface. Pave the internal roads of at least haring- bond bricks to suppress dusts and to work against possible muddy surface during monsoon. • Provide child crèches for women working construction site. The crèche shall have facilities for dormitory, kitchen, indoor and outdoor play area. Schools shall be attached to these crèches so that children are not deprived of education whose mothers are construction workers • Provide in-house community/common entertainment facilities. dependence of local entertainment outlets by the construction camps to be discouraged/prohibited to the extent possible

Disposal of waste	Management of wastes is crucial to minimize impacts on the environment	The Contractor shall • Ensure proper collection and disposal of solid wastes within the construction camps • Insist waste separation by source; organic wastes in one pot and inorganic wastes in another pot at household level. • Store inorganic wastes in a safe place within the household and clear organic wastes on daily basis to waste collector. Establish waste collection, transportation and disposal systems with the manpower and equipment/vehicles needed. • Dispose organic wastes in a designated safe placeon daily basis. At the end of the day cover the organic wastes with a thin layer of sand so that flies,

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
		mosquitoes, dogs, cats, rats, are not attracted. One may dig a large hole to put organic wastes in it; take care to protect groundwater from contamination by leachate formed due to decomposition of wastes. Cover the bed of the pit with impervious layer of materials (clayey or thin concrete) to protect groundwater from contamination. • Locate the garbage pit/waste disposal site min 500m away from the residence so that peoples are not disturbed with the odor likely to be produced from anaerobic decomposition of wastes at the waste dumping places. Encompass the waste dumping place by fencing and tree plantation to prevent children to enter and play with. • Do not establish site specific landfill sites. All solid waste will be collected and removed from the work camps and disposed in approval waste disposal sites
Fuel supplies for cooking purposes	Illegal sourcing of fuel wood by construction workers will impact the natural flora and fauna	The Contractor shall • Provide fuel to the construction camps for their domestic purpose, in order to discourage them to use fuel wood or other biomass. • Made available alternative fuels like natural gas or kerosene on ration to the workforce to prevent them using biomass for cooking. • Conduct awareness campaigns to educate workers on preserving the protecting the biodiversity and wildlife of the project area, and relevant government regulations and punishments on wildlife protection

Health an dHygiene	There will be a potential for diseases to betransmitted including malaria, exacerbated by inadequate health and safety practices. There will be an increased risk of work crews spreading sexually transmitte dinfections and HIV/AIDS	The Contractor shall • Provide adequate health care facilities within construction sites. • Provide first aid facility round the clock. Maintain stock of medicines in the facility and appoint fulltime designated first aider or nurse. • Provide ambulance facility for the laborers during emergency to be transported to nearest hospitals. • Initial health screening of the laborers coming from outside areas • Train all construction workers in basic sanitation and health care issues and safety matters, and on the specific hazards of their work Provide HIV awareness programming, including STI (sexuallytransmitted infections) and HIV information, education and communication for all workers on regular basis • Complement educational interventions with easy access to condoms at campsites as well as voluntary counseling and testing • Provide adequate drainage facilities throughout the camps to ensure that disease vectors such as stagnant water bodies and puddles do not form. Regular mosquito repellant sprays during monsoon.

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
		▪ Carryout short training sessions on best hygiene practices to be mandatorily participated by all workers. Place display boards at strategic locations within the camps containing messages on best hygienic practices
Safety	In adequate safety facilities to the construction camps may create security problemsand fire hazards	The Contractor shall ▪ Provide appropriate security personnel (police / home guard or private security guards) and enclosures to prevent unauthorized entry in to thecamp area. ▪ Maintain register to keep a track on a head count of persons present in the camp at any given time. ▪ Encourage use of flameproof material for the construction of labor housing / site office. Also, ensure that these houses/rooms are of sound construction and capable of withstanding wind storms/cyclones. ▪ Provide appropriate type of firefighting equipment suitable for the construction camps ▪ Display emergency contact numbers clearly and prominently at strategic places in camps. ▪ Communicate the roles and responsibilities of laborers in case of emergency in the monthly meetings with contractors
Site Restoration	Restoration of the construction camps to original condition requires demolition of construction camps.	▪ The Contractor shall ▪ Dismantle and remove from the site all facilities established within the construction camp including the perimeter fence and lockable gates at the completion of the construction work. ▪ Dismantle camps in phases and as the work gets decreased and not wait for the entire work to be completed ▪ Give prior notice to the laborers before demolishing their camps/units ▪ Maintain the noise levels within the national standards during demolition activities ▪ Different contractors shall be hired to demolish different structures to promote recycling or reuse of demolished material. ▪ Reuse the demolition debris to a maximum extent. Dispose remaining debris at the designated waste disposal site. ▪ Handover the construction camps with all built facilities as it is if agreement between both parties (contactor and land-owner) has been made so.

		▪ Restore the site to its condition prior to commencement of the works or to an agreed condition with the landowner. ▪ Not make false promises to the laborers for future employment in O&M of the project.

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
ECoP 18: Cultural and Religious Issues		
Construction activities near religious and cultural sites	Disturbance from construction works to the cultural and religious sites, and contractors lack of knowledge on cultural issues cause social disturbances	The Contractor shall • Communicate to the public through community consultation and newspaper announcements regarding the scope and schedule of construction, as well as certain construction activities causing disruptions or access restriction. • Do not block access to cultural and religious sites, wherever possible • Restrict all construction activities within the foot prints of the construction sites. • Stop construction works that produce noise (particularly during prayer time) shall there be any mosque/religious/educational institutions close to the construction sites and users make objections. • Take special care and use appropriate equipment when working next to a cultural/religious institution. • Stop work immediately and notify the site manager if, during construction, an archaeological or burial site is discovered. It is an offence to recommence work in the vicinity of the site until approval to continue is given by the Construction Contractor /PMU. Provide separate prayer facilities to the construction workers • Show appropriate behavior with all construction workers especially women and elderly people • Allow the workers to participate in praying duringconstruction time • Resolve cultural issues in consultation with local leaders and supervision consultants • Establish a mechanism that allows local people to raise grievances arising from the construction process. • Inform the local authorities responsible for health, religious and security duly informed before commencement of civil works so as to maintain effective surveillance over public health, social and security matters
ECoP 19: Worker Health and Safety		

Best practices	Construction works may pose health and safety risks to the constructionworkers and site visitors leading to severe injuries and deaths. The population in the proximity of the construction site and the construction workers willbe exposed to a number of (i) biophysical health risk factors, (e.g. noise, dust, chemicals, construction	The Contractor shall • implement suitable safety standards for all workers and site visitors which shall not be less than those laid down on the international standards (e.g. National / International Labor for 'Safety and Healthin Construction; World Bank Group's 'Environmental Health and Safety Guidelines') and contractor's own national standards or statutory regulations, in addition to complying with the national standards of the Government of Assam and Government of India • Provide the workers with a safe and healthy work environment, taking into account inherent risks in its particular construction activity and specific classes of

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
	material, solid waste, waste water, vector transmitted diseases etc), (ii) risk factors resultingfrom human behavior (e.g. STD, HIV etc) and (iii)road accidents from construction traffic.	hazards in the work areas, • Provide personal protection equipment (PPE) for workers, such as safety boots, helmets, masks, gloves, protective clothing, goggles, full-face eye shields, and ear protection. Maintain the PPE properly by cleaning dirty ones and replacing them with the damaged ones. • Safety procedures include provision of information,training and protective clothing to workers involved in hazardous operations and proper performance of their job • Appoint an environment, health and safety manager to look after the health and safety of the workers • Inform the local authorities responsible for health,religious and security duly informedbeforecommencement of civil works and establishment ofconstruction camps so as to maintain effectivesurveillance over public health, social and security Matters
	Child and pregnant labor	The Contractor shall • not hire children of less than 14 years of age and pregnant women or women who delivered a child within 8 preceding weeks, in accordance with the Bangladesh Labor Code, 2006
Accidents	Lack of first aid facilities and health care facilities in the immediate vicinity will aggravate the health conditions of the victims	• Provide health care facilities and first aid facilities are readily available. Appropriately equipped first-aid stations shall be easily accessible throughout the place of work Document and report occupational accidents, diseases, and incidents. • Prevent accidents, injury, and disease arising from, associated with, or occurring in the course of work by minimizing, so far as reasonably practicable, the causes of hazards. In a manner consistent with good international industry practice. • Identify potential hazards to workers, particularly those that may be life-threatening and provide necessary preventive and protective measures. • Provide awareness to the construction drivers to strictly follow the driving rules • Provide adequate lighting in the construction area and along the roads

Construction Camps	Lack of proper infrastructure facilities, such as housing, water supply and sanitation facilities will increase pressure on the local services and generate substandard living standards and health	The Contractor shall provide the following facilities in the campsites to improve health and hygienic conditions as mentioned in ECoP 17 Construction Camp Management • Arrangement for trainings • Adequate ventilation facilities • Safe and reliable water supply. Water supply fromdeep tube wells that meets the national standards • Hygienic sanitary facilities and sewerage system.The toilets and domestic waste water will be collected through a common sewerage.

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
		‘ Treatment facilities for sewerage of toilet and domestic wastes ‘ Storm water drainage facilities. ‘ Recreational and social facilities ‘ Safe storage facilities for petroleum and other chemicals in accordance with ECoP 2 ‘ Solid waste collection and disposal system in accordance with ECoP1. ‘ Paved internal roads. ‘ Security fence at least 2 m height. ‘ Sick bay and first aid facilities
Water and sanitation facilities at the constructionsites	Lack of Water sanitation facilities at constructionsites cause inconvenience to the constructionworkers and affect theirpersonal hygiene.	The contractor shall provide portable toilets at the construction sites, if about 25 people are working the whole day for a month. Location of portable facilities shall be at least 6 m away from storm drain system and surface waters. These portable toilets shall be cleanedonce a day and all the sewerage shall be pumped fromthe collection tank once a day and shall be brought to the common septic tank for further treatment. Contractor shall provide bottled drinking water facilities to the construction workers at all the construction sites.
Other ECoPs	Potential risks on health and hygiene ofconstruction workers and general public	The Contractor shall follow the following ECoPs to reduce health risks to the construction workers and nearby community ‘ ECoP 2: Fuels and Hazardous Goods Management ‘ ECoP 4: Drainage Management ‘ ECoP 10: Air Quality Management ‘ ECoP 11: Noise and Vibration Management ‘ ECoP15: Road Transport and Road TrafficManagement ‘ ECoP 16: River Transport management

Trainings	Lack of awareness and basic knowledge in health care among the construction workforce, make them susceptible to potential diseases.	The Contractor shall • Train all construction workers in basic sanitation and health care issues (e.g., how to avoid malaria and transmission of sexually transmitted infections (STI) HIV/AIDS. • Train all construction workers in general health and safety matters, and on the specific hazards of their work Training shall consist of basic hazard awareness, site specific hazards, safe work practices, and emergency procedures for fire, evacuation, and natural disaster, as appropriate. • Commence the malaria, HIV / AIDS and STI education campaign before the start of the construction phase and complement it with by a strong condom marketing, increased access to condoms in the area as well as to voluntary counseling and testing. • Implement malaria, HIV/AIDS and STI education campaign targeting all workers hired, international and national, female and male, skilled, semi- and unskilled occupations, at the time of recruitment and thereafter pursued throughout the construction

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
		phase on ongoing and regular basis. This shall be complemented by easy access to condoms at the workplace as well as to voluntary counseling and testing.

Construction Debris Management Plan

1. Introduction

Waste will be generated from the construction site and labour camps during the construction phase. Type of the waste to be generated during construction phase is given below.

2. Excavated Soil

Site is undulating and thus will require cut & fill for levelling. Finished level of the soil will be37m. Top excavated soil of 15 cm shall be stripped and shall be stored separately under covered sheds. This soil shall be used for green belt plantation. Lower layers of excavated soilshall be re-used within the site for filling purpose, construction of approach & internal roads & railway link. If any extra soil is remained, then that should be disposed of to the approved debris disposal site

3. Construction Waste

Construction waste will comprise of broken bricks, dry cement, discarded timber, metal piece, cement bag, dry asphalt/bitumen, glass, paint/varnishes box etc. These wastes should be segregated into recyclable and non-recyclable waste. Recyclable waste shall be stored in the covered area and shall be sold to authorized vendors regularly. Non-recyclable waste shall be disposed at approved debris site in covered vehicles.

4. Municipal Waste

Municipal waste will be generated from labour camp. Dustbins for recyclable and no recyclable waste shall be provided in labour camp area. Recyclable waste shall be sold to authorized vendors and non-recyclable shall be disposed through authorized agency in area responsible for waste collection and management. Waste generated requires proper management so as to minimize the negative impacts on environment. Concept of reduce, re- use and recycle shall be followed at site. The rejected waste should be disposed in a secured manner. Thus a site should be identified for disposal of the rejected waste.

4.1 Selection of Disposal Sites:

The locations of Disposal sites have to be selected such that: Disposal sites are located at least 1000 m away from sensitive locations like settlements, water body, notified forest areas, wildlife/bird/dolphin sanctuaries or any other sensitive locations. Disposal sites shall not contaminate any water sources, rivers etc so the site should be located away from water body and disposal site should be lined properly to prevent infiltration of water.

Public perception about the location of debris disposal site has to be obtained before finalizing the location. Permission from the village/local community is to be obtained for the Disposal site selected. Environment Engineer of PMU and Executive Engineer of Contract Management Unit must approve the Plan before commencement of work.

Contaminated sediment (a permanent disposal site is required) disposal aspects;

- No sensitive areas
- Government owned land (encumbrance free)
- Private land (non-agricultural)
- Details of the safeguard measures of the contaminated sediment disposal is includedin the Environment Management Plan (EMP)

4.2 Principles for lease agreement

The Project Management Unit of the AIWTDS will arrange land for disposal of the dredged materials following GOA law i.e. Acquisition. The land will be requisitioned through the concerned district collectors of the project districts. The PMU will pay the required amount to DC office asper law as required for renting/leasing for the particular land for the sand deposition. DC office will annually assess the rent for the land and claim fund from the PMU to disburse to the lessees.

A lease agreement would be signed between the PMU and the land owners according to thebroad principles as under-

1. DC will identify the actual owners of the proposed land taking into account of the record ofrights to the property

2. Rent would be paid through the DC office on yearly basis at the beginning of the year

3. Land will be used for project purposes only (sand deposition)

4. Land will be restored to original condition and returned to the land owners after agreedlease period. The lease agreement will be based on requisition of land

4.2 Precautions to be adopted during Disposal of Debris / Waste Material

The Contractor shall take the following precautions while disposing off the waste material. During the site clearance and disposal of debris, the Contractor will take full care to

ensure that public or private properties are not affected, there is no dwellings around the dumpsite and that the traffic is not interrupted. The Contractor will dispose debris only to the identified places or at other places only with prior permission of Engineer-in-Charge of works. In the event of any spoil or debris from the sitesbeing deposited on any adjacent land, the Contractor will immediately remove all such spoil debris and restore the affected area to its original state to the satisfaction of the Engineer-in- Charge of works. The Contractor will at all times ensure that the entire existing canal and drains within and adjacent to the site are kept safe and free from any debris. Contractor will utilize effective water sprays during the delivery and handling of materials when dust is likely to be created and to dampen stored materials during dry and windy weather.

Materials having the potential to produce dust will not the loaded to a level higher than the side and tail boards and will be covered with a tarpaulin in good condition. Any diversion required for traffic during disposal of debris shall be provided with traffic control signals and barriers after the discussion with local people and with the permission of Engineer-in-Charge of works.

During the debris disposal, Contractor will take care of surrounding features and avoid any damage to it. The debris should not be disposed along the bridges & culverts and near the water bodies. While disposing debris / waste material, the Contractor will take into account the wind direction and location of settlements to ensure against any dust problems. Contractor should display the board at disposal site stating the name of project, usage of the site and type of debris being disposed. A guard shall be kept at disposal site to prevent any unauthorized disposal of waste at the debris disposal site Material should be disposed through covered vehicles only. No contaminated/hazardous/e-waste shall be disposed at the debris disposal site

4.3 Record Keeping

Site approved by site engineer only can be used as disposal site. Record of all such site should be maintained along with the area of disposal site, type & quantity of material disposed daily and capacity of disposal site.

4.4 Guidelines for Rehabilitation of Disposal Sites

The dumpsites filled only up to the ground level could be rehabilitated as per guidelines below and to be decided by the Engineer and the supervision consultant. The dumpsites have to be suitably rehabilitated by planting local species of shrubs and other plants. Local species of trees has also to be planted so that the landscape is coherent and is in harmony with its various components. In cases where a dumpsite is near to the local village community settlements, it couldbe converted into a play field by spreading the dump material evenly on the ground.Such playground could be made coherent with the landscape by planting trees all along the periphery of the playground. Closure of the disposal site should be upto the satisfactory level of site engineer.

4.5 Penalties

Stringent action & penalties should be imposed off on contractor for dumping of materials in locations other than the pre-identified locations. Grievance Redressal mechanism should bein place for taking note and action on such complaints.

Along with the Construction and Labour Camp management Plan ECoPs shall be followed bythe Contract.

Borrow Area Management Plan

1.0 Introduction

Borrow areas will be finalized as identified by Contractor as agreed by the PMC and AIWTDS as per the requirements of the contract. Environment clearance under EIA Notification, 2006 from competent authority and NOC from state pollution control board under Air Act, 1981 as applicable shall be obtained by contractor prior excavation. Consent from land owners and DC of the area shall also be taken prior undertaking any excavation.

The Contractor in addition to the established practices, rules and regulation will also consider following criteria before finalizing the locations. Contractor should submit borrow area establishment plan along with the locations marked in map and the environmental settings of the planned area to PMC/AIWTDS for approval of the "Engineer" through RFI.

- The borrow area should not be located in agriculture field unless unavoidable i.e. barren land is not available.
- The borrow pits should not be located along the roads, close to project site
- The loss of productive and agricultural land should be minimum.
- The loss of vegetation is almost nil or minimum.
- Sufficient quality of soil is available.
- The Contractor will ensure the availability of suitable earth.

The Contractor shall obtain representative samples from each of the identified borrow areas and have these tested at the site laboratory following a testing programme as approved by the concerned Engineer. It shall be ensured that the fill material compacted to the required density. The Contractor shall submit the following information to the Engineer for approval at least 7working days before commencement of compaction.

- The values of maximum dry density and optimum moisture content obtained in accordance with ARE: 2720 (Part 7) or (Part 8), as the case may be, appropriate for each of the fill materials he intends to use.
- A graph of density plotted against content from which, each of the values in (1) above of maximum dry density and optimum moisture content are determined.

After identification of borrow areas based on guidelines and full filling the following requirements are to be fulfilled

- Quantification of Earth
- Land Agreement
- Clearance from local authorities
- Environmental Clearances from SEIAA should be obtained. All EC conditions are to be followed by contractor and contractor should submit EC to AIWTDS / PIU / PMC / CSC

After receiving the approval Contractor will begin operations keeping in mind following:

- Haulage of material to the areas of fill shall proceed only when sufficient spreading and compaction plants are operating at the place of deposition

- No excavated acceptable material other than surplus to requirements of the Contract shall be removed from the site. Contractor should be permitted to remove acceptable material from the site to suit his operational procedure, then be shall makegood any consequent deficit of material arising there from.
- Where the excavation reveals a combination of acceptable and un-acceptable materials, the Contractor shall, unless otherwise agreed by the Engineer, carryout the excavation in such a manner that the acceptable materials are excavated separately foruse in the permanent works without contamination by the un- acceptable materials. The acceptable material shall be stockpiled separately.
- The Contractor shall ensure that he does not adversely affect the stability of excavation or fills by the methods of stockpiling materials, use of plants or siting of temporary buildings or structures.

1.1 Borrow Area Management

Borrow areas located in different land will require different management. Management measures to be taken in different land types are given below.

1.1.1 Borrow Areas located in Agricultural Lands

- The preservation of topsoil will be carried out in stockpile.
- A 15 cm topsoil will be stripped off from the borrow pit and this will be stored in stock piles in a designated area for height not exceeding 2m and side slopes not steeper than 1:2(Vertical: Horizontal).
- Borrowing of earth will be carried out up to a depth of 1.5m from the existing groundlevel.
- Borrowing of earth will not be done continuously throughout the stretch.
- Ridges of not less than 8m widths will be left at intervals not exceeding 300m.
- Small drains will be cut through the ridges, if necessary, to facilitate drainage.
- The slope of the edges will be maintained not steeper then 1:4 (Vertical: Horizontal).

1.1.2 Borrow Areas located in Agriculture Land in un-avoidable Circumstances:

- The preservation of topsoil will be carried out in stockpile.
- A 15 cm topsoil will be stripped off from the borrow pit and this will be stored in stockpiles in a designated area for height not exceeding 2m and side slopes not steeper than 1:2(Vertical: Horizontal).
- The depth of borrow pits will not be more than 30 cm after stripping the 15 cm top soil aside.

1.1.3 Borrow Areas located on Elevated Lands

- The preservation of topsoil will be carried out in stockpile
- A 15 cm topsoil will be stripped off from the borrow pit and this will be stored in stock piles in a designated area for height not exceeding 2m and side slopes not steeper than 1:2(Vertical: Horizontal).
- At location where private owners desire their fields to be levelled, the borrowing shall be done to a depth of not more than 1.5m or up to the level of surrounding fields.

1.1.4 Borrow Areas near Riverside

- The preservation of topsoil will be carried out in stockpile

- A 15 cm topsoil will be stripped off from the borrow pit and this will be stored in stock piles in a designated area for height not exceeding 2m and side slopes not steeper than 1:2(Vertical: Horizontal).
- Borrow area near to any surface water body will be at least at a distance of 15m from the toe of the bank or high flood level, whichever is more.

1.1.5 Borrow Areas near Settlements

- The preservation of topsoil will be carried out in stockpile
- A 15 cm topsoil will be stripped off from the borrow pit and this will be stored in stock piles in a designated area for height not exceeding 2m and side slopes not steeper than 1:2(Vertical: Horizontal).
- Borrow pit location will be located at least 0.75 km from villages and settlements. If unavoidable, the pit will not be dug for more than 30 cm and drains will be cut to facilitate drainage.
- Borrow pits located in such location will be re-developed immediately after borrowing is completed. If spoils are dumped, that will be covered with layers of stockpiled topsoil in accordance with compliance requirements with respect MOEF&CC/CPCB guidelines.

1.1.6 Borrow Pits along the Roads

- The preservation of topsoil will be carried out in stockpile
- A 15 cm topsoil will be stripped off from the borrow pit and this will be stored in stockpiles
  in a designated area for height not exceeding 2m and side slopes not steeper than 1:2(Vertical: Horizontal).
- Borrow pits along the road shall be discouraged.
- If permitted by the Engineer; these shall not be dug continuously.
- Ridges of not less than 8m widths should be left at intervals not exceeding 300m.
- Small drains shall be cut through the ridges of facilitate drainage.
- The depth of the pits shall be so regulated that its bottom does not cut an imaginary line having a slope of 1 vertical to 4 horizontal projected from the edge of the final section of bank, the maximum depth of any case being limited to 1.5m.
- Also, no pit shall be dug within the offset width from the toe of the embankment required as per the consideration of stability with a minimum width of 10m.
- Minimum distance from road/ railway should be 50 metres.

1.1.7 Re-development of Borrow Areas

The objective of the rehabilitation programme is to return the borrow pit sites to a safe and secure area, which the general public should be able to safely enter and enjoy. Securing borrow pits in a stable condition is fundamental requirement of the rehabilitation process. This could be achieved by filling the borrow pit approximately to the road level. Re-development plan will be prepared by the Contractor before the start of work in line with the owner's will and to the satisfaction of owner.

The Borrow Areas will be rehabilitated as follows

- Borrow pits will be backfilled with rejected construction wastes (unserviceable materials) compacted and will be given a turfing or vegetative cover on the surface. If thisis not possible, then excavation slope should be smoothened and depression is filled in such a way that it looks more or less like the original ground surface.

- Borrow areas might be used for aquaculture in case landowner wants such development. In that case, such borrow area will be photographed after their post-use restoration and Environment Expert of Supervision Consultant will certify the post-use redevelopment.
- The Contractor will keep record of photographs of various stages i.e. before using materials form the location (pre-project), for the period borrowing activities (Construction Phase) and after rehabilitation (post development), to ascertain the pre and post borrowing status of the area

Construction and Labour Camp Management Plan

1.0 Objective of the Plan

The objective of this plan is to provide guidance to the contractor or other agency involved in setting up ofthe construction and labour camp for keeping the health & Safety of workers and impacts of setting up such camps on the local community in consideration while developing and establishing such camp. This plan is prepared in reference to the Workers accommodation: processes and standards (A guidance note by IFC and EBRD). The plan aims to promote "safeand healthy working conditions, and to protect and promote the health of workers."

2.0 Selection and layout of construction camp

Labour camps, plant sites and debris disposal site shall not be located close to habitations, schools, hospitals, religious places and other community places. A minimum distance of 500mshall be maintained from the habitations, sensitive locations like temple, school & hospitals, forest areas and other eco-sensitive zones for setting up such facilities.

3.0 Facilities at workers' camps

During the construction stage of the project, the construction contractor will construct and maintain necessary (temporary) living accommodation, rest area and ancillary facilities for labour. Facilities required are listed and elaborated below. Site barricading Clean WaterFacility Clean kitchen area with provision of clean fuel like LPG Clean Living Facilities for Workers Sanitation Facilities Waste Management Facilities Rest area for workers at construction site Adequate Illumination & ventilation Safe access road is required at camps Health Care Facilities Crèche Facility & Play School Fire-fighting Facility Emergency Response Area

3.1 Attendance& Working hours

Supervisor of the camp should take the attendance of the employee at each camp twice in a day(morning and evening) and should maintain the record. Further work hours of the workers should be maintained in accordance to the labour law and as mentioned in the labour licence. All workers should be provided with ID card and entry to the site should be through ID card only and should be ensured by security guard.

3.2 Site Barricading

Site should be completely barricaded from all the sides to prevent entry of outsiders and animals into the site. Entry gate should be provided at the site and labour camp which should be guarded by security guard. All workers should be issued ID cards and entry of outsiders shall be maintained in the register at the gate. Board should be displayed at the site and the labour camp, the name of project, capacity of project, authority carrying our projects, restrictionof entry without authorization, no smoking zone and associated risks. Plant operation shall be restricted to 6:00 Am to 10:00 PM

3.3 Clean Water Facility

Potable water shall be provided for construction labour for drinking & cooking purpose. Clean water shall be provided for bathing, cleaning and washing purpose. Water quality testing for drinking water provided for workers shall be carried out on monthly basis. Waterdispensers should be cleaned on monthly basis. Adequate water per person should be provided at site for drinking, cooking, bathing, cleaning and other use purpose

3.4 Clean Kitchen Area

Provision of clean kitchen area for cooking and storage of eatables shall be provided. Cleanfuels like LPG shall be provided for cooking purpose. Burning of firewood, garbage, paperandany other material for cooking or any other purpose shall strictly be prohibited at the site. Separate utensil washing area should be provided with proper drainage system. Kitchen wasteshould be daily cleaned and disposed off. Water storage facility at kitchen should be covered and cleaned on monthly basis. Kitchen area should be away from washing, toilets and bathing area.

Wall surfaces adjacent to cooking areas are made of fire-resistant materials. Food preparation tables are also equipped with a smooth durable washable surface. Lastly, in order to enable easy cleaning, it is good practice that stoves are not sealed against a wall, benches and fixtures are not built into the floor, and all cupboards and other fixtures and all walls and ceilings have a smooth durable washable surface.

3.5 Clean Living Facility for the Workers

Workers should be provided with proper bedding facility. Single bed should be provided to each workers and each bed should be at least 1 m apart from another. Double deck bedding should be avoided, in case provided, adequate fire-fighting facility should be provided. Bed linen should be washed regularly and should be applied with repellent and disinfectants so as to manage the diseases caused due to pests. Facilities for storage of personal belongings for workers should be provided in form of locker, shelf or cupboard. A separate storage area for the tools, boots, PPE should be provided. Proper ventilation through mechanical systems and lighting system should be ensured in construction camps.

3.6 Sanitation Facilities

Construction camps shall be provided with sanitary latrines and urinals. Toilets provided should have running water availability all the time. Bathing, washing & cleaning areas shall be provided at the site for construction labour. Washing and bathing places shall be kept in clean and drained condition. Adequate nos. of bathing & toilet facility should be provided at site and should not exceed 1 unit per 15 persons. Toilets and bathing facility should be closed to the camps

Workers shall be hired especially for cleaning of the toilets and bathing area. Septic tanksand soak pits shall be provided at site for disposal of the sewage generated. The toilets should be cleaned on daily basis. These tanks should be evacuated through authorized vendors if

Filled and at the time of closure. Pest management should be carried out at the camps if the area is infected by any pests. Adequate lighting should be ensured in camp area especially during night time. The area should be guarded by security guard to minimize the crime andthefts.

3.7 Waste Management Facilities

Waste generated should be segregated at the site by providing the different colour bins for recyclable and non-recyclable waste. Recyclable waste shall be sold to authorized vendors and non-recyclable shall be handed over to authority responsible in area for waste management.

Waste management for construction site shall be as per waste management plan proposed in EMP. Waste management area should be cleaned on regular basis to avoid germination of flies, mosquitoes, rodents and other pests.

3.8 Rest Area for Workers at Site

A rest area/shelter shall be provided at the site for construction workers where they can rest after lunch time and shall not lay down at site anywhere. The height of shelter shall not less than3m from floor level to lowest part of the roof. Sheds shall be kept clean and the space provided shall be on the basis of at least 1.0 Sq. m per head.

3.9 Adequate Illumination & Ventilation

Construction worker camps shall be electrified and adequately illuminated. Illumination level shall be maintained after 5.30 P.M. at the site to minimum 200 lux. Labour camps shall be adequately ventilated. Fans shall be provided for ventilation purpose.

3.10 Safe Access Road for Labour Camps

Temporary paved surface shall be constructed to approach the labour camp from the site. Movement shall not be hampered during monsoon season due to water logging and muddiness.

3.11 Health care Facilities:

First aid box, first aid room and personnel trained in first aid (certified first-aider) shall be available at labour camp and site all the time (24X7). Equipment in first-aid box shall be maintained as pet State Factory's Law. Ambulance/ 4 wheeler motorized vehicle shall be available at the site for carrying injured to the nearby hospital. Tie-ups should be made with nearby hospital to handle emergency, if any. Nos. of ambulance, doctors and nearby hospital shall be displayed in first-aid room, site office & labour camps. List of contact nos. of emergency personnel, hospitals, fire brigade and other emergency contact should be displayed at campsite, guard's room and first aid room. Workers shall be made aware about the causes, symptoms and prevention from HIV/AIDS through posters and awareness programs. Workers shall have access to adequate preventive measures such as contraception (condoms in particular) and mosquito nets.

3.12Crèche Facility & Play School

Crèche facility and play school should be constructed at the site temporarily so as children of construction labour can be kept there. Care takers should be hired for taking care of children. Attendance records of children shall be maintained. Children should not be allowed to enter active work areas.

3.13 Fire-Fighting facilities

Fire-fighting facility such as sand filled buckets and potable fire-extinguishers shall be provided at labour camps and at site. Fire-extinguishers shall be provided as per NBC norms. Personnel trained in handling fire fighting equipment should be available at the site. Fire evacuation plan should be displayed at the site and should be communicated to all the workers and other staff at camp site.

3.14 Emergency Assembly Area

Area shall be demarcated as emergency collection area near the gate where all the workers shall be guided to collect in case of any emergency like fire, flood and earthquake.

4.0 Activities prohibited at site

- Activities which should be strictly prohibited at site shall include Open burning of wood, garbage and any other material at sit for cooking or any other purpose
- Disturbance to the local community.
- Adoption of any unfair means or getting indulgence in any criminal activity Non compliance of the safety guidelines as communicated be safety officials and during the trainings
- Adoption and proper usage of PPEs all the time as required Operation of the plant and machinery between 10 pm to 6 am unless approved by team leader
- No animal (wild or domestic or bird) shall be harmed by any construction worker inany condition at site and nearby areas
- Cutting of tree without permission of team leader/authorized person
- No indigenous population shall be hurt or teased

5.0 Guidelines for night time working at the site.

No activity generating noise shall be carried out at the site after 10:00 PM. Night working protocol should be followed (if required) as per guidelines prepared by AIWTDS. Site should be well illuminated to maintain minimum illumination level of 200 lux. Personnel working shall obtain permit to work from the team leader prior carrying out any work in night time and therecord of such working shall be maintained in register. Any accidents, if occurs at site during night time working shall be immediately reported and recorded. Penalty shall be imposed on the contractor for the accident. Analysis shall be carried out to find the reason for such accidents for future learning.

6.0 Record keeping & Maintenance

Record of entry/exit of the people in the construction site and labour camp area shall be maintained in register at gate. Record of material coming in and going out from site also shall be maintained.

7.0 Auditing & Inspection

Conditions of labour camp and site shall be inspected and audit report shall be submitted toIWAI on monthly basis.

8.0 Grievance redressal System

CA complaint register and a complaint box should be provided at the site so any person fromlocal community can register their complaint, if any due to the camp, workers and other facilities. The system shall be communicated to local communities through consultations. Open house meetings should be conducted with workers on monthly basis to identify their problems and issues if any related health, hygiene, safety, comfort and other issues.

9.0 Security System

Site should be barricaded and should be guarded by security guards at all the gates. Security guards should allow only authorized personnel to the campsite. Guards should be available during both morning and night time. Guard should allow entry of workers to the siteonly be seeing the ID cards. Guard should report if any unusual or unfair practise happening at site and nearby area. Guards should be trained to handle emergency situations like fire fighting and should be responsible to contact the emergency personnel in case of any emergency.

10.0 Closure of the Construction Site and Construction labour Camps

Construction site and labour camps shall be restored back to the original site conditions. Following measures are required to be taken during closure

- Septic tanks/soak pits should be dismantled
- Any temporary/permanent structure constructed shall be dismantled
- Construction/demolition waste, hazardous waste and municipal waste at site and camp
- site shall be disposed as per waste management plan in EMP
- The site shall be cleaned properly
- Tree plantation to be carried out, if any required for stabilizing the area
- Any pit excavated shall be filled back

Along with the Construction and Labour Camp management Plan ECoPs shall be followed by the Contractor.

ANNEXURE – XVI

Aquatic Ecology and Comprehensive Study of the Gangetic Dolphin in the River Brahmaputra

Background of Study:

The scientist of the Zoological Survey of India, Kolkata has undertaken the study "Aquatic Ecology and Comprehensive Study of the Gangetic Dolphin in the River Brahmaputra" The work was assigned to ZSI by WAPCOS LTD. M/s WAPCOS Limited has been awarded the work of Safeguards Consultant for Environmental and Social Assessment Studies for Assam Inland Water Transport Project, Phase-II by AIWTDS.

The survey was carried out along the Brahmaputra River, Assam to document the aquatic faunal diversity and the presence and absence of the **Ganges river dolphin** (***Platanista gangetica gangetica***) near proposed terminals, CTC and slipways. The purpose for this study was to make a comprehensive study and documentation of the terrestrial and aquatic fauna of the proposed terminals, CTC and slipways. The present study established the baseline on faunal richness and diversity of the study landscape (impacts area of the terminals/slipways), assessed the status of water quality and the impacts on faunal diversity in the impact area. Further based on the present study and data collected a set of implementable strategies are provided. Further, for the implementation of the suggested strategies a management cum monitoring plan has been developed. The plan provides strategies, actions their time frame, outcomes and responsibilities.

Mitigations /Recommendations for conservation of Ganges Dolphin in the proposed project locations along Brahmaputra in brief are highlighted as below:Based on the present study following feasible and cost effective measures are suggested by ZSI to mitigate the present and temporal impacts of proposed terminals and slipways on the river ecosystem: -

1. **Installation of water quality monitoring system**: There is a need to install a water quality parameter monitoring system at least two units one in the middle of the river and the second one on any one bank (left or right) bank at each of the proposed terminal and slipway for continuous data collection on water quality parameters. The generated data may be shared with the Assam Inland Water Transport Development Society (AIWTDS) / Assam Inland Water Transport Project (AIWTP) on a regular basis.

2. **Biomonitoring of Brahmaputra River and other flood plain wetlands**

   In addition to monitoring water quality, biomonitoring of aquatic macro invertebrates, fishes, amphibians, aquatic reptiles and wetland birds are essential to understand the over all health of the Brahmaputra river ecosystem. Assam Inland Water Transport Development Society (AIWTDS) / Assam Inland Water Transport Project is recommended to initiate this exercise with the help of universities, colleges, educational institutions and NGO's. The data collected may be regularly uploaded in portal for continuous monitoring.

3. **Embankment stabilization:** The earthwork of the project may cause erosion on both the banks of the river in the impact area. During the study the embankment slope on river banks found to be used by a number of bird species for making nests and roosting sites of other species including bats and others soil dependent animals and plants. Hence, these embankments on both the sides of the river should be strengthen by using more robust soil erosion control models. Further, for the long-term viability of these embankments plantation of local tree and shrubs should be prioritized.

4. **Cleaning and maintenance of Terminals / Slipways:** Once the terminal/slipway is commissioned or opened for public transportation it may lead to various types of pollution (oil, air, water and sound) in the landscape and riverscape. For controlling these anticipated pollutions, there is a need to adopt best practices pertaining to cleanliness. Hence, strategies such as regular sprinkling of water on terminal / slipway should be considered to minimize the dust and other air and water born pollution in the river.
5. **Accelerated terminal construction:** A number of studies are available indicating that the accelerated terminal construction (ATC) can significantly minimize the impacts of construction on the ecosystem and sensitive species of a river on which bridges are constructed. The ATC is a strategy which uses prefabricated components of terminal which accelerates the construction work of terminal/slipway. The faster the construction is done faster the recovery of the ecosystem.

6. **Installation of green wall or living wall:** The major source of pollution in river when terminal is constructed is dust and non-point pollution sources such as throwing items into water. Hence the Contractor must make provisions for installation of green wall or vertical gardens to prevent such non-point pollution sources as well as it will enhance the scenic beauty. Moreover, these vertical gardens also found to be effective in contributing to better air quality and reducing air pollution wherever these green walls are installed.

7. **Construction of a Dolphin observatory**: Since the proposed terminal/slipway sites along the Brahmaputra riverscape is home for a viable population of Gangetic River Dolphin, it is suggested to install or construct an observatory at each terminal/slipway for monitoring dolphins and also to attract nature lovers or tourists. This will enhance the aesthetic values as well as may also help in creating public awareness about the conservation priority species such as dolphin and other species including migratory and residential birds inhabiting the area.

8. **Establishment of a control room for handling potential emergencies**: For dealing with potential emergencies there is a need to construct or install an emergency response or a control room at each terminal / slipway for dealing with extreme situations such as floods and accidents.

9. **No Construction Period**: The breeding season of the Gangetic dolphin extends from January to June. However, newly born calves are seen even in other months. While mating usually takesplace between March and June, it has been observed even in July. Only a single baby is born after a gestation period of about 9 months. During the dry time survey in March, neonates have been reported to be sighted in the Brahmaputra River. The breeding time of Gangetic dolphin was found tobe February to May. Further, the reduced river flow and depth in lean season cause severe problem for Gangetic river dolphins. The above-mentioned problem will be more critical for dolphins as the habitat of the species shrink naturally in dry period. The shrinkage of habitat due to reduced water flow and the breeding period coincide in the months of February to June. Therefore, it is recommended to avoid the construction activities in water part (for examplepiling or dredging) in between mid of March to Mid of June especially in the ghats located at Aphalamukh, Neamati, Umananda, and North Guwahati, where viable population of Gangetic River Dolphins have been reported in the past and cited often.

10. **Monitoring plan of implementation of the mitigating measures**: The present study established the baseline on faunal richness and diversity of the study landscape (impacts area of the terminals/slipways), assessed the status of water quality and the impacts on faunal diversity in the impact area. Further based on the present study and data collected a set of implementable strategies are provided. Moreover, for the implementation of the suggested strategies a management cum monitoring plan has been developed. The plan provides strategies, actions their time frame, outcomes and responsibilities, some of which are as below.

Actions priority, Output, Outcomes and Responsibilities for implementing the recommended strategies to mitigate the impacts of proposed terminals / slipways in the impact area

Action	Priority and time frame	Output	Outcome	Responsibility
Installing water quality	High, Long term (Regular	Assessment of river water quality as an	Help to guide authorities for adopting	Joint implementation by Assam Inland Water Transport Development

monitoring system	information on water quality), Data should be analysed once in a year	indicator to understand the health of ecosystem	suitable water quality improvement actions.	Society (AIWTDS) / Assam Inland Water Transport Project (AIWTP)
Biomonitoring programme	High, Long term (Regular information on wetland ecosystem health), Data should be analysed once in a year	Assessment of overall river biodiversity as an indicator to understand the health of ecosystem	Help to guide authorities for conservation of biodiversity of Brahmaputra river	Joint implementation by Assam Inland Water Transport Development Society (AIWTDS) / Assam Inland Water Transport Project (AIWTP) with other stake holders such as Forest Department, State Biodiversity Board, Universities, Colleges and NGO's.
Embankment stabilization	High, long term (Review of the status of embankments pre and post-monsoon season)	To prioritize the areas of embankment stabilization, and their management	Help to understand what key factors resulting in erosion of embankment, status of bird and other animal nests and roosting sites.	Jointly implemented by Assam Inland Water Transport Development Society (AIWTDS) / Assam Inland Water Transport Project (AIWTP) and the associated agencies involved in construction of terminals/slipways.
Cleaning and maintenance of bridge	High, Periodically (quarterly in a year)	To control pollution, and its anticipated impacts on river ecosystem.	Help in preventing pollution, biodiversity loss and smooth functioning of the ecosystem,	Joint implementation by Assam Inland Water Transport Development Society (AIWTDS) / Assam Inland Water Transport Project (AIWTP) and the associated agencies involved in construction of terminals/slipways
Accelerated bridge construction	High, Short term, the construction work of the terminal / slipway should be fast. Since faster the construction, faster the rejuvenation of	Minimize the impacts of construction work on the biotic elements of the river ecosystem.	Minimizing the loss of biodiversity of river.	Implemented by the Assam Inland Water Transport Development Society (AIWTDS) / Assam Inland Water Transport Project (AIWTP) and the associated agencies (Contractor) involved in construction of terminals/slipways.

	the water of river.			
Installation of green wall or living wall on the bridge.	High, Long Term, the green wall should be installed just after the construction of the terminal / slipway which should be periodically monitored and maintained.	Reduces the air and non-point pollution on the river.	Reduces pollution and maintain the health of water body.	Joint implementation by Assam Inland Water Transport Development Society (AIWTDS) / Assam Inland Water Transport Project (AIWTP) and Civic Department after the opening of the Terminals/ Slipways and other relevant state agency.
Construction of Dolphin observatory	High, Long term, the observatory shall me constructed at the terminal / slipway at suitable location	Enhance awareness about the dolphin among the locals and attract tourism.	Conservation and management of dolphin and other threatened aquatic species in the impact area.	Assam Inland Water Transport Development Society (AIWTDS) / Assam Inland Water Transport Project (AIWTP) in consultation with Forest Department.
Establishment of a control room for handling potential emergencies	High, Long term, Construction of control room to handle potential emergencies.	Emergency response to extreme events and other potential emergencies.	Address and mitigate the negative impacts of potential emergencies and extreme events.	Assam Inland Water Transport Development Society (AIWTDS) / Assam Inland Water Transport Project (AIWTP) and in consultation with State Fire Brigade, State Disaster Management Authority and allied agency.

Annexure- XVII

Social Document-Gender Action Plan

Project Stage	Activities	Indicators	Responsibility
Construction	Measures such as compliance with various labour welfare legislations which mandate the contractor to provide facilities, encourage more women to join the workforce, such as those pertaining to creches, working conditions and remuneration. Trainings and awareness camps on prevention and protection against GBV and HIV/AIDS Developing a code of conduct/SHW policy and setting up of ICC as per the mandate of SHW Act, 2013.	No. of skilled/ unskilled/ professional women employed in the project construction works. No. of female employees who have accessed employee welfare schemes and benefits under labour laws. No. of trainings and awareness camps on GBV and HIV/AIDS organised at the construction sites. ICC constituted at all establishments related to the project.	Construction contractors/ Supervision Consultant/ AIWTDS
Operation	Strict scheduling of the services. SMS alerts etc. to update users. Ticketing facilities in convenient places. Safety-displaying safety instructions, providing life jackets	Display boards about boat schedules and strict adherence to the same. Training boat crew on safety and gender sensitization.	AIWTDS

GRM	Steps to limit overcrowding, Display boards to improve awareness of women rights, and GRM. By-stander vigilance to enhance the safety of the travel environment	Complaint Boxes in terminal sites. Gender sensitization Display Boards. Dedicated helpline working for GBV issues.	AIWTDS/GRM systems

Livelihood supports to Women SHGs

In the social surveys and Focus Groups Discussions women explained that they are discriminated upon mainly because of their economic dependency. They demanded support to develop their skills for employment and provide various employment opportunities at the construction sites as well as in some schemes in connection with the Project. It has been suggested that skill development trainings are provided to women from impacted areas for additional employment and income generation. The supporting NGOs while preparing the micro plans will conduct a training need Assessment and organise such training programmes in the community as part of the RAP.

Gender inclusive water transport system

As part of the IWT project gender sensitive Inland Water transport design and implementation must become top priority factors. Field data indicates perception of general lack of security and safety among women while using IWT. Strong steps must be built into the IWT transport system to ensure safety and security of women, children, infirm and differently abled.

Labour, Health and Safety

During the project implementation phase, labour, health and safety are some of the major areas where risks may emerge, and mitigation measures must be planned. Expecting the involvement of women both directly and indirectly in the construction activities, certain measures are required to be taken towards welfare of labourers in general and well-being of women and children in particular during the construction phase.

Furthermore, the construction contractor is responsible for providing temporary residential accommodation and other necessary infrastructure facilities as per the 'The Building and Other Construction Workers (regulation of employment and conditions of service) Act, 1996'. Women may participate as unskilled labourers during construction and steps should be taken to ensure their health, security and safety.

In lieu of the covid-19 pandemic, the contractor must ensure certain precautions and measures are taken to avoid any potential outbreak and risk to the community and the workers. This includes conducting a preliminary assessment and laying down adequate measures in the C-ESMP for health and safety including redressal of any concerns raised by the workers.

Provisions for Labourers in the Construction phase

The construction sites established by the contractor needs to comply with all applicable labour laws. Accordingly, few recommendations are being made for the construction camp workers particularly to safeguard the interest of women working on site. Additionally, the

supervision consultant and PIU will monitor the labour standard compliance during the construction phase.

The prevalence of sexually transmitted diseases and AIDS is often rampant in construction areas. High risk sexual behaviour gives rise to STDs and AIDS. In context of the vulnerability of the construction workers, awareness camps for persons, both in the construction camp and neighbouring villages and supply of protective materials at concession rate and condom vending machines at specific locations can be considered.

All safeguard measures to manage the risks of Labour Influx management, need to be ensured and monitored by the Divisional E&S Cell, with the support of NGOs.

Contractor

The contractor will be responsible for the following activities:

- Recruiting local labourers to the maximum possible extent in coordination with the divisional office
- Setting up of temporary shelters for labourers at appropriate locations as per specifications of the law.
- Complying with all labour laws including the norms regarding child labour, proper scheduling of works to ensure the protection of women.
- Participating and facilitating awareness of HIV/ AIDS in the campsites.
- Respond to queries and issues raised through the grievance redress mechanism and assist PMU /Divisional office in responding to the queries.
- Follow the instructions of the PMU and PIU

Livelihood Restoration and Income Generation Plan

The development project may have an adverse impact on the income of project-affected persons. It is important to restore the pre-project levels of income, livelihood, socio-economic and cultural ties of affected communities. Majority of the eligible families for income restoration earn their livelihood through petty businesses therefore, it is imperative to ensure that the Project Affected Persons (PAPs) can regain their livelihood.

It has become a routine practice for the shop owners, squatters in Aphlamukh, Neamati and North Guwahati project sites to shift their business to the adjacent land when the water level in the river rises during the flood and return when the water recedes. At Umananda site, the numbers of squatters rises during festivals and tourist season. The livelihood of these squatters further get affected due to disruption of ferry services during the monsoon season as frequency of cancellation of ferry services increases during this period.

It was noticed during site visit that the proposed terminal sites have sufficient available land for up gradation works but access/ approach road to the terminal sites are narrow and needs to be widened. The access/ approach road to terminal sites have some squatters who are earning their livelihood through temporary shops will be affected. Based on the site visit and interaction with IWT officials, DPR consultant it is observed that about 24 squatters are likely to be affected.

The squatters will be affected due to absence of passengers and construction activities. Therefore, a livelihood restoration and income generation plan needs to be formulated for these squatters as per World Bank guidelines.

Income Generating Strategies

The long term income generating strategies for the PAPs, Government of India along with state governments, various poverty alleviation programmes are considered.

Some of the schemes which can be accessed by the PIU/ PMU along with NGO to benefits the impacted project affected persons includes:

- Centralised Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) which provides additional gainful employment for the unemployed population in rural areas, especially during lean agriculture season.
- Support to Training and Employment Programme for Women (STEP), Indira Gandhi Matritva Sahyog Yojna, Nai Roshni and Sawayamsidha, etc. which will socially and economically empower women PAPs.
- National Rural Livelihood Mission (NRLM) - National Rural Livelihood Mission (NRLM) is a poverty alleviation project implemented by Ministry of Rural Development, Government of India. This scheme is focused on promoting self-employment and organization of rural poor. The basic idea behind this programme is to organize the poor into SHG (Self Help Groups) groups and make them capable for self-employment. Govt of Assam is implementing this scheme in selected areas which can be extended to these Project areas and NGOs can facilitate to support the women to organise and strengthen SHGs and provide skill development training to initiate livelihood activities.

The PIU/ PMU along with partner NGO can facilitate PAPs to participate in these programmes as per their choices and skill requirement.

Strategic interventions such as establishing training needs; identification of skills; hiring training staff; providing training to interested PAPs; ensuring that PAPs take up their new vocation; mid-term evaluation and corrective measures if required; and concurrent monitoring will be undertaken by the Social Specialist at the PIU through the contracted NGO.

Grievance Redress Mechanism (GRM)

Existing Web-enabled GRM system and Hotline

AIWTD has a department webssite wherein complaints can be lodged. In addition to this, citizens can write to the email id grc.aiwtds@gmail.com for registering any complaints. A dedicated toll free no. **18008894717** for grievance redressal has been setup at the PMU, AIWTD office, Guwahati where project related complaints can be registered at any time.

Review of the Existing GRM Systems

At present, the helpline no. and email are being internally monitored by the officials of AIWTDS however a dedicated call centre exclusively for handling complaints will be established soon under the Project to provide all round support and tracking.

Purpose for the Helpline: Complainants that the helpline is intended to serve and what are their needs.

- *Scope of services:* Type of service the helpline will offer (e.g. information on e-ticketing services, referral, support, redressal, etc), nature of grievances (public safety, harassment, quality & efficiency of services, disaster management, R&R, Environment Health & Safety, construction- induced impact, etc.)
  Generating of unique registration no./token id for monitoring of grievances; and SMS system for acknowledgement and follow-up.
- *Operation of the helpline, including human and financial resources required:* Operational procedure for responding, staff and budget/logistics needed to support its operation. It is crucial to provide *training and supervision of helpline staff*, both to ensure they have relevant information to provide, necessary skills and related competencies for each mode of delivery: telephone, online or SMS.
  There should be public awareness program conducted among the affected communities and other stakeholders about grievance process. The purpose would be to inform local communities, and other stakeholder about grievance service. It is also important to highlight that complaint can be registered through multiple grievance uptake channels, such as helpline, email, by letter to the GRCs (a divisional level or upper level GRC) or walk-ins and registering a complaint on grievance logbook to be provided at each project site/Ghat or suggestion box.
  There should be specific procedures for Gender Based Violence (GBV) including confidential reporting with safe and ethical documenting of GBV cases. AIWTDS has signed an MoU with State Commission for Women, Assam for addressing complaints related to gender violence.

Grievance Redress Committee (GRC) at the PIU

A divisional level Grievance Redressal Committee (GRC) is formed by the Project Authority (vide issuance of Govt. Order) at the time of preparation of the RAP cum IPDP. The GRC will comprise Divisional Executive Engineer; Additional Deputy Commissioner of concerned district; Social Specialist- PIU, representatives of the concerned Village Panchayat/Council President or his/her authorised representative and supporting NGOs for implementing the RAP.

Grievances of PAPs in writing will either be brought to GRC for redressal by the supporting NGO or received through any other channel. The NGO will provide all necessary help to PAPs in presenting his/her case before the GRC. The GRC will respond to the grievance within 7 days. Grievances brought to the GRC shall be redressed within a period of one month (30 days) from the date of receipt of grievance. The decision of the GRC will not be binding to PAPs i.e., decision of the GRC does not debar PAPs taking recourse to court of law. The GRC will meet once in 15 days but may meet more frequently, depending upon the number of such cases. GRCs will continue to function during the life of the Project including the defects liability period. Broad functions of GRC are as under:

- Record the grievances of PAPs, categorize and prioritize them and provide solution to their grievances related to resettlement and rehabilitation assistance, land related disputed or construction induced impacts.

- The GRC may undertake site visit, ask for relevant information from other government and

non-government agencies, etc in order to resolve the grievances of PAPs.

- Fix a time frame within the stipulated time period of 30 days for resolving the grievance. Inform PAPs through the supporting NGO about the status of their case and their decision to PAPs.

- **Indigenous Peoples Development Plan (IPDP)**
- World Bank's safeguard policy ensures that for all projects that are proposed for Bank financing and can affect Indigenous Peoples, a process of free, prior, and informed consultation should be done for broad community support to the project. Such Bank-financed projects include measures to (a) avoid potentially adverse effects on the Indigenous Peoples' communities; or (b) when avoidance is not feasible, minimize, mitigate, or compensate for such effects. Bank- financed projects are also designed to ensure that the Indigenous Peoples receive social and economic benefits that are culturally appropriate and gender and intergenerational inclusive. The RAP-cum-IPDP for the four priority sites have been prepared due to the presence of large no. of ST population within the project influence area. Although there is no direct impact on ST families, some indirect impact may be there on tribal communities in the project influence areas, such as the Mishing tribe who rely on the Ghat/ferry services for daily commute to access market, work, medical facilities and educational institutions. The project will also have an impact on the livelihood of the riverine tribal community, which predominantly are weavers and cultivators.
- **Indigenous Peoples Plan for various stages of Project Cycle**

Stages	**Procedures**	**Activities & Outcome**
Preparation	Identify concerns/issues in relation to the project activities through Participatory Rural Appraisal (PRA) exercises	Preparation of a list of issues during the social screening and scoping process
	Communicate with Autonomous District Councils/Gaon Panchayat to carry out Free, Prior, Informed Consultation at the village level	Information dissemination on the project and brief account of project implementation plans and framework
	Organize consultation with STs to inform about the project activities and benefits	Stakeholder consultations and FGDs held at Majuli during the ESIA.

	Identify key areas of constraints that may be improved through the project and develop detailed plan for tribal development	Rate of poverty and periodic floods in the area has an adverse impact on the livelihood of the tribe who mostly dwell near the bank of the river. Project will facilitate access to short-term and long-term economic opportunities, particularly to women weavers. The sites selected for up gradation has huge potential for tourism. It is likely that tourism will expand more in these areas with the improvement of IWT services.
Implementation	One-time additional financial assistance of Rs. 50,000 to SC/ST PAFs who are displaced and require to relocate due to the project.	PAFs (SC) accruing the benefit.
	Employment to members from tribal community in carrying out actual construction work	Number of STs employed
Operation	Improvement of terminals and ferry services to attract and promote tourism Free Prior and Informed Consultation with the tribal communities.	% of tourists visiting historic sites, areas, museums, other heritage attractions using the ferry
	Capacity building of ST/SC and other vulnerable groups, and skill up-gradation for institutional strengthening.	Training calendar to be prepared Number of trainings undertaken Number of tribal members trained
	Employment generation for ST in related sub project activities	Number of ST employed undertaking various activities under the project
	Help build linkages with major government schemes for skill enhancement and improvement of ferry services (Jibondinga scheme).	Number of STs that have availed the Jibondinga scheme or similar incentivization schemes.
	Procedures	ivities & Outcome
	Including a member of the ADC in the sixth schedule area in the GRC, to address R&R and land related disputes.	nber of grievances brought forward in ST areas and addressed.

Other key areas of interventions for promotion of Culture & Heritage

Lack of access to economic opportunities and economic disparity of tribal population seems to be entrenched in Majuli. Furthermore, ineffective IWT services and lack of connectivity has rendered the place inaccessible for social enterprises such as tourism. While considering the tourist potentials in these areas, AIWTDS can further explore the possibility of promoting the tribal communities unique cultural and traditional practices, handlooms and handicrafts at the terminals and ferries operated by IWT. At the same time measures must be in built to preserve their cultural diversity by ensuring minimal or no over intrusion to culture zones. Some of the possible measures that IWT may consider are:

- Ferry boats and terminals can be further developed and enriched by display of paintings, wall art and artefacts of indigenous groups.
- Special zones and artefact centres can be arranged in the terminal areas to create opportunities to display and sell products of indigenous communities.
- Guides can be selected from the indigenous community, trained and supported to guide tourists accessing the information desk at the terminals.

Labour Influx Risk Assessment

The approximate number of skilled and unskilled labourers required for the construction works on site in peak phase is around 200-300. The influx of workers can lead to adverse social and environmental impacts on local communities, especially if the communities are rural, remote or small. However, the current project for development of IWT involves both rural and urban areas of Assam. While some Ghats are located in typical urban centres like Guwahati and Jorhat, others are located in remote rural settings of Majuli. Furthermore, IWT services offers one of the most important modes of connectivity for multiple sections of population, especially in rural areas.

Out of the total migrants, the interstate migrant into Assam contributes about 2.39 per cent and 1.93 per cent during 1991 and 2001. In both years, Bihar contributed to the highest volume of interstate migrants as about 36.31 per cent and 33.50 per cent respectively, followed by West Bengal (17.62 per cent and 19.19 per cent) and Uttar Pradesh (10.17 per cent and 9.72 per cent). According to the 2011 Census, net interstate migration rate for Assam during 1991-2011 is estimated at -2.02%. The share of interstate migration has increased from -0.69% to -2.02% from 1991 to 2011. Influx of migrants from the different states of India can be attributed to the existence of labour market and employment prospects in the destination area. Based on this assessment, potential adverse impacts of labour influx have been enumerated below:-

- Labour influx may influence the demographic composition of the existing mass of population in riparian areas, where there already seems to be a decline of man-land ratio, shortage of food, settlement pattern, and ethnic differences.
- Increased demand and competition for local social and health services, as well as for goods and services, which can lead to price hikes and crowding out of local consumers.
- ESIA of four priority sites indicated low capacity of the community to manage and absorb the incoming labour force. This is particularly relevant for Assam, as it already deals with

such risk from cross border and interstate migration. Bearing in mind the present socio-political environment, temporary labour influx due to the project may amplify social conflicts between the local community and the construction migrant workers.

- Project may result in increased rates of illicit behaviour and harassment, which is a real threat for Assam which has reported high incidence of crime against women according to the National Crime Record Bureau.
- ESIA of four priority sites revealed that the project will directly impact the livelihood of affected families who earn their living through petty businesses in the project area. It is therefore imperative to ensure that the PAPs can reconstruct their livelihood.
- The temporary labour influx may increase competition for jobs and have an impact on wage distribution.

While most of these potential impacts are identified in the Environment and Social Impact Assessment (ESIA) carried out for the sub-projects, they may become fully known only after a project contractor is appointed to take decisive actions on sourcing the required labour force. It is vital to develop a dynamic plan for addressing risks associated with labour influx before the stipulated work starts. It is also important to update such plans as necessary to reflect project improvements and developments that result from the course of project implementation. Overall, adequate monitoring and adaptive management of the potential impacts from labour influx are crucial for properly addressing and mitigating the risks involved.

Recommended Mitigating Measures

- The Project contractor to ensure equal payment for equal work and no discrimination in hiring based on gender, age, or ethnicity.
- The most effective mitigation measure against labour influx is to reduce it. Unskilled workers are available in plenty, and many of them are migrating in search of employment. The contractor is responsible for recruitment of labourers for construction work. Specifications on employment of local workforce including women should be reflected in the civil works bidding documents and subsequent contracts to ensure that the contractors fulfil these commitments. Locals including women may be screened further for skills, and adequate orientations can be provided to recruit for the work. AIWTDS can prepare a roster of interested workers and their skills. The lists can be provided to contractors at the pre-bid meetings for recruitment consideration.
- The project contractor needs to prepare a site-specific Labour Influx Management Plan and/or a Workers' Camp Management Plan. This plan will include specific measures that will be undertaken to minimize the impact on the local community, including elements such as worker codes of conduct, grievance redressal, skills development, training programs and awareness generation on HIV/AIDS and gender- based violence (GBV) for the workers and host community. A Workers' Camp Management Plan will also address specific aspects of the establishment and operation of the workers' camps in compliance with relevant labour laws. The plan should include appropriate screening and monitoring mechanisms for

addressing non- compliance.

- Adequate measures will be taken to ensure safety and security of women within the community and at the construction site. A security personnel will be deployed at the construction sites, and emergency nos. including contact details of local law enforcement officers, project's helpline no., existing state-run women helpline nos. will be prominently displayed at the site. The contractors will ensure that an Internal Complaints Committee (ICC) for each establishment is set-up to meet their corporate requirement and legal mandate under the Sexual Harassment at the Workplace Act, 2013.

- Health problems of the workers should be taken care of by providing basic health- care' facilities through health centres temporarily set up for the construction camp. The health centre should have the requisite staff, free medicines and minimum medical facilities to tackle first-aid requirements or minor accidental cases, linkage with nearest higher order hospital to refer patients of major illnesses and critical cases.

- Awareness camps on HIV/AIDS for both, construction workers and neighbouring villages must be organised at regular intervals by NGOs empanelled with NACO.

- It is expected that among the women workers there will be mothers with infants and small children. The provision of a day care crèche as per the Building and Other Construction Workers (regulation of employment and conditions of service) act, 1996 is the contractor's responsibility. The crèche should be provided with trained women to look after the children.

- In case work schedule extents up till night, it should be ensured that women workers are exempted night shifts.

- Media/IEC Specialist at the PMU must prepare and disseminate IEC materials on labour welfare and compliance. Additionally, the supervision consultant and PIU must monitor the labour standard compliance during the construction phase. The PIU with the support of the supervision consultant must document and furnish a monthly report on labour standard compliances including implementation of site-specific Labour Influx Management Plan/ Workers' Camp Management Plan and construction induced grievances to the PMU.

The following **Table** describes the cross-cutting mitigation measures related to labour influx to be adopted for each priority site under the AIWT project:

Table: Labour influx-cross-cutting issues	
Elements	**Measures**

Assess the magnitude of labour influx, relevant contextual factors, and related legal & institutional framework	Unskilled workers are expected to be largely recruited locally in the project area. All these locally recruited will continue living in their homes, except where work sites are far away from their settlements, in which case they would reside in the labour camps, as would workers from outside the immediate alignment.
Contractually bind the Contractor to carry out social impact mitigation	The Contractor is explicitly required under its contract to abide by the provisions of the site-specific SMP. Before commencement of works, the Contractor is required to obtain approval for its Contractor's camp, including plan for implementation of social and environmental risks, including labour influx. The works contract specifies the sanctions that the Contractor will face if the contractor-related provisions of the site-specific SMP is not adhered to, including by sub-contractors. The Contractor is required to have specific and qualified key staff (Social expert) to manage social mitigation and implement the project's safeguard instruments. The contractor safeguards expert will be responsible to verify compliance with and implementation of all mitigation measures. Physical works can only commence once these key staff are engaged.
Establish a mandatory Code of Conduct for workers	The Contractor must establish and enforce the employees' Code of Conduct (CoC), including prevention of HIV/AIDS/STCs, prohibition of gender-related violence, treatment of minors, and other behaviours affecting community residents. PMU will review and approve the CoC before physical works commence. The Contractor is required to implement the CoC. The Contractor's social team is required to provide training to all workers on the CoC. The training will be applied to 100% of the workers. PMU will monitor compliance.
Reporting and auditing	The PMU will prepare regular reports on the Contractor's compliance with all social impact mitigation plans.

SOCIAL IMPACTS	
Potential Adverse Impacts	**Mitigation Measures**
Aggravation or exploitation of social conflicts	The SIA of the pre-identified sites have carefully analysed and taken into account pre-existing cultural or social differences among groups in the project area.

Increased burden on public service provision, increasing costs to or crowding out the local population	Labor camps will provide their own water supply, electricity, wastewater treatment, solid waste disposal, medical services and transportation services, with no negative impacts on the supply of such services to local residents.
Resettlement, compensation related to labour camps	Sites for labour camps in project areas are most often on land leased for the duration of project execution, thereby avoiding any land acquisition.
Increased risk of communicable diseases	The Contractor's social team is required to provide training to all workers on HIV/AIDS/STD prevention, in coordination with the local health service and with additional support of specialized entities in the project area. The training will be applied to 100% of the workers. PMU monitoring team will monitor compliance.
Gender-based violence and misconduct **Illicit behaviour and crime affecting the local population**	The Contractor is required to fully enforce compliance by its workers with the Code of Conduct, GBV action plan, including application of sanctions. The Contractor is required to monitor the entry and exit of all personnel and visitors in and out of the labour camp. PMU and the Contractor will maintain outreach to law enforcement and legal services for women, children and teenagers, to facilitate prompt and effective responses when needed. The Grievance Redress Mechanism includes a specific mandate to address any kinds of gender-based violence.
Child labour and school dropout	The works contract includes a clause prohibiting the economic exploitation of minors and employment that is deemed dangerous, which interferes with education and/or risks their health or physical mental, spiritual moral or social development.
Camp-related traffic and safety	The Contractor in and around the camps, must provide signage, traffic control personnel, barriers, lighting, reflectors, proper pedestrian access, and public information on grievances.
Labour conditions	The Contractor will be required to prepare and obtain approval of an Occupational Safety and Health (OHS) plan for its workers at the work site and in the labour camps.

Closure and site restoration	The work camps' closure and site restoration, including removal of buildings and ancillary facilities, rehabilitation of access ways, removal of all materials and equipment, restoration of the topography to its original state, and replanting of trees and other vegetation should be a part of the contractor's Workers' Camp Management Plan.
Training and awareness of staff, workers and community on Covid-19 pandemic (prevention, protection and response)	Workers need to be provided with regular trainings to understand their situation, and how they can best protect themselves, their families and the community. This training or awareness building can be extended to the community members. They should be made aware of the procedures that have been put in place by the project, and their own responsibilities in implementing them. Some of the aspects to be covered for training and awareness generation include: • Understanding of how they are expected to behave and carry out their work duties. • Addressing issues of discrimination or prejudice if a worker becomes ill. • Use of safety procedures, use of construction PPE, occupational health and safety issues, and code of conduct, taking into account that work practices may have to be adjusted. • Understanding the trajectory of the virus and what to do if a worker displays symptoms.

Other measures for response to Covid-19 Pandemic

Considering the recent Covid-19 pandemic, the following measures must be taken by the contractor to prevent and protect the community and workers from a potential outbreak:

1. Contractor will prepare an **assessment of workforce employed at the site.** The assessment must include detailed profile on workforce such as breakdown of workers who reside at home (i.e. workers from the community), workers who lodge within the local community and workers in on-site accommodation. Where possible, it should also identify workers that may be more at risk from COVID-19, those with underlying health issues or who may be otherwise at risk.
2. Contractor will provide a detailed plan on Covid-19 Prevention and Response. These include

-Precaution taken to ensure that there is **minimal exposure** among workers and contact with the community

- **Response mechanism** in case of potential breakout of Covid-19

-Safeguards to ensure that all project workers are protected from exploitative work conditions.

It would also be important to ensure that all **eligible workers are given BOCW registration**, to be able to avail of benefits which are either under existing welfare schemes

or provided as a part of the Covid-19 relief package. The Contractor must also ensure **registration for contract labour and inter- state migrant workers as per the Contract Labour Act, 1970 and Inter-State Migrant Workmen Act, 1979**; including their registration for coverage under the Employee State Insurance Corporation (ESIC)/Employee Provident Fund Organisation (EPFO).

-Strengthen the use of **project grievance mechanism by workers to report concerns relating to COVID-19** including concerns about the health of their co- workers and other staff.

3. Contractor and Supervision Consultant to **designate senior personnel as a focal point to deal with COVID-19 issues.** This person can be responsible for coordinating preparation of the site and making sure that the measures taken are communicated to the workers, those entering the site and the local community.

Relevant Legislations formulated by the Govt. of India for 'Social Safeguards' but not limited to the following

- *RFCTLAR&R Act, 2013, Assam RFCTLAR&R Rules, 2015*
- *Sexual Harassment of Women at Workplace (Prevention, Prohibition, and Redress) Act, 2013*
- *All laws applicable to construction Industry such as:*
- *The code on Social Security, 2020*
- *The Occupational Safety, Health and Working Conditions Code,2020*
- *The Code on Wages, 2019*
- *Contract labour Act, 1970*
- *Interstate Migrant Act (latest)*
- *Child Labour (Prohibition and Regulation)Act 1996 along with rules,1998*
- *The Person with Disabilities (Equal Opportunities, Protection of Rights and Full participation) Act, 1985 and Rules 1996*
- *The Scheduled Castes and the Scheduled Tribes (Prevention of Atrocities) Rule, 1989 and Rule 1995.*
- *Others such as Panchayat Extension to Scheduled Area Act (PESA).*

A list of National and State level legislations and regulations that could have a bearing on the Project during its design, implementation, and monitoring stages is provided Table-2.

Relevance of national and state level legislations to the project

S. No	National/State Legislation	Description on provisions related to the Project	Relevance to the Project
1	National Environment Policy 2005	National Environment Policy deals with the issues related to the control and regulation of environmental degradation and underline the needs for water conservation for different use and appropriate management, including integrated water	ESIA and ESMP to examine the provisions of this policy, examine the clauses that are attracted and suggest remedial measures.

S. No	National/State Legislation	Description on provisions related to the Project	Relevance to the Project
		management considering ecological use as a means.	
2	• Environmental (Protection) Act, 1986, • Environmental Impact Assessment Notification, 2006 its amendments	This Act empowers the Central Government to take necessary action to protect the environment and in the prevention of environmental pollution. Construction of new projects or activities or the expansion or modernization of existing projects or activities listed in the Schedule to the notification under the Act will only be undertaken after the prior environmental clearance from the Central/State Government as the case may.	A preliminary review of documents its appear that No Environmental Clearance (EC) is required for the proposed project.
3	The Biological Diversity Act, 2002	This Act aims to integrate conservation, promotion and sustainable use of biological diversity into projects. The State Government can declare areas rich in biological diversity, or when biological resources are threatened by overuse, abuse or neglect, as areas of biological importance for preservation.	This Act may have a bearing on the stagnant/ any stored of water which need to be examined during ESIA.
4	Water Prevention and Control of Pollution) Act, 1974, Amendment there of	To prevent and control water pollution.	Applicable. Effluents are expected to be generated during both the construction and operation phase of the project

S. No	National/State Legislation	Description on provisions related to the Project	Relevance to the Project
5	Noise Pollution (Regulation and Control) Rules, 2000	A level of noise permitted in different areas, including from those of vehicular traffic, generators, and construction activities is defined under these rules.	The standards needs to be included in the bid documents for civil works Contracts for compliance.
6	Air (Prevention and Control of Pollution) Act, 1981, its Rules and amendments	Prevention and control of air pollution. State PCBs have set up to monitor and manage activities that would lead to air pollution in and around the project area. Under the Act air quality standards are to be maintained in residential, ecologically sensitive areas.	During construction phase, likely use of diesel generators, movement of heavy transport on unpaved or semi-paved roads may cause air pollution. The bid documents for civil works contracts should include the standards to be maintained for compliance.
7	Hazardous & Other Wastes (Management and Trans boundary Movement) Rules, 2016	Proper handling storage and disposal of hazardous waste.	Project has potential to generate hazardous waste (Used Oil) during both construction and operation phase.
8	Wetlands (Management and Conservation) Rules, 2010	Activities such as reclamation, setting up of a new or expansion of existing industries, dumping of waste or discharge of effluents including silt deposition in the wetland is prohibited.	Proposed terminals are away from the wetlands. So clauses of wet-lands are not attracted and not applicable
9	Labour laws	All legislations governing the labour including child and women labour, wages and compensation, working condition and worker welfare will have a bearing on the project	The bid documents for civil works need to include adequate provisions to ensure strict compliance with India's labour laws and regulations

S. No	National/State Legislation	Description on provisions related to the Project	Relevance to the Project
10	National Policy on Safety, Health and Environment at Workplace	The policy aims to secure health of strength of employees and ensure humane conditions of work, including maternity relief to women	The provisions will apply to ensure that labour camps and working conditions are safe and humane.
11	Solid Waste Management Rules, 2016	The provisions of the Act prevent littering and mandate proper segregation, collection, storage and disposal of municipal solid waste.	The project will have provisions to manage and dispose solid wastes generated during project construction and operation.
12	Construction and Demolition Waste Management Rules, 2016	Rules and regulation for construction & Demolition Waste	The project shall generate construction and demolition wastes.
13	Minimum Wages Act, 1948	The Act makes it mandatory for the employer to pay every employee in a scheduled employment under him wages at the rate not less than the minimum rates of wages fixed under the Act.	The project involves labour employment; the project will document and monitor paid wages and as far as possible discourage cash payments
14	**Mahatma Gandhi National Rural Employment Guarantee Act, 2005**	The aim of the act to guarantee the right to work and wage employment to enhance the livelihood security of people in the rural areas	The project involves labour employment and shall converge with this Act to leverage additional funds.
15	**National Policy for Empowerment of Women, 2001**	The policy advocates for equal access to participation and decision making of women in social, political and economic life of the nation and mainstreaming a gender perspective in the development process.	The project shall provide equal access and opportunity to women in employment, remuneration, occupational health and safety, social security etc.

S. No	National/State Legislation	Description on provisions related to the Project	Relevance to the Project
16	Child Labour (Prohibition and Regulation) Act, 1986	The Act prohibits the engagement of children in certain employments and to regulate the conditions of work or children in certain other employments.	To prevent contractor from employing child labour who shall come under the purview of the Act; the project will include relevant provisions in the bid document for complying with this Act.
15	Right to Information (RTI) Act, 2005.	The Act provides for setting out the practical regime of right to information for citizens to secure access to information under the control of public authorities, in order to promote transparency and accountability in the working of every public authority. Under the provisions of the Act, any India citizen may request information from a "public authority" (a body of Government) which is required to reply expeditiously or within thirty days.	The provisions of this act are beaning on AIWTDS/contractor etc.
16	The Assam Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Re-Settlement Rules,2015	The aim of the act is in similar line with LARR, 2013 of Government of India. The compensation for land/houses etc. will be provided to PAFs as per both the acts of Government of India and State Government of Assam	Applicable if, private land needs to be acquired for the proposed development of terminals.
17	Assam Land and Revenue Regulations,1886	The provisions and the amendments are applicable.	Applicable for the proposed project.
18	Sexual Harassment of Women At Workplace	The aim of the act is for preventing the sexual	Applicable for the proposed project in

S. No	National/State Legislation	Description on provisions related to the Project	Relevance to the Project
	(Prevention, Prohibition & Redressal) Act, 2013	harassment of women at workplace.	construction as well as operation phases.
19	Rights of Persons with Disabilities Act, 2016	The act aim for giving equal opportunities to the persons with disability.	Applicable for the proposed project.
20	Forest Conservation Act, 1980	This act is for the protection and conservation of forest.	The propose terminal developments may needs to acquire forest land or may needs to felling/cutting of a trees.
21	Ancient Monuments and Archaeological Sites and Remains Act, 1958	The Ancient Monuments and Archaeological Sites and Remains Act (or AMASR Act) is an act of the Parliament of India that provides for the preservation of ancient and historical monuments and archaeological sites and remains of national importance, for the regulation of archaeological excavations and for the protection of sculptures, carvings and other like objects. It was passed in 1958	There are project terminals like Umananda, where in the provisions of this act needs to be follow carefully while planning and implementation stages.

Provisions for Labourers in the Construction phase.

The construction sites will be established by the contractor which needs to comply with all applicable state and national laws. Accordingly, specific recommendations are being made for the construction camp workers. During the project implementation phase, labour, health and safety are some of the major areas where risks may emerge, and mitigation measures have to be planned. The construction contractor is responsible for providing temporary residential accommodation and other necessary infrastructure facilities as per the Building and Other Construction Workers (regulation of employment and conditions of service) Act, 1996. Women may participate as unskilled laborers during construction and hence, steps need to be taken to ensure their health, security and safety. The construction contractor is

responsible for hiring their labour force who may or may not be locally sourced. Thus, an influx of male and female migrant workers and their families is anticipated. Foreseeing the involvement of women both directly and indirectly in the construction activities, certain measures are required to be taken towards welfare of labourers in general and well-being of women and children in particular during the construction phase. The construction phase is expected to be completed by 18 months. During this phase no significant negative impacts are, other than those discussed above are expected to impact the users.