Environmental and Social Impact Assessment Report

Project Number: 50182-001
November 2018

INO: Riau Natural Gas Power Project
ESIA Vol.4
ESMP and Framework ESMS

Prepared by ESC for the Asian Development Bank

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Riau 275 MW Gas Combined Cycle Power Plant IPP - ESIA

Medco Ratch Power Riau

Volume 4: ESMP and Framework ESMS

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Contents

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List of Abbreviations

Acronym	Meaning
ADB	Asian Development Bank
AMDAL	Analisis Mengenai Dampak Lingkungan
CPM	PT Citra Panji Manunggal
EHS	Environmental, Health and Safety
EPC	Engineering, Procurement, Construction
EPFI	Equator Principle Financial Institution
ESIA	Environmental and Social Impact Assessment
ESMP	Environmental and Social Management Plan
ESMS	Environmental and Social Management System
GIIP	Good International Industry Practice
HR	Human Resources
HSE	Health Safety and Environment
IFC	International Finance Corporation
LEC	Lotte Engineering & Construction
LRP	Livelihood Restoration Plan
MRPR	Medco Ratch Power Riau
RAP	Resettlement Action Plan
RKL	Rencana Pengelolaan Lingkungan Hidup (Environmental Management Plan)
RPL	Rencana Pemantauan Lingkungan Hidup (Environmental Monitoring Plan)
SEP	Stakeholder Engagement Plan
UKL	Upaya Pengelolaan Lingkungan (Environmental Management Effort)
UPL	Upaya Pemantauan Lingkungan (Environmental Monitoring Effort)
WBG	World Bank Group
WHO	World Health Organisation

1. Introduction

Volume 4 of the Environmental and Social Impact Assessment (ESIA) presents the Environmental and Social Management Plan (ESMP) and Framework Environmental and Social Management System (ESMS) prepared for the Riau 275 MW Combined Cycle Gas Fired Power Plant IPP Project (referred to hereafter as the 'Project'). The Project consists of a 275 MW combined cycle power plant and ancillary facilities, a 40 km long 12-inch gas pipeline, a switchyard and a 750 m long 150 kV transmission line.

The Project Sponsors being PT Medco Power Indonesia (MEDCO) and Ratchaburi Electricity Generating Holding PCL (RATCH), have formed PT Medco Ratch Power Riau (MRPR) to build, own and operate the plant under the terms of the Power Purchase Agreement (PPA) which has been agreed with PT Perusahaan Listrik Negara (Persero) ("PLN"). Construction will be undertaken by two EPC Contractors being, Lotte Engineering & Construction (LEC) and PT Citra Panji Manunggal (CPM).

The building and operation of the power plant comprises two main phases:

1) Construction of:
    a. Power plant, switchyard, transmission line, water supply and discharge structures and pipelines – managed by LEC
    b. Gas pipeline – managed by CPM
2) Operation – managed by MRPR.

1.1 Overview

This ESIA Volume 4: ESMP and Framework ESMS provides the following:

- An Environmental and Social Management Plan (ESMP) – Summarises the mitigation and monitoring measures that should be employed during the construction Phases for the Project. The ESMP will summarise the Project Owner's commitments to address, mitigate and monitor risks and impacts identified as part of the ESIA, through management, avoidance, minimisation and if required compensation/offset.
- A Framework Environmental and Social Management System (ESMS) - The Framework ESMS provides a framework of the key elements for developing and implementing an Overarching ESMS which sets out how the mitigation and monitoring will be implemented, checked and reviewed for the life of the Project.

The findings of the ESIA (ESIA Volume 1: Introduction, ESIA Volume 2: EIA (Terrestrial) and ESIA Volume 3: EIA) are used to develop associated documentation, such as the ESMP and Framework ESMS, as shown below in Figure 1.1.

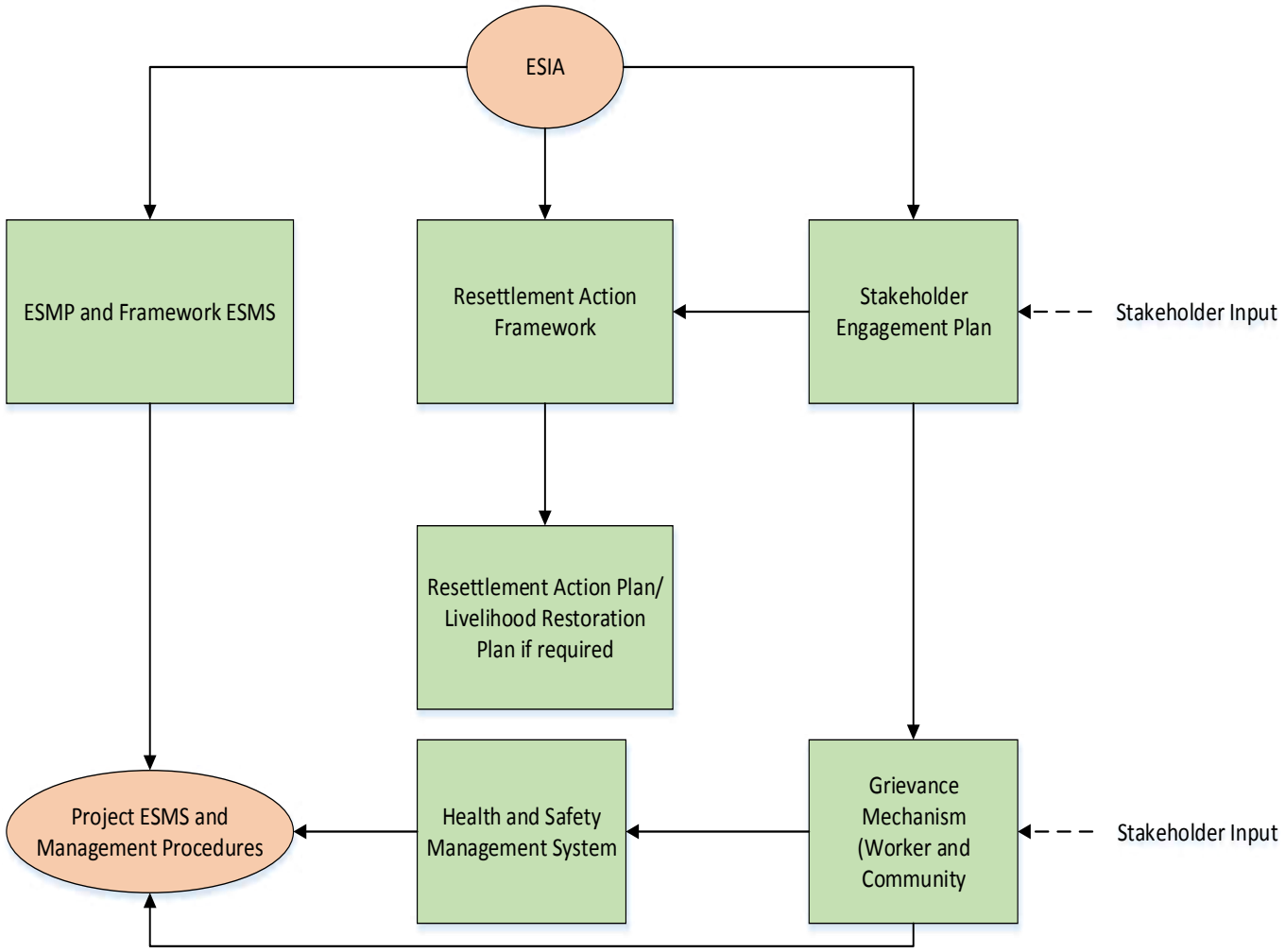


Figure 1.1 : Flow diagram showing how ESMS is developed from the ESIA and how the documents are interrelated

1.2 Structure of ESIA Volume 4

This ESIA Volume 4 of the ESIA is structured as follows:

- Section 2 – Environmental and Social Management Plan (ESMP)
- Section 3 – Framework Environmental and Social Management System (Framework ESMS)
- Section 4 – Assessment Against ADB Safeguards, Equator Principles and IPC Performance Standards

2. Environmental and Social Management Plan

2.1 Introduction

The ESMP describes and prioritises the actions needed to implement mitigation measures, corrective actions and monitoring measures necessary to manage the impacts and risks identified in this ESIA related to the Project. Implementation of the ESMP will take place under the broader framework of the ESMS and will be implemented and managed by the MRPR and the EPC Contractors. The EPC Contractors and MRPR will also adhere to the procedures and requirements as set out in the ESMP. The mitigation measures and action plans covered in this section therefore relate onto to pre-construction, construction and operation stages for the project.

The ESMP has been prepared in accordance with the following ADB Safeguard policy principles:

> ***Environmental Policy Principle 4***
>
> *"Avoid, and where avoidance is not possible, minimize, mitigate, and/or offset adverse impacts and enhance positive impacts by means of environmental planning and management. Prepare an environmental management plan (EMP) that includes the proposed mitigation measures, environmental monitoring and reporting requirements, related institutional or organizational arrangements, capacity development and training measures, implementation schedule, cost estimates, and performance indicators. Key considerations for EMP preparation include mitigation of potential adverse impacts to the level of no significant harm to third parties, and the polluter pays principle."*
>
> ***Involuntary Resettlement Policy Principle 8***
>
> *"Prepare a resettlement plan elaborating on displaced persons' entitlements, the income and livelihood restoration strategy, institutional arrangements, monitoring and reporting framework, budget, and time-bound implementation schedule."*
>
> ***Indigenous Peoples Policy Principle 6***
>
> *"Prepare an Indigenous Peoples plan (IPP) that is based on the social impact assessment with the assistance of qualified and experienced experts and that draw on indigenous knowledge and participation by the affected Indigenous Peoples communities. The IPP includes a framework for continued consultation with the affected Indigenous Peoples communities during project implementation; specifies measures to ensure that Indigenous Peoples receive culturally appropriate benefits; identifies measures to avoid, minimize, mitigate, or compensate for any adverse project impacts; and includes culturally appropriate grievance procedures, monitoring and evaluation arrangements, and a budget and time-bound actions for implementing the planned measures."*

The ESMP has been prepared in accordance with Principle 4 of the "Equator Principles" published by the International Finance Corporation (IFC), which states:

> ***Principle 4: (Environmental and Social Management System and Equator Principles Action Plan)***
>
> *"For all Category A and Category B Projects, the EPFI will require the client to develop or maintain an Environmental and Social Management System (ESMS). Further, an Environmental and Social Management Plan (ESMP) will be prepared by the client to address issues raised in the Assessment process and incorporate actions required to comply with the applicable standards. Where the applicable*

standards are not met to the EPFI's satisfaction, the client and the EPFI will agree an Equator Principles Action Plan (AP). The Equator Principles AP is intended to outline gaps and commitments to meet EPFI requirements in line with the applicable standards"

2.2 General Approach to Implementation of Mitigation and Monitoring Measures

The following mitigation measures and action plan will be applied by MRPR to prevent and mitigate the potential negative impacts and to effectively manage the Project for environmental protection, for the pre-construction, construction and operation stages of the Project.

Where necessary, mitigation measures have been proposed to meet the requirements of the ADB Safeguards, Equator Principles, IFC Performance Standards and Indonesian laws and regulations. IFC guidelines require that a sequencing strategy is applied that gives priority to avoiding impacts, then a focus on the reduction or minimisation of impacts that cannot be avoided, and finally where impacts are unavoidable people affected by the Project must receive compensation.

Mitigation measures are identified in the ESIA are summarised below. The mitigation measures proposed also reflect the outcomes from consultation.

In general, the types of mitigation measures identified are implemented by one or more of the following means:

1. Incorporated into the plant design
2. Specifying construction methods
3. Developing and implementing management plans
4. Undertaking monitoring
5. Following consultation and grievance procedures.

Detailed mitigation and monitoring measures will also be outlined in the management plans/procedures as set out in the following sections.

MRPR, in collaboration with the EPC Contractors (and any Subcontractors, will establish, maintain, and strengthen as necessary an organisational structure that defines roles, responsibilities and authority to implement the ESMS and ESMP during construction and operation of the Project. Key ESMS responsibilities are defined and will be communicated to the relevant personnel and to the rest of MRPR, as well as the EPC Contractor and any Subcontractors. Sufficient management sponsorship and human and financial resources will be provided by MRPR and the EPC Contractors on an ongoing basis to achieve effective and continuous ESMS performance and the implementation of mitigation and monitoring measures as set out in the ESMP. The schedule and budget are currently being determined and will be disclosed prior to financial closure. In addition, due to MRPRs commercial confidentiality concerns, this breakdown of schedule and budget for implementation of the ESMP will be provided as a separate document to lenders to this ESIA.

Management of environmental and social risks and impacts during construction will primarily be the responsibility of the EPC Contractor through the EPC Contract. During the construction phase, MRPR will review and monitor EPC Contractor's performance in accordance with their Health and Safety and Environment (HSE) Plans/Management Systems and related management plans/procedures to ensure alignment with the Overarching ESMS.

MRPR will operate the power plant and will be responsible for recordkeeping and reporting, maintenance inspections, execution of routine maintenance, periodical maintenance and major overhaul in accordance with the Overarching ESMS, and incident reporting.

2.3 Mitigation Measures – Pre - Construction

There are a range of potential environmental and social impacts and risks associated with the pre-construction phase of the Project. The key mitigation measures are summarised below:

- Along the gas pipeline route and for construction of the temporary jetty there may be some temporary physical displacement of stalls etc having to be moved during construction and some temporary loss of livelihood and as result a Livelihood Restoration Plan (LRP) may be required. First action is to conduct a census survey to identify the potentially affected parties and to obtain data on the asset and loss of livelihood that will be temporarily lost in order to develop the LRP. The LRP must be implemented and all compensations paid before construction commences.
- Resettlement and livelihood action measures will be defined in a participatory manner with the affected people.
- The land acquisition process will be completed prior to construction commencing on a willing seller – willing buyer basis.
- MRPR will develop a Workforce Development Strategy for training locals, and in particular woman.
- MRPR will ensure the EPC Contractors and Subcontractors to employ and train locals in order to assist those people affected by the development.
- The Grievance Mechanism defined in the Stakeholder Engagement Plan will be disclosed to the neighbouring communities and implemented, and grievances registered and addressed on a case by case basis.
- MRPR will undertake vocational training with current tenants to assist them in obtaining jobs with the Project.
- The Project will adapt the final design to avoid as much as possible destruction of houses and/or buildings. In particular, inhabited houses will be avoided as much as possible to minimise any potential physical displacement.
- Regular direct meetings with the local communities will be undertaken to update them on the progress of the work and to give them the opportunity to voice their concerns.
- Prior to construction soil sampling at approximately 10 to 15 locations will be undertaken across the power plant site for a suite of metals, organics, pesticides and acid sulphate soils to confirm baseline conditions.
- A pre-construction survey will be undertaken of the confirmed gas pipeline route. This monitoring is to identify any potential vulnerable/ critically endangered flora and fauna and where possible capture and relocate fauna. The surveys will be conducted by an ecologist familiar with the flora and fauna of the local area. As part of this survey a series of camera traps will be placed to record the potential presence of ecologically sensitive species prior to construction. The camera footage will be monitored at a minimum of once per month. Should evidence of ecologically sensitive species be found, appropriate action will be taken including the development of a biodiversity management plan to ensure no impacts to these species during construction and operation.
- It is recommended that pre-clearance terrestrial ecological surveys are undertaken of the power plant, water pipeline route and gas pipeline route, prior to any vegetation clearance to identify, capture and relocate vulnerable, threatened or endangered species from the project area e.g. sunda pangolin, agile

gibbon and Anisoptera marginata Korth. The surveys will be conducted by an ecologist familiar with the flora and fauna of the local area.

- Fisheries monitoring shall be undertaken at a minimum of three sites immediately upstream of the project; between the Riau and Tenayan CFPP discharges; and downstream of the temporary jetty. Fish species presence and abundance are to be recorded.
- The water supply intake shall be designed to minimise the risk of entrainment of fish within the intake by the installation of an appropriately sized and located screen. Fish screens are not just defined by the size of the mesh but also a number of factors including the angle relative to stream flow, provision of bywash and a particular velocity across and through the screen. The EPC Contractor will be contractually required to meet max water intake velocity of 150 mm/sec (0.03 ft/sec) and to design an appropriately sized fish screen which uses design standards e.g. EHS Guidelines for Thermal Power Plants. Depending on the size of screen required and its relative angle to the river flow plus the type of species the screen mesh type will vary. The screen size and intake velocity should be designed using appropriate guidelines to minimise the entrainment of the species identified as being within the Siak River. The following key parameters should be considered in the design of a fish screen:
  - Design for the species present and life stage of that species;
  - If possible location of the screen relative to river flow so as to be flush with the riverbank will increase the natural sweeping flow of the river;
  - Provision of a bywash flow to move species away from the screen in a reasonable time frame;
  - Identification of suitable velocities and screen size; and
  - Identification of suitable screen clearing mechanisms.

  The fish screen design will require approval by Lenders prior to construction.
- MRPR will prepare and implement a Livelihood Restoration Plan which sets out livelihood restoration measures required for persons who could be permanently or temporarily economically displaced as result of the Project prior to construction commencing.
- Should on-site retention of soil (including material from dredging) not be possible the two off-site disposal areas discussed in ESIA Volume 1 will be considered. A site-specific environmental and social assessment will be conducted by the Sponsor and approved by Lenders prior to the commencement of construction.
- A Quantitative Risk Assessment is to be completed by Sponsors and approved by Lenders prior to construction.

2.4 Mitigation Measures – Construction and Operation

There are a range of potential environmental and social impacts associated with the construction phase of the Project (Refer to ESIA Volume 2: EIA and ESIA Volume 3: SIA). During construction of the gas fired power plant, gas pipeline, transmission line and access roads, the following mitigation measures are proposed in Table 2.1 for construction and Table 2.2 for operation.

Table 2.1 : Summary of proposed mitigation during construction

Issue	Location of Mitigation Measures	Proposed Mitigation Measures	Responsibility of mitigation
Air quality	All Project construction works – emissions and dust control	• The EPC Contractors and MRPR will develop an Air Quality Management Procedure as part of the ESMS. The AQMP will include actions on: – Water spraying of or covering all exposed areas and stockpiles; – Minimising the size of earthworks, exposed areas and material stockpiles and the periods of their existence; – Covering the construction materials transported by trucks or vehicles to prevent dust emissions; – Limiting dust generation activities in high winds or specific wind directions, if required; – Cleaning wheels and the lower body parts of trucks at all exits of the construction site; and – Maintaining and checking the construction equipment regularly. • Windblown material from stockpiles of soil, aggregate, sand etc should be held in bins or other enclosures, and stockpiles of material including soil, and where practicable covered with a tarpaulin; • Construction vehicles should be periodically checked to ensure that they are not emitting excessive pollutants; • Vehicle speed on the construction site should be set to a maximum of 20 kph to reduce dust release from road surfaces. • To reduce windblown material, grass seed should be sown on soil stockpiles that will remain dormant for more than three months.	LEC and CPM to implement and MRPR to review compliance performance
Cultural Heritage	All Project construction works	• MRPR will implement a Chance Find Procedure for all Project components. This Procedure will be applied by the EPC Contractor's and all Subcontractors during all Project construction works. • The Worker's Code of Conduct will include a section on Cultural Heritage and respect of local beliefs and traditions in the local communities. All workers will be made aware of the Code of Conduct and awareness sessions will be organized for all new staff. • If any element of cultural heritage is discovered during the construction of the Project, mitigation measures to protect them and to ensure that the local population can access them will be defined and implemented. These measures will be defined in a participatory manner with the affected persons or communities.	LEC and CPM to implement and MRPR to review compliance performance
Environmental and Social Management Systems (ESMS)	All Project construction works	• MRPR will develop an Overarching ESMS for the management of environmental and social risk and impacts for the Project • Management of environmental and social risks and impacts during construction will primarily be the responsibility of the EPC Contractors through the EPC Contract and through the development and implementation of Construction ESMS or HSE Plans. • During the construction phase, MRPR will review and monitor the compliance of EPC Contractors performance in accordance with their Health, Safety and Environment (HSE) Plans and /or Construction ESMS and related management plans/procedures to ensure alignment with the overarching Project ESMS. Management of environmental and social aspects associated with the Project will be carried out in accordance with the CESMS. The CESMS will consist of a set of sub-ordinate plans/procedures, which may include, but are not limited to, the following topics:	MRPR to prepare overarching ESMS and EPC contractors to prepare Construction ESMS. MRPR to review compliance performance of all ESMS.

Issue	Location of Mitigation Measures	Proposed Mitigation Measures	Responsibility of mitigation
		- construction environmental management; - pest and weed management; - biodiversity restoration; - waste management; - hazardous substance management; - soil and erosion management; - air quality/dust management; - environmental and social monitoring; - stakeholder engagement; - grievance mechanism (community and workers); - emergency preparedness and response; - noise and vibration management; - recycling; - landscape management; - chance find procedure; - occupational safety and health management; and - traffic management. • Key personnel will be responsible for ensuring good environmental practice on site during construction will include the MRPR, Project Manager and the EPC Contractors' Site Manager and EPC Contractors HSE Manager. • Staff will be trained in environmental management, auditing and monitoring procedures as per the framework has been outlined in the Framework Environmental and Social Management System (see Section 3).	
Existing Infrastructure	All Project construction works	Construction activities should be operated in a way that will not encroach into the existing infrastructure facilities (e.g. electricity lines, information system, water supply system, offices, etc).	LEC and CPM to implement and MRPR to review compliance performance
Hazardous Substances and Waste	All Project construction works – general measures for waste	• A Waste Management Policy will be prepared by MRPR and will be followed by the EPC Contractors in the development and implementation of their Waste Management Plan during construction. Particular attention will be given to the use and re-use of materials to minimize waste and, whenever practicable, using materials and products from sustainable sources. The EPC Contractors will produce a Waste Management Plan/Procedure in accordance with MRPR Waste Management Policy which shall include steps to: – Minimise the amount of waste produced;	LEC and CPM to implement and MRPR to review compliance performance

Issue	Location of Mitigation Measures	Proposed Mitigation Measures	Responsibility of mitigation
		– Prepare designated waste storage areas for the wastes which are not able to be immediately disposed of. The waste storage areas should be covered and clearly signed; – Educate and train staff on separation of wastes and recycling; – Dispose of hazardous waste via a licensed third party operator; and – Record the disposal of wastes by "Waste Manifest". • Waste should be stored so as to prevent or control accidental releases to air, soil, and water resources. • Liquid wastes should be stored on impermeable surfaces with spill containment systems. Spill containment systems should be constructed with materials appropriate for the wastes being contained and with a drainage and collection system. Spill containment should be included wherever liquid wastes are stored in volumes greater than 220 litres. The available volume of spill containment should be at least 110% of the largest storage container, or 25% of the total storage capacity (whichever is greater), in that specific location. • Hazardous wastes should be stored in a separate storage area which is bunded and hazardous wastes should be removed for treatment and disposal by an approved licensed third party operator. Destruction certificates will be supplied by the licensed operator to indicate how and when the hazardous wastes were treated and disposed of; • Solid waste produced during construction of the Project should be collected onsite as outlined above, and then transferred to a designated waste disposal facility, fortnightly or as required. • A permit for the Temporary Storage of Hazardous Waste will be obtained by the EPC Contractor under Indonesian legislation.	
	All Project construction works - hazardous substances use and disposal of hazardous waste	• MRPR will develop a Hazardous Substances Management Policy for construction which will be followed by the EPC Contractors. The EPC Contractors will produce a Hazardous Substances Management Plan/Procedure in accordance with MRPRs Hazardous Substances Management Policy and this will include the following information: • A register should be held and maintained onsite, which sets out the types, volumes and locations of all hazardous substances. • Safety Data Sheets (SDSs) should be compiled in accordance with the approved code of practice for the preparation of material safety data sheets. • Labels on containers should be compiled in accordance with the approved code of practice for the labelling workplace substances. • Induction and training should be provided to all those employees whose work potentially exposes them to hazardous substances; and those employees who are supervising others who are using hazardous substances at work. • Hazardous substances storage containers (including gas cylinders) which are unsafe (e.g. damaged, leaking etc) should be clearly marked as 'out of service' to prevent them from being used, until their disposal.	LEC and CPM to implement and MRPR to review compliance performance

Issue	Location of Mitigation Measures	Proposed Mitigation Measures	Responsibility of mitigation
		• Designated stores which are appropriately designed, secured to avoid unauthorised access and fire rated should be used to store hazardous substances. • Incompatible substances should be stored separately. • Transport of hazardous substances should be carried out in full compliance with the relevant legislative requirements. • Transport vehicles should have appropriate signage and carry documentation on the hazardous substances to be transported. • Arrangements should be in place to ensure that the appropriate spill control equipment for storage and transport (i.e. for water and/or land) is available in sufficient quantities for any foreseeable spills. • Suitable firefighting equipment should also be available to suit the type/s of substances being transported. • Any such equipment should be routinely inspected and maintained in good working order and in a state of readiness. • No chemicals should be accepted onto the Project sites or off-loaded without the relevant health, safety and emergency information being made available by the supplier this includes SDSs. • Vehicles and other equipment should be turned off while fuelling operations takes place. • Provisions should be made for the containment, collection and disposal of waste oil and spills that are generated as a result of refuelling activities. Provisions may be in the form of a bunded and impervious area, with a spill and effluent collection system. Alternatively, a portable collection sump will be placed underneath the maintenance and refuelling areas to contain any spillage and/or minor leaks. • The EPC Contractors will prepare and implement and emergency response plan/procedure which manage spoils, fires etc., and include warning and evacuation of nearby residences. • All hazardous waste, including used spill response items, oils and residues, including drums and containers which were used to hold hazardous substances, and sludge removed from septic tanks, should be collected and transported an appropriately licensed hazardous waste disposal facility for disposal. • A Hazardous Waste Store should be developed at the site during construction for the temporary storage of hazardous wastes generated including contaminated soil waiting to be disposed of offsite to a licensed hazardous waste disposal facility.	
	All Project construction works - spill management	• An Emergency Response plan/procedure will be prepared, which includes measures for dealing with a spill. • Vehicles should only be filled in designated locations where the area is hard paved, and the collection sump is connected to the wastewater treatment system. • In the event of a spill during construction, spill containment and clean up equipment should be located onsite. This should include equipment for: - Containing and cleaning any spill such as a shovel, broom, drain covers, sandbags, booms and absorbent material. All spills will be handled with compatible materials.	LEC and CPM to develop and implement and MRPR to review compliance performance

Issue	Location of Mitigation Measures	Proposed Mitigation Measures	Responsibility of mitigation
		- Storing and disposing of spilled material such as safe containers, bags, and drums. - Protecting the safety of staff through PPE. - Any spills will be contained and cleaned up immediately and disposed of at an approved facility. Incidents should be recorded and reported following the accident reporting system as detailed in the HSE Plan. This includes the preparation of an Accident/Incident Report.	
Landscape	All Project construction works	• After construction is complete the gas pipeline and power plant site should be landscaped in order to improve visual amenity. This will also aid in limiting soil erosion at the site during heavy rainfall events. • Where possible the soil removed during earthworks for construction should be reinstated and used as topsoil for the proposed landscaping bunds. • Plants used in any landscape planted should be nursery grown and should be sound, healthy, and vigorous and free from insect infestations. Trees and shrubs should be chosen to tolerate weather conditions and other such site characteristics. Maintenance operations should begin immediately after each plant is planted by mulching, watering, pruning, spraying, weeding and other necessary operations of maintenance • A Pest and Weed Management Plan/Procedure will be developed by the EPC Contractors and planting beds will be kept free of weed, grass and other undesired vegetation growth. • Any lighting requirements should be designed to ensure light spill is directed into the site. • Where possible the selection of neutral/muted cladding and external finishing would aid in limiting the extent of adverse visual impacts. • Site fencing has the potential to aid in mitigating adverse visual effects of the power plant by partially screening and softening the visual impact of the site and ensuring light spill from the site is minimised.	LEC and CPM to implement and MRPR to review compliance performance
Hydrology	Pipeline and Power plant construction	• Following surveying of the boundary of the construction pad, diversion drains should be excavated around the perimeter of the site to convey overland flow to appropriate locations downstream. During construction these could be temporary excavations, rock or geotextile lined to reduce erosion. • Direct site runoff from the 9.1 ha will be captured via interceptor ditches and sumps/sediment ponds. In localised areas, sediment runoff could be managed through silt fences. • Any discharges of concentrated flow should be to watercourses that have adequate erosion protection in place to prevent gullying of channels, bank collapse and increased sedimentation downstream. • Should local water sources be required for meeting some construction demands including vehicle and equipment washdown, the use of temporary portable storage tanks or lined earth reservoir is advised. Multiple 25,000 L plastic tank (3.6 m x 2.8 m) could provide storage for firefighting and water supply, and be topped up at low abstraction rates (<5 L/s) to reduce environmental impacts. Water for these activities will be sourced from off-site sources and no water abstraction will be conducted on site.	LEC and CPM to implement mitigation and MRPR to review compliance performance

Issue	Location of Mitigation Measures	Proposed Mitigation Measures	Responsibility of mitigation
		• For the gas pipeline construction, near stream works should require local sediment controls such as silt fences or downstream sediment traps to reduce the effects of disturbance. • An Erosion and Soil Control Plan/Procedure (ESCP) will be developed by the EPC Contractors before the construction phase. The typical objectives of a ESCP are as follows: – To minimise any potential adverse environmental effects on water quality and aquatic ecosystems from the proposed stormwater discharge from the operation of the development. – To protect and enhance the natural character and amenity of watercourses from the proposed stormwater discharge from the operation of the pipeline and plant. – To minimise any potential adverse environmental effects from flooding or erosion (inclusive of land or watercourses) from the stormwater discharge from the operation of the pipeline and plant.	
Noise and Vibration	All Project construction works	• MRPR will produce a Noise and Vibration Management Policy which the EPC Contractors will follow and will use to develop a Noise and Vibration Management Plan/Procedure for the construction phase. • The EPC Contractors HSE Officers should periodically check the site and nearby residences for noise problems so that solutions can be quickly applied. • No night-time construction is permitted within 60 m of residential properties, villages, schools or mosques unless prior written approval is received from the village head. • Construction workers should avoid the use of radios or stereos, shouting and slamming vehicles doors, especially during any scheduled night time activities. • Truck routes to and from the worksite should be restricted to major roads where possible • All vehicles, plant and equipment should be turned off when not in use. • Adherence to the standard hours of construction (7.00am to 6.00pm) should be observed with periods of rest and respite. • Regular inspection and maintenance of machinery should avoid increased noise levels from rattling hatches, loose fittings etc. • The use of non- 'beeper' reversing/movement alarms such as broadband (non-tonal) alarms or ambient noise sensing alarms will reduce excess noise. • All doors/hatches should be shut during operation of plant and equipment. • Work compounds, parking areas, equipment and material stockpile sites will be positioned away from noise-sensitive locations. • Use of noise screens as appropriate particularly along the gas pipeline. • Along the gas pipeline route all residential properties and other key stakeholders such as schools and educational facilities should be notified prior to the commencement of works. Note: the gas pipeline will be constructed in sections of no more than 500 m at a time.	LEC and CPM to implement and MRPR to review compliance performance

Issue	Location of Mitigation Measures	Proposed Mitigation Measures	Responsibility of mitigation
		• Regularly train workers and contractors to use equipment in ways to minimise noise. • Construction activities at night time will be limited insofar as possible, to reduce any potential impacts on local residents and fauna. Construction work shall be managed so that noise and light emissions do not cause annoyance to neighbours and fauna unless it: o is associated with an emergency; or o is carried out with the prior written approval of the relevant authorities, or o does not cause existing ambient noise levels to be exceeded.	
Social / Economic	All Project construction works	*General* • MRPR will respect and apply industrial good practices as highlighted in WBG EHS Guidelines. This includes among others: no operation during night time near inhabited settlements, implementation of noise and dust control measures, low speed limits for the Project's vehicles in inhabited areas. *Grievance* • The Project will implement regular consultations with project affected people, their grievances will be noted, treated and addressed. • The Grievance Mechanism defined in the Stakeholder Engagement Plan will be disclosed to the neighbouring communities of the power plant and along the gas and water pipeline routes. Grievances received will be registered and addressed on a case by case basis. *Jobs / Employment* • MRPR and the EPC Contractors will design employment and recruitment opportunities that supports the local community. These will be developed via consultations with local stakeholders, Kecamatan/Kelurahan (Village) administration office and other local stakeholders, including woman and vulnerable groups. • MRPR in conjunction with the EPC Contractors will establish a local employment brokerage that will publicise job vacancies in ways and during times that villagers will be able to participate. It is important that the employment process is well managed, and that the local community is able to actively participate to the extent feasible. • MRPR will encourage local employment prioritising the three administrative areas: Industri Tenayan, Bencah Lesung and Tuah Negeri along with adjacent villages. Also include the five villages (Meredan, Tualang Timur, Pinang Sebatang, Kuala Gasib, Melebung) and along the pipeline route location and Okura Village which across from the temporary jetty site location. • Local villagers will be informed of job opportunities along with the required qualifications in a timely manner, ensuring the advertising process is culturally and administratively appropriate.	LEC and CPM to implement and MRPR to review compliance performance

Issue	Location of Mitigation Measures	Proposed Mitigation Measures	Responsibility of mitigation
		• Local businesses will be informed of contracting opportunities in a timely manner. • MRPR will ensure that the hiring process is conducted as transparently as possible by the EPC Contractors to help the community to understand strategic staffing decisions for the Project. • MRPR will develop and monitor an internal standard to guide labour practices and apply this to Supply Chain for EPC Contractors to follow and implement. • MRPR will develop and implement a Workers Code of Conduct that addresses issues such as anti-social behaviour and drug and alcohol consumption, and respect for women in accordance with the applicable regulation. The EPC Contractors will follow the Code of Conduct. • MRPR will define targets the employment of women (at all levels and skills) whenever possible. It will be disclosed that recruitment is also open to women in the local communities. Specific recruitment strategies targeting women will be defined in accordance with the culture, regulation and required qualifications. • MRPR and the EPC contractors will provide opportunities for women and women groups to participate in the workforce, and assist them in having good quality work standards so they can train others and are able to work with other companies in the future. *Skills and Training* • MRPR will develop a Workforce Development Strategy – a commitment to maximise employment and skills opportunities for local people. • MRPR will advise the EPC Contractor to maximize the employment of locals and based on the requisites of qualifications and skills required. • MRPR and their EPC Contractors will design and develop a capacity building program including mentoring, coaching and apprenticeship opportunities for local villagers to maximise skills development for local people. The employment of local villagers for higher level positions should be maximised to facilitate good community relations. • MRPR will make efforts to facilitate the growth and development of new entrepreneurs, both individuals and groups originating from affected communities. *Community Development* • MRPR will establish a Community Development Fund to undertake a range of community development initiatives that will assist in alleviating poverty in the Project area. • Corporate Social Responsibility (CSR) programmes will be designed and implemented by also coordinating with District (Kecamatan) and Village (Kelurahan) Offices, including in partnership with local agencies to create business opportunities for the	

Issue	Location of Mitigation Measures	Proposed Mitigation Measures	Responsibility of mitigation
		local community. The CSR programme will be available to the local community, including the workforce that is no longer involved after the construction of the Project. • CSR programmes will also seek to improve levels of education and skills for people affected by the Project. • MRPR will establish a program that will look to promote the empowerment of women in the Project area. *Health and Social Initiatives* • To prevent social tensions between the workforce and the local population, MRPR will develop a Worker's Code of Conduct. It also includes guidance on visits, prescribed actions for conduct violations and a grievance mechanism for complaints • The EPC Contractors will undertake pre-employment screening to ensure employees are fit to work; • MRPR and their EPC Contractors will provide free and anonymous health surveillance and active screening and treatment of workers including sexually transmitted diseases. • MRPR and their EPC Contractors will prevent illness among workers in local communities by undertaking health awareness and education amongst the workforce and in the neighbouring communities. • MRPR and their EPC Contractors will prepare and implement a Workers Health Education Procedure. • MRPR and their EPC Contractors collaborate with local authorities to enhance access to public health services and promote immunisation. • The EPC Contractor shall involve external stakeholders (i.e. police or local authorities) in any on or off-site security incidents and ensure that appropriate incident response procedures are implemented. • MRPR and their EPC Contractors will define and implement measures to prevent vector-borne diseases (such as avoidance of stagnant water, measures to avoid mosquito development). • MRPR and their EPC Contractors will provide adequate and sufficient sanitation facilities for both female and male workers. • Meals provided by MRPR or the EPC Contractors shall be in line with international standards of hygiene and health requirements. *Access and Security* • Access to all construction sites will be controlled with no unauthorised access from local communities permitted. • MRPR and their EPC Contractors will train the security guards on human rights issues. The security guards will not be armed. They will coordinate with local government security forces in case of need and will ensure that security and human rights members of the local communities are respected. • A Security Management Plan shall be developed in accordance with national law and the principles of good international industry practice.	

Issue	Location of Mitigation Measures	Proposed Mitigation Measures	Responsibility of mitigation
		• If any workers accommodation is provided. The worker's accommodation shall be developed according to ADB safeguards and EBRD/IFC Performance Standard 2 and ensure there is no race discrimination for basic services for accommodation and healthy meals provided by the company	
Soils, Geology and Groundwater	All Project construction works - soil erosion	• An Erosion and Soil Control Plans/Procedures will be developed by the EPC Contractors with one covering the gas pipeline route and the other the power plant, water pipeline and temporary jetty. • Excavated earth should be strongly compacted and cut-off ditches should be dug in erosion prone areas to divert water away for the earthworks and to settling ponds before discharge to nearby water courses. • Silt curtains, fibrous mats etc should be placed across as temporary stormwater drains to reduce the efflux velocity of the water and to aid settling of suspended sediment from the water.	LEC and CPM to implement mitigation and MRPR to review compliance performance
	All Project construction works - soil and groundwater pollution	• Spill kits should be located on the construction site to manage and contain any fuel or hazardous substance spillage. • If an accident does occur, then contaminated soil should be excavated and replaced with clean fill to minimise (or prevent) groundwater contamination with treatment of any stormwater runoff or process water prior to disposal. • All wastewater should be collected prior to discharge. • Oily and/or hazardous waste should be separately collected and disposed of by an appropriately licensed operator. • The laying of overland flow diversion drains and preload fill should be completed preferable during the dry season and prior to the pipeline and power plant construction earthworks commencing. • Drainage water collection and treatment systems should be installed as a priority to prevent discharge to the adjacent rivers and streams. • Groundwater dewatered from the power plant site excavations will be treated prior to disposal via an engineered soakaway located on site.	
	All Project construction works - excavated material	• Prior to filling, sub-grade surfaces of depressions should be free of standing water and unsatisfactory soil materials will be removed. • All unnecessary excavated materials should be transported and deposited outside of the site at an approved facility. • Where excavated material is suitable to be used for fill and backfill, the material should be segregated and transported to a stockpile location at the construction site.	
Terrestrial Ecology	Critical Habitat impacted by the Project footprint 33.105 ha.	In accordance with IFC Performance Standard 6, the Project is required to achieve net gains for the biodiversity for which the Critical Habitat was designated, which in this case is in relation to the sunda pangolin. The net gains proposed to be delivered for this is Project are via CSR type activities which may include for example the following: • Engagement with relevant civil society organisations to assist in their sunda pangolin conservation programs such as the Wildlife Conservation Society and the IUCN SSC Pangolin Specialist Group; • Running local educational programs on sunda pangolin conservation at local schools or community centres;	MRPR

Issue	Location of Mitigation Measures	Proposed Mitigation Measures	Responsibility of mitigation
		• Donation to sunda pangolin conservation groups such as the Wildlife Conservation Society and the IUCN SSC Pangolin Specialist Group; • Optimising community channels to conduct socialisations in order to increase sunda pangolin awareness to the community; and • Install educational banners and boards in local communities on the sunda pangolin including messages regarding the status of the sunda pangolin and stopping hunting and pet trade activities. The activities to be conducted will be further evaluated and incorporated into construction / operation planning. Net gain activities to be started prior to construction and will carried out throughout construction.	
	Temporary Loss of 0.29 ha of Natural Habitat directly impacted due to construction of gas pipeline	• Biodiversity offsetting for the 0.29 ha of Natural Habitat that will be impacted ensuring like for like replacement or better for habitat values being impacted. Options for biodiversity offsetting will include use of 3.7 ha of power plant that will require re-planting / landscaping following completion of construction or alternatively funding support to a local NGO undergoing reforestation activities. Biodiversity offsetting considerations will be further detailed in the BAP and will be identified and carried out in accordance with IFC Performance Standard 6 and ADB Safeguards. • The vegetation clearance required in the two Natural Habitat areas should be kept to a minimum with felling of mature trees (except oil palm), and large areas of scrub/immature vegetation avoided. • Clear demarcation of the site limits should occur to avoid any accidental incursion in to the adjacent habitats. • Full time site supervision by a suitably qualified / trained member of staff able to identify the species of concern e.g. sunda pangolin, agile gibbon etc. • No night-time construction is permitted within or adjacent to areas of Natural Habitat except whilst 24 hr activities comprising hydrotesting and/or Non-Destructive Testing are ongoing. Both these activities are not considered noisy activities.	EPC Contractors and MRPR to review compliance performance
	Gas pipeline construction	• The vegetation clearance required should be kept to an absolute minimum • The felling of mature trees (except oil palm), and large areas of scrub/immature vegetation should be avoided. • Clear demarcation of the pipeline construction area limits should occur to avoid any accidental incursion in to the adjacent habitats. • Excavations should be covered or fenced at the end of the working day to avoid incursion by species. Fencing or tape will be used to demarcate the trenches and the use of branches or planks or wood to allow any species to escape. • Should a sensitive species be found on site, construction work will stop until it moves off site. If the species is more permanently located due to nesting, then alternative options such as re-routing the pipeline or seeking specialist advice will be taken. • Exits points in the excavations should be provided to allow any animals which enter the pipeline trench to escape. • Tool box talks should be undertaken to construction staff to highlight the presence of local wildlife and behaviour towards it.	CPM to implement mitigation and MRPR to review compliance performance

Issue	Location of Mitigation Measures	Proposed Mitigation Measures	Responsibility of mitigation
		• The planned vegetation clearance area for the construction works shall be clearly identified and marked to avoid accidental clearing. • The Project owner shall provide training to staff and workers on all rules, regulations and information concerning restrictions related to flora and fauna that are present in the project area and particularly highlighting those that are ecologically significant e.g. sunda pangolin and agile gibbon. • The Project owner will enforce a no tolerance policy towards the poaching or illegal trafficking of any flora or fauna. This zero tolerance policy will be included in employment contracts. • Prepare and implement a Biodiversity Action Plan.	
	All project construction works	• Ecological surveys are to be undertaken of the power plant, transmission line, water pipeline and gas pipeline route, prior to any vegetation clearance to identify, any Vulnerable, Threatened, Endangered or Critically Endangered species as noted in the ESIA. The surveys will be conducted by a member of staff trained to identify the sensitive species found in the area and as noted in this ESIA. If any sensitive species including the sunda pangolin are found, further consideration of the species context will be factored into decision planning. For example, if the species is foraging then waiting until it moves out of the area prior to work commencing. If a nest is observed, then looking at options to re-route around the nest incorporating sufficient distance to avoid disturbance and/or seeking a species specialist advice. • Should a sensitive species be found on site, construction work will stop until it moves off site. If the species is more permanently located due to nesting, then alternative options such as re-routing the pipeline or seeking specialist advice will be taken. • The vegetation clearance required should be kept to a minimum with felling of mature trees (except oil palm), and large areas of scrub/immature vegetation avoided. • All vegetation cleared will be chipped and re-used for any construction site revegetation post construction. In particular at the power plant site. • Replant the temporary working areas, if possible by using saplings salvaged from the site clearance and chippings from vegetation clearance phase and/or by native endemic species. • Site management measures will include: • Clear demarcation of site limits; • Directional site lighting; • Tool box talks to construction staff to highlight the presence of local wildlife and behaviour towards it. • Night-time deliveries of construction equipment and material should be avoided. • Temporary working areas should be replanted, if possible by using saplings salvaged from the site clearance phase.	LEC and CPM to implement mitigation and MRPR to review compliance performance

Issue	Location of Mitigation Measures	Proposed Mitigation Measures	Responsibility of mitigation
		• Excavations should be covered or fenced at the end of the working day to avoid incursion by species. • The Project owner shall provide training to staff and workers on all rules, regulations and information concerning restrictions related to flora and fauna that are present in the project area and particularly highlighting those that are ecologically significant e.g. sunda pangolin and agile gibbon. • The Project owner will enforce a no tolerance policy towards the poaching or illegal trafficking of any flora or fauna. • Prepare and implement a Biodiversity Action Plan.	
Traffic Management and Access	All project construction works	• A Traffic Management Plan/Procedure (TMP) will be produced by the EPC Contractors. This plan/procedure will involve: - identifying routes within the site and from the main road to the site; - identifying weight/height restrictions and alternative routes; - developing a signing strategy for the routes; - formulating mechanisms for vehicle control; • All heavy and / or oversized loads should be transported to site via barge to avoid the need to truck the cargo through local roads. Where possible also transport other loads via barge to further reduce impacts on local roads. • Deliveries should be made at off-peak times when there are fewer local people using the road and when children would not be walking to and from school. • Project and the associated construction traffic should be discussed with the local community so that residents are aware of what is happening and can plan ahead in anticipation of delays. • Workers should be transported to and from the site via minibus instead of by car or motorbike. • A Community Liaison Officer should discuss road safety with community leaders and residents to encourage the safe use of the road. • A truck wheel wash facility should be provided to clean truck wheels prior to exiting the site in order to prevent dust and spoil being transported on to the public road. • The traffic impacts from removing the excess soil from the site should be minimised by careful choice of the site for dumping the soil and also through developing a traffic management plan/procedure for this component of the work which addresses impacts related to this work. • If it is not possible to transport an over width load by barge, then pilot vehicles will be used when transporting oversized and/or heavy equipment to site to warn drivers of approaching hazards. • Consideration should be given to the speed at which the vehicles are advised to travel on the public road network and especially in rural areas. • Construction traffic drivers should be asked to reduce speeds in built up areas and ensure that braking distances are acceptable.	LEC and CPM to implement mitigation and MRPR to review compliance performance

Issue	Location of Mitigation Measures	Proposed Mitigation Measures	Responsibility of mitigation
		• Operators of the vehicles should regularly maintain vehicles to reduce excessive emissions. • Other procedures to prevent the deposition of slurry, clay or other materials on roads by vehicles leaving the site should include: - provision of cleaning facilities including hoses, brooms and shovels; - twice daily monitoring, and education of all construction staff/drivers to monitor for any material which may be accidently spilt onto public roads from construction traffic; and - maintaining a contingency of sweeper equipment on call at all times to clean up material which may be accidently spilt onto public roads. • Adherence to the TMP should be included within site induction and weekly toolbox meetings as required to ensure all site staff are aware and practice the required clean roads protocols. • The TMP should outline methods for controlling noise and vibration associated with construction traffic. • It is recommended that a Travel Plan is written and distributed to staff to inform them of the best ways to travel to the sites of the Project. Staff should be encouraged to take public transport, car pool or that the contractor provides transport for them. • A Vessel Management Plan will be developed by the EPC Contractor and sub-contractors.	
	Gas pipeline construction	• Adequate temporary traffic management along the route of the 40 km long gas pipeline should be provided to ensure impacts on traffic movement (from safety and delays) are minimised. • Where possible, only half the road should be excavated at a time to allow traffic to continue to use the other lane with a stop start control. Where full road closure is required a short detour around the construction site should be provided. • Work at night should be avoided for safety reasons. • The EPC Contractors will provide safe access for pedestrians and cyclists throughout the duration of construction phase of the Project.	CPM to implement mitigation and MRPR to review
Working Conditions		• The EPC Contractors will issue all Project staff with an individual contract of employment detailing their rights and conditions in accordance with the national law and ADB requirements related to hours of work, wages, overtime, compensation and benefits such as maternity or annual leave, and update the contract when material changes occur. • Generic rules shall be provided within employment contracts and task specific procedures will be communicated during tool box talks and displayed on machinery or within hazardous work areas. • A worker's grievance mechanism will be established. In compliance with World Bank Group Standards, this grievance mechanism will be designed to receive and facilitate resolution of concerns and grievances about the Project's working conditions and safety performance.	MRPR, LEC and CPM to implement mitigation
Occupational Health and Safety	All Project construction works	• The EPC Contractors will be required to develop and implement an Occupational Health Safety Management System OHSMS) for the construction activities at the Project site, which will apply to all personnel involved in the Project, including Subcontractors and part-time workers. The primary health and safety objectives will be to ensure effective measures and management of	LEC and CPM to implement mitigation and MRPR to review

Issue	Location of Mitigation Measures	Proposed Mitigation Measures	Responsibility of mitigation
		occupational health and safety to minimise workplace accidents and injuries. In addition, any Subcontractors appointed by the EPC Contractors will be required to submit their own OHS Plans/Health and Safety Management Systems which will meet EPC Contractor and MRPR safety requirements. • The Safety Management System will have a procedure for identifying all hazards associated with the activity in question. A hazard in this context is defined as any aspect of the Project activities which could result in harm to onsite personnel. • The EPC Contractors and Subcontractors will be made aware of their role in ensuring the Project meets international standards related to labour and working conditions and will be contractually obliged to do so. The EPC Contractors will establish a hierarchy of responsibility with regards for the provision of health and safety. • MRPR and the EPC Contractors will establish a hierarchy of responsibility with regards for the provision of health and safety. The precise titles and roles of each member will be determined by MRPR and the EPC Contractors prior to work on the site. • A Health and Safety Management Committee will be appointed to evaluate health and safety at the power plant site and to assess and recommend changes to equipment, policy and/or procedures where required by health and safety issues. The Committee will comprise members from MRPR, EPC Contractors and subcontractors. • Staff should be trained in safety procedures and provided with Personal Protective Equipment (PPE). • All hazardous work shall require the completion of a permit-to-work form and approval by the OHS Manager prior to commencement. • A Security Procedure shall be included within the OHS Plan covering areas of security control, working hours etc. • Emergency Response Procedures will form an integral part of the OHS Plans/HSMS. As part of these, an Emergency Response Plan shall be prepared to address emergencies of all scales.	compliance performance
Water Quality and Freshwater Ecology	Construction and use of temporary jetty on the Siak River	• Where possible works should occur in dry working conditions with work areas being isolated from the river flow and pumped dry. • Sediment control devices such as vertically hanging silt curtains should be employed around the tunnel area to minimise suspended material moving outside the work area during excavations. • Excavated material should be removed from the river channel and disposed of to an appropriate site. • Spill clean-up kits including floating booms should be available at the jetty to respond to any spills from vessels using the jetty. The spill kit elements should be appropriate for the type and nature of products being imported and for general spills of oils and fuels from boats.	LEC to implement mitigation and MRPR to review compliance performance
	Construction and use of temporary jetty on the Siak River – ongoing monitoring	• Fisherfolk can consult with the CLO as stated in the SEP.	LEC to implement mitigation and MRPR to review compliance performance

Issue	Location of Mitigation Measures	Proposed Mitigation Measures	Responsibility of mitigation
	All construction activities	• An Erosion and Sediment Control Plan/Procedure (ESCP) will be developed for all project earthwork and construction elements with a risk of generating sediment laden runoff that could impact upon the Siak River and river crossings along the gas pipeline route. This should include as a minimum: – Measures to isolate and divert clean water around open work areas; – Measures and work staging to minimise the amount of bare land open at any time; – Measures taken to minimise erosion and the entrainment of sediment within water flowing onsite; – Measures taken to treat sediment once it is entrained in water prior to discharge. Measures may include silt fences and sediment settlement ponds. Methods used should be designed to achieve a discharge limit of 50 mg/L of total suspended solids.	LEC and CPM to implement mitigation and MRPR to review compliance performance
	Discharge of water – use of low ecological toxicity biocides	Biocides to be used should be of low toxicity to fish. For example, the environmentally-friendly chemicals that can be used are Tetrakis Hydroximethyl Phosponium Sulfate (THPS) for biocides Triple Combination Hydrostatic Test as oxygen scavenger and corrosion inhibitor. THPS is a biodegradable, non-accumulative component, with low toxicity, in addition to being water-soluble. Technical literature for THPS described it as “readily biodegradable” using the U.S. EPA Guideline 40 CFR § 158 Subdivision N §162-4. Ranked as Gold by CEFAS (https://www.cefas.co.uk/cefas-data-hub/offshore-chemical-notification-scheme/)	LEC and CPM to implement mitigation and MRPR to review compliance performance
	Construction of the gas pipeline crossings	• Sediment laden dewatering water from open work areas within stream crossings should be discharged after filtration to the bypass water and then back into the stream. • Ensure discharge of chemicals will be at least 20 m from any watercourse or area of native vegetation and with prior landowner approval. (i) Horizontal Directional Drilling is not to be used; and (ii) pipeline crossing of watercourses will not use water-based drilling fluid and disposal of drilling mud. Fluid will be discharged to land at least 20 m from any watercourse or native vegetation and with prior landowner approval.	CPM to implement mitigation and MRPR to review compliance performance
Qualitative Risk Assessment	Gas pipeline construction	• Geotechnical works to strengthen slopes stability (rock bolts, crib walls etc.) • Diversion of water around slopes with low stability. • Separation of gas pipeline from oil pipeline 6 m • Penetration resistance. • Vertical separation greater than 1200 mm. • Emergency response plan	CPM to implement mitigation and MRPR to review compliance performance

For the operation phase it will be the responsibility of MRPR to implement and the manage the mitigation measures listed below.

Table 2.2 : Summary of proposed mitigation during operation

Issue	Location of Mitigation Measures	Proposed Mitigation Measures
Air quality	All power plant operation activities related to emissions and dust control	• Routine maintenance checks should be undertaken of all combustion equipment installed at the site including the blackstart diesel generators • Mitigation of discharges from the operational phase of the project has occurred in the Project design stage, and includes high efficiency burners and low emissions of contaminants from natural gas combustion that meet the WBG EHS Thermal Power Guidelines emission limits. • Drift eliminators will be installed on the cooling towers to limit particulate matter discharges from the site. • All areas not hard paved or gravelled at the site should be subject to landscape planting and grassing to minimise exposed surfaces that could give rise to dust emissions.
Greenhouse Gases		• To mitigate GHG impacts, MRPR shall develop procedures to quantify its annual GHG emissions using established methodologies and report these on an annual basis. • In addition, MRPR should incorporate the following into the ESMS: – Develop a process to identify areas of GHG reduction in the future. – Ensure an environmental management system designed to achieve improved environmental performance and compliance is in place
Cultural Heritage	All Project operation activities	• The mitigation measures employed during operation will be the same as those described above for construction (Table 2.1), namely the implementation of the Chance Find Procedure if an asset of cultural heritage value is discovered as part of the operational activities of the power plant or gas pipeline • The Worker's Code of Conduct used during operation will also include a section on the importance of cultural heritage preservation and understanding.
Environmental and Social Management Systems (ESMS)	All Project operation activities	• MRPR will prepare and implement an ESMS for Operation Phase which sets out management plans and procedures that align with the Overarching ESMS. MRPR will also develop an overall organisational structure for environmental and health and safety responsibilities on site. • MRPR, will establish, maintain, and strengthen as necessary an organisational structure that defines roles, responsibilities and authority to implement the ESMS and ESMP in the operation phase. Specific personnel with clear lines of responsibility and authority are designated in this section. Key ESMS responsibilities are defined and will be communicated to the relevant personnel and to the rest of MRPR any maintenance contractors. • Sufficient management sponsorship and human and financial resources will be provided on an ongoing basis to achieve effective and continuous ESMS performance.

Issue	Location of Mitigation Measures	Proposed Mitigation Measures
Hydrology	Power plant operation activities (design mitigation)	• The permanent power plant site and laydown area should have a stormwater system designed to capture and treat any runoff. The diversion drains to divert the overland flow (from the eastern and western catchments) put in place during the construction period will remain and given their performance, should ideally be enhanced from a temporary channel to one that is lined with concrete or rock rip rap. • The stormwater system should be sized to convey runoff, eventually draining to a sump, settling pond or wetland prior to discharge to the receiving environment. This will capture any runoff from the pad and settle out rubbish and sediment, while reducing flow velocities. Design of the settling pond/sump that should receive the stormwater should take into account: – the catchment area draining to the pond; – sediment characteristics that may require settling (i.e. dispersion and particle size assessments); and – design storms duration and velocities • All stormwater ponds should be designed with an emergency spillway to convey a design event when the pond is at capacity, typically a 100 year ARI storm for permanent structures. A wetland could also be considered for treatment of stormwater, if the water quality is acceptable. A serpentine water design will help slow velocities and coupled with a sediment forbay (that is regularly cleaned) will allow treatment and settling of sediment, nutrients and some metals. • Areas of the plant that are at risk of having contaminant discharges (such as oil leaks from vehicles or fluid spills) should be isolated, with their flows first draining through an oil water separator. The outflows from this separator should then drain to the sump/settling pond for further treatment.
Hazardous Substances and Waste	All Project operation activities	MRPR will develop a Hazardous Substances Management Plan/Procedure for operation. This will include the following information: • A register should be held and maintained onsite during construction and operation, which sets out the types, volumes and locations of all hazardous substances. • Safety Data Sheets (SDSs) should be compiled in accordance with the approved code of practice for the preparation of material safety data sheets. • Labels on containers should be compiled in accordance with the approved code of practice for the labelling workplace substances. • Induction and training should be provided to all those employees whose work potentially exposes them to hazardous substances; and those employees who are supervising others who are using hazardous substances at work. • Hazardous substances storage containers (including gas cylinders) which are unsafe (e.g. damaged, leaking etc) should be clearly marked as 'out of service' to prevent them from being used, until their disposal. • Designated stores which are appropriately designed, secured to avoid unauthorised access and fire rated should be used to store hazardous substances. • Incompatible substances should be stored separately. • Appropriate bunding should be used when there is a risk of leaks, spills or loss of containment. Bunding needs to be provided for: – All tanks and other vessels containing materials which can cause an environmental, safety or health hazard. – Any other area where spills may occur (e.g. filling stations, decanting areas, drum storage areas etc.).

Issue	Location of Mitigation Measures	Proposed Mitigation Measures
		– Bunded areas for tanks should be sized to contain 110% of the largest tank in the bund. • Level protection (including automatic trips) is required to avoid overflow during the filling of tanks. • Storage areas for hazardous substances (including piping systems) should be inspected on a regular basis to detect spills, leaks and the potential for such occurrences. Any deficiencies found must be recorded and immediately reported to the work area manager in order for the deficiency to be rectified as soon as practicable. • Standard Operating Procedures (SOPs) and/or guidelines (if appropriate, by means of signage) should be prepared and implemented to cover at least the following: – Incompatibility of substances when mixed (e.g. mixing may result in fire or explosion). – Precautions when pouring, decanting or transferring substances. – Steps to be taken in the event of a spill or exposure. – Personal protective equipment to be used with the substance. • Operations which require the mixing of one or more substances should be assessed by personnel with the appropriate handling training prior to work commencement. In addition, areas where mixing and decanting of hazardous substances occur should be fitted with eye wash baths and emergency showers. • Transport of hazardous substances should be carried out in full compliance with the relevant legislative requirements. • Transport vehicles should have appropriate signage and carry documentation on the hazardous substances to be transported. • Arrangements should be in place to ensure that the appropriate spill control equipment for storage and transport (i.e. for water and/or land) is available in sufficient quantities for any foreseeable spills. • Suitable firefighting equipment should also be available to suit the type/s of substances being transported. • Any such equipment should be routinely inspected and maintained in good working order and in a state of readiness. • No chemicals should be accepted onto the Project sites or off-loaded without the relevant health, safety and emergency information being made available by the supplier this includes SDSs. Vehicles and other equipment should be turned off while fuelling operations takes place. • Provisions should be made for the containment, collection and disposal of waste oil and spills that are generated as a result of refuelling activities. Provisions may be in the form of a bunded and impervious area, with a spill and effluent collection system. Alternatively, a portable collection sump should be placed underneath the maintenance and refuelling areas to contain any spillage and/or minor leaks. • MRPR will prepare and implement an emergency response plan/procedure to manage spoils, fires etc., and include warning and evacuation of nearby residences. • Firefighting systems will be fitted as required by the design.

Issue	Location of Mitigation Measures	Proposed Mitigation Measures
		• All hazardous waste, including used spill response items, oils and residues, including drums and containers which were used to hold hazardous substances, and sludge removed from septic tanks, should be collected and transported an appropriately licensed hazardous waste disposal facility for disposal. • A Hazardous Waste Store should be developed at the site during construction for the temporary storage of hazardous wastes generated including contaminated soil waiting to be disposed of offsite to a licensed hazardous waste disposal facility.
Noise and Vibration	Power plant operation activities	Given the remote locations of the proposed Riau CCPP site, no operational noise impacts have been predicted. As such, noise mitigation is not considered necessary. However, to promote best practice at the site and to ensure that noise impacts are maintained at or below the modelled levels, the following operational noise management measures are recommended: • Where noise levels differ from those outlined in described above, remodelling should be conducted to confirm noise impacts; • Noise levels modelled in this report should be confirmed prior during the commissioning of the plant; • Operational equipment should be maintained and operated in the recommended manner in order to keep noise emissions to a minimum; • Hatches on noisy plant and doors to noisy work areas should remain closed where possible; and • It is recommended that all noise generating equipment is selected based in part on its acoustic rating where multiple choices exist. •
Social / Economic	All Project operation works	*Grievance* • The Project will implement regular consultations with project affected people, their grievances will be noted, treated and addressed. • The Grievance Mechanism defined in the Stakeholder Engagement Plan will be disclosed to the neighbouring communities of the power plant and along the gas and water pipeline routes. Grievances received will be registered and addressed on a case by case basis. *Jobs / Employment* • MRPR will design employment and recruitment opportunities that supports the local community. These will be developed via consultations with local stakeholders, Kecamatan/Kelurahan (Village) administration office and other local stakeholders, including woman and vulnerable groups. • MRPR will establish a local employment brokerage that will publicise job vacancies in ways and during times that villagers will be able to participate. It is important that the employment process is well managed and that the local community is able to actively participate to the extent feasible. • MRPR will encourage local employment prioritising the three administrative areas: Industri Tenayan, Bencah Lesung and Tuah Negeri along with adjacent villages. Also include the five villages (Meredan, Tualang Timur, Pinang Sebatang, Kuala Gasib, Melebung) and along the gas pipeline route location and Okura village which across the jetty site location.

Issue	Location of Mitigation Measures	Proposed Mitigation Measures
		• Local villagers will be informed of job opportunities along with the required qualifications in a timely manner, ensuring the advertising process is culturally and administratively appropriate. • Local businesses will be informed of contracting opportunities in a timely manner. • MRPR will ensure that the hiring process is conducted as transparently as possible to help the community to understand strategic staffing decisions for the Project. • MRPR will develop and monitor an internal standard to guide labour practices and apply this to Supply Chain. • MRPR will develop and implement a Workers Code of Conduct that addresses issues such as anti-social behaviour and drug and alcohol consumption, and respect for women in accordance with the applicable regulation. • MRPR will define targets for the employment of women (at all levels and skills) whenever possible. It will be disclosed that recruitment is also open to women in the local communities. Specific recruitment strategies targeting women will be defined in accordance with the culture, regulation and required qualifications. • MRPR will provide opportunities for women and women groups to participate in the work force and assist them in having good quality work standards so they can train others and are able to work with other companies in the future. *Skills and Training* • MRPR will continue will the capacity building program as mentioned in Table 2.1. • The employment of local villagers for higher level positions should be maximised to facilitate good community relations. • MRPR will make efforts to facilitate the growth and development of new entrepreneurs, both individuals and groups originating from affected communities. *Community Development* • MRPR will establish a Community Development Fund for the operational stage of the Project to undertake a range of community development initiatives that will assist in alleviating poverty in the Project area. • Corporate Social Responsibility (CSR) programmes will be designed and implemented by also coordinating with District (Kecamatan) and Village (Kelurahan) Offices, including in partnership with local agencies to create business opportunities for the local community. The CSR programme will be available to the local community during operation, including the workforce that is no longer involved after the construction of the Project. CSR programmes will also seek to improve levels of education and skills for people affected by the Project. • MRPR will establish a program that will look to promote the empowerment of women in the Project area. *Health and Social Initiatives* • To prevent social tensions between the workforce and the local population, MRPR will enforce the Worker's Code of Conduct. • MRPR will undertake pre- employment screening to ensure employees are fit to work; • MRPR will provide free and anonymous health surveillance and active screening and treatment of workers including sexually transmitted diseases.

Issue	Location of Mitigation Measures	Proposed Mitigation Measures
		• MRPR will prevent illness among workers in local communities by undertaking health awareness and education amongst the workforce and in the neighbouring communities. • MRPR will continue to implement the Workers Health Education Procedure. • MRPR will collaborate with local authorities to enhance access to public health services and promote immunisation. • MRPR will define and implement measures to prevent vector-borne diseases (such as avoidance of stagnant water, measures to avoid mosquito development). • MRPR will keep in place adequate and sufficient sanitation facilities for both female and male workers. *Access and Security* • Access to the power plant site will be controlled with no unauthorised access from local communities permitted. • MRPR will train the security guards on human rights issues. The security guards will not be armed. They will coordinate with local government security forces in case of need and will ensure that security and human rights of members of the local communities are respected. • The Security Management Plan shall be revised for operations and be in accordance with national law and the principles of good international industry practice. •
Soils, Geology and Groundwater	Power plant operation activities	• Mitigation measures have been built into the design of the power plant to help reduce the risk of accidental contamination spill occurring. In the unlikely event that an accidental contamination spill does occur, and the mitigation measures built into the design of the power plant, such as bunding, do not stop the contaminants from entering the underlying soils, all contaminated soil should be excavated and replaced with clean fill to limit the likelihood of groundwater contamination occurring. The excavated soil should be disposed of off-site in accordance with relevant regulatory guidelines. • MRPR will develop a Hazardous Substances Management plan/procedure, which outlines mitigation measures will be produced and implemented. For further details of mitigation measures, reference should be made to mitigation outlined for Hazardous Substances and Waste. • Spill kits should be located on the construction site to manage and contain any fuel or hazardous substance spillage. If an accident does occur, then contaminated soil should be excavated and replaced with clean fill to minimise (or prevent) groundwater contamination with treatment of any stormwater runoff or process water prior to disposal. • All wastewater should be collected and treated prior to discharge. • Oily and/or hazardous waste will be separately collected and disposed of by an appropriately licensed operator. • All vehicle maintenance should be done in garages.
Terrestrial Ecology	Power plant	• There should be provision of wetland areas and swamp forest within the green zones of the CCPP. This is likely to be approximately 3.5 ha of habitat provided on completion of the construction phase. • Ongoing CSR activities as detailed in Table 2.2. • The Project owner will enforce a no tolerance policy towards the poaching or illegal trafficking of any flora or fauna particularly the agile gibbon and sunda pangolin. This zero tolerance policy will be included in employment contracts.

Issue	Location of Mitigation Measures	Proposed Mitigation Measures
		• The Project owner shall provide training to staff and workers on all rules, regulations and information concerning restrictions related to flora and fauna that are present in the project area and particularly highlighting those that are ecologically significant e.g. sunda pangolin and agile gibbon
Traffic Management	Power plant operation activities	• A Travel Plan should be distributed to staff to inform them of the best ways to travel to the sites of the Project. Staff should be encouraged to take public transport, car pool or that the contractor provides transport for them.
Working Conditions, Occupations and Safety	All operation activities	• MRPR will be required to develop an Occupational Safety and Health Management System (OSHMS) for the operation and maintenance of the pipeline and power plant, which will apply to all personnel involved in the Project, including subcontractors and part-time workers. The primary health and safety objectives will be to ensure effective measures and management of occupational health and safety to minimise workplace accidents and injuries. The health and safety procedures within OHSMS will meet the requirements specified in the WBG Environmental, Health and Safety Guidelines pertaining to occupational safety and health. In addition, any Subcontractors appointed by MRPR will be required to submit their own. • MRPR should establish a hierarchy of responsibility with regards for the provision of health and safety. • The OHSMS will have a procedure for identifying all hazards associated with the activity in question. A hazard in this context is defined as any aspect of the Project activities which could result in harm to onsite personnel. • A Health and Safety Management Committee should be appointed to evaluate health and safety at the site and to assess and recommend changes to equipment, policy and/or procedures where required by health and safety issues. • Staff should be trained in safety procedures and provided with PPE. Working conditions and occupational safety and health procedures framework has been outlined in the ESIA Volume 5: Appendices, Technical Report - Working Conditions, Occupational Safety and Health. • The Worker's Grievance Mechanism will continue to run throughout operational period.
Qualitative Risk Assessment	Gas pipeline operation	• Signage advising presence of pipeline. • Signage advising to contact Riau CCPP prior to conducting drilling/excavations in this area. • Third party liaison. • Hazard tape place above the pipe warning of its presence. • The gas supply can be shut off at the point of supply or at one of the several line break valves to be installed along the route. • Signage advising to contact Riau CCPP prior to conducting drilling/excavations in this area • Socialisation of risks pertaining to the gas pipeline operation with local communities • Separation of gas pipeline from oil pipeline by a minimum of 6 m • Emergency response plans

2.5 Monitoring

A recommended monitoring programme is set out in the ESMP. This is designed to conduct sufficient monitoring in order to demonstrate compliance with Indonesian regulatory discharge limits and ambient standards and the applicable WBG EHS Guidelines specified for the receiving environments (air, water, soil, etc.). The monitoring programmes will also assess the performance of mitigation measures including containment and treatment systems at the power plant during construction and operation and for the construction of the gas pipeline.

The Monitoring Procedures will set out the location of the sampling points, sampling methodology to be used (grab samples, automated etc.), number of samples to be collected each round, frequency of sampling, sample handling and preservation, parameters to be analysed for and analytical methods, and reporting requirements. This monitoring will include, but will not be limited to:

- Regular monitoring of in stream water quality and of stormwater discharged into the environment from the stormwater sumps, during all seasons;
- Groundwater levels and quality;
- Traffic management measures;
- OHS performance;
- Waste generation;
- Noise and ambient air quality; and
- Social surveys and changes monitoring.

This environmental monitoring for the construction and operation phases is set out in Table 2.3 and Table 2.4.

2.6 Construction Monitoring

Details on the monitoring locations, and methodologies are included in the MRPR Overarching ESMS and the supporting ESMS procedures.

Table 2.3 : Monitoring activities during construction

Issue	Location of Monitoring	Proposed Monitoring Measures	Responsibility of monitoring	Method(s)	Applicable Standards
General	All Project construction works	• MRPR will engage an external third party to monitor the environmental and social performance of the Project and report back to lenders. This would be every six months during construction and annually during operation. • MRPR will prepare a lenders Environmental and Social report which details the current level of environmental and social performance being achieved, the monitoring conducted in the last six months, incidents and accidents, results of inspections and audits along with any corrective actions, grievances logged and the results of any corrective actions.	MRPR	Physical site audit of activities and review of monitoring documentation by external third party.	• Equator Principles • IFC Performance Standard 1 and 3
Air quality	All construction works	• As part of good working practice the construction managers should complete routine checks on dust generation from construction activities, and confirm that dust suppression and appropriate storage is being used where required. In addition, a mechanism for complaints regarding dust will be available to locals, and due regard given to any issues raised.	LEC and CPM to implement monitoring and MRPR to review performance	Manual	• IFC Performance Standards 1 and 3 • IFC EHS General Guidelines
Terrestrial Ecology	Gas pipeline route	• Ecological surveys are to be undertaken of the power plant, transmission line, water pipeline and gas pipeline route, prior to any vegetation	MRPR to implement	To be determined and will be covered BAP	• IFC Performance Standard 1 and 6

Issue	Location of Monitoring	Proposed Monitoring Measures	Responsibility of monitoring	Method(s)	Applicable Standards
		clearance to identify, any Vulnerable, Threatened, Endangered or Critically Endangered species as noted in the ESIA. The surveys will be conducted by a member of staff trained to identify the sensitive species found in the area and as noted in this ESIA. If any sensitive species including the sunda pangolin are found, further consideration of the species context will be factored into decision planning. For example, if the species is foraging then waiting until it moves out of the area prior to work commencing. If a nest is observed, then looking at options to re-route around the nest incorporating sufficient distance to avoid disturbance and/or seeking a species specialist advice.			
Cultural Heritage	All construction works	• No monitoring measures are proposed during construction, with the exception of MRPR ensuring the implementation of the Chance Find Procedure.	LEC and CPM to implement monitoring and MRPR to review performance	N/A	IFC Performance Standard 8
Environmental and Social Management System (ESMS)	All construction works	• The ESMS will set out MRPR's policies and procedures for managing, mitigating and monitoring environmental and social impacts. Monitoring will be carried out in order to determine whether environmental and social outcomes are being achieved. Monitoring requirements will be specified in a monitoring plan (or plans), which identify: - the type of monitoring that is to be carried out; - where monitoring is to take place; - how frequently monitoring will be carried out; - the parameters that will be tested for;	MRPR to responsible for monitoring overarching ESMS and EPC contractor's construction ESMS.	N/A	• Equator Principles • IFC Performance Standard 1, 2, 3, and 4. • IFC EHS General Guidelines

Issue	Location of Monitoring	Proposed Monitoring Measures	Responsibility of monitoring	Method(s)	Applicable Standards
		- the applicable objectives and performance standards; and - who will conduct the monitoring. • Reviews of the ESMS will be conducted throughout construction and operation of the Project and where necessary changes should be made to the documentation to ensure that it remains relevant. For instance, once construction has been completed, the construction related environmental and social aspects will no longer be relevant. • MRPR will be responsible for overall monitoring and reporting every six months to relevant authorities regarding the findings of the reports.			
Hazardous Substances and Waste	All construction works	• The amount and the disposal destination of the hazardous wastes should be recorded and monitored. • A record of all spillages should be maintained. • All bund enclosures should be regularly inspected for water and sheens prior to the collected water being discharged. • Regular inspection of storage facilities should be undertaken to check for leaks, spills and inappropriate storage practices. • Regular inspections should be undertaken of waste collection skips, to check wastes are being separated correctly and hazardous wastes are not being included with non-hazardous will be undertaken on a weekly basis. The inspection should also include a check of the waste skips and bins condition to be sure waste is being held securely and not able to impact the environment through leakage or being blown away.	LEC and CPM to implement monitoring and MRPR to review performance	Manual inspections and record keeping	• IFC EHS General Guidelines

Issue	Location of Monitoring	Proposed Monitoring Measures	Responsibility of monitoring	Method(s)	Applicable Standards
Hydrology	All construction works	• Visual monitoring of stream banks and the construction of diversion channels should be undertaken to identify any areas that may be performing inadequately (resulting in bank collapses, localised erosion hot spots and scouring). • Monitoring of the effectiveness of the settling pond or wetland on sediment should be undertaken during construction and ongoing operations, with spot samples assessed for Total Suspended Solids (TSS) at the inlet and outlet locations. Imhoff settling cones offer a cheap and viable method for quick onsite estimates of TSS from the inlet and outlet.	LEC and CPM to implement monitoring and MRPR to review performance		
Noise and Vibration	Power plant site	During operations the following monitoring is recommended: • Direct observation of machine maintenance should be made to ensure that any noise-creating faults are treated. • Noise monitoring at the boundary of the power plant and nearest residential property carried out every six months in accordance with Indonesian standards and WBG EHS Guidelines (during day and night time periods). • Compliance with operational noise criteria will be determined in accordance with the methodology outlined in State Minister of Environment Decree No 48	LEC and CPM to implement monitoring and MRPR to review performance	Environmental noise monitoring will be conducted in accordance with *ISO1996 Acoustics – Description, measurement and assessment of environmental noise* (or equivalent). The results of monitoring will include: • Date, time and location of monitoring; • Name of person conducting the monitoring; • Statistical descriptors to be recorded for 15-minute intervals include	• WBG EHS Guidelines • State Minister of Environment Decree No 48

Issue	Location of Monitoring	Proposed Monitoring Measures	Responsibility of monitoring	Method(s)	Applicable Standards
				LAeq, LAmax and LA90 levels; • Instrumentation to be fitted with wind shields, and calibrated prior to measurements to measure drift; and • Details of site activity, environmental noise characteristics and weather to be noted during monitoring. Noise instrumentation is to comply with the requirements of *IEC61672-1 Electroacoustics – Sound Level Meters – Part 1: Specifications* and carry appropriately accredited certification.	
	Gas pipeline	• Noise monitoring spot checks should also be conducted during gas pipeline construction, where the works pass in close proximity to residential properties.	CPM to implement monitoring and MRPR to review performance	As above	As above
Water Quality and Aquatic Ecology	Construction and use of temporary jetty on the Siak River	• Daily observations should be made during in river works to visually assess whether sediment plumes are being generated and to modify the sediment controls to minimise	LEC to implement monitoring and MRPR to review performance	Manual observations Sampling for fisheries as per set out in BAP	• Equator Principles • IFC Performance Standard 1 and 5. • IFC EHS General Guidelines

Issue	Location of Monitoring	Proposed Monitoring Measures	Responsibility of monitoring	Method(s)	Applicable Standards
		effects. Records will be made of observations and any changes to controls undertaken. • At the same fisheries points monitored during pre-construction further monitoring shall be undertaken immediately following completion of construction work. Fish species presence and abundance are to be recorded.			
	Gas pipeline construction	• Daily observations should be made during in stream works to visually assess whether sediment plumes are being generated and to modify the sediment controls to minimise effects. Records should be made of observations and any changes to controls undertaken.	CPM to implement monitoring and MRPR to review performance	Manual	• Equator Principles • IFC Performance Standard 1 and 6. • IFC EHS General Guidelines
	All construction works	• Inspection and maintenance – the ESCP should specify who is responsible for inspecting all physical elements of the erosion and sediment control measures. These should be inspected daily to ensure they are installed and working correctly. Any defects should be rectified before earthworks occur in that area of the site. Accumulated sediment shall be removed from all features when it reaches 25% of the available space. Records of all inspection and maintenance should be kept. • The discharge from the sedimentation ponds should be monitored during rain events. At least once per month for total suspended solids for comparison with the discharge limit of 50 mg/l and to determine the effectiveness of the pond.	LEC and CPM to implement monitoring and MRPR to review performance	• Manual • TSS sampling shall be aligned with the Standard Nasional Indonesia SNI 6.989, 57: 2008 Regarding Method for Surface Water Sampling .	• Government of Indonesia Regulation No. 82 Year 2014 regarding Management of Water Quality and Control on Water Pollution (for Water Quality); • IFC Performance Standard 1 • IFC EHS General Guidelines
Social	All construction works	• Monitor the number of people being employed by the project from the following villages Industri Tenayan, Bencah Lesung, Tuah	MRPR to implement and monitor	N/a	• Equator Principles • IFC Performance Standard 1 and 6.

Issue	Location of Monitoring	Proposed Monitoring Measures	Responsibility of monitoring	Method(s)	Applicable Standards
		Negeri, Maredan, Kuala Gasib, Pinang Sebatang, Tualang Timur, Melebung and Okura. This should be compared to predicted numbers of employees. • Surveys will be conducted to determine the number of new businesses generated by the development and the level of indirect employment. • Monitor the recruitment process and the EPC contractor's implementation of employment, health and safety, security mitigation. • MRPR and the EPC contractors shall monitor their social performance against the requirements of the ADB Safeguards on a quarterly basis • An independent third party review is recommended of the effective implementation of the LRP, one year after civil construction works commence at the power plant and gas pipeline site. • Ongoing consultation and communication with the local community will be required particularly with project affected people, vulnerable groups and key stakeholder groups. The minutes of meetings and signed lists of attendees will be completed and documented. • Independent third party audit to check that livelihood restoration measures as set out in the LRP have been implemented.			• ADB Social Safeguards
	Grievance Mechanism	• The MRPR Community Liaison Officer will be responsible for updating and monitoring the implementation of the LRP (and RAP if required) and Grievance Mechanism defined in the Stakeholder Engagement Plan.		N/A	• Equator Principles • IFC Performance Standard 1 and 6. • ADB Social Safeguards

Issue	Location of Monitoring	Proposed Monitoring Measures	Responsibility of monitoring	Method(s)	Applicable Standards
		• For any grievances lodged by workers or the community during construction, the CLO will log and undertake analysis and report • An external monitor will complete bi-annual site visits, audits and reports during construction including the review of the grievance log			
Soils, Geology and Groundwater	Power plant construction	• To assess the effects of localised dewatering operations at the site a minimum of four groundwater level monitoring wells should be installed around the boundary of the site. These should be installed after the cut and fill operations but prior to foundation construction to minimise the risk of them being damaged, and so that they reflect the post earthworks water table. Should groundwater levels reduce by more than 0.5 m at the property boundary, then the monitoring of the eight neighbouring wells within 500 m of the site shall be implemented. • Any wells identified as being used for domestic purposes within a 250 m radius of the Power Plant site should be monitored on a monthly basis for a suite of contaminants. • Dewatering discharges should be monitored in accordance with WBG EHS Guidelines for liquid effluents	LEC to implement monitoring and MRPR to review performance	• Dip meter to record level of wells on a weekly basis should groundwater levels reduced by 0.5 m. • All field tests shall be carried out in accordance to the ASTM standards for suite of contaminants as set out in Table 3.13 in Volume 2: EIA.	WBG EHS General Guidelines
	Gas pipeline construction	• Wells within a close proximity radius to the open trench for the gas pipeline should be monitored for water level and water quality once whilst construction is directly adjacent.	CPM to implement monitoring and MRPR to review performance	• Dip meter to record level of wells on a weekly basis should groundwater levels reduced by 0.5 m.	WBG EHS General Guidelines

Issue	Location of Monitoring	Proposed Monitoring Measures	Responsibility of monitoring	Method(s)	Applicable Standards
Traffic Management	All construction works	Monitoring of construction traffic and traffic management measures should occur to ensure compliance with the traffic management requirements outlined within the TMP. Activities to be monitored include: • Construction traffic movements to ensure truck drivers use the designated routes; • Traffic incidents/complaints from the public or officials to ensure that unpredicted changes in travel time due to incidents such as, for example traffic accidents, emergencies, natural disasters can be managed by specially trained personnel; and • Public roads to ensure that the roads in the vicinity of the site are clean at all times of clay, slurry or materials from the site. • Monitor the safety performance of the local roads, and where necessary make physical changes to improve safety or encourage road user behavioural changes.	LEC and CPM to implement monitoring and MRPR to review performance	Manual surveys conducted to check list of monitoring measures on a three-monthly basis. Daily inspection of roads by the site or along gas pipeline route for dust and dirt.	WBG EHS General Guidelines
Working Conditions, Occupations and Safety	All construction works	• The EPC Contractors will undertake regular safety inspections and monitoring of exposure to hazards. This will include the state of the site as well as the maintenance of equipment and a comparison to internationally published exposure guidelines. • The Site Manager shall instigate measures to correct non-conformance in safety performance found during safety checks and inspections. A record of the safety checks and inspections, and resulting actions, shall be provided to the Health and Safety Management Committee every month. • MRPR, as principals, undertake independent audits of the EPC Contractors and their Subcontractor's Health and Safety compliance	LEC and CPM to implement monitoring and MRPR to review performance	Manual inspections and audits following developed checklists on a weekly basis	• IFC Performance Standard 1 and 2 • WBG EHS General Guidelines • WHG EHS Guidelines for Thermal Power Plants

Issue	Location of Monitoring	Proposed Monitoring Measures	Responsibility of monitoring	Method(s)	Applicable Standards
		and performance to ensure that the health and safety practices as set out in their health and safety plans are being complied with. The audits will also check that no unsafe practices are being carried out at site. If unsafe practices are identified during the audits, work at the site should cease. The audits should be carried out once every two months. • All staff at MRPR and the EPC Contractors should be notified of all incidents/accidents which result in first aid treatment during the construction of the pipeline and power plant. Minor incidents along with the incident/accident investigation report should be supplied to MRPR once a month. Serious accidents that are Lost Time Incidents or result in serious harm or a fatality should be reported immediately to MRPR. • Notification of accidents and incidents at the site during construction provide another means of monitoring the Contractor's safety performance.			

2.7 Operational Monitoring

Table 2.4 : Monitoring activities during operation

Issue	Location of Monitoring	Proposed Monitoring Measures	Responsibility of monitoring	Method(s)	Applicable Standards
General	All Project Operations	• MRPR will engage an external third party to monitor the environmental and social performance of the Project and report back to lenders. This would be	MRPR	• Physical site audit of activities and review of monitoring documentation by external third party.	• Equator Principles • IFC Performance Standard 1 and 3

Issue	Location of Monitoring	Proposed Monitoring Measures	Responsibility of monitoring	Method(s)	Applicable Standards
		every six months during construction and annually during operation. • MRPR will prepare a lenders Environmental and Social report which details the current level of environmental and social performance being achieved, the monitoring conducted in the last six months, incidents and accidents, results of inspections and audits along with any corrective actions, grievances logged and the results of any corrective actions.			
Air quality	Power Plant operation activities	• The Project will include an environmental monitoring programme, which will include a Continuous Emissions Monitoring System (CEMS) for continuous monitoring of gases discharged from both stacks, including measurements of oxygen, carbon dioxide, nitrogen oxides and temperature. • Annual stack testing to calibrate CEMS units and sampling should cover oxygen, carbon dioxide, nitrogen oxides and temperature. • It is recommended that ambient air monitoring for NO_2 should be undertaken in the area surrounding the power plant at two locations, with sampling carried out using passive and manual methods on a monthly basis. Alternatively, a permanent continuous ambient air monitoring unit for NO_2 which utilises electrochemical cell	MRPR	• Continuous stack emission monitoring with CEMS • Annual stack testing • Continuous automatic monitoring for duration of operation phase using Aeroqual AQS1 air quality monitoring systems	• Corporation (IFC) (2007) Environmental, Health and Safety Guidelines for Thermal Power Plant • Regulation of the Minister of Environment Number 21 of 2008 Regarding Emission Standard for Stationary Sources from Thermal Power Generation Business and/or activities. • Government Regulation of the Republic of Indonesia Number 41 (1999) regarding Air Pollution Control (PP41/1999).

Issue	Location of Monitoring	Proposed Monitoring Measures	Responsibility of monitoring	Method(s)	Applicable Standards
		non-reference method could be installed at one location where the highest concentration of NO_2 as a 24-hour average is predicted to occur, subject to land acquisition and security arrangements. •			
GHG	Power Plant operation activities	• To monitor GHG impacts, MRPR shall monitor and report on emissions in accordance with Annex A of the Equator Principles (2013).	• MRPR	Evaluation of : • Scope 1 Emissions: direct emissions from the CCGT Power Plant facilities within the physical project boundary; and • Scope 2 Emissions: indirect emissions associated with the project's use of energy but occurring outside the project boundary	• IFC Performance Standards (PS) 3 – Resource Efficiency and Pollution Prevention
Environmental and Social Management Systems (ESMS)	All Project operation activities	• During operation, monitoring of an operational ESMS will be carried out as described above for construction activities.	• MRPR	• N/A	• Equator Principles • IFC Performance Standard 1, 2, 3, and 4. • IFC EHS General Guidelines
Hazardous Substances and Waste	Power plant operation activities	• To ensure the processes and procedures are operating effectively, MRPR will conduct regular audits of hazardous substance storage and the operation of the Hazardous Substance Management Plan. Audits will involve reviewing storage procedures, ensuring staff are appropriately trained and supervised,	• MRPR	• Manual inspections and record keeping	• IFC EHS General Guidelines

Issue	Location of Monitoring	Proposed Monitoring Measures	Responsibility of monitoring	Method(s)	Applicable Standards
		ensuring materials are stored and used in accordance with good international industrial practice, and identifying and recommending any areas for continual improvement. • As part of the Waste Management Plan a monitoring plan will be developed to inspect waste collection skips, to check wastes are being separated correctly and hazardous wastes are not being included with non-hazardous. The inspection should also include a check of the waste skips and bins condition to be sure waste is being held securely and not able to impact the environment through leakage or being blown away. • Records will be kept on the types of wastes generated, the volume generated and the location/volume of waste disposed off-site. Types and volumes of hazardous waste must be recorded and destruction certificates obtained from the hazardous waste removal contractor.			
Noise and Vibration	Power plant operation activities	• Direct observation of machine maintenance should be made to ensure that any noise-creating faults are treated. • Noise monitoring at the boundary of the power plant and nearest residential property carried out every six months.	• MRPR	Environmental noise monitoring will be conducted in accordance with *ISO1996 Acoustics – Description, measurement and assessment of environmental noise* (or equivalent). The results of monitoring will include:	• WBG EHS Guidelines • State Minister of Environment Decree No 48

Issue	Location of Monitoring	Proposed Monitoring Measures	**Responsibility of monitoring**	**Method(s)**	**Applicable Standards**
				• Date, time and location of monitoring; • Name of person conducting the monitoring; • Statistical descriptors to be recorded for 15-minute intervals include LAeq, LAmax and LA90 levels; • Instrumentation to be fitted with wind shields, and calibrated prior to measurements to measure drift; and • Details of site activity, environmental noise characteristics and weather to be noted during monitoring. Noise instrumentation is to comply with the requirements of *IEC61672-1 Electroacoustics – Sound Level Meters – Part 1: Specifications* and carry appropriately accredited certification.	
Water Quality and Freshwater Ecology	Power plant operation activities	• Visual inspection of oil interceptors for visible oil and settling ponds.	• MRPR	• Manual observations	• Equator Principles

Issue	Location of Monitoring	Proposed Monitoring Measures	Responsibility of monitoring	Method(s)	Applicable Standards
		• Monitoring of the discharge from oil interceptors and settling ponds every three months (with comparison to WBG EHS Discharge Guidelines). • At the same fisheries points monitored during pre-construction further monitoring shall be undertaken approximately 12 months into operation. Fish species presence and abundance are to be recorded.		• • All field tests shall be carried out in accordance to the ASTM standards for suite of contaminants as set out in EHS General Guidelines. • Sampling for fisheries as per set out in BAP	• IFC Performance Standard 1 and 5. • IFC EHS General Guidelines
Social	All Project operation activities	• Monitor the number of people being employed by the project from the following villages Industri Tenayan, Bencah Lesung, Tuah Negeri, Maredan, Kuala Gasib, Pinang Sebatang, Tualang Timur, Melebung and Okura. This should be compared to predicted numbers of employees. • Surveys should be conducted to determine the number of new businesses generated by the development and the level of indirect employment. • Ongoing consultation and communication with the local community will be required particularly with project affected peoples, vulnerable groups and key stakeholder groups. The minutes of meetings and signed lists of attendees will be completed and documented. • During operation, on a quarterly basis, the number of regular and ad-hoc meetings with communities will be recorded, as well as the minutes of meetings and signed lists of attendees. • During operation, the number of consultations with project affected parties and number grievances received, treated	• MRPR	• N/a	• Equator Principles • IFC Performance Standard 1 and 6. • ADB Social Safeguards

Issue	Location of Monitoring	Proposed Monitoring Measures	Responsibility of monitoring	Method(s)	Applicable Standards
		and solved will be recorded through minutes of meetings and signed lists of attendees.			
	Grievance Mechanism	• The MRPR Community Liaison Officer will be responsible for updating and monitoring the implementation of the LRP (and RAP if required) and Grievance Mechanism defined in the Stakeholder Engagement Plan. • For any grievances lodged by workers or the community during construction, the CLO will log and undertake analysis and report • An external monitor will complete bi-annual site visits, audits and reports during construction including the review of the grievance log • The Grievance database will be monitored with progress reported on a quarterly basis.	• MRPR	• N/A	• Equator Principles • IFC Performance Standard 1 and 6. • ADB Social Safeguards
Soils, Geology and Groundwater	Power plant operation activities	• Any wells identified as being used for domestic purposes within a 250 m radius of the Power Plant site should be monitored on a six monthly basis for a suite of contaminants as set out in Table 3.13 in Volume 2: EIA.	• MRPR	• All field tests shall be carried out in accordance to the ASTM standards for suite of contaminants as set out in Table 3.13 in Volume 2: EIA.	• WBG EHS General Guidelines
Working Conditions, Occupational Health and Safety	All operation works activities	• The Occupational Health and Safety Management System will include a schedule of regular safety inspections and monitoring of exposure to hazards. This will include the state of the site as well as the maintenance of equipment and a comparison to internationally published exposure guidelines. • The Site Manager should instigate measures to correct non-conformance in	• MRPR	• Manual inspections and audits following developed checklists on a weekly basis	• IFC Performance Standard 1 and 2 • WBG EHS General Guidelines • WHG EHS Guidelines for Thermal Power Plants

Issue	Location of Monitoring	Proposed Monitoring Measures	Responsibility of monitoring	Method(s)	Applicable Standards
		safety performance found during safety checks and inspections. A record of the safety checks and inspections, and resulting actions, shall be provided to the Health and Safety Management Committee every month. • MRPR will undertake audits to check that no unsafe practices are being carried out at site. If unsafe practices are identified during the audits, work at the site should cease. The audits should be carried out once every two months. • All staff should notify MRPR of all incidents/accidents which result in first aid treatment during the operation of power plant. Minor incidents along with the incident/accident investigation report should be supplied to MRPR HSE Manager once a month. Serious accidents that are Lost Time Incidents, or result in serious harm or a fatality should be reported immediately to MRPR's HSE Manager. • Worker occupational monitoring such as hearing and vision should be undertaken on an annual basis.			
Qualitative Risk Assessment	Gas pipeline	• Monitoring of slopes which were identified as having less than desirable stability as to movement • Patrolling gas pipeline route to check on potential areas of disturbance.	• MRPR	• Manual	• IFC Performance Standard 1, 3 and 4

2.8 Budget and Schedule

The implementation responsibility, estimated budgets and implementation for each required management plan (where available) and action are provided in Table 2.6. The management procedures/plans to be implemented during construction will be developed by the EPC Contractors for review by MRPR and will include commitments made to adhere to the Applicable Standards and mitigations set out in this ESIA. As such Table 2.6 only sets out additional costs to be incurred by MRPR on an annual basis over the construction schedule. The below estimates include budgets for resources and equipment to implement the ESMP as well as conduct training, environmental and social monitoring, analysis and reporting. Estimates for the Operation Phase are provided on the assumption that the O&M contract is for 20 years.

Table 2 5 : Budget for ESMP and Proposed Implementation

Item	Management Plan/Action	Responsibility	Estimate (US $)	Phase/Timeline	Remarks
Pre-Construction					
1	Overarching Environmental and Social Management Systems preparation, institutional strengthening and implementation	MRPR	~30,000 US per annum	Pre Construction, Construction, and Operation Phase.	Document is being prepared during preconstruction for both construction and operational stage. Document may be reviewed and updated from time to time.
2	Construction Environmental and Social Management System/Plan	EPC	Under EPC Contract	Prepared during Pre-Construction Phase	Document is being prepared during preconstruction for both construction and operational stage.
3	Air Quality Management Procedure and Air Quality Monitoring	EPC	Under EPC Contract	Prepared during Pre-Construction Phase	Document is being prepared during preconstruction for both construction and operational stage.
4	Chance Find Procedure	EPC	Under EPC Contract	Prepared during Pre-Construction Phase	Document is being prepared during preconstruction for both construction and operational stage.
5	Health, Safety and Environmental Plans	EPC	Under EPC Contract	Prepared during Pre-Construction Phase	Document is being prepared during preconstruction for both construction and operational stage.
6	Waste Management Procedure including recycling	EPC	Under EPC Contract	Prepared during Pre-Construction Phase	Document is being prepared during preconstruction for both construction and operational stage.
7	Hazardous Substance Management Procedure	EPC	Under EPC Contract	Prepared during Pre-Construction Phase	Document is being prepared during preconstruction for both construction and operational stage.
8	Emergency Response Plan	EPC	Under EPC Contract	During Construction and Operation Phase	Document is being prepared during preconstruction for both construction and operational stage. Will be updated prior to Construction
9	Pest and Weed Management Procedure	EPC	Under EPC Contract	Prepared during Pre-Construction Phase	Document is being prepared during preconstruction for both construction and operational stage.
10	Stormwater Management Procedure	EPC	Under EPC Contract	Prepared during Pre-Construction Phase	Document is being prepared during preconstruction for both construction and operational stage.
11	Construction Noise Management Procedure and Noise Monitoring	EPC	Under EPC Contract	Prepared during Pre-Construction Phase	Document is being prepared during preconstruction for both construction and operational stage.

Item	Management Plan/Action	Responsibility	Estimate (US $)	Phase/Timeline	Remarks
12	Erosion and Sediment Control Procedure	EPC	Under EPC Contract	Prepared during Pre-Construction Phase	Document is being prepared during preconstruction for both construction and operational stage.
13	Habitat Management Procedure and monitoring	MRPR		Prepared during Pre-Construction Phase	Document is being prepared during preconstruction for both construction and operational stage.
14	Traffic Management Procedure	EPC	Under EPC Contract	Prepared during Pre-Construction Phase	Document is being prepared during preconstruction for both construction and operational stage.
15	Occupational Health and Safety Management System preparation	MRPR/Third Party	~20,000.00 US per annum	Prepared during Pre-Construction Phase	Document is being prepared during preconstruction for both construction and operational stage.
16	Construction Occupational Health and Safety Management System/Plan	EPC	Under EPC Contract	Prepared during Pre-Construction Phase	Document is being prepared during preconstruction for both construction and operational stage.
17	Stakeholder Engagement Plan, ongoing community consultation and grievance mechanism management	MRPR/EPC	Part of MRPR normal operational costs which is ~ 4,000 USD per annum	During Construction Phase. Shall be maintained in weekly basis	Document is being prepared during preconstruction for both construction and operational stage.
18	Monitoring and Inspection of EPC Contractor EHS Performance	MRPR/Jacobs OE	~ 40,000.00 USD per annum	Every month by MRPR and every 6 months by OE	
19	Workers Code of Conduct	EPC	Under EPC Contract	Prepared during Pre-Construction Phase	Document is being prepared during preconstruction for both construction and operational stage.
20	Landscape Management Plan and Biodiversity Restoration	EPC	Under EPC Contract	Prepared during Pre-Construction Phase	Document is being prepared during preconstruction for both construction and operational stage.
21	Community Development Fund	MRPR	10,000 USD per annum	Pre Construction, Construction, and Operation Phase.	It will be budgeted annually for both construction and operational stage. The value may be reviewed and adjusted from time to time.
22	Workforce Development Strategy	MRPR	Part of MRPR normal operational costs which is ~ 27,000 USD per annum	Pre Construction, Construction, and Operation Phase.	It will be budgeted annually for both construction and operational stage. The value may be reviewed and adjusted from time to time.
23	Internal Capacity Building / Training Programme	MRPR / EPC	10,000 USD per annum	Pre-Construction, Construction and Operation	It will be budgeted annually for both construction and operational stage. The value may be reviewed and adjusted from time to time.

Item	Management Plan/Action	Responsibility	Estimate (US $)	Phase/Timeline	Remarks
24	Corporate Social Responsibility Programme	MRPR	Part of MRPR normal operational costs which is ~ 30,000 USD per annum	Pre Construction, Construction, and Operation Phase.	It will be budgeted annually for both construction and operational stage. The value may be reviewed and adjusted from time to time.
25	Workers Health Education Procedure	EPC	Under EPC Contract	Prepared during Pre-Construction Phase	Document is being prepared during preconstruction for both construction and operational stage.
26	Monitoring implementation of Grievance Mechanism	MRPR	Part of MRPR normal operational costs which is ~ 4,000 USD per annum.	Will be implemented during construction phase	
27	Cultural Education Programme	EPC	Under EPC Contract	Every Year	
28	Semi-annual Environmental and Social Reports	MRPR	Part of MRPR normal operational costs which is ~ 50,000 USD per annum	Every 6 months	
	Semi-annual EHS Audits	MRPR	Part of MRPR normal operational costs which is ~ 110,000 USD per annum	Every 6 months	
	Sub Total for Construction (MRPR only)		325,000 USD per annum		
Operation					
1	Traffic Management Plan	O&M	Under O&M Contract.	During Operation	Document will be developed during construction, and will be implemented throughout operation phase
2	Operation ESMS	O&M	Under O&M Contract.		Document will be developed during construction, and will be implemented throughout operation phase
3	Operation Occupational Health and Safety Plans	O&M	Under O&M Contract.		Document will be developed prior to operation, and will be implemented throughout operation phase
4	Annual Environmental and Social Reports	MRPR	Part of MRPR normal operational costs estimated at ~ 25,000 USD per annum.	Every Year during operation	

Item	Management Plan/Action	Responsibility	Estimate (US $)	Phase/Timeline	Remarks
5	Ongoing Consultation and Communication with Local Communities and Monitoring of Grievance Mechanism	MRPR	Part of MRPR normal operational costs estimated at ~ 4,000 USD per annum.	To be implemented in weekly basis during operation	
6	Monitor O&M Contractor EHS Performance	MRPR	Part of MRPR normal operational costs estimated at ~ 25,000 USD per annum.	Ongoing audits on a three monthly basis	
7	Habitat Management Procedure and monitoring (once every 5 years)	MRPR	~20,000.00	Every 5 years	
8	Annual EHS Audits	MRPR	Part of MRPR normal operational costs estimated at ~ 80,000 USD per annum.	Every year during operation	
22	Workforce Development Strategy	MRPR	Part of MRPR normal operational costs which is ~ 22,500 USD per annum		
9	Worker Occupational Monitoring	O&M	Under O&M Contract	Monitoring will be conducted annually	The Employee Handbook may be reviewed and updated based on the monitoring results, if required.
11	Air Quality Monitoring	O&M	Under O&M Contract	Monitoring will be conducted every 6 months	
11	Noise Monitoring	O&M	Under O&M Contract	Monitoring will be conducted every 6 months	

3. Framework Environmental and Social Management System

3.1 What is an EMS?

An ESMS is designed to establish a methodological approach to managing environmental and social risks and impacts in a structured way, on a continuous basis. The goal of an ESMS is to make sure that there are appropriate environmental and social policies and procedures in place and that people consistently follow them. A key feature is the idea of continual improvement – an ongoing process of reviewing, correcting and improving the system. The most common method is the Plan-Do-Check-Act cycle (PDCA), shown below in Figure 3.1.

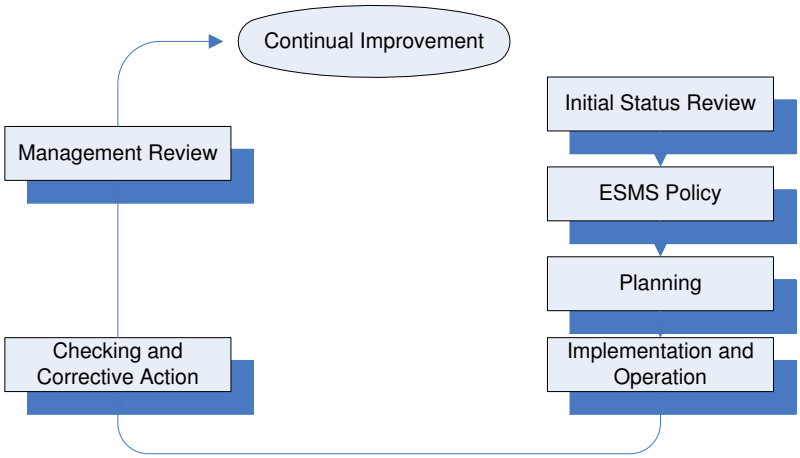


Figure 3.1 : Elements of an Environmental and Social Management System

The resources needed are planned, provided and managed to support the management plans and programs implemented during the construction phase of the Project. Monitoring and measurements are done in order to track MRPR's environmental and social performance, as well as feedback from the stakeholders. Information will be gathered from monitoring and measurements are analysed and presented to the MRPR Management Team. The MRPR's Management Team will then review and the implement the ESMS systems and prepares plans for continual improvement of MRPR's environmental and social performance.

3.2 Structure of the ESMS

The structure of the ESMS that will be implemented for the construction and operation of the Project is shown in Figure 3.2 below:

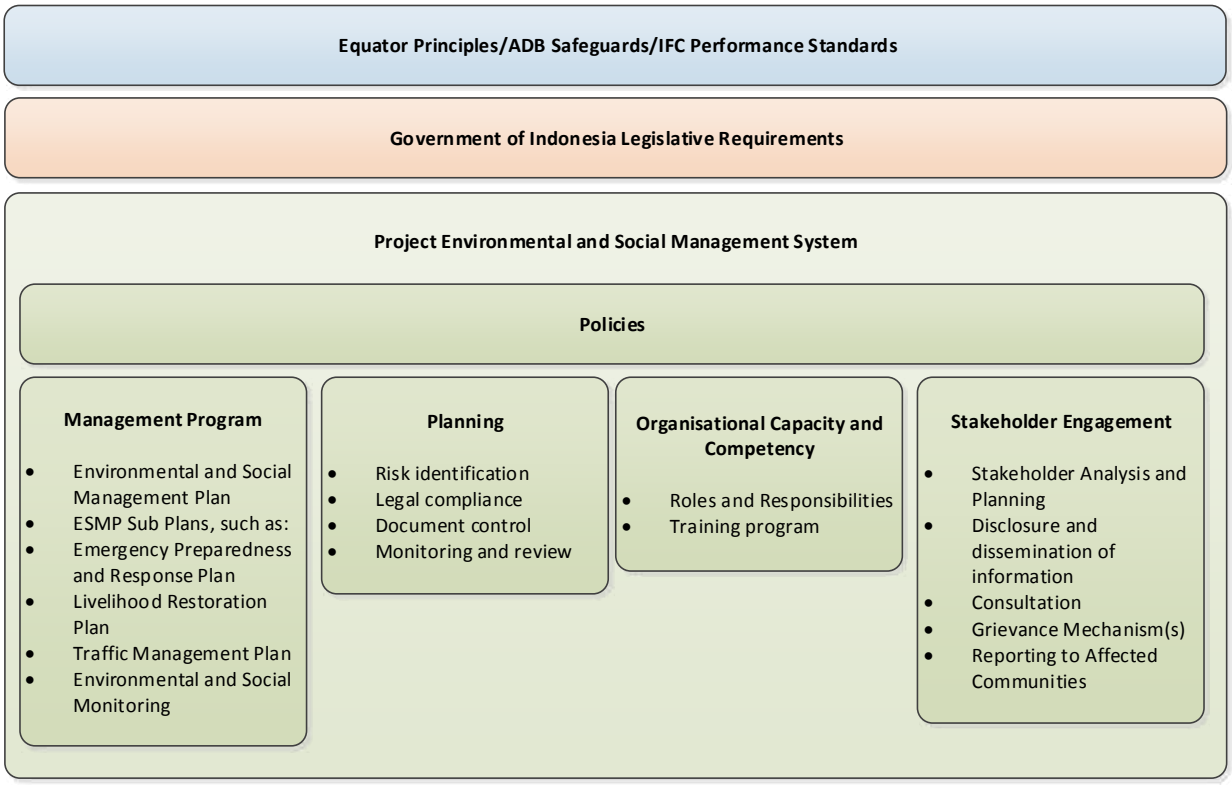


Figure 3.2 : Structure of ESMS

3.3 Alignment with the Equator Principles

In accordance with International Finance Corporation (IFC) Performance Standard 1 the structure of the ESMS incorporates the following elements, as shown in Table 3.1:

Table 3.1: Alignment with the Equator Principles

Equator Principle for ESMS	Description
Policy	Policies that define MRPR's environmental and social commitment/objectives and the principles that guide the project to achieve sound environmental and social performance are described in Section 3.4.
Identification of Risks and Impacts	The process for identifying and assessing environmental and social risks is described in ESIA Volume 1: Introduction, ESIA Volume 2: EIA and ESIA Volume 3: SIA. The primary mechanism is the completion of an Environmental and Social Impact Assessment for the construction and operation of the Project.
Management Programmes	The management programmes used to mitigate potential environmental and social risks and impacts are described in section 3.8 and assessment against ADB standards in section 4. This includes preparation of an ESMP, which will contain procedures/plans to address specific issues in the appropriate level of detail.
Capacity/Competency	The roles, responsibilities and authorities for implementation of the ESMS are defined in Section 3.5 and training requirements are described in Section 3.11.

Equator Principle for ESMS	Description
Emergency Preparedness/Response	Emergency preparedness and response is addressed in ESIA Volume 5: Technical Appendices, Technical Report – Working Conditions, Occupational Health and Safety, as part of the Management Programmes that are applicable to the construction and operation of the Project.
Monitoring and Review	Section 3.9 describes the monitoring that will be carried out to ensure environmental and social performance standards are being met and the ESMS is being implemented effectively.
Stakeholder Engagement	An overview of stakeholder engagement is provided in Section 3.10, which addresses: • Stakeholder analysis and planning • Disclosure and dissemination of information • Consultation and participation • Grievance mechanism • Reporting to affected communities.
Communications and Grievances	
Reporting to Affected Communities	

The ESMS is a 'living' document, which will be reviewed and updated in accordance with the ESMS Management Review Procedure to ensure it maintains its relevance. At a minimum the ESMS will be reviewed by MRPR management before commencing each new phase of work and on an annual basis.

3.4 Policies

3.4.1 MRPR Environmental, Social, Health and Safety Policies

At the time of writing this report MRPR, as a joint venture, is in the development stage and therefore, in the process of developing HSE policies and procedures. These will be developed based on the existing MEDCO and RATCH HSE policies and procedures.

However, we have been advised that as part of the joint venture between MEDCO and RATCH, MEDCO will be more responsible for the operational functions of the power plant. As such the MEDCO policies and procedures, rather than RATCH's, have been included below to provide an indication of content for the MRPR policies and procedures still to be developed. MEDCO's commitment to HSE is outlined in their HSE Policy below:

MEDCOENERGI
Power

QUALITY, ENVIRONMENT, HEALTH AND SAFETY POLICY

PT Medco Power Indonesia (MPI) is committed to conduct business activities to achieve the highest possible level of Quality, to preserve the Environment, to protect Safety and Health of all personnel involved in its operation.

To achieve this, MPI will:

- Promote a culture of continuous improvement of its Management system of Quality, Environment, Safety and Health to all personnel and promote awareness of safety, good health and best practices in all activities, pollution prevention and hazardous material awareness.
- Develop and establish principles and procedures, competencies, knowledge and work method to ensure health of its personnel, respect to environment and protect the safety of its personnel, assets and installations.
- Comply with all related National and Local government legislation, statutory requirements and other regulations.
- Prevent environmental hazards and protect all its personnel from injuries and ill health and risks.
- Identify, evaluate and control Environmental, Health and Safety hazards
- Identify, evaluate and record non compliances, take corrective action and regularly verify and review.
- Communicate health and safety responsibilities of each and every individual.
- Monitor and audit regularly to ensure compliances to the procedures.
- All accident and near miss incident are openly reported and investigated in order to prevent recurrence.

Jakarta, 28 May 2012

PT. Medco Power Indonesia

Fazil E. Alfitri
President Director

PT. MEDCO POWER INDONESIA
The Energy 50th Floor, SCBD Lot 11A, Jl. Jenderal Sudirman Kav.52 – 53 Jakarta 12190
Phone : 021 – 29953300 Fax : 021 - 29953301

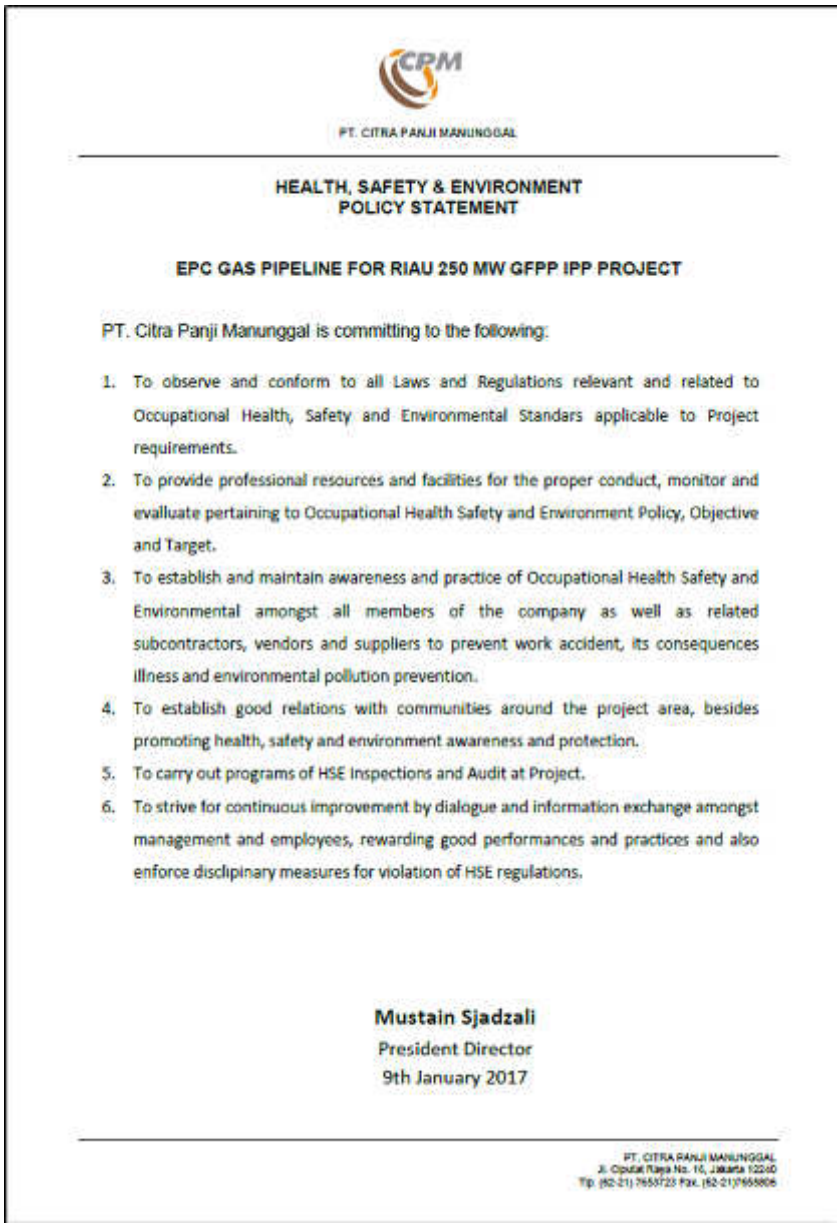
Figure 3.3 : Medco HSE Policy

3.4.2 EPC Contractor Policies

During construction, separate policies, plans and procedures relating to assessment, monitoring and control of environmental and social aspects will be prepared and implemented by the EPC contractors (Lotte Engineering & Construction and Citra Panji Manunggal). These policies, plans and procedures will align with MRPR's overarching ESMS, which will cover both construction and operation phases.

Citra Panji Manunggal (CPM) Policies

For this Project construction of the gas pipeline will be managed by CPM whose commitment to HSE is outlined by their project specific HSE and Drugs and Alcohol policy statements below.



PT. CITRA PANJI MANUNGGAL

HEALTH, SAFETY & ENVIRONMENT POLICY STATEMENT

EPC GAS PIPELINE FOR RIAU 250 MW GFPP IPP PROJECT

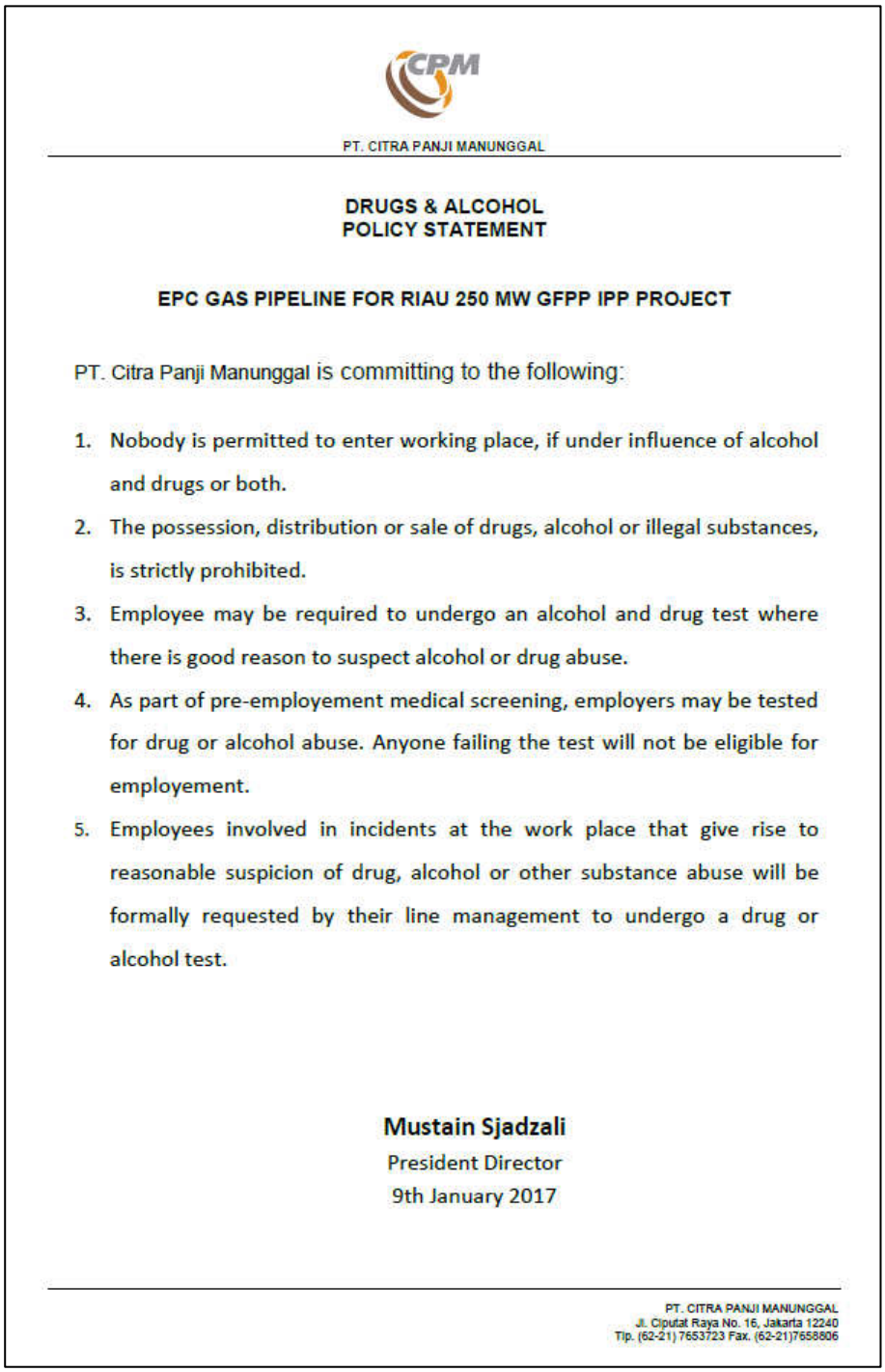
PT. Citra Panji Manunggal is committing to the following:

1. To observe and conform to all Laws and Regulations relevant and related to Occupational Health, Safety and Environmental Standars applicable to Project requirements.
2. To provide professional resources and facilities for the proper conduct, monitor and evalluate pertaining to Occupational Health Safety and Environment Policy, Objective and Target.
3. To establish and maintain awareness and practice of Occupational Health Safety and Environmental amongst all members of the company as well as related subcontractors, vendors and suppliers to prevent work accident, its consequences illness and environmental pollution prevention.
4. To establish good relations with communities around the project area, besides promoting health, safety and environment awareness and protection.
5. To carry out programs of HSE Inspections and Audit at Project.
6. To strive for continuous improvement by dialogue and information exchange amongst management and employees, rewarding good performances and practices and also enforce disciplinary measures for violation of HSE regulations.

Mustain Sjadzali
President Director
9th January 2017

PT. CITRA PANJI MANUNGGAL
Jl. Cipulir Raya No. 10, Jakarta 12240
Tlp. (62-21) 7653723 Fax. (62-21)7655806

Figure 3.4 : CPM HSE policy statement



PT. CITRA PANJI MANUNGGAL

DRUGS & ALCOHOL POLICY STATEMENT

EPC GAS PIPELINE FOR RIAU 250 MW GFPP IPP PROJECT

PT. Citra Panji Manunggal is committing to the following:

1. Nobody is permitted to enter working place, if under influence of alcohol and drugs or both.
2. The possession, distribution or sale of drugs, alcohol or illegal substances, is strictly prohibited.
3. Employee may be required to undergo an alcohol and drug test where there is good reason to suspect alcohol or drug abuse.
4. As part of pre-employement medical screening, employers may be tested for drug or alcohol abuse. Anyone failing the test will not be eligible for employement.
5. Employees involved in incidents at the work place that give rise to reasonable suspicion of drug, alcohol or other substance abuse will be formally requested by their line management to undergo a drug or alcohol test.

Mustain Sjadzali
President Director
9th January 2017

PT. CITRA PANJI MANUNGGAL
Jl. Ciputat Raya No. 16, Jakarta 12240
Tlp. (62-21) 7653723 Fax. (62-21)7658806

Figure 3.5 : CPM Drugs and Alcohol policy statement

Lotte Engineering & Construction (LEC) Policies

For this Project construction of the power plant, switchyard, transmission line, water supply and discharge structures and pipelines, will be managed by (LEC). Their commitment to HSE is outlined by their HSE policy below.

LOTTE E&C	HSE Policy	Date of Legislation	01.Jan.2018
		Date of Amendment	-
		Rev. No	0
		Page	1 / 2

In its management system and business activities, Lotte Engineering & Construction Co., Ltd. (LEC) is committed to ensure the prevention and protection of employees from causes of injury and ill health: and to continually improve occupational health, safety and environment management and performance by working towards HSE objectives and targets.

This policy is mandatorily applicable to anyone who enters any LEC facility, site or project : which includes its Employees, contractors, suppliers or any other party.

Commitment of LEC & Its Top Management :

1. To provide human and material resources and training in safe work practices, to all staff.
2. To manage the prevention of incidents, injuries and ill health due to occupational causes.
3. To hold each staff member accountable for the performance of Health, Safety & Environment (HSE) in their respective functional areas.
4. To engage in safe work habits in an environmentally responsible manner as a pre-condition to employment.
5. To comply with International environmental, health and safety regulations and minimize sources of hazard and its adverse impact on people and environment; ensuring a safe and healthy work place in all Lotte facilities.

The Chairman of LEC has issued the following guidelines for compliance by all staff member in their commitment to health, safety and environmental protection.

Managers / Supervisors are required to :

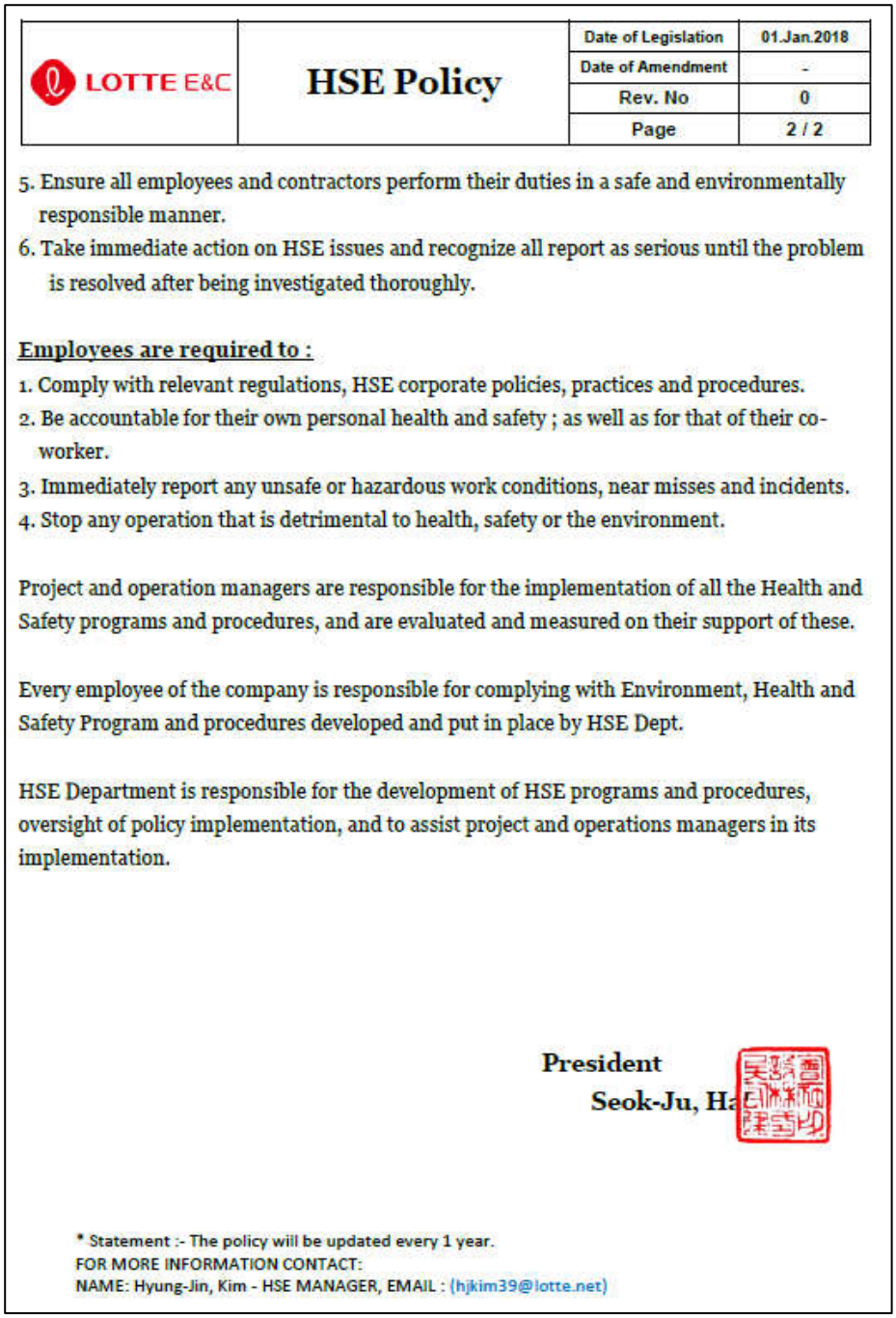
1. Establish health, safety and environment objectives and lead by example.
2. Ensure all employees are competent and understand their responsibilities and we given HSE orientation and training.
3. Identify and communicate all hazards and risks to employees regarding their jobs.
4. Provide employees with practices, procedures and tools to perform their work in a safe and environmentally responsible manner to prevent injuries, ill health and pollution of the environment.

* Statement :- The policy will be updated every 1 year.
FOR MORE INFORMATION CONTACT:
NAME: Hyung-Jin, Kim - HSE MANAGER, EMAIL : (hjkim39@lotte.net)

HSE Policy

Document Code : LECS-OS-01-01-01
Date of Legislation: 01.Jan.2018
Date of Amendment : -

Lotte Engineering & Construction Co., Ltd.
50-2 Lotte Welfare Center Bldg., Jamwon-dong, Seocho-gu, Seoul, Korea
Tel +82-2-3480-9225 Fax +82-2-3480-9982



LOTTE E&C	HSE Policy	Date of Legislation	01.Jan.2018
		Date of Amendment	-
		Rev. No	0
		Page	2 / 2

5. Ensure all employees and contractors perform their duties in a safe and environmentally responsible manner.
6. Take immediate action on HSE issues and recognize all report as serious until the problem is resolved after being investigated thoroughly.

Employees are required to :

1. Comply with relevant regulations, HSE corporate policies, practices and procedures.
2. Be accountable for their own personal health and safety ; as well as for that of their co-worker.
3. Immediately report any unsafe or hazardous work conditions, near misses and incidents.
4. Stop any operation that is detrimental to health, safety or the environment.

Project and operation managers are responsible for the implementation of all the Health and Safety programs and procedures, and are evaluated and measured on their support of these.

Every employee of the company is responsible for complying with Environment, Health and Safety Program and procedures developed and put in place by HSE Dept.

HSE Department is responsible for the development of HSE programs and procedures, oversight of policy implementation, and to assist project and operations managers in its implementation.

President
Seok-Ju, Ha

* Statement :- The policy will be updated every 1 year.
FOR MORE INFORMATION CONTACT:
NAME: Hyung-Jin, Kim - HSE MANAGER, EMAIL : (hjkim39@lotte.net)

3.5 Roles and Responsibilities

During construction and operation, MRPR, in collaboration with EPC Contractor's and Subcontractors, will establish, maintain, and strengthen as necessary an organisational structure that defines roles, responsibilities and authority to implement the ESMS and the mitigation and monitoring measures as set out in the ESMP. Key ESMS responsibilities are defined and will be communicated to the relevant personnel and to the rest of MRPR, as well as the EPC Contractor's and any Subcontractors. Sufficient management sponsorship and human and financial resources will be provided on an ongoing basis to achieve effective and continuous ESMS performance. Specific personnel with clear lines of responsibility and authority are designated in this section.

3.5.1 Construction Phase

Management of environmental and social risks and impacts during construction on a day to day basis will primarily be the responsibility of the EPC Contractors.

MRPR Roles and Responsibilities

Prior to the construction phase, MRPR will confirm and finalise the ESMP and notify the ESMP requirement to the EPC Contractors. During the construction phase, MRPR will review and monitor EPC Contractors' performance in accordance with their Health and Safety and Environment (HSE) Plans and related management plans/procedures to ensure alignment with this overarching ESMS. MRPR is responsible to report every six months to relevant authorities and the Lenders regarding the environmental and social performance being achieved by the Project.

MRPR shall report to the relevant financial institutions and government authorities on the implementation of the AMDAL, ESMP and on the Projects environmental and social performance on a six monthly basis.

MRPR will engage an external third party to monitor the environmental and social performance of the Project and report back to lenders. This would be every six months during construction and annually during operation.

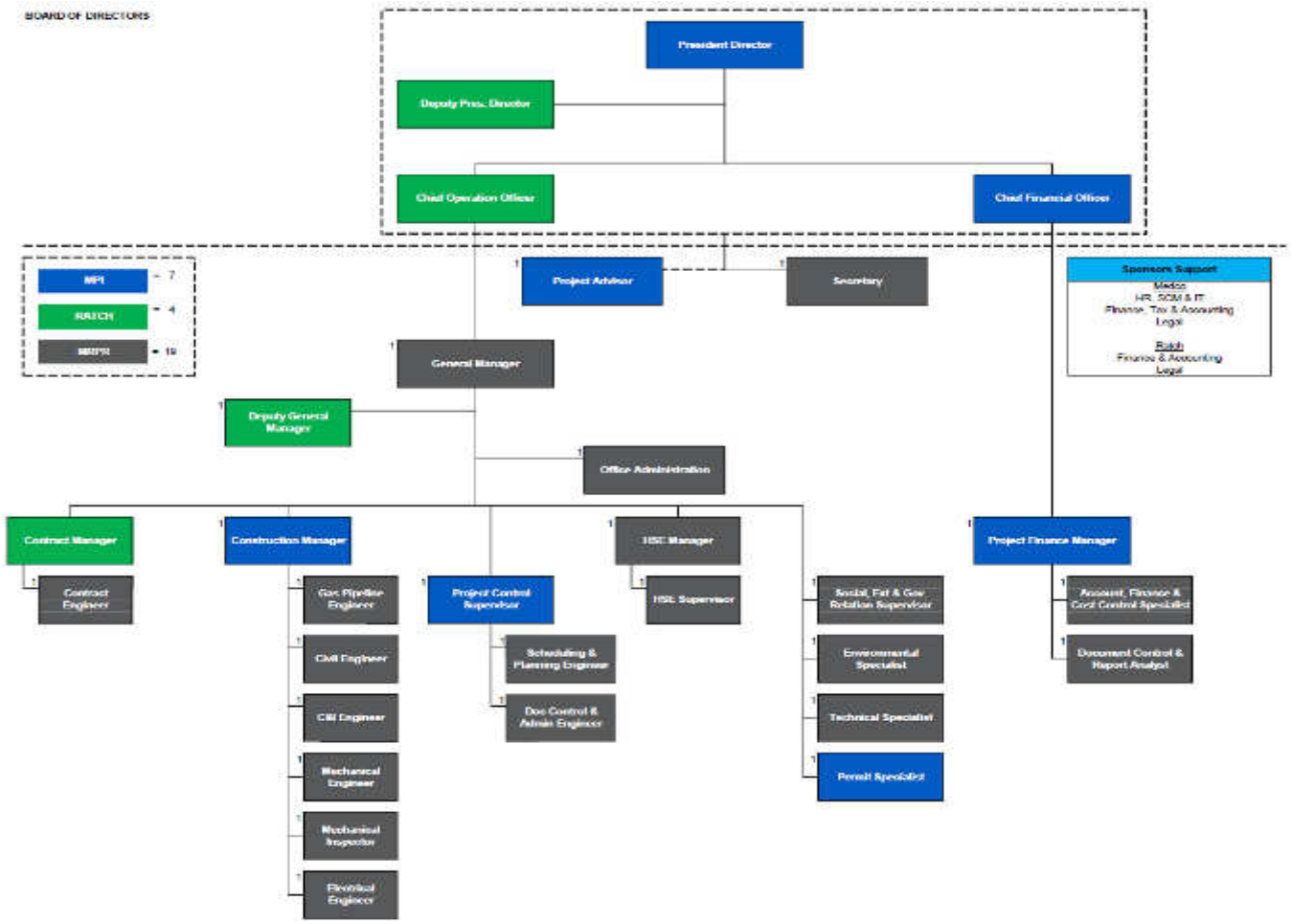


Table 3 1: MRPR Environmental, Health and Safety Organisational Chart

The following role descriptions are provided for MRPR roles for implementation of the ESMS. These roles will be confirmed prior to construction and operation of the Project.

MRPR General Manager

- Review and approve strategic Project HSE Policy and Objectives;
- Approve the Project ESMS and procedures;
- Define roles, responsibilities and provide resources for ensuring that environmental requirements are implemented and maintained in all areas of Project activities;
- Ensure that Project Environmental and Social Management System is managed in a structured manner throughout the site organisation;
- Ensure sufficient resources are available to support the implementation of the Project ESMS;
- Review suitability and effectiveness of the Project ESMS etc.;
- Monitor overall performance of the construction and commissioning works;
- Liaison with EPC Contractors;
- Liaison with MRPR staff; engineers, managers etc.; and
- Overall responsibility to ensure the following:
  - Compliance with Contract and MRPR Standards
  - Compliance with MRPR safety and environmental standards
  - Compliance with all relevant regulations.

MRPR HSE Manager

- Ensure that the environmental requirements are established, implemented and maintained across the Project site activities, specifically including:
  - Identification and assessment of environmental aspects
  - Environmental objectives, targets and environmental management program;
- Develop and maintain environmental documents (e.g. Project environmental procedures and control procedures) and records;
- Monitor adherence to the Project environmental policy & objectives, alerting management of non-compliance, and providing advice on remedial actions, through environmental audits, reviews, inspections etc.;
- Monitor and verify closeout of actions arising from environmental audits;
- Report periodically to the Project management on the performance of the Project environmental management system;
- Review the EPC Contractor's safety plan and ensure that all equipment and systems with the EPC scope are included and that the correct sequence of safety plan implementation has been adopted;
- Review the EPC Contractor's Permit to Work procedure and ensure that it complies with the MRPR safety rules;
- Establish, oversee and ensure the safe performance of all work by site personnel;
- Develop and implement the emergency response procedures;
- Monitor First Aid and Fire response facilities and procedures and ensure that all necessary supplies are provided;

- Conduct routine safety meetings for site personnel and provide material for EPC contractors to promote MRPRs safety rules in their own safety meetings;
- Monitor adherence to the Project safety policy & objectives, alerting management of non-compliance, and providing advice on remedial actions, through safety audits, reviews, inspections etc.;
- Monitor and verify closeout of actions arising from safety audits; and
- Records and report site safety performance statistics.

MRPR HSE Supervisor

- Conduct daily and weekly health and safety inspections of site and routine (at least every three months) audits;
- Report results of inspections/audits and documentation reviews to the MRPR HSE Manager;
- Assist the EPC Contractor to define appropriate corrective actions to be implemented as a result of any identified non-compliances and providing project-wide advice to ensure consistent approach and outcomes are achieved; and
- Ensure on an on-going basis, that health and safety requirements are communicated via formal training programs to all personnel engaged in work on behalf of MRPR.

MRPR Environmental Specialist

- Conduct daily and weekly environmental inspections of site and routine (at least every three months) audits;
- Report results of inspections and documentation reviews to the MRPR HSE Manager;
- Assist the EPC Contractor to define appropriate corrective actions to be implemented as a result of any identified non-compliances and providing project-wide advice to ensure consistent approach and outcomes are achieved; and
- Ensure on an on-going basis, that environmental requirements are communicated via formal training programs to all personnel engaged in work on behalf of MRPR.

MRPR Social, External and Government Relation Supervisor

- Act as MRPR's representative to the affected communities and external stakeholders; and
- MRPR will establish a clear reporting structure among the Community Liaison, Project Manager, Site Manager, HSE Manager and other relevant senior staff to effectively respond to stakeholder concerns and to manage reputational risks for the Project.

Key EPC Contractor roles will interact with the above MRPR representatives, as shown in Figure 6.1 above, and described further in the next section.

LEC roles and responsibilities

The key LEC personnel responsible for ensuring good environmental practice on site during construction as listed in the LEC HSE Plan will be the Project Director, Site Manager, HSE Manager, HSE Officer/Supervisor and subcontractors. Figure 3.6 sets out an example HSE organisational chart and the HSE Committee Structure. The final organisational structure will need to be confirmed prior to construction. Table 3.2 provides example of further roles for the implementation of the ESMS.

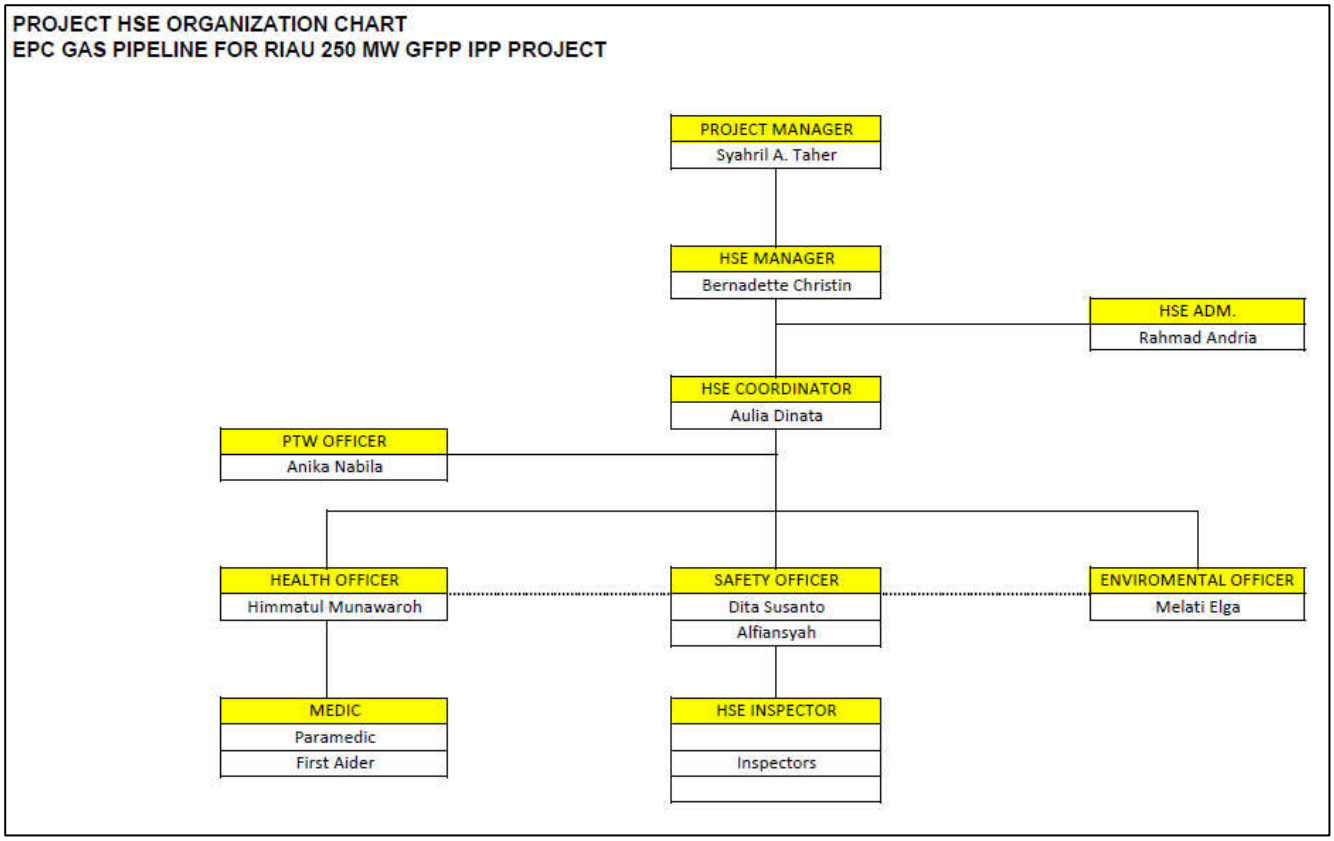


Figure 3.6 : Example LEC HSE organisational chart

CPM Roles and Responsibilities

The key CPM personnel responsible for ensuring good environmental practice on site during construction as listed in the CPM HSE Plan will be the Project Manager, HSE Manager, Construction Manager, Project HSE Coordinator, Environmental Officer, Safety Officer, Work Permit Officer, Health Officer, HSE Inspectors and all employees and subcontractors. Figure 3.6 sets out the proposed CPM organisational structure for managing health, safety, environmental and social performance during construction. Table 3.2 provides example of further roles for the implementation of the ESMS.

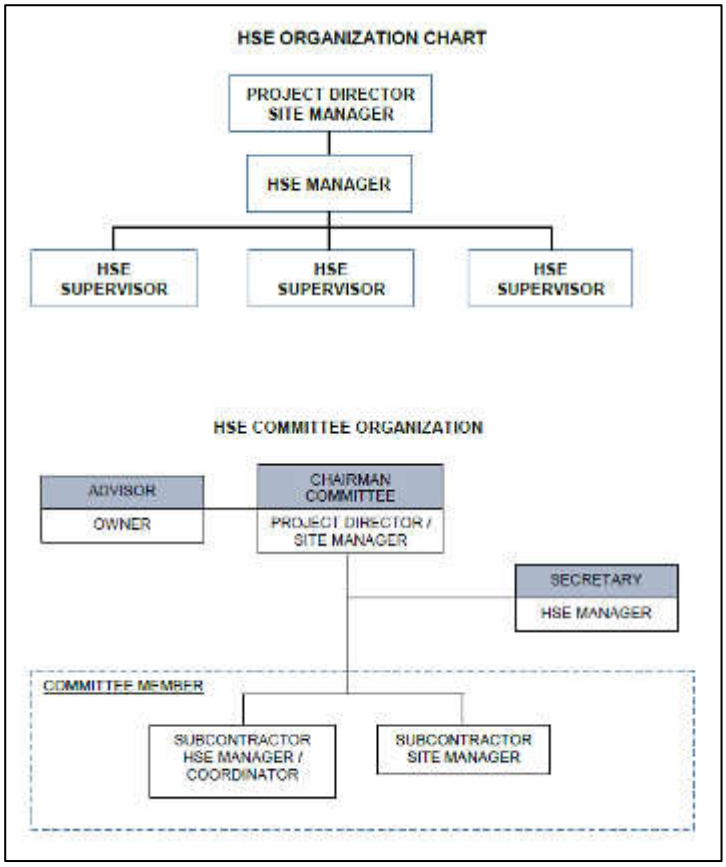


Figure 3.7 : CPM Environment, Health and Safety Organisation for construction phase

3.5.2 Operation and Maintenance (O&M) Phase

MRPR will be operate the power plant and will be responsible for recordkeeping and reporting, maintenance inspections, execution of routine maintenance, periodical maintenance and major overhaul in accordance with the Project ESMS, and emergency stop of operation and incident reporting. MRPR will prepare separate operation management plans and procedures that align with the Project ESMS. MRPR will also develop an overall organisational structure for environmental responsibilities on site and an organisational structure for operational health, safety, environmental and social management.

Table 3.2 provides an example of roles and responsibilities for implementation of the ESMS. However, these will need to be confirmed prior to construction/operation of the Project.

Table 3.2: Example roles and responsibilities for implementation of ESMS

Role	Responsibilities

General Manager	• Review and approve strategic Project HSE Policy and Objectives.
	• Approve the Project ESMS and procedures.
	• Define roles, responsibilities and provide resources for ensuring that environmental requirements are implemented and maintained in all areas of Project activities.
	• Ensure that Project Environmental and Social Management System is managed in a structured manner throughout the site organisation.
	• Ensure sufficient resources are available to support the implementation of the Project ESMS
	• Review suitability and effectiveness of the Project ESMS etc.
	• Monitor overall performance of the construction and commissioning works.
	• Liaison with EPC Contractors.
	• Liaison with MRPR staff; engineers, managers etc.
	• Overall responsibility to ensure the following:
	  ○ Compliance with Contract and MRPR Standards.
	  ○ Compliance with MRPR safety and environmental standards.
	  ○ Compliance with all relevant regulations.
	• Represent MRPR for all stakeholders.

MRPR HSE Site Manager	• Ensure that the environmental requirements are established, implemented and maintained across the Project site activities, specifically including:
	  • Identification and assessment of environmental aspects.
	  • Environmental objectives, targets and environmental management program.
	• Develop and maintain environmental documents (e.g. Project environmental procedures and control procedures) and records.
	• Monitor adherence to the Project environmental policy & objectives, alerting management of non-compliance, and providing advice on remedial actions, through environmental audits, reviews, inspections etc.
	• Monitor and verify closeout of actions arising from environmental audits.
	• Report periodically to the Project management on the performance of the Project environmental management system.
	• Review the EPC Contractor's safety plan and ensure that all equipment and systems with the EPC scope are included and that the correct sequence of safety plan implementation has been adopted
	• Review the EPC Contractor's Permit to Work procedure and ensure that it complies with the MRPR safety rules.
	• Establish, oversee and ensure the safe performance of all work by site personnel.
	• Develop and implement the emergency response procedures.
	• Monitor First Aid and Fire response facilities and procedures and ensure that all necessary supplies are provided.
	• Conduct routine safety meetings for site personnel and provide material for EPC contractors to promote MRPRs safety rules in their own safety meetings.
	• Monitor adherence to the Project safety policy & objectives, alerting management of non-compliance, and providing advice on remedial actions, through safety audits, reviews, inspections etc.
	• Monitor and verify closeout of actions arising from safety audits.
	• Records and report site safety performance statistics.

Healthy and Safety Officer	• Conduct daily and weekly health and safety inspections of site and routine (at least every three months) audits. • Report results of inspections/audits and documentation reviews to the MRPRHSE Site Manager. • Assist the EPC Contractor to define appropriate corrective actions to be implemented as a result of any identified non-compliances and providing project-wide advice to ensure consistent approach and outcomes are achieved. • Ensure on an on-going basis, that health and safety requirements are communicated via formal training programs to all personnel engaged in work on behalf of MRPR

Role	Responsibilities
Environmental Specialist	• Conduct daily and weekly environmental inspections of site and routine (at least every three months) audits. • Report results of inspections and documentation reviews to the MRPR HSE Site Manager. • Assist the EPC Contractor to define appropriate corrective actions to be implemented as a result of any identified non-compliances and providing project-wide advice to ensure consistent approach and outcomes are achieved. • Ensure on an on-going basis, that environmental requirements are communicated via formal training programs to all personnel engaged in work on behalf of MRPR.
Community Liaison Officer	The Community Liaison Officer will act as MRPR's representative to the affected communities and external stakeholders. MRPR will establish a clear reporting structure among the Community Liaison, Project Manager, Site Manager, HSE Manager and other relevant senior staff to effectively respond to stakeholder concerns and to manage reputational risks for the Project.
EPC Project Manager/ Project Director	The Project Manager has overall responsibility for the construction of the Project and associated infrastructure. In particular, the Project Manager will: • Maintain an awareness of the applicable Indonesian legal requirements, potential HSE implications, and relevant operational controls among the construction workers. • Manage implementation of standard operational procedures for implementing the ESMS. • Communicate the latest work programme to the HSE Manager on a daily basis to effectively manage and monitor the potential HSE risks and impacts associated with the upcoming works. • Ensure the ESMS is communicated, implemented, and maintained by the Operations Contractor and any Subcontractors. This includes: a) Reviewing and approving training plans. b) Ensuring appropriate training is carried out for employees. c) Reviewing and approving the site's Emergency Preparedness and Response Plan. d) Reviewing and approving the monitoring programme and HSE mitigation measures onsite, and implementing corrective and/or preventive actions in accordance with the operational control procedures. e) Monitoring compliance with the ESMS Periodically evaluating the effectiveness of the ESMS. f) Delegating a clear line of responsibility for HSE protection to the EPC Contractor's and any subcontractors
EPC HSE Manager	The HSE Manager has an overarching responsibility for the management, monitoring, inspection, and reporting of HSE aspects during operation. The HSE Manager will have the knowledge, skills, and experience necessary to perform their work, including up-to-date knowledge of Indonesian legislation and the international requirements as listed in Legal Requirements Register. The HSE Manager will also possess the knowledge, skills, and experience to implement the specific measures and actions required under the ESMS.
All other employees	All personnel employed for the operation of the Project are responsible for carrying out their roles in accordance with the ESMS.

3.6 Legal and Other Requirements

An important component of identifying and evaluating relevant environmental and social risks and impacts is defining the legislative framework within which the Project will operate. This includes Government of Indonesia legislation and international requirements such as the ADB Safeguards, International Finance Corporation (IFC) Standards for Environmental and Social Sustainability, etc

MRPR will prepare and maintain a Legal Requirements Register which sets out the relevant Indonesian environmental and social legislation and international requirements. The Legal Requirements Register will as a minimum be reviewed every six months by MRPR and it will be amended to take into account new legislation and all changes to existing legislation and international requirements in the preceding six months. Any changes which required revision to the ESMS and its management procedures such as changes to emission limits etc will be made and communicated with HSE personnel, EPC Contractors and MRPR senior

management. Key requirements to establishing the Legal Requirements Register are described in this section and listed in the Legal Requirements Register (Appendix A).

3.6.1 ADB Safeguards

ADB is committed to ensuring the social and environmental sustainability of the projects it supports. This commitment is outlined in the ADB Safeguard Policy Statement (ADB, 2009) which cover the following: Environmental, Involuntary Resettlement and Indigenous Peoples Safeguards. The ADB Safeguards represent the "policy framework" that the project must operate within.

3.6.2 Equator Principles

The Equator Principles (EP) consist of ten principles which provide guidance to financial institutions developing projects in a manner that is socially responsible and reflects sound environmental management practices. The following key principle relates to the requirement for an ESMS to be developed:

Principle 4 (Environmental and Social Management System and Equator Principles Action Plan) states that:

'For all Category A and Category B Projects, the EPFI will require the client to develop or maintain an Environmental and Social Management System (ESMS).

Further, an Environmental and Social Management Plan (ESMP) will be prepared by the client to address issues raised in the Assessment process and incorporate actions required to comply with the applicable standards. Where the applicable standards are not met to the EPFI's satisfaction, the client and the EPFI will agree an Equator Principles Action Plan (AP). The Equator Principles AP is intended to outline gaps and commitments to meet EPFI requirements in line with the applicable standards."

3.6.3 Supporting Documents

The EPs are supported primarily by two additional sets of documents:

- The IFC's Performance Standards on Social and Environmental Sustainability (IFC, 2012), which consist of eight performance standards which establish the standards the project should meet over the life of investment by IFC.
- The World Bank Environmental, Health, and Safety (EHS) Guidelines, which are technical reference documents with general and industry-specific examples of Good International Industry Practice (GIIP).

These are summarised below and further information is provided in Appendix A.1.

IFC's Performance Standards

IFC's Performance Standards define sponsor's roles and responsibilities for managing their projects and the requirements for receiving and retaining IFC support. They are also relevant to other institutions applying the Equator Principles when making project financing decisions.

The Performance Standards represent the "policy framework" for the ESIA and sustainable social and environmental management for the Project, whereas the IFC EHS Guidelines provide guidance on general and industry best practice as well as recommended numerical limits for emissions to the atmosphere, noise, liquid and solid wastes, hazardous wastes, health and safety, and other aspects of development projects.

EHS Guidelines

The Environmental Health and Safety (EHS) Guidelines are technical reference documents with general and industry-specific examples of Good International Industry Practice. The EHS Guidelines contain the performance levels and measures that are normally acceptable to the International Finance Corporation (IFC) and are generally considered to be achievable in new facilities at reasonable costs by existing technology.

In general, when host country regulations differ from the levels and measures presented in the EHS Guidelines, projects are expected to achieve whichever is more stringent. If less stringent levels or measures are appropriate in view of specific project circumstances, a full and detailed justification for any proposed alternatives is needed as part of the site-specific environmental assessment. This justification should demonstrate that the choice for any alternate performance levels is protective of human health and the environment.

The most applicable EHS guidelines to this Project are:

- EHS General Environment, Health and Safety (EHS) Guidelines (April 2007);
- EHS Guidelines for Electric Power Transmission and Distribution (April 2007); and
- EHS Guidelines for Thermal Power Plants (December 2008).
- EHS Guidelines for Onshore Oil and Gas Development (2007)

3.6.4 Indonesian Legislation

The Indonesian legal system is a hierarchal system under which National Regulations (Acts, National Government Regulations) provide the governing regulation and are translated into a number of implementing regulations and technical standards at lower levels of government. The requirements and standards in each regulation must be kept consistent at different levels of government. Should there be conflicting standards the higher level regulation takes precedence.

The implementing instrument for Acts and National Government Regulation normally takes the form of Ministerial Decrees. These are more detailed and specific than the governing National Regulations. For environmental issues, the implementing regulations and Decrees are normally issued by the State Minister of Environment. Acts, National Government Regulations, Ministerial Decrees of State Environmental Minister and Decrees of the Head of Central Environmental Agency are applicable throughout Indonesia.

At provincial level, the Governor and provincial government can set up local government standards in the form of Governor Decrees and Provincial Local Government Regulations. These regulations apply only within the issuing provincial jurisdiction. In terms of environmental standards, Governor and/or the provincial local government may set stricter standards than those set at a National level. In such cases, the stricter standards are to be followed by project proponents.

The various levels of government of Indonesia, including the provincial and local government agencies, that have some jurisdiction or control over the power plant, transmission line and gas pipeline construction and operation activities include:

- National Level: Ministry of Environment and Forestry (MOEF);
- Province Level: The Province of Riau; and
- Regency and City Level: Power plant and transmission line - Environmental Agency of Pekanbaru City (DLH – Kota Pekanbaru) and gas pipeline the Siak Regency and Pekanbaru City.

Relevant regulations to the project are summarised in Table 2.2. within Volume 1 of the ESIA.

3.7 Identification of Risks and Impacts

3.7.1 Introduction

This section details the procedures and actions to be undertaken as a result of the identification of risks and impacts occurring during the development of the Project that were not formerly identified or foreseen during the ESIA process.

3.7.2 Assessment of Risks

The ESIA and ESMP was finalised in April 2018 and identified and assessed the predicted risks and impacts of the Project in relation to a variety of environmental and social aspects. Impacts were identified based on the 'current' understanding of the Project and using baseline information from readily available data sources and data gathered on site. Due to a number of factors including change of environmental baseline status and limitations of the baseline studies, other impacts and risks not identified in the ESIA and ESMP process may arise during the construction and operation of the Project.

To appropriately manage the Project, an understanding of the potential risks and impacts that may affect the environmental, social, health and safety aspects is required. The potential impacts and associated mitigation measures and management procedures presented in this Framework ESMS are based on the baseline information and assessments provided in:

- Environmental and Social Management Plan (ESMP) prepared for the Project by Jacobs (April, 2018); and
- Environmental and Social Impact Assessment (ESIA) and associated Technical Reports, prepared for the Project by Jacobs (April, 2018)

During construction and operation of the Project there will be ongoing monitoring of environmental, social and health and safety aspects, reviews of compliance with the ESMS and an evaluation of the effectiveness of the ESMS. These monitoring events and reviews provide opportunities to review the environmental and social aspects of the project, determine whether the appropriate controls are working or need to be improved. In addition, they will help to identify any new aspects. This process is summarised in Figure 3.8.

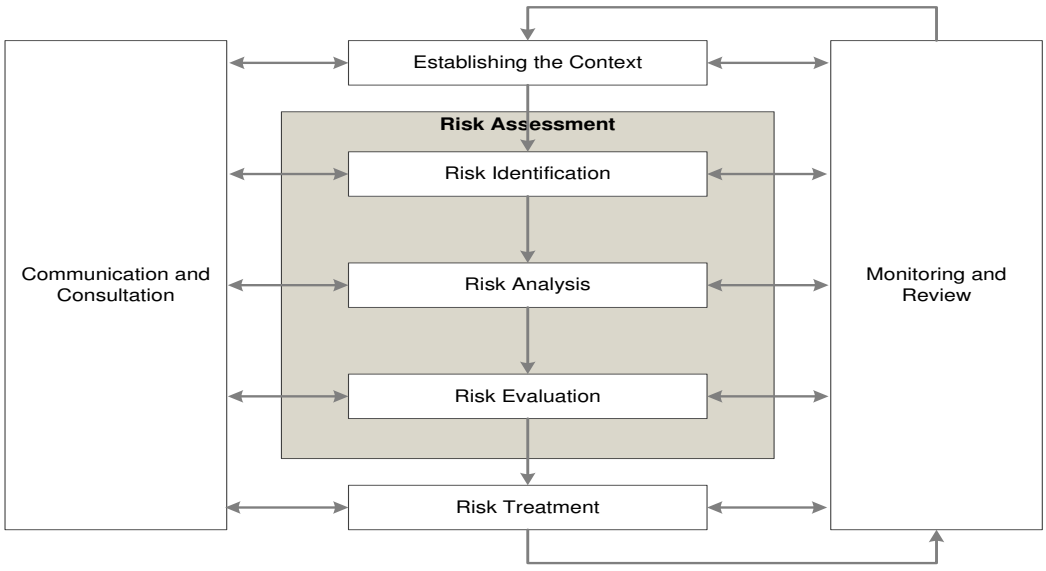


Figure 3.8 : Risk Assessment Process

3.7.3 Risks/Aspects Register

MRPR will develop a Risks/Aspect Register. This is a live document which will be reviewed as part of the ESMS review process or if there is a change to the design or operating procedure, which means a new aspect is added to the program or an existing aspects rating is modified.

All relevant Project environmental and social aspects will be captured in the Risks/Aspect Registers (examples provided in Appendix B). Any new aspects that are identified can then be assessed and rated in accordance with the risk rating systems described in Appendix B, and added to the Aspect Registers.

Designs, construction and operation shall be included in the hazard identification and risk assessment. Changes made to the original design, construction, fabrication or operation shall be addressed by applying management of change and communicating it to relevant employees. Site Instructions shall use the risk register as the reference to ensure there is adequate environmental and safety risk control in conducting a process or a task.

Environmental Aspect Identification and Impact Assessment

In order to apply best practices in environmental management, MRPR shall identify environmental aspects and impacts within its business process. MRPR shall follow criteria set out ISO14001 to determine significant environmental aspects and impacts. Based on significant aspects and impacts, MRPR shall develop its management plan. The control of significant aspects shall be based on hierarchy of control: elimination, substitution, engineering control and administrative control. Reduce, Reuse and Recycle (3R) shall be considered during selection of controls.

MRPR shall document and keep the environmental aspects and impacts up to date and communicate its significant environmental aspects and impacts among the various levels and functions.

OHS Management Hazard Identification and Risk Assessment

MRPR's OHS management shall be based on risks assessment and management. MRPR shall conduct hazard identification and risk assessment to produce an OHS Risk Register that will feed into the overall ESMS Aspects Register. This register shall be reviewed once a year at the minimum for maintaining adequacy and up-to-date suitability. The methodology for hazard identification and risk assessment shall:

- Provide for the identification, assessment and documentation of risks and its control.
- Apply the hierarchy of risk control: elimination, substitution, engineering control, administrative control and personal protective equipment (PPE).
- Changes in process shall be identified and risk register shall be updated accordingly.

3.8 Management Programmes

3.8.1 Environmental and Social Management Plan

The Environmental and Social Management Plan (ESMP) as outlined in Section 2 of this report, describes and prioritises the actions needed to implement mitigation measures, corrective actions and monitoring measures necessary to manage the impacts and risks identified in this ESIA relevant to the Project. These measures as outlined in the ESMP will be implemented via the ESMS.

In addition, a separate health and safety management plan will be prepared to ensure the wellness of the work force and surrounding community. Reference should be made to the Technical Report - Working Conditions, Occupational Safety and Health which is provided in Volume 5: Technical Appendices.

3.8.2 Procedures

The ESMS will provide a structure and procedures as to how the mitigation and monitoring measures as set out in the ESMP will be implemented. Procedures may include existing documents developed by the MRPR, or be developed by external parties. Procedures should, as a minimum, be developed on the following:

- Waste Management
- Hazardous Substances Management
- Soil and Erosion Management
- Excavation Works
- Entry into Confined Spaces
- Hazard Identification and Risk Assessment
- Air Quality Management and Monitoring
- Chance Find
- Emergency Preparedness and Response
- Noise and Vibration Management and Monitoring
- Traffic Management
- Stormwater Management and Monitoring
- General Human Resources
- Recruitment
- Training
- Work Permit
- Workers Grievance Mechanism
- Community Grievance Mechanism
- Stakeholder Engagement
- Occupational Safety and Health Management
- First Aid
- GHG Calculation and Reporting
- Social Monitoring and Reporting
- Review and Auditing of the ESMS
- Incident Investigation and Reporting
- Surface Water Quality and Monitoring
- Aspects Register Identification and Assessment
- Site Security

General Structure of Procedures

The following general structure should be applied to all ESMS Procedures:

1) **Project Sponsor Statement:** Outlines the commitment of the Project Sponsors to good environmental and social practices. May make reference to existing statements, policies or procedures.
2) **Project Context:** Outlines the overall context of the project and the purpose of the procedure.

3) **Purpose of Procedure:** Outlines the purpose of the procedure and which other related documents should be read alongside it.

4) **Scope of Procedure:** Outlines the mitigation measures proposed by the procedure and what specific tasks the management, mitigation and or monitoring covers.

5) **Procedure Details:** Provides detailed guidance including the following:

   a) Roles and responsibilities in relation to activities for both the Project Sponsors and any subcontractors;

   b) Definition of keys terms;

   c) Schedule of works;

   d) Sets out the steps and actions that need to be undertaken to implement the management, mitigation and/or monitoring measures;

   e) Sets out the standards the mitigation or monitoring is required to comply with;

   f) Verification and monitoring;

   g) Reporting of non-conformities;

   h) Details of training in relation to the procedure;

   i) Any forms that will accompany the procedure; and

   j) Auditing of procedure.

3.8.3 Contractor Management

A Contractor Management Procedure is required that establishes the necessary environmental, social and health and safety criteria for EPC Contractor's, Subcontractors and contracted services. This is very important given that the construction will be contracted to an external party and the operation and maintenance of the Project will be partly contracted to external service providers. Recommended procedural information for reporting includes:

- Contractor HSE Pre-Qualification;
- Contractor Safety, Health, Environment, and Community Management;
- Contractor HSE Performance Monitoring including site inspections, s audits etc;
- Incident/ Accident Reporting;
- HSE Reporting
- Contractor Register; and
- Contract Close-out.

These should be supported by a register of contractors, which includes information on pre-qualification requirements and contractor approvals.

3.9 Monitoring, Auditing and Review

3.9.1 Overview and Objectives

This section details a programme for the routine monitoring and evaluation of environmental, social and health and safety performance throughout the Project's lifecycle to ensure compliance with and conformance to good international industry practice. Monitoring and review are required not only to meet the commitments detailed in the AMDAL, ESIA and the various management plans, but also to monitor and respond to any unanticipated

environmental, social and health issues and impacts which arise during construction and/or operation. The programme aims to:

- routinely monitor, audit and review compliance with the ESMS;
- ensure adequate and appropriate interventions to address any occurrences of non-compliance;
- provide a mechanism for the follow-up and resolution of complaints by members of the public and/or contractors and/or workers on site;
- ensure appropriate and adequate record keeping related to compliance;
- determine the effectiveness of the specifications and recommend necessary changes and updates based on audit outcomes, in order to enhance the effectiveness of environmental and social management on site; and
- aid communication and feedback to authorities and stakeholders.

3.9.2 Monitoring of Environmental, Social and Health and Safety Aspects

Monitoring will be carried out in order to determine whether environmental, social and health and safety outcomes are being achieved. Monitoring requirements will be specified in a monitoring plan (or plans), which identify:

- the type of monitoring that is to be carried out;
- where monitoring is to take place;
- how frequently monitoring will be carried out;
- the parameters that will be tested for;
- the applicable objectives and performance standards; and
- who will conduct the monitoring.

3.9.3 ESMS Monitoring Programme

Reviews of the ESMS will be conducted throughout construction and operation of the Project and where necessary changes should be made to the documentation to ensure that it remains relevant. For instance, once construction has been completed, the construction related environmental and social aspects will no longer be relevant. An effective monitoring programme in terms of this ESMS will be achieved through:

- six monthly inspections and monitoring of all site activities by MRPR;
- maintenance of a monitoring schedule of all site activities in accordance with the suite of management plans as defined in the ESIA;
- routine review of all environmental, social and health and safety documents produced;
- compilation of progress reports that track progress and indicate the effectiveness of the ESMS in addressing and implementing environmental and social requirements; and
- monitoring of the implementation of any preventative action identified as a result of any incident, complaint or non-conformance to ensure the effectiveness of any changed procedures.

The monitoring programme will be supported by:

- the process for lodging grievances or complaints (i.e. MRPR's Worker's or Community Grievance Mechanism); and
- the process for corrective action (i.e. Worker's or Community Grievance Mechanism) to be followed if a complaint is made, an incident occurs or a non-conformance is identified;

- internal and external audits to be conducted to evaluate compliance with relevant environmental legislation and the ESMS.

The results of all monitoring undertaken in terms of this ESMS (including audits) will be analysed by MRPR to facilitate improvements in work practices or site activities in order to progressively improve environmental and social performance in terms of the ESMS.

3.9.4 Contractor Monitoring and Auditing

MRPR will be responsible for monitoring and auditing the EPC Contractors and Subcontractor to ensure that their environmental, social and health and safety performance is compliant with the following:

- MRPR Management Plans and Procedures;
- ESMP;
- RKL/RPL Documentation;
- Indonesian Regulations;
- ADB Safeguards;
- IFC Performance Standards; and
- WBG EHS Guidelines.

3.9.5 Corrective Action

Any breaches and/or non-compliance of the ESMS should be reported to the responsible department manager, with details of the incident/observation clearly documented. A copy of each incident/observation record should be held on file by MRPR's HSE Manager, to be supported by the reply copy when it is received. Depending on the nature of the non-compliance (minor or major incident), the Construction Manager and Owner's Engineer would be notified as required. Upon generation of such record, a timeline should be established by MRPR's HSE Manager, along with the manager/supervisor responsible for the area for:

- Planning and submission of a corrective action plan;
- Planned implementation and inspection/verification of the corrective action;
- Final close-out the corrective action plan;

The responsible manager/supervisor is to implement the corrective action by the targeted dates. A record of the corrective actions would be made and tracked to their completion.

All non-compliances must then be investigated and a report identifying reasons for occurrence, measures required to prevent future incidents and any other recommendations including development of new procedures (if required), are to be produced within a reasonable timeframe of the incident occurring.

3.9.6 ESMS Auditing

Routine auditing will be carried out to determine the level of compliance with the ESMS and evaluate the effectiveness of the ESMS. A procedure will be developed along with an auditing programme to define:

- timing;
- scope;
- audit criteria;
- reporting of audit findings; and
- process for implementing corrective actions.

An audit checklist should be produced to maintain consistency if different auditors are utilised.

Internal Audits

In addition to regular monitoring, periodic internal system audits (i.e. semi-annual) will be conducted to ensure that the ESMS is properly implemented and maintained, that work is being performed in accordance with planned arrangements and that the management plans and controls are effective. Audits are classified into internal and external audits.

An audit schedule will be developed by MRPR. The schedule will be reviewed annually and amended, as necessary, to ensure that it provides for the effective review of the ESMS.

The internal audits will be undertaken by MRPR semi-annually and will ensure that audit findings (including both non-compliance and also positive audit results) are documented in an Audit Report.

The audit report would be structured to check the progress and compliance of the various ESMS components (i.e. having content similar to this ESMS report, with individual components being audited). A summary of the key findings from the ESMS Audit Report will also be included in the Semi-Annual Report to the Lenders.

External Audits

An independent body (a third party auditor) is likely to undertake an audit of the overall Project activities and may include, but is not limited to, the following organisations:

- International finance institutions or their representative/consultants (i.e. Lender's Technical Advisor);
- an ESMS auditor / certifying body; and
- any other external audits committed to in the various management plans.

3.9.7 Incident and Non Compliance Investigation and Reporting

Incident investigation shall be carried out for all environmental incidents (including near misses that could lead to major incident). Root causes of incident shall be identified and corrective actions implemented to prevent recurrence. The investigation team is formed based on the magnitude and severity of the incident. For major incidents, Corporate function representatives will be part of the investigation team. Team members shall have adequate competency to conduct investigation. Environmental incidents and non-compliances must be reported to the MRPR site manager. Major ones are also to be reported to MRPR's corporate functions and if there are notifiable event of environmental incident, MRPR shall report to local environmental agency.

3.10 Stakeholder Engagement

The purpose of stakeholder engagement is primarily for transparency to the community, to inform them of the Project and associated construction activities, and the impacts it has on them and the environment. This provides an avenue for stakeholders to understand the Project impacts, how the impacts are being managed. A key aim of the stakeholder engagement is to provide stakeholder the opportunity for comment. Their comments/views will be considered by MRPR.

A Stakeholder Engagement Plan (SEP) has been prepared for the Project: see ESIA Volume 3: Social Impact Assessment. This addresses the requirements described in the following sections.

3.10.1 Stakeholder Analysis and Planning

In order to conduct effective engagement some analysis is required of the type of stakeholders and the best means of communication with them with regards to the project and its potential impacts. The identification of these stakeholders involved consideration of persons or groups:

- who are directly and/or indirectly affected by the Project, due to environmental, social or economic changes;
- have interest in the Project and Project outcomes; and
- have potential to influence the Project and Project outcomes.

Furthermore, the stakeholders consulted included key stakeholder representatives (especially community leaders, elected public representatives and traditional representatives) and vulnerable stakeholder groups (including women). A comprehensive list of stakeholders and key interest groups affected by the Project has been consulted with and have been included in the SEP.

The list of identified stakeholders has been assessed to the stakeholder's level of interest in the Project and influence according to the following categories, shown in Figure 3.9. Refer to SEP and ESIA Volume 3 – Social Impact Assessment for the list of stakeholders consulted on the Project to date.

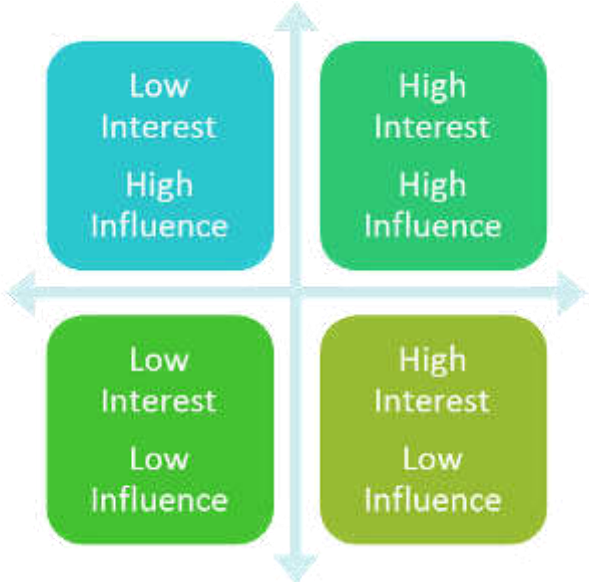


Figure 3.9 : Stakeholder Interest and Influence

Levels of engagement ranged from closer management for high interest/high influence stakeholders to monitoring for lower interest/low influence parties. It is important to keep in mind that the interest or influence of a stakeholder is fluid and may change as the Project progresses. Therefore, it is important that MRPR continuously reassess and identify new stakeholders and the level of stakeholder engagement at different stages of the Project as outlined in the SEP. As a result, the SEP will need to be updated on a regular basis.

3.10.2 Disclosure and dissemination of information

Disclosure of relevant project information helps potentially affected communities understand the potential risks, impacts and opportunities of the project. MRPR should provide such people with access to relevant information on:

- the purpose, nature, and scale of the project;
- the duration of proposed project activities;
- any risks to and potential impacts on such communities and relevant mitigation measures;
- the envisaged stakeholder engagement process; and
- the grievance mechanism.

In addition, MRPR will need to prepare and maintain a procedure for external communications that includes methods to:

- receive and register external communications from the public;
- screen and assess the issues raised and determine how to address them;
- provide, track, and document responses, if any; and
- adjust the management program, as appropriate.

MRPR are also encouraged to make publicly available periodic reports on their environmental and social sustainability.

3.10.3 Consultation and participation

Consultation with potentially affected communities and individual stakeholders as discussed further in the ESIA Volume 3 – SIA and Livelihood Restoration Plan included opportunities to provide input on the Project, its potential impacts, possible alternatives and the proposed mitigation and monitoring measures. The extent and nature of engagement activities depends upon the nature of degree of impacts.

The SEP prepared for the Project outlines key timing, participants and methods of consultation across the lifetime of the project. During construction and operation MRPR will be responsible for consultation to keep stakeholders informed of the ongoing changes in Project activities, manage issues and grievances as they arise and monitor the effectiveness of mitigation and compensation.

3.10.4 Grievance mechanism

A grievance mechanism has been established in the SEP and shared with local communities to enable potentially affected communities to air their concerns and grievances about the MRPR's environmental and social performance. The grievance mechanism has been scaled to the risks and adverse impacts of the Project; seeks to resolve concerns promptly, using an understandable and transparent consultative process that is readily accessible, and at no cost to such affected communities. The mechanism also ensures there is no retribution to the party that originated the issue or concern.

3.10.5 Reporting to affected communities

MRPR through the Community Liaison Officer will provide periodic reports to the affected communities (as identified in the LRP) describing progress in implementation of project actions that involve or may impact on them as well as addressing issues that the communities have raised.

3.11 Training

MRPR shall identify the knowledge and skills necessary for implementation of the ESMS and identify training requirements for its personnel and contractors engaged during the construction and operation of the Project.

All persons responsible for undertaking work during the life of the project must be trained on the contents of the ESMS. Training shall include, but is not limited to:

- definition of the environment;
- need for environmental protection and conservation;
- impacts of construction activities on the environment;
- adequate mitigation measures against such impacts;
- emergency preparedness and response plan;
- social responsibility during construction e.g. being considerate to local residents;

- Project ESMS policy and objectives;
- the Project ESMP;
- Health and Safety Management System; and
- current applicable laws and regulations.

A Training Procedure will be developed that includes:

- inductions (identifying different types that may be required);
- training needs identification;
- training schedule;
- assessment of competency;
- recognition of prior learning;
- evaluation of training; and
- records.

All training information, records and certificates should be properly documented and filed. An audit of the ESMS is likely to seek verification that all project personnel have been given the appropriate training. This will require a comprehensive training/induction register.

3.12 Administration

3.12.1 Human resources

MRPR shall develop human resources (HR) policies and procedures which are documented in a HR manual and give guidance consistent with the requirements of IFC Performance Standard 2 and Government of Indonesia labour laws. The HR policy and manual will provide standard compliance with local labour laws, a description of functions/positions and requirements, general benefits, and give guidance on employee's selection, hiring and promoting procedures.

All employees will receive a copy of this manual at their first day at work. The HR manual will include:

- prohibition of any type of child and/or forced labour;
- the implementation of equal opportunity and non-discriminatory hiring and promotion policies;
- description and full disclosure of the workers/employees' rights and duties, including freedom of association and collective bargaining; and
- a non-retaliatory grievance mechanism to receive and process any complaints from employees on work related conflicts or issues.

Compliance with these policies and procedures will also be mandatory to all contractors, suppliers, and sub-contractors.

3.12.2 Document control

Document control will be carried out in accordance with a Document Control Procedure, which will address the following:

- controlled documents;
- controlled document preparation;
- document reference notation (document numbering);

- review of documents;
- approval of documents; and
- document recording and removal.

A document register will be prepared to capture all relevant ESMS documents, spreadsheets, registers and maps.

Controlled Documents

A 'controlled document' is a standard document produced by MRPR in which the format, content and distribution are controlled. A 'controlled format document' in which the format is controlled but not the content once the document has been completed. This refers to pre-printed forms including incident reporting, training records and audit checklists. Upon completion of this type of document, a copy is retained (filed) as a record.

Document Approval and Issue

The issue of controlled documents will be under cover note (memorandum) to all persons identified in the distribution list. A Master Register which records the latest revision number of the issues is retained for all such distributions.

The cover note identifies the reason for the issue and which documents are superseded and to be subsequently removed. Each holder of a controlled document is responsible for updating issues upon receipt of the memorandum and removing obsolete copies.

Document Changes/Modifications

All documents are to be reviewed and approved by the Project Manager. The authorisation of changes will be denoted by a memorandum which will be added at the front of each controlled document. The cover note identifies changes to controlled documents.

In each document making up the ESMS, there is a revision log which shall be used to record the date and revision number of each section which is issued as a revision. It is the responsibility of the manual owner to update the revision log on receipt of new or revised sections. They are also responsibility for notifying affected parties that a new version is in use.

An electronic version of the ESMS should be made available to MRPR Personnel. This version shall be maintained in a 'read only' mode. Changes to this electronic copy may only be made under the delegated authority from the Project Manager. In all cases, changes to the electronic version should mirror only those changes issued to the controlled documents through memorandums or cover notes. The electronic version will act at the most up-to-date version of the ESMS. All hard copies of the ESMS are considered 'uncontrolled' copies.

3.12.3 ESMS review and auditing

As described in Section 3.9, there will be periodic reviews and audits of the ESMS. Any changes to ESMS documentation that result from these shall be made in accordance with the Document Control Procedure outlined above.

3.12.4 Reporting

MRPR shall report to the relevant financial institutions and government authorities on the implementation of the AMDAL, ESMP and on the Projects environmental and social performance on a six monthly basis.

Progress reporting by the EPC contractor's to MRPR will also be carried out as required. For example, reporting should be in accordance with the Environmental Permit issued once the AMDAL has been approved. Reporting to financial institutions should be in accordance with the CTA (following financial close).

4. Assessment Against ADB and IFC Criteria

4.1 Assessment Against ADB Criteria

An assessment of the Project's environmental and social impacts against the ADB Safeguards is provided in Tables 4.1, 4.2 and 4.3 below. It should be noted that this is Jacobs' review and interpretation of the ADB Safeguards which may differ from ADB's Safeguard Specialists review of the ESIA and supporting environmental documentation, and in this situation the ADB's Safeguard Specialists review will take precedent.

The ESIA states that "*Indigenous peoples Category C: Impacts to indigenous peoples are unlikely to occur as a result of the Project. As a result, no further assessment is required*".

Table 4.1 : Assessment of ADB Environmental Safeguards

Environmental Safeguards Policy Principles	Assessment
1. Use a screening process for each proposed project, as early as possible, to determine the appropriate extent and type of environmental assessment so that appropriate studies are undertaken commensurate with the significance of potential impacts and risks.	The Project has been categorized as a Category A for Environmental Impacts.
2. Conduct an environmental assessment for each proposed project to identify potential direct, indirect, cumulative, and induced impacts and risks to physical, biological, socio-economic (including impacts on livelihood through environmental media, health and safety, vulnerable groups, and gender issues), and physical cultural resources in the context of the project's area of influence. Assess potential transboundary and global impacts, including climate change. Use strategic environmental assessment where appropriate.	An Environmental and Social Impact Assessment (ESIA) has been prepared by Jacobs on behalf of the MRPR and it assesses the environmental social impacts of the Project's activities including construction and operation of the gas pipeline, jetty, CCPP, transmission line, water pipelines and temporary jetty.
3. Examine alternatives to the project's location, design, technology, and components and their potential environmental and social impacts and document the rationale for selecting the particular alternative proposed. Also consider the no project alternative.	The Assessment of Alternatives section in the ESIA (see Section 4.2, Volume1 of the ESIA) provides an assessment of the alternative options (sites, routes, technologies considered for the power plant. Transmission line and gas pipeline) and why the preferred option was selected on environmental and social basis.

Environmental Safeguards Policy Principles	Assessment
4. Avoid, and where avoidance is not possible, minimize, mitigate, and/or offset adverse impacts and enhance positive impacts by means of environmental planning and management. Prepare an environmental management plan (EMP) that includes the proposed mitigation measures, environmental monitoring and reporting requirements, related institutional or organizational arrangements, capacity development and training measures, implementation schedule, cost estimates, and performance indicators. Key considerations for EMP preparation include mitigation of potential adverse impacts to the level of no significant harm to third parties, and the polluter pays principle.	An ESMP is provided in the ESIA which sets out the proposed mitigation and monitoring measures to avoid, minimize, mitigate and offset adverse impacts. The ESMP (ESMP – refer Section 2, Volume 4 of the ESIA) sets out reporting requirements, capacity development and training measures, implementation schedule, cost estimates, and performance indicators.
5. Carry out meaningful consultation with affected people and facilitate their informed participation. Ensure women's participation in consultation. Involve stakeholders, including affected people and concerned nongovernment organizations, early in the project preparation process and ensure that their views and concerns are made known to and understood by decision makers and taken into account. Continue consultations with stakeholders throughout project implementation as necessary to address issues related to environmental assessment. Establish a grievance redress mechanism to receive and facilitate resolution of the affected people's concerns and grievances regarding the project's environmental performance.	■ A Stakeholder Engagement Plan (SEP) has been prepared (refer ESIA Volume 5: Appendices – Appendix P) which document the methods and process by which its stakeholders and other interested parties are consulted in relation to the proposed Project. The SEP will form one of the live documents in the Project ESMS so that ongoing community consultation is proactively managed. ■ The results of the public consultation undertaken to date in the preparation of the ESIA is presented in the Social Impact Assessment, ESIA Volume 3. Around 800 people have been consulted to date in regards to the project. ■ The SEP document also outlines the Community Grievance Mechanism (GM), which will be adopted and implemented by MRPR, the EPC and other subcontractors. The GM has been socialized and disclosed to Project Affected People (PAPs) via consultations with the community including the disclosure of the EESIA NTC in September 2018.
6. Disclose a draft environmental assessment (including the EMP) in a timely manner, before project appraisal, in an accessible place and in a form and language(s) understandable to affected people and other stakeholders. Disclose the final environmental assessment, and its updates if any, to affected people and other stakeholders.	■ A draft ESIA including ESMP has been disclosed on the ADB website for comment. ■ The Non-Technical Summary (NTS) of the ESIA has been disclosed to affected communities in September 2018 and this disclosure process was witnessed by representatives from ADB. The disclosure covered Project update, schedule and key parties-sponsors; ESIA process; ESIA findings; Mitigations proposed; Stakeholder consultation; and Grievance Mechanism.
7. Implement the EMP and monitor its effectiveness. Document monitoring results, including the development and implementation of corrective actions, and disclose monitoring reports.	This Safeguard cannot be evaluated at this stage of the project as the construction has yet to commence.
8. Do not implement project activities in areas of critical habitats, unless (i) there are no measurable adverse impacts on the critical habitat that could impair its ability to function, (ii) there is no reduction in the population of any recognized endangered or critically endangered species, and (iii) any lesser impacts are mitigated. If a project is located within a legally protected area, implement additional programs to promote and enhance the conservation aims of the	■ The ESIA adequately demonstrates that the Project will have no measurable adverse impacts on Critical Habitat in regards to the Sunda Pangolin that could impair its ability to function, that there is no reduction in the population of any recognized endangered or critically endangered species, and any lesser impacts are mitigated. The details of biodiversity management planning and approaches to biodiversity offsets to achieve '*no net loss*' for areas of Natural Habitat. (See Section 3.10 Volume 2: EIA) ■ The ESIA has adequately demonstrated that for 'Natural Habitat' there will be no significant conversion or degradation, unless (i) alternatives are not

Environmental Safeguards Policy Principles	Assessment
protected area. In an area of natural habitats, there must be no significant conversion or degradation, unless (i) alternatives are not available, (ii) the overall benefits from the project substantially outweigh the environmental costs, and (iii) any conversion or degradation is appropriately mitigated. Use a precautionary approach to the use, development, and management of renewable natural resources.	available, and (ii) any conversion or degradation is appropriately mitigated. Mitigation in relation to impacts on Natural Habitat are considered appropriate. Additional mitigation measures are to be implemented via the BAP.
9. Apply pollution prevention and control technologies and practices consistent with international good practices as reflected in internationally recognized standards such as the World Bank Group's Environmental, Health and Safety Guidelines. Adopt cleaner production processes and good energy efficiency practices. Avoid pollution, or, when avoidance is not possible, minimize or control the intensity or load of pollutant emissions and discharges, including direct and indirect greenhouse gases emissions, waste generation, and release of hazardous materials from their production, transportation, handling, and storage. Avoid the use of hazardous materials subject to international bans or phase outs. Purchase, use, and manage pesticides based on integrated pest management approaches and reduce reliance on synthetic chemical pesticides.	■ The potential environmental and social impacts of the construction and operation of the power plant, transmission line, gas pipeline, temporary jetty have been assessed based on the information provided in the ESIA (See Volumes 1-5 ESIA). ■ With regards to potential pollution, the key environmental impacts and risks identified in the ESIA relate to air emissions from the Riau CCPP, greenhouse gas emissions during operation and temporary noise impacts during the construction of the gas pipeline. Each of these issues is manageable providing sufficient consideration is given to implementation of the mitigation and monitoring as set out in the ESMP. ■ In relation to resource use/efficiency the key positive issues identified in the ESIA relate to a closed circuit cooling water system which significantly reduces the volume of water taken for cooling and the size of the thermal plume to the riverine environment and the use of a combined cycle gas turbine plant which means an increased efficiency in the amount of power generated MWh for the amount of gas burnt as compared to a gas fired gas turbine system or coal fired power plant. ■ The level of GHG emissions generated by the Riau CCPP will require to be reported annually (Scope 1 and 2). However as noted above the level of efficiency in generating electricity using a CCGT plant is much higher than for an equivalent sized coal fired power plant or a gas turbine power plant is much higher resulting in overall reduction in GHG emissions. (see Section 5 of ESIA Volume 5: EIA).
10. Provide workers with safe and healthy working conditions and prevent accidents, injuries, and disease. Establish preventive and emergency preparedness and response measures to avoid, and where avoidance is not possible, to minimize, adverse impacts and risks to the health and safety of local communities.	The ESIA provides a discussion on working conditions and on the occupational health and safety measures which will be adopted by MRPR and the EPC Contractors in the construction and operation for the power plant. A Workers Grievance Mechanism is contained in the ESIA and will be implemented by MRPR and its EPC Contractors via the ESMS. An ESMS will be prepared which will contain A Community, Health and Safety Procedure which will be implemented at the site during construction and operation.
11. Conserve physical cultural resources and avoid destroying or damaging them by using field-based surveys that employ qualified and experienced experts during environmental assessment. Provide for the use of "chance find" procedures that include a pre-approved management and conservation approach for materials that may be discovered during project implementation.	The development will have negligible impact on cultural resources. (See Section ESIA Volume 3: SIA) A Chance Find Procedure has been developed an is included in Volume 5: Appendices which will be implemented as part of the ESMS for construction and operation.

The Involuntary Resettlement Category is categorised as Category B. It should be noted that a category A classification is when involuntary resettlement impacts are considered significant where 200 or more persons experience major impacts, which are defined as:

i. Being physically displaced from housing, or

- Losing 10% or more of their productive assets (income generating).

The assessment against the ADB Involuntary Resettlement Safeguards includes the mitigation measures set out in the Resettlement Plan (equivalent to a Resettlement Action Plan under IFC Performance Standards) which the ESIA relied heavily on in terms of the mitigations being applied for reducing the level of impact significance from major to a residual impact of minor.

Based on the analysis of the Area of Influence (AoI), the Project will impact on a total of 8 villages.

Table 4.2 : Assessment of ADB Involuntary Resettlement Safeguards

Involuntary Resettlement Safeguard Policy Principles	Assessment
1. Screen the project early on to identify past, present, and future involuntary resettlement impacts and risks. Determine the scope of resettlement planning through a survey and/or census of displaced persons, including a gender analysis, specifically related to resettlement impacts and risks.	The ESIA concludes that there will be no involuntary resettlement (Section 6.2 of Volume 3 SIA of the ESIA).
2. Carry out meaningful consultations with affected persons, host communities, and concerned nongovernment organizations. Inform all displaced persons of their entitlements and resettlement options. Ensure their participation in planning, implementation, and monitoring and evaluation of resettlement programs. Pay particular attention to the needs of vulnerable groups, especially those below the poverty line, the landless, the elderly, women and children, and Indigenous Peoples, and those without legal title to land, and ensure their participation in consultations. Establish a grievance redress mechanism to receive and facilitate resolution of the affected persons' concerns. Support the social and cultural institutions of displaced persons and their host population. Where involuntary resettlement impacts, and risks are highly complex and sensitive, compensation and resettlement decisions should be preceded by a social preparation phase.	Public meetings with Project Affected communities was conducted as part of the AMDAL process. In addition, census surveys of Project Affected Parties have been undertaken by MRPR as part of the identification of land owners / land users A Stakeholder Engagement Plan (SEP) has been prepared to guide stakeholder engagement throughout the life of the project. The SEP will be revised and updated through the life of the project and will form one of the plans under the ESMP and be implemented by the Project ESMS. A Community Grievance Mechanism has been prepared and is included in the SEP. This GM will be integrated into the Livelihood Restoration Plan (LRP) rather than using the generic one.
3. Improve, or at least restore, the livelihoods of all displaced persons through (i) land-based resettlement strategies when affected livelihoods are land based where possible or cash compensation at replacement value for land when the loss of land does not undermine livelihoods, (ii) prompt replacement of assets with access to assets of equal or higher value, (iii) prompt compensation at full replacement cost for assets that cannot be restored, and (iv) additional revenues and services through benefit sharing schemes where possible.	A Livelihood Restoration Plan (LRP) has been developed and outlines the options for those affected.
4. Provide physically and economically displaced persons with needed assistance, including the following: (i) if there is relocation, secured tenure to relocation land, better housing at resettlement sites	Physical displacement is captured as a willing-selling willing-buyer basis. Cash compensation is only provided to land users along the gas pipeline for temporary impacts on their livelihoods as a result of the construction of the gas

Involuntary Resettlement Safeguard Policy Principles	Assessment
with comparable access to employment and production opportunities, integration of resettled persons economically and socially into their host communities, and extension of project benefits to host communities; (ii) transitional support and development assistance, such as land development, credit facilities, training, or employment opportunities; and (iii) civic infrastructure and community services, as required.	pipeline. For compensation for crops, businesses refer to Section 11: Implementation Schedule of the LRP
5. Improve the standards of living of the displaced poor and other vulnerable groups, including women, to at least national minimum standards. In rural areas provide them with legal and affordable access to land and resources, and in urban areas provide them with appropriate income sources and legal and affordable access to adequate housing.	There will be no physical displacement of residents. Vulnerable groups are identified and have been addressed as a separate group for compensation.
6. Develop procedures in a transparent, consistent, and equitable manner if land acquisition is through negotiated settlement to ensure that those people who enter into negotiated settlements will maintain the same or better income and livelihood status.	Land acquisition process to date for the power plant, transmission line and gas pipeline, based on the sample of people interviewed during the site visit, was undertaken on a negotiated willing seller - willing buyer basis with agreed prices with the land owners at or above market rates for land based on recent sales of other parcels of land in the areas. Section 6.2.1 Volume 3 ESIA establishes that all land acquisition activity will be undertaken applying the principle of willing buyer - willing seller along with a fair and negotiated settlement process.
7. Ensure that displaced persons without titles to land or any recognizable legal rights to land are eligible for resettlement assistance and compensation for loss of non-land assets.	A Livelihood Restoration Plan has been developed to cover compensation for PAPs with non-land assets and for the temporary impacts on their livelihoods as a result of construction the gas pipeline and water pipeline.
8. Prepare a resettlement plan elaborating on displaced persons' entitlements, the income and livelihood restoration strategy, institutional arrangements, monitoring and reporting framework, budget, and time-bound implementation schedule.	A Livelihood Restoration Plan has been developed to cover compensation for PAPs with non-land assets and for the temporary impacts on their livelihoods as a result of construction the gas pipeline and water pipeline.
9. Disclose a draft resettlement plan, including documentation of the consultation process in a timely manner, before project appraisal, in an accessible place and a form and language(s) understandable to affected persons and other stakeholders. Disclose the final resettlement plan and its updates to affected persons and other stakeholders.	MRPR have disclosed the Livelihood Restoration Plan to affected communities in five villages in November 2018 by a series of consultation meetings
10. Conceive and execute involuntary resettlement as part of a development project or program. Include the full costs of resettlement in the presentation of project's costs and benefits. For a project with significant involuntary resettlement impacts, consider implementing the involuntary resettlement component of the project as a stand-alone operation.	There is no involuntary resettlement. Full costs of economic displacement have not been calculated. Entitlement matrix quantifies costs against temporary loss of livelihoods, and crops temporary relocation of structures The Livelihood Restoration Plan is still a draft.
11. Pay compensation and provide other resettlement entitlements before physical or economic	No Resettlement Plan is required. Compensation for affected parties are laid out in the LRP section 11.1

Involuntary Resettlement Safeguard Policy Principles	Assessment
displacement. Implement the Resettlement Plan under close supervision throughout project implementation.	
12. Monitor and assess resettlement outcomes, their impacts on the standards of living of displaced persons, and whether the objectives of the resettlement plan have been achieved by taking into account the baseline conditions and the results of resettlement monitoring. Disclose monitoring reports.	To be conducted prior to construction commencing to determine compliance with this safeguard policy.

Table 4.3 : Assessment of ADB Indigenous People Safeguards

Indigenous Peoples Safeguard Policy Principles	Assessment
1. Screen early on to determine (i) whether Indigenous Peoples are present in, or have collective attachment to, the project area; and (ii) whether project impacts on Indigenous Peoples are likely.	Jacobs has under taken a detailed Indigenous Peoples Assessment against ADB criteria and as a result of the assessment has concluded that there are no Indigenous People within the vicinity of the project site. The majority are Malay.
2. Undertake a culturally appropriate and gender-sensitive social impact assessment or use similar methods to assess potential project impacts, both positive and adverse, on Indigenous Peoples. Give full consideration to options the affected Indigenous Peoples prefer in relation to the provision of project benefits and the design of mitigation measures. Identify social and economic benefits for affected Indigenous Peoples that are culturally appropriate and gender and intergenerationally inclusive and develop measures to avoid, minimize, and/or mitigate adverse impacts on Indigenous Peoples.	See above
3. Undertake meaningful consultations with affected Indigenous Peoples communities and concerned Indigenous Peoples organizations to solicit their participation (i) in designing, implementing, and monitoring measures to avoid adverse impacts or, when avoidance is not possible, to minimize, mitigate, or compensate for such effects; and (ii) in tailoring project benefits for affected Indigenous Peoples communities in a culturally appropriate manner. To enhance Indigenous Peoples' active participation, projects affecting them will provide for culturally appropriate and gender inclusive capacity development. Establish a culturally appropriate and gender inclusive grievance mechanism to receive and facilitate resolution of the Indigenous Peoples' concerns.	See above
4. Ascertain the consent of affected Indigenous Peoples communities to the following project activities: (i) commercial development of the cultural resources and knowledge of Indigenous Peoples; (ii) physical displacement from traditional or customary lands; and (iii) commercial development of natural resources	See above

Indigenous Peoples Safeguard Policy Principles	Assessment
within customary lands under use that would impact the livelihoods or the cultural, ceremonial, or spiritual uses that define the identity and community of Indigenous Peoples. For the purposes of policy application, the consent of affected Indigenous Peoples communities refers to a collective expression by the affected Indigenous Peoples communities, through individuals and/or their recognized representatives, of broad community support for such project activities. Broad community support may exist even if some individuals or groups object to the project activities.	
5. Avoid, to the maximum extent possible, any restricted access to and physical displacement from protected areas and natural resources. Where avoidance is not possible, ensure that the affected Indigenous Peoples communities participate in the design, implementation, and monitoring and evaluation of management arrangements for such areas and natural resources and that their benefits are equitably shared.	See above
6. Prepare an Indigenous Peoples plan (IPP) that is based on the social impact assessment with the assistance of qualified and experienced experts and that draw on indigenous knowledge and participation by the affected Indigenous Peoples communities. The IPP includes a framework for continued consultation with the affected Indigenous Peoples communities during project implementation; specifies measures to ensure that Indigenous Peoples receive culturally appropriate benefits; identifies measures to avoid, minimize, mitigate, or compensate for any adverse project impacts; and includes culturally appropriate grievance procedures, monitoring and evaluation arrangements, and a budget and time-bound actions for implementing the planned measures.	See above
7. Disclose a draft IPP, including documentation of the consultation process and the results of the social impact assessment in a timely manner, before project appraisal, in an accessible place and in a form and language(s) understandable to affected Indigenous Peoples communities and other stakeholders. The final IPP and its updates will also be disclosed to the affected Indigenous Peoples communities and other stakeholders.	See above
8. Prepare an action plan for legal recognition of customary rights to lands and territories or ancestral domains when the project involves (i) activities that are contingent on establishing legally recognized rights to lands and territories that Indigenous Peoples have	See above

Indigenous Peoples Safeguard Policy Principles	Assessment
traditionally owned or customarily used or occupied, or (ii) involuntary acquisition of such lands.	
9. Monitor implementation of the IPP using qualified and experienced experts; adopt a participatory monitoring approach, wherever possible; and assess whether the IPP's objective and desired outcome have been achieved, taking into account the baseline conditions and the results of IPP monitoring. Disclose monitoring reports.	See above

4.2 Assessment Against IFC Performance Standards

Table 4.4 provides a summary assessment against IFC Performance Standards.

Table 4.4: Assessment of the Project against IFC Performance Standards

Performance Standards	Objectives	Assessment
PS 1 Assessment and Management of Environmental and Social Risks and Impacts	■ To identify and evaluate environmental and social risks and impacts of the project. ■ To adopt a mitigation hierarchy to anticipate and avoid, or where avoidance is not possible, minimize, and where residual impacts remain, compensate/ offset for risks and impacts to workers, Affected Communities, and the environment. ■ To promote improved environmental and social performance of clients through the effective use of management systems. ■ To ensure that grievances from Affected Communities and external communications from other stakeholders are responded to and managed appropriately. ■ To promote and provide means for adequate engagement with Affected Communities throughout the project cycle on issues that could potentially affect them and to ensure that relevant environmental and social information is disclosed and disseminated.	• **Compliance with Indonesian Legislation** An AMDAL has been prepared for the project which provide an assessment of environmental and social impacts and provides management and monitoring measures to control and monitor impacts from the proposed development. • **ESIA** A separate ESIA has been prepared for the Sponsors by MRPR to demonstrate conformance with the ADB Safeguards, Equator Principles, IFC Performance Standards and EHS Guidelines. It identifies potential environmental and social impacts and risks associated with the proposed development and sets out recommendations for mitigating and monitoring impacts and risks via an ESMP. The assessment has been carried out against Indonesian standards and international guidelines. The standards used in the assessment are explained in Annex A and are a mix of national legislation and international guidelines. • **SEP and Grievance Mechanism** A Stakeholder Engagement Plan (SEP) has been prepared to document the methods and process by which its stakeholders and other interested parties are consulted in relation to the proposed Project. The ESIA states that the SEP will be throughout the life of the project and will form part of the Overarching ESMS. The SEP document also outlines the Community Grievance Mechanism (GM), which will be adopted and implemented by the EPC Contractors and other subcontractors. We understand MRPR have disclosed the GM via consultations with the community relations officer and the villages in December 2017. The Grievance Mechanism has also been socialised and disclosed with Project Affected People (PAPs) in public meetings held in December 2017 and September 2018. • **ESMP** An ESMP (Volume 4 of the ESIA) sets out a series of management plans, mitigation measures and monitoring requirements that are required to be

Performance Standards	Objectives	Assessment
		implemented by the Sponsors and the EPC Contractors to adequately manage impacts and risks to acceptable levels as in accordance with PS1. Of the specified management procedures and plans in the ESMP pertaining to MRPR, all have been developed to date as part of drafting the ESMS and will be submitted to lenders for review in the near future. The ESMP also provides a budget estimate for the implantation of these measures. The ESIA states that the EPCs and the Sponsors will have suitable resources in place to oversee the ESMP implementation; ensuring construction activities are addressing commitments set out in the ESMP. This team will be led by MRPR HSE Manager and consist of H&S supervisors, environmental specialists (including air, noise, biodiversity, water quality etc.) and community relations advisors (Who will lead the consultation, grievance management, CSR and LRP activities). The EPCs will also be expected to reflect a similar team structure to support the implementation of the construction management plans. • **Assessment of Alternatives** A detailed assessment of the alternative options (sites, routes, power plant) and why the preferred option was selected on environmental and social basis has been provided in the final version of the ESIA Volume 1: Introduction.
PS 2 **Labour and Working Conditions**	■ To promote the fair treatment, non-discrimination, and equal opportunity of workers. ■ To establish, maintain, and improve the worker-management relationship. ■ To promote compliance with national employment and labour laws. ■ To protect workers, including vulnerable categories of workers such as children, migrant workers, workers engaged by third parties, and workers in the client's supply chain. ■ To promote safe and healthy working conditions, and the health of workers. ■ To avoid the use of forced labour.	The ESIA provides a discussion on working conditions and on the occupational health and safety measures which will be adopted by MRPR and the EPC Contractors in the construction and operation for the power plant. A Workers Grievance Mechanism is contained in the ESIA and will be implemented by MRPR and its EPC Contractors via the ESMS. An ESMS will be prepared which will contain A Community, Health and Safety Procedure which will be implemented at the site during construction and operation.

Performance Standards	Objectives	Assessment
PS 3 **Resource Efficiency and Pollution Abatement**	■ To avoid or minimize adverse impacts on human health and the environment by avoiding or minimizing pollution from project activities. ■ To promote more sustainable use of resources, including energy and water. ■ To reduce project-related GHG emissions.	■ The potential environmental and social impacts of the construction and operation of the power plant, transmission line, gas pipeline, temporary jetty have been assessed based on the information provided in the ESIA (See Volumes 1-5 ESIA). ■ With regards to potential pollution, the key environmental impacts and risks identified in the ESIA relate to air emissions from the Riau CCPP, greenhouse gas emissions during operation and temporary noise impacts during the construction of the gas pipeline. Each of these issues is manageable providing sufficient consideration is given to implementation of the mitigation and monitoring as set out in the ESMP. ■ In relation to resource use/efficiency the key positive issues identified in the ESIA relate to a closed circuit cooling water system which significantly reduces the volume of water taken for cooling and the size of the thermal plume to the riverine environment and the use of a combined cycle gas turbine plant which means an increased efficiency in the amount of power generated MWh for the amount of gas burnt as compared to a gas fired gas turbine system or coal fired power plant. ■ The level of GHG emissions generated by the Riau CCPP will require to be reported annually (Scope 1 and 2). However as noted above the level of efficiency in generating electricity using a CCGT plant is much higher than for an equivalent sized coal fired power plant or a gas turbine power plant is much higher resulting in overall reduction in GHG emissions. (see Section 5 of ESIA Volume 5: EIA). ■ The measures proposed for the management of waste and hazardous substances appears to be appropriate
PS 4 **Community Health, Safety and Security**	■ To anticipate and avoid adverse impacts on the health and safety of the Affected Community during the project life from both routine and non-routine circumstances. ■ To ensure that the safeguarding of personnel and property is carried out in accordance with relevant human rights principles and in a manner that avoids or minimizes risks to the Affected Communities.	■ The ESIA demonstrates that the impacts on the health and safety of the Affected Community during the project life from both routine and non-routine circumstances from the development are acceptable. A Qualitative Risk Assessment undertaken for the operation of the gas pipeline shows that the level of risk posed from non-routine events are acceptable. The air quality, noise, water quality studies show that the impacts on the surrounding communities are minor. ■ An ESMS will be prepared which will contain A Community, Health and Safety Procedure which will be implemented at the site during construction and operation.

Performance Standards	Objectives	Assessment
PS 5 **Land Acquisition and Involuntary Resettlement**	■ To avoid, and when avoidance is not possible, minimize displacement by exploring alternative project designs. ■ To avoid forced eviction. ■ To anticipate and avoid, or where avoidance is not possible, minimize adverse social and economic impacts from land acquisition or restrictions on land use by (i) providing compensation for loss of assets at replacement cost and (ii) ensuring that resettlement activities are implemented with appropriate disclosure of information, consultation, and the informed participation of those affected. ■ To improve, or restore, the livelihoods and standards of living of displaced persons. ■ To improve living conditions among physically displaced persons through the provision of adequate housing with security of tenure at resettlement sites	*Physical and Economic Displacement* ▪ Volume 3 Section 6.2.3 of the ESIA has identified there will be no permanent physical displacement as a result of the land acquisition for the project. However, there are a number of people will have their means of livelihood impacted and may suffer economic displacement. Detail is provided in the LRP. ▪ Cash Compensation at replacement value is calculated for land users along the gas pipeline route, and for temporary economic loss will be full replacement cost for the entire temporary duration of the economic displacement. Trees or crops lost will be compensated in accordance with the crop calculation provide din Section 8.2 of the LRP ■ The land acquisition process for is completed for the project apart for a 3.5 km section along the gas pipeline. This is expected to be completed by early 2019.

Performance Standards	Objectives	Assessment
PS 6 **Biodiversity Conservation and Sustainable Management of Living Natural Resources**	■ To protect and conserve biodiversity. ■ To maintain the benefits from ecosystem services. ■ To promote the sustainable management of living natural resources through the adoption of practices that integrates conservation needs and development priorities	▪ Project area predominately palm oil plantations – habitat considered modified habitat. Areas with native regrowth are considered areas of low grade natural habitat. 106 ha of the 8,793 ha is determined low grade Natural Habitat (refer to ESIA Volume 2 Section 3.10.8. ▪ Discrete Management Uni has been identified for areas where Agile Gibbon's and Sunda Pangolin have been identified to protect the IUCN Red List Threatened species. ▪ The ESIA adequately demonstrates that the Project will have no measurable adverse impacts on Critical Habitat in regards to the Sunda Pangolin that could impair its ability to function, that there is no reduction in the population of any recognized endangered or critically endangered species, and any lesser impacts are mitigated. The details of biodiversity management planning and approaches to biodiversity offsets to achieve 'no net loss' for areas of Natural Habitat. (See Section 3.10 Volume 2: EIA) ▪ The ESIA has adequately demonstrated that for 'Natural Habitat' there will be no significant conversion or degradation, unless (i) alternatives are not available, and (ii) any conversion or degradation is appropriately mitigated. Mitigation in relation to impacts on Natural Habitat are considered appropriate. Additional mitigation measures are to be implemented via the BAP. ▪ A Biodiversity Action Plan has been developed to address measures to avoid potential adverse impacts of the project on biodiversity and ecosystem services. Jacobs are currently in contact with Sunda Pangolin and Agile Gibbon Specialists on providing mitigation measures to reduce impact from the project. ■ Details of biodiversity management planning and approaches to biodiversity offsets to achieve 'no net loss' for areas of Natural Habitat impact by the Project are included in the Biodiversity Action Plan ■ Details of general monitoring activities for terrestrial biodiversity is included. However, further details should be included in a BAP. ■ Impacts on aquatic ecology in the Siak River as a result of the development are minor.

Performance Standards	Objectives	Assessment
PS 7 **Indigenous Peoples**	■ To ensure that the development process fosters full respect for the human rights, dignity, aspirations, culture, and natural resource-based livelihoods of Indigenous Peoples. ■ To anticipate and avoid adverse impacts of projects on communities of Indigenous Peoples, or when avoidance is not possible, to minimize and/or compensate for such impacts. ■ To promote sustainable development benefits and opportunities for Indigenous Peoples in a culturally appropriate manner. ■ To establish and maintain an ongoing relationship based on Informed Consultation and Participation (ICP) with the Indigenous Peoples affected by a project throughout the project's life-cycle. ■ To ensure the Free, Prior, and Informed Consent (FPIC) of the Affected Communities of Indigenous Peoples when the circumstances described in this Performance Standard are present. ■ To respect and preserve the culture, knowledge, and practices of Indigenous Peoples.	■ PS7 is not triggered by the project – refer to Volume 3: SIA of the ESIA. ■ Impacts to indigenous peoples are negligible therefore the need for FPIC and IP plan is not warranted.
PS 8 **Cultural Heritage**	■ To protect cultural heritage from the adverse impacts of project activities and support its preservation. ■ To promote the equitable sharing of benefits from the use of cultural heritage.	■ Overall impacts to cultural heritage sites are determined to be of minor impact. The gas pipeline has been designed to avoid disturbance to sacred sites and the temporary jetty has be sited away from the Okura Village Cemetery ■ A Chance Find Procedure has been developed an is included in Volume 5: Appendices which will be implemented as part of the ESMS for construction and operation.,

Appendix A. Legal Requirements Register

A.1 ADB Safeguards

Policy Principles:

1. Use a screening process for each proposed project, as early as possible, to determine the appropriate extent and type of environmental assessment so that appropriate studies are undertaken commensurate with the significance of potential impacts and risks.
2. Conduct an environmental assessment for each proposed project to identify potential direct, indirect, cumulative, and induced impacts and risks to physical, biological, socioeconomic (including impacts on livelihood through environmental media, health and safety, vulnerable groups, and gender issues), and physical cultural resources in the context of the project's area of influence. Assess potential transboundary and global impacts, including climate change. Use strategic environmental assessment where appropriate.
3. Examine alternatives to the project's location, design, technology, and components and their potential environmental and social impacts and document the rationale for selecting the particular alternative proposed. Also consider the no project alternative.
4. Avoid, and where avoidance is not possible, minimize, mitigate, and/or offset adverse impacts and enhance positive impacts by means of environmental planning and management. Prepare an environmental management plan (EMP) that includes the proposed mitigation measures, environmental monitoring and reporting requirements, related institutional or organizational arrangements, capacity development and training measures, implementation schedule, cost estimates, and performance indicators. Key considerations for EMP preparation include mitigation of potential adverse impacts to the level of no significant harm to third parties, and the polluter pays principle.
5. Carry out meaningful consultation with affected people and facilitate their informed participation. Ensure women's participation in consultation. Involve stakeholders, including affected people and concerned nongovernment organizations, early in the project preparation process and ensure that their views and concerns are made known to and understood by decision makers and taken into account. Continue consultations with stakeholders throughout project implementation as necessary to address issues related to environmental assessment. Establish a grievance redress mechanism to receive and facilitate resolution of the affected people's concerns and grievances regarding the project's environmental performance.
6. Disclose a draft environmental assessment (including the EMP) in a timely manner, before project appraisal, in an accessible place and in a form and language(s) understandable to affected people and other stakeholders. Disclose the final environmental assessment, and its updates if any, to affected people and other stakeholders.
7. Implement the EMP and monitor its effectiveness. Document monitoring results, including the development and implementation of corrective actions, and disclose monitoring reports.
8. Do not implement project activities in areas of critical habitats, unless (i) there are no measurable adverse impacts on the critical habitat that could impair its ability to function, (ii) there is no reduction in the population of any recognized endangered or critically endangered species, and (iii) any lesser impacts are mitigated. If a project is located within a legally protected area, implement additional programs to promote and enhance the conservation aims of the protected area. In an area of natural habitats, there must be no significant conversion or degradation, unless (i) alternatives are not available, (ii) the overall benefits from the project substantially outweigh the environmental costs, and (iii) any conversion or degradation is appropriately mitigated. Use a precautionary approach to the use, development, and management of renewable natural resources.
9. Apply pollution prevention and control technologies and practices consistent with international good practices as reflected in internationally recognized standards such as the World Bank Group's Environmental, Health and Safety Guidelines. Adopt cleaner production processes and good energy efficiency practices. Avoid pollution, or, when avoidance is not possible, minimize or control the intensity or load of pollutant emissions and discharges, including direct and indirect greenhouse gases emissions, waste generation, and release of hazardous materials from their production, transportation, handling, and storage. Avoid the use of hazardous materials subject to international bans or phaseouts. Purchase, use, and manage pesticides based on integrated pest management approaches and reduce reliance on synthetic chemical pesticides.
10. Provide workers with safe and healthy working conditions and prevent accidents, injuries, and disease. Establish preventive and emergency preparedness and response measures to avoid, and where avoidance is not possible, to minimize, adverse impacts and risks to the health and safety of local communities.
11. Conserve physical cultural resources and avoid destroying or damaging them by using field-based surveys that employ qualified and experienced experts during environmental assessment. Provide for the use of "chance find" procedures that include a pre-approved management and conservation approach for materials that may be discovered during project implementation.

Figure A.1: ADB Environmental Safeguards Policy Principles (ADB, 2009)

Policy Principles:

1. Screen the project early on to identify past, present, and future involuntary resettlement impacts and risks. Determine the scope of resettlement planning through a survey and/or census of displaced persons, including a gender analysis, specifically related to resettlement impacts and risks.
2. Carry out meaningful consultations with affected persons, host communities, and concerned nongovernment organizations. Inform all displaced persons of their entitlements and resettlement options. Ensure their participation in planning, implementation, and monitoring and evaluation of resettlement programs. Pay particular attention to the needs of vulnerable groups, especially those below the poverty line, the landless, the elderly, women and children, and Indigenous Peoples, and those without legal title to land, and ensure their participation in consultations. Establish a grievance redress mechanism to receive and facilitate resolution of the affected persons' concerns. Support the social and cultural institutions of displaced persons and their host population. Where involuntary resettlement impacts and risks are highly complex and sensitive, compensation and resettlement decisions should be preceded by a social preparation phase.
3. Improve, or at least restore, the livelihoods of all displaced persons through (i) land-based resettlement strategies when affected livelihoods are land based where possible or cash compensation at replacement value for land when the loss of land does not undermine livelihoods, (ii) prompt replacement of assets with access to assets of equal or higher value, (iii) prompt compensation at full replacement cost for assets that cannot be restored, and (iv) additional revenues and services through benefit sharing schemes where possible.
4. Provide physically and economically displaced persons with needed assistance, including the following: (i) if there is relocation, secured tenure to relocation land, better housing at resettlement sites with comparable access to employment and production opportunities, integration of resettled persons economically and socially into their host communities, and extension of project benefits to host communities; (ii) transitional support and development assistance, such as land development, credit facilities, training, or employment opportunities; and (iii) civic infrastructure and community services, as required.
5. Improve the standards of living of the displaced poor and other vulnerable groups, including women, to at least national minimum standards. In rural areas provide them with legal and affordable access to land and resources, and in urban areas provide them with appropriate income sources and legal and affordable access to adequate housing.
6. Develop procedures in a transparent, consistent, and equitable manner if land acquisition is through negotiated settlement to ensure that those people who enter into negotiated settlements will maintain the same or better income and livelihood status.
7. Ensure that displaced persons without titles to land or any recognizable legal rights to land are eligible for resettlement assistance and compensation for loss of nonland assets.
8. Prepare a resettlement plan elaborating on displaced persons' entitlements, the income and livelihood restoration strategy, institutional arrangements, monitoring and reporting framework, budget, and time-bound implementation schedule.
9. Disclose a draft resettlement plan, including documentation of the consultation process in a timely manner, before project appraisal, in an accessible place and a form and language(s) understandable to affected persons and other stakeholders. Disclose the final resettlement plan and its updates to affected persons and other stakeholders.
10. Conceive and execute involuntary resettlement as part of a development project or program. Include the full costs of resettlement in the presentation of project's costs and benefits. For a project with significant involuntary resettlement impacts, consider implementing the involuntary resettlement component of the project as a stand-alone operation.
11. Pay compensation and provide other resettlement entitlements before physical or economic displacement. Implement the resettlement plan under close supervision throughout project implementation.
12. Monitor and assess resettlement outcomes, their impacts on the standards of living of displaced persons, and whether the objectives of the resettlement plan have been achieved by taking into account the baseline conditions and the results of resettlement monitoring. Disclose monitoring reports.

Figure A.2: ADB Involuntary Resettlement Safeguards Policy Principles (ADB, 2009)

Policy Principles:

1. Screen early on to determine (i) whether Indigenous Peoples are present in, or have collective attachment to, the project area; and (ii) whether project impacts on Indigenous Peoples are likely.
2. Undertake a culturally appropriate and gender-sensitive social impact assessment or use similar methods to assess potential project impacts, both positive and adverse, on Indigenous Peoples. Give full consideration to options the affected Indigenous Peoples prefer in relation to the provision of project benefits and the design of mitigation measures. Identify social and economic benefits for affected Indigenous Peoples that are culturally appropriate and gender and intergenerationally inclusive and develop measures to avoid, minimize, and/or mitigate adverse impacts on Indigenous Peoples.
3. Undertake meaningful consultations with affected Indigenous Peoples communities and concerned Indigenous Peoples organizations to solicit their participation (i) in designing, implementing, and monitoring measures to avoid adverse impacts or, when avoidance is not possible, to minimize, mitigate, or compensate for such effects; and (ii) in tailoring project benefits for affected Indigenous Peoples communities in a culturally appropriate manner. To enhance Indigenous Peoples' active participation, projects affecting them will provide for culturally appropriate and gender inclusive capacity development. Establish a culturally appropriate and gender inclusive grievance mechanism to receive and facilitate resolution of the Indigenous Peoples' concerns.
4. Ascertain the consent of affected Indigenous Peoples communities to the following project activities: (i) commercial development of the cultural resources and knowledge of Indigenous Peoples; (ii) physical displacement from traditional or customary lands; and (iii) commercial development of natural resources within customary lands under use that would impact the livelihoods or the cultural, ceremonial, or spiritual uses that define the identity and community of Indigenous Peoples. For the purposes of policy application, the consent of affected Indigenous Peoples communities refers to a collective expression by the affected Indigenous Peoples communities, through individuals and/or their recognized representatives, of broad community support for such project activities. Broad community support may exist even if some individuals or groups object to the project activities.
5. Avoid, to the maximum extent possible, any restricted access to and physical displacement from protected areas and natural resources. Where avoidance is not possible, ensure that the affected Indigenous Peoples communities participate in the design, implementation, and monitoring and evaluation of management arrangements for such areas and natural resources and that their benefits are equitably shared.
6. Prepare an Indigenous Peoples plan (IPP) that is based on the social impact assessment with the assistance of qualified and experienced experts and that draw on indigenous knowledge and participation by the affected Indigenous Peoples communities. The IPP includes a framework for continued consultation with the affected Indigenous Peoples communities during project implementation; specifies measures to ensure that Indigenous Peoples receive culturally appropriate benefits; identifies measures to avoid, minimize, mitigate, or compensate for any adverse project impacts; and includes culturally appropriate grievance procedures, monitoring and evaluation arrangements, and a budget and time-bound actions for implementing the planned measures.
7. Disclose a draft IPP, including documentation of the consultation process and the results of the social impact assessment in a timely manner, before project appraisal, in an accessible place and in a form and language(s) understandable to affected Indigenous Peoples communities and other stakeholders. The final IPP and its updates will also be disclosed to the affected Indigenous Peoples communities and other stakeholders.
8. Prepare an action plan for legal recognition of customary rights to lands and territories or ancestral domains when the project involves (i) activities that are contingent on establishing legally recognized rights to lands and territories that Indigenous Peoples have traditionally owned or customarily used or occupied, or (ii) involuntary acquisition of such lands.
9. Monitor implementation of the IPP using qualified and experienced experts; adopt a participatory monitoring approach, wherever possible; and assess whether the IPP's objective and desired outcome have been achieved, taking into account the baseline conditions and the results of IPP monitoring. Disclose monitoring reports.

Figure A.3: ADB Indigenous Peoples Safeguards Policy Principles (ADB, 2009)

A.2 Equator Principles

The Equator Principles comprise of ten principles that provide guidance to financial institutions developing projects in a manner that is socially responsible and reflects sound environmental management practices. These are:

Principle 1: Review and Categorisation.

When a project is proposed for financing it will be categorised based on the magnitude of its environmental and social risks and impacts. This screening is based on the environmental and social categorisation process of the International Finance Corporation (IFC). The categories are as follows:

- Category A – projects with potentially significant adverse environmental and social risks and/or impacts that are diverse, irreversible or unprecedented.
- Category B - projects with potential limited adverse environmental and social risks and/or impacts that are few in number, generally site-specific, largely reversible and readily addressed through mitigation measures; and
- Category C - projects with minimal or no adverse environmental and social risks and/or impacts

Principle 2: Environmental and Social Assessment

For all Category A and B projects an assessment process is required to address the relevant environmental and social risks and/or impacts of the proposed project. This should propose measures to minimise, mitigate and offset adverse impacts in a manner that is relevant and appropriate to the nature and scale of the Project.

Principle 3: Applicable Environmental and Social Standards

In the first instance, projects should address compliance with the host country laws, regulations and permits that pertain to environmental and social issues where they are available.

Principle 4: Environmental and Social Management System and Equator Principles Action Plan

For Category A and B projects an Environmental and Social Management System (ESMS) shall be prepared and an Environment and Social Management Plan (ESMP) also prepared to address issues raised in the assessment process and incorporate actions required to comply with applicable standards. Where standards are unable to be met, an Equator Principles Actions Plan (AP) shall be prepared to outline gaps in achieving the standards.

Principle 5: Stakeholder Engagement

For all Category A and B projects effective stakeholder engagement must be undertaken on an ongoing basis. It must be structured and culturally appropriate and include affected communities and other stakeholders. The provision of information should be tailored to the risks and benefits of the programme, phase of development, language preferences of affected communities and free from external manipulation, interference, coercion and intimidation.

Principle 6: Grievance Mechanism

For Category A and as appropriate Category B projects a grievance mechanism must be designed in order to receive and facilitate resolution of concerns and grievances about the environmental and social performance.

Principle 7: Independent review

Project finance - for Category A and as appropriate Category B projects an independent review of the Assessment Documentation and Stakeholder Engagement process documentation will be undertaken to assess compliance with the Equator Principles.

Project related corporate loans – For projects with potential high risk of impacts (and if appropriate Category A and B projects) an independent review is required by an Environmental and Social Consultant.

Principle 8: Covenants

For all projects, the sponsor will covenant in the financing documentation to comply with all relevant host country environmental and social laws, regulations and permits in all material respects. For Category A and B projects the sponsor will covenant the financial documentation to comply with the ESMPs and Equator Principles Action Plan, to provide periodic reports to document compliance and to decommission the facilities, where appropriate in accordance with a decommissioning plan.

If there are non-compliances, remedial action will need to be taken.

Principle 9: Independent Monitoring and Review

All Category A and where appropriate Category B projects require the appointment of an independent Environmental and Social Consultant to assess project compliance and ensure ongoing monitoring for project finance. For project related corporate loans where review is required under principle 7 an independent review by an Environmental and Social Consultant is also required. The financial institutions will normally appoint a Lenders Technical Advisor to conduct due diligence. The LTA will perform an independent review of the ESIA, ESMS and ESMP as well as ongoing project compliance.

Principle 10: Reporting and Transparency

Sponsors reporting – also required in addition to principle 5 is ensuring that at a minimum, a summary of the ESIA is accessible and available online and GHG emission levels are publically reported, if applicable. Note that GHG emissions will be addressed in the ESIA and will only need to be publically reported if the project emits over 100,000 tonnes of CO_2 equivalent annually.

Equator Principle Financial Institutions (EPFI) – the EPFI will report publically at least monthly on transactions that have reached financial close and on its Equator Principles implementation process and experience.

Supporting Documents

The Equator Principles (2013) are supported primarily by two additional sets of documents:

- the IFC's Performance Standards on Social and Environmental Sustainability (IFC, 2012), which consist of eight performance standards which establish the standards the Project should meet over the life of investment by IFC
- the World Bank Environmental, Health, and Safety (EHS) Guidelines, which are technical reference documents with general and industry-specific examples of Good International Industry Practice. These guidelines include specific guidelines for Electric Power Transmission and Distribution.

IFC Performance standards objectives

Performance Standard	Objectives
Social and Environmental Assessment and Management Systems	• To identify and evaluate environmental and social risks and impacts of the project. • To adopt a mitigation hierarchy to anticipate and avoid, or where avoidance is not possible, minimise, and where residual impacts remain, compensate/ offset for risks and impacts to workers, Affected Communities, and the environment. • To promote improved environmental and social performance of sponsors through the effective use of management systems. • To ensure that grievances from Affected Communities and external communications from other stakeholders are responded to and managed appropriately. • To promote and provide means for adequate engagement with Affected Communities throughout the project cycle on issues that could potentially affect them and to ensure that relevant environmental and social information is disclosed and disseminated.
Labour and Working Conditions	• To promote the fair treatment, non-discrimination, and equal opportunity of workers. • To establish, maintain, and improve the worker-management relationship. • To promote compliance with national employment and labour laws. • To protect workers, including vulnerable categories of workers such as children, migrant workers, workers engaged by third parties, and workers in the sponsor's supply chain. • To promote safe and healthy working conditions, and the health of workers. • To avoid the use of forced labour.
Pollution Prevention and Abatement	• To avoid or minimise adverse impacts on human health and the environment by avoiding or minimising pollution from project activities. • To promote more sustainable use of resources, including energy and water. • To reduce project-related GHG emissions.
Community Health, Safety and Security	• To anticipate and avoid adverse impacts on the health and safety of the Affected Community during the project life from both routine and non-routine circumstances. • To ensure that the safeguarding of personnel and property is carried out in accordance with relevant human rights principles and in a manner that avoids or minimises risks to the Affected Communities.
Land Acquisition and Involuntary Resettlement	• To avoid, and when avoidance is not possible, minimise displacement by exploring alternative project designs. • To avoid forced eviction. • To anticipate and avoid, or where avoidance is not possible, minimise adverse social and economic impacts from land acquisition or restrictions on land use by (i) providing compensation for loss of assets at replacement cost and (ii) ensuring that resettlement activities are implemented with appropriate disclosure of information, consultation, and the informed participation of those affected.

	• To improve, or restore, the livelihoods and standards of living of displaced persons. • To improve living conditions among physically displaced persons through the provision of adequate housing with security of tenure at resettlement sites.
Biological Conservation and Sustainable Natural Resource Management	• To protect and conserve biodiversity. • To maintain the benefits from ecosystem services. • To promote the sustainable management of living natural resources through the adoption of practices that integrate conservation needs and development priorities.
Indigenous Peoples	• To ensure that the development process fosters full respect for the human rights, dignity, aspirations, culture, and natural resource-based livelihoods of Indigenous Peoples. • To anticipate and avoid adverse impacts of projects on communities of Indigenous Peoples, or when avoidance is not possible, to minimise and/or compensate for such impacts. • To promote sustainable development benefits and opportunities for Indigenous Peoples in a culturally appropriate manner. • To establish and maintain an ongoing relationship based on Informed Consultation and Participation (ICP) with the Indigenous Peoples affected by a project throughout the project's life-cycle. • To ensure the Free, Prior, and Informed Consent (FPIC) of the Affected Communities of Indigenous Peoples when the circumstances described in this Performance Standard are present • To respect and preserve the culture, knowledge, and practices of Indigenous Peoples.
Cultural Heritage	• To protect cultural heritage from the adverse impacts of project activities and support its preservation. • To promote the equitable sharing of benefits from the use of cultural heritage.

A.3 Government of Indonesia Legislative Requirements

Regulation	Summary
General Requirements	
Act No. 32 of 2009 regarding Environmental Protection and Management	Overarching environmental law for Indonesia.
Act No. 05 of 1990 regarding Natural Resources Conservation and its Ecosystems	Overarching on natural resources conservation with ecosystems on all over Indonesia
Act No. 30 of 2009 regarding Electricity	Overarching on Electricity for Indonesia
Environmental Impact Assessment	
Government Regulation No. 27 of 2012 regarding Environmental Permit	Defines requirement to prepare an AMDAL including timeframes. Key components include technical assessments, developing an ongoing monitoring programme and consultation.
Ministerial Environment Regulation No. 5 of 2012 regarding Types of Projects and/or Activities which require AMDAL	Defines activities that require an AMDAL including CCGT generation and electricity transmission.
Ministerial Environment Regulation No.16 of 2012 regarding guidelines for environmental documentation	Provides guidance of the preparation of environmental documents, including an AMDAL and UKL/UPL.
Ministerial Environment Regulation No.17 of 2012 regarding community participation in the AMDAL and environmental permit process	Outlines the public involvement requirements in the AMDAL and Environmental Permit process.
Ministerial Environment Decree No.45 of 2005 regarding implementation report of the AMDAL and UKL/UPL	Guidelines for preparing implementation report for AMDAL and UKL UPL
Ministerial Environment Regulation No. 2 of 2013 regarding sanctions for Environmental Management and Protection	Regulates sanctions for violations in environmental protection and management regulations
Ministerial Environment Regulation No. 8 of 2012 regarding Procedures of Assessment and Examination of Environmental Documents	Regulates how to assess and examine an AMDAL or UKL/UPL documents prior to Environmental Permit
Water and Wastewater	
Government Regulation No. 82 of 2001 regarding Water Quality Management and Water Pollution Control	Regulates the ambient river water quality standards. PT MRPR as the project proponent must apply for and obtain a discharge permit from the provincial local government for discharging wastewater to river during the power station operation. Once the power station operates, PT MRPR or the assigned operating company must provide three monthly compliance reports to the Pekanbaru Mayor (Walikota Pekanbaru).

Regulation	Summary
Ministry of Environment Regulation No. 8 of 2009 regarding wastewater quality standards for thermal power plants	Regulates the minimum effluent quality of thermal power plants.
Ministry of Environment Regulation No. 1 of 2010 regarding procedure for water pollution control	Provides guidance for central and local governments to implement water pollution control.
Ministry of Environment and Forestry Regulation No. 68 of 2016 regarding standards for domestic wastewater.	Provides the standards for domestic wastewater.
Ministry of Health Regulation No. 32 of 2017 regarding groundwater health and hygiene in relation to: pool, solus per aqua and public bath.	Provides the standards for using groundwater for daily activities.
Natural Protection and Free Zone	
Presidential Decree No. 32 of 1990 regarding Protected Area	Determines environmentally sensitive areas that must be protected and used only for green / natural areas.
Ministerial Regulation of the Minister of Public Works No. 63/PRT/1993 of 1993 regarding River Free Zone Lines, River Use Areas, River Control Areas and Dried Rivers	Determines river areas and uses allowed in such areas, including River Free Zones that can only be used for green / natural areas with no permanent buildings.
Ambient Air Quality and Air Emissions	
Government Regulation No. 41 of 1999 regarding Air Pollution Control	Regulates ambient air quality standards.
Ministerial Environment Regulation No. 21 of 2008 regarding Emission Standard of Stationary Sources	Regulates emission standards.
Noise	
Ministerial Decree of State Minister of Environment No. 48 of 1996 regarding Noise Level Standard	Regulates 55 dBA and 70 dBA as the noise thresholds for residential areas and at the site boundary of the power station respectively.
Hazardous Waste & Substances	
Government Regulation No. 101 of 2014 regarding classification and management of hazardous materials	Determines characteristics of substances that should be classified as hazardous and toxic goods. Under this regulation, hazardous substances are to be managed in a manner similar to managing hazardous wastes.
Ministerial Environment Regulation No. 18 of 2009 regarding permit procedure of hazardous waste management	Regulates the hazardous waste management licensing procedure.
Ministerial Environment Regulation No. 30 of 2009 regarding the supervision of hazardous waste management	Regulates the supervision of hazardous waste management. This excludes the management of used oils.
Solid waste	

Regulation	Summary
Act No. 18 of 2008 regarding the management of waste	Regulates waste management in Indonesia.
Land Acquisition	
Law No. 2 of 2012 regarding land acquisition for project development of public interest	Regulates land acquisition for public projects.
Presidential Regulation No. 71 of 2012 regarding land acquisition for project development of public interest.	Requires land acquisition plans to be developed in implementation of Law No. 2 of 2012.
Head of National Land Agency (BPN) Regulation No. 5 of 2012 regarding technical guide of land acquisition.	Regulates the procurement phase of the land and the authorities in the implementation of land acquisition.
Ministry of Mining and Energy Regulation No. 01.P/47/MPE/1992 regarding free space for high voltage and extra high voltage line for electric power distribution	Regulates space requirements for transmission lines, and requires land acquisition to be undertaken prior to construction.
Ministry of Energy and Mineral Resources No. 38 of 2013 regarding Compensation for land, building, and crop under high voltage and extra high voltage line	Regulates compensation that must be supplied by business proponent for land acquisition of high voltage and extra high voltage line free space.
Government Regulation No. 61 of 2012 regarding amendment of Government Regulation No. 24 of 2010 regarding forest area utilisation.	Implements Law No. 41 of 1999 regarding forest land use for non-forest activities. Contains the requirements and mechanisms of forest use to be done prior to development.
Presidential Decree No. 88 of 2017 regarding resolution on the land tenure within forestry area	Completion of land tenure in the forest area
Ministry of Environment and Forestry No. 50 of 2016 regarding Guidance on borrow lease on forest area.	Governs forest land utilisation for non-forestry purposes. The regulations provide the procedures and mechanisms of forest utilisation.
Spatial Planning	
Law No. 26 of 2007 regarding spatial planning	Regulates spatial planning and requires the Project to be within the industrial zone determined in the local government strategic planning for land use.
Ministry of Environment and Forestry Decree No 903 of 2016 regarding Forestry area in Riau Province.	Decree regarding the forestry status in Riau Province and used as a reference for Riau Province in building their spatial plan.
Law No. 13 of 2017 on Amendments to Government Regulation No. 26 of 2008 on The National Spatial Plan	The National Spatial Plan, spatial utilization and control for area which has national strategic value has significant relation to the National Spatial Planning therefore it considered to be covered by the authority of central government and the Government Regulation is set to resolve the problem of inconformity between the implementation of projects with national strategic values and regional regulations on spatial planning.

	The Riau 275MW CCPP is included Annex VA on Electricity Generation Infrastructure Network letter M Number 3 of Government Regulation No. 13 of 2017 on Amendment to Government Regulation Number 26 Year 2008 on National Spatial Plan and is subject to the requirements of Law No 13.

Appendix B. Environmental and Social Aspects Register

B.1 Introduction

In order to manage the adverse effects of its activities, and the activities of the EPC Contractor and Subcontractors, MRPR has to be able to identify, assess and control environmental, social and health and safety aspects that may have significant impact.

This section sets out the procedure for ensuring that all environmental, social and health and safety aspects with a potential to have adverse impacts are systematically identified and recorded on the Aspects Register (AR). The level of significance of each aspect's impact is determined and control measures are implemented to eliminate, isolate or minimise the effect. The procedure also describes how the AR is maintained and updated.

B.2 Responsibilities

Environmental, social and health and safety aspect identification and control is a shared responsibility between management and staff. Aspects will be systematically identified by examining the activities, products and services of the company.

Designated staff and management will be responsible for reviewing their work areas to consider the environmental aspects of their activities. The significance of the impact determined and targets introduced as part of the sites environmental management programme to effectively control/manage the aspect.

B.3 Definitions

Environmental, Social or Health and Safety Aspect

Element of an organisation's activities, products or services that can interact aspects related to the environment, social and health and safety.

Environment

Surroundings in which an organisation operates including, air, water, land, natural resources, flora, fauna, humans and their interaction.

Impact (effect)

Any change to the environment, whether adverse or beneficial, wholly or partially resulting from an organisations activities, products or services.

Consequence

The outcome of an event or situation expressed qualitatively or quantitatively, being a loss, or adverse impact, disadvantage or gain.

Frequency

A measure of likelihood expressed as the number of occurrences of an event in a given time.

Likelihood

A qualitative description of probability or frequency.

Probability

The likelihood of a specific outcome, measured by the ratio of specific outcomes to the total number of possible outcomes.

Risk

The measure both of the likelihood (frequency) and the consequences (severity) of a specified untoward event caused by an identified environmental aspect (hazard).

B.4 Aspects Identification

B.4.1 Aspect Categories

To assist with the process of identifying environmental, social or health and safety aspects the following categories are used.

1) Discharges to air: Activities which result in the discharge of contaminants to air, including particulates, chemicals, odour, microbiological agents etc.
2) Discharges to stormwater: Activities which can result in contaminants being discharged to stormwater.
3) Discharges to water: Activities which can discharge contaminants to natural waters.
4) Discharges to ground: Activities which can discharge contaminants to ground.
5) Discharges to groundwater: Activities that discharge contaminants directly to groundwater or discharge contaminants which by natural underlying process enter the groundwater.
6) Hazardous Wastes: Activities that generate hazardous waste (liquid and solid) which have to be neutralised, or treated or disposed offsite.
7) Storage and Handing of Hazardous Substances: Potential for accidental release which results in discharges to air, water or land.
8) Noise Emissions: Noise emissions beyond the site boundary that could result in complaints from interference, nuisance.
9) Waste Discharges: Solid and liquid wastes (non-hazardous) generated by an organisations activities, products or services that must be disposed of.
10) Liquid Discharges to Sewer: Trade waste discharges and loss of product.
11) Energy: Electrical, gas etc used in the process to produce products.
12) Historic activities: Activities undertaken at the site in the past with a potential to have resulted in residual ground, water contaminants.
13) Health and Safety: Potential for issues related to worker and community health and safety.

B.4.2 Determination of Significance

Significance of environmental impacts was determined using a qualitative approach. The following issues were considered for each aspect when determining significance.

1. Environmental concerns

a) the frequency of occurrence

b) duration of impact

c) offensiveness of impact

d) quantity of discharge

2. Business concerns

e) regulating/legal exposure

f) cost of changing the impact

g) difficulty in changing the impact

h) effect of damage on other processes and activities

i) effect on public image of the organisation

Categories of significance were developed as per Appendix D.

B.5 Procedure to Maintain and Update the Aspects Register

The AR that contains the base data from which MRPR's Environmental and Social Management Plan (ESMP) is developed. The environmental aspects of the organisation and their level of significance will change for the following reasons:-

1) ESMP targets have been achieved reducing the significance of the aspects effects;

2) changes to legislation;

3) new aspects introduced or modified by the introduction of new or changes to plant, equipment or operating procedures;

4) non-conformance reports issued due to incidents/accidents, internal environmental audits, environmental monitoring show non-compliance with consents, legal action etc.; and

5) re-assessment of a process or area.

Methods that will be followed to maintain and update the AR are as follows and is presented in Figure B-1.

B.5.1 Changes to Legislation

MRPR will maintain a procedure for updating legislative requirements pertaining to the sites activities.

The AR will be reviewed on a six monthly basis with respect to any legislative changes. The review will be performed by the MRPR Environment Manager. Additional aspects will be added to the register and the level of significance reviewed for recorded aspects.

For those aspects whose effect is modified to high a non-conformance report will be issued and the EAR adjusted accordingly. The non-conformance report will act as a means of adding a target or procedure to EMP to ensure compliance with the new requirement.

B.5.2 Management of Change

The management of environment aspects of the facility is a continuing process. If conditions change (activity change, process change or new equipment) the extent that the environmental aspects and their impact are affected by the change will be reviewed.

For every proposed change or new project the environmental aspects associated with the change (upstream and downstream) shall be identified the effect assessed and the level of significance determined.

The AR will be adjusted to account for these changes with aspects being added or deleted to account for these changes. In some instances only the level of significance may alter.

(Has the appropriate person in control of AR is advised of the changes will be need to be specified)

For those aspects of high significance new targets will have to be added to the aspects register.

B.5.3 Non-Conformances

Non-conformance reports will be generated with respect to:-

1) monitoring data indicating a non-compliance with a discharge limit
2) accident of incident investigation where an aspect is identified as needing to be reassessed or missed.
3) environmental aspect identified by a staff member who believes it is not on the register
4) result of an internal environmental audit.

On a six monthly basis the non-conformance reports shall be reviewed with respect to identifying/adjusting the AR.

The review will be undertaken by the AR Committee and will be based on the number of non-conformance, level of non-conformance, etc. adjust the level of significance up of an aspect. If a target has already been set then this will be reviewed to determine whether the performance indicates the completion date needs shorting or the level of priority is increased.

For those non-conformances which recommend immediate action, the AR will be adjusted to take into account the recommendation.

B.5.4 Internal Audits

As part of the ESMS internal auditing process, sections of the AR will be reviewed on a department basis. The audit aim is to ensure aspects recorded on the AR are still appropriate. There have been no changes that affected the AR. To add to the AR any aspects previously missed.

All aspects will be reviewed as to their level of significance and the AR adjusted accordingly.

The frequency of audits will be subject to the Internal Audit Programme.

B.5.5 Management Review

As part of the annual management review, the AR will be reviewed to ascertain changes made during the year due to changes, non-conformance etc. The AR will be adjusted to take into account changes from targets being achieved.

B.6 Environmental Impacts

The environmental aspects will be scored using the rating system set out in the tables below. Each aspect is assigned a rating for likelihood and another for consequence, which are used to determine the significance.

Table B.1 : Likelihood

Descriptor	Probability	Frequency	Historical
Almost Certain	>1 in 10	Several times per year	Has occurred frequently in the company
Likely	Between 1 in 10 and 1 in 100	About once per year	Has occurred once or twice in the company
Possible	Between 1 in 100 and 1 in 1,000	Once in 1-10 years	Has occurred many times in the industry
Unlikely	Between 1 in 1,000 and 1 in 10,000	Once in 10-100 years	Has occurred once or twice in the industry
Rare	<1 in 10,000	< Once in a 100 years	Unheard of in the industry

Table B.2: Consequence Rating

Descriptor	Safety	Cost	Schedule	Environment	Reputation
Catastrophic	1 or more fatalities or total permanent disability	>$10M	>2 years change to schedule	Permanent impact, long term (decades) regional impact	Adverse global media coverage. Major stakeholders terminate. Company at stake.
Major	1 or more partial disabilities	$1M-10M	1-2 years to change to schedule	Long term (decades) local area impact. Medium term (years) regional impact	Adverse national media coverage. Company on notice
Moderate	Lost time injury	$100k-$1M	6-12 months change to schedule	Medium term (years) local area impact. Short term(months) regional impact	Long term (weeks), local media and local interest
Minor	Medical attention, light duties	$10k-$100k	2-6 months change to schedule	Short term (months) local area impact	Short term (days), local media and local interest
Insignificant	Minor injury/illness. First aid needed. No lost time injury	$0-$!0k	<2 months change to schedule	Temporary impact (days/weeks) to immediate area	Local interest only, quickly forgotten

Table B.3: Significance Rating

Likelihood	Insignificant	Minor	Moderate	Major	Catastrophic
Almost Certain	6	12	18	30	36
Likely	5	10	15	25	30
Possible	3	6	9	15	18
Unlikely	2	4	6	10	12
Rare	1	2	3	5	6

Table B.4: Example Environmental Aspects Register

Aspect/Activity	Impact	Location	Likelihood	Severity	Significance	Mitigation	Likelihood	Severity	Treated Significance
Earthworks	Reduced visual amenity	Laydown Area	Likely	Minor	Medium	Minimise area of soil disturbance	Likely	Insignificant	Low
	Erosion and sedimentation	Laydown Area	Possible	Minor	Medium	Prepare Erosion and Soil Control Plan Seeding of stockpiled soil to stabilise Following completion of the exploration activities, assess whether disturbed areas such as access tracks are required for long term operations. Rehabilitate all disturbed areas not required for long-term operations using sterile seed mixes	Unlikely	Minor	Low
	Dust generation	Laydown Area	Likely	Minor	Medium	Seeding of stockpiled soil to stabilise Carry out watering of exposed areas and stockpiles as required to suppress dust.	Possible	Minor	Medium
	Noise disturbance	Laydown Area	Likely	Minor	Medium	Regular/routine community consultation/communication to ensure awareness of works programme amongst villagers. The use of machinery for earthworks will be limited to daylight hours	Likely	Insignificant	Medium

Aspect/Activity	Impact	Location	Likelihood	Severity	Significance	Mitigation	Likelihood	Severity	Treated Significance
	Contamination of land and/or groundwater from leaking fuel	Laydown Area	Possible	Minor	Medium	Maintain vehicles in good working order to prevent leaks of oil and fuel Vehicles to carry spill kits All personnel to be provided spill response training as part of site induction	Unlikely	Minor	Low
Construction/installation of temporary buildings	Reduced visual amenity	Laydown Area	Possible	Insignificant	Low		Possible	Insignificant	Low
	Noise disturbance	Laydown Area	Likely	Minor	Medium	The use of machinery to construct temporary buildings will be limited to daylight hours	Possible	Insignificant	Low
Lighting	Disturb local residents and fauna	Laydown Area	Almost Certain	Insignificant	Medium	Position lighting to shield adjacent dwelling as much as possible Turn off all unnecessary lighting at night to avoid attracting migratory birds Screen intake Horizontal intake rather than vertical	Possible	Minor	Low

B.7 Social Impacts

The social impacts will be scored by determining the potential consequence and likelihood of an impact and using these to calculate the significance. Consequence is calculated by determining the extent, duration and severity of an impact and adding these together.

Table B.5: Likelihood Table

Descriptor	Probability	Frequency	Historical
Almost Certain	>1 in 10	Several times per year	Has occurred frequently in the company
Likely	Between 1 in 10 and 1 in 100	About once per year	Has occurred once or twice in the company
Possible	Between 1 in 100 and 1 in 1,000	Once in 1-10 years	Has occurred many times in the industry
Unlikely	Between 1 in 1,000 and 1 in 10,000	Once in 10-100 years	Has occurred once or twice in the industry
Rare	<1 in 10,000	< Once in a 100 years	Unheard of in the industry

Table B.6: Consequence Rating

Descriptor	Safety	Cost	Schedule	Environment	Reputation
Catastrophic	1 or more fatalities or total permanent disability	>$10M	>2 years change to schedule	Permanent impact, long term (decades) regional impact	Adverse global media coverage. Major stakeholders terminate. Company at stake.
Major	1 or more partial disability	$1M-10M	1-2 years to change to schedule	Long term (decades) local area impact. Medium term (years) regional impact	Adverse national media coverage. Company on notice
Moderate	Lost time injury	$100k-$1M	6-12 months change to schedule	Medium term (years) local area impact. Short term(months) regional impact	Long term (weeks), local media and local interest
Minor	Medical attention, light duties	$10k-$100k	2-6 months change to schedule	Short term (months) local area impact	Short term (days), local media and local interest
Insignificant	Minor injury/illness. First aid needed. No lost time injury	$0-$!0k	<2 months change to schedule	Temporary impact (days/weeks) to immediate area	Local interest only, quickly forgotten

Table B.7: Significance Rating

Likelihood	Insignificant	Minor	Moderate	Major	Catastrophic
Almost Certain	6	12	18	30	36
Likely	5	10	15	25	30
Possible	3	6	9	15	18
Unlikely	2	4	6	10	12
Rare	1	2	3	5	6