

Through a systematic assessment, the ESIA has identified a number of significant environmental and social impacts which may potentially result from the construction and operation of the Project. In order to manage and mitigate these impacts, a range of measures have been developed to reduce the overall residual impacts to acceptable levels and as low as reasonably practicable. Implementing and tracking the effect of these management and mitigation measures is an essential element to ensuring that the assessed residual impact levels are confirmed.

18.1

OBJECTIVES

The key objectives of this Environmental and Social Management Plan (ESMP) are to:

- Collate the various mitigation and management measures developed throughout the ESIA into a single point;
- Identify all of the detailed management plans which will need to be developed for implementation throughout the various phases of the Project;
- Define monitoring requirements to determine the efficacy of all mitigation and management measures; and
- Provide clarity to all stakeholders as to what impacts have been identified, how they will be mitigated and managed, and through what means.

18.2

SCOPE OF THIS ESMP

The scope of this ESMP covers both construction and operation phases of the Project, which have the potential to affect, positively or negatively, the environment and communities in which the Sponsor and/or its contractors/sub-contractors will operate.

As required by this ESMP, a range of detailed management plans will be developed and implemented for each specific phase of the Project. The responsibility for the implementation of these plans will lay variously with the Sponsor, contractors and sub-contractors. It is noted that this is only a framework ESMP into which the full range of management and monitoring activities will eventually fit into.

In addition, it is to be noted that environmental, social and governance (ESG) considerations are embedded in the Sponsor's business decisions and processes. The ESMP for the Project will also align with the Sustainability and HSE Policies of the Sponsor, which are presented in **Box 18.1** and **Box 18.2**, respectively. The Project will also follow these policies and specific actions will be planned to align with them.

Box 18.1 Sustainability Policy of the Sponsor

Sembcorp's Sustainability Policy

Sembcorp, as a member of the international business community, recognises that our business activities have varying direct and indirect impacts on the societies in which we operate. We commit to manage these in a responsible manner, believing that sound and appropriate performance in this area is linked to business success.

For Sembcorp, being a responsible corporate citizen is reflected in the following principles:

Standards of Business Conduct

We ensure that our business is conducted according to rigorous ethical, professional and legal standards, through maintaining robust corporate governance and an Employee Code of Conduct for staff.

Health, Safety and the Environment

Management of our health, safety and environmental responsibilities is our first priority. We are committed to continuously improving our HSE performance and managing health, safety and environmental risks associated with our activities, products and services. We integrate health, safety and environmental considerations into all aspects of our business operations and processes with the aim of preventing accidents, injuries, occupational illnesses and pollution and conserving natural resources.

Employees

We aim to be a fair and caring employer offering our staff equitable opportunities to develop and grow.

Community

We act as a responsible corporate citizen through support for community care initiatives, community partnerships and philanthropic and charitable causes, in particular causes supporting children and youth, education and the environment.

Sembcorp's operations throughout the world are committed to these principles. The stage and level of implementation varies according to each operation and maturity of business.

Source: <http://www.sembcorp.com/en/esg-sustainability.aspx>

Box 18.2 Health, Safety and Environment Policy of the Sponsor

Sembcorp's Health, Safety and Environmental Policy

Sembcorp manages health, safety and environment responsibilities as our first priority. We are committed to continuously improving our HSE performance and managing HSE risks associated with our activities, products and services. We are committed to continuously improving our HSE performance and managing HSE risks associated with our activities, products and services.

Sembcorp has established and will maintain a HSE management system, and integrate HSE considerations into all aspects of our business operations by implementing the following policy which aims to prevent accidents, injuries, occupational illnesses and pollution as well as conserve natural resources:

- Stress to all employees and contractors their responsibility and accountability for safe performance and set appropriate objectives and targets to continually improve HSE performance
- Educate employees to be aware of and understand the safety risks and health hazards associated with their job and the potential impact on the environment
- Make available this policy to all interested parties upon request
- Build, design, operate and maintain facilities and conduct operations in a manner that safeguards people, property and the environment, and minimises waste
- Comply with all HSE laws and regulations and other HSE requirements applicable to Sembcorp's activities, products and services
- Offer assistance to and influence suppliers, contractors and other interested parties to improve their HSE performance where necessary
- Review and evaluate operations to measure progress and ensure compliance with this policy via periodic system audits and management reviews
- Prepare for, and respond quickly to, accidents or other emergency situations to mitigate adverse impact on people, property and the environment

18.3

SUMMARY OF IMPACTS AND MITIGATION/ MANAGEMENT MEASURES

Key environmental and social impacts have been identified and reported in the following chapters:

- Chapter 7: Air Quality;
- Chapter 8: Greenhouse Gas;
- Chapter 9: Surface Water Quality;
- Chapter 10: Noise and Vibration;
- Chapter 11: Landscape and Visual;
- Chapter 12: Soil and Groundwater;
- Chapter 13: Waste;
- Chapter 14: Terrestrial and Marine Biodiversity;
- Chapter 15: Social Impact Assessment; and
- Chapter 16: Cumulative Impact Assessment.

A summary of mitigation measures identified for the construction and operation phases of the Project is presented in **Table 18.1**. This also identifies lead responsibility for implementing the mitigation measures and sources of funds for such implementation. Many of the mitigation measures suggested during the construction phase of the Project are associated with good construction and housekeeping practices. Most of the mitigation measures for the operation phase (such as those for air emissions and noise generation) of the Project are already incorporated into the Project design specifications.

The construction phase of the Project is anticipated to start in the first quarter of 2016 and be completed in the region of 22.5 months, whereas the operation phase of the Project is 22 years, as per the Power Purchase Agreement.

The Sponsor will be responsible for ensuring that the mitigation measures in the ESMP are implemented throughout the life span of the Project.

18.4

DETAILED MANAGEMENT PLAN

Based upon the outcomes of the ESIA, detailed management plans are required to guide the Sponsor and its contractors in the implementation of all mitigation and management measures. This is essential to ensure that the key outcomes of the impact assessment process are put in place throughout the life of the Project, and their overall efficacy tracked. These detailed management plans will be leveraged by EPC contractors in developing their own management plans.

As identified with the summary of impacts and mitigation and management measures, the following detailed management plans are considered necessary to effectively implement the outcomes of the ESIA throughout the life of the Project:

- Air Quality Management Plan;
- Plant and Vehicle Management and Maintenance Plan;
- Traffic Management Plan;
- Noise and Vibration Management Plan;

- Surface Water Management Plan;
- Soil and Groundwater Management Plan;
- Biodiversity Action Plan;
- Waste Management Plan (Hazardous Waste);
- Waste Management Plan (Non Hazardous Waste);
- Oil and Chemical Spill Contingency Management Plan;
- Emergency Response Plan (including Community Emergency Response Plan);
- Worker Occupational Health and Safety Management Plan;
- Stakeholder Engagement Plan (including Grievance Management Plan);
- Community Development Plan (CDP);
- Community Health Management Plan;
- Workers' Accommodation Management Plan;
- Local Recruitment and Procurement Plan;
- Influx Management Plan;
- Worker Training Plan(including Induction Training Program);
- Cultural Heritage Chance Find Procedure; and
- Security Plan.

It is intended that these documents will be prepared to cover the site clearance and construction phases of the Project. Prior to operation commencing documents will be developed to cover the operation phase.

Specific plans will be disclosed to stakeholders at the appropriate time.

It is to be noted that commitments and framework for the implementation of Emergency Response Plan (ERP) and Stakeholder Engagement Plan (SEP), including Grievance Management Plan, have been disclosed to the relevant stakeholders during the public consultation during 2nd – 5th September 2015.

18.5

ENVIRONMENTAL AND SOCIAL MONITORING PROGRAMME

Monitoring is a means verifying overall effectiveness of the management and mitigation measures contained within the management plans listed above. Key objectives of the monitoring process are to:

- Confirm effectiveness of management and mitigation measures;
- Ensure compliance with Applicable Standards (i.e. ADB SPS, IFC Performance Standards and IFC EHS Guidelines) and the Sponsor's objectives;
- Monitoring the status of, and impacts on, identified sensitive receptors;
- Provide an early warning that any of the control measures or practices are failing to achieve their desired performance and ensure changes can be implemented to remedy these practices;
- Determine whether environmental and social changes are attributable to Project activities, or as a result of other activities or natural variation; and
- Provide a basis for continual review and improvements to Project design and execution.

18.5.1

Performance Indicators and Monitoring Schedule

Physical, biological and social environmental management components of particular significance have been identified as performance indicators. A comprehensive monitoring plan for each performance indicator has been prepared for all phases of the Project and is presented in **Table 18.1**.

This includes the tentative parameters to be measured, methods to be utilised, sampling locations, frequency of measurements, detection limits, cost and responsibilities for implementation and supervision.

However, it is to be noted that the detailed and specific monitoring measures will be developed and included within the relevant management plans. The monitoring components of the various management plans will be refined and finalised during plan development.

Impact monitoring will be undertaken during the life of the Project to verify the predicted levels of residual impacts from the Project and the effectiveness of the various management plans.

18.5.2

Reporting Mechanism for Environmental and Social Monitoring Programme

A robust reporting system will provide the Project with the necessary feedback mechanisms to ensure quality and timely implementation of the works. The reporting system will ensure regular flow of information from the Project site to the Project headquarters and, as necessary, to regulatory authorities and funding agencies. The reporting system will provide a mechanism to ensure that the measures proposed in the Project's ESMP are implemented.

Prior to the commencement of the construction activities, the Sponsor will finalise the format and frequency for reporting on the status and progress of environmental and social monitoring.

During construction phase, it is recommended that the report shall be submitted to the relevant authorities and funding agencies on a regular basis during construction and operation. Frequency will be agreed with relevant authorities and funding agencies.

However, it is recommended that the Sponsor shall submit the report to the relevant authorities and funding agencies on six-monthly basis during construction and on annually basis during operation.

The format will be designed to meet all the compliance conditions associated with the local and international requirements. The contractor will be required to submit the duly filled up reporting form on the agreed frequency to the Sponsor.

Table 18.1 Environmental and Social Management Plan of the Project

| S. No. | Project Stage/ Affected Aspect | Project Activity and affected area | Potential Impacts | Proposed Mitigation Measures (if applicable) | Responsibility for Mitigation Implementation | Responsibility for supervision of mitigation implementation | Reporting Requirements | Mitigation Cost Source |
|--|-----------------------------------|---|-------------------|--|--|--|--|---------------------------|
| A Site Preparation and Construction Phase | | | | | | | | |
| 1.1 | Air Quality | Operation of heavy machinery and transport vehicles | Exhaust Emissions | <ul style="list-style-type: none"> A speed limit of 20 km/hr will be enforced on the construction site/access road. Regularly maintain all diesel-powered equipment and reduce idling time to avoid emissions of NO_x, PM₁₀ and SO₂. Where available use low sulphur diesel (LSD) in HGVs and diesel powered equipment. Implement best practice procedures to control vehicle / equipment air emissions (such as turning off equipment when not in use). Vehicle / equipment exhausts observed to be emitting significant black smoke from their exhausts will be serviced/ replaced. | Appointed EPC Contractor | On site Project Management team and designated EHS team | Monthly report to the Sponsor | EPC Contractor Cost |
| 1.2 | Air Quality | Overall construction activities | Dust | <ul style="list-style-type: none"> Erection of minimum 2m high site hoardings around the site boundary. Water spraying of or covering all exposed areas and stockpiles. Specifying transport networks and locating stockpiles as far away from the site boundary which is close to the air sensitive receptors, as practicable to minimize the impact of air pollutants and dust. Minimizing the size of exposed areas and material stockpiles and the periods of their existence. Temporary stockpiles of dusty materials will be either covered entirely by impervious sheets or sprayed with water to maintain the entire surface wet all the time. Covering the construction materials transported by trucks or vehicles entirely to prevent dust emissions. Cleaning wheels and the lower body parts of trucks at all exits of the construction site. Cleaning the entire construction work sites at least once per week. Controlling the height of unloading the fill materials during filling as far as possible. Where possible, this should be well below the height of the hoardings along the Project site boundary. Watering the main haul road regularly to suppress dust emissions during truck movement. Prohibiting the burning of waste or vegetation on site. Compacting the reclaimed land immediately to avoid fugitive dust emissions. Maintaining and checking the construction equipment regularly. Switching off engines when idling. Using ultra-low sulphur diesel for trucks and diesel-fuelled construction equipment if available. | Appointed EPC Contractor | On site Project Management team and designated EHS team | Monthly report to the Sponsor | EPC Contractor Cost |
| 1.3 | Air Quality | Concrete Batching Plant (CBP) | Dust | <ul style="list-style-type: none"> Using grid electricity for the operation of the CBP to minimize the potential air emissions from diesel burning. Equipping all vent exhausts with dust suppression measures such as dust filter or scrubber, etc., to reduce dust emissions as much as possible. Carrying out in such a manner that dust emissions will be prevented or minimized during loading, unloading, handling, transfer or storage of other raw materials which may generate airborne dust emissions such as crushed rock, sand, stone aggregates. Enclosing all receiving hoppers and belt conveyor systems totally. Storing all aggregates with a nominal size of less than or equal to 5 millimetres and cement in an enclosed area. Wetting all access roads and routes within the CBP. Maintaining a high standard of housekeeping always. All spillages or deposits of materials on ground, support structures or roofs will be cleaned up promptly. Any dumping of materials in open areas will be prohibited. | Appointed EPC Contractor | On site Project Management team and designated EHS team | Monthly report to the Sponsor | EPC Contractor Cost |
| 1.4 | Air Quality* | Monitoring | | <ul style="list-style-type: none"> Monthly on-site inspection is recommended to ensure proper implementation of the proposed mitigation and management measures. | EPC Contractor | Designated EHS team on site | Monthly monitoring report to the Sponsor | EPC Contractor Cost |
| 2.1 | Greenhouse Gas | Construction activities including Operation of heavy machinery and transport vehicles | GHG emissions | <ul style="list-style-type: none"> A speed limit of 20 km/hr will be enforced on the construction site/access road. Regularly maintain all diesel-powered equipment and reduce idling time to avoid emissions of NO_x, PM₁₀ and SO₂. Where available use low sulphur diesel (LSD) in HGVs and diesel powered equipment. Implement best practice procedures to control vehicle / equipment air emissions (such as turning off equipment when not in use). Vehicle / equipment exhausts observed to be emitting significant black smoke from their exhausts will be serviced/ replaced. | Appointed EPC Contractor | On site Project Management team and designated EHS team | Monthly report to the Sponsor | EPC Contractor Cost |

| S. No. | Project Stage/ Affected Aspect | Project Activity and affected area | Potential Impacts | Proposed Mitigation Measures (if applicable) | Responsibility for Mitigation Implementation | Responsibility for supervision of mitigation implementation | Reporting Requirements | Mitigation Cost Source |
|--------|-----------------------------------|--|---|--|--|--|----------------------------------|---------------------------|
| | | | | <ul style="list-style-type: none"> Develop and implement preventive maintenance plan for machines, and engines to ensure combustion efficiency. Develop vehicle maintenance plan. | | | | |
| 3.1 | Surface Quality | Water Wastewater Discharges and Runoff | Impacts to surface water due to wastewater discharges and sediment- laden runoff | <ul style="list-style-type: none"> Install silt trap to treat surface run-off from bunded areas prior to discharge to the stormwater system. Implement adequate sanitary facilities, (one toilet for every 25 workers up to the first 100, and one for every 50 thereafter) will be provided for the construction workforce. Liquid effluents arising from construction activities will be treated to the applicable IFC guideline prior to discharge. Septic tanks will be provided to treat sanitary discharge. Exposed soil surfaces should be protected by paving or fill material as soon as possible to reduce the potential of soil erosion and subsequent sedimentation. Open stockpiles of construction materials or construction wastes on-site should be covered with tarpaulin or similar fabric during rainstorms. Use methods for minimising sediment runoff, as appropriate to the conditions on-site, including wheel cleaning facilities. Provision of channels, earth bunds or sand bag barriers on site to direct stormwater to silt removal facilities. Design drainage pipes and culverts for the controlled release of storm flows. Protect temporary trafficked areas on-site with coarse stone ballast or equivalent. Regularly, and particularly following rainstorms, inspect and maintain drainage systems and erosion control and silt removal facilities to ensure proper and efficient operation at all times. Provide measures to reduce the ingress of site drainage into excavations. If trenches have to be excavated during the wet season, excavate and backfill them in short sections wherever practicable. Discharge any water pumped out from trenches or foundation excavations into storm drains via silt removal facilities. Mulch to stabilise exposed areas, where practicable and appropriate. Re-vegetate areas promptly, where practicable and appropriate. Provide measures to prevent the washing away of construction materials, soil, silt or debris into any drainage system of open stockpiles of construction materials. Install onsite wastewater treatment facilities or processes such as filtration, flocculation or biochemical treatment before discharge to river. Surface run-off from bunded areas should pass through oil/water separators prior to discharge to the stormwater system. Wastewater collected from canteen kitchens, including that from basins, sinks and floor drains, should be discharged into sanitary sewers via grease traps. The sanitary sewer should then be treated prior to discharge or reuse as greywater. Oil-contaminated water will be collected and handled by local licensed wastewater sub-contractors (if available, to be determined at a later stage). | Appointed EPC Contractor | On site Project Management team and designated EHS team | Monthly report to the Sponsor | EPC Contractor Cost |
| 3.2 | Surface Quality | Water Waste Storage and Disposal | Impact to surface water contamination from inappropriate waste management | <ul style="list-style-type: none"> Implement the same mitigation measures to minimize impacts to Waste Management (See 6.1 and 6.2). Provide training to labourers for waste disposal in designated areas and use of sanitation facilities. Implement proper storage of the construction materials and wastes to minimise the potential damage or contamination of the materials. Implement construction materials inventory management system to minimise over-supply of the construction materials, which may lead to disposal of the surplus materials at the end of the construction period. Segregate hazardous and non-hazardous waste and provide appropriate containers for the type of waste type (e.g. enclosed bins for putrescible materials to avoid attracting pests and vermin and to minimise odour nuisance). Store wastes in closed containers away from direct sunlight, wind and rain. Store waste systematically to allow inspection between containers to monitor leaks or spills. Ensure that storage areas have impermeable floors and containment, of capacity to accommodate 110% of the volume of the largest waste container. Dispose of waste by licensed contractors. | Appointed EPC Contractor | On site Project Management team and designated EHS team | Monthly report to the Sponsor | EPC Contractor Cost |

| S. No. | Project Stage/ Affected Aspect | Project Activity and affected area | Potential Impacts | Proposed Mitigation Measures (if applicable) | Responsibility for Mitigation Implementation | Responsibility for supervision of mitigation implementation | Reporting Requirements | Mitigation Cost Source |
|--------|-----------------------------------|---|---|--|--|--|--|---------------------------|
| 3.3 | Surface Quality Water | Accidental Spills and Leaks. Potentially from fuelling and operation of heavy machinery, transport vehicles and Storage and handling of chemicals | Impact to surface water due to contamination from accidental releases of hazardous substances such as fuels, oils or lubricants, as well as improper chemical/fuel storage | <ul style="list-style-type: none"> Disposal sites to be designed for hazardous and non-hazardous waste, including sludge disposal. Hazardous waste storage areas will comply with best practice/ international standards. Mitigation measures/ monitoring programme with regard to accidental events/ spills shall be communicated to the EPC Contractor at the early stages of the Project implementation. Carry out land contamination assessments and identification of legacy contaminated land sites. Contractor will prepare unloading and loading protocols and train staff to prevent spills and leaks. Contractor will prepare guidelines and procedures for immediate clean-up actions following any spillages of oils, fuels or chemicals. A site specific Emergency Response Plan will be prepared by the Contractor for soil clean-up and decontamination. Fuel tanks and chemical storage areas will be sited on sealed areas and provided with locks to prevent unauthorized entry. Use of spill or drip trays to contain spills and leaks. Use of spill control kits to contain and clean small spills and leaks. The storage areas for oil, fuel and chemicals will be surrounded by bunds or other containment devices to prevent spilled oil, fuel and chemicals from percolating into the ground or reaching the receiving waters. Contractor will implement a training program to familiarise staff with emergency procedures and practices related to contamination events. Implement a construction materials inventory management system to minimise over-supply of the construction materials, which may lead to disposal of the surplus materials at the end of the construction period; Provide dedicated storage areas for construction materials to minimise the potential for damage or contamination of the materials. Segregate hazardous and non-hazardous waste and provide appropriate containers for the waste types' generated (e.g. enclosed bins for putrescible materials to avoid attracting pests and vermin and to minimise odour nuisance). Store wastes in closed containers away from direct sunlight, wind and rain. Provide enough space to allow for inspection between waste containers so as to identify any leaks or spills. Ensure storage areas have impermeable floor and containment, of capacity to accommodate 110% of the volume of the largest waste container. Storage of inert concrete waste in a laydown area near the concrete batching plant and reuse of these wastes under floors or roads. Dispose of hazardous waste including bitumen by licensed contractors. Oil-contaminated water will be collected and handled by local licensed wastewater sub-contractors (if available, to be determined at a later stage). Vehicle servicing areas, vehicle wash bays and lubrication bays will, as far as practical, be located within roofed and cemented areas. The drainage in these covered areas will be connected to sewers via an oil/water interceptor. | Appointed EPC Contractor | On site Project Management team and designated EHS team | Monthly report to the Sponsor | EPC Contractor Cost |
| 3.4 | Surface Quality Water | Barge transport | Impact on Ayeyarwady River due to routine discharges of oily bilge and ballast water from barges; dumping of non- biodegradable solid waste and accidental oil/ cargo spills or toxics | <ul style="list-style-type: none"> Only barge operators that comply with the relevant local and international standards and are permitted to operate barges for transportation purposes will be engaged. Barges used for Project material transport will be independently inspected and audited by the Project EHS Management Team. Each barge will be inspected at least once every 6 months and records maintained. If any continued non-compliance is observed over two (2) audit inspections, the Project will terminate the services of the barge transporter. | Appointed EPC Contractor | On site Project Management team and designated EHS team | Monthly report to the Sponsor containing relevant records and details | EPC Contractor Cost |
| 3.5 | Surface Quality* Water | Monitoring of surface water quality | | <ul style="list-style-type: none"> Monthly on-site inspection is recommended to ensure proper implementation of the proposed mitigation and management measures. Monitoring of surface water quality of at Nyaung Hla Jetty for turbidity, pH, DO, Total dissolved solids, oil and grease, total coliform, heavy metals, once in every month by using standard analytical methods for the duration of the usage of the jetty. Please refer to Table 18.2 for details. | EPC Contractor through 3 rd Party Environmental Consultant | On site Project Management team and designated EHS team | Monitoring report to the Sponsor | EPC Contractor Cost |

| S. No. | Project Stage/ Affected Aspect | Project Activity and affected area | Potential Impacts | Proposed Mitigation Measures (if applicable) | Responsibility for Mitigation Implementation | Responsibility for supervision of mitigation implementation | Reporting Requirements | Mitigation Cost Source |
|--------|-----------------------------------|--|--|---|--|--|---|---------------------------|
| 4.1 | Noise | Overall construction activities inc. heavy machinery operations for construction works | Increase in ambient noise levels | <ul style="list-style-type: none"> Install noise barriers at the Project Site boundary. In accordance with BS 5228-1:2009, the barrier material shall have a mass per unit of surface area in excess of about 7 kg/m² and no gaps at the joints. The minimum height of barriers is typically such that no part of the noise source will be visible from the noise sensitive receiver; Well-maintained equipment to be operated on-site; Regular maintenance of equipment such as lubricating moving parts, tightening loose parts and replacing worn out components; Shut down or throttled down between work periods for machines and construction plant items (e.g. trucks) that may be in intermittent use; Reduce the number of equipment operating simultaneously as far as practicable; Orientate equipment known to emit noise strongly in one direction so that the noise is directed away from receptors far as practicable; Locate noisy plant as far away from receptors as practicable; Avoid transportation of materials on- and off-site through existing community areas; and Use material stockpiles and other structures, where practicable, to screen noise sensitive receptors from on-site construction activities. | Appointed EPC Contractor | On site Project Management team and designated EHS team | Monthly report to the Sponsor | EPC Contractor Cost |
| 4.2 | Noise | Increased traffic | Increase in ambient noise levels | <ul style="list-style-type: none"> Vehicles should be regularly maintained. Avoid transportation of materials on- and off-site through existing community areas. | Appointed EPC Contractor | On site Project Management team | Monthly report to the Sponsor | EPC Contractor Cost |
| 5.1 | Landscape and Visual | Construction activities | Visual impacts due to construction activities and the construction of linear infrastructure | <ul style="list-style-type: none"> The extent of the construction areas (including any laydown areas) is to be limited to minimum extent necessary. The design for earthworks and cut and fill should ensure that it is blended with the landscape as much as possible. Cut and fill slopes as well as areas disturbed by construction activity are to be suitably top soils and revegetated as soon as is possible after shaping. All existing large trees, if any, that fall outside the earthworks areas must be retained. Felled trees, if any, should be replaced where possible and the perimeter to the power plant site should be replanted with native trees. Hoarding is to be put in place around the power plant construction site. The colour of this hoarding should blend in with the surrounding environment as much as possible. Laydown areas which will no longer be required for the operation stage are to be landscaped with suitable vegetation after the construction work is completed. | Appointed EPC Contractor | On site Project Management team | Monthly report to the Sponsor | EPC Contractor Cost |
| 6.1 | Waste | Disposal of Removed Biomass | Impacts due to improper disposal of removed biomass | <ul style="list-style-type: none"> No vegetation is to be disposed of by burning under any circumstances. Generally biomass such as trees, shrubs and grass are utilised by the local community for a variety of purposes. The Sponsor will engage with the local community to ensure that they are provided with priority access to all of the biomass. In order to ensure public safety and limit access to the site (given its proximity to the steel mill), the Sponsor will first clear of the biomass and store it in a designated area (most likely the north-east corner of the site closest to the village of Sa Khar) where the local community are easily able to access it. Any biomass not taken by the local community biomass is to be appropriately stored (or immediately mulched) for later use within site stabilisation and rehabilitation activities. | Appointed EPC Contractor | On site Project Management team | Report to the Sponsor during site clearance | EPC Contractor Cost |
| 6.2 | Waste | Solid Waste Generation, Storage and Disposal | <p>Impacts to community and worker health and safety due to contamination of drinking water or food</p> <p>Accidental leaks or spills of oil, fuel or other hazardous materials could potentially pollute surface waters</p> <p>Soil may be contaminated by pollution from spills or</p> | <ul style="list-style-type: none"> Waste collection and storage measures will be implemented. Prior to construction commencing, the Sponsor is to engage with local authorities and other stakeholders (such as the Steel Mill) to determine the capacity of the local waste management network to absorb the new waste streams during construction. A waste management plan is to be developed which includes specific requirements to manage, avoid, reduce and reuse waste during the construction phase for all of the waste streams identified. Education of all workers on site shall be undertaken to avoid, reduce and reuse wastes generated. Waste disposal facilities shall be sited and signposted throughout the construction site. Waste clean-up measures are to be undertaken on at least a fortnightly basis to collect any waste or unused materials from the construction site. All waste collected should be managed and | Appointed EPC Contractor | On site Project Management team | Monthly report to the Sponsor | EPC Contractor Cost |

| S. No. | Project Stage/ Affected Aspect | Project Activity and affected area | Potential Impacts | Proposed Mitigation Measures (if applicable) | Responsibility for Mitigation Implementation | Responsibility for supervision of mitigation implementation | Reporting Requirements | Mitigation Cost Source |
|--------|-----------------------------------|---|--|--|--|---|--|---------------------------|
| | | | leaks of fuel, oil and other hazardous liquid wastes which are incorrectly stored. | <p>disposed of in accordance with the accepted best practice for waste collection and disposal.</p> <ul style="list-style-type: none"> Contractors employed to manage the waste should clearly identify within their bidding documents how the collected waste will be managed. All end points for collected waste are to be inspected and audited and noted to be developed such that all waste is able to be disposed of in an environmental responsible manner and in accordance with all prevailing regulations. Monitoring of appointed waste contractors using chain-of custody documentation for the disposal of waste to ensure that it is able to be disposed of in an environmental responsible manner and in accordance with all prevailing regulations. The appointed waste contractor shall report on an annual basis on any cross-boundary transport of waste. | | | | |
| 7.1 | Soil Quality | Site clearing and preparation, Laying of gas pipeline, use of heavy loaders from the temporary jetty site | Soil compaction | <ul style="list-style-type: none"> Delineation of clearance boundaries to limit the areas to be cleared. Scheduling clearance activities (if possible) to avoid extreme weather events such as heavy rainfall, extreme dry and high winds. Revegetation areas with temporary land use, conducting progressive rehabilitation. Demarcate routes for movement of heavy vehicles to minimise disturbance of exposed soils and compaction of sub-surface layers. Reuse topsoil as much as possible within rehabilitation activities. Control erosion through diversion drains, sediment fences, and sediment retention basins. Where topsoil is to be stored for later use in rehabilitation activities, the following basic principles are to be applied: <ul style="list-style-type: none"> Stockpiles to be separated into topsoil and sub-soil and be located at least 50m from any surface water source or groundwater well. To the extent possible, stockpiles are to be located in areas surrounded by natural wind barriers to minimise the potential for wind erosion. Stockpile storage areas are to be prepared in advance of the removal of topsoil as much as possible. Topsoil heights are to be restricted in height to 2m above ground level to minimise wind erosion, and they are only to be partially compacted on the upper layer in order to promote aeration, maintain soil vertical structures, reduce runoff and encourage infiltration. | Appointed EPC Contractor | On site Project Management team | Route plans and top soil management inventory submitted to EHS and Project Management team | EPC Contractor Cost |
| 7.2 | Soil and sediment Quality | Sourcing of backfill material. Fuelling and operation of heavy machinery and transport vehicles. Unloading and loading activities near the temporary jetty. | Soil and sediment contamination through spills and leaks and use of potentially contaminated fill material | <ul style="list-style-type: none"> Unloading and loading protocols will be developed to ensure that staff are able to undertake these tasks in a manner that minimises the risks of spills occurring. Fuel tanks and chemical storage areas will be sited on sealed hardstand areas, provided with locks to prevent unauthorised entry where appropriate. Secondary containment, with appropriate drainage connection and/or provision for removal of spilled liquids, will be provided around places of fuel and hazardous materials storage such as oil filled transformers, oil pumps and tanks, generators, chemical storage houses etc. to contain any hazardous spills and to exclude surface water run-off from entering the contained area. The containment capacity of these areas is to accommodate 110% of the volume of the largest container. Any refuelling activities will only take place within a designated hard stand area with spill kits present. All mobile equipment is to be equipped with spill or drip trays to contain spills and leaks. Equipment and vehicle maintenance scheduling is to be undertaken such that they are continually monitored for potential or actual leaks. Mobile toilets are to be provided throughout the construction are for use by workers. No sanitary effluent is to be disposed of on, or adjoining the site. A training program will be implemented to familiarise staff with measures to be taken to prevent spills and leaks, and for emergency procedures and practices related to contamination events; Should any of the above measures fail to prevent spills or leaks occurring, the follow are also to be in place to ensure that any contamination is swiftly cleaned. <ul style="list-style-type: none"> Specific guidelines and procedures for immediate clean-up actions following any spillages of oils, fuels or chemicals is to be developed. A site specific Emergency Response Plan will be prepared for soil clean-up and decontamination. All mobile vehicles are to be equipped with spill control kits to contain and clean small spills and leaks. | Appointed EPC Contractor | EHS Division of the Sponsor and on site Project Management team | Plans submitted to EHS division for approval and monthly reports to the Sponsor | EPC Contractor Cost |

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| | | | | <ul style="list-style-type: none"> For any spills or leaks, once the initial emergency response has been implemented, an appropriate clean up and monitoring plan is to be developed. This is to take into account the type of spill and its extent. It is also to include provisions for monitoring of soil and groundwater quality to track potential or actual migration of the contamination through the soil and groundwater profiles. | | | | |
| 7.3 | Soil Quality | Storage, handling and disposal of construction waste | Soil contamination | <ul style="list-style-type: none"> Storage of all inert concrete waste will be undertaken in a dedicated laydown area near the concrete batching plant, and reuse of these wastes under floors or roads. A dedicated storage area for construction material will be developed to minimise the potential for damage or contamination of the material. Sufficient space will be left between all waste containers so as to identify any spills or leaks. Appropriate management, storage and disposal of all waste streams will be implemented in accordance with the measures developed within 6.1 and 6.2 above. A Hazardous Materials Management Plan and a Construction Waste Management Plan will be developed to integrate all these measures. A construction materials inventory management system will be implemented to minimise over supply of and construction materials (hazardous and non-hazardous), which may lead to disposal of the surplus materials at the end of the construction period. | Appointed EPC Contractor | EHS Division of the Sponsor and on site Project Management team | Plans submitted to EHS division for approval and monthly reports to the Sponsor | EPC Contractor Cost |
| 7.4 | Soil Quality | Generation of sanitary effluent | Soil contamination | <ul style="list-style-type: none"> Adequate sanitary facilities, (one toilet for every 25 workers up to the first 100, and one for every 50 thereafter) will be provided for the construction workforce. Liquid effluents arising from construction activities will be treated to the standards specified in the applicable IFC guideline prior to discharge. Septic tanks will be provided to treat sanitary discharge. | Appointed EPC Contractor | EHS Division of the Sponsor and on site Project Management team | Plans submitted to EHS division for approval and monthly reports to the Sponsor | EPC Contractor Cost |
| 8.1 | Ground Water Quality | Fuelling and operation of heavy machinery and transport vehicles | Contamination of groundwater | <ul style="list-style-type: none"> See 7.2 | Appointed EPC Contractor | EHS Division of the Sponsor and on site Project Management team | Monthly report to the Sponsor | EPC Contractor Cost |
| 8.2 | Ground Water Quality | Generation of sanitary effluent | Contamination of groundwater by sanitary effluent | <ul style="list-style-type: none"> See 7.4 | Appointed EPC Contractor | EHS Division of the Sponsor and on site Project Management team | Monthly report to the Sponsor | EPC Contractor Cost |
| 8.3 | Ground Water Quality | Storage and handling of chemicals | Contamination of groundwater | <ul style="list-style-type: none"> See 7.2 | Appointed EPC Contractor | EHS Division of the Sponsor and on site Project Management team | Monthly report to the Sponsor | EPC Contractor Cost |
| 8.4 | Groundwater Quantity (Drawdown) | Groundwater use for construction operations | Draw-down from extraction of onsite groundwater wells could potentially impact groundwater levels. | <ul style="list-style-type: none"> Monitor the quantity of groundwater abstracted and associated draw down. Address and respond to any community complaints regarding Project impacts on groundwater availability. | Appointed EPC Contractor | EHS Division of the Sponsor and on site Project Management team | Monthly report to the Sponsor | EPC Contractor Cost |
| 9.1 | Terrestrial and Marine Biodiversity | Site Preparation and Construction activities | Loss of habitat | <ul style="list-style-type: none"> The design and layout plan will be prepared to minimise tree cutting and protected area disturbance where possible. The Project owner shall be directly responsible for dissemination to its staff and workers of all rules, regulations and information concerning these restrictions, as well as the punishment that can be expected if any staff or worker or other person associated with the Project violate rules and regulations. The planned clearance area for the construction works shall be clearly identified and marked to avoid accidental clearing. Project will utilise or upgrade existing roads where possible to minimise unnecessary clearing requirements. | Appointed EPC Contractor | EHS Division of the Sponsor and on site Project Management team | Monthly report to the Sponsor | EPC Contractor Cost |
| 9.2 | Terrestrial and Marine Biodiversity | Site Preparation and Construction activities | Disturbance to fauna behaviour | <ul style="list-style-type: none"> Construction vehicles and machinery will be maintained in accordance with industry standard to minimise unnecessary noise generation. Arrangement of transportation schedules will aim to avoid peak hours of road usage to minimise heavy traffic through habitat areas. Traffic signs will be installed on all roads throughout construction areas depicting speed limits. For construction areas requiring night-time lighting, lights will be used only where necessary and will be directed toward the subject area and away from habitat areas where possible. Commitment will be made to raise awareness of the construction work force and make arrangements for restriction of poaching. | Appointed EPC Contractor | EHS Division of the Sponsor and on site Project Management team | Monthly report to the Sponsor | EPC Contractor Cost |
| 9.3 | Terrestrial and | Site Preparation and | Barrier to movement and | <ul style="list-style-type: none"> The Project shall implement landscaping and re-vegetation after completion of construction in | Appointed EPC | EHS Division of the Sponsor and on | Monthly report to | EPC |

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| | Marine Biodiversity | Construction activities | habitat fragmentation | <p>suitable areas to establish a suitable riparian corridor.</p> <ul style="list-style-type: none"> In-stream works will be carried out in low-flow conditions where possible. The transmission line will not be fenced. | Contractor | site Project Management team | the Sponsor | Contractor Cost |
| 9.4 | Terrestrial and Marine Biodiversity | Site Preparation and Construction activities | Edge effects | <ul style="list-style-type: none"> Dust suppression techniques will be utilised during construction, to control the dispersion of dust created by clearing lands at the construction sites. The Project shall implement landscaping and re-vegetation after completion of construction using native species where possible. To avoid/minimize releasing sediment load into the river, erosion control measures will be implemented and maintained e.g. using silt fence and temporary re-vegetation to minimize sediment transport from steep slope releasing to the river and smaller waterways. Weed and pest management measures should be implemented in accordance with a Project weed and pest management plan to avoid introduction of weeds to natural and modified habitat areas. | Appointed EPC Contractor | EHS Division of the Sponsor and on site Project Management team | Monthly report to the Sponsor | EPC Contractor Cost |
| 9.5 | Terrestrial and Marine Biodiversity | Site Preparation and Construction activities | Degradation of habitat | <ul style="list-style-type: none"> Construction and domestic waste will be appropriately stored and disposed of to avoid attracting native and alien species to the construction areas. For areas in direct runoff path to a watercourse, sediment and erosion control devices will be installed and maintained until vegetation replanting can occur to stabilise disturbed surfaces. Oil, chemical and solid waste will be stored, and handled and disposed of by appropriately licenced waste management contractors. Weed and pest management measures should be implemented in accordance with a Project weed and pest management plan to avoid introduction of weeds to natural and modified habitat areas. Speed limits to maximum of 20 km/hr for construction vehicles will be enforced to limit noise and dust generation. Construction materials and chemicals will be appropriately secured and locked down during flood season to avoid accidental release to the natural environment. Engineering works will be designed to comply with the agreed water quality standards; Water quality monitoring will begin as soon as possible after the Project begins, in order to control the quality of discharge water. Emergency response plan and procedures will be prepared and implemented for the construction activities of the Project. This will include emergency drills and education of Project workers. | Appointed EPC Contractor | EHS Division of the Sponsor and on site Project Management team | Monthly report to the Sponsor | EPC Contractor Cost |
| 9.6 | Terrestrial and Marine Biodiversity | Site Preparation and Construction activities | Fauna mortality | <ul style="list-style-type: none"> Speed limits to maximum of 20 km/hr for construction vehicles will be enforced to minimise potential for fauna strike. Commitment will be made to raise awareness of values of natural habitat areas to construction work force and arrangements will be made for restriction of poaching and forest product collection. Hunting wild animals will be strictly prohibited to apply for all staff. Fishing and using of illegal fishing gear anywhere along the river will be prohibited. | Appointed EPC Contractor | EHS Division of the Sponsor and on site Project Management team | Monthly report to the Sponsor | EPC Contractor Cost |
| 10.1 | Transportation | Transportation of personnel by road | Disturbance to existing road users through increase in road traffic | <ul style="list-style-type: none"> Accommodation for the migrant construction workforce and Sponsor personnel shall be provided in the vicinity of the Project site to minimise the distance travelled. Road safety initiatives will be implemented to minimise risks to other users, including: <ul style="list-style-type: none"> Emphasizing safety aspects among drivers, particularly with regard to safe driving speed of 20 km/hr; Ensuring that only licensed drivers are employed by the Project; Avoiding peak hours where possible; Regular maintenance of vehicles and use of manufacturer approved parts to minimize potentially serious accidents caused by equipment malfunction or premature failure; Driving and road safety procedure will be developed; and Coordination with emergency responders to ensure that appropriate first aid is provided in the event of accidents. | Appointed EPC Contractor | EHS Division of the Sponsor and on site Project Management team | Monthly report to the Sponsor | EPC Contractor Cost |
| 11.1 | Occupational Health and Safety | General construction activities | Health and safety of construction workforce | <ul style="list-style-type: none"> The Contractor will prepare and implement a Health and Safety Plan prior to commencing work. This plan will include method statements for work activities, plant utilisation, construction sequence and safety arrangements. <ul style="list-style-type: none"> Measures will be implemented to reduce the likelihood and consequence of the potential | Appointed EPC Contractor | EHS Division of the Sponsor and on site Project Management team | Monthly report to the Sponsor | EPC Contractor Cost |

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| | | | | <p>hazards. This shall include (but not limited to) the following hazards: falling from height;</p> <ul style="list-style-type: none"> o falling into water; o entanglement with machinery; o tripping over permanent obstacles or temporary obstructions; o slipping on greasy walkways; o falling objects; o asphyxiation; o explosion; o contact with dangerous substances; o electric shock; o variable weather conditions; o lifting excessive weights; and o traffic operations. <ul style="list-style-type: none"> • A Permit to Enter system will be established to ensure that only authorised persons gain entry to the site. • Competent and adequately resourced sub-contractors will be used where construction activities are to be sub-contracted. • All persons working on site will be provided information about risks on Site and arrangements will be made for workers to discuss health and safety with the Contractor. • The Contractor will prepare and implement a Health and Safety Plan prior to commencing work. This plan will include method statements for work activities, plant utilisation, construction sequence and safety arrangements. • All workers will be properly informed, consulted and trained on health and safety issues. • Personal Protective Equipment (PPE) shall be worn at all times on the Site. This shall include appropriate safety shoes, safety eyewear, and hard hats. Non-slip or studded boots will be worn to minimize the risk of slips. • Before starting work all the appropriate safety equipment and the first-aid kits will be assembled and checked as being in working order. Breathing apparatus will be tested at regular intervals in the manner specified by the manufacturer. • All lifting equipment and cranes will be tested and inspected regularly. All hoist ways will be guarded. • All scaffolding will be erected and inspected in conformity with the Factories Act (1951) and the appropriate records maintained by the Contractor. • Safety hoops or cages will be provided for ladders with a height in excess of two metres. • When there is a risk of drowning lifebelts shall be provided and it shall be ensured that personnel wear adequate buoyancy equipment or harness and safety lines, and that rescue personnel are present when work is proceeding (near the temporary jetty site). • All breathing apparatus, safety harnesses, life-lines, reviving apparatus and any other equipment provided for use in, or in connection with, entry into Confined Spaces, and for use in emergencies, will be properly maintained and thoroughly examined at least once a month, and after every occasion on which it has been used. • Where sound levels cannot be reduced at the source, suitable hearing protection will be provided when noise levels indicate a Leq of more than 85 dB(A). When hearing protection is used, arrangements will be made to ensure the wearers can be warned of other hazards. • The Contractor shall provide appropriate safety barriers with hazard warning signs attached around all exposed openings and excavations. | | | | |
| 11.2 | Occupational Health and Safety | Labour and working conditions | <ul style="list-style-type: none"> • Working conditions • Terms of employment • Child/ forced labour | <ul style="list-style-type: none"> • The EPC contractor will comply with the IFC Performance Standard 2 and ADB SPS, Safeguard Requirement 1: Environment for labour and working conditions. • Develop and monitor an internal standard to guide labour practices and apply this to supply chain to ensure that no child and/or forced labour will be employed by the EPC contractor and its sub-contractors. | Appointed EPC Contractor | EHS Division of the Sponsor and on site Project Management team | Monthly report to the Sponsor | EPC Contractor Cost |
| 11.3 | Occupational | Monitoring and review of | | <ul style="list-style-type: none"> • Daily monitoring and monthly review of near-misses, incidents, occupational diseases, dangerous | Appointed EPC | EHS Division of the Sponsor and on | Monthly report to | EPC |

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| | Health and Safety | accidents/ incidents due to construction activities; workers' health | | occurrences, accidents at project activity areas and construction workers camp, as per construction phase Health and Safety Plan, which will be prepared by the EPC contractor. | Contractor | site Project Management team | the Sponsor | Contractor Cost |
| 12.1 | Community Health | Influx of construction workers | Increased prevalence of disease | <ul style="list-style-type: none"> • Training for all workers on the transmission routes and common symptoms of communicable diseases. This can help reduce the potential for workers to unknowingly transmit communicable diseases. This may also help to increase knowledge within Project area villages – e.g. through the training of workers that have been sourced from the local villages. • Establish amenities at the camp to help minimize the interaction between the workforce (particularly temporary construction workers) and local villagers. This includes recreation facilities and health care infrastructure. • Establish a workforce code of conduct. Include in the code specific measures that target anti-social behaviour, such as becoming involved with commercial sex workers. • Undertake pre-employment screening to ensure fitness for work. It is important that the pre-screening process does not result in discrimination, but instead is used as a tool to minimize the transmission of communicable diseases. • Vector management procedures, including measures to reduce the presence of vector habitat and consideration of whether pesticides will be utilized to reduce the presence of vectors onsite. • Provision of onsite health care, to ensure that medical attention can be sought should a worker present with the symptoms of a communicable disease and facilities for workers to reside if ill. This will also help reduce the potential pressure on local health care facilities. • Emergency management procedures should a health issue escalate and require a rapid response. | Appointed EPC Contractor | EHS Division of the Sponsor and on site Project Management team | Monthly report to the Sponsor | EPC Contractor Cost |
| 13.1 | Community Safety and Security | Construction activities, construction material transportation | Community disturbance and potential safety hazard due to road traffic | <ul style="list-style-type: none"> • Develop and implement a traffic management plan. The plan should set out the measures to minimize the risks associated with transporting materials, goods, and workers to and from site. This includes fatigue management, busing workers to and from the Project site, and ensuring all employees observe recommended speed limits. • Ensure all employees complete training prior to driving any Project vehicle. The content of the training should be tailored to the employee's role. • Explore opportunities to work with local stakeholders to increase awareness within local villages about the hazards associated with traffic. • Provide appropriate training for security personnel and monitor implementation of the training over time (to minimize any potential use of excessive force). • Develop and implement waste management plan. The plan should set out procedures for appropriately managing and disposing of hazardous materials and other forms of waste. | Appointed EPC Contractor | EHS Division of the Sponsor and on site Project Management team | Monthly report to the Sponsor | EPC Contractor Cost |
| 13.2 | Community Safety and Security | | | <ul style="list-style-type: none"> • Monitoring and review of community disturbance and potential safety hazard due to road traffic as well as accidents, incidents and complaints around the project activity areas, based on occurrence. • Please refer to Table 18.2 for details. | Appointed EPC Contractor | EHS Division of the Sponsor and on site Project Management team | Monthly report to the Sponsor | EPC Contractor Cost |
| 14.1 | Community Infrastructure and services | | | <ul style="list-style-type: none"> • Develop and implement a social management plan. As part of this plan, Sembcorp will need to track in-migration. If in-migration occurs additional management measures will need to be established. As Sembcorp will have limited influence on in-migration, these measures will need to be developed in conjunction with local stakeholders (e.g. village representatives, government) so that there is a comprehensive response. • Provide appropriate amenities at the workforce accommodation camp – e.g. recreational opportunities. This will help reduce the need for workers to utilize local infrastructure and services; • Develop and implement a traffic management plan to minimize the impact experienced by road users as a result of the Project. • Develop and implement a social investment/ corporate social responsibility plan/ program. As part of the plan, Sembcorp should explore opportunities to enhance community infrastructure and services. • Develop and implement a community health management plan and an occupational health and safety plan. These plans will ensure that appropriate and adequate health care services are provided on site and at the accommodation camp to address/ manage worker illnesses and injuries. | Appointed EPC Contractor | EHS Division of the Sponsor and on site Project Management team | Monthly report to the Sponsor | EPC Contractor Cost |
| 15.1 | Employment and Economy | Construction activities | Employment Opportunities and opportunities for local | <ul style="list-style-type: none"> • Develop and implement a local content plan. The plan should establish measures to facilitate local recruitment and procurement. This should include targets so that performance can be tracked and | Appointed EPC Contractor | EHS Division of the Sponsor and on site Project Management team | Monthly report to the Sponsor | EPC Contractor |

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| | | | business | <p>evaluated. Development of the plan should involve consultation with relevant stakeholders, including government authorities and local villagers.</p> <ul style="list-style-type: none"> Review opportunities to establish a skills training program with an aim of training interested local villagers to contribute to the Project. Inform local villagers of job opportunities in a timely manner. Ensure that the advertising process is locally and culturally appropriate. Inform local businesses of contracting opportunities in a timely manner. Ensure that the process is locally and culturally appropriate. Develop an internal standard to guide labour practices, and apply this to the Project's supply chain. This should include development and implementation of an internal grievance mechanism for direct employees and contractors, and ongoing monitoring to ensure that the standard is consistently implemented across the Project. | | | | Cost |
| 16.1 | Social Network | Construction activities | Overall social impacts | <ul style="list-style-type: none"> Develop and implement a social management plan. As part of this plan, Sembcorp will need to track in-migration. If in-migration occurs additional management measures will need to be established. As Sembcorp will have limited influence on in-migration, these measures will need to be developed in conjunction with local stakeholders (e.g. village representatives, government) so that there is a comprehensive response. Develop and implement a workforce code of conduct that addresses issues such as anti-social behavior and drug and alcohol consumption. Provide an introduction for workers moving into the area (even temporarily) – so that workers understand local culture and customs. Develop and implement a local content plan. A key aspect should be providing local employment opportunities (to reduce the number of workers being brought into the local area from outside). | Appointed EPC Contractor | EHS Division of the Sponsor and on site Project Management team | Monthly report to the Sponsor | EPC Contractor Cost |
| 17.1 | Physical Cultural Resources | Construction activities | Damage to cultural resources | <ul style="list-style-type: none"> Develop a chance find procedure for managing cultural heritage, and implement this procedure if any cultural heritage is discovered during construction. | Appointed EPC Contractor | EHS Division of the Sponsor and on site Project Management team | Monthly report to the Sponsor | EPC Contractor Cost |
| 18.1 | Grievance | Public concerns | | <ul style="list-style-type: none"> Continuous monitoring and review of complaints received from neighbouring communities around the Project activity areas as per the grievance redress mechanism. | the Sponsor | the Sponsor | Monthly report to the Sponsor | EPC Contractor Cost |
| 19.1 | Displacement | Construction Activities | <ul style="list-style-type: none"> Loss of land (or access to land) Loss of crops Loss of housing and business or community structures Loss of community resources | <ul style="list-style-type: none"> Work with MEPE during the river water supply pipeline and 230kV overhead transmission line right of way land acquisition process, so that the process and outcome is consistent with IFC and ADB requirements; Establish plans based on a resettlement framework; and Consultation with stakeholders that may be impacted by the Project, to ensure that stakeholders are clear about the potential impacts and proposed mitigation measures. | the Sponsor | the Sponsor | Monthly report to the Sponsor | EPC Contractor Cost |
| 20.1 | General | Inspection of mitigation compliance | | <ul style="list-style-type: none"> Daily visual inspection of all active work areas within the project activity areas⁽¹⁾ and construction workers camp to ensure general compliance with mitigation measures presented in the ESMP and as specified in EPC Contractor Manual. | EHS Team of EPC Contractor | On site Project Management Team and Designated EHS team on site | Monthly report to the Sponsor | EPC Contractor Cost |

⁽¹⁾ Activity areas are defined as Project site, access road and gas/ water pipeline alignment.

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| Operation Phase | | | | | | | | |
| 1.1 | Air Quality | Stack emissions | Impact on ambient air quality | <ul style="list-style-type: none"> Two air emission stacks – main and by-pass stacks of 40m and 30m height respectively will be constructed - to disperse the air pollutants such that ground level concentration of air pollutants do not exceed the relevant standards in the IFC EHS Guidelines for Thermal Power Plant (2008) . Built-in dry low NOx burners to reduce NOx emission at stack to below 25ppm at all times. Monitor ambient air quality in and around the Project site as per the Environment Monitoring Program formulated for the Project. | Plant EHS Team and Operations | Designated Team comprising of representation from EHS and Operations | Relevant Records maintained. Monthly internal reports to top management and reports to regulatory authorities/lenders as required. | Plant O&M Cost |
| 1.2 | Air Quality* | Monitoring of emissions | | <ul style="list-style-type: none"> Continuous emission monitoring (CEM) systems will be installed common for both main stack and bypass stack for real-time data collection on emission status from the Plant to monitor emission concentrations of NOx as NO2, PM, SO2, O2, moisture content. Annual CEM validation for NOx, CO, PM2.5 and O2 at Main Stack and Bypass Stack by using standard methods. Monitor ambient air quality as per the Monitoring Programme formulated for the Project. Please refer to Table 18.2 for details. | Plant EHS Team and Operations | Designated Team comprising of representation from EHS and Operations | Relevant Records maintained. Monthly internal reports to top management and reports to regulatory authorities/lenders as required. | Installation of CEM systems included in EPC Cost Monitoring and maintenance in O&M cost |
| 2.1 | Greenhouse Gases | Plant emissions | GHG emissions from the plant may add to larger global warming issue | <ul style="list-style-type: none"> Implement CCGT power generation technology, which is an efficient form of power generation. Use natural gas as fuel to generate electricity, which provides more efficiency than coal because of higher operating temperatures. Conduct annual pollutant release inventory to monitor the GHG emissions from the Project. The GHGs emission shall be reported as CO2e unit. | Plant EHS Team and Operations | Designated Team comprising of representation from EHS and Operations | Relevant Records maintained. Monthly internal reports to senior management and reports to regulatory authorities/lenders as required. | Plant O&M Cost |
| 3.1 | Surface Water Quality* | Wastewater Discharges and Runoff | Impacts to surface water due to wastewater discharges during plant operation. | <ul style="list-style-type: none"> Install oil/water separators to treat surface run-off prior to discharge to the storm water system. Implement adequate sanitary facilities for onsite personnel. Liquid effluents arising from operations will be treated to the applicable IFC guideline prior to discharge. Design drainage pipes and culverts for the controlled release of storm flows. Wastewater collected from canteen kitchens, including that from basins, sinks and floor drains, should be discharged into sanitary sewers via grease traps. The sanitary sewer should then be treated prior to discharge or reuse as greywater. Conduct monitoring of temperature at the cooling water discharge point at a frequency of once every 15 days. Please refer to Table 18.2 for details. Implement discharge system shutdown in event that discharge temperature of effluent exceeds standard. Efforts to be made to increase the cycle of concentration to reduce the volume of blow down and consequently the volume of make-up water required by the cooling tower. Storm water drainage and wastewater will be treated in accordance to the applicable World Bank Group environmental requirements and World Bank/IFC guidelines. Additionally, where applicable (i.e. to irrigation canal), the Project will, as much as possible, control the effluent discharged to the irrigation canal to be below the “Severe” restriction on use according to the FAO Guidelines for Interpretations of Water Quality for Irrigation. Separated oil will be disposed of as part of oily wastes and handled as a hazardous waste stream. The treated de-oiled water will be discharged with the plant wastewater. The Project will study the possibility to transfer to cooling water basin and used as part of cooling water stream during detailed engineering. The sewage from the entire plant area will be collected and treated in a sewage treatment plant (STP). No untreated sewage will be directly discharged into the Ayeyarwady River or the irrigation canal near the site, or disposed of on land, for the duration of the project life cycle. The treated effluent will comply with IFC Guidelines before discharge outside the plant premises. In order to monitor STP performance, continuous evaluation and monitoring of discharge parameters will be undertaken at the outlet point of STP. The stormwater drainage system will be periodically inspected for blockages and cleaned at least | Plant EHS Team and Operations | Designated Team comprising of representation from EHS and Operations | Relevant Records maintained. Monthly internal reports to senior management and reports to regulatory authorities/lenders as required. | Plant O&M Cost |

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| | | | | <p>once before the monsoon season each year.</p> <ul style="list-style-type: none"> Operating personnel will be trained to visually inspect discharged water quality for oil and grease traces (that will be visible on the surface) periodically and take appropriate corrective actions. | | | | |
| 3.2 | Surface Water Quality | Waste Storage and Disposal | Impact to surface water contamination from inappropriate waste management. | <ul style="list-style-type: none"> Implement the same mitigation measures to minimize impacts to Waste Management (See 6.1). Provide training to all staff for waste disposal in designated areas and use of sanitation facilities. Segregate hazardous and non-hazardous waste and provide appropriate containers for the type of waste type (e.g. enclosed bins for putrescible materials to avoid attracting pests and vermin and to minimise odour nuisance). Store wastes in closed containers away from direct sunlight, wind and rain. Store waste systematically to allow inspection between containers to monitor leaks or spills. Ensure that storage areas have impermeable floors and containment, of capacity to accommodate 110% of the volume of the largest waste container. Dispose of waste by licensed contractors. | Plant EHS Team and Operations | Designated Team comprising of representation from EHS and Operations | Relevant Records maintained. Monthly internal reports to senior management and reports to regulatory authorities/lenders as required. | Plant O&M Cost |
| 3.3 | Surface Water Quality | Water Intake | <ul style="list-style-type: none"> Impact on downstream agricultural water users. Impact on downstream fishing activity having negative impact on fisherman's livelihood. | <ul style="list-style-type: none"> The Project commits to comply with following IFC EHS guideline measures or equivalent of them that are pertinent to river water intake systems: <ul style="list-style-type: none"> Reduction of intake flow to such a level that there is sufficient flow in the river to maintain resource use (i.e., irrigation and fisheries) as well as biodiversity during annual mean low flow conditions. | Plant EHS Team and Operations | Designated Team comprising of representation from EHS and Operations | Relevant Records maintained. Monthly internal reports to senior management and reports to regulatory authorities/lenders as required. | Plant O&M Cost |
| 3.4 | Surface Water Quality | Cooling Water Discharge | Surface water impacts from discharge of cooling water. | <ul style="list-style-type: none"> Comply with WBG/IFC EHS Guidelines for TPP regarding the cooling water discharge standards. Cooling water discharge will be regularly monitored for temperature at the outfall point. Monitor surface water quality in the irrigation canal per the Environment Monitoring Program formulated for the Project. | Plant EHS Team and Operations | Designated Team comprising of representation from EHS and Operations | Relevant Records maintained. Monthly internal reports to senior management and reports to regulatory authorities/lenders as required. | Incorporate the cooling water discharge requirements and installation appropriate system included in EPC Cost Monitoring and maintenance in O&M cost |
| 3.5 | Surface Water Quality | Increased Impervious Surfaces | Surface water impacts from altered hydrology due to an increase in impervious surfaces in the Project area. | <ul style="list-style-type: none"> Ensure that drainage channel or irrigation canal has enough capacity to accommodate the increased rainfall runoff from the Project's impervious surface. | the Sponsor | Designated Team comprising of representation from EHS and Operations | Relevant Records as required by regulatory authorities/ lenders | EPC Contractor Cost |
| 3.6 | Surface Water Quality | Accidental Spills and Leaks | Impacts to surface water due to contamination from accidental releases of hazardous substances such as fuels, oils or lubricants, as well as improper chemical/fuel storage. | <ul style="list-style-type: none"> To optimize use of antifouling and corrosion inhibiting chemicals, appropriate depth of water intake will be maintained, and use of screens will be ensured. Minimum required quantities of chlorinated biocides or alternatively intermittent shot dosing of chlorine will be practised rather than continuous low level feed. Waste storage areas will be equipped with secondary containment and spill control measures (similar to the hazardous material storage areas) to limit impact to ground. Liquid wastes such as waste oil, etc. will be collected and stored for recycling in cemented areas. All drainage/tanks, etc. will be positioned on concrete hard standing to prevent any seepage into ground. Disposal sites to be designed for hazardous and non-hazardous waste, including sludge disposal. Hazardous waste storage areas will comply with best practice/ international standards. Store and handle all hazardous substances in accordance with their MSDS. | Plant EHS Team and Operations | Designated Team comprising of representation from EHS and Operations | Relevant Records maintained. Monthly internal reports to senior management and reports to regulatory authorities/lenders as required. | Plant O&M Cost |

| S. No. | Project Stage/ Affected Aspect | Project Activity and affected area | Potential Impacts | Proposed Mitigation Measures (if applicable) | Responsibility for Mitigation Implementation | Responsibility for supervision of mitigation implementation | Reporting Requirements | Mitigation Cost Source |
|--------|-----------------------------------|---|--|--|--|--|---|--|
| | | | | <ul style="list-style-type: none"> Keep a register for all hazardous substances on site and relevant Material Safety Data Sheets (MSDSs) readily accessible for reference. Fuel tanks and chemical storage areas will be sited on sealed areas and provided with locks to prevent unauthorized entry. Use of spill or drip trays to contain spills and leaks. Use of spill control kits to contain and clean small spills and leaks. The storage areas for oil, fuel and chemicals will be surrounded by bunds or other containment devices to prevent spilled oil, fuel and chemicals from percolating into the ground or reaching the receiving waters. Provide enough space to allow for inspection between waste containers so as to identify any leaks or spills. Ensure storage areas have impermeable floor and containment, of capacity to accommodate 110% of the volume of the largest waste container. Oil-contaminated water will be collected and handled by local licensed wastewater sub-contractors (if available, to be determined at a later stage) Guidelines and procedures should be established for immediate clean up actions following any spillages of oil, fuel or chemicals. As part of the facility-wide HSEMS, SOPs will be prepared to manage any oil spills, leaks and/or seepages. SOPs will cover transport, handling, storage, use and disposal of oil/ oil wastes/ empty drums etc. Operating personnel will be trained on the SOPs and monitored in their use on a daily basis. Acids and other hazardous materials will be stored in a dedicated room as per their MSDS specifications with adequate ventilation. The spill prevention and response guidance of the General IFC EHS Guidelines (2007) will be followed and implemented. | | | | |
| 3.7 | Surface Water Quality* | Monitoring of surface water quality | | <ul style="list-style-type: none"> Conduct monitoring of temperature at the cooling water discharge point at a frequency of once every 15 days. In order to monitor STP performance, continuous evaluation and monitoring of discharge parameters will be undertaken at the outlet point of STP. Cooling water discharge will be regularly monitored for temperature at the outfall point. Monitor surface water quality at the wastewater discharge point as per the Environment Monitoring Program formulated for the Project. | Plant EHS Team and Operations | Designated Team comprising of representation from EHS and Operations | Relevant Records maintained. Monthly internal reports to senior management and reports to regulatory authorities/lenders as required. | Plant O&M Cost |
| 4.1 | Noise* | Operation of fixed plant and machinery during operational phase | Increase in ambient noise levels | <ul style="list-style-type: none"> Select quieter equipment. Install silencers, mufflers or acoustic enclosures to reduce sound power level of noisy equipment at all times. Installing acoustic enclosures or other applicable control measures to ensure a maximum of 85 dB(A) at 1m away from the noise emitting equipment; Re-locate noise sources to less sensitive areas to take advantage of distance and shielding; Site permanent facilities away from community areas if possible. Take advantage of the natural topography as a noise buffer during facility design. | Plant EHS Team and Operations | Designated Team comprising of representation from EHS and Operations | Relevant Records maintained. Monthly internal reports to senior management and reports to regulatory authorities/lenders as required. | Installation of appropriate equipment included in EPC Cost Monitoring and maintenance in O&M cost |
| 5.1 | Landscape and Visual | Presence of the Project and Operation activities | Visual impacts during the operations phase | <ul style="list-style-type: none"> No further mitigation required. | | | | |
| 6.1 | Waste | Solid Waste Generation, Storage and Disposal | <p>Impacts to community and worker health and safety due to contamination of drinking water or food</p> <p>Accidental leaks or spills of oil, fuel or other hazardous materials could potentially pollute surface waters</p> | <ul style="list-style-type: none"> Waste collection and storage measures will be implemented. Prior to construction commencing, the Sponsor is to engage with local authorities and other stakeholders (such as the Steel Mill) to determine the capacity of the local waste management network to absorb the new waste streams during construction. A waste management plan is to be developed which includes specific requirements to manage, avoid, reduce and reuse waste during the construction phase for all of the waste streams identified. Education of all workers on site shall be undertaken to avoid, reduce and reuse wastes generated. Waste disposal facilities shall be sited and signposted throughout the site. Waste clean-up measures are to be undertaken on at least a fortnightly basis to collect any waste | Plant EHS Team and Operations | Designated Team comprising of representation from EHS and Operations | Relevant Records maintained. Monthly internal reports to senior management and reports to regulatory authorities/lenders as required. | Plant O&M Cost |

| S. No. | Project Stage/ Affected Aspect | Project Activity and affected area | Potential Impacts | Proposed Mitigation Measures (if applicable) | Responsibility for Mitigation Implementation | Responsibility for supervision of mitigation implementation | Reporting Requirements | Mitigation Cost Source |
|--------|-------------------------------------|---------------------------------------|---|--|--|--|---|---------------------------|
| | | | Soil may be contaminated by pollution from spills or leaks of fuel, oil and other hazardous liquid wastes which are incorrectly stored. | <ul style="list-style-type: none"> or unused materials from the construction site. All waste collected should be managed and disposed of in accordance with the required regulations. Contractors employed to manage the waste should clearly identify within their bidding documents how the collected waste will be managed. All end points for collected waste are to be inspected and audited and noted to be developed such that all waste is able to be disposed of in an environmental responsible manner and in accordance with all prevailing regulations. Monitoring of appointed waste contractors using chain-of custody documentation for the disposal of waste to ensure that it is able to be disposed of in an environmental responsible manner and in accordance with all prevailing regulations. The appointed waste contractor shall report on an annual basis on any cross-boundary transport of waste. | | | | |
| 7.1 | Soil* | | | <ul style="list-style-type: none"> Monitoring of soil quality in the event of any leakage or spillage of hazardous substances, with the parameters to be sampled based upon the likely chemical compositions of the material. Locations, parameters and frequency to be defined on a case by case basis. The measures outlined for management of spills and leaks during the construction phase are to be directly carried across into the operations phase (as appropriate) and embodied within the following plans: <ul style="list-style-type: none"> Hazardous Materials Management Plan. Hazardous Waste Management Plan. Emergency Response Plan. Guidelines and Procedures are to be developed specifically in relation to spills and leaks management and clean-up. To minimise use of antifouling and corrosion inhibiting chemicals, appropriate depth of water intake will be maintained, and use of screens will be ensured. Minimum required quantities of chlorinated biocides or alternatively intermittent shot dosing of chlorine will be practised rather than continuous low level feed. All drainage/tanks, etc. will be positioned on concrete hard standing to prevent any seepage into ground. As part of the facility-wide HSEMS, SOPs will be prepared to manage any oil spills, leaks and/or seepages. SOPs will cover transport, handling, storage, use and disposal of oil/ oil wastes/ empty drums etc. Operating personnel will be trained on the SOPs and monitored in their use on a daily basis. Acids and other hazardous materials will be stored in a dedicated room as per their MSDS specifications with adequate ventilation. | Plant EHS Team and Operations | Designated Team comprising of representation from EHS and Operations | Relevant Records maintained. Monthly internal reports to senior management and reports to regulatory authorities/lenders as required. | Plant O&M Cost |
| 8.1 | Groundwater* | | | <ul style="list-style-type: none"> See 7.1 A groundwater monitoring plan (including groundwater wells installed at strategic locations) is to be developed and implemented through the life of the Project to detect any changes in groundwater quality that may be contributed to spills and leaks from the Project. | Plant EHS Team and Operations | Designated Team comprising of representation from EHS and Operations | Relevant Records maintained. Monthly internal reports to senior management and reports to regulatory authorities/lenders as required. | Plant O&M Cost |
| 9.1 | Terrestrial and Marine Biodiversity | Plant Operations | Disturbance to fauna behaviour | <ul style="list-style-type: none"> Vehicles and machinery will be maintained in accordance with industry standard to minimise unnecessary noise generation. For areas requiring night-time lighting, lights will be used only where necessary and will be directed toward the subject area and away from habitat areas where possible. Speed limits to maximum of 20 km/hr for vehicles will be enforced to minimise potential for fauna strike. | Plant EHS Team and Operations | Designated Team comprising of representation from EHS /Operations | Relevant Records maintained and internal report to senior management. | Plant O&M Cost |
| 9.2 | Terrestrial and Marine Biodiversity | Plant operations | Fauna mortality | <ul style="list-style-type: none"> Commitment will be made to raise awareness of values of natural habitat areas and arrangements will be made for restriction of poaching and forest product collection. Hunting wild animals will be strictly prohibited to apply for all staff. and Fishing and using of illegal fishing gear anywhere along the river will be prohibited. | Plant EHS Team and Operations | Designated Team comprising of representation from EHS /Operations | Relevant Records maintained and monthly internal report to senior management and report to regulatory authorities as required. | Plant O&M Cost |

| S. No. | Project Stage/ Affected Aspect | Project Activity and affected area | Potential Impacts | Proposed Mitigation Measures (if applicable) | Responsibility for Mitigation Implementation | Responsibility for supervision of mitigation implementation | Reporting Requirements | Mitigation Cost Source |
|--------|--|---------------------------------------|---|---|--|--|--|---------------------------|
| 10.1 | Labour Welfare -Occupational Health and Safety | Plant operations | <ul style="list-style-type: none"> The health and safety impacts particular to operation of the power plant include the following: <ul style="list-style-type: none"> Non-ionizing radiation Heat Noise Confined spaces Electrical hazards Fire and explosion hazards Chemical hazards Exposure to fugitive emissions of natural gas and VOCs at diesel/oil storage areas | <ul style="list-style-type: none"> Comply with Occupational health and safety guidelines presented in Section 2.0 of the General EHS Guidelines published by IFC. Comply with Occupational health and safety guidelines presented in Section 1.2 of the EHS Guidelines for Thermal Power Plants published by IFC for the health and safety impacts particular to operation of combined cycle power plants. | Plant EHS Team | Designated Team comprising of representation from EHS /Operations | Relevant Records maintained and monthly internal report to senior management. | Plant O&M Cost |
| 10.2 | Labour Welfare -Occupational Health and Safety | Labour and working conditions | <ul style="list-style-type: none"> Working conditions Terms of employment Child/ forced labour | <ul style="list-style-type: none"> The management system will comply with the IFC Performance Standard 2 for labour and working conditions and the same will be implemented during the operation phase. Develop and monitor an internal standard to guide labour practices and apply this to supply chain to ensure that no child and/or forced labour will be employed during operation phase. | The Sponsor/Plant Management/Plant EHS Team | Designated Team comprising of representation from relevant departments as Administration and HR. | Relevant Records maintained. Monthly internal reports to top management and reporting to regulatory authorities/lenders as required. | Plant O&M Cost |
| 11.1 | Community Health | Plant operations | Increased prevalence of disease | <ul style="list-style-type: none"> Training for all workers on the transmission routes and common symptoms of communicable diseases. This can help reduce the potential for workers to unknowingly transmit communicable diseases. This may also help to increase knowledge within Project area villages – e.g. through the training of workers that have been sourced from the local villages. Establish amenities at the camp to help minimize the interaction between the workforce (particularly temporary construction workers) and local villagers. This includes recreation facilities and health care infrastructure. Establish a workforce code of conduct. Include in the code specific measures that target anti-social behaviour, such as becoming involved with commercial sex workers. Undertake pre-employment screening to ensure fitness for work. It is important that the pre-screening process does not result in discrimination, but instead is used as a tool to minimize the transmission of communicable diseases. Vector management procedures, including measures to reduce the presence of vector habitat and consideration of whether pesticides will be utilized to reduce the presence of vectors onsite. Provision of onsite health care and medical facility, to ensure that basic medical and first aid treatment can be sought for all hours during which activity is taking place on the work site. This will also help reduce the potential pressure on local health care facilities. Emergency management procedures should a health issue escalate and require a rapid response. | The Sponsor/Plant Management/Plant EHS Team | Designated Team comprising of representation from relevant departments as Administration and HR. | Relevant Records maintained. Monthly internal reports to top management and reporting to regulatory authorities/lenders as required. | Plant O&M Cost |
| 12.1 | Community Safety and Security | Plant operations | Community disturbance and potential safety hazard due to road traffic | <ul style="list-style-type: none"> Develop and implement a traffic management plan. The plan should set out the measures to minimize the risks associated with transporting materials, goods, and workers to and from site. This includes fatigue management, busing workers to and from the Project site, and ensuring all employees observe recommended speed limits. Ensure all employees complete training prior to driving any Project vehicle. The content of the training should be tailored to the employee's role. Explore opportunities to work with local stakeholders to increase awareness within local villages | The Sponsor/Plant Management/Plant EHS Team | Designated Team comprising of representation from relevant departments as Administration and HR. | Relevant Records maintained. Monthly internal reports to top management and reporting to regulatory authorities/lenders | Plant O&M Cost |

| S. No. | Project Stage/ Affected Aspect | Project Activity and affected area | Potential Impacts | Proposed Mitigation Measures (if applicable) | Responsibility for Mitigation Implementation | Responsibility for supervision of mitigation implementation | Reporting Requirements | Mitigation Cost Source |
|--------|---------------------------------------|---------------------------------------|---|--|--|--|--|---------------------------|
| | | | | <p>about the hazards associated with traffic.</p> <ul style="list-style-type: none"> Provide appropriate training for security personnel and monitor implementation of the training over time (to minimize any potential use of excessive force). Develop and implement waste management plan. The plan should set out procedures for appropriately managing and disposing of hazardous materials and other forms of waste. | | | as required. | |
| 12.2 | Community Safety and Security | Plant operations | | <ul style="list-style-type: none"> Monitoring and review of community disturbance and potential safety hazard due to road traffic as well as accidents, incidents and complaints around the Project activity areas, based on occurrence. Please refer to Table 18.2 for details. | The Sponsor/Plant Management/Plant EHS Team | Designated Team comprising of representation from relevant departments as Administration and HR. | Relevant Records maintained. Monthly internal reports to top management and reporting to regulatory authorities/lenders as required. | Plant O&M Cost |
| 13.1 | Community Infrastructure and services | Plant operations | | <ul style="list-style-type: none"> Develop and implement a social management plan. As part of this plan, Sembcorp will need to track in-migration. If in-migration occurs additional management measures will need to be established. As Sembcorp will have limited influence on in-migration, these measures will need to be developed in conjunction with local stakeholders (e.g. village representatives, government) so that there is a comprehensive response. Provide appropriate amenities at the workforce accommodation camp – e.g. recreational opportunities. This will help reduce the need for workers to utilize local infrastructure and services. Develop and implement a traffic management plan to minimize the impact experienced by road users as a result of the Project. Develop and implement a social investment/ corporate social responsibility plan/ program. As part of the plan, Sembcorp should explore opportunities to enhance community infrastructure and services. Develop and implement a community health management plan and an occupational health and safety plan. These plans will ensure that appropriate and adequate health care services are provided on site and at the accommodation camp to address/ manage worker illnesses and injuries. | The Sponsor /Plant Management/Plant EHS Team | Designated Team comprising of representation from relevant departments as Administration and HR. | Relevant Records maintained. Monthly internal reports to top management and reporting to regulatory authorities/lenders as required. | Plant O&M Cost |
| 14.1 | Employment and Economy | Plant operations | Employment Opportunities and opportunities for local business | <ul style="list-style-type: none"> Develop and implement a local content plan. The plan should establish measures to facilitate local recruitment and procurement. This should include targets so that performance can be tracked and evaluated. Development of the plan should involve consultation with relevant stakeholders, including government authorities and local villagers. Review opportunities to establish a skills training program with an aim of training interested local villagers to contribute to the Project. Inform local villagers of job opportunities in a timely manner. Ensure that the advertising process is locally and culturally appropriate. Inform local businesses of contracting opportunities in a timely manner. Ensure that the process is locally and culturally appropriate. Develop an internal standard to guide labour practices, and apply this to the Project's supply chain. This should include development and implementation of an internal grievance mechanism for direct employees and contractors, and ongoing monitoring to ensure that the standard is consistently implemented across the Project. | The Sponsor/Plant Management/Plant EHS Team | Designated Team comprising of representation from relevant departments as Administration and HR. | Relevant Records maintained. Monthly internal reports to top management and reporting to regulatory authorities/lenders as required. | Plant O&M Cost |
| 15.1 | Social Network | Plant operations | Overall social impacts | <ul style="list-style-type: none"> Develop and implement a workforce code of conduct that addresses issues such as anti-social behavior and drug and alcohol consumption. Provide an introduction for workers moving into the area (even temporarily) – so that workers understand local culture and customs. Develop and implement a local content plan. A key aspect should be providing local employment opportunities (to reduce the number of workers being brought into the local area from outside). | The Sponsor/Plant Management/Plant EHS Team | Designated Team comprising of representation from relevant departments as Administration and HR. | Relevant Records maintained. Monthly internal reports to top management and reporting to regulatory authorities/lenders as required. | Plant O&M Cost |
| 16.1 | Physical Cultural Resources | Operational activities | Impact on cultural heritage | <ul style="list-style-type: none"> Develop a chance find procedure for managing cultural heritage, and implement this procedure if | Plant EHS Team | Designated Team comprising of representation from EHS | Relevant Records maintained and | Plant O&M Cost |

| S. No. | Project Stage/ Affected Aspect | Project Activity and affected area | Potential Impacts | Proposed Mitigation Measures (if applicable) | Responsibility for Mitigation Implementation | Responsibility for supervision of mitigation implementation | Reporting Requirements | Mitigation Cost Source |
|--------|--|---------------------------------------|--|--|--|---|---|--|
| | | | | <p>any cultural heritage is discovered.</p> <ul style="list-style-type: none"> Project commits, in line with IFC PS 8 objectives, to protect cultural heritage from the adverse impacts of project activities and support its preservation and to promote the equitable sharing of benefits from the use of cultural heritage. | | /HR/Administration | internal report to senior management. | |
| 17.1 | Displacement | Construction Activities | <ul style="list-style-type: none"> Loss of land (or access to land) Loss of crops Loss of housing and business or community structures Loss of community resources | <ul style="list-style-type: none"> Work with MEPE during the river water supply pipeline and 230kV overhead transmission line right of way land acquisition process, so that the process and outcome is consistent with IFC and ADB requirements; Establish plans based on a resettlement framework; and Consultation with stakeholders that may be impacted by the Project, to ensure that stakeholders are clear about the potential impacts and proposed mitigation measures. | MEPE | the Sponsor | Monthly report to the Sponsor | MEPE |
| 18.1 | General | Inspection of mitigation compliance | | <ul style="list-style-type: none"> Daily visual inspection of all active work areas within the Project activity areas⁽¹⁾ and construction workers camp to ensure general compliance with mitigation measures presented in the ESMP and operational manual | Plant EHS Team | Designated Team comprising of representation from EHS /HR/Administration/logistics | Relevant Records maintained and internal report to senior management. | Included in operation and maintenance (O&M) cost |
| 19.1 | Community Health and Safety and Risk of Industrial Accidents, Fire related accidents from gas leakage or transfer of HSD | Project Operation Phase | <ul style="list-style-type: none"> Conflict with community Management & labour relation | <ul style="list-style-type: none"> Developing a Risk and Disaster Management Plan (RDMP) to charter proper protocol to be followed in the event of a disaster in order to limit the impact on the local community. Disclose potential disasters and potential risks from the plant to the local community as well as the plan of action on emergency protocol in the event of these accidents. Disclose and generate awareness on the RDMP as well the measures and protocols prescribed by the same. Train employees and plant personnel on health and safety as well as handling and managing disasters and emergency events. Maintain harmonious relation with community and create a feedback system. Maintain sound labour and management relation to avoid conflict and disruption in operation. | Plant Management | Designated Team comprising of representation from EHS /HR/Administration/Emergency Management | Relevant Records maintained and internal report to senior management. | Plant O&M Cost |

⁽¹⁾ Activity areas are defined as Project site, access road and gas/ water pipeline alignment.

* Criteria for Air Quality, Noise, Surface Water, Groundwater and Soil monitoring is included in Annex K for reference.

Table 18.2 Environmental and Social Monitoring Programme (Construction and Operation Phase)

| Project Stage/ Affected Component | Potential Impact | Parameters to be Monitored | Location | Measurements | Frequency | Responsibility | Cost |
|--|-------------------------------------|---|---|--|--|--|---------------------|
| Site Preparation and Construction Phase | | | | | | | |
| General | Inspection of mitigation compliance | General compliance with mitigation measures presented in the ESMP and as specified in EPC Contractor Manual | Project activity areas ⁽¹⁾ and construction workers camp | Visual inspection of all active work areas | Daily | EHS Team of EPC Contractor | EPC Contractor Cost |
| Noise | Increase in ambient noise levels* | Noise levels in Leq, Leq day, Leq night and hourly Leq | Identified NSRs within 500 m from the Project boundary | 24-hour | Quarterly | EPC Contractor | EPC Contractor Cost |
| | Workers Health* | Noise levels in Leq | Identified location within the construction area | 24-hour | Monthly | EPC Contractor | EPC Contractor Cost |
| Soil | Contamination of soil* | pH, salinity, NH ₄ ⁺ , total P, heavy metals, oil & grease | Construction site or laydown area or spill area | Standard analytical methods** | In the event of any leakage or spillage of hazardous substances, oil, or toxic chemicals | 3 rd Party Environmental Consultant | EPC Contractor Cost |
| Surface Water | Contamination of surface water* | Turbidity, pH, DO, TSS, Total dissolved solids, oil & grease, total coliform, heavy metals | Ayeyarwady River (upstream and downstream) and Nyaung Hla Jetty | Standard analytical methods** | Half Yearly | EPC Contractor | EPC Contractor Cost |

⁽¹⁾ Activity areas are defined as Project site, access road and gas/ water pipeline alignment.

| Project Stage/ Affected Component | Potential Impact | Parameters to be Monitored | Location | Measurements | Frequency | Responsibility | Cost |
|-----------------------------------|--|--|--|--|--|--|---------------------------------------|
| Groundwater | Groundwater availability due to abstraction | Quantity of groundwater abstracted and associated draw down | Tube well used during construction | Standard analytical methods** | Monthly | EPC Contractor | EPC Contractor Cost |
| Soil | Soil quality* | Monitoring of soil quality in the event of any leakage or spillage of hazardous substances, with the parameters to be sampled based upon the likely chemical compositions of the material. | Locations, to be defined on a case by case basis. | Standard analytical methods** | Frequency to be defined on a case by case basis. | 3 rd Party Environmental Consultant | EPC Contractor Cost |
| Occupational Health and Safety | Accidents or incidents due to construction activities, workers' health | Near-misses, incidents, occupational diseases, dangerous occurrences | Project activity areas and construction workers camp | As defined in construction phase Health & Safety Plan to be prepared by EPC contractor | As defined in H&S Plan | EHS Team of EPC Contractor | EPC Contractor Cost |
| Community Health and Safety | Community disturbance and potential safety hazard due to road traffic | Accidents, incidents and complaints | Access Road connecting site | Incidents, accidents and community complaints | Based on occurrence | EHS and/or Community Liaison Officer of EPC Contractor | EPC Contractor Cost |
| | Public concerns | Complaints from community | Neighbouring communities around the Project activity areas | As per the grievance redress mechanism | Continuous | Project Company | EPC Contractor Cost |
| Operation Phase | | | | | | | |
| General | Inspection of mitigation | General compliance with mitigation | Project activity areas | Visual inspection of all active work areas | Daily | Plant EHS Team | Included in operation and maintenance |

| Project Stage/ Affected Component | Potential Impact | Parameters to be Monitored | Location | Measurements | Frequency | Responsibility | Cost |
|-----------------------------------|-----------------------------------|--|---|--|--|----------------|---|
| | compliance | measures presented in the ESMP and operational manual | | | | | (O&M) cost |
| Air Emissions | Stack emissions* | NOx as NO ₂ , PM, SO ₂ , O ₂ , moisture content | Main stack and by-pass stack | CEMS Annual stack emission test : following USEPA method or equivalent | Continuous and Annually | Plant EHS Team | Installation included in EPC Cost Monitoring and maintenance in O&M cost |
| Air Emissions | Ambient air quality* | <ul style="list-style-type: none"> 1-hour and 24-hour averaged NO₂ and SO₂ 24-hour averaged PM, PM10 and PM2.5 | <ul style="list-style-type: none"> One village house at Hnan Ywa village (ASR3) One village house at Sa Ka village (ASR4) One village house at Gyoke Pin village (ASR5) One village house at Nyaung Kan village (ASR14) | Method published by International Organization for Standardization, or USEPA or European Committee for Standardization or equivalent | Monthly (year 1 – first 3 months of operation) Quarterly (year 1 – after first 3 months) ¹ | Plant EHS Team | O&M Cost |
| GHG Emissions | Climate change | GHG generation | Plant control room | Natural gas consumption Pollutant release inventory | Annually | Plant EHS Team | No cost |
| Noise | Increase in ambient noise levels* | Noise levels in Leq, Leq day, Leq night and hourly Leq | Identified NSRs within 500 m from the Project boundary | 24-hour | Quarterly | Plant EHS team | O&M Cost |
| | Workers Health* | Noise levels in Leq | Identified location within the construction area | 24-hour | Monthly | Plant EHS team | O&M Cost |

¹ As outlined in the IFC EHS Guidelines for Thermal Power Plants (2008), the effectiveness of the ambient air quality monitoring program should be reviewed regularly. If compliance is shown from the monitoring in year 1 monitoring may be stopped in year 2.

| Project Stage/ Affected Component | Potential Impact | Parameters to be Monitored | Location | Measurements | Frequency | Responsibility | Cost |
|-----------------------------------|---|--|--|--|-------------------------------------|--|----------|
| Surface Water | Surface Water Quality* | Temperature | At cooling water discharge point | Standard analytical method** | Bi-weekly | Plant EHS Team | O&M Cost |
| | Surface Water Quality* | Turbidity, pH, DO, TSS, Total dissolved solids, oil & grease, total coliform, heavy metals, salinity, conductivity, sodium, chloride, boron, and nitrogen. | At wastewater discharge point | Standard analytical method** | Quarterly | Plant EHS team | O&M Cost |
| Soil | Soil and Sediment Contamination* | pH, salinity, NH ₄ ⁺ , total P, heavy metals, oil & grease, TSS | Accidental spillage area, waste storage area, and Ayeyarwady River | Standard analytical methods** | Half Yearly | 3 rd Party Environmental Consultant | O&M Cost |
| Waste | Soil and Groundwater contamination | Monitoring of waste segregation, transportation and disposal | Project activity areas, disposal site. | As to be defined in the Waste Management Plan to be prepared for the Project | As defined in Waste Management Plan | Plant EHS Team | O&M Cost |
| | Inappropriate waste disposal by waste contractor | Monitoring of appointed waste contractors using chain-of custody documentation | Project site Waste contractor documentation | Chain of custody documentation | As defined in Waste Management Plan | Plant EHS Team | O&M Cost |
| Occupational Health and Safety | Accidents or incidents due to operation and maintenance activities, workers' health | Near-misses, incidents, occupational diseases, dangerous occurrences | Project activity areas | As to be defined in the H&S Plan to be prepared for the Project | As defined in H&S Plan | Plant EHS Team | O&M Cost |
| Community Health and Safety | Community disturbance and potential safety | Accidents, incidents and complaints | Access Road | Incidents, accidents and community complaints | Based on occurrence | EHS and/or Community Liaison Officer of the | O&M Cost |

| Project Stage/ Affected Component | Potential Impact | Parameters to be Monitored | Location | Measurements | Frequency | Responsibility | Cost |
|-----------------------------------|---|---|--|--|-------------------------|--|------------|
| | hazard due to road traffic | | | | | Sponsor | |
| | Discharge of effluent and cooling water | Accidents, incidents and complaints | Adjoining Channel | Incidents, accidents and community complaints | Based on occurrence | EHS and/or Community Liaison Officer of the Sponsor | O&M Cost |
| | Public concerns | Complaints from community | Neighbouring communities around the Project activity areas | As per the grievance redress mechanism | Continuous | Community Liaison Officer of the Sponsor and Plant Manager | O&M Cost |
| CSR Activities | Community Development | Activities/ Programmes and No. of beneficiaries | Local communities around the Project activity areas | No. of beneficiaries and outcome of the activities | Periodic and need based | Admin/ HR Manager and Plant Manager | CSR Budget |

* Criteria for Air Quality, Noise, Surface Water, Groundwater and Soil monitoring is included in Annex K for reference.

** Standard analytical methods for Air Quality, Noise, Surface Water, Groundwater and Soil monitoring are included in Annex L for reference.

The ESMP will be included in the construction contract and the contractor will be responsible for implementation of the measures associated with design and construction. The Sponsor's staff, specifically the EHS Officer and Site Engineer, will monitor the implementation of these mitigation measures by the contractors at the site. These officers will be responsible for the field level monitoring of the Project.

The roles and responsibilities of the Sponsor and EPC Contractor for implementation and monitoring have been outlined in **Table 18.3**.

Table 18.3 Roles and Responsibilities of Sponsor and EPC Contractor

| Sponsor | EPC Contractor |
|--|--|
| Obtaining statutory clearances required during pre-construction stage of the Project | Obtaining permits required during the construction stage |
| Overall Project co-ordination and management through EPC Contractor and supported by the third party environmental consultants | Joint verification with Sponsor and Third Party Environmental Consultant for review of ESMP implementation |
| Interaction and reporting to the respective department of GOM | Interaction with Sponsor and appointed supervision consultant, if any |
| Interaction and reporting to lenders | Filling of reporting formats as per the reporting schedule and submission to Sponsor |
| Effective implementation of ESMP and monitoring of ESMP implementation | Environmental monitoring through Third Party Environmental Laboratory |
| Carryout verification/ supervision exercises during the construction phase of the Project for implementation of ESMP | Preparation of various plans for effective implementation of ESMP by the Sponsor |
| Keeping records of all permits obtained by EPC Contractor | Identification of site for labour camp, batch mix plant, laydown areas |
| Overall supervision of ESMP implementation | Management of labour camp and to provide drinking water, sanitation facility |
| Approval of plans prepared by EPC Contractor | |
| Addressing grievances of local community and information dissemination | |
| Environmental monitoring through laboratory | |

While the contractor or a particular party is responsible for physical implementation of the mitigating measures, the whole implementation process requires supervision, checking, documentation and verification so that problems are identified and properly addressed before they get out of hand. In order to ensure proper execution of the ESMP, implementation reviews will be conducted by the Project engineer such as the weekly construction meetings, construction log book, monthly and other construction reports etc. Records of these minutes of the weekly meeting, monthly reports and special reports on implementation of the mitigating measures will also be maintained and available for review by the Project management. It is suggested to identify documents and records that require templates and accordingly suitable templates shall be developed, which shall include but not limited to policies, procedures and work instructions, meeting minutes, monitoring results, training attendance records, emergency contract lists, action plans etc. Further, all these

templates shall be communicated to all potential users. All these records will be archived at the Project office and will be maintained by the EHS officer. All documents and records shall be archived with a unique identifier so that they can be distinguished from any other material and can be easily retrieved. The Sponsor will document the process for creating, allocating and approving unique identifiers and will communicate this to relevant staff.

18.6.2 Operation Phase

During Operation Phase, the Sponsor, especially the EHS team and operation team will be fully responsible for implementation of the ESMP. The Sponsor's staff, specifically the EHS Officer and Plant Engineer, will monitor the implementation of these mitigation measures.

18.7 TRAINING

18.7.1 Construction Phase

Prior to commencement of major civil works at site, a suitably qualified in-house/ external expert will be appointed by the EPC contractor in consultation with the Sponsor to develop and deliver a training program on implementation of the ESMP, monitoring and reporting will be conducted in line with the applicable reference framework for the Project. The training will include the following topics:

- Environment, Health and Safety Policy of the EPC contractor;
- Environment and fundamentals of environmental pollution in relation to the Project;
- EHS management plans prepared by the EPC Contractor;
- Do's and Don'ts for the construction workers;
- Safety procedures and guidelines;
- Internal reporting and response system;
- Hazardous chemicals and waste handling;

In addition, specific training will be provided to the team involved in environmental and social monitoring and reporting, which will include:

- Applicable environmental and social guidelines and standards;
- Sampling site selection guidelines in line with environmental monitoring plan;
- Sample collection, storage, transportation and analysis procedures;
- Solid and hazardous waste management;
- Quality assurance and quality control;
- Environmental monitoring report preparation

The training will help in capacity building and implementation of the ESMP during the construction phase of the Project. It will also help in ensuring internal and external monitoring and verification of the environmental and social performance of the Project. The timeframe for reporting and verification during the construction phase will be agreed between the Sponsor, the relevant authorities and the Lenders.

18.7.2 *Operation Phase*

Prior to the commencement of the Plant operation, a suitably qualified in-house/ external environmental expert will be engaged by the Sponsor to develop and deliver a training program on operation phase environmental and social monitoring and reporting. The topics will be mostly same as that during the construction phase. However, it will also include following modules, which are specific to the operation phase:

- Continuous emission monitoring;
- Hazardous chemicals and waste management;
- Occupational health and safety programs;

The training will help in capacity building and implementation of the ESMP during the operation phase of the Project. It will also help in ensuring internal and external monitoring and verification of the environmental and social performance of the Project. The timeframe for reporting and verification during the construction phase will be agreed between the Sponsor, the relevant authorities and the Lenders.

18.8 *PLANS FOR CONSTRUCTION AND OPERATION PHASE OF THE PROJECT*

18.8.1 *Construction Phase*

Prior to the beginning of major site works, the EPC contractor in cooperation with Sponsor will develop the following plans:

18.8.1.1 *Emergency Response Plan*

A site specific emergency response plan will be prepared for soil clean-up, decontamination and any accidental spill management in Ayeyarwady River.

18.8.1.2 *Health and Safety Plan*

The EPC Contractor will prepare and implement a Health and Safety Plan prior to commencing work. This plan will include method statements for work activities, plant utilisation, construction sequence and safety arrangements. Measures will be implemented to reduce the likelihood and consequence of the following hazards:

- falling from height;
- falling into water;
- entanglement with machinery;
- tripping over permanent obstacles or temporary obstructions;
- slipping on greasy or oily walkways;
- falling objects;
- asphyxiation;
- explosion;
- contact with dangerous substances;
- electric shock;
- variable weather conditions;
- lifting excessive weights; and
- traffic operations.

18.8.1.3 Construction Environmental and Social Management Plan (Site Specific Plan)

The EPC Contractor will prepare and implement a Construction Environmental and Social Management Plan prior to commencing work to manage the construction related environmental and social aspects.

18.8.1.4 Traffic Management Plan

The EPC Contractor will prepare and implement Traffic Management Plan prior to commencing work to manage the construction traffic. This will be required towards prevention of local traffic disruptions, avoid peak hours rush and prevent accidents. Movement of all heavy equipment and vehicles from Jetty to project site needs to be coordinated with the logistics team of Sponsor.

Additionally, it is to be noted that the detailed management plans as specified in **Section 18.4** will also be developed prior commencing activities in relation to such plans.

18.8.2 Operation Phase

During the operation phase of the Project, the Sponsor will develop the following plan/ management systems for effective operation of the Plant:

18.8.2.1 HSE and Social Management System

The Sponsor will develop and implement an HSE and Social Management System (HSE&SMS) to international guidelines for the entire Plant premises and its impact zones (project area of influence as defined under IFC PS) within two (2) years of commissioning the Plant.

18.8.2.2 Waste Management Plan

For effective segregation, handling, storage and disposal of solid and hazardous wastes generated from the Plant operations, a waste management plan will be developed by the Sponsor.

18.8.2.3 Spill Response and Emergency Plan

The Sponsor will prepare a spill response and emergency plan to address accidental spillages or release of hazardous wastes.

18.8.2.4 Emergency Response and Disaster Management Plan

Based on the outcome of the consequence analysis as well as detailed quantitative risk assessment of the Project after finalisation of project design, an emergency response and disaster management plan will be developed by the Sponsor. This will define protocols to be followed in the event of emergencies or disasters in order to limit the impact on the employees and the local community. The plan will address both on-site and off-site emergency situations due to the operation of the project. The plan will disclose potential disasters and potential risks from the plant to the local community as well as the plan of action on emergency protocol in the event of

any such eventuality. This will also include awareness programs for the Plant personnel, local community and local administration.

Additionally, it is to be noted that the detailed management plans as specified in **Section 18.4** will also be developed prior commencing activities in relation to such plans.

18.8.3 *Budget*

The EPC Contractor and the Sponsor will allocate separate budget for environmental and social management plan implementation, training, environmental monitoring, analysis and reporting, verification monitoring and capacity building. It should be noted that costs for many in-built mitigation measures, such as, acoustic enclosures for noise control, water and wastewater treatment, CEM, etc., are already included in the EPC contract cost estimate and/or operating cost estimates. In addition, separate budget will be allocated for CSR activities, which will be conducted by the Sponsor for community development.

18.9 *UPDATING OF ESMP*

This ESMP will be updated, revised and reviewed internally on regular basis to ensure particularly that ESMP continuing suitability, adequacy and effectiveness regarding the Project commitment to continual improvement. The ESMP of the Project will be monitored and reviewed on half yearly basis.

Furthermore, in the event of an unanticipated impact and design change with respect to the Project Standards (including Myanmar Government, ADB and IFC requirements), the ESMP would be updated as necessary.