

Appendix IX: Environmental Codes of Practice (ECPs)¹³

Introduction

The objective of the Environmental Codes of Practice (ECPs) is to address all potential general construction related impacts during implementation of the Project. The ECPs provide guidelines for international good practices and environmental management guidelines to be followed by the contractors for management of all environmental issues. These ECPs as part of the EMP will be annexed to the general conditions of all the contracts, including subcontracts, carried out under the Project.

The list of ECPs prepared for the Project is:

- ECP 1: Waste Management
- ECP 2: Fuels, Oils and Other Hazardous Substances Management
- ECP 3: Water Resources Management
- ECP 4: Drainage Management
- ECP 5: Soil Quality Management
- ECP 6: Erosion and Sediment Control
- ECP 7: Top Soil Management
- ECP 8: Topography and Landscaping
- ECP 9: Borrow Areas Management (note that borrow areas and dredging not permitted, only existing licensed sources are to be used)
- ECP 10: Air Quality Management
- ECP 11: Noise and Vibration Management
- ECP 12: Protection of Flora
- ECP 13: Protection of Fauna
- ECP 14: Protection of Fisheries
- ECP 15: Road Transport and Road Traffic Management
- ECP 16: Construction Camp Management
- ECP 17: Cultural and Religious Issues
- ECP 18: Workers Health and Safety
- ECP 19: SF6 Management
- ECP 20: Construction Management in Ecologically Sensitive, Salt Pan, Fish Ponds and Waterlogged Areas

Contractors will prepare Construction Environmental and Social Management Plans (CESMPs), H&S Plans and Biodiversity Management Plans (BMPs) with sub-plans for each contract/construction site in compliance with ADB and Government of Bangladesh requirements as set out in the EMP and EC respectively and based on the guidance given in the ECPs. The contractors' implementation of the CESMPs, H&S and BMP Plans will be supervised and monitored by PGCB along with implementation of the EMP and EC requirements. It is mandatory for the contractors procured directly by the Project to include these ECPs in their subcontracts along with the requirements from the EMP and EC applicable to subcontractor activities. Non-compliance by the contractors procured directly by the Project or their subcontractors will require corrective action to be taken or penalties being imposed on the contractors.

ECP 1: Waste Management

¹³These are initial representative ECPs developed by Tecvy, PGCB's IEE contractor and appended by ADB TA consultants, However, these ECPs can be revised and reviewed by SIC and Contractors for each site as relevant at detailed design to account for any value addition.

Project Activity/Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
Solid Waste and Wastewater Generation	Health hazards and soil and water pollution from the improper management of excess materials including inert spoil from any earthworks, solid wastes and wastewater	The Contractor will: • Prepare and follow the site-specific waste management plan covering all waste streams (e.g., reusable and recyclable waste, flammable waste, construction debris, food waste, e-waste etc.) submitted to PIU and SIC for approval • Organize disposal of all wastes generated during construction in the designated disposal sites. • Minimize the production of waste materials by 3R (Reduce, Recycle and Reuse) approach. • Segregate and reuse or recycle all the wastes, wherever practical. • Vehicles transporting loose materials and solid waste will be covered with tarpaulins 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 environment management induction process. • Request suppliers to minimize packaging where practicable. • Place a high emphasis on good housekeeping practices. • Maintain all construction sites in a clean, tidy and safe condition. • Provide refuse containers at each worksite. • Provide and maintain appropriate waste management facilities for the temporary storage of all waste types before transportation and final disposal. • Plastic bag and container use to be avoided. • Potable water imported to be supplied in bulk containers to reduce the quantity of plastic waste (plastic bottles).
Hazardous Waste Generation	Health hazards and soil and water pollution from the improper management of excess hazardous materials and hazardous waste	The Contractor will • 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 110% volume of storage bunded impermeable platform made of concrete or other impermeable flooring to prevent seepage in case of spills.

ECP 2: Fuels, Oils and Other Hazardous Substances Management

Project Activity/Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
Use of fuels, oils, chemicals and	Materials used in construction have the potential to be a source of contamination.	The Contractor will: • Prepare and follow spill control procedures and submit them for PIU and SIC approval.

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
other hazardous substances	Improper storage 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 and/or communities in the vicinity.	• Train the relevant construction personnel in handling of fuels, oils (such as transformer oils) and spill control procedures. • Store dangerous goods in bunded areas on top of a sealed plastic sheet away from watercourses. • Refueling will occur only within bunded areas. • Store and use fuels in accordance with material safety data sheets (MSDS). • Make available MSDS for chemicals and dangerous goods on-site. • Transport hazardous which cannot be recycled, to a suitably licensed and designed hazardous waste facility for disposal. • Provide absorbent and containment material (e.g., absorbent matting) where hazardous materials are used and stored; and ensure personnel trained in the correct use. • Provide protective clothing, safety boots, helmets, masks, gloves, goggles, to the construction personnel, appropriate to materials in use. • 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 all liquid fuels in fully bunded storage containers, with appropriate volumes, a roof, a collection point and appropriate filling/decanting point. • Store hazardous materials above flood level considered for construction purposes • 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 will preferably have slope or drain so that the fuels or hazardous lubricants can be safely collected in an event of a spill. • Take all precautionary measures when handling and storing fuels and lubricants, avoiding environmental pollution. • Avoid the use of materials with greater potential for contamination by substituting them with more environmentally friendly materials.

ECP 3: Water Resources Management

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
Hazardous material and waste	Water pollution from the storage, handling and disposal of hazardous materials and	The Contractor will • Follow the management guidelines proposed in ECPs 1 and 2.

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
	general construction waste, and accidental spillage	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 or storm water systems.
Discharge from construction sites	Construction activities, sewerage from construction sites and work camps may affect the surface water quality. The construction works will modify the groundcover and topography changing the surface water drainage patterns of the area. These changes in hydrological regime may lead to an increased rate of runoff, increase in sediment and contaminant loading, increased flooding, and affect habitat of fish and other aquatic biology.	The Contractor will - 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 (constructed at the entrance of the construction site) to remove the mud from the wheels. This should be done in every exit of each construction vehicle to ensure the local roads are kept clean. - Sewerage and grey water from portable toilets on the construction site and labor camps is to be collected and tankered off for offsite treatment and disposal. - Dewater sites by pumping water to a sediment basin prior to release off site – do not pump directly off site. - Protect water bodies from sediment loads by silt screen or other barriers.
Soil erosion and siltation	Soil erosion and dust from the material stockpiles will increase the sediment and contaminant loading of surface water bodies.	The Contractor will - Stabilize the cleared areas not used for construction activities with vegetation or appropriate surface treatments as soon as practicable following earthwork to minimize erosion. - Ensure that roads used by construction vehicles are swept regularly to remove dust and sediment. - Spray water regularly to reduce air borne particles after cleaning. - Spray water on the loose 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 water bodies	Construction works in the water bodies will increase sediment and contaminant loading, and effect habitat of fish and other aquatic biology	The Contractor will Dewater sites by pumping water to a sediment basin prior to release off site – and should not pump directly off site into fields or canals and ditches.

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
		- Protect water bodies from sediment loads by silt screen 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 or storm water systems - Do not discharge cement and curing water used for cement concrete directly into water courses and drainage inlets. - Monitor the water quality in the runoff from the site or areas affected by dredge plumes, and improve work practices as necessary - Use environment friendly and nontoxic slurry during construction of piles and avoid discharge into the river. - Reduce infiltration of contaminated drainage through storm water management design
Drinking water	Untreated surface water is not suitable for drinking purposes due to presence of suspended solids and E. coli.	The Contractor will - Provide drinking water according to peak construction labor/O&M staff deployed at site that meets national and WBG EHS Guidelines. - Pumping of groundwater shall be from deep aquifers of more than 300 m to supply arsenic free water. Safe and sustainable discharges are to be ascertained 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 aquifer cross contamination - All tube wells, test holes, monitoring wells that are no longer in use or needed shall be properly decommissioned
	Depletion and pollution of groundwater resources	The Contractor will - 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

ECP 4: Drainage Management

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
Excavation and earth work, 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 will - Prepare and follow drainage management procedures submitted to PIU and SIC approval. - Prepare a program to prevent/avoid standing waters, which PIU and CSC will verify in advance and confirm during implementation.

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
		• Provide alternative drainage for rainwater if the construction works/earth-filling cut the established drainage 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 as appropriate with oil interceptors connecting to the available nearby recipient water bodies. • Ensure wastewater quality conforms to national and WBG EHS Guidelines before it is being discharged into the recipient water bodies. • Ensure that there will be no water stagnation at the construction sites and camps. • Provide appropriate silt collector and silt screen at the inlet and manholes and periodically clean the 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 to mosquito breeding	The contractor will • 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.

ECP 5: Soil Quality Management

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
Filling of Sites with dredge spoils	Soil contamination will occur from drainage of dredged spoils	The Contractor shall • Ensure that dredged sand used for land filling shall be 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 surface and boundary slopes along with grass. Side Slope of 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 turving 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.

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
		- 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 - Ensure sand and gravel sourcing/selection of government licensed sand and gravel suppliers from legally permitted sites i.e. ensure no illegally extracted sand and gravel is used for the project which may negatively impact any sensitive aquatic life and hydrology of the adjoining river systems at the sites.
Storage of hazardous and toxic chemicals	Spillage of hazardous and toxic chemicals will contaminate the soils	The Contractor will - Strictly manage the wastes management plans proposed in ECP1 and storage of materials in ECP2. - Construct appropriate spill contaminant facilities for all fuel storage areas. - Establish and maintain a hazardous material register detailing the location and quantities of hazardous substances including the storage, and their 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. - Store all hazardous and chemical in a 110% volume of bunded impermeable concrete platform and clearly demarcate the area - Remediate the contaminated land using the most appropriate available method.
Construction material stockpiles	Erosion from construction material stockpiles may contaminate waterbodies	The Contractor will Protect the toe of all stockpiles, where erosion is likely to occur, with silt fences, straw bales or bunds.

ECP 6: Erosion and Sediment Control

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
Clearing of construction sites	Cleared areas and slopes are susceptible for erosion of topsoils, which affects the growth of vegetation and causes ecological imbalance.	The Contractor will - Prepare and follow site specific erosion and sediment control measures and submit them for PIU and SIC approval. - Reinstate and protect cleared areas as soon as possible in timeframe approved by PIU/SIC. - Cover unused areas of disturbed or exposed surfaces immediately with mulch/grass turf/tree plantations.

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
Construction activities and material stockpiles	Soil erosion and dust from the material stockpiles will increase the sediment and contaminant loading of surface water bodies.	The Contractor will • Locate stockpiles away from drainage lines. • Protect the toe of all stockpiles, where erosion is likely to occur, with silt fences, straw bales or bunds. • Remove debris from drainage paths and sediment control structures. • Cover the loose sediments of construction material and water them if required. • Divert natural runoff around construction areas prior to any site disturbance. • Install protective measures on site prior to construction, for example, sediment traps. • Install 'cut off drains' on large cut/fill batter slopes to control water runoff speed and hence erosion. • Observe the performance of drainage structures and erosion controls during rain and modify as required.
Soil erosion and siltation	The impacts of soil erosion are (i) increased run off and sedimentation causing a greater flood hazard to the downstream, and (ii) destruction of aquatic environment by erosion and/or deposition of sediment damaging the spawning grounds of fish and avifauna feeding areas	The Contractor will: • stabilize the cleared areas not used for construction activities with vegetation or appropriate surface water 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). • Remove any sediment that deposits in spawning areas from the drains from the construction site after every inspection every month.

ECP 7: Top Soil Management

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
Land clearing and earth works	Earthworks will impact the fertile top soils that are enriched with nutrients required for plant growth or agricultural development.	The Contractor will • 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 etc. and mulch and dry compost if possible • 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.

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
		- 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. - Stored top soil will be utilized for covering all disturbed area and plantation sites. - Prior to the re-spreading of topsoil, the ground surface will be ripped to assist the binding of the soil layers, water penetration and revegetation
Transport	Vehicular movement outside RoW or temporary access roads will affect the soil fertility of the agricultural lands	The contractor will: - Limit equipment and vehicular movements to within the approved construction zone. - Construct temporary access tracks/culverts to cross concentrated 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, ramps or wash down areas and ensure that tires of construction vehicles are cleaned in the washing bay (constructed at the entrance of the construction site) to remove the mud from the wheels. This should be done on every exit of each construction vehicle to ensure the local roads are kept clean.

ECP 8: Topography and Landscaping

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
Land clearing and earth works	Construction activities especially earthworks will change the topography and disturb the natural rainwater/flood water drainage as well as changing the local landscape.	The Contractor will - Prepare a landscaping and tree plantation plan and submit the plan for PIU and SIC approval. - Ensure the topography of the final surface of all raised lands (construction sites, access roads, 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 causes water logging. - Undertake 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

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
		plantation to prevent soil erosion and bring improved landscaping. Reinstate the natural landscape of the temporary construction sites after completion of works.

ECP 9: Borrow Areas Management

(note that borrow areas and dredging not permitted, only existing licensed sources are to be used)

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
Development and operation of borrow areas	Borrow areas will have impacts on local topography, landscaping and natural drainage.	The Contractor will - Use only approved quarry and borrow sites as specified in ECP 5: Soil Quality Management - Reuse excavated material available from the project to the maximum extent possible. - Store top soil for reinstatement and landscaping. New borrow areas and quarries will not be used unless the IEE has been updated to assess the impact of them - Identify new borrow and quarry areas in consultation with PMU, if required. - Undertake ecology survey, physical baseline surveys, and inventorization of receptors to inform IEE update prior to selection - Not use agriculture areas or ecologically sensitive areas as borrow sites - Develop surface water collection and drainage systems, anti-erosion measures (berms, revegetation etc.) and retaining walls and gabions where required. - Implement mitigation measures in ECP 3: Water Resources Management, ECP 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 ECP 10: Air Quality Management - Noise and vibration control by ECP 11: Noise and Vibration Management. - Maintain record of all sand or gravel extraction (quantities, location shown on map, timing, any sighting of key species).
Dredging from the rivers	Increased turbidity, loss of transparency and increased suspended sediment concentrations. Impact on benthic habitats	The Contractor will - Use sand and gravel only from existing licensed dredging sources as specified in ECP 5: Soil Quality Management - Reuse excavated material available from the project to the maximum extent possible. - Store top soil for reinstatement and landscaping. Dredging by the contractor will not be used unless the IEE has been updated to assess the impact of this - Identify dredging areas in consultation with PMU, if required. - Undertake ecology survey, physical baseline surveys, and inventorization of receptors to inform IEE update prior to selection - Avoid destruction or alteration of habitats which may result in a reduction of biodiversity for the ecosystem and may potentially lead to changes in water quality parameters. - Not use ecologically sensitive areas as dredging sites - Select dredging equipment (e.g. Cutter Suction Dredger) which are known to have a low risk of sediment dispersal. The suction action inside the Cutter Suction Dredger means that most of the sediment removed by the cutter is

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
		captured. As high dredging efficiency and low turbidity at the cutter head are closely linked, it is uncommon for turbidity generated by the cutter head to cause environmental concern. – Monitor the dredging operation and, if necessary, modify operations, e.g. restrict the amount of material being dredged (or the number of dredgers allowed to operate) at any one time – Maintain record of all sand or sediment extraction (quantities, location shown on map, timing, any sighting of key species).
Sand placement at temporary locations prior to shifting or direct placement on the proposed site for filling	Dispersion of sediments and release of high sediment laden runoff from the placement sites.	The Contractor will – To the extent possible, shall directly place the sediments for filling the proposed disposal areas. – If pipeline is required for filling then the IEE will need to be updated to reflect the impact of the route. – Prior to filling commencing, the areas being filled will be subdivided into compartments by construction of temporary containment bunds of suitable material (e.g. sheet piles or earthen bund, dredged sand is not suitable). – Filling will be achieved by progressively pumping a slurry of sand and water into the bunded areas, allowing the surplus water to drain away to artificial and natural waterways in a controlled manner through the pipeline, without affecting floodplains. – Control the discharge of site runoff, including excess dredge water, by the installation and correct use of containment walls, bunds and weirs. – Monitor the quality of water (e.g. sediment content) in site runoff to confirm that the design and operation of the containment walls, bunds and weirs, and the retention time for dredge waters which facilitates the settlement out of fine sediments prior to discharge off site, is adequate. – If required, additional siltation ponds are to be provided to divert the runoff water and allow further settlement before discharge to that there is no sediment laden runoff. – Ensure adjacent land and waterbodies do not experience sedimentation and waterlogging.

ECP 10: Air Quality Management

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
Construction vehicular traffic	Air quality can be adversely affected by vehicle exhaust emissions and combustion of fuels.	The Contractor will • Prepare air quality management plan (under the Pollution Prevention Plan) and submit the plan for PIU and SIC approval. • 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 moving outside the construction site. • Impose speed limits on all vehicle movement at the worksite to reduce dust emissions. • Control the movement of construction traffic. • Water construction materials prior to loading and transport. • Service all vehicles regularly to minimize emissions.

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
		Limit the idling time of vehicles to not more than 2 minutes.
Construction machinery	Air quality can be adversely affected by emissions from machinery and combustion of fuels.	The Contractor will - Fit machinery with appropriate exhaust systems and emission control devices. Maintain these devices in good working condition in accordance with the specifications defined by their manufacturers to maximize combustion efficiency and minimize the contaminant emissions. Proof or maintenance register will be required by the equipment suppliers and contractors. - 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 any 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.
Construction activities	Dust generation from construction sites, material stockpiles and access roads is not only a nuisance for local people, it aggravates the environment and can bring forth multiple health hazards, and can also affect the local crops	The Contractor will - 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 of high risk (e.g., high winds). - Stored materials such as gravel and sand will be covered and confined to avoid them being wind-drifted. - Minimize the extent and period of exposure of the bare surfaces. - 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. - Water must not be used as a means of dust suppression on potentially contaminated areas. - Crushing of rocky and aggregate materials will be wet-crushed or performed with particle emission control systems. - Not permit the burning of solid waste. - Handheld sprays are more effective than hoses attached to equipment as the water can be directed to where it is needed. In addition, high volume water suppression systems, manually controlled, can produce

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
		fine water droplets that effectively bring the dust particles to the ground.
Air Pollution Monitoring at construction site	Ambient dust in air at construction site causes health issues among workers, adjoining community as well as negatively ecologically sensitive areas	The contractor will • Monitor regularly air emissions (as mandated by PIU/SIC) at site by application of national legislated standards, or WHO Air Quality Guidelines 2005 or other internationally recognized sources (whichever is stringent) to ensure pollutant concentrations at site do not reach or exceed relevant ambient quality guidelines and standards • Ensure suitable mitigation measures that include suppression of particulate matter at site, reduction in exhaust from mobile sources through use of cleaner fuels/technologies and/or use of properly maintained equipment, besides application of comprehensive pollution control measures at site.

ECP 11: Noise and Vibration Management

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
Construction vehicular traffic	Noise quality will deteriorate due to vehicular traffic	The Contractor will • Prepare a noise and vibration management plan (under the Pollution Prevention Plan) and submit the plan for PIU and SIC approval. • Reduce project traffic routing through community areas wherever possible • Maintain all vehicles in order to keep them in good working order in accordance with manufactures maintenance procedures. • Make sure all drivers 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 may have an impact on people, property, fauna, livestock and the natural environment.	The Contractor will • Appropriately site all noise generating activities to avoid noise pollution to local residents. • Use the equipment with lower sound power levels. i.e. the quietest available plant and equipment. • Installing silencers for fans • Installing vibration isolation for mechanical equipment • Fit high efficiency mufflers to appropriate construction equipment such as on engine exhausts and compressor components • Maintain all equipment in order to keep those in good working condition in accordance with manufactures maintenance procedures. Equipment suppliers and contractors will present proof of maintenance register of their equipment.

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
		• Install acoustic enclosures around generators to reduce noise levels. • Install acoustic barriers without gaps and with a continuous minimum surface density of 10 kg/m² in order to minimize the transmission of sound through the barrier. • Avoid the unnecessary use of alarms, horns and sirens.
Construction activity	Noise and vibration may have an impact on people, property, fauna, livestock and the natural environment.	The Contractor will • Notify adjacent landholders prior to any typical noise events outside of daylight hours. • Limiting the hours of operation for specific pieces of equipment or operations, especially mobile sources operating through community areas • Locate barriers should be close to the source or to the receptor location to be effective • 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 potentially affected people if major noise generation activities will be undertaken, e.g. blasting. • 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 high noise generating activities, where possible, when working at night near the residential areas.
Noise Monitoring at construction site	Noise at construction site causes health issues among workers, adjoining community as well as negatively ecologically sensitive areas that have birds	The contractor will: Monitor regularly Noise emissions (as mandated by PIU/SIC) at site by application of national legislated standards, or Guidelines for Community Noise, World Health Organization (WHO), 1999 (adopted as standard by World Bank EHS guidelines 2007 or other internationally recognized sources (whichever is stringent) to ensure Noise impacts should not exceed the prescribed levels or result in a maximum increase in background levels of 3 dB at the nearest receptor location off-site. Implement noise reduction options that include: - o Re-locating noise sources to less sensitive areas to take advantage of distance and shielding - o Siting permanent facilities away from community areas if possible - o Taking advantage of the natural topography as a noise buffer during facility design

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
		o Developing a mechanism to record and respond to complaints

ECP 12: Protection of Flora

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
Vegetation clearance	Local flora is important to provide shelter for the birds and small animals, offer fruits and/or timber/firewood, and protect soil erosion. As such damage to flora can have adverse environmental impacts.	The Contractor will • Prepare a plan for protection of flora and submit the plan for PIU and SIC approval. • Minimize disturbance to surrounding vegetation. • Use appropriate type and minimum size of machine to avoid disturbance to adjacent vegetation. • Get approval from PIU and SIC for clearance of vegetation. • Undertake selective and careful pruning of trees where possible to reduce need of tree removal. • Control noxious weeds by disposing of at a suitably licensed waste management facility. • Clear only the vegetation that needs to be cleared in accordance with the engineering plans and designs. • Not burn off of 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 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 area it came from. • Avoid work within the drip-line of trees to prevent damage to the tree roots and compacting the soil. • 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 is done at the earliest. • Provide adequate knowledge to the workers regarding nature protection and the need to avoid felling trees during construction. • Supply appropriate fuel in the work camps to prevent fuel wood collection. • These measures are applicable to both the construction areas as well as to any associated activities such as sites for stockpiles, disposal of fill, etc..
Cutting of Trees/Lopping of trees	Loss of trees along the Right of way and substations	The Contractor will Prepare a plan for cutting and trimming of trees at substation and lines and submit the plan for PIU and SIC approval.

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
		Minimize the number of trees can by using flexible tower placement and increasing conductor height. Ensure species-specific tree retention as approved by statutory authorities (average and maximum tree height at maturity, in metres) Felled trees and other cleared or pruned vegetation to be disposed of by authorized agents/forest department. Trees allowed growing up to a height within the RoW by maintaining required clearance between the top of tree and the conductor as per the Electricity Rules. Regular pruning is required. Any tree species that is protected by law, religious beliefs or is an endangered/critical or vulnerable variety should only be cut after obtaining proper approvals.

ECP 13: Protection of Fauna

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
Construction activities	The location of construction activities can result in the loss of wildlife habitat and habitat quality,	The Contractor will • Prepare a plan for protection of fauna and submit the plan for PIU and SIC approval. • Limit the construction works within the designated sites allocated to the contractors. • Check the site for animals trapped in, or in danger from site works and use a qualified person (ecologist or veterinary) to relocate the animal.
	Impact on birds, their habitat and their active nests	The Contractor will • Not be permitted to destruct active nests or eggs of birds. • Minimize the tree removal during the bird breeding season. If work must be continued during the bird breeding season, a nest survey will be conducted by a qualified biologist prior to commencing works to identify and locate active nests. • If bird nests are located/detected within the trees or on ledges or the ground, then those areas must be avoided. • Petroleum products must not come in contact with sensitive ecosystems. • Minimize the release of oil, oil wastes or any other substances harmful to birds' habitats, to any waters, wetlands or any areas frequented by birds.
Vegetation clearance	Clearance of vegetation may impact shelter, feeding and/or breeding and/or physical destruction and severing of habitat areas	The Contractor will • Restrict the tree removal to the minimum numbers required. • Fell the trees in a manner which reduces the potential for fauna mortality. • Retain tree hollows on site, or relocate hollows, where appropriate • Leave dead trees where possible as habitat for fauna

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
		Felled trees will be inspected before felling for fauna and if identified and readily accessible will be removed and relocated or rendered assistance if injured. After felling, hollow bearing trees will remain unmoved overnight to allow any animals to move of their own volition.
Night time lighting	Lighting from construction sites and construction camps may affect the visibility of night time migratory birds that use the moon and stars for navigation during their migrations.	The Contractor will - Use lower wattage flat lens fixtures that direct light down and reduce glare, thus reducing light pollution, - Avoid flood lights unless those are absolutely required. - Use motion sensitive lighting to minimize needless lighting. - Use, if possible, green lights that are considered as bird friendly lighting instead of white or red colored lights. - Install light shades or plan the direction of lights to reduce light spilling outside the construction area.
Construction camps	Illegal poaching	The Contractor will - Provide adequate knowledge to the workers regarding protection of flora and fauna including avifauna that is notified as endangered/ critical/vulnerable species by relevant biodiversity related international agencies such as IUCN etc. - Implement relevant government regulations and enforcements for illegal poaching. - Ensure that staff and subcontractors are trained and empowered to identify, address and report potential environmental problems to these threatened species.

ECP 14: Protection of Fisheries

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
Construction activities in River	The main potential impacts to aquatic flora and fauna are increased suspended solids from earthworks erosion, sanitary discharge from work camps, and hydrocarbon spills and also potential impacts to fisheries are hydrocarbon spills and leaks from riverine transport and disposal of wastes into the river	The Contractor will Prepare procedures for protection of fish and other aquatic life and submit those for PIU and SIC for approval. 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 equipment; make an emergency oil spill containment plan (under the Fuels and Other Hazardous Substances Management Plan) to be supported with enough equipment, materials and human resources. Not dump wastes, be it hazardous or non-hazardous into the nearby water bodies or in the river. Follow proper mitigation for acquiring dredged of sand from river for site filling in proposed ECP 9: Borrow Management Areas
Construction activities on the land	The main potential impacts to aquatic flora and fauna are increased suspended	The Contractor will Follow mitigation measures proposed in ECP 3: Water Resources Management and EC4: Drainage Management.

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
	solids from earthworks erosion, sanitary discharge from work camps, and hydrocarbon spills	
Construction activities inside water body/pond	Filling of ponds for site preparation will impact the fishes.	The Contractor will 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 Install and maintain fish screens etc. on any water intake with drawing water from any water body that contain fish

ECP 15: Road Transport and Road Traffic Management

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
Construction vehicular traffic	Increased traffic use of road by construction vehicles will affect the movement of normal road traffic and the safety of the road-users.	The Contractor will • Prepare a traffic management plan and submit the plan for PIU and SIC 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 bridges temporary diversions, necessary barricades, warning signs / lights, and road signs. Updating it as needed if additional traffic routes or traffic diversion and management required. • Strictly follow the traffic management plan and work in close coordination with the local authorities. • Provide signs at strategic locations of the roads complying with the schedules of signs contained in the national traffic regulations. • A designated person, traffic controller, wearing colored vest will be engaged for traffic management. • 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 Bangla: - o Location: chainage and village name - o Duration of construction period - o Period of proposed detour / alternative route - o Suggested detour route map - o Name and contact address/telephone number of the concerned personnel - o Name and contact address / telephone number of the Contractor - o Inconvenience due to ongoing work is sincerely regretted.
Pollution incidents	Accidents and spillage of fuels and chemicals	The Contractor will • Restrict truck deliveries, where practicable, to day time working hours. • Restrict the transport of oversize loads. • Operate vehicles, if possible, to non-peak periods to minimize traffic disruptions.

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
		Enforce off- and on-site speed limit.
Parking nuisance	Parking of construction vehicles or truck trailer bring in construction material/equipment for erection parked outside on main road and unloading operations at main road	The Contractor will Restrain any truck containing deliveries/construction material to park on the main or access roads for the project. Demarcate a designated loading/unloading area for the above category Designate the delivery times to particular time of day and any night deliveries should not be encouraged.

ECP 16: Construction Site and Labor Camp Management

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
Siting and location of construction camps	Labor campsites for construction workers can impact health and safety and disrupt nearby communities.	The Contractor will - Prepare a construction camp management plan and submit the plan for PIU and SIC approval. - Build the construction camps within the designed construction sites or at areas which are acceptable from environmental, cultural or social point of view; and approved by the PIU and SIC. - 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 PIU and SIC 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, conducting religious rituals and security will be duly informed on the set up of camp facilities to maintain effective surveillance over public health, social and security matters.
Construction Camp Facilities	Lack of proper infrastructure facilities, such as water supply and sanitation facilities will increase pressure on the local services and generate substandard living standards and health hazards for construction workers.	Contractor will provide the following facilities in the campsites - Adequate housing for all workers. - Safe and reliable water supply, which should meet the national and WBG EHS guidelines. - Water supply from deep tube wells of 300 m depth. Drinking water to be chlorinated at source, and ensure presence of residual chlorine with 0.1 ~ 0.25 ppm as minimum after 30 minutes of chlorine contact time (WHO guideline). - Hygienic sanitary facilities and sewerage system. The toilets and domestic waste water will be collected through a common sewerage. Provide separate latrines and bathing places for males

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
		and females workers with total isolation by location. The minimum number of toilet facilities required is one toilet for every six persons. • Treatment facilities for sewerage of wastewater. • Storm water drainage facilities. Both sides of roads are 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 there is 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. • Labor Camp will be constructed by maintaining all the safety issues to fight against COVID 19 and following COVID-19 Protocol of DG Health, Bangladesh. (https://old.dghs.gov.bd/images/docs/Guideline/Concise_Covid-19_guideline.pdf)
Disposal of waste	Management of wastes is crucial to minimize negative impacts on the environment	The Contractor will • Ensure the collection and disposal of solid wastes from the labor camps with disposal to suitably licensed waste management facilities • Insist on waste separation by source; organic wastes in one container and inorganic wastes in another container at household level. • Store inorganic wastes in a safe place within the household and clear organic wastes on a 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 place on daily basis. At the end of the day cover the organic wastes with a thin layer of sand so that flies, 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 500 m 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

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
		by fencing and tree plantation to prevent children to enter and play with. Do not establish site specific landfill sites. 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 local flora and fauna	The Contractor will - Provide fuel to the construction camps for their domestic purpose, in order to discourage them to use fuel wood or other biomass. - Make available alternative fuels like natural gas or kerosene on ration to the workforce to prevent it from using biomass for cooking. - Conduct awareness campaigns to educate workers on preserving and protecting the biodiversity and wildlife of the project area, and relevant government regulations and enforcements on wildlife protection.
Health and Hygiene	There will be a potential for diseases to be transmitted including malaria, exacerbated by inadequate health and safety practices. There will be an increased risk of construction workers spreading sexually transmitted infections and HIV/AIDS.	The Contractor will - Provide adequate health care facilities within the 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 labors during emergency to be transported to nearest hospitals. - Carry out initial health screening of the labors 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 (sexually transmitted infections) and HIV information, education and communication for all workers on a regular basis. - Provide 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 anywhere near the site. - Regular mosquito repellent sprays (not pesticides subject to bans) are used during rainy season in offices and construction camps and yards. - Do not dispose food waste openly as that will attract rats, cockroaches and other insects, and stray dogs. - Carry out 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	Inadequate safety facilities to the construction camps may create security problems and fire hazards	The Contractor will - Provide appropriate security personnel (police or private security guards) and enclosures to prevent unauthorized entry into the camp area. - Maintain a register to keep a track on a head count of persons present in the camp at any given time.

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
		• Use 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 firefighting equipment at the labor camps • Display emergency contact numbers clearly and prominently at strategic places in camps. • Communicate the roles and responsibilities of labors 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 will • 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 as certain work gets done/decreased and not wait for the entire work to be completed. • Give prior notice to the labors before demolishing their camps/units. • Maintain the noise levels within the applicable noise levels during demolition activities. • Different subcontractors must be hired to demolish different structures to promote recycling or reuse of demolished materials. • Reuse the demolition debris to a maximum extent. • Dispose remaining debris at the suitably licensed waste management facility. • Restore the site to its condition prior to commencement of the works or to an agreed condition with the landowner.

ECP 17: Cultural and Religious Issues

Project Activity/	Environmental Impacts	Mitigation Measures/ Management Guidelines
Construction activities near religious and cultural sites	Disturbance from construction works to the cultural, religious and educational sites, and construction workers lack of knowledge on cultural issues causes social disturbances.	The Contractor will • Communicate to the public through community consultation regarding the scope and schedule of construction, as well as certain construction activities causing disruptions or access restriction. • Not block access to cultural and religious sites, wherever possible. • Restrict all construction activities to within the footprints of the construction sites. • Stop construction works that produce noise (particularly during prayer time and school hours) if there are any mosque/religious/educational institutions close to the construction sites and users make objections. • Provide separate prayer facilities to the construction workers. • Allow the workers to participate in praying during construction time. • Show appropriate and decent behavior with all construction workers especially women and elderly people. • Resolve cultural issues in consultation with local leaders, PIU and SIC.

Project Activity/	Environmental Impacts	Mitigation Measures/ Management Guidelines
		- 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 before commencement of construction works so as to maintain effective surveillance over public health, social and security matters.
Construction activities near archaeological, burial sites	Disturbance from construction works to the archaeological or burial sites and construction workers lack of knowledge on these issues causes social disturbances	- Take special care and use appropriate equipment when working next to cultural/religious institutions. - Develop a Chance Find Procedure for archaeological remains. This procedure will require stopping 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. - 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 SIC/PMU.

ECP 18: Worker's Health and Safety (including COVID-19 Prevention and Protection)

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
Best practices	Construction works may pose health and safety risks to the construction workers and site visitors leading to severe injuries and deaths. The population in the proximity of the construction site and the construction workers will be exposed to a number of (i) biophysical health risk factors, (e.g. noise, dust, chemicals, construction material, solid waste, waste water, vector transmitted diseases etc.), (ii) risk factors resulting from human behavior (e.g. STD, HIV etc.) and (iii) road accidents from construction traffic.	The Contractor will - Prepare an Occupational Health and Safety plan (including COVID management measures) and submit the plan for PIU and SIC approval. - Implement suitable safety standards for all workers and site visitors which must not be less than those laid down in international good practice guidelines (e.g., International Labor Organization guideline on 'Safety and Health in Construction; World Bank Group's 'Environmental Health and Safety Guidelines') and the contractor's own national standards or statutory regulations, in addition to complying with national requirements. - Appoint an environment, health and safety manager to look after the health and safety of the workers. - Provide the workers with a safe and healthy work environment, considering inherent risks in its particular construction activity and specific classes of 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 the damaged ones. - Safety procedures to include provision of information, training and protective clothing to workers involved in hazardous operations and ensuring safe performance in their job. - Inform the local authorities responsible for health, religious rituals and security before commencement of construction works and establishment of labor camps so as to maintain effective surveillance over public health, social and security matters.

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
	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
Incident Management	Lack of first aid facilities and health care facilities in the immediate vicinity will aggravate the health conditions of the victims	The Contractor will • Ensure health care facilities and first aid facilities are readily available; appropriately equipped first-aid stations to be easily accessible throughout the place of work. • Prevent accidents, injury, and disease arising from, associated with, or occurring in the course of work by minimizing, as 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. • Document and report occupational accidents, diseases, and incidents. • Provide awareness raising to the construction drivers to strictly follow the driving rules. • Provide adequate lighting in the construction area.
Construction Camps	Lack of proper infrastructure facilities, such as water supply and sanitation facilities will increase pressure on the local services and generate substandard living standards and health hazards for construction workers.	The Contractor will provide the following facilities in the labor campsites or other accommodation being provided to improve health and hygienic conditions as mentioned in ECP 16 Construction Camp Management • Construction Camps will be constructed by maintaining all the safety issues to fight against COVID 19 and following COVID-19 Protocol of DG Health, Bangladesh (https://old.dghs.gov.bd/images/docs/Guideline/Concise_Covid-19_guideline.pdf) • Adequate ventilation facilities • Safe and reliable water supply meeting drinking water standards • Hygienic sanitary facilities and sewerage system. • Treatment facilities for sewerage • Storm water drainage facilities. • Safe storage facilities for petroleum and other chemicals in accordance with ECP 2 • Solid waste collection and disposal system in accordance with ECP1. • Arrangements for trainings • Recreational and social facilities • Sick bay and first aid facilities • Paved internal roads. • Security fence at least 2 m height.
Water and sanitation facilities at the construction sites	Lack of water and sanitation facilities at construction sites causes inconvenience to the construction workers and affects	The Contractor will • Provide portable toilets at construction sites. • The location of portable toilets should be at least 6 m away from the storm drain system and surface waters.

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
	their personal hygiene.	- Portable toilets must be cleaned once a day and all the sewerage pumped from the collection tank once a day and brought to a common septic tank for further treatment. - Provide safe and reliable drinking water facilities meeting drinking water standards to the construction workers at all the construction sites and accommodation provided for them
Other ECPs	Potential risks to health of construction workers (and general public)	The Contractor will follow the following ECPs to reduce health risks to the construction workers and nearby communities - ECP 2: Fuels, Oils and Other Hazardous Substances Management - ECP 4: Drainage Management - ECP 9: Air Quality Management - ECP 10: Noise and Vibration Management - ECP 15: Road Transport and Road Traffic Management
Training and Awareness Raising	Lack of awareness and basic knowledge in health and safety among the construction workforce, increases the risk of an incident or contracting of diseases	The Contractor will - Train all construction workers in general health and safety matters, and on the specific hazards of their work. Training should consist of basic hazard awareness, site specific hazard awareness, safe work practices, and emergency procedures for fire, natural hazards, and evacuation, as appropriate. - Train all construction workers in basic sanitation and health care issues (e.g., hand washing etc.) - Keep up to date on the latest COVID Prevention and Protection Measures and provide training to the construction workers on them (https://old.dghs.gov.bd/images/docs/Guideline/Concise_Covid-19_guideline.pdf) - Implement malaria, HIV/AIDS and STI education campaign targeting all workers hired by contractor and subcontractors, international and national, female and male, skilled, semi- and unskilled occupations, at the time of recruitment and thereafter pursued throughout the construction phase on an ongoing and regular basis. This should be complemented by easy access to condoms at the workplace as well as to voluntary counseling and testing.

ECP 19: SF6 Management

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
SF6 emissions and leakages	SF6, a potent greenhouse gas, will be contained within GIS and in gas insulated circuit breakers and other equipment, improper handling of SF6 tanks and equipment can cause rupture and	The Contractor will - Prepare an SF6 emergency response plan for construction. Prepare policies, protocols, and standard operating procedures: Understanding emissions sources is the first step to better managing SF6 gas in electric power systems. - Train and instruct all personnel in SF6 management practices and procedures as a component of the environment management induction process.

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
	leakage to the atmosphere thus contributing to climate change.	• Store and handle SF6 tanks and gas insulated equipment with care to avoid any leakages of SF6. • Ensure that GIS and other gas insulated equipment are hermetically pressure sealed “sealed for life” units, tested and guaranteed by the supplier at less than 0.1% leakage rate. • Prepare gas inventory, accounting, and tracking procedures and systems: Procedures and systems for gas accounting, tracking, and management can monitor all SF6 activities, such as purchases, cylinder rentals, recycling, and disbursements. It is imperative that any residual SF6 gas from cylinders be accounted for either by physical removal of SF6 from a facility or by removal from inventory when the cylinders are returned to the suppliers. • Conduct training: Training is a vital ingredient for successfully managing SF6 emissions at all phases of the life- cycle. Training raises awareness of emissions, environmental and health impacts of SF6 and by-products, and potential reduction options, but training also enables employees to follow procedures and protocols properly. • Arrange a facility for Recycling of SF6 gas: Recycling of SF6 gas allows utilities to capture used gas that otherwise would be vented to the atmosphere. • Arrange a facility for Leak detection and repair (LDAR): LDAR is a vital strategy to managing SF6 emissions (Components of LDAR are included as: Leak detection, Monitoring programs and Leak repair). A handheld LDAR kit should be made available at the site during filling and testing/commissioning which should be kept at the substation thereafter for O&M by substation staff. • Upgrade and replace the old and obsolete equipment: Upgrading and replacing equipment (circuit breakers in case of AIS stations with GIS technology) is a successful strategy that can significantly reduce emissions. • ensure for proper decommissioning: At the end of life, all SF6 equipment, including hermetically sealed-pressure switchgear, should be properly decommissioned to avoid emissions.

ECP 20: Construction Management in Ecologically Sensitive, Salt Pan, Fish Ponds and Waterlogged Areas

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
Construction of foundations in Salt pan, fish pond and waterlogged area	Piling of foundations in salt pan areas leads to drainage of waste slurry and drilling fluids into water canals and flat lands that adversely impact the ecological sensitive area	The Contractor will – Ensure the strata analysis below the salt pan, fish pond, waterlogged area through borehole testing before piling for foundations to ensure proper depth and soil stability is available to avoid repeated drilling/piling – Ensure conformance to BS 5228-2:2009+A1:2014 that covers Noise and vibration control on construction and open sites. Code of practice for noise and vibration control applicable to piling operations. Section 2 in the standard contains recommendations relating to noise control and Section 3 contains recommendations for the mitigating of the effects of ground-borne vibration.

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
		– Design noise screen or barrier around piling activities (e.g. a wall of straw bales) or sheets to absorb sound and reduce the noise levels experienced by communities. – Consider alternative practices such as augering and sheet piling that can be pressed into place rather than being driven in, thereby reducing the noise at source.
Construction of infrastructure in that impact ecology of coastal areas	Avian collision: Possible collision of migrant and local birds with transmission line/others	The Contractor will – Design of towers and cables to follow international good practice. Install and maintain Flight Diverters where necessary to prevent avian collision risk on the transmission line. – Conduct periodic ecological survey of migratory birds during wintering months along with waterbirds and local birds to ensure documentation of affect to any endangered/critical/vulnerable species.
Other ECPs to reduce construction impacts in the coastal areas	Filling of canals, natural water drainage pathways inland that adversely impact salt pans, fishing areas and block access to saline coastal tidal waters to enrich the local ecology of the area	The Contractor will: – follow the ECPs to reduce construction impacts in the coastal areas that are environmentally sensitive ECP 3: Water Resources Management, ECP4: Drainage Management, ECP 11: Noise and Vibration Management, ECP 13: Protection Fauna and ECP 14: Protection of Fisheries.