DRAFT Environmental and Social Impact Assessment Report

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Figure 2.7 : Example of Benthic Macroinvertebrate Species Identified

Samples were taken from the Siak River and the three rivers along the pipeline route in the wet season. These sites were analysed independently without compositing. Results are presented in Table 2.8 and indicate that:

- The macroinvertebrate populations in the Siak River are impoverished with low numbers of taxa and low diversity (WQ 02, 03 and 05). All three sites are impoverished with the site in proximity to the proposed Jetty having the poorest macroinvertebrate ecology.
- The results indicate slightly fewer taxa than in the composite sample previously analysed however in general both indicated poor macroinvertebrate ecology.
- The two sites on the Gasib River (RW-01 and RW-02) and the results from the Pasir River (RW-03B) have greater number of taxa and better diversity than the Siak River. The tributary of the Gasib River (RW-01) and the Pasir River RW-03B have the best macroinvertebrate ecology with examples of pollution tolerant species such as mayflies and the largest diversity of any sites.
- The unnamed creek located along the pipeline route in an area of palm plantations had a very poor diversity with mostly midge larvae present. These are indicative of a very disturbed poor habitat areas and/or of poor water quality.

Table 2.8 : Wet Season Benthic Macroinvertebrate Results (By PT Nusa Buana Cipta, sourced for this project)

		Gasib River		Unnamed Creek	Pasir River	Siak River		
Family	**Species**	**RW-01**	**RW-02**	**RW-03**	**RW-03B**	**WQ-02**	**WQ-03**	**WQ-05**
Baetidae	Baetissp.	25	-	-	88	-	-	-
Glossosomatidae	Glossosoma sp.	5	-	-	4	-	-	-
Rhyacophilidae	Rhyacophila sp.	-	-	-	-	-	-	10
Dytiscidae	Cybister sp.	5	-	-	-	-	-	-
Corixidae	Micronecta sp.	15	20		152	-	-	-

		Gasib River		Unnamed Creek	Pasir River	Siak River		
Family	**Species**	**RW-01**	**RW-02**	**RW-03**	**RW-03B**	**WQ-02**	**WQ-03**	**WQ-05**
	Synaptonecta sp.	10	5	-	46	-	-	-
Aphelocheiridae	Aphelocheirus sp.	25	-	-	4	-	-	-
Nepidae	Ranatra sp.	5	-	-	-	-	-	-
Macroviliidae	Macrovelia sp.	-	-		13	-	-	-
Coenagrionidae	Enallagma sp.	-	-	-	13	-	-	-
Libellulidae	Leuchorrhinia sp.	20	5		8	-	-	-
Chironomidae	Cricotopus sp.	15	-	-	-	-	-	-
	Parachironomus sp.	74	-	-	-	-	-	-
	Dicrotendipes sp.	-	74	-	-	-	-	-
	Chironomus sp.	-	-	8622	-	-	-	-
	Polypedilum sp.	-	-	-	109	5	84	-
Tipulidae	Tipula sp.	5	-	-	-	-	-	-
Scathopagidae	Scathopaga sp.	-	-	15	-	-	-	-
Pachychilidae	Sulcospira sp.	-	-	15	-	-	-	-
Mytilidae	Limnoperna sp.	-	-	-	-	-	133	
Tubificidae	Limnodrilus sp.	15	10	-	-	30	-	
	Branchiura sp.	-		-	-	5	-	
Naididae	Stylaria sp.	-	5	-	-	-	-	
Abundance of macrobenthic fauna/m^2		217	119	8652	438	40	217	10
Total Taxa		12	6	3	9	3	2	1
Shannon-Wiener Diversity Index (H)		2.11	1.20	0.03	1.64	0.74	0.67	0
Equitability index		0.85	0.67	0.02	0.75	0.67	0.96	0

2.2.5 Fish

Fish species have been identified in both the Siak and Tenayan Rivers as shown in Table 2.9 for dry season surveys and Table 2.10 for wet season surveys. Overall 9 types of fish were identified in the dry season and 25 in wet season surveys.

The dry season results show that the Siak River had a greater diversity of fish species than the Tenayan River and in greater numbers. There was little difference between the upstream and downstream sites on the Siak River in terms of either species or density. On the Tenayan River there were few fish identified with none in the middle reach. The fish identified to species level were generally species that are found in freshwater systems only and were all native to this area and other areas throughout Asia.

In the wet season there was a greater number of species identified with a similar pattern of distribution with the greatest diversity of species being found in the Siak River. The smaller watercourses including the Tenayan River and Gasib River had lower numbers of fish species.

Aryani (2015) reports on fish populations within the Kampar Kanan River in Riau Province. The study identified the occurrence of 36 fish species belonging to 7 orders, 15 families and 23 genera. Among the collected species, order Cypriniformes was most dominant which is similar to the data gathered for this project. Iskandar and Dahiyat (2012) assessed potential fish populations in the Siak River based on interview methods. This identified 36 species in the Siak River with many thought to be becoming less frequently found than in the past.

These papers indicate that the fishing methods used in this study have provided results broadly in line with published information in terms of numbers of species potentially in the area.

The threat status of the fish identified has been identified with reference to the International Union for Conservation of Nature (IUCN) Red list of threatened species status. This is only possible where fish were identified to species level. One species is identified as near threatened and was found within the Siak River upstream of the proposed water intake and discharge. This is Kryptopterus minor (Siamese Glass Catfish) which is native to Indonesia, Cambodia, Malaysia, Thailand and Vietnam. It was classed as near threatened as while data are not available on population trends, however the species is assessed as Near Threatened due to inferred population declines arising from the impact of harvesting for the ornamental fish trade and the loss and degradation of suitable habitat, especially peatland and lowland forest covered streams. The remaining species were mostly classed as of least concern or not evaluated and one as data deficient.

Table 2.9 : Fish Species Identified Within the Siak and Tenayan Rivers in Surveys in July 2017 (By NBC, sourced for this project)

Family	Scientific name	Common name	Local name	Status[1]	Environment[2]	Distribution[2]	Siak River		Tenayan River		
							U/S	D/S	U/S	Mid	D/S
Schilbeidae	Pangasius polyuranodon	Species of shark catfish	Juwaro	LC	F, B	Asia	15	13	0	0	2
Bagridae	Mystus singaringan	Species of bagrid catfish	Keting tunggik	LC	F	Asia	0	0	2	0	0
Bagridae	Leiocassissp.	Genus of bagrid catfish	Bawung pisang	-	-	-	2	3	0	0	0
Bagridae	Hemibagrussp.	Genus of bagrid catfish	Bawung biasa	-	-	-	3	2	0	0	0
Ambassidae	Ambassissp.	Genus of Asiatic glassfish	Sepongkah	-	-	-	9	7	0	0	0
Cyprinidae	Oxygastersp.	Genus of minnow or carps	Pimping	-	-	-	3	2	1	0	1
Cyprinidae	Barbichthys laevis	Sucker Barb	Rasau	LC	F	Asia	7	9	0	0	0
Cyprinidae	Cosmochilus falcifer	Species of minnow or carp	Teningal	NE	F	Asia	0	2	1	0	1
Osphronemidae	Trichogaster trichopterus	Three spot gourami	Sepat mata merah	LC	F	Asia	0	0	1	0	0

Notes: [1]Status is based upon the IUCN Red List of threatened species status as reported in http://www.iucnredlist.org/details/180650/0 and http://www.fishbase.org/summary/14215. Key: NE - Not Evaluated; DD - Data Deficient; LC – Least Concern; NT – Near Threatened, VU – Vulnerable; EN – Endangered; CR – Critically Endangered; EW – Extinct in the wild; EX – Extinct.
[2]Environment and Distribution from http://www.fishbase.org/summary/14215. F= Freshwater, B= Brackish. Distribution is an indication of whether species are native to the area or introduced. Data only available when identified to detailed species level hence (-) indicates that data not available at level species were identified to.

Table 2.10 : Fish Species Identified Within the Siak and Tenayan Rivers in Surveys in the Wet Season in February 2018 (By NBC, sourced for this project)

Family	Scientific name	Common name	Local name	Status[1]	Siak River		Tenayan River			Gasib River		Pasir River
					WQ 02	WQ 03	U/S	Mid	D/S	RW 01	RW 02	S. Pasir
Ambassidae	Parambassis siamensis	Glassfish	Sepongkah	LC	4	13	-	-	-	-	-	-
Bagridae	Bagrichthys macracanthus	Black lancer catfish	Pampang Lahung	NE	1	-	-	-	-	-	-	-
	Hemibagrus nemurus	Yellow Catfish	Baung duri, tageh	LC	6	3	-	-	3	-	-	-
	Mystus nigriceps	Twospot catfish	Baung sangiring	NE	1	-	-	-	-	-	-	-
	Mystus singaringan	Bagrid catfish	Baung Tunggik	LC	1	1	-	-	1	-	-	-
Belontiidae	Trichogaster trichopterus	Three spot gourami	Sepat rawa	LC	-	-	-	1	-	2	-	-
	Trichogaster pectoralis	Snakeskin gourami	Sepat siam	NE	-	-	-	1	-	-	-	-
	Trichopsis vittata	Croaking gourami	Cupang,tampelo	LC	-	-	-	-	-	-	-	-
Chandidae	Channa micropeltes	Giant Snakehead	Toman	LC	-	-	-	-	-	2	-	-
Clariidae	Clarias batrachus	Philippine catfish	Lele	LC	-	1	-	-	-	2	-	-
	Clarias leiacanthus	Airbreathing catfish	Limbat	NE	-	-	-	-	-	-	-	-
Cyprinidae	Amblyrhynchichthys truncatus	Minnows or carps	Betet, Kedukul	NE	6	5	-	-	-	3	-	-
	Barbodes schwanenfeldii	Tinfoil barb	Kapiek	NE	3	2	-	-	-	-	-	-
	Cyclocheilichthys apogon	Beardless barb	Siban	LC	-	2	-	6	1	-	-	-
	Hampala macrolepidota	Hampala Barb	Barau	LC	-	4	-	4	-	-	-	-
	Osteochilus hasseltii	Hard-lipped Barb	Paweh	LC	-	-	1	5	5	-	-	-
	Oxygaster anomalura	Minnows or carps	Pimpiang	LC	-	1	-	-	-	-	-	-
	Puntioplites bulu	Bulu Barb	Tabingalan	DD	1					-	1	-

Family	Scientific name	Common name	Local name	Status[1]	Siak River		Tenayan River			Gasib River		Pasir River
					WQ 02	WQ 03	U/S	Mid	D/S	RW 01	RW 02	S. Pasir
	Puntius gemellus	Minnows or carps	Kemuringan	NE	-	-	-	-	-	-		-
	Rasbora argyrotaenia	Silver rasbora	Bada	NE	4	5	1	1	-	8	23	-
Eleotridae	Oxyeleotris marmorata	Marbled Goby		LC	-	1	-	-	-	-	-	-
Helostomatidae	Helostoma temminckii	Kissing gourami	Tambakang	NE	-	-	-	-	-	-	-	-
Pangasiidae	Pangasius polyranodon	Shark catfish	Juaro	NE	4	158	1	-	-	5	1	-
Pristolepididae	Pristolepis grooti	Malayan leaffish	Katung	NE	-	-	-	1	-	-	-	-
Siluridae	Kryptopterus lais	Sheatfish	Lais	NE	-	7	-	-	-	4	-	-
	Kryptopterus minor	Siamese Glass Catfish	Lais	NT (population trend decreasing)	4	1	-	-	-	-	-	-
Number of species					10	14	3	7	4	7	3	0

Notes: [1]Status is based upon the IUCN Red List of threatened species status as reported in http://www.iucnredlist.org/search and http://www.iucnredlist.org/details/180650/0 and http://www.fishbase.org/summary/14215. Key: NE - Not Evaluated; DD - Data Deficient; LC – Least Concern; NT – Near Threatened, VU – Vulnerable; EN – Endangered; CR – Critically Endangered; EW – Extinct in the wild; EX – Extinct.
[2]Environment from http://www.iucnredlist.org/search and http://www.fishbase.org/summary/14215. F= Freshwater, B= Brackish.

2.2.6 Sediment Quality

Sediment quality results from are presented in Table 2.11. These include samples from Siak, Tenayan and Gasib Rivers and include one sample that is a composite across the Tenayan and Siak Rivers. The individual sample results have no parameters above guidelines indicating generally good sediment quality. The composite sample represents the general quality of the lower Tanayan River and the Siak River upstream and downstream of the project. Due to the process of compositing samples results have been multiplied by the number of samples contributing to the composite (3). This therefore allows for a scenario where any one of the contributing composite samples could exceed the guidelines but have been diluted ay the remaining clean samples. This indicates that the surface sediments of the river contain elevated metals, specifically arsenic, cadmium, chromium, lead, mercury and nickel. Water quality data analysed above has indicated from available literature that lead, iron and boron could be in elevated concentrations with other metals below guideline concentrations. Therefore, the individual sample appear to be more representative of the overall water quality as they do not show notable elevation of metals. The results for organic contaminants were below the laboratory detection limits, however it should be noted that the detection limits were generally above the trigger levels therefore it cannot be concluded that organic contaminants are not present in concentrations that may impact on the ecological values of the waterways.

Table 2.11 : Sediment Quality Results (By NBC, sourced for this project) (units as mg/kg)

Parameter	Detection Limit	Guideline value		Siak and Tenayan	Siak	Siak	Gasib	Gasib	Gasib	Siak	Siak	Siak
		ISQG – Low[1]	ISQG - high[2]	Composite sample representing WQ 2 PP to WQ 4 PP combined[3]	WQ 05	WQ 05 (D)	RW 01	RW 02	RW 02 (D)	WQ 03	WQ 04	WQ 02
Heavy metals												
Arsenic	1	20	70	33.0	1.67	1.13	1.8	3.13	-	7.01	4.93	4.98
Boron	5	-	-	-	<5.00	<5.00	<5.00	<5.00	-	<5.00	<5.00	<5.00
Cadmium	1	1.5	10	3	<1.00	<1.00	<1.00	<1.00	-	<1.00	<1.00	<1.00
Chromium	1	80	370	258	10.80	4.24	18.4	24.7	-	9.54	12.1	9.15
Copper	1	65	270	123	5.43	24.10	2.34	2.44	-	3.41	4	3.31
Iron	5	-	-	-	6460.00	14400.00	16900	14600	-	15900	9250	14500
Lead	1	50	220	**252**	8.74	6.50	5.09	6.14	-	15.5	10.5	14.9
Manganese	1	-	-	-	46.20	300.00	17.8	11.4	-	269	64.4	265
Mercury	0.05	0.15	1	**1.431**	<0.05	<0.05	0.10	0.12	-	0.06	0.14	0.05
Nickel	1	21	52	**87**	3.76	3.72	1.86	2.51	-	5.23	4	4.98
Zinc	5	200	410	99	42.00	23.80	12.7	11.7	-	27.4	25.6	26.5
Organics												
Chlordane	0.5	0.0005	0.006	<0.5	-	-	-	-	-	-	-	-
trans-Chlordane	0.5	-	-	-	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5
cis-Chlordane	0.5	-	-	-	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5
Dieldrin	0.5	0.00002	0.008	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5
DDT	1	0.0016	0.046	<1	<1.0	<1.0	<1.0	<1.0	-	<1.0	<1.0	<1.0
Endosulfan	0.5	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5
Polychlorinated BiPhenyls	0.25	-	-	<0.25	<0.25	<0.25	<0.25	<0.25	-	<0.25	<0.25	<0.25
PAH	1	4	45	<1	<1.00	<1.00	<1.00	<1.00	-	<1.00	<1.00	<1.00
Mirex	0.001	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-

Notes: [1,2] – Interim sediment quality guideline (ISQG) values from ANZECC (2000) (table 3.5.1), The low and high values correspond to the effects range-low and –median. The ISQG-Low is the appropriate trigger value, the high results are provided for reference.

[3]For composite sample results have been multiplied by the number of samples included in the composite (3) then compared to trigger levels. This therefore allows for a scenario where any one of the contributing composite samples could exceed the guidelines but have been diluted ay the remaining clean samples.

Results in grey shading exceed the ISQG-low trigger levels, results in grey shading and bold exceed the ISQG-high trigger levels.

(d) indicates a duplicate sample

2.2.7 Summary and sensitivity

Overall water quality is average from an ecological perspective with many parameters are within environmental guidelines. However, there was low dissolved oxygen, low pH and high suspended sediment, turbidity levels and iron and some impacts of oil and grease and high oxygen demand. Sediment quality indicates little enrichment by metals or hydrocarbons. All rivers studies had broadly similar water quality. Macroinvertebrate populations in the Siak and Tenayan Rivers were generally fairly impoverished with a reasonably small range of taxa present and those that were are considered to be pollution/disturbance tolerant. A range of fish species were present, especially in the Siak River which are broadly in line with the expected numbers of species for the region. One near threatened species was present at the site upstream of the proposed intake and discharge. The data did not identify any clear differences between the upstream and downstream Siak River sample locations in dry or wet season sampling. The main difference observed between the Siak and Tenayan Rivers was the greater number of fish species observed in the Siak River. The Siak River is the primary watercourse that would be potentially impacted by project activities.

The Gasib and Pasir Rivers at the location of the proposed pipeline crossings had broadly similar water quality to the Siak and Tenayan Rivers and generally a more diverse macroinvertebrate ecology but more impoverished fishery population.

In general, this data indicates that the receiving environments are not pristine and are likely to be degraded to some extent by existing surrounding and upstream land uses and use of the rivers. Utilising the criteria within the ESIA methodology (Section 3.4.4) it is considered that overall the water quality and ecology of the Siak River, Gasib River, Pasir River and unnamed creek that the pipeline crosses are of low sensitivity as receptors with some capacity to absorb the project changes. This is due to the existing water quality having some capacity for change and the existing ecology already being degraded and comprising mainly more tolerant species. The presence of one near threatened fish species could indicate that the upstream site on the Siak River may be of medium sensitivity as the fish population has little capacity to absorb changes. This location is upstream of the project area so less likely to be impacted.

3. Impact Assessment Methodology

3.1 Introduction

The impact assessment methodology applies to the assessment of potential environmental impacts arising from the Project. The impact assessment methodology has been developed in accordance with good industry practice and the potential impacts have been identified in the context of the Project's Area of Influence (AoI), in accordance with ADB Environmental Safeguards and IFC Performance Standard 1 (Assessment and Management of Environmental and Social Risks and Impacts).

3.2 Spatial and Temporal Scope

The AoI constitutes the spatial extent of the ESIA. The AoI encompasses all areas directly and indirectly affected by Project components, which are primarily contained within the power plant and associated water supply, power distribution and material supply activities and along the gas pipeline route. The temporal scope of potential impacts on water quality and ecology covers the construction and operation phases of the Project.

The study period is a time limit that will be used in predicting and undertaking an impact evaluation as part of the impact assessment. The period is used as a basis to determine if there are any changes to the environmental baseline resulting from the Project activities.

3.3 Baseline Environmental Conditions

Baseline data collection refers to the collection of background data in support of the environmental assessment. Ideally baseline data should be collected prior to development of a project, but often this is not possible. Baseline data collection can also occur throughout the life of a project as part of ongoing monitoring of environmental and social conditions.

World Bank (1999) guidance on identification of baseline data states that it *'…describes relevant physical, biological, and socioeconomic conditions, including any changes anticipated before the project commences. Also takes into account current and proposed development activities within the project area but not directly connected to the project. Data should be relevant to decisions about project location, design, operation, or mitigatory measures. The section indicates the accuracy, reliability, and sources of the data.'*

Baseline information used for this ESIA has utilised primary data collected through on-site surveys by Environmental and Social Specialists from Jacobs and their sub-consultants, NBC, in August 2017. Where applicable secondary data sources collected from desk-based studies and literature reviews have also been used.

3.4 Impact Assessment

The impact assessment predicts and assesses the Project's likely positive and negative impacts, in quantitative terms to the extent possible. The assessment determines the sensitivity of the receiving environment and identifies impacts and assesses the magnitude and overall significance of environmental impacts. An ESIA will always contain a degree of subjectivity, as it is based on the value judgment of various specialists and ESIA practitioners. The evaluation of significance is thus contingent upon values, professional judgement, and dependent upon the environmental context. Ultimately, impact significance involves a process of determining the acceptability of a predicted impact.

3.4.1 Defining Impact

There are a number of ways that impacts may be described and quantified. An impact is essentially any change to a resource or receptor brought about by the presence of the proposed project component, project discharge or by the execution of a proposed project related activity. The assessment of the significance of impacts and determination of residual impacts takes account of any inherent mitigation measures incorporated into the Project by the nature of its design.

In broad terms, impact significance can be characterised as the product of the degree of change predicted (the magnitude of impact) and the value of the receptor/resource that is subjected to that change (sensitivity of receptor). For each impact the likely magnitude of the impact and the sensitivity of the receptor are defined. Generic criteria for the definition of magnitude and sensitivity are summarised below.

3.4.2 Direct vs Indirect Impacts

A direct impact, or first order impact, is any change to the environment, whether adverse or beneficial, wholly or partially, resulting directly from an environmental aspect related to the project. An indirect impact may affect an environmental, social or economic component through a second order impact resulting from a direct impact. For example, removal of vegetation may lead to increased soil erosion (direct impact) which causes an indirect impact on aquatic ecosystems through sedimentation (indirect impact).

3.4.3 Magnitude Criteria

The assessment of impact magnitude is undertaken by categorising identified impacts of the Project as beneficial or adverse. Then impacts are categorised as 'major', 'moderate', 'minor' or 'negligible' based on consideration of parameters such as:

- Duration of the impact – ranging from 'well into operation' to 'temporary with no detectable impact'.
- Spatial extent of the impact – for instance, within the site boundary, within district, regionally, nationally, and internationally.
- Reversibility – ranging from 'permanent thus requiring significant intervention to return to baseline' to 'no change'.
- Likelihood – ranging from 'occurring regularly under typical conditions' to 'unlikely to occur'.
- Compliance with legal standards and established professional criteria – ranging from 'substantially exceeds national standards or international guidance' to 'meets the standards' (i.e. impacts are not predicted to exceed the relevant standards) presents generic criteria for determining impact magnitude (for adverse impacts). Each detailed assessment will define impact magnitude in relation to its environmental or social aspect.
- Any other impact characteristics of relevance.

Table 3.1 below presents generic criteria for determining impact magnitude (for adverse impacts). Each detailed assessment will define impact magnitude in relation to its environmental or social aspect.

Table 3.1 : General Criteria for Determining Impact Magnitude

Category	Description
Major	Fundamental change to the specific conditions assessed resulting in long term or permanent change, typically widespread in nature and requiring significant intervention to return to baseline; would violate national standards or Good International Industry Practice (GIIP) without mitigation.
Moderate	Detectable change to the specific conditions assessed resulting in non-fundamental temporary or permanent change.
Minor	Detectable but small change to the specific conditions assessed.
Negligible	No perceptible change to the specific conditions assessed.

3.4.4 Sensitivity Criteria

Sensitivity is specific to each aspect and the environmental resource or population affected, with criteria developed from baseline information. Using the baseline information, the sensitivity of the receptor is determined factoring in proximity, number exposed, vulnerability and the presence of receptors on site or the surrounding area. Generic criteria for determining sensitivity of receptors are outlined in Table 3.2 below. Each detailed assessment will define sensitivity in relation to its environmental or social aspect.

Table 3.2 : General Criteria for Determining Impact Sensitivity

Category	Description
High	Receptor (human, physical or biological) with little or no capacity to absorb proposed changes
Medium	Receptor with little capacity to absorb proposed changes
Low	Receptor with some capacity to absorb proposed changes
Negligible	Receptor with good capacity to absorb proposed changes

3.4.5 Impact Evaluation

The determination of impact significance involves making a judgment about the importance of project impacts. This is typically done at two levels:

- The significance of project impacts factoring in the mitigation inherently within the design of the project; and
- The significance of project impacts following the implementation of additional mitigation measures.

The impacts are evaluated taking into account the interaction between the magnitude and sensitivity criteria as presented in the impact evaluation matrix in Table 3.3 below.

Table 3.3 : Impact Matrix

		Magnitude			
		Major	**Moderate**	**Minor**	**Negligible**
Sensitivity	**High**	Major	Major	Moderate	Negligible
	Medium	Major	Moderate	Minor	Negligible
	Low	Moderate	Minor	Negligible	Negligible
	Negligible	Minor	Negligible	Negligible	Negligible

The objective of the ESIA is to identify the likely significant impacts on the environment and people of the project. In this impact assessment, impacts determined to be 'moderate' or 'major' are deemed significant. Consequently, impacts determined to be 'minor' or 'negligible' are not significant.

3.5 Mitigation

Mitigation measures are actions taken to avoid or minimise negative environmental or social impacts. Mitigation includes those embedded within the design (as already considered as part of the impact evaluation) and any additional mitigation required thereafter. Additional mitigation will be implemented to reduce significant impacts to an acceptable level, this is referred to as the residual impact. The mitigation hierarchy should be followed: avoid, minimise, restore or remedy, offset, compensate. Mitigation measures should be clearly identified and linked to environmental and social management plans.

3.6 Monitoring

Monitoring is not linked to the impact evaluation but is an important component of the ESIA. Monitoring and follow-up actions should be completed to:

- Continue the collection of environmental and social data throughout construction, operation and later decommissioning.
- Evaluate the success of mitigation measures, or compliance with project standards or requirements.
- Assess whether there are impacts occurring that were not previously predicted.

- In some cases, it may be appropriate to involve local communities in monitoring efforts through participatory monitoring. In all cases, the collection of monitoring data and the dissemination of monitoring results should be transparent and made available to interested project stakeholders.

3.7 Residual Impacts

Those impacts that remain once mitigation has been put in place will be described as residual impacts, using Table 3.3 set out above.

3.8 Cumulative Impacts

The assessment of cumulative impacts will consider the combination of multiple impacts that may result when:

- The Project is considered alongside other existing facilities within similar discharges.
- The Project is alongside other existing or proposed projects in the same geographic area or similar development timetable.
- Impacts identified in different environmental and social aspects of the ESIA combine to affect a specific receptor.

The assessment of cumulative impacts will identify where particular resources or receptors would experience significant adverse or beneficial impacts as a result of a combination of projects (inter-project cumulative impacts). In order to determine the full combined impact of the development, potential impacts during construction and operational phases have been assessed where relevant.

4. Assessment of Potential Impacts

During construction and operation, the proposed power plant would have a number of activities with the potential to result in impacts on the river environments. This includes a range of physical disturbance activities as well as water use and water management processes. Table 4.1 provides an overview of these proposed activities and identifies how they are currently proposed to be managed as outlined in the Volume 5, Appendix B, Process Description. In some cases, the proposed management and mitigation measures included in the design is such that no impact is considered likely to occur.

Those activities considered to be of potential risk as they have the potential to impact upon waterbodies are then assessed in the following sections. Table 4.1 also identifies the water body that may be potentially impacted by the activities. Impacts to the Tenayan River are not considered further as the Project construction and operation will not result in any discharges to this river and therefore there are no potential impacts.

Table 4.1 : Potential Impacts of the Project on the River Environments

Phase	Activity	Potential impact
Construction	*Construction of the power plant and switchyard* This will involve clearance of palm oil plantation, backfilling of land and land drainage, construction of the power plant and switchyard of approximately 5.4 ha on a 9.1 ha plot of land. During construction an additional estimated 3.7 ha within the site area will be used for laydown areas, offices and accommodating the construction workforce. Site clearance and levelling is expected to take 6 months with construction of the power plant and switchyard taking 24 months. Vegetation will be cleared and any voids and water ponds drained and filled. Topsoil will be stripped and the site will be levelled. Overall it is expected that approximately 45,000 m^3 of soil will be removed from site. The site will be at an elevation of 10 m above the Siak River so not at risk of flooding. Drainage features will be excavated into the prepared site to serve during both construction and operation. Reinforced concrete foundations and base building slabs will be installed to support the project equipment and buildings. Concrete may be batched on site or imported as ready mix. After construction and erection work are completed, the power plant site will be landscaped for visual appearance and to limit erosion from surface water during heavy rains. The upper, organic layer of soil temporarily removed and stored during construction, will be used to provide fertile soil for landscaping, where possible.	The main power plant site is located approximately 3 km from the Siak River and 600 m from the Tenayan River. No watercourses are known to flow through or past the site towards the river. During land preparation and construction drainage features will be developed on the site to manage site stormwater. It is expected that this will be treated in ponds and other features on and adjacent to the site and discharge to ground with no impact likely on the Siak River or Tenayan River. This item has therefore not been assessed further in this report.
	Construction and use of temporary jetty on the Siak River A temporary jetty will be constructed close to PLN's existing Tenayan CFPP. It will be approximately 100 m long by 70 m wide. This is to serve as a berth for ships and barges delivering plant construction materials and equipment. Construction of the jetty will involve sheet piling for the "tunnel" into the river, while rock and sandbagging will be used for the head area (see figures in Appendix B). The tunnel will be excavated and the river bed dredged where required, the scope of which will depend on the exact location and local depth and conditions. The construction period will be approximately four months. After construction of the Project is complete (two to three years) and assuming there	Construction of the jetty will involve works in the Siak River and on the river bank which can impact on the water quality and ecology of the river. The use of the jetty will impact upon the ecological value of the local area for a period of two to three years. This issue is assessed further in the following sections.

Phase	Activity	Potential impact
	is no reason for the jetty to remain in place, it will be removed. This will take approximately one month. The roadway from the temporary jetty past the CFPP and up to the power plant site is narrow in places and some widening of or improvements to the route may also be required.	
	Construction of the water supply/discharge pipelines and intake/discharge points The water supply/discharge pipelines would be routed through a 6 m wide corridor of approximately 3 km long. The primary use of water is for cooling water and the primary discharge water is condensate from the cooling towers. The river water pump house would have a footprint of approximately 50 x 40 m Construction of the water pipelines is expected to take 8 months.	The intake and discharge structure will be constructed on the banks of the Siak River and have the potential to impact the river during construction. This is assessed further in the sections below. The pipeline route does not cross any watercourses and any sediment laden discharges should be managed and discharged along the route. As such it is not considered likely to impact on the Siak River and is not assessed further in this report.
	Construction of the 150kV transmission line Construction of 3 towers (on footprints of 40 by 40 m) and the line through an easement of approximately 25 m wide and 750 m long. Construction is expected to take 8 months. Construction is likely to be labour intensive with hand tools and progress from pylon to pylon.	The transmission line route does not cross any watercourses and is approximately 3 km from the Siak River. Potential sediment laden stormwater from the earthworks for the tower platforms is expected to be minimal, with it managed and discharged to land in the vicinity of the transmission line so would not be expected to impact upon the Siak River. This item has therefore not been assessed further in this report.
	Construction of the gas supply pipeline The pipeline route crosses four watercourses. These have been assessed for this project, two of these are on the Gasib River, one on the Pasir River and one on an unnamed creek. The methodology for construction of the pipeline outlines that river crossings will be by open cut methods. It is intended that the crossing points would be dammed using machinery working from the banks placing sandbags and then a trench opened in the dry. The pipes would be laid 2m below the base of the river and the trench backfilled in the dry. Water would be overpumped past the work site to keep the trench dry.	Pipeline crossings are to be directly through watercourses which have the potential to impact upon those bodies through direct disturbance and impact on water quality. This issue is assessed further in the following sections.
	Construction of the access road Construction of an 8 m wide access road of approximately 500 m length. Vegetation will be cleared and the site levelled and then the road will be permanently sealed.	The access road route does not cross any watercourses and is approximately 2.5 km from the Siak River. Potential sediment laden stormwater from the earthworks is expected to be managed and discharged to land in the vicinity of the road so would not be expected to impact upon the Siak River. This item has therefore not been assessed further in this report.
	Sanitary wastewater discharge from construction camp and water supply At present the intent is to rent existing accommodation for workers and no construction camp is proposed.	This item has therefore not been assessed further in this report.
Operation	*Abstraction of water* Water will be abstracted as make-up water for the water cooling systems in the cooling towers to replace losses to the air from evaporation and to generate	Depending on the degree of modification to the natural flow regime and river water levels the abstraction of water has the

Phase	Activity	Potential impact
	potable water and firefighting water. The abstraction will be continuous during plant operations. Water will be treated prior to use in the cooling system to remove suspended sediments and other contaminants that could foul the system. Treatment will involve clarifying, aeration, and filtering and include dosing with caustic soda and alum. Further treatment will be provided for the potable water system. Water will be stored in an approximately 17,700 m^3 raw water reservoir on site. The raw water requirements when the plant is at full load are predicted to be approximately 370 m^3/h with the predominant usage being for the cooling system. Maximum demand will be in the order of 400 m^3/h. To minimise make-up requirements, where possible, water will be recycled – for example clean stormwater and some process wastes can go to the cooling tower basin to reduce the need for make-up from the River.	potential to impact on the ecology of the Siak River. This issue is assessed further in the following sections.
	Discharge of process wastewaters The power generation process does not produce any hazardous liquid wastes. Water discharging to the Siak River will be primarily made up of condensate blow down from the cooling towers. The discharge will be continuous during plant operations. The following water streams are expected to flow into process wastewater. • Clean stormwater will be collected and sent to the cooling tower basin or discharged from site. • Stormwater which could be contaminated with oil will be collected and sent to a separator, before being discharged to the River. • Stormwater which could be contaminated with chemicals will be collected and sent to the wastewater treatment plant. • Effluent from the raw water settling and filtration process will be thickened and dehydrated. The solids will be disposed of off-site via truck. Liquid effluents will be discharged to the wastewater treatment plant. • Effluents from the water treatment plant (the demineralised water plant) will be discharged to the wastewater treatment plant. • It should be possible to maintain the chemistry of blowdown from the cooling tower to be within the effluent discharge limits, and so this may not be treated before discharge. In the event any such treatment is necessary, it will be carried out in the wastewater treatment plant. • Areas storing oils and chemicals will be bunded and drained to an operational wastewater pit for treatment before discharge. • Compressor water wash water will be collected in a dedicated tank and then trucked off site for disposal. The water quality within the cooling water system will be maintained by using acid dosing to reduce scale buildup and dosing with organic biocide of NaOCl to control organic growths within the cooling system. The primary liquid waste streams will be pH adjusted and treated as required before being discharged into the Siak River. The normal discharge of effluent at full load is expected to be 80 m^3/hr made up of 56 m^3/hr from the cooling towers, 2 m^3/hr from the water steam cycle and 22 m^3/hr from other processes. The combined wastewater effluent discharged to the Siak River will meet the discharge limits set in the WBG EHS General and Thermal Power Plant Guidelines.	The discharge of process wastewaters to the Siak River has the potential to impact on the water quality and ecology downstream of the discharge. This issue is assessed further in the following sections.
	Drainage of stormwater	Any contaminated stormwater with oily water etc will be treated and discharged to the Siak River as part of the process

Phase	Activity	Potential impact
	Oily or potentially oily stormwater will drain to the oily water pond where the oil will be separated in a CPI type separator, after which the clean water may be discharged from Site The design will avoid or minimise the potential for stormwater to become contaminated with chemicals other than oil. Where this is not possible, stormwater from those areas will be collected and sent to the normal waste water pond. Clean stormwater will be collected and either re-used in the process – perhaps in the cooling water system, to reduce make-up water requirements – or discharged from Site with the other effluents.	wastewaters as discussed and assessed in the item above. Clean stormwater if it is not reused on site will be discharged to the Siak River. As the water will be clean it is unlikely to have a potential impact on the Siak River and has not been assessed further within this report.
	Discharge of sanitary wastewater from operational staff facilities These effluents will be treated in a package sewage treatment plant and discharged to land in vicinity of the power plant.	Treated sanitary wastewater will be discharged to ground in the vicinity of the power plant. Given that this location is approximately 3 km from the Siak River it is considered unlikely to have a potential impact on the river and has not been assessed further within this report.
	Hazardous and toxic substance storage and use Various hazardous and toxic substances will be used during the operation of the plant. They are not waste products but chemicals used in the general maintenance of the station. Materials would include sulphuric acid, hydrochloric acid, sodium hydroxide, turbine oils, hydraulic oils, ammonia, trisodium phosphate and sodium hypochlorite. All chemicals and hazardous substances will be stored in secure locations on site and waste materials will be trucked from site for proper disposal where appropriate.	Storage and use of these substances in secure locations with bunds should reduce the risk of uncontained spills entering the stormwater network. Given the distance to surface water features the risk of any potential impact on the Siak River is considered to be low and this issue has not been further assessed within this report.

4.1 Construction Impacts

During construction the following activities are considered to potentially have impacts on the surface water environments:

- Construction and use of temporary jetty on the Siak River;
- Construction of the water supply/discharge intake and discharge structures; and
- Construction of the gas pipeline crossings.

These are discussed in turn below.

4.1.1 Construction and Use of Temporary Jetty on the Siak River

A temporary jetty will be constructed in the Siak River downstream of the existing coal fired power station location. A simple image of the jetty design is provided in Appendix AB. Construction of the jetty will involve sheet piling for the “tunnel” into the river, while rock and sandbagging will be used for the head area (see figures in Appendix B). The tunnel will be excavated and the river bed dredged where required, the scope of which will depend on the exact location and local depth and conditions. During these works there is a risk of disturbance of the sediment from the bed into the water column and any benthic ecology in the area to be dredged will be lost. The jetty will be in use for the three to four-year construction period during which time the ecological habitat will not be available. The jetty may then be decommissioned which would allow sediment processes within the river to re-naturalise the area and benthic communities to recolonise the area. Operational use of the temporary jetty will involve a number of ships and barges using the jetty with associated disturbance of the area and the risk of discharges from vessels.

The existing sediments are fine and easily disturbed into the water column, and as discussed in Section 2 contain some elevated metal concentrations (e.g. iron). These would then join the generally turbid and high suspended sediment load river water before settling out nearby. The change in water quality is not anticipated to be significant given the existing turbid water quality. As the general river sediments are expected to be of a similar quality with elevated metal concentrations the depositing sediment would not be likely to impact on surrounding ecological values as the benthic ecology is impoverished and already adapted to the existing sediment and water quality.

No specific details are available of measures to be used to minimise in river works and sediment mobilisation during pile driving and dredging. It is considered that additional mitigation is needed to control the potential impacts from these works. These are outlined in Section 5.

Through dredging and placement of the jetty structure the existing benthic ecology and habitat will be lost. Replacement of sediment and recolonization of species would occur naturally once structures are removed hence it would be a temporary change during the period of jetty use.

Water quality could be impacted by boat use of the area through spills and discharges. The use of the river by boats is, however, a common occurrence at present with numerous boats and tankers using the waterway and existing jetty's and wharves along the river. Therefore, the use of the river by boats is not a new activity and disturbance by boat wave wash and minor spills etc would be a common occurrence that the river environment is adapted to. Potential impacts associated with boat movements for the Project construction will occur over a short period and measures should be put in place to minimise the risk and potential impact of spills (Section 5).

Overall while there is a risk of impacts on water quality through sediment mobilisation these would likely be temporary during construction and not have a longer term ecological impact. The permanent loss of habitat and benthic ecological values during the jetty use is considered to be a measurable and permanent change to the area. However, the low value of the existing ecology and likelihood of it recolonising after the jetty is removed results in the change being of lower ecological concern. It is considered that these would be classed as a moderate magnitude impact which has a detectable change to the water quality and ecology that results in a non-fundamental temporary or permanent change. The existing environment is considered to be of low sensitivity to potential impacts and this is therefore evaluated as a **minor impact**.

4.1.2 Construction of the water supply/discharge intake and discharge structures

A design of the proposed water supply intake and pump house building is provided in Appendix C. The main structures will be constructed on the river bank with an intake pipeline extending into the river. The potential impacts therefore arise from the potential runoff of sediment laden stormwater from the works area and from direct in-river work to locate the intake pipeline.

No design is available of the discharge structure however this is expected to comprise of a pipe outlet with a protected headwall to stabilise the discharge area. This will require works on the bank and bed of the river to install the structure.

No details are provided of the stormwater management for the works therefore additional mitigation is suggested with some basic measures to control the risk of sediment runoff in section 5. Without this mitigation there is a risk of temporary sediment mobilisation during works from bare earth into the river. The river is however already turbid and due to its tolerant ecology less likely to be impacted. The in-river works would also give rise to a temporary impact as sediment is mobilised into the water column during installation of the structure to hold the pipe in place and protect it. Again with the turbid nature of the river and existing tolerant ecology this impact may be measurable in the water quality but unlikely to materially affect the wider ecology value of the river. Overall it is considered that these would be classed as a moderate magnitude impact which has a detectable change to the water quality that results in a non-fundamental temporary or permanent change. The existing environment is considered to be of low sensitivity to potential impacts and this is therefore evaluated as a **minor impact**.

4.1.3 Construction of the gas pipeline crossings.

The gas pipeline will cross four rivers. Three of these have been assessed in this report including two on the Gasib River. Water quality and ecology data for these watercourses indicated that they are broadly similar and it is likely that the other stream crossed by the gas pipeline not included in baseline surveys will be similar to the others surveyed, as it drains similar land uses and is in the same lowland environment. The river crossings are intended to be by open cut methods with the pipeline then being laid below the river bed. The contractors' method statement (see ESIA Volume 5 – Process Description) outlines the way this would be undertaken. Sand bags would be placed by excavators to create a working area in the watercourse. This would be pumped dry to the downstream side of the waterway. The bed would be excavated to allow the pipe placement and then backfilled in the dry.

It is considered that the construction could potentially impact upon the water quality as the initial dam is placed and removed and also as dewatering water is discharged. The placement and removal of the dams are expected to be short duration activities and have minor potential impacts.

The works in the rivers would limit the ability for fish to pass through the work area. The small duration of works being open to allow the pipeline to be placed is unlikely to have an impact on the overall fish populations of the area. The temporary discharges of sediment laden water would occur to waterbodies that are already turbid and thus would have limited risk of ecological impacts. By working in the dry the amount of sediment input will be minimised. Sediment quality data do not indicate a high risk of contamination of sediment that could be mobilised and impact upon the existing ecology. Overall it is considered that this would be classed as a moderate magnitude impact that has a detectable but small change to the water flow and aquatic ecology values assessed. Overall given the low sensitivity of the environment this is evaluated as a **minor impact**.

4.2 Operational Impacts

During operation of the power plant the following activities are considered to potentially have impacts on the surface water environments:

- Abstraction of water; and
- Discharge of process wastewaters.

These are discussed in turn below.

4.2.1 Abstraction of water

The power plant will have a continuous water take during operation and this will be on average 370 m^3/hr during peak power production. The abstraction has the potential to impact the existing ecology by modifying the natural river flow and water level. In addition, the intake itself could have the risk of fish entrainment in the structure.

Table 4.2 outlines the minimum and average flows in the Siak River over the period 2004 to 2012. The proposed water take is then expressed as a proportion of the minimum and average flow. During the driest/lowest flow year in this time period the water take would have been 1.27% of the minimum flow. In all years the take would be less than 0.2% of the average flow. This proportion of change in river flow is expected to have very little, probably unmeasurable, impact on the water level especially at average river flows. It would still be expected to have minimal impact during periods of low flow. As there would be little change to the flow regime and water level there would be unlikely to be any impact on the ecology of the river. As an indication in a study into flow diversion as a proportion of low river flows Mierau *et. al.* 2017 reference other researchers which indicate that there was no ecological impact in river systems with either 5 or 10% of low seasonal stream flows being abstracted. This study was for different types of river systems so is used as an indication of the degree of modification that could be acceptable only. It is considered that this would be classed as a minor magnitude impact that has a detectable but small change to the water flow and aquatic ecology values assessed. Overall given the low sensitivity of the environment this is evaluated as a **negligible impact**.

Table 4.2 : Plant Water Take as a Proportion of Siak River Flow

Year		2004	2005	2006	2007	2008	2009	2010	2011	2012
Minimum flow	m^3/h	33840	61200	29160	65160	43200	64440	33840	77040	31680
Average flow	m^3/h	259200	219600	224280	270000	261000	279720	250920	312480	265680
Average take required	m^3/h	370								
Take as a % of minimum flow	%	1.09%	0.60%	1.27%	0.57%	0.86%	0.57%	1.09%	0.48%	1.17%
Take as a % of average flow	%	0.14%	0.17%	0.16%	0.14%	0.14%	0.13%	0.15%	0.12%	0.14%

At present no details are provided of measures to be taken to minimise the risk of fish entrainment in the intake structure but it is assumed that the intake would have a screen to prevent fish ingress as this is standard international practice. Given the range and number of fish species present unmitigated an impact could occur. However, with a screen in place, there is unlikely to be any significant impact on the fish populations within the Siak River. It is considered that this could have a minor magnitude impact which has a detectable but small change to the local fish populations but not a fundamental change to the populations within the wider Siak River.

4.2.2 Discharge of process wastewaters

The discharge of process wastewaters covers various waste elements as outlined in Table 4.1. The main component of the waste stream is the cooling tower blowdown. Wastewater volumes are shown in Table 4.3 as a proportion of the minimum and average flow of the Siak River. At low flow in the driest year in the recent record the discharge would have equated to 0.27% of the river flow. During average river flows the proposed discharge would have been less than 0.04% of the river flow. Therefore, the discharge is likely to be a very small proportion of the flow with a significant amount of dilution available.

Table 4.3 : Estimated Plant Discharge Volumes as a Proportion of Siak River Flow

Year		2004	2005	2006	2007	2008	2009	2010	2011	2012
Minimum flow	m^3/h	33840	61200	29160	65160	43200	64440	33840	77040	31680
Average flow	m^3/h	259200	219600	224280	270000	261000	279720	250920	312480	265680
Average discharge	m^3/h	80								
Discharge as a % of minimum flow	%	0.24%	0.13%	0.27%	0.12%	0.19%	0.12%	0.24%	0.10%	0.25%
Discharge as a % of average flow	%	0.03%	0.04%	0.04%	0.03%	0.03%	0.03%	0.03%	0.03%	0.03%

The quality of the main effluent, the blowdown from the cooling tower, will depend on the:

- Incoming water quality. Salts in the original treated river water will likely be concentrated approximately 6 times.
- Chemicals added to the cooling water system to control biocides, scaling, and (if necessary from time to time) deposits.

River water samples noted in this report have been use to predict the likely discharge concentration after treatment of the raw water supply and then concentration of the water following six cycles of concentration in the cooling tower. Table 4.4 presents the estimated cooling tower blowdown quality based on the incoming water quality. The table also outlines the relevant Indonesian and IFC/World Bank Standards that the discharge must meet. The most stringent of these standards apply.

No allowance is made for chemicals added in the raw water treatment process or cooling water system dosing. These are normally dosed in small quantities (compared with the circulating water flow rate), and are chosen or controlled so that they cannot cause discharges to exceed environmental limits.

The discharge quality will meet all the chemical standards as a result of the raw water treatment and wastewater treatment process as outlined in Table 4.4.

For physical parameters the discharge will be pH dosed to control it within the acceptable discharge range. Temperature has been further considered through modelling of the likely impact of the discharge plume on the river temperature. Two approaches were used of (1) a mass balance thermal mixing calculation, and: (2) a thermodynamic heat exchange equation. These were run in a GoldSim model to predict the likely change in temperature at various points downstream. Table 4.5 outlines the modelling results and input assumptions. Overall the modelling indicates a very small change in temperature at all points downstream due to the warm ambient river temperature and volume of flow. The temperature changes would be within those permitted by the relevant guidelines.

Based on the following:

- Average river water flows (Table 4.3);
- The nominal abstraction and discharge rates at the design condition (i.e. full load operation) (Table 4.3); and
- A conservative assumption that the same mass of a substance extracted from the Siak River is returned to the Siak River.

It has been calculated that the concentration of any substance in the river would increase by approximately 0.1% as a result of the operation of the power plant. Even at minimum river flow rates, we have calculated that the concentration of any substance in the Siak River would increase by no more than 1% as a result of the operation of the power plant.

It is noted that the Siak River which will be used as the power plant water supply has elevated concentrations of parameters including iron. Iron concentrations in the raw water supply are above the relevant discharge guidelines. The process description (ESIA Volume 5, Appendix – Process Description) details that a proportion of incoming contaminants will be removed through the water treatment process to make it suitable for use in the power plant. Through the power plant wastewater treatment process the final discharge to the Siak River will be of a better water quality than the incoming raw water. In relation to iron the concentration discharged to the Siak River will be lower than the incoming raw water concentration and will be less than the discharge guidelines of 1 mg/l at the point of discharge. Therefore, the discharge will have no adverse impact on existing water quality within the Siak River. At the point of discharge changes in concentration of any parameters in the receiving environment would be very small even before allowing for any further dilution below the point of discharge.

It is therefore considered that the changes in water quality in the river would be classed as a Minor magnitude impact due to the potentially detectable but small change to the water quality conditions. The existing environment is considered to be of Low sensitivity to potential impacts and this is therefore evaluated as a **Negligible** impact.

Table 4.4 : Estimated Cooling Tower Blowdown Quality Based on Incoming Water Quality

Parameter	Unit	Local Standard[A]	IFC/World Bank Guideline	Max incoming	Discharge quality, assuming 6 cycles of concentration
pH value	-	6 - 9	6 - 9	6.88	Controlled by pH dosing
Suspended Solids	mg/L	100	50	56	Removed in filtration system
Chromium (Total)	mg/L	0.5	0.5	<0.002	< 0.012
Copper (Cu)	mg/L	1	0.5	<0.01	< 0.06
Zinc (Zn)	mg/L	1	1	0.05	< 0.3
Iron (Fe)	mg/L	3	1	1.168	< 1[B]
Free Chlorine (Cl_2)	mg/L	0.5	0.2		Controllable in process
Oil and grease	mg/L	10	10	2.4	Removed in separator

Parameter	Unit	Local Standard[A]	IFC/World Bank Guideline	Max incoming	Discharge quality, assuming 6 cycles of concentration
Phosphate (PO^{4-})	mg/L	10	silent	0.862	5.172
Lead (Pb)	mg/L	silent	0.5	<0.005	< 0.03
Cadmium (Cd)	mg/L	silent	0.1	<0.002	< 0.012
Mercury (Hg)	mg/L	silent	0.005	<0.0005	< 0.003
Arsenic (As)	mg/L	silent	0.5	<0.005	< 0.03
Temperature	°C	silent	Less than 3°C above ambient water temperature at edge of mixing zone at discharge.		Raw blowdown temperature will be 31.6 at design case, and temperature will drop between site and river

Note: [A] The Ministerial Decree of State Minister of Environment No. 51 of 1995 regarding Threshold Limit of Liquid Waste for Industrial Activities;

[B]For iron the measured incoming iron concentrations exceeds the effluent guideline value. The non-soluble iron content will be removed by filtration. The soluble content will be removed by aeration, clarifying (coagulation / flocculation / sedimentation) and filtration. It is expected that the iron level entering the cooling tower basin will be between 0.05 ~ 0.10 mg/L. Even after concentrating 6 times, the iron content in any discharge will be lower than 1.0 mg/L as Fe, and so will comply with the guidelines. The iron level will be monitored and effluent may be routed to the wastewater treatment system if it happens that the discharge limit will not be met. The wastewater treatment system also has aeration, clarifying and filtration facilities and these would reduce the iron content to meet the specification.

Table 4.5 : Temperature Discharge Modelling

Discharge water temperature above river	River Temp (°C)	Actual Discharge Water Temp (°C)	Mixing Zone Temp (°C) (at discharge point)	Temp ~500 m downstream (°C)	Temp ~ 1 km downstream (°C)	Temp ~10 km downstream (°C)
1 °C	28	28	28	28	28	28
3 °C		30	28	28	28	28
5 °C		32	28.01	28.01	28.01	28
10 °C		37	28.01	28.01	28.01	28
Input Assumptions						
Input Description	**Unit**	**Value**	**Reference**			
River Flow Rate (steady state)	m^3/d (m^3/s)	1,296,000 (15.0)	Low flow exceeded 90% of the time in the Siak River (based on examination of 3-4 years of Flow Duration Curves)			
Discharge Flow Rate (steady state)	m^3/d (m^3/s)	1,975.8 (0.0229)	Water Balance Diagram (ESIA Volume 5, Appendix B – Process Description)			
River Velocity	m/s	1	Velocity (assumed)			
River Temperature	°C	28	Based off ambient air temp ranging from 23 to 33 °C			

5. Mitigation and Monitoring

Table 5.1 outlines the additional mitigation and monitoring activities that have been proposed to manage the risk of potential effects from the activities covered in Section 4.

Table 5.1 : Proposed Mitigation and Monitoring Activities

Potential Impact	Action
Construction and use of temporary jetty on the Siak River – mitigation measures to control potential impacts on water quality of instream pile driving and dredging.	1. Where possible works should occur in dry working conditions with work areas being isolated from the river flow and pumped dry. 2. Sediment control devices such as vertically hanging silt curtains should be employed around the dredging area to minimise suspended material moving outside the work area. 3. Dredged material should be removed from the river channel and disposed of to an appropriate site. 4. 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 effects. Records should be made of observations and any changes to controls undertaken. 5. Spill clean-up kits including floating booms should be available at the jetty to respond to any spills from vessels using the temporary 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.
Construction of the water supply/discharge intake and discharge structures and gas pipeline crossings	As Erosion and Sediment Control Plan (ESCP) should 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: 1. Measures to isolate and divert clean water around open work areas. 2. Measures and work staging to minimise the amount of bare land open at any time. 3. Measures taken to minimise erosion and the entrainment of sediment within water flowing onsite. 4. 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. 5. Visual monitoring should be undertaken during and after rain of all ESCP measures and discharges. Modifications should be made to any elements leading to erosion and high sediment losses. 6. Inspections of all ESCP elements should be made at a minimum of weekly and prior to predicted rain events.
Construction of the gas pipeline crossings	Sediment laden dewatering water from open work areas within stream crossings shall be discharged after filtration to the bypass water and then back into the stream.
Abstraction of water – potential impact of entraining fish in the intake structure	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 screen.

6. Assessment of Residual Impacts

Mitigation has been proposed for four specific activities where the potential impacts were such that additional mitigation would be necessary. With the specific additional mitigation in place the residual impacts are considered to be as follows:

6.1 Construction and Use of Temporary Jetty on the Siak River

The in-river sheet piling and dredging works were considered to have potential impacts that required additional mitigation to minimise the changes to water quality and consequent potential impacts on the ecology around the work areas. Implementation of the mitigation in terms of controls on how in-river works occur and the use of sediment control will reduce the risk and magnitude of potential impacts. The preparation for potential spills and provision of kits to deal with spills should reduce potential effects from the use of the jetty.

Overall with this additional mitigation while the potential impacts may reduce there is still considered to be a moderate magnitude impact as a detectable change to water quality could result. The existing environment is considered to be of low sensitivity to potential impacts and this is therefore evaluated as a **minor impact**.

6.2 Construction of the Water Supply/Discharge Intake and Discharge Structures

With a well-developed ESCP in place incorporating the elements in Section 5 it is considered that the risks of erosion of soils would be reduced. The proposed methods should reduce off site losses and treatment prior to discharge should control the discharge quality. Overall the approaches are likely to reduce the amount of suspended material in site construction discharges. It is considered that site discharges would still contain elevated suspended sediments but after the implementation of good ESCP these would be at concentrations more typical of catchment flows from undeveloped land in larger rainfall events. As such the potential impact on the receiving water quality and ecology would be reduced. With the above additional ESCP mitigation in place it is considered that the magnitude of the impact is likely to be minor, which is it would be a detectable but small change to the existing water quality.

This minor magnitude impact in a low sensitivity receiving environment is considered to reduce the potential impact to a **negligible impact**.

6.3 Construction of the Gas Pipeline Crossings.

With a well-developed ESCP in place and dewatering discharging to land thus allowing sediments to be removed via overland flow and infiltration it is considered that the risk of sediment being mobilised from the works into the water column in concentrations that could impact the existing ecology will be minimised. With the above additional ESCP and dewatering mitigation in place it is considered that the magnitude of the impact is likely to be minor, which is it would be a detectable but small change to the existing water quality.

This minor magnitude impact in a low sensitivity receiving environment is considered to reduce the potential impact to a **negligible impact**.

6.4 Abstraction of water – Risk of Entrainment of Fish

The design of the intake to minimise fish entrapment should reduce the chance of fish getting caught and a local impact on the fish populations. As such the potential impact would be expected to be minor or negligible. Overall given the low sensitivity of the environment this is evaluated as a **negligible impact**.

7. Assessment of Cumulative Impacts

In assessing potential cumulative impacts on the Siak River the primary activity that the Project could interact with the existing Tenayan CFPP located near to the proposed water intake and discharge structures and temporary jetty. The Tenayan CFPP is constructed and operational hence there should be no cumulative construction impacts such as multiple sediment laden runoff discharges. The primary operational impacts that may have cumulative impacts are the water take and discharge. It is assumed that the Tenayan CFPP would require the same order of magnitude water take volumes as the Project (except for cooling tower make up which may be up to double the volume for the Tenayan CFPP) and also give rise to similar effluent volumes treated to comply with the same guidelines.

The water supply volume of the project is very small as a portion of river flow and thus unlikely to modify flows and levels and impact upon the ecology. If the existing Tenayan CFPP were taking a similar or even double the volume proposed by the Project, then the potential impacts are still likely to be less than 5% of the low flow in the river and thus unlikely to give rise to cumulative environmental impacts.

The discharges from both power plants both have to meet the same local guidelines at the point of discharge. While discharges are likely to be physically located close to each other the risk of any cumulative impact is small as the effluents should be appropriately treated and the mixing zones will be small given the size of the river and amount of available dilution.

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Appendix A. Site map showing ecological monitoring sites

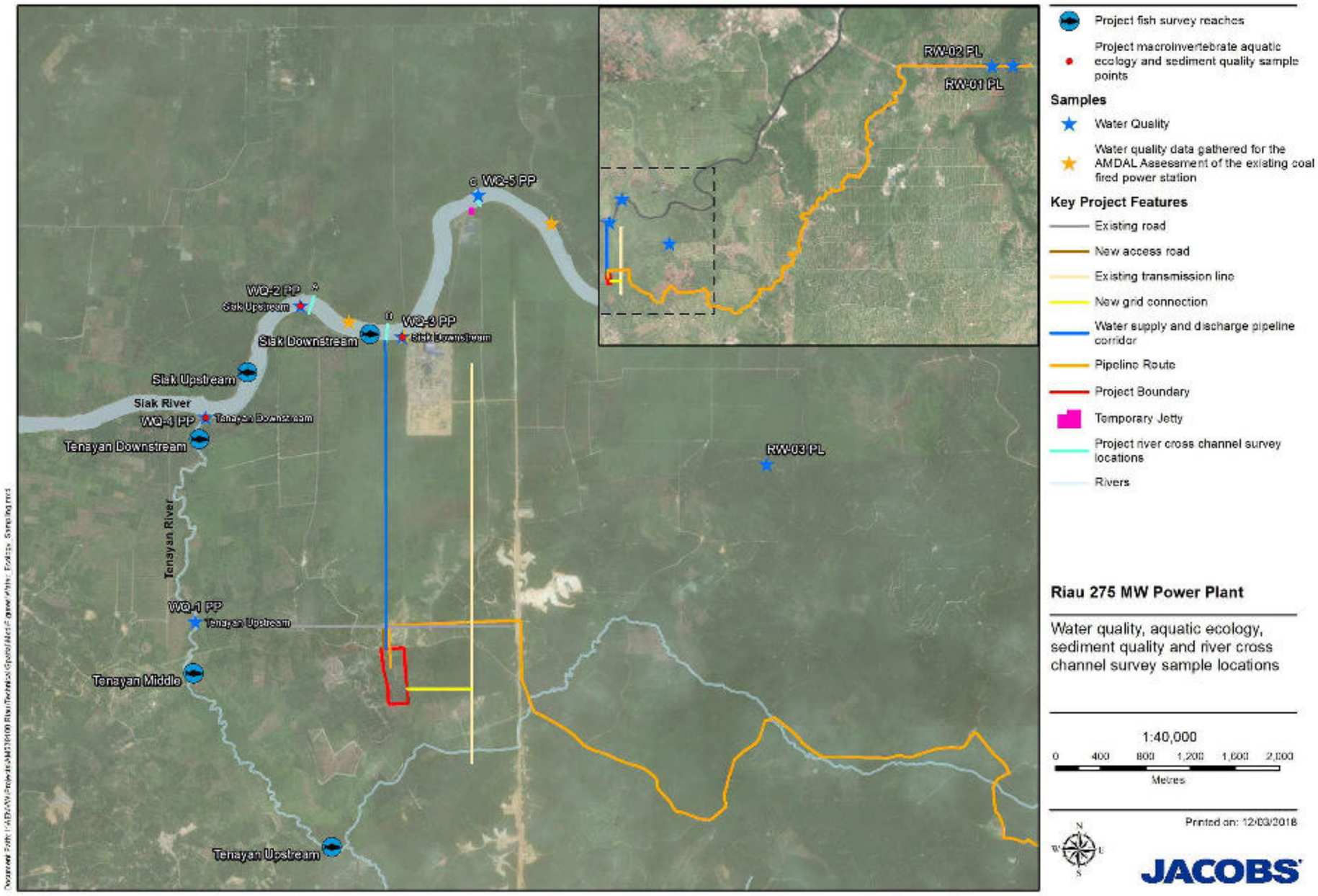
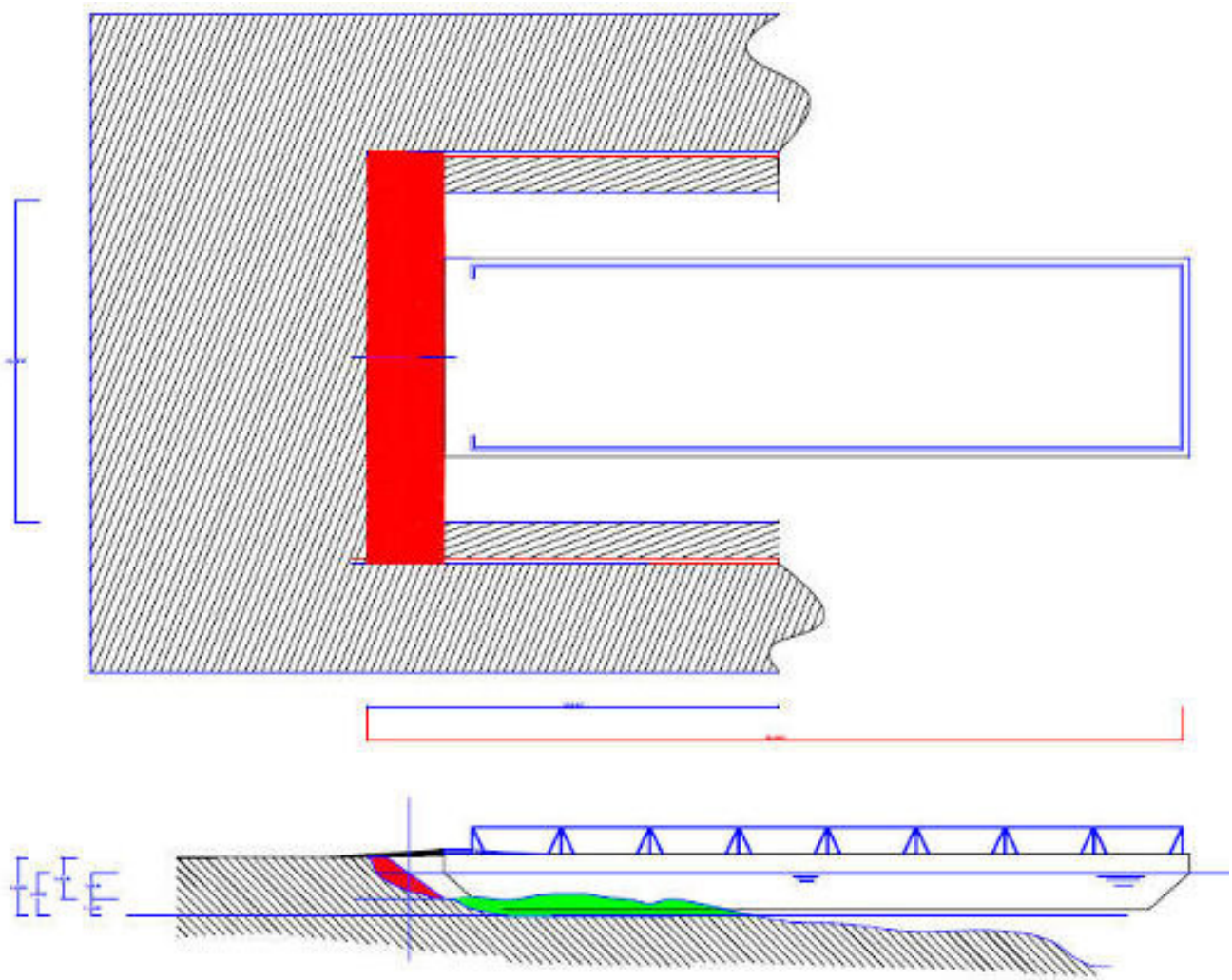


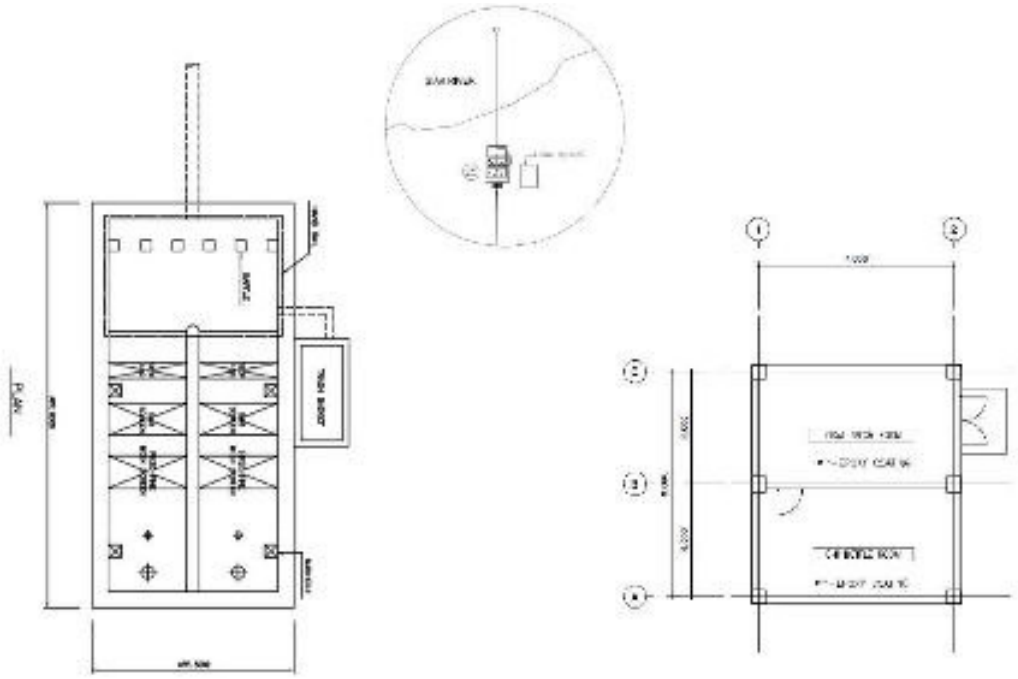
Figure A.1 : Water quality, aquatic ecology, sediment quality and river cross channel survey sample locations

Appendix B. Plans of the jetty structure



The centre of the jetty (known as the tunnel) will be constructed using sheet piling and wire for the stud in both walls of the tunnel. For the head on the river bank (red area) crushed stone and sandbags will be installed on the bed and bank. Dredging will be required to locate the jetty in the green areas shown. Exact areas for dredging and volumes will be identified on site. Construction would take 3 to 4 months and demolition 1 month. The temporary jetty's capacity would be for barges up to 270 ft long.

Appendix C. Plans and location of the water intake structure



River Water Intake Structure / underground

Water Intake Building

Considering interconnection between both structures, area (50 m x 40 m) is required.

Appendix H. OHS and Working Conditions

Riau 275 MW Gas Combined Cycle Power Plant IPP - ESIA

Medco Ratch Power Riau

Technical Report – Occupational Health and Safety and Working Conditions

AM039100-400-GN-RPT-1008 | V2

April 2018

Riau 275 MW Gas Combined Cycle Power Plant IPP - ESIA

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Author:	Alex Gifford
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Jacobs New Zealand Limited

Level 3, 86 Customhouse Quay,
PO Box 10-283
Wellington, New Zealand
T +64 4 473 4265
F +64 4 473 3369
www.jacobs.com

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Revision	Date	Description	By	Review	Approved
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V1	16/3/2018	Final Draft	A Gifford	B Clarke	B Clarke
V2	19/04/2018	Final Draft for Issue	A Kubale	B Clarke	E Morrissey

Contents

Important note about your report

The sole purpose of this report and the associated services performed by Jacobs New Zealand Limited (Jacobs) is to provide guidance on the working conditions, occupational safety and health which forms a section of the Environmental and Social Impact Assessment for the Project in accordance with the scope of services set out in the contract between Jacobs and the Client. That scope of services, as described in this report, was developed with the Client.

In preparing this report, Jacobs has relied upon, and presumed accurate, any information (or confirmation of the absence thereof) provided by the Client and/or from other sources. Except as otherwise stated in the report, Jacobs has not attempted to verify the accuracy or completeness of any such information. If the information is subsequently determined to be false, inaccurate or incomplete then it is possible that our observations and conclusions as expressed in this report may change.

Jacobs derived the data in this report from information sourced from the Client (if any) and/or available in the public domain at the time or times outlined in this report. The passage of time, manifestation of latent conditions or impacts of future events may require further examination of the project and subsequent data analysis, and re-evaluation of the data, findings, observations and conclusions expressed in this report. Jacobs has prepared this report in accordance with the usual care and thoroughness of the consulting profession, for the sole purpose described above and by reference to applicable standards, guidelines, procedures and practices at the date of issue of this report. For the reasons outlined above, however, no other warranty or guarantee, whether expressed or implied, is made as to the data, observations and findings expressed in this report, to the extent permitted by law.

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1. Introduction

This Technical Report is part of an Environmental and Social Impact Assessment (ESIA) prepared to assess the environmental and social impacts and risks of 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.

This Technical Report assesses the proposed labour and working conditions for the development, and sets out a framework as to occupational health and safety systems and practices which will be implemented in the construction, operation and maintenance of the Project. It is anticipated that detailed labour, health and safety documents will be prepared by Medco Ratch Power Riau (MRPR) and the EPC Contractors (Lotte Engineering & Construction and PT Citra Panji Manunggal) prior to commencement of project construction works and by MRPR prior to commissioning the plant. These would cover human resources policies, employment agreements, hazard identification, safe work practices, emergency response plans, incident/accident management, auditing and review etc.

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 Lotte Engineering & Construction (LEC)
    b. Gas pipeline – managed by PT Citra Panji Manunggal (CPM)
2) Operation of the power plant – managed by MRPR.

Separate occupational health and safety management systems are expected to be developed for each of these phases and the key aspects of each system are summarised in this report.

The report demonstrates that the development will meet the requirements of the ADB Safeguards and Performance Standard 2 in regards to working conditions and that the proposed occupational health and safety systems for each stage will meet good international industry practice. The proposed occupational safety and health systems have been reviewed against the requirements set out in the WBG Environmental, Health and Safety – General Guidelines. The EHS General Guidelines contain the performance levels and measures that are generally considered to be achievable in new facilities by existing technology at reasonable costs.

1.1 Structure of the Report

The technical report is structured as follows:

- Section 2 describes the relevant international and Indonesian legislation and guidelines;
- Section 3 describes how the Project will comply legislation relating to labour and working conditions;
- Section 4 describes the worker's grievance mechanism;
- Section 5 gives an overview of the construction / operation Occupational, Health and Safety (OHS) Plans;
- Section 6 describes the site safety management and awareness measures;
- Section 7 describes the construction and operation Health and Safety Plans; and
- Section 8 outlines the relevant reporting, reviewing and auditing procedures to be implemented on site.

2. Legislation and Guidelines

2.1 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 covers the following: Environmental, Involuntary Resettlement and Indigenous Peoples Safeguards. The Environmental Safeguards outline ADB's commitment to OHS and working conditions, specifically policy principle 10 which states:

> *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.*

To achieve the objectives of the environmental safeguards and assist the implementation of policy principle 10, ADB has prepared a good practice sourcebook (2012). The sourcebook provides technical guidance and recommends good practices in relation to:

Occupational Health and Safety

- Identify and eliminate or minimize the cause of potential hazards;
- Establish preventative and protective measures;
- Train workers;
- Document and report;
- Have emergency prevention, preparedness, and response plans; and
- Comply with host country laws.

Community Health and Safety Principles

- Identify and assess risks;
- Establish preventive and protective measures;
- Conduct contractors and subcontractor's due diligence;
- Manage natural hazards;
- Have community emergency prevention, preparedness, and response arrangements;
- Inform affected communities, local authorities and emergency services; and
- Conduct an independent review of high-risk structural elements or components.

2.2 The Equator Principles

Occupational safety and health systems for the development will need to meet the requirements of the Equator Principles (EPs). These principles ensure that projects are developed in a manner that is socially responsible and reflects sound environmental management practices. The EPs most relevant to this report are Principle 4: Environmental and Social Management System and Equator Principles Action Plan and Principle 6: Grievance Mechanism.

2.3 IFC Performance Standards on Environmental and Social Sustainability

The IFC Performance Standards on Environmental and Social Sustainability (PS) relevant to this report are as follows:

PS1: 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.

PS2: Labour and Working Conditions of the Equator Principles require the Project's proponent:

- 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.

PS4: Community Health, Safety and Security of the Equator Principles require the Project's proponent:

- To avoid or minimise risks to and impacts on the health and safety of the local community during the Project life cycle.
- To ensure that the safeguarding of personnel and property avoids or minimises risks to the community's safety and security.

2.4 World Bank Environmental, Health and Safety (EHS) Guidelines

Occupational safety and health systems for the development will also need to be compliant with the requirements set out in the World Bank Environmental, Health and Safety (EHS) Guidelines. The EHS Guidelines contain international performance levels and measures that are generally considered to be achievable in new facilities by existing technology at reasonable costs. They are designed and should be used together with the relevant industry sector guidelines. The most applicable EHS guidelines to this Project are:

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

- EHS Guidelines for Onshore Oil and Gas Development (April 2017).

2.5 International Labour Organisation (ILO) and United Nations Conventions

It is anticipated that a large portion of personnel working on the site through the construction phase will be employed through MRPR, the EPC Contractors and Subcontractors providing specific services to the project. It will be a contractual requirement for all providers to the Project that they comply fully with the laws and regulations of the government of Indonesia concerning employment of labour and working conditions. The Project policy for its own employees will also follow the laws and regulations of the government of Indonesia and an employment policy framework will be developed which will comply with (at a minimum):

- ILO Convention 87 on Freedom of Association and Protection of the Right to Organise.
- ILO Convention 98 on the Right to Organise and Collective Bargaining.
- ILO Convention 29 on Forced Labour.
- ILO Convention 105 on the Abolition of Forced Labour.
- ILO Convention 138 on Minimum Age (of Employment).
- ILO Convention 182 on the Worst Forms of Child Labour.
- ILO Convention 100 on Equal Remuneration.
- ILO Convention 111 on Discrimination (Employment and Occupation).
- UN Convention on the Rights of the Child, Article 32.1.
- UN Convention on the Protection of the Rights of all Migrant Workers and Members of their Families.

Indonesia was the first Asian country and the fifth country in the world to ratify all eight fundamental ILO Conventions mentioned above.

2.6 Indonesian Legislation and Guidelines

The Project shall be constructed and operated in accordance with the laws and regulations pertaining to employment, human rights, and worker rights in Indonesia. The Project and all Contractors and Subcontractors of the site will be required to meet Indonesian standards for employment and working conditions, including minimum wage standards, working hours and amenities. All Contractors and Subcontractors will be required to meet minimum working condition standards, and provide proof as part of tendering and contracting. Safety requirements will be part of tender specification for all Contractors and Subcontractors who will necessarily need to sign on to the safety management system of the project and demonstrate appropriate procedures, such as health and safety plans for activities and stop work protocols for unsafe conditions.

All activities conducted in relation to the Project shall comply with the laws and regulations of Indonesia. Key Health and Safety legislation in Indonesia includes, but is not limited to:

- Law No. 1 of 1970 on Work Safety.
- Law No. 13 of 2003 on Manpower.
- Ministry of Health Decree No. 1405 / Menkes / SK / XI / 2002 on Requirements of Occupational Environmental Health for Office and Industrial.
- Regulation of the Minister of Manpower and Transmigration No. Per.03 / Men / 1982 on Occupational Health Services.
- Government Regulation No. 50 of 2012 on the Implementation of Safety Management and Occupational Health System.

The Manpower Act (No.13/2003) was enacted in Indonesia in 2003 and consolidated eleven existing labour-related laws into one. Provincial and district authorities, not central government, now establish minimum wages, which vary by province, district, and sector. This legislation is relevant to establishing values for income restoration measures with respect to workers involved in the construction and operation of the Project. MRPR and the EPC Contractors are aware of these legislative requirements and procedures will be implemented to ensure the requirements are complied with. At the time of writing this report a number of the labour and working condition policies and procedures for the construction and operation of the power station have yet to be written.

2.7 Contract Legislation

Article 50 of the Manpower Act (No.13/2003) provides that employment relations are the result of the work agreement between the employer and the worker/ labourer. The Act requires a set of particular features to be met by the work agreement in order to protect the worker from unfair practices or abuses and to guarantee legal certainty in respect to the rights and obligations of the worker/labourer and employer.

The work agreement is made in writing or orally (Article 51) and shall at least include (Article 54):

- name, address, and area of business of the company;
- name, sex, age, and address of the worker/labourer;
- occupation or type of job of the worker/labourer;
- working place;
- wage and how it should be paid;
- terms of employment, including the rights and obligations for workers/labourers and employer;
- starting and the period of time the work agreement is effective;
- place and date that the work agreement is made; and
- signatures of employer and worker/labourer.

The EPC Contractors shall initiate, maintain and supervise all safety precautions and programs in connection with the construction work. The EPC Contractors and their subcontractors will issue all Project staff with an individual contract of employment detailing their rights and conditions in accordance with the national law and IFC 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.

3. Labour and Working Conditions

3.1 Compliance with the Labour Code and WBG EHS Guidelines

The Project shall be constructed and operated in accordance with the laws and regulations pertaining to employment, human rights and worker rights in Indonesia. As discussed in Section 2 above, it shall also abide by the policies of the ADB Safeguards, IFC Performance Standards and WBG EHS Guidelines.

A Human Resources Policy to demonstrate compliance with Indonesia's Labour Legislation and WBG EHS Guidelines will be developed prior to commencement of any work by employees of either MRPR or the EPC Contractors on the Project. This will be supplied to the local labour authority and regularly reviewed as the Project progresses.

3.2 Contracts of Employment

All employees working on the Project shall have a mutually agreed Contract of Employment with their employer. This contract will include:

- type of employment;
- period of employment - working hours, working days and length of employment;
- holidays – annual leave and public holidays;
- duties and job title;
- payment including overtime;
- insurance;
- procedures to deal with personal grievances; and
- termination of employment.

In addition, the following with be a requirement of the EPC Contractors or MRPR in regards to labour and working conditions:

- provision of information throughout the recruitment process on the employer's labour, health and safety policies;
- assignment of tasks to employees that are consistent with their physical capacities and job skills;
- operation of programmes for employees' health management, including regular health checks; and
- ongoing safety education and training as required to perform, supervise, and manage assigned tasks without mishap.

3.3 Health Checks

In accordance with international good practice regular health assessments of all staff at the site shall be carried out during the Project. Costs for these assessments shall be borne by the employer. An example of the type and frequency of health checks is provided in Table 3.1.

Figure 3.1 : Example Health Assessment Schedule

Type of Health Inspection	Personnel	Frequency	Comments
Pre-employment health check	Potential employees	Before signing of employment contracts	
Routine health inspection	All workers (including subcontractors)	Once a year	
Special health inspections	Workers who handle heavy metals and organic solvents	If requested	
	Workers exposed to noise/vibration, dust or harmful rays	If requested	Special tests where appropriate including lung function, sight and hearing, etc

As well as regular worker health assessments, occupational health monitoring will be conducted at the site. This includes:

- noise monitoring; and
- occupational hygiene air quality monitoring.

Further details are given in Section 6.7.

3.4 Training

Training will be an important component of health and safety for both the construction and operation / maintenance of the power plant. All staff will receive appropriate health and safety training so they can undertake their work tasks in a safe manner. The level of health and safety training provided will depend on the health and safety hazards of each individual's work.

3.4.1 Induction Training

Health and safety induction training will be provided for all new Project employees prior to the commencement of their duties. The training will cover health and safety, familiarization with the site and site-specific hazards. All new employees will be required to attend the safety induction course prior to receiving entry badges for authorisation to enter the project site.

Induction training will be conducted by the OHS Manager. It will be the responsibility of the MRPR and EPC Contractors to ensure all staff receives induction training.

The induction programme will cover the following:

- site safety policy;
- project safety objectives and behavioural based health and safety;
- site safety rules;
- work permit and security systems;
- good housekeeping;
- job safety analysis / risk assessment;

- communicate HSSE roles and responsibilities of respective positions (e.g. managers, supervisors, HSSE personnel and workers);
- the site hazard labelling / signage system;
- personal protective equipment (PPE);
- hazards and accident reporting; and
- emergency procedures.

Visitors to the site shall also attend either a site safety induction or a visitor orientation and control programme to ensure they do not enter hazardous areas unescorted.

3.4.2 Ongoing Health and Safety Training

As well as a site induction for new workers, ongoing health and safety training shall be provided by the MRPR or EPC Contractors. This will ensure that staff have the appropriate technical skills and safety awareness to perform their assigned jobs properly and safely. Staff involved in potentially hazardous tasks, e.g. working in hazardous areas, working at heights, working in confined spaces etc., where additional skills are needed, will be given specialised training as per the job requirement.

A proportion of employees will be required to attend additional training courses, such as basic industrial first aid or firefighting.

An example of the type and frequency of safety training is provided in Table 3.2. MRPR and/or the EPC Contractors may also provide further training as part of their internal requirements.

Figure 3.2 : Example Safety Training Requirements

Type of Training	Personnel	Frequency	Comments
Regular training	Site staff	2 hours/ month	Including subcontractors
Training by OHS Manger	Staff higher than foreman position	16 hours / year	Including subcontractors
Adaptation training	Staff whose work activity has changed	Dependent on activity	
Special training	Staff engaged in hazardous activities	Dependent on activity	
Basic fire fighting	All staff or not less than 40% of all people on site	Once a year	By a third party
Emergency drill	All staff or not less than 80% of all people on site	Once a year	

The level and type of safety training provided shall be documented in Safety Training Registers held by MRPR and the EPC Contractors.

3.5 Discipline

Discipline of employees is addressed in Law No. 13 of 2003 on Manpower. Both the EPC Contractors and MRPR will be required to have discipline measures and procedures included within their Human Resource Policy.

3.6 Dispute Resolution

Law No. 13 of 2003 on Manpower provides details for the resolution of labour disputes. The Human Resource Policy will include procedures for dispute resolution, including details of external mediators.

3.7 Retrenchment

The following with be a requirement of the EPC Contractor's and MRPR should retrenchment occur in accordance with IFC Performance Standard 2 and Guidance Note 2. This will include:

- Prior to implementing any collective dismissals an analysis of alternatives to retrenchment will be carried out.
- If no viable alternatives are identified, an retrenchment plan will be developed and implemented to reduce the adverse impacts of retrenchment on workers.
- The retrenchment plan will be based on the principle of non-discrimination and will reflect MRPR's and the EPC contractors consultation with workers, their organizations, and, where appropriate, the government, and comply with collective bargaining agreements if they exist.
- MRPR and the EPC contractors will comply with all legal and contractual requirements related to notification of public authorities, and provision of information to, and consultation with workers and their organizations.
- MRPR and the EPC contractors should ensure that all workers receive notice of dismissal and severance payments mandated by law and collective agreements in a timely manner.
- All outstanding back pay and social security benefits and pension contributions and benefits will be paid.

3.8 Worker Accommodation

At the time of writing this report it is understood that worker's accommodation will not be provided. Should worker's accommodation be provided, it shall be in accordance with the IFC Performance Standard 2 and Guidance Note 2.

4. Worker's Grievance Mechanism

4.1 Overview

A Worker's Grievance Mechanism will be established as part of the Overarching Environmental and Social Management System (ESMS). In compliance with the Principle 6 of the Equator Principles, this grievance mechanism will be designed to receive and facilitate resolution of concerns and grievances about the Project's working conditions and safety performance. It will be scaled to the risks and impacts of the Project and have workers as its primary user. It will seek to resolve concerns promptly, using an understandable and transparent consultative process that is culturally appropriate, readily accessible, at no cost, and without retribution to the party that originated the issue or concern. The mechanism should not impede access to judicial or administrative remedies. MRPR and the EPC Contractors will inform their workers about the mechanism in the course of the workers' engagement and induction process.

4.2 Proposed Grievance Mechanism

Site preparation, construction activities and the use of temporary worker accommodation pose potential risks to the health, safety, and security and therefore well-being of construction workers if not managed appropriately. Community health and safety risks associated with the use of temporary accommodation sites include those relating to sanitation, disease, cultural alienation and fire. Similarly, there are potentially negative occupational health and safety impacts related to personal accident or injury on any construction site. There are also potential adverse impacts on workers related to their terms of engagement and relationship with their employer.

MRPR will establish a Grievance Mechanism for workers, which will include any concerns related to working conditions and health and safety. The Grievance Mechanism process will be communicated to all EPC Contractors and Subcontractors with instructions how to implement it.

Each affected person will be free to register a grievance, in accordance with procedures specified below. This mechanism covers any type of complaint, and includes three main steps:

- the registration of the complaint or dispute;
- the amicable resolution of the complaint; and
- use of mediation if necessary.

Most of these issues can often be resolved by a good faith discussion with the complainant and may be resolved by additional communication (e.g. providing detailed information about the rights of the workers on the Project). However, some issues may only be able to be resolved through a formal legal process. Figure 4.1 shows the proposed complaints handling mechanism.

4.3 Recording of Complaints

The Project will use the following means to register complaint from workers:

- provision of a dedicated phone number to provide information on the Project, and register complaints; and
- provision of a comment box / complaints register in MRPR's and Lotte E & C's and CMP's site offices once the construction has started. Workers will be able to lodge complaints using a grievance form.
- Any oral complaint given to the Health and Safety Office of MRPR or the EPC Contractor's Safety Officers will also be registered.

The existence of this register and access conditions will be widely disseminated to workers during induction activities.

Workers complaints relating to employment and health and safety issues of the Project will be recorded and kept in a communications / complaints log book and in a database. A quarterly report monitoring the complaints recorded will be generated for the attention of the management of Lotte E & C, CMP and MRPR.

When a complaint is received, it must be recorded in the Grievance Mechanism and Complaints Form in Appendix A. The complaint should be recorded by the Health and Safety (HS) Manager and the Human Resources (HR) Manager, or other members of the Project Team receiving the complaint before being passed onto the OHS Manager and the HR Manager to action. The OHS Manager and the HR Manager will then follow up with the complainant directly to discuss options for a resolution.

All communications or complaints must be acknowledged by the OHS Manager and the HR Manager within 5 business days and a response must be made to the complainant within 30 business days.

If the complaint is resolved internally, details of the complaint and resolution should be provided in the complaints form and filed. If the complaint cannot be resolved, the OHS Manager and the HR Manager shall organise a mediation session with the local authority.

4.4 Mediation by Local Authorities

If the solution proposed by Lotte E & C, CMP or MRPR is rejected by the complainant, and no amicable solution can be found, the issue will be transmitted to the sub-district authorities. All evidence and documentation will be transmitted, in order to allow the district authorities to understand the issue at stake. The sub-district authority will then hold a mediation session with the affected parties and relevant members of the Project Team in order to develop a solution. If the complainant is not satisfied with the solution, the matter must then be referred to the Judicial Courts.

4.5 Complaint Processing Time

All communications or complaints will be acknowledged within five business days and a response within 30 business days. A communications procedure and log will be developed for use during the period of the SEP. This will be used to log all significant incoming and outgoing communications. An overview of the grievance mechanism is provided below in Figure 4.1.

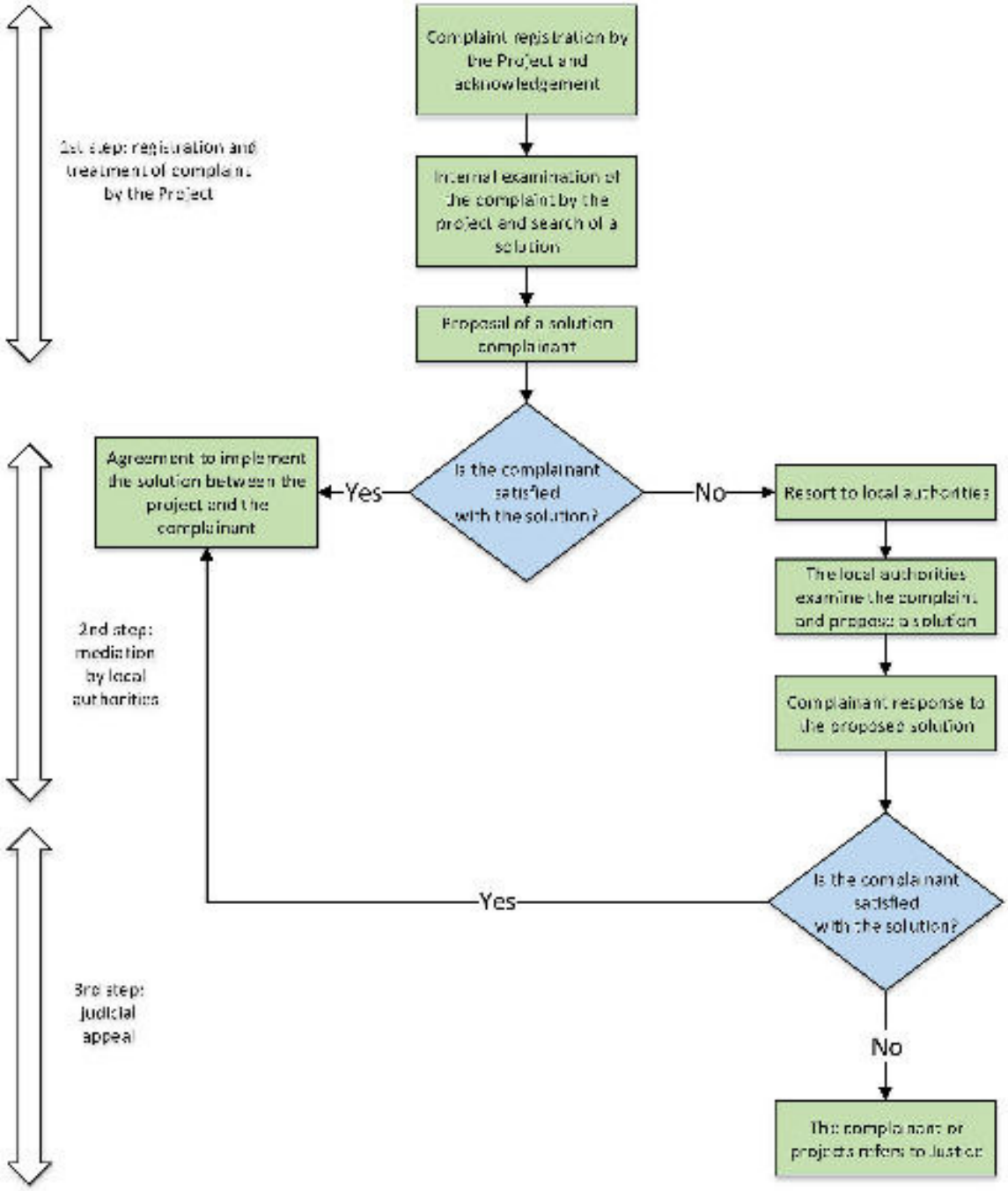


Figure 4.1 : Grievance Mechanism Overview Chart

5. Construction / Operation Occupational Health and Safety Management Systems

MRPR and the EPC Contractors will be required to develop and implement comprehensive Occupational Health, and Safety Management Systems (OHSMS) for the construction and operation activities for the Project, 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 OHSMS's will meet the requirements specified in the WBG Environmental, Health and Safety General Guidelines pertaining to occupational safety and health.

At the time of writing this report MRPR has not prepared an operational OHSMS. LEC has provided an example OHSMS (refer to Appendix B) and CPM has provided an OHSMS (refer to Appendix C). MRPR will be required to work with LEC and CPM towards the development of their own operational and final construction OHSMS's.

Set out in the following sections are the key elements of the site health and safety procedure to be included within the OHSMS. This report provides a high level overview of health and safety considerations only; further detail will be included in the final OHSMS prepared by the MRPR and EPC Contractors prior to commencement of onsite work.

5.1 System Requirements

The OHSMS will outline the procedures essential for the protection of personnel during construction and operation. They will be designed to assist all those who deal with OHS as a functional responsibility within the context of their job.

In particular, they will include:

- demonstration of compliance with Indonesian and IFC health and safety requirements;
- OHS responsibility / reporting structure;
- details of site inductions and ongoing training;
- hazard identification and risk assessment;
- mitigation measures including mandatory personal protection equipment (PPE);
- safe working procedures and safety rules (includes permit-to-work procedures, working at height, etc);
- response to health and safety incidents, including investigation and reporting;
- emergency response plans;
- reporting and record keeping systems;
- scheduled HS meetings; and
- inspection and auditing procedures.

The key goal of the plans will be to instill a safety culture within the site employees through education, good communication, a motivated workforce, recognition of individual/team effort and safety incentive programmes.

The OHSMS will be living documents that will be regularly updated throughout the life of the Project to ensure compliance with changes in regulation and industry practice.

5.2 Health and Safety Responsibilities

It is the responsibility of all individuals working within the Project to be aware of health and safety hazards. Health and safety should be encouraged by example, knowledge, skills, overall attitude, and involvement in the OHSMS.

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; however, the following is an indicative list of personnel with specific OHS responsibilities:

- Construction / Operation Site Manager;
- OHS Manager;
- OHS Supervisors / Safety Officers;
- Work Supervisors;
- all staff, including sub-contractors; and
- visitors.

The OHSMS will define the responsibilities of these personnel. These will include who will enforce the OHSMS, the reporting lines for OHS management, discipline procedures for safety violations, etc. An example is given in Table 5.1.

Table 5.1: Example of Health and Safety Responsibility Hierarchy

Position	Responsibility
Construction / Operation Site Manager	Establishment of the OHSMS, ensuring that it meets the Owner's contractual requirements
OHS Manager	• Head of emergency response • Arranging the inspection of safety equipment, PPE and firefighting equipment, and taking action as required when equipment does not meet the required standard • Choosing suitable products when purchasing protective equipment, hazardous machines, instruments and facilities • Organising safety training • Instructing the site security team on their role • Investigating the causes of accidents and ensuring the appropriate follow-up measures are undertaken • Discipline of personnel who violate safety rules • Maintaining HSE records and reporting to the Health and Safety Committee on a monthly basis and to the appropriate authorities when required • Managing the medical care of patients who are injured in a workplace accident
OHS Supervisors / Safety Officers	• Routine checking of equipment, facilities and instruments to identify hazards and ensure safe operation • Training and instruction in the use of protective equipment • Conducting inspection of safety equipment, PPE and firefighting equipment, and taking action as required when equipment does not meet the required standard Accident reporting on any incidents within their area of responsibility
Work Supervisors	• Ensuring machinery / equipment is used by appropriately trained personnel in a safe manner • Ensuring personnel working with / in hazardous substances or locations have the appropriate level of protection before work commences • Ensuring appropriate permits-to-work have been obtained

Position	Responsibility
All Staff and Visitors	• Duty of care • Identification and communication of hazards • Compliance with instructions and the OHS Plans

In addition, any Subcontractors appointed by MRPR and their EPC Contractors will be required to submit their own OHSMS and MRPR and the EPC Contractors will establish a hierarchy of responsibility with regards for the provision of health and safety.

A Health and Safety Committee will be formed, comprising senior management and Subcontractor's representatives. This committee will meet on a monthly basis to discuss labour, health and safety concerns.

6. Safety Management and Awareness

The following outlines the general safety measures to be applied during the construction, operation and maintenance of the Project.

6.1.1 Hazard / Risk Assessment

The aim of the hazard and risk assessment is to limit the risks to life, prevent injury and property loss by identifying and mitigating the potential hazards posed during the various activities undertaken in the construction, operation and maintenance of the Project.

Each 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. These may include some of the following:

- non-ionizing radiation;
- heat;
- noise;
- confined spaces;
- electrical hazards;
- fire and explosion hazards;
- chemical hazards; and
- dust.

Each hazard will then be assigned a risk level based on the likelihood and severity of the consequence of exposure using a matrix system such as that provided in Table 2.1.1 of the IFC *EHS General Guidelines: Occupational Health and Safety*. Depending on the assigned level of risk appropriate mitigation measures will be proposed to eliminate, control or minimise the risks associated with each hazard. It shall be MRPR and the EPC Contractor's responsibility to ensure these measures are undertaken. The output from this hazard identification and risk assessment process will be a Hazard Register and a series of corrective actions required to implement the mitigation proposed to reduce the level of risk of a hazard to an acceptable level. The Hazards Register will be regularly reviewed and updated.

6.2 Personal Protective Equipment

All workers shall at a minimum wear safety shoes, safety helmets and safety glasses. Some personnel will require additional specialist PPE if exposed to specific hazards. An example of PPE requirements for specific tasks is set out in Table 6.1. Other tasks that are not included within this table may have further PPE requirements.

Table 6.1: Example of PPE Requirements

Work	Minimum Items to be Supplied
All workers	Safety helmet, safety shoes and safety glasses
Work at heights	Safety harness and rope

Work	Minimum Items to be Supplied
Work where oxygen deficiency is expected	Portable or supplied air (fixed lines) On-site rescue equipment
Work producing harmful gas	Facemasks with appropriate filters for air purification (chemicals, mists, vapours and gases) Single or multi-gas personal monitors
Electrical work	Live wire alarm Safety gloves
Work producing dust	Facemasks with appropriate filters for dust removal and air purification
Welding and grinding work	Face shield / welder goggles and earmuffs Protective clothing
Work producing noise greater than 85 dB over an 8 hour day or an instantaneous noise of greater than 140 dB	Earplugs / earmuffs
Work handling poison and toxic substances	Gloves, apron, splash suits, face shield or goggles
Harmful radiation such as X-rays	Protective glasses with side-shields Radioactive meter

6.3 Safe Work Rules and Procedures

The safe construction and operation of the site will be reliant on staff comprehending and obeying safety rules and restrictions. Because of this, the dissemination of safe work rules and procedures will be crucial.

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. An example of some basic safety rules include:

1) All site safety signage shall be obeyed.
2) No unauthorised staff shall enter restricted areas.
3) No work shall be undertaken without prior instruction.
4) No staff shall undertake work for which they have not received adequate training.
5) All staff shall use designated safe walkways and site entrances and exits.
6) All staff shall wear provided personal protective equipment, which at a minimum shall include safety shoes, safety glasses and fastened safety helmets.
7) Operating machinery shall not be left unattended.
8) Zero tolerance policy on alcohol or drugs in the work place.

In addition to rules, safe work procedures will be developed for operating equipment and work around machinery. Workers will be trained in the requirements of these safe work procedures. These are likely to include the following (not a comprehensive list):

- fire prevention;
- job site safety inspection;

- transportation;
- excavations, trenching and shoring;
- asbestos and other fibres;
- welding, cutting and brazing;
- piling operations;
- work place ladders and scaffolding;
- hand tools and power tools;
- paints and coatings;
- concrete forms and shorings;
- crane and lifting equipment;
- slings and lifting gear (rigging);
- mechanical equipment;
- material handling;
- electricity;
- ionizing radiation;
- liquefied petroleum gases; and
- chemicals.

A comprehensive catalogue of safe work procedures shall be developed as part of the OHS Plans and Safety Management Systems.

Compliance with safe work rules and procedures will be an important facet of the employment contracts between Project employers and employees and failure to comply will result in disciplinary action.

6.4 Permits to Work

All non-routine hazardous work shall require the completion of a permit-to-work form and approval by the OHS Manager prior to commencement. Hazardous work is likely to include the following (not a comprehensive list):

- work with or near hazardous substances;
- welding and cutting of containers and pipes where explosives or inflammables may remain;
- work in confined spaces where toxic gases may be present;
- work at heights;
- installing and repairing hazardous equipment;
- work with live electrical systems; and
- radioactive work.

6.5 Site Safety Facilities

The facilities provided at the site shall be to a level that allows health and safety standards to be maintained. These shall include:

- provision of first-aid equipment and stations;
- an onsite medical facility including trained medical staff;
- clean eating areas;
- sanitary facilities;
- safe access to work and communal areas;
- sufficient air supply in indoors work areas;
- emergency response equipment; and
- appropriate labelling / signage of equipment and hazards.

6.6 Meetings

It is imperative that health and safety messages are communicated so that all staff are aware of their responsibilities.

6.6.1 Daily Tool Box Talks

Daily 5-10 minute meetings shall be conducted by Site Supervisors before commencing work to publicise and emphasise safety and health procedures relevant to the nature and location of work taking place on that day. Where work permits are required, the Site Supervisor will use this time to ensure that personnel involved are fully aware of all limitations and restrictions, safety requirements, and job execution details. This will ensure that all personnel working at the site are aware of hazards and controls required at the start of each day's work.

6.6.2 Weekly OHS Meetings

Weekly HSE meetings shall be conducted by the OHS Manager. The purpose of these meetings will be to:

- provide a regular update of safety alerts;
- review all incident reports and make recommendations;
- review tool box meeting minutes/topics;
- review weekly inspections/audits; and
- provide an opportunity for staff to raise health and safety concerns.

6.6.3 Safety and Health Management Committee

The Construction Site Manager and the Operation Site Manager shall appoint a Health and Safely Management Committee, which will include members of Subcontractor organisations. The Committee shall meet every month to undertake a joint safety check. The Committee shall review the following:

1) summary of current health and safety issues;
2) evaluation of the state of health and safety controls at the site;
3) evaluation of the communication of health and safety messages to staff;
4) assessment of any health and safety incidents (especially lost time incidents);
5) recommended changes to equipment, policy and / or procedure as a result of injury, damage or failure;
6) recognition of health and safety success and failures; and

7) any other matters raised as necessary for the management of health and safety.

These meetings will provide an on-going forum for managing health and safety at the site and reacting to changing conditions and work activities. The outputs from these meetings will be a monthly report, which will be provided to the local labour authority.

6.7 Monitoring and Inspections

The OHS Management Systems 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. Table 6.2 sets out an example schedule for conducting safety checks and inspections.

Table 6.2 : Example of Inspections and Monitoring Schedule

Description	Site Area	Frequency	Inspector	Focus
Safety patrol	All the areas in the construction site	Every day	Work Supervisors	Filling out the safety check form
Weekly check	Work place hazards and construction equipment / machinery	Weekly	OHS Safety Manager	Hazards / defects in equipment. Valid certificate of operations if required.
Maintenance checks	Hazardous machines, facilities and tools	More than once in every quarter or as given in supplier's specifications	Specialist	Safety of machinery / tools
Noise levels	Where exposure to noise is likely to occur	Upon commencement then twice a year if there is not a problem or at a frequency as determined by the hazard assessment.	Specialist	Compliance with threshold values**
Electric and magnetic field monitoring	Where exposure to electric and magnetic fields is likely to occur	Upon commencement then twice a year if there is not a problem or at a frequency as determined by the hazard assessment	Specialist	Compliance with threshold values*
Occupational air quality monitoring	Where exposure to hazardous air emissions is likely to occur	Upon commencement then twice a year if there is not a problem or at a frequency as determined by the hazard assessment	Specialist	Compliance with threshold values**

*As given in the IFC's Environmental, Health, and Safety Guidelines: Thermal Power Plants

**As given in the IFC's General Environmental, Health, and Safety Guidelines: Occupational Health and Safety

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.

6.8 Security Procedures

A security procedure shall be included within the OHSMS. The document shall cover the following issues:

- areas of security control;
- working hours;

- prohibited articles / activities on the site;
- duties of security staff;
- behaviour requirements of security staff when interacting with locals;
- entry and exit from the site; and
- application, issue and display of security passes (including vehicle passes).

The security procedures will be communicated to all site personnel as part of their induction training. It will outline the duties, tasks and responsibilities of employees working on the Project. It will also provide actions in the event of an identified security breach.

6.9 Emergency Response Procedures

Emergency Response Procedures will form an integral part of the OHSMS. As part of these, an Emergency Response Plan shall be prepared to address emergencies of all scales, such as:

- small incidents such as minor spillages or individual incidents resulting in minor harm;
- large incidents major spillages or failure of control equipment that could result in offsite impacts or severe injuries or even fatalities;
- natural disasters such as tsunami or an earthquake;
- fires or explosions; or
- release of toxic gases or substances.

This plan will include responsible personnel in the event of an accident / incident or emergency, procedures to be followed, a site evacuation plan and contact details of emergency response facilities.

MRPR and the EPC Contractors shall also co-ordinate and provide training for a emergency response team.

The site shall at all times have adequate and functioning firefighting facilities. The Safety Manager shall conduct regular training for workers on how to use firefighting equipment safely.

Accident / incident and disaster reporting requirements will also be detailed in the Emergency Response Plan.

6.10 Accident / Incident Reporting and Investigation

All MRPR / EPC Contractor employees, Subcontractors and visitors will be required to report any incidents that occur, including fire, explosion, natural disaster, equipment failure, plant, vehicle or other accident, other incidents or near misses during the construction and operation of the power plant. Procedures will be developed by the EPC Contractor and the operator Contractor for the reporting, investigating of all accidents and incidents that as a minimum result in first aid treatment or are deemed to be a near miss which for other reason could have resulted in an accident that caused significant injury or even a fatality.

The procedures will cover:

- Responsibilities for employees, site supervisors, and managers for notifying the incident/accident, investigating and reporting on the incident/accident and for implementing any recommended corrective actions as a result of the incident/accident investigation.
- All incidents, including near misses to personnel, plant and equipment damage must be reported to the person's immediate supervisor or foreperson.

- How the incident (lost time accident (LTA), no lost time accident (NLTA) or near miss) is recorded in the site's Accident Register and who is required to complete the initial sections of the Incident Investigation Report Form.
- Who should undertake the incident investigation and the information that shall be recorded on the Incident Investigation Report Form including all recommendations including improvements, work practice changes, disciplinary actions, etc.
- Procedures for notifying incidents/accidents to government and provincial agencies, including the time period allowed for reporting such incidents
- How corrective actions as a result of the incident/accident investigation are implemented and the Hazards Register is amended.

7. Reporting, Reviews and Audits

7.1 Reporting to the Local Labour Authority

MRPR and the EPC Contractors shall establish contact with the local labour authority to determine the appropriate reporting channels. Once construction has commenced the following shall be communicated:

7.1.1 Bi-annual Reports

The output of the Health and Safely Management Committee's meeting will be a bi-annual report provided to the local labour authority. This will summarise the actions undertaken as the result of onsite meetings, any current health and safety issues and an evaluation of the current state of health and safety at the site.

7.1.2 Labour Disputes and Dismissals

If any issues are raised by either employers or employees relating to labour or working conditions, such as contravention of site rules or contractual disputes, these shall in the first instance be dealt with as outlined in the site Human Resource Policy. Where a disciplinary action result in a dismissal or contractual mediation is required this shall be reported immediately to the local labour authority.

7.1.3 Notification of Accidents / Incidents

All accidents and incidents which result in first aid treatment during the construction and operation of the power plant shall be reported via the appropriate channels to the Health and Safety Management Committee. Minor incidents along with the incident/accident investigation report shall be supplied to the local labour authority along with the monthly report. Serious accidents that result in serious harm or a fatality should be reported immediately to the local labour authority.

7.2 Management Review

This report outlines the requirement for a number of site documents and procedures, including a Human Resource Policy, OHS Policy Occupational Health and Safety Management System, Hazard Register and Emergency Action Plan. As discussed previously these should be all be 'living' documents and procedures in that they should be regularly reviewed and updated when required.

Together, they comprise the site labour, occupational safety and health system. This should be overhauled on at least an annual basis to ensure it is inclusive of new guidelines and legislation and that the existing systems are working as required. The Construction / Operation Site Manager shall be responsible for ensuring this is undertaken.

7.3 External Auditing of Health and Safety Systems

Independent audits of the Construction and Operation OHS Plans shall be undertaken by an appropriately qualified person to ensure compliance with Indonesian Labour and Health and Safety Legislation and World Bank EHS Guidelines. In addition, onsite audits shall be conducted on a timeframe specified within the plans to ensure the health and safety practices are compliant.

If unsafe practices are identified during the audits, immediate cessation of the work shall ensue until the situation has been remedied to an acceptable level. Corrective actions will be documented and provided to the Health and Safety Management Committee.

The accident and fatality rates of the Project shall be benchmarked against the performance of other facilities in this sector in developing countries through consultation with published sources.

8. Conclusions

The report demonstrates that the development will meet the requirements of the World Bank EHS General Guidelines related Occupational Health and Safety Guidelines and that the proposed occupational health and safety systems for each stage will meet good international industry practice. The EHS Guidelines contain the performance levels and measures that are generally considered to be achievable in new facilities by existing technology at reasonable costs.

Appendix A. Grievance Form

GRIEVANCE REGISTRATION		
Date:	Filled by:	
Plaintiff's name :	Plaintiff's gender: M / F	Plaintiff occupation:
Plaintiff's contact (address, tel. number):		
☐ The plaintiff is filling an individual complain		
☐ The plaintiff is representing an individual or group of workers - Name of the individual or group of worker: - Nature of the individual or group of workers: - Location/address:		
Description of the grievance:		
GRIEVANCE TREATMENT		
Date of the response:	Filled by:	
Proposed action(s) to remedy to the grievance: Plaintiff's acceptance of the proposed action:		
GRIEVANCE CLOSURE		
Date of grievance closure:	Filled by:	
Ending of the grievance treatment:		

Appendix B. Example LEC OHS Management System

Owner	PT. Medco Ratch Power Riau
Consultant	
Contractor	Riau IPP Joint Operation

Project

Indonesia Riau GFPP 275MW IPP Project

Revision Status:

Rev. No.	Date	Purpose	Prepared by	Checked by	Approved by

Title:

HEALTH SAFETY AND ENVIRONMENT (HSE) PLAN

Riau Document Number:

Contractor Document Number:	Rev. No.	Page
	0	001 of 027 (incl. cover)

TABLE OF CONTENTS

REVISION OF HISTORICAL SHEET

Rev.	Date	Purpose	Reason

1. INTRODUCTION

This HSE Plan is established to ensure that each work process from beginning to work completion is performed with fulfill the requirement of Health, Safety, and Environment standard and to ensure that expected HSE Performance is achieved during project execution period.

This Health Safety & Environmental (HSE) Plan is for covering the work of Indonesia Riau GFPP 275MW IPP Project (hereinafter the "Project") at Pekanbaru in Riau Province Sumatra the Republic of Indonesia which is to be carried out by Riau IPP Joint Operation.

Contractor, including SubContractor's employees and visitors who are in this project area should comply with following laws, regulations and procedures in the given order of priority.

- Indonesia Government Laws and Regulations.
- International Laws and Regulations.
- Owner's requirements.

2. PURPOSE

This HSE Plan is created to meet the commitment of contractor. Contractor's HSE policy is promoting high standards in health, safety, environment, and security performance through developing and maintaining an appropriate HSE plan and procedures covering such as assessments, education, motivation, participation, implementation and accountability to achieve "**No accident, No harm to people and No damage to the environment"** in this project.

3. SCOPE

This HSE Plan document defines Health, Safety, and Environment requirements which should be applied by Contractor during the work execution under Indonesia Riau GFPP 275MW IPP Project. It is applied to Contractor and SubContractor, including SubContractor who provides service to the Project.

4. DEFINITION

a. HSE : Health Safety and Environment

b. Owner : PT. Medco Ratch Power Riau

c. Contractor : Riau IPP Joint Operation

d. Sub-Contractor : Organization is selected and awarded by Contractor to perform a certain project activity or to supply materials, equipment or manpower.

e. Project Site : Pekanbaru area in Riau Province Sumatra

5. REFERENCE

The document that will be used in the development of HSE is the Indonesian laws, regulations and the other relevant standards. The codes, Standards and references are, including but not limited to the following:

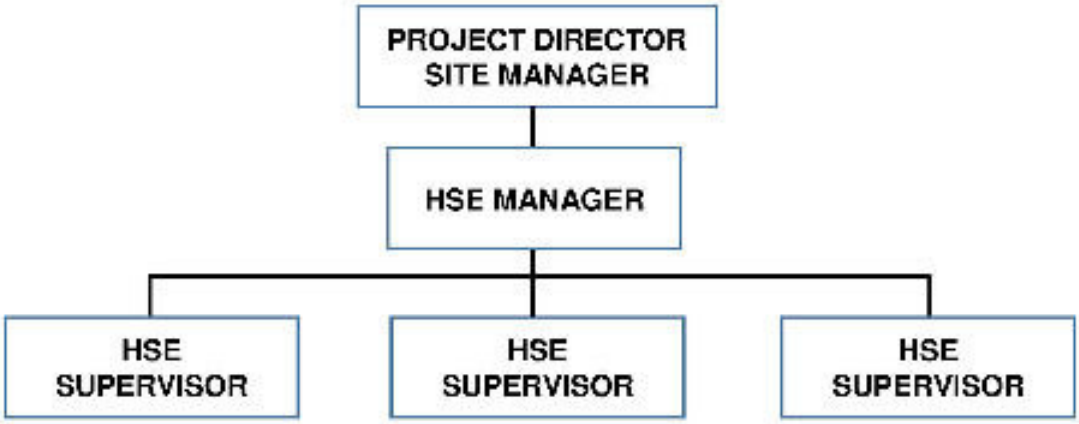
- Law No.1 of 1970 concerning Occupational Safety,
- Law No. 18 of 2008 regarding Waste Management,
- Government Regulation, No.101 of 2014, regarding Hazardous Waste Management,
- Government Regulation No. 50 year 2012 regarding Implementation of Occupational Health and Safety Management Systems,
- Act of Indonesia Manpower Minister No. Kep.51/MEN/1999 about Time Limit Value of Physical Factor in Work Place,
- Act of Indonesia Manpower Minister No. Kep.187/MEN/1999 about Control of Hazardous Chemical Material,

6. HSE ORGANIZATION AND RESPONSIBILITIES

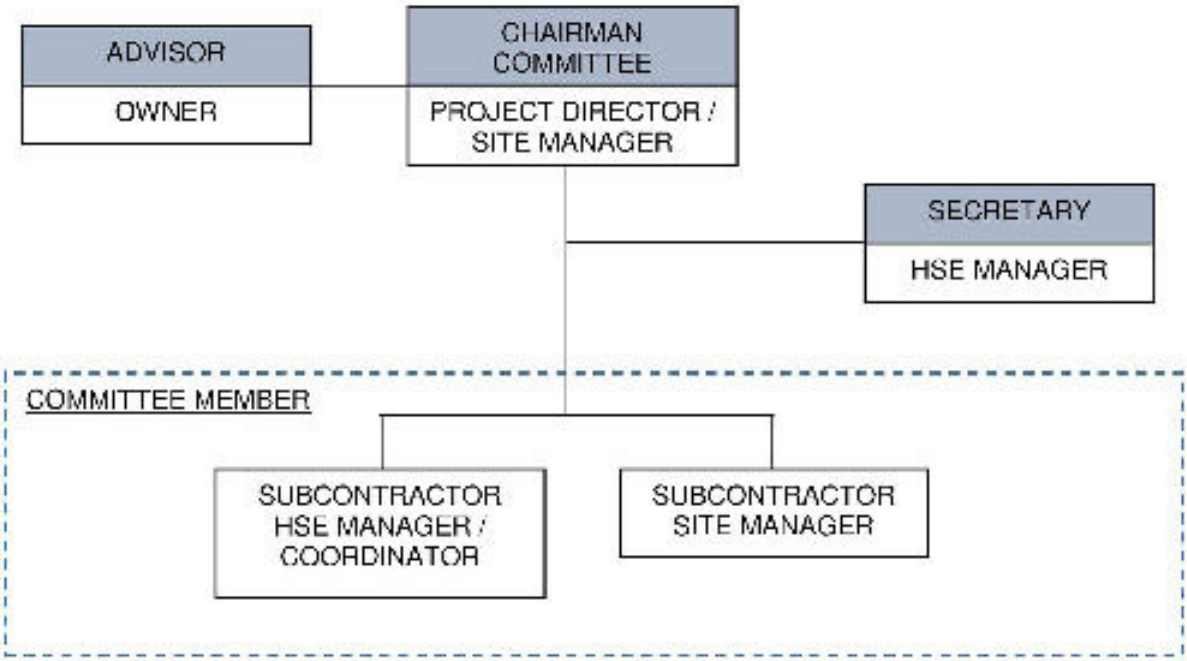
6.1. ORGANIZATION

This project will be applied HSE organization with ratio between safety personnel and employees at project site for Sub-Contractor minimum 1: 100. This project will be formed HSE Organization Chart for project and HSE Committee Organization as below:

HSE ORGANIZATION CHART



HSE COMMITTEE ORGANIZATION



6.2. RESPONSIBILITIES

Contractor will organize safety committee for this project that consists of Project Director / Site Manager, HSE Manager, HSE Supervisor, Site Manager and HSE Manager /

Coordinator of SubContractors. The responsibility of each position in the organization as below:

1) **Project Director**

   Project Director be a chairman of safety committee due to as top leadership in the safety committee.

2) **Site Manager**

   Site Manager has overall responsibility for implementation of HSE Plan. Site Manager leads all activities and responsible for implementing and ensuring Contractor's HSE policy and program at site.

   Site Manager delegates his authority concerning HSE control to his subordinate staff to introduce contractor's philosophy and execution manner into daily activities. The Site Manager should be ultimately responsible for implementation of HSE Plan and display positive leadership in safety and health control.

   a. Site Manager should :Be responsible for concerning safety to all personnel in the project work place.
   b. Give direction while occur emergency situation.
   c. Promote full support of HSE program by enthusiastically advocating the program.
   d. Establish strategy to achieve HSE objective and target.
   e. Establish and direct accident investigation team while occur the accident and report to owner.
   f. Establish or encourage implementing disciplinary action necessary to develop an efficient, functioning HSE program.

3) **HSE Manager**

   The HSE Manager is responsible for overall coordination of HSE program and supports implementation of HSE procedures. HSE Manager will assist Site Manager related with HSE matters and direct HSE Officer and all Supervisors to promote HSE programs and ensure HSE requirement fulfillment.

   The HSE Manager should :

   - Assist Project Management in providing risk assessment related with HSE aspects.
   - Report to the Site Manager directly.

- Assist Site Manager and Superintendent in the implementation of all HSE Programs.
- Set up or establish applicable HSE standards or procedures and HSE programs.
- Prepare safe working procedures and introduce them into site execution.
- Inspect the site and advise necessary corrective actions and mitigation plan. Prepare inspection reports for Site Manager and staff for their review and action.
- Conduct investigation of accidents, as necessary, and forward the reports to Site Manager.
- Coordinate with owner and SubContractors for HSE committee operation and support its meetings.
- Plan and lead activities/events in site HSE control.
- Prepare weekly report with stating all accident and incident that occur during that week.
- Prepare monthly report and accident status to Site Manager.

4) HSE Officer / Supervisor

HSE Officer / Supervisor assist HSE Manager to ensure that liaison and coordination are maintained between Owner, Contractor, and Sub-Contractors.

HSE Officer / Supervisor responsibilities are:

a. Assist and advise HSE Manager to develop HSE Management system, HSE Procedure and HSE programs.
b. Ensure that hazard identification is implemented by using JSA (Job Safety Analysis)
c. Inspect the construction area frequently to examine appropriate corrective actions and prepare reports to HSE Manager.
d. Direct Subcontractor's safetyman to ensure implementation of HSE requirement.
e. Participate in the accident investigation team and submit report to HSE Manager and completed with corrective action and mitigation plan to prevent reoccur similar accident or incident.
f. Establish related work procedure.
g. Update HSE statistic report data.
h. Assist HSE Manager establish training program.
i. Attend HSE Committee meeting.

5) Sub-Contractors/ Suppliers/ Vendors/ Visitors

a. Comply with related Working Procedures (WP)/ Work Instructions (WI) which, related to their activities.
b. Provide all necessary equipment, personal protective equipment (PPE) and proper attire to their workers.
c. Provide adequate HSE training required by Contractor to their workers.
d. Report all accidents/ incidents immediately direct to Contractor's HSE Department.
e. Participate to any accidents/ incidents investigation in their area.
f. Maintain good housekeeping and physical arrangements.
g. Ensure all tools, equipment uses are free from defects.
h. Attend all HSE training and meeting requested by Contractor.

7. ELEMENTS OF HSE MANAGEMENT SYSTEM

Contractor will establish HSE Policy as a part of HSE Management System which will be implemented in this project. HSE policy shows about commitment of Contractor related with HSE matter.

All of the people in this project have responsibility to implement HSE Policy in their each activity. Contractor is committed complying HSE requirement and all government regulation related with HSE in every activity.

The elements of HSE Management System of Contractor that will be implemented in this project are:

7.1. HSE Policy, Objective, and Commitment

Top Management of Contractor project team will establish HSE Policy to ensure commitment of all people who engage with this project about HSE matter and doing continual improvement.

Contractor's Management will establish HSE program to improve all people's HSE culture. This program will be adapted with current situation to ensure the effectiveness of this program.

7.1.1. HSE Policy

Contractor's policy consists of the following principles:

- Every employee has responsibility about HSE performance during the Project execution.
- Management has responsibility to develop all worker's competency about HSE through HSE training.
- Maintain industrial hygiene to ensure that every employee avoid from occupational disease.
- Management provide proper PPE according to the job risk that is executed by worker.
- Management has responsibility to communicate HSE to all workers for creating HSE culture during project execution.
- Keep environmental sustainability by minimalize waste which is produced from job activity.
- Obey all local and international regulation in every job acitivity.

This policy will provide assurance that the applicable legislation, approved codes of practice and owner's requirements will be complied.

7.1.2. Objectives

Health and safety objectives are all the participants of the Project should subscribe and strive to achieve Zero Accident, with:

- No Fatalities.
- Zero Lost Time Incidents (injuries and work-related illnesses).
- Minimum medical treatments and First Aids cases.
- Continuing reduction of incidents which could lead to any of the above.
- Minor spills or environmental releases / impacts under the Contractor's control.
- All wastes disposed with adequate compliance to the related laws of Indonesia.

7.1.3. Commitment

Contractor is all committed to:

- Pursue the goal of no harm to people;
- Protect the environment;
- Manage HSE matters as any other critical business activity;
- Promote a culture in which all employees of subcontractor share this commitment

7.2. Planning

The plan for HSE Policy will include as follow:

a. Hazard identification related with site condition, environment, tools and equipment, vehicle, etc.
b. Health condition of the worker
c. Compliance of HSE regulation and government regulation
d. Commitment from management

7.3. Implementation

To achieve the objective of HSE Policy in this project, this HSE Plan will include as follows:

a. Management should ensure that all people who are in the project area obedience to follow HSE regulation.
b. Ensure that all workers who will join with this project are competence with accordance to their job.
c. HSE management system and all hazards should be communicated to all workers related with this project, and keep the documentation.
d. Ensure that all of HSE activities are recorded and keep the documentation.
e. Organization should identify the activities that are associated with identified hazards wherein risk control is necessary.
f. Organization should prepare, implemented and maintain emergency response procedure to prevent or reduce consequences from the emergency situation.

7.4. Measurement and Evaluation

Program and procedure should be prepared, implemented, and maintained to monitor and measure HSE Performance periodically. Management should measure the effectiveness of program, mitigation plan to prevent accident, incident, illness, and environment pollution.

Evaluation purpose is to ensure that HSE Requirement is applied properly in each

activity. Contractor will conduct evaluation of HSE performance of SubContractor every once a year. This activity is to check compliance the implementation of HSE Procedure in each work execution.

Assessment of HSE performance for construction site is done once a year. The sites which have been recorded outstanding performance will receive recommendations from the top management of the HSE committee as a motivation towards better HSE performance.

7.5. Improvement

The organization will regularly review and improve continually this HSE Management system, to improve the HSE performance. This will include:

a. Review of HSE objectives, target,
b. Evaluation of the effectiveness of HSE Management system.

8. HSE AWARENESS

8.1. HSE Communication

Safety Committee goal is that Contractor start from top management up to bottom level implement HSE Management system include Sub-Contractors. The agenda of safety committee is to discuss health, safety and environmental issues, accidents, unsafe condition and unsafe act, personal protective equipment, the physical conditions of working area, and monitoring the implementation of HSE Management System of this Project.

In order to realize the safety targets, Project Director should establish HSE Committee comprising of contractor and subcontractors' site management. They should join for the site HSE control with a common understanding of contractor's HSE program.

Owner's participation in the committee at an advisory level is appreciated so their requirements are commonly understood. It will also enable all participants closely recognize their restrictions and site conditions. The committee is led by contractor's Project Director.

The members consist of:

Chairman : Contractor's Project Director
Advisor : Owner Representative
Secretary : Contractor's HSE Manager
Members : Subcontractor's Site Manager and Subcontractor's HSE Manager / Coordinator

8.2. HSE Meeting

a. Daily

1) Tool Box Meeting

Tool box meeting is conducted every day by Supervisors or Foreman with their members before start to work. Job sequences, accident prevention plan and safe work methods will be explained to all workers in this meeting.

b. Weekly

1) Weekly Coordination Meeting

Weekly coordination meeting is conducted by Contractor's HSE Manager with Subcontractor's HSE Manager or Coordinator. The agenda on the meeting will review of HSE program and its improvement, HSE finding follow up action, safe work practice. This meeting will be held once a week.

c. Monthly

1) Monthly Safety Talk

Monthly Safety Talk is conducted by Site Management to all employees includes Sub-Contractor and their employees and will be held once a month.

2) Safety Committee Meeting

Safety Committee Meeting is conducted by safety committee members and others who are in charge in the project. The agenda of this meeting is to discuss health, safety and environmental issues, accidents, unsafe condition and unsafe act, personal protective equipment, the physical conditions of worksite area, and monitoring the implementation of HSE Management System of this Project.

d. Conditional

1) Pre-Job Safety Meeting

   Pre-job safety meeting is a special meeting for high risk construction activities such as: heavy lifting, high elevation work, confined space work, etc. This meeting will be conducted by Contractor representative to discuss safety aspects of the high risk construction activities if necessary.

8.3. HSE Induction

Safety Induction is conducted to all new employees or visitors who join to the project site at the first time and the attendance shall fill up the statement letter form after safety induction. The statement letter is a commitment for following the HSE rules and procedure during execution of work in this project.

Induction program will include, but not limited to Personnel Identification, Basic HSE Rules, and PPE (hard hat, protective footwear, etc), fire prevention / protection, emergency preparedness & response, traffic safety rule, first aid / medical service.

8.4. Alcohol and Drugs

The consumption of narcotic and alcohol during working hours or within such time previous that a person would still be considered intoxicates is prohibited.

Any such substance such as alcoholic beverages, illegal drugs, inhalants and prescription drugs are not to be consumed during working hours or within such time as the person would still be mentally or physically impaired.

Any person found to be intoxicated will be immediately refused to access to the site or removed from its normal duties. Persons not admitting the offense of the substance abuse but later found not telling the truth by test results will be terminated from the employment immediately.

8.5. SubContractor Safety Management System

Sub-contractors should have commitment about HSE that will be shown during working execution this project. During work to this project, SubContractor should follow Contractor's HSE Plan & Procedure.

8.6. Signage and Barricade

In this site there are possibilities to executed work simultaneous. To keep all area in safe condition need to protect and communicate the available hazards to other worker. Therefore, need to install signages and barricades in each work location.

Site management and supervision will ensure that appropriate and adequate quantities of signs and barricades are available and are used, erected and maintained as required to keep the safety and health of all personnel.

8.7. HSE Inspection

HSE Inspection is a way for monitoring HSE performance. It can be used to identify hazard and analysis risks which available in site to prevent illness and accident / incident occurrence.

Typical activities are:

- Decide the patrol/inspection schedule and items to be monitored.
- Conduct the patrol, inspect site condition and activities.
- Summarize the results of patrol and discuss necessary measures for improvement.

HSE Manager will prepare inspection program to evaluate HSE performance. The following are type of HSE Inspection:

a. Management Joint Inspection

   Inspection by Management to ensure that HSE requirements implemented by project team, this program will be conducted every one (1) months:

   - Execution/ working Procedure,
   - Management system,
   - Obidience of Policy,
   - Unsafe action and unsafe condition

b. Daily HSE Inspection

   Daily Inspection to ensure all work comply with HSE standard/ regulation.

   Type of inspection are, but not limited to:

   - Heavy Equipment operation inspection
   - Portable electric hand tool inspection
   - Gas Cutting equipment
   - Excavation inspection

- Scaffolding inspection
- Confined Space inspection
- etc

c. Weekly HSE Inspection

The inspection team is HSE Manager among Contractor and Sub-Contractor to ensure compliance of HSE requirement of each activity in site.

This inspection purpose is to follow up HSE finding items from Management inspection.

d. Equipment Inspection

- All Contractor's and Subcontractor's heavy equipment is periodically inspected by monthly basis.
- Complete records of all inspections will be maintained by Contractor upon request.
- Heavy equipment and electrical power tool will be inspected visually by each operator or worker who will operate it by daily basis before start to be used. No written record are required for these daily inspection.

e. Color Code Inspection:

- Lifting equipment (Crane, Chain block, etc).
- Lifting Gear (sling, shackle, etc).

f. Pre-mobilization Inspection

Contractor will ensure that, in the early stage of construction work planning, subcontractors survey the necessary for construction equipment and vehicles. They should provide a list of equipment need to safely perform the work. Need for cranes, hoists, slings, etc., are analyzed considering the load limits as per manufacturer's recommendations.

All cranes and lifting equipment should be thoroughly examined by an approved qualified person. A report on the result of examination (inspection checklist form) should be submitted by Subcontractor to the Contractor before equipment is brought into site. All heavy equipment should be completed with valid government certificate.

Operator for cranes and heavy equipment should have / completed with valid license from government to operate that equipment.

Each SubContractor must submit inspection result (recorded by inspection checklist form), valid government certificate of equipment, valid government certificate of operator before the equipment is brought to the project.

8.8. Safety Reward and Punishment Program

8.8.1. Reward

- Reward to the worker who fulfill the criteria at "National Safety Day".
- Give Reward to worker, Supervisor (Contractor and Subcontractor), who reported unsafe action & unsafe condition, show and act in good use of PPE and follow HSE regulation or show in good HSE Performance.

8.8.2. Violation

- Indonesia Riau GFPP 275MW IPP Project HSE Department has authority to stop the work if there are any non-conformance and unsafe act and condition finding, until the corrective action taken by Contractor / Sub-Contractor.
- Employee who brings cigarette, weapon, drug and alcohol into project site will be terminated directly.
- Smoking in all of the Project area will be terminated directly.
- Violator will be identified and depending on the seriousness and frequency of offences, one of the following action will be taken:
  - 1st warning and fill up statement letter
  - 2nd warning and fill up statement letter and re-training
  - 3rd warning and worker will be terminated from this project.
- Employee who gets 3 (three) warning of their violation, will be terminated from project site.

9. HSE TRAINING

As a minimum, project personnel will be trained and qualified in accordance with the requirements. Special skills required for a specific job, the workers will be trained about

that training material related with their job before worker start to work in site.

Training Plan:

- Conducted for all employees HSE Matrix Training in the project, safe working procedure and practices and any other specific safety topic.

10. FIRST AID FACILITY

All of the project personnel should keep HSE regulation to prevent accident. However, there is possibility in occuring unpredictable event. Therefore, Contractor will provide first aid kit which is located in the strategic place in working area, office and also will be under supervision from first aid officer.

11. ENVIRONMENTAL MANAGEMENT

Project team will have an environmental monitoring program. The purpose of this program controls environmental pollution and manages all waste from the construction activities such as: register, identification, handling organic waste, non-organic waste,etc. This program will be discussed with the client and be in line with the client's environmental management program.

12. PROCEDURE

12.1. Job Safety Analysis (JSA)

Job Safety Analysis (JSA) will be done for all activities (identify hazards and manage risks, critical jobs, routine and non-routine) to provide safe work and environment at project site.

Job Safety Analysis will be provided before start the activity to identify hazards and risk assessment. This JSA will become attachment of each permit to work and will be socialized to all workers at Toolbox Meeting time before start to work. Supervisor shall ensure that all workers who involve in that job activity understand about job steps and mitigation plan of each available hazard to prevent any accident happen.

Method to control the hazards is using hazard hierarchy control as follows:

1. Elimination
2. Substitution

3. Engineering
4. Administration
5. PPE (Personal Protective Equipment)

12.2. Permit to Work

Permit to work must be prepared before starting the work and must be available at site during the work execution. All of the safety instructions that are mentioned on JSA as permit to work attachment must be obeyed by all persons in charge before starting the work. Permit to work should be ensured that it still valid. If permit to work validity date have expired, the activity should be stopped for a while and the work can be continued after permit to work is extended.

12.3. Housekeeping

Contractor management and supervision will ensure that sites and work are maintained to a high standard of housekeeping at all times, including:

- Securing of clear access
- Elimination of potential fire causes
- Maintaining a safe work environment
- Maintaining a healthy work environment
- Keep the working location clean from the garbage or waste
- Eliminate potential hazard to prevent accident by keep the work location neat from working tools and materials and keep it in the proper storage and material
- Continually conduct housekeeping in the working area

12.4. Lock Out and Tag Out (LOTO)

Detailed as part of the Permit to Work system, isolations are intended to prevent accidental contact with power equipment, opening valves, released stored energy, or energizing of electrical equipment.

Isolation is required to keep the equipment and worker in safe condition. The isolation tag is to inform that the equipment has been isolated and locked off from hazardous sources. Lock or tag will be applied at all point of isolation to indicate the

purpose, date and responsible person for the isolation. LOTO only can be taken off by authorized person.

12.5. Personal Protective Equipment (PPE)

Personal protective equipment that follows international standard for all kind activities will be provided by each company and distributed to its employees sufficiently and properly. Personal Protective Equipment (PPE) that is required to be worn while working in site (except in the office area), but are not limited to:

a. Safety helmet based on ANSI Z89.1-1986 / SNI / AS NZS or equivalent.
b. Safety shoes based on ANSI Z41 - 1991 or equivalent

12.6. Electrical Safety

- All Portable tools, hand tools and other portable electrical equipment, must meet standard or safety requirement. For example: They must follow current regulation, and their plugs and sockets should comply with the standard industry regulations.
- Temporary electrical wiring regulation should include temporary grounding.
- Power source will be equipped with ELCB
- All of the electrical tools and equipment should be inspected before use it for working in the first time. After pass the inspection, that equipment can be used for work. The electrical equipment should be inspected periodically by the supervisor / operator before it is used.

12.7. Traffic Management Procedure

Contractor site management and supervision will ensure that all drivers are competent and hold a valid license for the class and type of vehicle or equipment driven or operated.

Each driver or operator must have completed the Safety Induction training before driving or operating vehicles and equipment on site.

Contractor site management and supervision will monitor and strictly enforce the following traffic safety rules as follows:

- Drivers and operators will fully comply with all traffic safety regulations, traffic controls and signs.
- The maximum speed limit on the construction site is 10 km/h.

- Drivers or operators who violate the site traffic safety regulations will be given disciplinary action.
- Personnel must not be transported while standing on the back of trucks or trailers.
- Only the person who have driving license from Indonesia police according to the type of vehicle *(SIM A / B / B1 / B2)* can be driving to inside of project area.
- Except the authorized operator is prohibited ride on the operating or moving heavy equipment.

Each vehicle must be equipped with the required safety equipment in good working order, such as sign lamp, good condition of brake, etc.

Contractor site management and supervision should ensure that the subcontractors and their employees will comply with the following requirements:

- All people are prohibited take a rest or sleep inside of vehicle or equipment while that vehicle or equipment is not used / parking.
- Preventive maintenance will be performed on all of heavy equipments on a monthly schedule. All safety features will be checked and repaired as necessary to ensure proper operation.
- Operator will perform a pre-use inspection of their assigned heavy equipment at the start of each working day.
- Record of the monthly inspection of heavy equipment should be kept.
- Flagman should available to direct and clear the area for moving heavy equipment and vehicle (trailer, truck,etc).

12.8. Fire Prevention and Protection

Contractor and SubContractors will plan the prevention and measures for the worst possible conditions during construction stage. These plans will include an emergency response plan.

Contractor and SubContractors will implement fire prevention by housekeeping, training, safety patrol, site inspection by Supervisor, daily work instructions, etc.

Construction site management will also ensure that subcontractors provide an adequate quantity of well-maintained extinguisher for their activity (especially in the hot work activity location should be provided fire extinguisher), office, equipment and

vehicles.

Contractor site management will ensure that workers are trained for using fire extinguishers, and the basic skills of safe firefighting.

12.9. Working at Height

Contractor should provide fall protection when execute working at height. Working at height is activity at height more than 1.8 meter. Proper access and permanent or temporary work platform should be installed fall protection such as handrail and lifeline to prevent falling hazard. Worker who are working at height should wear full body harness. JSA should be prepared and communicated to the related worker before start that activity.

12.10. Scaffolding

Scaffolding should be erected by personnel who have experience and competency as a scaffolder and under supervision by supervisor who have experience and competency as scaffolding supervisor.

All of the scaffolding must be inspected and tagged. There are three (3) colors of scaffolding tag, as follows:

- Green : Scaffolding has been completed and passed the inspection, so that scaffolding can be used for working
- Red : Scaffolding still incomplete or in progress and only scaffolder and scaffolding supervisor (authorized person to build that scaffolding) who can use it or that scaffolding still does not passed the inspection. Therefore that scaffolding is prohibited to be used.

12.11. Confined Space

Confined space is a place which having limit space for entry and exit, mean limited ventilation and that is not designed for continual work. Inside of the confined space can contains or has potential to contain a hazardous atmosphere such as flammable vapors or gases, toxic contaminants or and oxygen deficient atmosphere can accumulate.

Examples of confined spaces includes, but are not limited to: underground vaults, tanks, storage bins, pit and diked areas, vessels, silos and other similar areas. The followings are guidance to work inside of confined space are:

a) Permit to work should be prepared
b) Check gas contains inside of confined space before entering / start to work inside of confined space
c) Check gas contains inside of confined space periodically and record it in gas test sheet which is attached in outside of confined space entrance
d) Install artificial ventilation by blower
e) Install enough lighting system inside of confined space
f) Working alone in confined space is prohibited
g) Should standby at least one person in the outside of confined space work location as watchman and become first aider if occur unpredictable event with the worker inside
h) Name of the worker who work in confined space should be record in the sheet of confined space entry and out, also put that sheet in outside of confined space entrance
i) The worker inside should be completed with communication equipment to communicate with hole watcher periodically
j) Work in confined space should be executed under qualified person supervision
k) All of the worker who will work at confined space must be trained about confined space
l) Authorized worker who work in confined space location must wear full body harness to make easier evacuation process if occur emergency situation
m) If work in confined space finish, should be ensured that all of the worker inside have been out
n) Confined space hole or entrance should be closed when finish the confined space activity.

12.12. Hazardous Materials

Hazardous chemicals and materials which are brought into the site should be controlled in compliance with MSDS (Material Safety Data Sheet) and the quantity always will be recorded on an inventory sheet. Handling procedures will be issued to employees who may be exposed during construction work.

MSDS shall be installed in the area where hazardous material is available. Contents of the MSDS shall be inform to the person who will handling that material.

12.13. Emergency Response

Project team will be preparing site emergency response procedure with the following

breakdown items:

a. Organization of emergency response.

b. Emergency response plan.

c. Procedure for communication and coordination in the emergency condition.

d. Evacuation procedure (process and system).

e. Decided temporary or permanent of muster point.

f. Coordination with the client/ owner on the emergency response program is required.

12.14. Accident / Incident Investigation and Reporting

All incidents and accidents must be investigated and reported. Accident / incident report contain of corrective action and mitigation plan to prevent reoccur similar accident or incident refer to the investigation result.

There are some requirements when occur accident and incident as below:

- When accident or incident occurs, worker should inform to their Supervisor and HSE team verbally.
- Incident / accident report should be reported to Contractor within one (1) hours by Subcontractor.
- Contractor will conduct incident / accident investigation.
- Contractor will submit incident / accident report to owner including with corrective action, and mitigation plan.

13. DOCUMENTATION

Contractor will establish and maintain all information related with HSE Management System in paper or electronic form. In order to describe the core elements of the HSE Management System and their interaction and also to provide information related to those documents. All HSE issues will be documented and the records maintained at the job site.

1) Documentation

Documents that will be reported are:

No	Document Name	Person In Charge	Schedule	Report To

1	HSE Weekly Report	HSE Manager/ Chief HSE	Weekly	Client and HSE Department
2	HSE Monthly Report	HSE Manager/ Chief HSE	Monthly	Client and HSE Department
3	Accident / Incident Report	Site Manager and HSE Manager/ Chief HSE	1 x 24 Hours	Client, HSE

HSE Activities that should be documented and recorded:

No	Document Name	Record Time
1	HSE Weekly Report	Until Project Finish
2	HSE Monthly Report	Until Project Finish
3	HSE Induction or Orientation	Until Project Finish
4	Tool Box Meeting	Until Project Finish
5	Safety Committee Meeting	Until Project Finish
6	Equipment Inspection Result	Until Project Finish
7	Management Inspection / Joint Safety Patrol	Until Project Finish
8	Job Safety Analysis	Until Project Finish
9	Work Permit	Until Project Finish
10	Evaluation Report	Until Project Finish
11	Material Safety Data Sheet	Until Project Finish
12	Emergency Response Drill Report	Until Project Finish
13	Incident / Accident Report	Until Project Finish
14	Environmental Monitoring Report	Until Project Finish

2) Health, Safety and Environmental Performance

Health, Safety and Environment Performance or HSE statistics will be recorded and update periodically, the management will know HSE Performance of Contractor by this statistic. The information that apply in HSE statistic board:

a. Total Safe Man-Hours.
b. Total Fatality.
c. Total Lost Time Injury.
d. Total Medical Treatment.

e. Total Man-Power.

f. Number of Environmental Case.

g. LTIFR.

h. TRIR.

The following formula is to be used to calculate the Lost Time Injury Frequency Rate (LTIFR) and Total Recordable Injury Rate (TRIR):

Formulation to measure frequents of accident every 200.000 man working hour.

$$\textbf{Formulation LTIFR} = \frac{\textbf{No. of LTI Case X 200.000}}{\Sigma\ \textbf{Total working hours}}$$

$$\textbf{Formulation TRIR} = \frac{\textbf{Total Recordable Case X 200.000}}{\Sigma\ \textbf{Total working hours}}$$

Recordable Case = Restricted Work Day Case + Medical Treatment + Lost Time Injury.

Lost Time Injury = Fatality + Lost Work Day Case

HSE Manager will maintain statistical data in the statistic board HSE summary. A copy of this statistical data will be submitted to Owner by monthly basis.

3) Unsafe Act and Unsafe Condition Report

To achieve zero accident and no damage to property and environment, all employees of contractor and subcontractor in project site should report any unsafe act and unsafe condition that available in site to minimize exposure of hazards.

KEBIJAKAN K3LL

Manajemen Konsorsium berkomitmen untuk menerapkan standar yang tinggi pada kinerja K3LL dan keamanan melalui pengembangan rencana K3LL dan prosedur yang mencakup penilaian, pendidikan, motivasi, partisipasi, implementasi dan tanggungjawab pada **Proyek Grati CCPP (Peaker) Extension Project 450 MW** untuk mencapai target **"Zero Accident"** termasuk nihil kecelakaan, tidak ada penyakit akibat kerja, dan tidak ada pencemaran lingkungan.

Untuk mewujudkan target tersebut maka Manajemen Konsorsium akan menjalankan prinsip - prinsip sebagai berikut:

1. Setiap personil memiliki tanggung jawab terhadap kinerja K3LL selama pelaksanaan proyek Grati CCPP (Peaker) Extension Project 450 MW.
2. Manajemen memiliki tanggung jawab untuk meningkatkan kompetensi seluruh pekerja mengenai faktor K3LL melalui pelatihan K3LL.
3. Menjaga hygiene lingkungan kerja untuk menjamin setiap pekerja terhindar dari Penyakit Akibat Kerja.
4. Manajemen menyediakan Alat Pelindung Diri yang sesuai dengan resiko pekerjaan yang dilakukan oleh pekerja.
5. Manajemen bertanggungjawab untuk mengkomunikasikan K3LL kepada seluruh pekerja untuk menciptakan budaya K3LL selama pelaksaan proyek.
6. Menjaga kelestarian lingkungan dengan meminimalisir limbah yang dihasilkan dari aktivitas pekerjaan.
7. Mematuhi seluruh peraturan baik lokal maupun internasional pada setiap pelaksanaan aktivitas pekerjaan.

Untuk mencapai target tersebut di atas, maka Manajemen Konsorsium dan semua orang yang terlibat dalam eksekusi proyek Grati CCPP (Peaker) Extension Project 450 MW harus melaksanakan semua pernyataan yang tertuang di dalam kebijakan ini pada setiap aktivitas. Kebijakan ini akan di review kembali apabila telah tidak relevan dengan kondisi yang ada.

Pasuruan, Juni 2016

Project Director
Grati CCPP (Peaker) Extension
Project 450 MW Consortium

HSE POLICY

Consortium Management is committed to implement high standard in HSE performance and security through develop HSE plan and procedure that covering assessment, education, motivation, participation, implementation and accountability in **Grati CCPP (Peaker) Extension Project 450 MW** to achieve target **"Zero Accident"** including no accident, no illness, and no environment pollution.

To achieve target, Consortium Management will implement the following principles:

1. Every employee has responsibility about HSE performance during Grati CCPP (Peaker) Extension Project 450 MW execution.
2. Management has responsibility to develop all worker's competency about HSE through HSE training.
3. Maintain industrial hygiene to ensure that every employee avoid from occupational disease.
4. Management provide proper PPE according to the job risk that is executed by worker.
5. Management has responsibility to communicate HSE to all workers for creating HSE culture during project execution.
6. Keep environmental sustainability by minimalize waste which is produced from job activity.
7. Obey all local and international regulation in every job acitivity.

To achieve the above target, Consortium Management and all people who involve in this Grati CCPP (Peaker) Extension Project 450 MW execution shall implement all of the statement that is mentioned on this policy in every activity. This Policy will be reviewed if does not relevant with the current condition.

Pasuruan, June 2016

Project Director
Grati CCPP (Peaker) Extension
Project 450 MW Consortium

REFERENCE ONLY

Appendix 2 – JOB SAFETY ANALYSIS FORM

PT. PLN (Persero) Consortium GRATI CCPP (Peaker) Extension Project 450MW	JSA (JOB SAFETY ANALYSIS)	
	Permit Number :	JSA Number :

Company	:	Subcontractor	Main Contractor		Owner
Name of Person In Charge / Nama PIC	:	Prepared by,	Checked by,		Approved by,
Position / Posisi	:	(Sign)	Construction Dept	HSE Department	(Sign)
Date / Tanggal	:		(Sign)	(Sign)	
Job / Pekerjaan	:				
PPE / APD	:	(Name)	(Name)	(Name)	(Name)
Equipment & Tools / Alat	:	(Position)	(Position)	(Position)	(Position)

No.	Langkah Kerja / Job Step	Bahaya / Hazard	Konsekuensi / Consequence	Risk assessment /Penilaian Resiko			Risk Control / Recommendation	Remarks
				P	C	R		

Note :
- Original file for Field Supervisor and put in site
- Copy 2 (one copy for Consultant and one copy for Owner)

REFERENCE ONLY

No	Consequence	Probability				
		Rare (1)	Unlikely (2)	Occasional (3)	Probable (4)	Frequence (5)
1	Negligible	1	2	3	4	5
2	Minor	2	4	6	8	10
3	Moderate	3	6	9	12	15
4	Major	4	8	12	16	20
5	Catastrophic	5	10	15	20	25

Risk Rate :

1 - 5 : Low (rendah)
6 - 12 : Medium (sedang)
13 - 25 : High (tinggi)

Probability	Definition
Rare	probable occur 0 time in 1 year
Unlikely	probable occur 1 time in 1 year
Occasional	probable occur 1 time in 6 months
Probable	probable occur 2 time in 1 month
Frequence	probable occur 1 time in 1 week

Severity	
Negligible	No injury, no spill/ environment pollution, financial loss < $ 1000
Minor	Injury need first aid, there is spill or environment pollution with small or low level, financial loss $1001 - $ 10000
Moderate	Injury with medical treatment (MTI), kerugian financial $ 10001 - $ 100k, there is spill or environment pollution in medium level
Major	There is serous injury cause Lost Time Injury (LTI) or permanent disability, there is spill or environmental pollution in high level, financial loss $ 101k - $ 1000k
Catastrophic	Causes fatality, financial loss > $ 1001k, there is toxic spill or toxic environmental pollution

Appendix 3 – KEY PERFORMANCE INDICATOR

REFERENCE ONLY

TARGET OF HSE PERFORMANCE (KPI)
GRATI CCPP (PEAKER) EXTENTION PROJECT 450 MW

No.	Item	Annual	Monthly	Percentage	Indicator	Remark
1.	Target Safe Man hour				Safe working hour record without lost time injury	
	LAGGING INDICATOR					
1.	Fatality	0	0		Case Data Record	Number of Fatality
2.	TRIR	0.25	0.02		Case Data Record	
3.	LTI	1	0		Case Data Record	Number of LTI
4.	MTC	24	2		Case Data Record	Number of MTC
5.	FAI	48	4		Case Data Record	Number of FAI
6.	Property Damage	24	2		Case Data Record	Number of Property Damage
7.	Environment Case	24	2		Case Data Record	Number of Environment Case
	LEADING INDICATOR					
1.	HSE Reporting	95%	95%		Report that is submitted	
2.	HSE Meeting	36	3		Meeting that is attended by HSE	
3.	HSE Evaluation	1	0		Evaluation for HSE Performance in site	
4.	HSE Training	95%	95%		Documented training	
5.	Closure Action	90%	90%		Follow up of daily finding	
6.	Fit to work	95%	95%		Medical Record	Comparison between worker who work and do not work that is caused by sick

Appendix C. CPM OHS Management System

MEDCOENERGI Power	**EPC GAS PIPELINE** **FOR RIAU** **250 MW GFPP IPP PROJECT**	CPM

DOCUMENT NO.
CPM – HSE – HSP - 001

HSE PLAN

Rev	Issue Date	Reason for Issue	Prepared By	Approved By
0	11/01/2017	Issued For Information	PT. CITRA PANJI MANUNGGAL	PT. MEDCO POWER INDONESIA
Signed By,				

Table of Content – HSE Plan

1 INTRODUCTION

1.1 Project Overview

PT. MEDCO POWER INDONESIA has planned project to build the onshore gas pipeline development from Perawang to Pekanbaru.

The onshore gas pipeline project development consists of:

1. Connecting to future existing at TGI - SV1401 KP 457
2. Pipeline installation from Perawang to Pekanbaru include Pig Launcher, Pig Receiver and 4 Sectional valve.

1.2 Scope

The procedure is designed to provide a sound basis for communication, execution and participation of all personnel on the implementation of the Health and Safety of personnel, Environmental protection and prevention on COMPANY and CONTRACTOR's asset loss by planning, implementing, checking and acting on all activities in accordance with HSE standards applicable to all phases of the PROJECT.

1.3 Definition

Throughout this document all HSE related documents, the following terms and definitions shall applied:

COMPANY	:	MEDCO ENERGY POWER
PROJECT	:	EPC for Pipeline Riau GFPP IPP 250 MW Project
CONTRACTOR	:	PT. CITRA PANJI MANUNGGAL (CPM)
SUB-CONTRACTOR	:	The party(s) that carry(s) out all or part Equipments, technical documents/drawings and services to perform the duties specified by the Project.
SHALL	:	Indicates a mandatory requirement
SHOULD	:	Indicates a strong recommendation to comply with the requirements of this document.
VENDOR	:	The party(s) providing specific materials or services required for the construction of the facility

1.4 Code, Standard and Reference

Occupational Safety, Health and Environmental Codes, Standards and Reference:

- Law / UU No. 1. 1970 regarding the safety

- Regulation of Minister of Mines and Energy Number 06.P/0746/M.PE/1991 regarding safety inspection on installation, equipment and technique utilized in oil and gas mining and geothermal resources exploitation
- Goverment Regulation of Republic of Indonesia No. 50 Year 2012 regarding health and safety management system
- Decree of Minister of Mines and Energy Number 300K/38/MPE/1997 Dated 28 April 1997 regarding work safety for oil and gas pipeline
- Decree of State Minister of Environment No 21, Year 2008 regarding Standard Quality of Non-moving Emission (As guidelines for standard quality of emission)
- Decree of State Minister of Environmental Number No. 48 Year 1995, Emission Standards of Noise Level
- Act of The Republic of Indonesia No. 23/1997 concerning the Management of the Living Environmental.
- Government Regulation of Republic of Indonesia Number 18 of 1999 regarding management of toxic and hazardous waste.
- Government Regulation of Republic of Indonesia Number 4 of 2001 regarding damaging control and/or Environmental pollution fire forest and/or land.
- Government Regulation of Republic of Indonesia Number 74 of 2001 regarding hazardous material management.
- Regulation of Minister of Mines and Energy Number 103.K/088/M.PE/1994 regarding supervision of implementation of Environmental Management Plan & Environmental Monitoring Plan (RKL-RPL).
- Decree of Minister of Agriculture Number 421/Kpta/UMB/1970 regarding protection of wild life animal
- Decree of Minister of Agriculture Number 54/Kpta/UM2/1972 regarding protection of wild trees in conservation area
- Decree of State Minister of Environmental Number 35/MENLH/10/1993 regarding the standard of gas emision of vehicle exhaust
- Decree of State Minister of Environmental Number 13/MENLH/3/1995 regarding the standard of gas emision for fixed sources
- Decree of State Minister of Environmental Number KEP-42/MENLH/10/1996 regarding determining of water quality status guidline
- Government regulation No. 27/1999 regarding Environmental Impact Assesment / EIA/ AMDAL
- Government Regulation No. 41, year 1999 regarding Control of Air Pollution (As guidelines in controlling air pollution)
- Decree of State Minister of Environment No. 51, Year 1995 regarding Standard Quality of Waste Water (As guidelines for standard quality of waste water)
- PLN Standards (SPLN 46-1 and SPLN 46-2)
- Local Regulation of Riau Province No. 7, year 2000 regarding Retribution License of Liquid Waste Management
- Local Regulation of Riau Province No. 8,year 2014 regarding Environmental Protection and Law Enforcement in Riau Province

- Local Regulation of Riau Province No. 6, year 2006 regarding Ground and Surface Water Management
- Local Regulation of Riau Province no. 6, year 2012 regarding Company Social Responsibility in Riau Province
- U.S Department of Labor, Occupational Safety and Health Administration (OHSA)
- ANSI SI-13 Methods for the Measurement of Sound Pressure Levels and appropriate standards approved by the COMPANY.
- ILO-OSH 2001: guidelines on occupational safety and health management system
- ISO 9001 Series – Quality Management System
- OSHAS 18001: 2007 Occupational Health and Safety Management System (OHSMS)
- ISO 14001 : Environmental Mangement System (EMS).
- National Fire Protection Association (NFPA) codes
- IEEE 80 Code – Safety in AC Substation Grounding
- ISA S71.04 Code – Environmental Conditions
- NFPA 17 Code – Dry Chemical Extinguishing System
- NFPA 30 Code – Flammable and Combustible Liquid Code
- NFPA 72 Code – National Fire Alarm and Signaling Code
- Other updated relevant codes, standards, and references on occupational safety and health of Law and regulation of Health, Safety and Environmental of Indonesian Republic

2 HEALTH, SAFETY, AND ENVIRONMENTAL MANAGEMENT SYSTEM

2.1 Top Management Commitment

Project Manager and his line manager (PMT) will have a direct involvement in the implementation of the HSE policy and shall be required to demonstrate their commitment of this plan to all workforces as a function of their daily responsibilities.

The Project Management Team shall:

- Provide adequate resources for HSE;
- Participate in the safety audit program and hazard identification, assessment and controlling systems;
- Visit all work areas and be fully committed with this plan;
- Deal appropriately and immediately with any non-compliance with this plan
- Participate in accident investigation and review of accident reports and determination and implementation of remedial action;
- Ensure all sub contractor and suppliers are aware of and comply with this HSE Plan and its objectives; and
- Encouraging all workforces to participate into all HSE Programs.
- Monitor the HSE performance of all section of their area of control.

2.2 Policy

2.2.1 HSE Policy

CONTRACTOR 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 evaluate 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 disclipinary measures for violation of HSE regulations.

2.2.2 Drug and Alcohol Policy

CONTRACTOR 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, employees 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.

2.2.3 3R Policy

CONTRACTOR is committing to the following:

1. Reduce
   Reducing the amount of waste by increasing the efficiency of resource use and extending the useful life of produce
2. Re-use
   Using the “Recycable Resources” from used items again, as products or parts, after giving them proper treatment.
   “Recycable Resources” are the useful parts of components of waste, used products and by products.
3. Recycle
   Using the Recycable Resources” as the raw materials to make new products.

2.3 HSE Objective

HSE Objective for this PROJECT:

- No recordable accident
- No work related illness
- No environment damage caused by the project activities

Line management team shall support and encourage of HSE performance, all staff levels, workforce, vendor and subcontractor shall participate in achievement of this HSE goal.

2.4 HSE Planning/Program

Program in this HSE Plan are Implemented as follow: (see attachment 1)

1) Top management establish POLICIES and committed to socialized it to all workforce, sub contractor and supplier/vendor. They shall know and understood it.
2) Line Management and workforce are responsible for implementation of Health, Safety and Environmental work practices, they shall understand and applied to their daily activities.
3) Carry hazard identification and risk assessment and determining control prior to work.
4) Conduct induction to all workforce and visitor to inform about hazard and risk in this PROJECT.
5) Inspection and audit to check that the HSE are performed in according to this HSE Plan.
6) Appropriate and effective training to workforce who their knowledge are assessed did not meet with the requirement/standard.
7) Communication through all levels of the organization.
8) Involving workforce to participate in HSE Observation and Intervention program.
9) Promote Policy “Reduce, Re-use, Recycle”.
10) Promote “Environment Protection”
11) Evaluation of sub-contractor who work for the project to comply with this HSE Plan
12) Establishment of Project Safety Committee, Emergency Response Plan and Emergency Response Team on every activities.
13) Reporting and recording of all accident, incidents and near miss with thorough investigation and follow up action to prevent reocurrence.

2.5 Organization Chart

Project HSE team/department (see attachment 2) is equal/the same level with other department within the project (construction dept, purchasing dept etc).

2.6 Role and Responsibility

Line management, from the project manager through every level of supervisor, is responsible and accountable for health, safety and environment
management system, progress and performance. They shall work as a team to achieve HSE objectives.

Specific responsibilities of individuals are detailed below:

2.6.1 Project Manager

Responsible for:

- Implementation of this HSE Plan to all employees, workforce, sub contractor and supplier/vendors.
- Provision of adequate resources to all site activities and department within the project.
- Control of HSE performance of all sections associated with their activities in the project
- Ensuring that all accident and incidents are reported and investigated to prevent re-occurrence
- Nomination of sub-contractor/suppliers and vendors before they are working for the project
- Ensuring subcontractors, suppliers/vendor has been informed the requirements for compliance with this HSE Plan, and they shall obey and comply with this HSE Plan
- Continuous monitoring of HSE performance
- Review the project HSE program and performance with the HSE Manager
- Regularly inspect the site activities, workplaces with HSE personnel
- Review accident/incident statistics and any relevant HSE reports and implements recommendations
- Review training implementation records and requirements

2.6.2 HSE Manager

Responsible for:

- Establish HSE Plan
- Ensuring the implementation of HSE Plan and Procedures
- Ensuring the implementation of HSE training
- Ensuring the periodic drill of project emergency response plan conducted
- Conduct HSE Audit
- Ensuring the implementation of periodic HSE inspection schedule
- Give Advise on investigation of any incident occured during project course and ensuring lesson learned implemented
- Ensuring accident/incident reports issuance and provision of recommendations for remedial action
- Generating weekly and monthly project HSE Reports
- Provision of HSE Plan advice and recommendations to Project Management Team CONTRACTOR (PMT)
- Active in monthly safety meetings with client
- To review the HSE performance activities

2.6.3 Construction Manager

Responsible for:

- HSE performance in this PROJECT

- Compliance of this HSE Plan and standard to all workforce, sub contractor, suppliers/vendor to achieve project HSE objectives
- Provision and maintenance of safety system of works
- Chairs monthly meeting of the project safety committee
- Established accident investigation team when there is an accident
- Review the safety progress with HSE coordinator
- Inspect periodically all workplace
- Review accident/incident reports and HSE performance reports, and the implementation of recommendations
- Evaluate sub contractors, suppliers/vendor of their HSE performance
- Promote HSE at toolbox meetings and safety meetings
- Review environmental protection performance

2.6.4 Project HSE Coordinator

Responsible for:

- Implementation of this HSE Plan
- Implementation of all HSE procedures
- Review of HIRADC before it is issued
- Developing and implementing all safety training needed for workforce
- Performed periodic drill of project emergency response team as it was programmed on the emergency response plan
- Developing and implementing HSE inspection and audit as it was scheduled
- As a secretary of project safety committee
- Prepare of accident/incident report and investigation report, provision of recommendations for remedial act
- Prepared weekly and monthly project HSE reports
- To coordinate and control of HSE activities within the project site
- Conduct HSE Inspection for tools, equipments, work area, and PPE
- Active participate in monthly safety committee meetings as secretary of committee
- Review daily report and take necessary action of HSE performance from his sub-ordinate
- Ensure that all workforce performing their activities are comply with this HSE Plan
- Participate in project weekly and monthly meeting at site
- Take the initiative in tool box and safety talks before any job are performed

2.6.5 Environmental Officer

Responsible for:

- Supervise the environment management system
- Perform periodic environment monitoring (water, air, ground condition etc) of the project site area where the activities are performed, within threshold and make a report if it is above the threshold
- Member of Emergency Response team especially for Environmental accident/issue
- Conduct an investigation of environmental incident, make a report of the incident
- Prepare environment monthly report

- Conduct a periodic inspection of environmental issues
- Assess all environment aspect which lead to environment impact, warning sign shall be posted
- Perform waste management system to all project site activities, all dangerous substance shall be managed in accordance with its MSDS

2.6.6 Safety Officer

Responsible for:

- Coordinating the HSE activity on the area they are assigned
- Ensure that the works are performed in according HSE Plan, the procedures and HIRADC
- Ensure that appropriate PPE are used by the workers performing the works
- Ensure that HIRADC are informed to workforce before any activity are performed
- Enforcement of all safety and health rules and regulations
- Enforce of statutory regulations
- To stop the job/activities if it is considered dangerous to be performed
- Ensure that sub contractor, suppliers/vendor on performing their job is comply with HSE Plan
- Assist investigations of accidents and incidents in their area of control
- Conduct toolbox and safety talk/meeting
- Supervision of work place and workforce activities of their HSE performance (no unsafe act, unsafe condition, hygiene of the workplace, usage of PPE, safety of the work place etc)
- Participate in HSE monthly and weekly meetings
- Conduct tool box meetings and safety talk
- Conduct HSE inspections on site area of responsibilities

2.6.7 Work permit Officer

Responsible for

- Close communication with construction team to know job area which should be provided work permit and its certificate few week in advance
- To compile the procedures and JSA of each job sites going to be executed for work permit request
- To arrange (to fill the work permit form, request to do the work and its certificate) all work permit before the job is started at least one day before the jobs are started
- To register the work permit and its certificate going to be issued on a work permit book
- To submit the work permit request, work procedure and JSA to the authority to be reviewed and approved during work permit meeting
- To distribute the approved work permits and JSA to safety inspectors who responsible to the area where the work permit is intended
- Ensure that the job are performed in according particular procedure and JSA
- Ensure that safety rules/standard are conducted before any activity is performed

- To arrange daily meeting with construction team to prepare work permit and its certificate, work procedure and JSA to be submitted to the client authority during work permit meeting
- To collect and files the work permits, its procedures and its certificate after the job completed and to closed out work permit

2.6.8 Health Officer

Responsible:

- To prepare health facility needed for project team on project office and all job sites
- Responsible person of any accident which occur in the project office and job site
- To train first aider among the workers (1 first aider for every 50 person), to provide them with first aid kit (all first aider should know how to use the drug and health care in the first aid kit)
- To register and file all workforce health care, to file the MCU records of all staff employee
- To provide health care to all work force of CONTRACTOR'S project team, to send them to nearest clinic/hospital all victim when there is an accident
- To build close contact with nearest clinic/hospital to evacuate victim when there is an accident
- To distribute first aid kit to first aider
- Hygiene inspection of the project facilities, sanitary, mess and galley
- To participate in drill as mention on Emergency Response Plan

2.6.9 Inspector

Responsible for:

- Ensure that work permit on his area of activity is issued
- Ensure that the activities are performed in accordance with this HSE Plan
- Ensure that the work are performed in according with particular procedures and HIRADC
- Ensure that appropriate PPE are used by all workers performing the works
- Ensure that all safety rules/standard are conducted before any activity is performed
- Enforcement of statutory and local regulations
- Compliance of sub contractor, suppliers/vendors to this HSE Plan; and
- Assist investigations of all accidents and incidents in their area of control.
- As first aider of any accident that occur on site
- To supervise only particular job/activities on his/her area of responsibility
- To stop the job/activities if it is considered dangerous to be performed
- Record all incident/issue take place on his area of responsibilities
- Participate in HSE weekly and monthly meetings
- Conduct tool box meetings and safety talk before new work is performed
- Assist in the site HSE inspections and audit

2.6.10 Employee/ Worker Responsibilities

All employees shall ensure that they are fully understand, implement and conform to this HSE Plan and rules/standard as stated within their contracts, and undertake their

activities in accordance with this HSE Plan, Procedure and Work Instruction address to them.

All employees are responsible for undertaking their activities in strict rules. They shall participate in Observation and Intervention program, by identifying any unsafe situation/condition in their work area, not performing unsafe act, report to their supervisors if encounter any hazard that can lead to incident/accident. They shall active in participating the achievement HSE objectives and improve a safe working Environment.

2.6.11 Sub Contractor Responsibilities

All subcontractor, suppliers/vendor shall ensure that they are fully understand, implement and conform to this HSE Plan rules as stated within their contracts, and undertake their activities in accordance with this HSE Plan.

2.7 Human Resources

Recruitment and selection of staff and workforce refer to manpower plan, shall consider the competencies required in the work position. For unskilled labour, HR will consider to recruit from local community. For skilled labour if HR can not find from local community, HR will find from outside Riau.

HR Departement shall:

- Preparing job description of each position in the PROJECT
- Identifying their competence (education, skill, training and experience) suitable with their position and responsibility
- Ensure the provision of medical checkup (MCU) by hospital to all personnel
- Conducting interviews prior recruitment
- Register BPJS to all employees hired in this PROJECT

After recruitment, HR will informed HSE department to give induction to the employees. Employees will received mandatory PPE from HSE department. Induction sticker will be mounted on the hard hat of the employee after they received and passed the Induction training.

Employees that never worked before must be accompanied and monitored by the grup leader in their work team.

2.8 Training & Competence

HSE and HR department shall conduct or require employees and/or subcontractors to undertake a general awareness and orientation training course for all persons performing tasks on the site. Such persons shall be required to complete the training before they start any work activities related to the training. The HSE Coordinator and HR Personnel will arrange a plan and implementation of various HSE training sessions specific to the job requirements specified by COMPANY consist of the following:

- HSE Induction to describe of:

- Company policies
- The project activities
- General rules
- General responsibilities of employees and supervisors
- Safety system
- High-risk work (lock out/tag out; confined space, hot work, cranes & lifting, excavation, working at height, etc)
- House keeping
- Hand and power tools
- Machine guarding
- Material handling
- Health hazards
- Transportation
- Communication
- Medical programs
- Fire prevention
- General recommendations
- Personal Protective Equipment
- Right to say "No"

- First Aid
- Fire Fighting
- Emergency Response Drill
- Permit to work system (PTW)
- Working at Height
- Hazard Identification and Risk Assessment and Determination Control and Job safety Analysis (JSA) and (HIRADC)
- MSDS for warehouse and purchasing personnel
- Hazardous Material and Hazardous Waste Handling
- Defensive driving
- Confine Space
- Tool box meetings, safety talk / campaigns and/or current HSE topics

Training will be carried on to employees and or subcontractors based on the following:

a. Employees performing tasks that have the potential to cause a significant environmental impact shall train the relevant individuals, using training materials provided by the CONTRACTOR, and retain the training records on-site and available

b. Employees performing tasks that have the potential to cause a significant safety impact shall train the relevant individuals, using training materials provided by the CONTRACTOR, and retain the training records on-site and available

(See HSE Training Program on Attachment 3)

2.9 Communication

Effective communication is essential for the development of a safety performance throughout the project team. Open communication between the workforce and the project management team on HSE matters is needed.

This will be achieved through the socialization of the HSE policy, HSEP, periodic HSE briefing and safety campaigns to all workforce.

2.9.1 Project Safety Committee Meetings

Project Safety Committee will be established at the Project office, they will conduct HSE meeting periodically, it shall be chaired by Project Manager or Construction Manager.

In case there is an accident/incident happen in the project area, Project Safety Committee via secretary shall invite all project safety committee's team to hold a meeting. These meetings shall involve personnel from management, workers and sub contractor representative.

In this meeting project safety committee shall establish a team for the accident/incident investigation, this team shall be chaired by HSE Coordinator.

Result of the investigation shall be circulated / posted to notice boards and copied to COMPANY, HSE Manager in Head Office Jakarta.

2.9.2 Site HSE Meetings

HSE Meeting will be conduct weekly. These meetings shall involve construction manager, supervisors, foreman, sub contractor/suppliers and HSE personal.

Meeting will encourage discussion from all personnel on safety issues affecting their work group, the result of discussion shall be minutes and followed up.

Minutes of meeting will be circulated to relevant attendance and recorded by DCC.

General Safety talk will be held every week. All employee must attend this meeting. Supervisor will be alternately give awareness or information about HSE to the audience. Topic can be variance, including topic about accident for lesson learn.

Tool box meeting will be done in group prior to begin work in order to review and address the ever-changing risks profiles and communicate the changes to employees/workforce. Project's supervisors or foreman shall conduct brief JSA and pre-work safety briefings for all personnel in their team in the work. During the briefing supervisor shall explain the permit-to-work (PTW) document, what requirements shall be fulfilled and ensure that everyone understands the hazards that could be encountered during the course of work and the safeguards need to be taken against them.

2.10 Audit & Inspection

In this project, HSE audits & inspections will be carried on to verify compliance with the regulation, standard, HSE Plan and Project procedures.

2.10.1 Inspections Team and Management Walk Through

HSE Inspection will be done by HSE officer to check the performa of working area, tools, rigging and lifting equipment, vehicles, heavy equipment and PPE or safety tools. Accomodation such as mess shall be inspect periodically too.

Joint inspection team or walk through with Client will be done every first week of the month. HSE Coordinator will be the team leader of management walk through. The team will typically consist of personnel from the following:

- Project management representative;
- HSE Coordinator;
- Employee representative;
- Sub contractor representative;
- COMPANY representative; and
- Joint Inspection/Audit schedule shall be done between Project Management Team and COMPANY.

2.10.2 Audits and Inspection Report

HSE Audit will be held on project site to see HSE project's compliance to regulation, standard, COMPANY's requirement, HSE Plan and procedures. Audit will be held at least once a year.

HSE Manager will develop audit plan, audit team and audit schedule. Audit notification to auditee and COMPANY will be relased at least 2 (two) weeks before the implementation. COMPANY can participate on this Audit as an observer.

A complete audit nonconformance report will be made by HSE Manager and distributed to auditee and COMPANY. Areas of non-conformance will be reviewed by Project Management Team to assist in rectifying inconsistent or bellow standard performance and areas of non-compliance with regulation, standard, COMPANY's requirement, HSE Plan and procedures. Auditee, in this case head of section or group leader are responsible to follow up the non-conformances found during Audit.

Response to non-conformance or findings will be made by auditee that provide detail actions to be taken, responsibilities, completion dates and follow up action to be performed. The effectiveness of corrective action will be checked by HSE Manager as audit leader.

2.11 HSE Performance

HSE Performance will be reported weekly and monthly. Measurement of HSE performance will be made in two areas through:

1. Historical data incident and injury numbers and classifcations
2. HSE activities undertaken each month as contribution to positive HSE Management implementation.

2.11.1 HSE Activities (Leading Indicator)

- Induction
- Inspection
- PPE Distribution
- Training
- SHES Cards
- Meeting
- Reporting
- Drill
- Socialization

2.11.2 Injury/Incident Statistics (Lagging Indicator)

- Fatality
- LTI
- Medical Treatment Case
- First Aid Case
- Near miss
- Total Recordable Incident (Rate) TRI (R)
- Total Non Recordable Incident Rate (TNRI) (R)
- Day Lost

2.11.3 HSE Performance Definitions

LTI	Lost Time Injure. Injury with causes loss of at least one complete shift /day after the shift/day of injury.
IWLT	Injury without lost time, that only needs first aid treatment and not causing working time lost after the accident occur.
Man-hours	All man hours actually worked on site under the control or direction of CONTRACTOR
Day Lost	Day lost to particular injury are those complete shifts or days lost commencing with the shifts and day following the shift or day of treatment
FrequencyRate (FR)	(No LTA x 106) / ∑Mhr
Severity Rate	(No Day Lost x 106) / ∑Mhr

TRIR	Total Recordable Incident Rate TRIR = $\frac{\text{Recordable Accident} \times 10^6}{\text{Total Man hours}}$
Recordable Accident	Accident that will be recorded i.e. Medical Treatment Case (MTC), Restricted Work Case (RWC), Lost Time Incident (LTI) and Fatality
Fatality	A hazardous & undesired condition which result in a big loss or death
Near Miss	A hazardous condition which, under slightly different circumstances, could have caused an accident or incident.
Anomaly	Any situation having a potential contribution to an accident.

2.11.4 HSE Performance Target

Fatality = 0
LTI = 0
Recordable Accident = 0
ERP Drill = Once in 6 months
Work Related Illness = 0
Spill case = 0

2.12 Report & Review

Report of HSE plan Implementation will be made in daily, weekly and monthly basis. Project Manager and HSE Manager will review and evaluate the HSE Plan implementation report.

3 HIRARDC (Hazard Identification Risk Assessment and Risk Determining Control)

3.1 Hazard Management

All project personnel at work site shall be encouraged at all times to identify hazards and implement immediate corrective actions, as a part of their normal duties.

Any hazard identified, which is outside their ability or cannot be rectified immediately shall be made safe with barricades or warning sign and it shall be reported to the Supervisor immediately.

Any item brought to the supervisor's attention, which cannot be immediately rectified, will be recorded an follow up action shall be made by the manager.

3.2 Hazard Inspection

The project management team, supervisor and subcontractor responsible on the area shall conduct a weekly HSE inspection in each area. The findings will be discussed after inspection in the weekly safety meetings, The results of the inspection will be recorded and actions/follow up will be check on next weekly meeting then posted for information.

3.3 HIRADC & JSA

HIRADC will be undertaken before any works are starting (survey work, site clearing, pipe stringing, pipelines welding, NDT, joint coating, trench excavation, pipeline lowering etc).

The objective of the HIRADC is to identify hazards related with the work's activities and develop mitigation plan to reduce the risks to tolerable and manageable level.

The HIRADC will identify the activities, equipment used and responsibilities for the management of hazard and risk within each work activity.

The subcontractor/vendors and its supplier will implement the HIRADC during work execution. HIRADC is transformed into JSA by means of removal HIRADC columns into 3 columns only

The HIRADC/JSA process are taken from the working procedure which shall be prepared by the construction team, typical includes the following step:

- Identify the task to be examined
- Break the task into its chronological step-by-step and identify the hazards on each steps
- Assess the risk if the hazard become reality, Risk = Hazard effect X Probability
- Develop means of eliminating the hazards by reducing risk to tolerable and manageable levels (elimination, substitution, isolation, administration and PPE)
- Record HIRADC results
- Incorporate recommendations into JSA, attached it in the permit to work (PTW), bring it in the pre-job meeting
- Provide briefings the JSA on tool box meeting/safety talk to all workers involved in the activity, prior to job commencement.

The following activities will be subject to HIRADC (a complete schedule will be developed before work execution at each site).

Safety Risk Assessment

- Site preparation/abrasive cleaning and access road;
- Transportation /materials handling, land transportation and warehousing;
- Fabrication of spools and other component of the facilities;
- Working at height;
- Working in confined space;
- Working on or near river or swamp;
- Storage fuel and chemical;

- Pipe welding & cutting;
- NDT / Radiography Test;
- Pipe laying/stringing in the jobsite/plant;
- Excavation of the pit or trench;
- Pipe lowering into the trench;
- Back filling and reinstatement of the job site;
- Road Crossing;
- Tie-in;
- Hydrotesting and pre-commissioning;
- Working at night; and

Health Risk Assessment

- Abnormal Climate condition;
- Accommodation quality;
- Food and water quality;
- Infectious disease;
- Wild animal attack;
- Insect and snake bite;
- Harmful vegetation;
- Noise;
- Radiography Exposure;
- Sanitation; and
- Temporary toilet availability.

Environmental/social Impact Risk Assessment

- Air quality;
- Conservation of archaeological site;
- Conservation of environmental protection or wildlife area;
- Crossing environmental sensitive area;
- Dust and Mud;
- Hydrotest water;
- Water discharge;
- Removal, conservation and replacement of top soil;
- Open-cut river crossing or rice field;
- HDD crossing;
- Preservation of river and canal bank;
- Job opportunity for local people;
- Vehicle maintenance facilities;
- Fuelling facilities;
- Close-out of temporary facilities; and
- Waste Disposal.

Environmental sensitive issue

- Vehicle and equipment emissions;

- Dust spreading caused by transportation;
- Noise emissions effecting work sites and community area;
- Air quality/emission;
- Release of hazardous materials to water course or atmosphere;
- Soil contamination;
- Soil spill;
- Bentonite mud disposal;
- Damage road, bridges, public facilities, agriculture and fisheries;
- Interaction with other resource users; and
- Waste Disposal.

To mitigate the effect of operation and maintenance activities on the environmental the following have to be followed:

- Not to use any materials with known ozone depletion or global warning potential;
- Minimize Environmental impact of chemical by proper selection, use and disposal of it;
- Not to discharge any chemical to land or water bodies;
- To discharge hydro test water only at approved location and conduct sampling and laboratory analysis prior to discharging of hydro test water;
- Reinstate all disturbed areas in according to standards and specification;
- Prevent dust generation (e.g. by moisten road during dry periods);
- Minimize exhaust and noise emission from machinery;
- Arrange suitable methods for disposal waste in a manner that is approved by authorities. (Burning of waste on ROW shall not be permitted);
- Minimize the need of padding under the pipelines by reusing trench soil wherever possible;
- Plan road transport activities by giving consideration to traffic congestion and hazard;
- Install and maintain adequate sediment and erosion control measures to prevent impact on other Environmental resources;
- In the event of unanticipated discovery (e.g. archaeological artifacts or contaminated land) the project shall immediately stop work and report the discovery to COMPANY. No work shall be undertaken in the vicinity of the site until the relevant authorities examine the site and grand permission to continue the work;
- Conduct waste management plan in office in according with solid waste disposal, sanitary waste disposal and sewage (camp grey water) disposal; and
- Plan emergency response to any spills.

HAZOP Study

- HAZOP study is provided during engineering phase between process engineering and the performing authority of the client.

3.4 Risk Register, Control & Monitoring

Every risk identified in this Project will be registered, analysed and evaluated, responsed, monitored and communicated to related parties.
Response to the risk shall control and mitigate the risk. It might be accept, treat, transfer or avoid.

Construction Manager will responsible for Risk Register helped by HSE Coordinator. The risk will be rating by calculating the probability and the impact. Rating is important to help the Project Management Team implement the risk mitigation strategy. Monitoring can be done in daily, weekly or monthly basis depend on the risk mitigation strategy or plan. Description of the risk and the impact, including the COMPANY of the risk shall be written on the Risk Register.

4 HSE GENERAL STANDARD

4.1 Personal Protective Equipment

4.1.1 Headgear

CONTRACTOR shall provide protective headgear to all workers and ensuring that the wearing of protective helmets and other head safety equipments such as safety glasses and other protective equipments is enforced.

4.1.2 Clothing

The minimum clothing requirement while at work for project workforce shall be long sleeved or coverall except where the work Environmental requires greater protection such as welding activity need eye, face, and hand protection, sand blasting activity need special wardrobe etc.

4.1.3 Minimum PPE

Safety foot-wear in good condition with treads on soles etc. shall be worn at all times on the work site.
Safety helmets shall be worn at all times, except in accommodation or office area.

Safety spectacles shall be worn to personnel performing or in the vicinity of task that may present a hazard to the eyes or as required.

Safety Gloves shall be worn all the times for rigger on the work site except in office area.

Rubber gloves shall be worn to personnel performing holiday test.
Various tasks will require particular attention to PPE other than that already mentioned.

Face shield/welding mask and apron shall be worn during welding activities.

Whenever possible materials and procedures will be selected that reduce the necessity for PPE, however, when it is considered that there is no other alternative, than special PPE is required, training in the use and care of that equipment will be an integral part of the task and logged as a requirement in the job safety analysis and incorporated into the installation procedures.

4.1.4 Working at Heights

Any work at heights more than 1.8 meters above ground or deck level or work directly over water will require a body harness and lanyard, although each specific job should be assessed on its own merit, appropriate protective mechanisms shall be implemented.

Whenever tasks are envisaged that may require working at height, the following action is followed:

- Avoid or minimize the work at height by redesign the work method
- Provide a safe platform i.e. scaffolding elevated work platform etc
- Only competent personnel can built and erect the scaffolding
- Scaffolding must be inspected and tagged to ensure that it safe to use
- Prevent falls with guard-rails and mesh etc.
- Minimize injury with nest, less than two meters below work level
- No work shall be done under and near the working area
- Appropriate sign board shall be put to keep unauthorized person entering the working area
- Personnel shall undergo training working at height prior to work

4.1.5 Hearing Protection

Hearing protection shall be worn in areas identified as exceeding statutory noise level (>85 dB). HSE officer will checked the area using sound level meter. Ear plug or ear-muff shall be wear by personnel who worked on noisy area to prevent damage to hearing.
Excessive noise in an area can be easily identified when personnel raised his voice one oktav to talk to each other.

4.1.6 Confined Space

A confined space is a space that is large enough for a person to enter and work but has limited or restricted means of entry and exit. Confined space is not designed for continuous occupancy.
PPE such as body harness, breathing apparatus, headgear, headlamp shall be provided according to HIRADC. Appropriate ladder and blower shall be provided if needed. Gas detection will be carried on prior to work in a confined space area.

4.1.7 Working Near or Above Water

Life jackets/buoyancy aids shall be provided to and worn by workers with risk of falling into water. Lifejackets shall be thoroughly checked by the user before each use. A lifebuoy or ring buoy with sufficient lifeline shall be provided.

(See PPE Matrix on Attachment 5)

4.2 Safety Induction

4.2.1 General HSE Induction

All project personnel (staff and workforce), including sub contractor, suppliers/vendor, office workers, workshop/fabrication yard or work site personnel and visitor shall attend

a general HSE induction prior entering or working in the project. The induction will be given by HSE officer.
The general induction are designated to give brief lesson / training to all project personnel of work conditions, hazard, scope of work and other relevant information that shall be known by all personnel working in the project, it will include a general introduction to the HSE rules and policy also evacuation route which applied to the project.

A HSE guide book which contain a practical guidance of health, safety and environmental procedure and regulation in this project will be distributed to new employees/workers who has passed the induction to joint the project team.

The main topics of induction / training include, but not be limited to, as appropriate:

- Introduction of HSE policy and objectives
- Drug and alcohol policy
- No smoking and smoking area location
- Health, safety and environment responsibilities
- Incident/accident report
- Safety meetings and safety talk
- Emergency response plan
- Safety driving, operating equipment; and
- Work permit system
- Personal protective equipment (PPE)

4.2.2 Visitor Induction

Short-term visitors that visit the worksites will be required to attend a brief information session covering specific requirements and guidelines for the particular site including PPE and safety requirement which shall be obedient. The Induction for visitor will be conducted by Safety officer or Safety Man on site.

4.3 Fire Protection

CONTRACTOR shall provide adequate fire protection equipment in each warehouse and office, in the other temporary structures and in each work area. Access to sources of fire water shall be identified and kept open at all times. Suitable fire extinguisher shall be provided in enclosed areas, in areas which are not accessible to fire water and in areas which may be exposed to fire that cannot be safely extinguished with water.

Provision of fire extinguisher in each work area, shall be in accordance to fire hazard types (e.g. dry chemical powder for risk area with fire hazard from paper, wood,). In areas where more

than one type of fire might occur, triple rated (A,B,C Hazards) appropriate fire extinguisher shall be provided. Each extinguisher shall be placed in convenient and clearly identified location, which will most likely be accessible in the event of fire.

CONTRACTOR's workmen shall be instructed in proper method of extingushing fires (with adequate training) and shall be assigned for fire protection duties.

4.4 Chemicals or Hazardous Materials

No chemicals or hazardous materials will be allowed to be used on job site without a Material Safety Data Sheet (MSDS). A register of all chemicals and hazardous materials on site will be maintained with copies of MSDS's. Hazardous materials or chemical being used shall be properly labeled.

Warehouse supervisor shall be responsible for the proper storage, transportation, handling, use and disposal of all hazardous materials utilized in or generated by construction activities.

All personnel required to work with chemicals or hazardous materials will attend an on site training session conducted by the HSE Department or by vendor of the hazardous materials.

The following principle shall be adopted:

- Minimize the use of hazardous substances and when it is essential to use such materials, keep them in well secured, segregate and contained location;
- Minimize airborne concentrations by providing closed ventilation system;
- Storage and handling of hazardous materials should be done in accordance with the guideline given in MSDS and applicable local regulation;
- Container of hazardous liquids shall be stored over secondary containments to prevent liquid spills contaminating soil and ground water resources in the surrounding areas;
- Use of appropriate PPE;
- Monitor work involving hazardous substances and personal exposure to such substances; and
- Ensure that the PPE are used, and in particular, the breathing apparatus being used are in proper usable condition.

The following shall not be used:

- Volatile materials that are known to have global warning potentials. Permitted exception are health care products, and pesticides in limited quantities, but permit to use shall be obtained in advance from COMPANY; and
- Any product containing Asbestos.

4.5 Electrical Work

Only qualified, experienced and certified worker shall carry out electrical work. Safety equipment to anticipate and minimize of electrocuted such as helmet, rubber insulating glove, sleeve and blanket, flame retardant clothing and other equipment depend on hazard identification and risk assessment shall be provided and wear. Before commencing the work, electric power must be on “off” position. Voltage of the electric component shall be checked using electric test instrument.

Infra red scan (thermography) shall be use during inspection when there is potential problem. Barricade such as warning tape, cone, or guard rail shall be use to warn and barrier access from entering hazardous area. Worker shall be equipt with voltage testers. No work shall be carried out on any electrical equipment unless a hot-work permit is in force.

In order to avoid personnel injury or equipment damage, the electrical power supply shall always be locked and attached with a sign “Danger Do Not Operate” prior repair of electrical equipment.

All building and equipment shall be grounding and bounding referring electricity standard and requirement. Prior fuelling by using hose or pipe, truck must be grounding and bounding.

Extension cord, adapter or cable shall be inspected periodically. Extension cord using in the open area shall use waterproof connector.

4.6 Confine Space

Only qualified, experienced and certified worker shall carry out confine space work. No work shall be carried out on any confine space unless a work permit is in force.

In order to avoid personnel injury, adequate and proper PPE according to risk assessment shall be provided. Evacuation plan shall be made prior commencing the work. Protective body harness, lifeline, lanyard and breathing apparatus shall be provided along with SCBA, three legged catrol, communication radio with level “intrinsically safe”. Ventilation and blower equipment shall be ready to use.

CONTRACTOR shall guarantee the safety of the workers by commencing gas testing on confine space prior to work. Place two workers outside the entrance access, authorized entrant, and trained response team.

Gas testing shall be done by qualified Gas Tester.

4.7 Working at Height

Any work at heights more than 1.8 meters above ground or deck level or work directly over water will require a body harness, although each specific job should be assessed on its own merit, appropriate protective mechanisms shall be implemented.

Working at height required fall protection equipment; full body harness, lanyard, life line, etc. Shock absorber for full body harness is needed when working above 6 (six) meters height. Worker shall be trained to use fall protection equipment.

Whenever tasks are envisaged that may require work at height, the following action shall be followed:

- No work without supervision can be done
- Avoid or minimize the work at height by redesign the work method
- Provide a safe platform i.e. scaffolding elevated work platform etc;
- Scaffold shall be designed, erected and dismantled only by competent person and the work shall always be carried out under the direction of a competent supervisor
- To prevent falls during the erection of scaffolding if using an advanced guard rail system, workers shall wear harnesses to arrest their fall
- Prevent falls with guard-rails and mesh etc; and
- Minimize injury with nest, less than two meters below work level
- No work under the working at height work
- To prevent equipment or tool falling, toe bord shall be placed on scaffold, bucket will be provided to store the tools

Scaffolding erection and ladder shall be refer to standard and procedure. Ladder shall be installed at 1:4 ratio (horizontal:vertical). End of ladder shall be tied and had 1 (one) metres length over surfaced.

Prior Scaffold erection, typically information should include at the planning process:

- Site location
- Period of time the scaffold is required to be in place
- Intended use
- Height and length and any critical dimensions which may affect the scaffold
- Number of boarded lifts
- Maximum working loads to be imposed and maximum number of people using the scaffold at any one time
- Type of access onto the scaffold eg staircase, ladder bay, external ladders
- Whether there is a requirement for sheeting, netting or brickguards

- Any specific requirements or provisions eg pedestrian walkway, restriction on tie locations, inclusion/provision for mechanical handling plant eg hoist)
- Nature of the ground conditions or supporting structure
- Information on the structure/building the scaffold will be erected against together with any relevant dimensions and drawings
- Any restrictions that may affect the erection, alteration or dismantling process

Scaffolding will be tagged to inform that the scaffold are safe for use or not. CONTRACTOR shall ensure that all scaffolding has been inspected as follows:
- Following installation/before first use
- At an interval of no more than every 7 days thereafter
- Following any circumstances liable to jeopardise the safety of the installation e.g high winds

All scaffolding inspection shall be carried out by a competent person whose combination of knowledge, training and experience is appropriate for the type and complexity of the scaffold.

The scaffold inspection report shall note any defects or matters that could give rise to a risk to health and safety and any corrective actions taken, even when those actions are taken promptly, as this assists with the identification of any recurring problem.

Workers that will be working at height shall be a person who doesnt had any Acrophobia.

4.8 Excavation

During Excavation team work must ensure the provision and condition of:
- Air or Gas detector equipment (including sensor, detector, and inlet)
- Supporting equipment to support the trenches deeper than 1.5 meters
- Emergency equipment such as Self Contained Breathing Breathing Apparatus (SCBA), harness with life line and stretcher
- Special PPE according to hazard identification and risk assessment
- Fire Extinguisher
- Water Pump
- Warning systems (such as barricades, stop logs, hand or mechanical signals) must be utilized to warn against mobile equipment operating close to the excavation
- Barricades or barriers shall be provided at all excavations
- Metal and Cable Detector

Worker involved in excavation shall be competent personnel and experienced to assessed the condition and the type of the soil and understand about the excavation equipment.

Heavy equipment shall not be operate near on excavation bank. All dirt must be piled at least 1 meter back from edge of excavation. Opening in floors must be barricaded and cover by net if left unattended. Enough safety sign shall be place near the excavation area.

Prior to commencing excavation activities, identification shall be made on:
- Soil classification
- Surface encumbrances
- Location and identity of utilities
- Amount of surface and subsurface water present
- Traffic and nearby structures
- Depth of excavation
- Length of time the excavation will be open
- Climatic conditions
- Access and egress

4.9 Road Crossing with Drilling Work (with Auger boring)

Auger boring shall be operated by competent operator. Different types of equipment might be required on or around the boring site. Excavator is needed to dig the boring pit and set the equipment. During boring activity, there will be friction between casing and soil, a lubricant that applied to the outer skin of the casing to reduce the requirement for the thrust capacity of the boring machine shall be lubricant that unharm to soil, such as bentonite.

When boring activity:
- Distance should be kept from exposed auger during bore work
- Standing on the opposite of operator station during boring operation is not prohibited
- Do not use loose clothing to prevent tangling on engine
- Boring pit must be properly sized and shored
- Excavation in excess of 20 feet in depth shall be design by a competent Engineer

4.10 River Crossing by Horizontal Direct Drilling

- Prior to HDD working, CONTRACTOR shall conduct site walkthrough. A risk identification and assessment shall be performed (to identify overhead, surface and subsurface hazards). The site shall be examined for indication of possible unmarked utilities.
- Prior to HDD working, CONTRACTOR shall conduct site walkthrough. A risk identification and assessment shall be performed (to identify overhead, surface and subsurface hazards). The site shall be examined for indication of possible unmarked utilities.

4.11 Welding & Burning

Welding equipment should be handled by certified person. Welders should always wear the proper PPE while performing welding works.

Welding & Burning set should always be shut down when refuelling. Welding set and cables should be checked by welder prior commence of the work.

Welding machines should be fitted with spark arrestors, drain pot and fire extinguisher.

Supervisors shall brief their crew about:

- Work in enclosed spaces;
- Work on pipes having contained flammable or reacting products;
- Safe environmental conditions;
- Individual and site safety equipment;
- Fire fighting and first aid.

Welder must be aware of:

- Danger presented by arc welding and weld coating removal; danger or arcing in the structures (return cable must be fitted near to the welding area);
- Location of return cable (not connected to gratings or bolted structures);
- Environmental protection must be supplied as necessary e.g. non flammable tarpaulins or screens. Ventilation or fume removal arrangements must be suitable at the welding area. Coatings like zinc or other dangerous vapor emitting substances must be removed before welding;
- Individual personnel protection equipment must be worn (e.g. face shield of helmet type, leather apron, etc.); and
- Gas testing (hydrocarbon and oxygen) must be performed immediately before any hot work in a hazardous area or an enclosed space. Permanent oxygen meters and explosive meters with alarm must be used during any hot work in an enclosed space. Welders must be qualified and approved according to the relevant codes specified for the work.

Welders must be qualified and approved according to the relevant codes, MIGAS Certification specified for the work.

4.12 N2 Purging

Purging work must be supervised by a responsible personnel. Take precautions for nitrogen gas that may cause fatal damage to personnel in charge.
Individual personnel protection equipment must be worn in appropriate manner

Pressure gauges shall be protected and inspected prior to activity

4.13 Heavy Equipment and Rigging

4.13.1 Side Boom Operations

The project shall be aware that heavy equipment operations are one of the major causes of injury and accident on site.

The sideboom operator must :

- Be adequately trained both on the general principles and specific type of equipment he is to operate;
- Have the required certificate (issued by MIGAS);
- Be medically fit;
- Be able to understand operating instruction and procedures;
- Have a knowledge of safe slinging procedures;
- Be familiar with and act upon signals (body gestures) used for the operation of sideboom;
- Know the safe working load (SWL) for the job in hand; and
- Be able to carry out routine maintenance on his sideboom.

4.13.2 Crane Operations

The crane operator must :

- Be adequately trained both on the general principles and specific type of machine he is to operate;
- Have the required certificate (issued by MIGAS);
- Be medically fit;
- Be able to understand operating instruction and procedures;
- Have a knowledge of safe slinging procedures;
- Be familiar with and act upon signals (body gestures) used for the operation of cranes;
- Know the safe working load (SWL) for the job in hand; and
- Be able to carry out routine maintenance on his crane.

Any new crane operator on project site will be required to perform a test lift. If he fails this test the project shall supply an alternative crane operator.

All cranes which are operated in project premises must be covered by valid MIGAS certificates. MIGAS certification purpose can be carried out by an independent surveyor (third party) duly authorized by appropriate identification number, Safe Working Load and colour code.

4.13.3 Excavator Operations

The excavator operator must :

- Be adequately trained both on the general principles and specific type of equipment he is to operate;
- Have the required certificate;
- Be medically fit;
- Be able to understand operating instruction and procedures;
- Be able to carry out routine maintenance on his equipment.

4.13.4 Rigging Equipment

All rigging gear and lifting equipment to be used for the project shall be the one that approved by COMPANY. A register of all rigging gear shall be kept to record the type and serial number of the equipment, the certification information, location of equipment and current status.

All lifting and rigging equipment are inspected periodically and marked with the current Colour Code, these includes the chain blocks, tirfors and come-along.

Visual inspection of the rigging and lifting equipment shall be carry out by the riggers prior to use.

4.14 Portable Power Tools

All power tools electric or pneumatic shall be used only for the intended purpose, which they are designed, and in accordance with the manufacturer's specifications. Power tools shall be equipped with a dead man switch.

4.15 Generators

Generators must be of a class suitable for use location and environmental conditions. Maximum expected load must be well within the generator's capacity. Generators shall be diesel type only. Generators shall be equipped with a minimum:

- Speed limiter and voltage regulator;
- Manual emergency shut-down;
- Spark arrestors;
- Overload, over speed, temperature & pressure alarm;
- Ground fault alarm and instrumentation panel;
- Provide a drip tray for oil or fuel spillage preventive; and

- Provide fire extinguisher.
- No refueling while the engine is running;

4.16 Compressors

Compressor shall be equipped with emergency shut down switch. Compressors shall always be shut down when refuelling. Compressors shall be equipped with a manifold, pressure relief valve and panel instrument.

4.17 Permit to Work

No work shall be carried out unless a permit has been issued to CONTRACTOR by the COMPANY which will state:

- The equipment involved
- A description of the work to be carried out
- The dates and times when the work is to be commenced and completed
- Any other condition concerning protection and safety of personnel and property
- JSA related to work

Before commencing the work, Permit shall be sign by COMPANY's authorized personnel and shall be returned to COMPANY after completion of the work. CONTRACTOR shall state on the permit that the work has been completed and obtain an authorized person's signature for acceptance.

4.18 Critical Work Area

In this PROJECT there are several activities that needs extra attention, such as Hot Work, Horizontal Direct Drilling, Radiology, N2 Purging.

According to the planning, there will be 1 river-crossing with 520 m length of HDD work located in Sungai Siak

Risk assessment shall be done prior to commencing these activities. Pre-job safety meeting shall be carried out to ensure the preparation of the activities.

All workers shall understand clearly about the hazard and the method of the work.

5 ENVIRONMENTAL MANAGEMENT

5.1 Environment Aspect Impact Identification

CONTRACTOR will identify all environmental aspects relating to the project's activities. The process of identifying environmental aspects include: activities, products and services with due regard to routine activities, non routine, abnormal or emergency conditions. The process of identification of environmental aspects into account planned or new activity or process modifications. Control of significant environmental aspects in accordance with the hierarchy of control significant environmental aspects:

1. Elimination
2. Substitution
3. Engineering Modification
4. HSE signs/administration
5. Preparation and implementation of work instructions
6. Socialization training
7. Environmental target and environmental management programs
8. Personal protective equipment
9. Monitoring and measurement

5.2 Environment Protection Program

5.2.1 Water

The water quality will be compared with the Indonesia Standards. As the project crosses water bodies, it is necessary that the water quality monitoring is carried out during the active work period to ensure that the project's activities do not contibrute to any deterioration of water quality significantly.

Regular inspections of all discharges, drainage systems, collection ditches, lagoons, interceptors, and watercourses will be undertaken to check that these items are in good order.

Potential impacts to water resources during the construction phase include;

1. Disposal of septic wastewater generated by construction workers
2. Impacts on water reserves from over extraction
3. Disposal of hydrotest water

The pollutant contents in the waste water that comply to the standard should not be adjusted by means of dilution with water obtained directly from the water source.The pollutants shall not degrade the chemical, physical and biological integrity of the water source.

5.2.2 Soil

Top soil that will be temporaryly moved during excavation will be placed back to its original location to sustain soil fertility. Any hazardous material that consider harmful to soil will be handling with precaution.

To protect the soil, CONTRACTOR shall consider the following:

- Top soil after excavation work shall be placed beside trenching
- Laying compacted topsoil as quickly as possible after construction at each area is completed
- Allowing sediment to settle in sedimentation ponds and storm water channels prior to discharge into the sea
- Soil contamination will be prevented by installing appropriate storage facilities for hazardous wastes and hydrocarbon on site
- All hazardous waste will be removed from the site to approved waste disposal sites.
- Soil generated from construction activities will be stockpiled, and used for landscaping where possible or removed from the site to approved disposal areas.
- Sediment fences should be installed around temporary soil stockpiles to control erosion runoff
- CONTRACTOR will restore and re-vegetate all affected lands to minimize soil erosion and sedimentation

5.2.3 Air

The main impact to air quality during construction will be from increased dust levels from vehicle exhaust, construction machinery, excavation, cement mixing, building construction, soil backfilling and minor access road construction.

5.2.4 Noise

During construction, noise will be generated from vehicular movement, sand and aggregate processing, concrete mixing, excavation machinery, and construction.

Noise will not be affected to nearest residential area with approximately 1 km distance.

Equipment and machinery used for construction will strictly conform to the Indonesia Noise Standards (Decree MLH No. 48, Year 1996). All equipment will be properly maintained to minimize noise.

The workers will include standard occupational health and safety practices to relevant Indonesia standards

Noise mitigation measures will include enclosing the relevant equipment and noise suppression controls on relevant machinery.

<u>Standard of Noise Level</u>

Noise parameter in the usage area will be as follows:

NO	AREA	dB (A)
1	Residential	55
2	Trade and Service	70
3	Offices	65
4	Green Zone	50
5	Industries	70
6	Government and Public Utility	60
7	Recreation	70
8	Business	70
9	Work Environment	55

(Decree MLH No. 48, Year 1996)

Ongoing noise monitoring will be undertaken to ensure compliance. The noise monitoring equipment will be placed on site fence near the community house.

Noise modeling will be carried out in accordance to ensure compliance. The noise modeling could be indicates that the maximum noise level does not more than the requirement. Noise modeling results will be reported to the COMPANY before.

5.3 Spill Prevention Program

5.3.1 Spill Prevention Measures

Some of the spill mitigation measures to be implemented include:

- Oils, fuels, paints, solvents, chemicals or contaminated waste waters will not be allowed to be discharged onto the ground or migrate into any ditch system(s).
- Prevention is the most effective method of protecting the environment against pollution from chemical spills. Measures to prevent spills will be incorporated into all aspects of the facilities: design, work, maintenance and emergency preparedness.
- Design features include mainly containment (spill palette, bund devices, and dike) of the chemicals storage on site to prevent pollution of the environment. Personnel will need to be properly trained to understand routine and emergency procedures and adhere to relevant codes of practice and regulations.
- In addition to the above, the following spill prevention measures shall be taken into account by CONTRACTOR :
  - Regular inspection of any storage area to identify leakage due to poor condition of containers or damage to containers during handling

- Designated area for the maintenance of vehicles e.g. excavators and equipment
- Regular maintenance of vehicles, e.g. excavators and equipment
- Provision of double-walled protection for all liquids inside fuel, lubricant or solvent storage tanks
- Provision of spill response materials in chemicals and fuel storage areas
- Spill containment material, might be sawdust, clay absorbent, sorbent mats and booms, etc.
- Immediate clean up of the spill areas is to be carried out after any spill incident occurs

5.3.2 Oil/Chemical/Fuel Transfers

The following requirements are necessary for oil, chemical or fuel transfer activities where temporary flanges connect the hoses:

- An adequate drip tray shall be provided
- Any spillage shall be collected and disposed of as hazardous waste
- Trucks transporting oils and fuels to site for the earthmoving machinery shall be equipped with anti-spill devices on distribution nozzles and pistols
- Oil changes is expected to be carried out on a paved area within the mechanical workshop area
- During oil changes, portable drip trays shall be placed under engine drain points to prevent any spillage. The contents of the trays will be transferred immediately to sealed drums within the designated waste oil storage areas
- For transfer of fuel from a delivery tanker to a stationary storage tank
- The hose coupling must be compatible
- The use of improvised connections shall not be permitted
- Shut off valves shall be available and easily closable in the event of hose or connection failure
- The operation must be supervised at all times
- Vehicle refueling operations on site shall be carried out only at designated refueling areas

The refueling areas are designed to include the followings:

- Paved and bounded or connected to a retention area
- Located at minimum 30 meters away from any hot work activity
- Delivery pipes shall be properly connected
- Couplings shall be inspected prior to fuel transfer and the shut off valves is easily accessible
- The refueling activity must be supervised at all times by the driver

5.3.3 Spill Containment and Clean-up Equipment

Spills of any petroleum products, chemicals or other hazardous materials shall be immediately contained, cleaned up and reported.

CONTRACTOR shall have stock of spill kits, which shall be proportioned to their activities and shall be ready for use. CONTRACTOR is fully responsible for preventing, cleaning up and reporting any spill relevant to their activities as well as the subcontractor, under CONTRACTOR supervision.

All vehicles transporting oils and chemicals to or within site must carry an emergency spill kit.

Materials used to clean-up spills shall be disposed of as per the site Waste Management procedures.

5.4 Hazardous Material

CONTRACTOR shall ensure the hazards associated with all chemicals being used on the project are evaluated for both personnel and environmental risk and that this risk and the required mitigation is both communicated and implemented.
Methods of communication and mitigation of environmental risk include:

- Provision of MSDS for all chemicals
- Container labeling
- Provision of suitable storage areas and containment
- Warning signage
- Awareness of proper handling techniques
- Spill / cleanup procedures and planning

All chemicals to be used on the project will be identified and assessed, with the details input into the Hazardous Materials Register.

Prior the usage of the chemical, proper protection such as PPE (Personal Protection Equipment), applicable engineering control, storage standards and potential spill prevention and clean-up measures shall be determined.

Discharge of waste-chemical effluent shall be taken with care and only after approval to prevent pollution to the environment. Storage container(s) must be chemically compatible, protected against physical damage or leak and should be suitably sized for chemical effluent storage.

5.5 Waste Management

Waste minimization is a CONTRACTOR strategy for waste management. CONTRACTOR will consider the following:

- Re-use of materials by reducing usage of primary materials, through quarrying and mineral extraction (reducing the impacts associated with transport of both waste and primary materials);
- Minimization of road transport where possible;
- Minimization of packaging materials, agreement with manufacturers and suppliers;
- Re-use of excavated soils generated by earthworks in development works;
- On-site segregation, recycling and processing of waste materials; and
- Preferential energy recovery from any remaining wastes in lieu of landfill disposal where practicable

Some examples of waste control measures are provided below:

- Solid waste generated during construction should be collected, stored on site in appropriate storage facilities, and transported off site to approved disposal facilities
- No on-site landfills will be developed. Hazardous waste generated during construction should be collected and stored separately on site in approved facilities. Hazardous waste will be removed from the site to approved disposal facilities
- Hazardous wastes, as defined by the applicable local regulations, will be stored separately from non-hazardous wastes in accordance with applicable regulations, project-specific requirements, and good waste management practices
- CONTRACTOR Site management will separate waste based on its classifications (organic, non organic, and hazardous waste) prior to disposal on landfill. CONTRACTOR will record wastes amount.
- Hazardous waste will be managed by waste management company which have licensed.
- Suitable protection measures will be incorporated in the design of the waste management areas to prevent pollution
- Waste disposal containers will be appropriately labeled and waste will be correctly segregated on site
- CONTRACTOR field execution management and employees will be required to use suitable appropriately labeled containers that are maintained in suitable conditions for temporary waste storage
- Contaminated soil waste being collected prior to disposal will be stored so as to protect local surface water, minimize the potential for leachate formation and minimize the potential for dust generation
- When leaving the site, haul truck loads will be covered with sheeting to prevent any spill of materials onto the public roadways.
- The site must be left in a clean and tidy condition at the end of each working day

5.5.1 Domestic Waste

Domestic waste management begins by dividing the types of waste that is organic and inorganic waste.

Organic Waste - Degradable

Organic waste is wastes that easily decompose like food scraps, vegetables, dried leaves, etc. This rubbish can be further processed into compost.

Inorganic waste - undegradable

Inorganic waste is waste that is not easily decomposed, like plastic, paper, bottles and glasses of drinks, cans, wood, etc. It can be used as a commercial trash or useful products.

Inorganic waste is divided into :

Recyclable: waste that can be processed and reused because it has economic value such as plastic, paper, clothes and others.

Non recyclable: waste that does not have economic value and cannot be processed or changed like carbon paper, cigarette butts, etc.

5.5.2 Hazardous Waste

Hazardous waste from construction activities will be collected into special containers and stored in a temporary warehouse (workshop). This waste then will be submited to the waste management company which have certification from the Ministry of Environment to manage hazardous waste.

CONTRACTOR will follow the requirement apply for the temporary hazardous storage:

- Hazardous waste stored for a maximum of 90 days in a temporary storage place. If hazardous waste generated less than 50 kilograms per day, hazardous waste can be stored more than 90 days before being handed over to the licensed-third party. (source: Indonesian Government Regulation No. 18 of 1999)
- Hazardous Waste should be protected from direct sunlight and infiltration of rain
- Hazardous Waste which had different characteristics will be separated, e.g. combustible waste apart from explosive
- Temporary storage constructed of suitable material with waterproof floor and is equipped with a bund wall to contain the spill
- Provide Material Safety Data Sheet (MSDS) and socialized it to all workers involved

- Provide symbol of hazardous waste at temporary storage (regulatory of environment minister)
- In and out of hazardous waste from temporary storage will be recorded the Log hazardous waste
- Hazardous waste Inspection must be done once in a week by environmental officer with the relevant departments

5.6 Socio-Economic Environment

This PROJECT is located on Riau Province. Prior to work, CONTRACTOR with COMPANY will do socialization to society about the PROJECT and all factors that will appear during construction phase. CONTRACTOR also will explained the need of workers for this PROJECT.

CONTRACTOR will hire around 379 workers from Riau and around Indonesia. More than 50% workers will be hire from Riau. Riau consist of 2 (two) autonomous cities and 10 (ten) regencies.

CONTRACTOR will prioritize to hire local people at ring 1, society along the pipeline and station for un-skilled labour and ring 2, Riau society for semi skilled labour (or un-skilled labour if the quantity of un-skilled workers in the area were not enough). Recruitment will involve local authorities.

For pipeline area, to avoid jealousy and friction CONTRACTOR will hire workers base on working area, un-skilled workers will work outside their village.

Skilled and semi-skilled positions are filled as follows:

- Preference is given to hiring local candidates for these positions at equivalent experience, capacity, or qualifications;
- If there are insufficient qualified local candidates, preference is then given to hiring qualified Regional candidates for those positions, and then subsequently to National candidates; and
- Expatriate candidates are considered only when National candidates meeting the qualifications and experience requirements cannot be obtained.

From the existance of this PROJECT, CONTRACTOR expect to give positive contribution to the society, especially in the economic side. Use of manpower, housing, food, and other facilities that will be taken from local community enabling economic improvement.
CONTRACTOR shall work by upholding the local values.

5.7 Community Complaint Management

CONTRACTOR has committed to maintain local community, government and engineering and COMPANY satisfaction. In order to fulfill that, community complains management and mitigation processes become the part of the environmental management.

In case complaint from community due to construction work or activity, following action can be an alternate plan to control the situation.

- Complaint will be registered by public relation officer and reporting to management to be follow up
- Each complaint will be subjected for each department or PIC, for example: if complaint raise because of the activity from construction, such as to many dust spread along the resident area (when the excavation work), the subject will be dedicate to Supervisor In charge and acknowledge by Construction Manager
- After a note has been received by Supervisor In charge, he have max 6 days to follow up the complaint
- Action item shall be recorded and shall be known to all nearest local community
- Periodically meeting will be held to discuss how to avoid the similar complaint happen in the future, Public Relation Officer will be the leader of the discussion assist by Environment Officer

5.8 Usage of Natural Resources

The usage of natural resources shall be minimized or optimized. It will be recorded and reported on monthly environment report. Energy and Natural resources used that will be recorded and reported in this project are electricity, water and fuel. Control and monitoring the use of energy and natural resources will be carried on by Environment Officer.
Program to minimize the use of energy and natural resources shall be implemented during the construction phase and will be reported in HSE report.

5.9 Reduce, Re-use, Recycle

The hierarchy consist of a series of management options that can be used to manage waste streams, namely: raw material selection, technology selection, source reduction, reduces, reuse and recycle. The hierarchy concept implies that the management options are ranked in order of preference.

The source reduction and recycling are clearly the preferred management options, nevertheless, the hierarchy allows for flexibility in selecting a mix of control and management options.

The applicability of each of the management options in waste reduction will be dictated by the diversity of site-specific operational needs, as well as, the feasibility and the cost of the various options available. The following descriptions are the preferred steps in the integrated waste management hierarchy and the generally accepted definitions applicable in the oil and gas industry.

Raw Material and Technology Selection

Waste management begins with the selection of raw materials to be selected is the one that potentially generates minimum waste once the process completes. With regards to the constructions and installations in this PROJECT not much room is open for such a selection. This is because the work already require specified material and technology that meet with the common worldwide standard industrial practice in the oil and gas sector.

Source Reduction

Source reduction refers to the reduction or elimination of waste generation at the source, and or reduces the volume of toxicity, usually within a process. Source reduction measures can include types of treatment processes, as well as process modification, and even recycling within a process. It implies any action that reduces the amount of waste generated by a process. Minimize repair rate also be an option of source reduction.

Waste Re-Use

The re-use method is to be implemented after the source reduction method has been thoroughly considered. The wooden support for lining up the onshore pipeline will be recovered and piled. Inventory and segregation of the wood waste will be carried out to separate the “good” wood from the “bad” wood. The good may be re-use for the next job to provide support for pipeline. The bad wood may be re-use for fire-generating heat for cooking by the local people; otherwise they may be land-buried, as woods are easily degradable.

The used lubricating oil may be stored in properly closed drum (see PP No. 18/1999 as references) for reprocess by legal hazardous waste processing company (3rd party). The reprocessed product may be reused for another kind of oil lubrication. Otherwise, the used oil may be used for generating fire in an incinerator.

Waste Recycle

This option is considered after the two previous options have been examined. Recycling onsite should be considered whenever possible. The scrap metals and or the pieces of the welding rod may be sent to steel mills facility for recycle. To do this, temporary storage will be required until certain amount of scrap waste can be sold to third party or transport it to the local milling facility.

5.10 Traffic Management

CONTRACTOR Site Management will conduct regular inspections to verify adequate implementation of traffic management measures. Deviations from site requirements will be corrected.

CONTRACTOR will provide details of site-specific traffic management measures. Typical measures that may be included are listed below:

1. Parking will be permitted only in designated areas. Parking on other areas of the site or on the public highway will not be permitted
2. All field execution traffic and deliveries will arrive via an off-site truck parking lot to facilitate appropriate traffic management when necessary
3. All vehicles exiting the site must pass through the wheel washing facility and the site security compound
4. Special arrangements and prior agreement with the police/local authorities (in consultation with the COMPANY) will be obtained for the routing and timing of any abnormal and large loads to or from the site
5. CONTRACTOR will control all deliveries and traffic entering and exiting the site
6. Working hours will be limited. Working outside of these hours will require the approval of the COMPANY and the appropriate authorities
7. A maximum speed limit will apply on the site for the safety of the workforce and to minimize disturbance from noise and dust. At large sites in unpopulated areas with significant distances between site facilities, this speed limit may be modified
8. CONTRACTOR shall maintain clear and safe pedestrian access to all office accommodation
9. Specified on & near access road construction activity, CONTRACTOR shall provide adequate safety sign to make others driver (public user) to be aware for the activity or any hazard

6 OCCUPATIONAL HEALTH

CONTRACTOR will carry on health protection program to prevent employee's health disturbances such as:

6.1 Medical Check Up

To avoid any accident during construction phase, CONTRACTOR shall ensure that all workers are medically fit to work. All workers shall undergo medical examination carried by doctors and medic personnel. For key personnel or staff and specific workers will undergo specified Medical Check Up (MCU). Copy of MCU result will be recorded by HR personnel.

For non staff personnel shall submit health/medical letter complete with examination result of heart and blood pressure validated by Doctors.

6.2 Sanitation

Sanitation is the hygienic means of promoting health through prevention of human contact with the hazards of waste as well as the treatment and proper disposal of sewage or wastewater. Wastes that can cause health problems include human and animal excreta, solid wastes, domestic wastewater (sewage or greywater) and industrial wastes. Hygienic means of prevention can be using engineering solutions such as sanitary sewers, sewage treatment, surface runoff management, solid waste management and simple technologies such as septic tanks or even simply by behaviour changes in personal hygiene practices, such as hand washing with soap.

CONTRACTOR shall provide and maintain sanitary facilities especially the provision of clean drinking water and adequate sewage disposal, including chemical toilets for the use of all personnel engaged in work under this PROJECT. Toilet is one of the employee's welfare factors. In ROW, where there is no Toilet, CONTRACTOR can provide portable chemical toilets base on need and distance calculation. The toilet shall be provided with enough light and water and it shall be cleaned periodically.

CONTRACTOR will provide hand soap and sufficient information of the importance of hand cleaning, to prevent contagious disease by bacteria.

6.3 Medic Facilities

CONTRACTOR shall provide medical room. Other emergency facilites such as ambulance with its equipments will be provided by nearby hospital as needed.

6.4 First Aid Equipment

The PROJECT shall provide first aid equipment and facilities in the form of:

- First aid sets to be taken on site, in vehicles and office. They must be maintained by first aiders;

- For location under the PROJECT supervision (vessels, yards etc) a sick-bay must be arranged where first aid can be dispensed by a competent and well trained person;
- The equipment recommended for the clinic includes :
  - A comprehensive store of common medicine and first aid apparatus (aspirin, disinfectant, gauze, thermometer, etc.). Classification drugs/medicines must be kept in a locked place with an up to date inventory;
  - Oxygen respirator (resuscitator);
  - Stretcher (preferably of the vacuum type);
  - Splints (preferably of inflatable type); and
  - Sufficient provision of beds, blankets and sheets.

All other equipment necessary to deal with the more likely injuries: traumatisms, open wounds, extensive burns, eye injury, broken or displaced bone or joint, etc. should also to be provided.

6.5 Drinking Water

CONTRACTOR shall provide water for drinking to all personnel in each activity in the PROJECT. Water for drinking shall meet standard released by Ministery of Health Republic of Indonesia withe Minister of Health Regulation No.492/MENKES/PER/IV/2010 about Drinking Water Quality Policy, and the other one is base on National Indonesia Standard (SNI) No.01-3553-2006 about Drinking Water in Package. Water quality is important point and CONTRACTOR shall ensure the water quality by testing the Drinking Water to Laboratory Services. The drinking water shall be:

- Free from pathogenic (disease causing) organism
- Clear (with low turbidity and little color)
- Not saline (salty in taste)
- Free from offensive taste or smell
- Free from compiunds that may have adverse effects on health or harmfull in long term
- Free from chemicals that may cause corrosion of water supply system

Need for water intake for man is 3 (three) liters of water while for woman is 2.2 liters but can be variant depend on the daily activities, weather, body condition and other factors. Field workers need more water than average. CONTRACTOR shall ensure the sufficient of drinking water at site.

6.6 Employee Welfare

CONTRACTOR shall provide facilities such as: mess, toilets, shelter at worksite, drinking water, adequate transportation, medical or first aid facilities, refreshing or break time and other activities related to employees' welfare. Field break shall be given to employee which recruited outside the PROJECT area.

7 SUBCONTRACTOR MANAGEMENT

Subcontractor management shall be implemented to ensure alignment between SUBCONTRACTORs performance that work under CONTRACTOR's in this PROJECT, with COMPANY's requirements to assure quality to each work they will perform.

7.1 Subcontractor Selection

SUBCONTRACTORS shall undergo pre-qualification by reviewing different aspects of work performance including HSE aspects, such as:

- A formal HSE review of the subcontractor being performed by HSE department.
- The scope of the review was commensurate with the hazards and risk exposure.
- Subcontractor has been/will be oriented to the HSE policies, expectations and requirements of CONTRACTOR
- The subcontractor agrees to abide by CONTRACTOR 's Drug and Alcohol policy and on site safety rules throughout the duration of the work.

Any subcontractor that has a "Non-Approved" HSE status will not be used on any CONTRACTOR's site.

7.2 Subcontractor Evaluation

Evaluation to subcontractors will be taken during working period to assess their performances (by performing audit) and after the work is done. Evaluation shall be lead by Procurement and assisst by related department such as HSE, Quality and Construction.

8 EMERGENCY PREPAREDNESS

8.1 Emergency Response Plan

An emergency response plan (ERP) will be developed for each worksite prior to work commencing. The plan(s) and supporting procedures will address medical resources, medical evacuation, fire, explosion and typhoon response and evacuation of personnel, oil spillage/oil leakage, and other specific procedures such as collision and man overboard where applicable.

Probable maximum incident severity will require being determined, and plans developed accordingly. Drills and exercises shall be undertaken to test the effectiveness of the plan and the resources that it relies upon.

Bridging/coordination with COMPANY's Emergency Team shall be developed.

8.2 Emergency Situation

- Earthquake
- Severe weather
- Hazardous substance exposure
- Radiography exposure
- Bomb Threat
- Accident
- Man overboard/drowning
- Fire Hazard
- Social Conflict

8.3 Emergency Response Team

- Following an incident, it is important to control the situation, incident causing people act differently, They want to know what has happening, try to help, often they act irrationally that could difficult the rescuing effort.
- For that reason CONTRACTOR will establish an Emergency Response Team (ERT) for each work site.
- ERT consist of 5 – 6 construction personnel appointed by and responsible to the Construction Manager. They work normally until an emergency situation is arising where they will automatically become an ERT member. Each member will have their assignment depend on the type of the emergency. They will identify by a specified sticker on their hard hat or wears an arm band. Membership of an Emergency Response Team will be decided by Construction Manager.
- Member of ERP will receive training in the fighting of small fire, perform cardiac pulmonary resuscitation until paramedic arrive, apply simple tourniquet to stop bleeding, reporting to security on Duty which in turn will report to Construction Manager.

EMERGENCY RESPONSE TEAM & ROLE

TITLE	FIRE	EARTH QUAKE	INJURY	DAMAGE	EVACUATION	HAZARDOUS SUBSTANCE
Area Coordinator/ **Construction Manager**	ascertains stand-by team and equipments, Coordination with HSE Coordinator for ERT member training and equipment maintenance	ascertains stand-by team and equipments, Coordination with HSE Coordinator for ERT member training and equipment maintenance	ascertains stand-by team and equipments, Coordination with HSE Coordinator for ERT member training and equipment maintenance	ascertains stand-by team and equipments, Coordination with HSE Coordinator for ERT member training and equipment maintenance	ascertains stand-by team and equipments, Coordination with HSE Coordinator for ERT member training and equipment maintenance	ascertains stand-by team and equipments, Coordination with HSE Coordinator for ERT member training and equipment maintenance
	report the emergency situation to project management.	report the emergency situation to project management.	report the emergency situation to project management.	report the emergency situation to project management.	report the emergency situation to project management.	report the emergency situation to project management.
Team Leader/ Commander/ **HSE Coordinator**	takes over the emergency situation control, leads the evacuation effort and perform counting head of workers assembled in muster point	takes over the emergency situation control, leads the evacuation effort and perform counting head of workers assembled in muster point	takes over emergency situation by preventing other accident occur, mass control, handling injured victim.	takes over emergency situation control by preventing next damage occur, mass control and secure event location	ensure all people have left the scene and assembling in Muster Point. If possible, turn off electricity	ensure the spill/exposure had secured and cleaned up. Coordination with team members
Leader Deputy/ Instructor/ **First Aider**	call security on-duty to inform the emergency situation. Report to Leader	call security on-duty to inform the emergency situation. Report to Leader	call security on-duty to inform the emergency situation. Report to Leader	call security on-duty to inform the emergency situation. Report to Leader	call security on-duty to inform the emergency situation. Report to Leader	call security on-duty to inform the emergency situation. Report to Leader

ERT Member 1/ Supporting Team	try to extinguish the fire using portable fire extinguisher	assist team leader to evacuate people from the area	prepared with first aid kit, asisst team leader handling the injured. standby as stretcher #1	securing area, mass-control	assist team leader to evacuate people from the area	prepared with environmental spill kit, clean up the spill/ close the expose area
ERT Member 2/ Supporting Team	try to extinguish the fire using portable fire extinguisher	assist team leader to evacuate people from the area	prepared with stretcher , asisst other member handling the injured. standby as stretcher #2	assist other member, by clearing/ securing area with baricades if necessary	assist team leader to evacuate people from the area	prepared with environmental spill kit, clean up the spill/ close the expose area
ERT Member 3/ Supporting Team	standby with fire extinguisher, assist Member 1 and 2 if necessary	assist team leader to evacuate people from the area	prepared with stretcher , asisst other member handling the injured. standby as stretcher #3	assist other member, by clearing/ securing area with baricades if necessary	assist team leader to evacuate people from the area	prepared with environmental spill kit, clean up the spill/ close the expose area
ERT Member 4/ Supporting Team	standby with fire extinguisher, assist Member 1,2, and 3 if necessary. Report to Team Leader to receive certain task such as: turn off the electricty.utilit y	assist team leader to evacuate people from the area	prepared with stretcher , asisst other member. standby as stretcher #4	assist other member. report to Team Leader	assist team leader to evacuate people from the area	prepared with environmental spill kit, clean up the spill/ close the expose area

Communication/ Radio Room	call the nearest fire brigades, clinic/ hospital and police dept if necessary	call the nearest fire brigades, clinic/ hospital and police dept if necessary	call the nearest clinic/ hospital and police dept. if necessary	call the nearest fire brigades, clinic/ hospital and police dept if necessary	call the nearest fire brigades, clinic/ hospital and police dept if necessary	call the nearest fire brigades, clinic/ hospital and police dept if necessary

8.4 Emergency Response Equipment

Emergency Response Equipments such as spill kit, gas detector, fire extinguisher, stretcher, ambulance and first aid kit shall be properly operated and provided around PROJECT AREA.

Equipment	Location	PIC	Inspection
Ambulance (4WD)	Workshop	Health Officer	Once a month
First Aid Kit	Every area	Health Officer	Once a month
Fire Extinguisher	Every area	Safety Officer	Once a month
Stretcher	Inside Ambulance, HSE	Health Officer	Once a month
Spill Kit	Every area	Environment Officer	Prior to provision
Gas Detector	Workshop	Safety Officer	Once a month

8.5 Emergency Evacuation

This step below is taken because of the following emergency situation. Special emergency instruction will be made for CONTRACTOR site. The following steps should be done:

1. Identify the type of hazard/emergency on the happening situation
2. Identify wind direction to determine Muster Point and crossing evacuation procedure.
3. Assembly Points located in two area (in front of the building and in the back)
4. Provide Portable Announcer (portable loud speakers) to help giving direction.
5. All personnel shall be gathering at Muster Point that had been determined.
6. The ERT Leader will count all people gathered at Muster Point.
7. All electricity shall be shut down from center panel located inside room beside stairs on ground floor
8. All vehicles are parked at the place that will not interfere when the emergency vehicles entered the venue.
9. Do not back to work station until “All Clear” sign is announced or rings
10. Asembbly Point (Muster Point) will be given “M” alphabet, with the green board and white color in the center. Muster point always be placed above the wind from emergency area / emergency venue
11. The Emergency Control Center is located in the office, leaded by Project

Manager, assisted by HSE Manager and ERT.

12. There are no information that can be release to media or other party without the approval of Project Manager.
13. Establish parking rule that regulates all parking vehicle must be park in reversed position
14. If there is any injured person and needed medical treatment, ERT and first aider shall take the person to nearest (appointed) hospital (see medical evacuation)

8.6 Medical Evacuation

Medical evacuation will be provided by CONTRACTOR in case of any medical emergency situation by using ambulance from nearby hospital. Health officer will be person in charge to take victim to nearest hospital for further medical treatment.

Medical treatment service will be provided by a Hospital with 24 hours a day access to an off-site consultant physician. A clinic, a national doctor, paramedics, and two ambulances will be provided to meet service as follows:

- General medical care, including diagnosis and therapy of common, acute medical condition.
- First aid and minor trauma management.
- In-field stabilization of medical and surgical emergencies.
- Rescue, extrication and medical transportation of ill and injured parties by suitable air, water, or ground transport to designated referral hospital.

Staffing, equipment, programs and procedures, and supplies for medical service shall be in accordance with PROJECT's requirements, Manual, Company's policy.

8.7 Emergency Institution & Contact Numbers

Below list of Emergency Institution and contact numbers nearby PROJECT area:

Polres Siak	: (0764) 20 110
Polsek Minas	: (0761) 598 110
Polsek Tualang Perawang	: (0761) 91 448
BASARNAS Riau	: (0761) 674 821
Pemadam Kebakaran Perawang	: (0761) 91088 6000/ 6001
RSUD Siak	: (0764) 200 11

8.8 Emergency Drill

To ensure the Emergency Response Plan and Preparadness is effective, the emergency drill or exercise will be conducted every 6 (six) month. Emergency drill will be held on different type of emergency lead by HSE coordinator. Scenario shall be made prior to commencing drill and will be reported to COMPANY.

8.9 Emergency Preparadness Evaluation

Emergency preparedness evaluation shall be taken after drill including. Following the scenario, HSE Coordinator will do the evaluation on the emergency drill especially on the total evacuation time takes during the evacuation, the readiness of the emergency response team on their rules, the participation of the employee, the effectiveness of Emergency Response Procedure, and the availaibility and readiness of the emergency equipment.

9 OBSERVATION & INTERVENTION

As one of HSE Program in this PROJECT, Observation and Intervention program shall be conduct by all workers (within CONTRACTOR and also COMPANY).

Workers are encouraged to file report of any unsafe act or condition in workplace. In case of any unsafe act or condition in daily basis, worker shall report it to HSE officer to be followed up by filling SHES Card.

Observation result will be collected each month, and for worker with numerous amount of report regarding to any unsafe act or condition will be awarded.

The main purpose of the observation & Intervention program is to minimize occurence of nearmisses, anomaly cases, or even incident.

10 SAFETY AWARDS

10.1 Safety Personnel Award

SHES Card Award will be awarded once in a month for employee and work team based on the quantities and qualities of the reports.

10.2 Safe Work Celebration

Safe Manhours without LTI will be celebrate on 350.000 Manhours and 700.000 Manhours. All worker, subcontractor and COMPANY will be participate on the celebration.

11 HSE VIOLATION

In case of HSE Violation done by worker under CONTRACTOR's, he/she will get disciplinary provision/sanction from CONTRACTOR's management, based on the severity of violation refer to disciplinary rules set by CONTRACTOR.

Employees:

- Shall not smoking in working area except on the designated location
- Shall wear PPE all the time in working area

- Shall not drink alcohol during working hours and or at working premysis
- Shall not use prohibited drugs
- Shall not have a quarrel in working area
- Shall follow procedures to work
- Shall follow all the disciplinary rules set by CONTRACTOR

12 INCIDENT REPORTING & INVESTIGATION

12.1 Incident Reporting

Every incident and near miss shall be reported immediately to ensure that an investigation is conducted to determine the cause and identify appropriate corrective actions to prevent recurrence.

12.2 Incident Investigation

Every incident or near miss shall be investigated and an Incident Investigation team shall be set up to investigate the caused of the incident.

Project Manager shall issue a detailed report of the investigation to COMPANY within 7 (seven) days after the incident occured.

The result of the incident investigation report shall be announced to all employee/ workers through the bulletin board/ meetings.

The main purpose of the investigation is to find out the incident causes, and to establish suitable corrective actions, which will then reduce the possibility of a similar incident to occur.

12.3 Lesson Learned

Learning from incidents could help to prevent incidents in the future. Incident report will be shown on bulletin board, discuss on safety talk and HSE meeting.

13 INTERFACE

Interfacing with other company, contractor and facilites will occur during this PROJECT execution. Interface activity (communication) such as coordination meetings and correspondencies with related parties will be conducted to ensure effective work and to avoid impacts/ obstacles during work commencing.

14 LAW AND REGULATION COMPLIANCE

To ensure safety work practices, CONTRACTOR wil make list of regulations related to work activities in PROJECT including Codes, Standards, and Reference. CONTRACTOR then will make program to achieve compliances regarding to all the related laws and regulations.

15 SITE SECURITY PLAN

CONTRACTOR shall responsible for all materials and equipment in his custody or placed in construction by him and shall take all necessary precautions to ensure the protection of all materials, aequipment and construction work from theft, vandalism, and fire and all other damage and loss.

Security personnel employed by CONTRACTOR shall be competent and experienced to secure the area, material, equipment and tools that owned both by CONTRACTOR and COMPANY at CONTRACTOR's premysis. Security personnel shall be uniformed and registered to COMPANY. All such personnel shall be approved by COMPANY prior the employement .

Each person employed on the construction site shall bewearing an identification badge and registered to COMPANY's security organization. CONTRACTOR shall provide badges for his employees and subcontractors which shall be coordinated with the identification system in PROJECT and shall be approved by COMPANY. In addition to personnel identification, all licensed construction vehicles shall be registered to COMPANY's security organization and shall be marked with a suitable identification sticker. The licensed vehicles of construction personnel autorized to bring their vehicles on site shall be similarly registered and marked.

Prior entering CONTRACTOR premysis, all visitors shall report to Security, Vehicle or Equipment shall be checked by Security on Exit and Entry to ensure there are no harmfull material entering the area and there are no material, tools or equipment exit the area without permission.

16 ATTACHMENT

16.1 HSE Program
16.2 HSE Organization Chart
16.3 HSE Training Program
16.4 Risk Assessment
16.5 PPE Matrix
16.6 List of HSE Procedure
16.7 HSE KPI
16.8 HSE Statistic Form
16.9 SHES Card
16.10 Incident Investigation Form
16.11 HSE Policy Statement
16.12 Drugs & Alcohol Policy Statement

Appendix I. Stakeholder Engagement Plan Including Community Grievance Mechanism

Riau 275 MW Gas Combine Cycle Power Plant IPP Project - ESIA

PT. Medco Ratch Power Riau

Technical Report - Stakeholder Engagement Plan

AM039100-400-GN-RPT-1003 | V3

May 2018

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Riau 275 MW Gas Combine Cycle Power Plant IPP Project - ESIA

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Jacobs New Zealand Limited

Level 3, 86 Customhouse Quay,
PO Box 10-283
Wellington, New Zealand
T +64 4 473 4265
F +64 4 473 3369
www.jacobs.com

Contents

Important note about your report

The sole purpose of this report and the associated services performed by Jacobs New Zealand Limited ("Jacobs") is to describe the Stakeholder Engagement Plan for power plant and supporting facilities component of the Riau IPP Project in accordance with the scope of services set out in the contract between Jacobs and the Client. That scope of services, as described in this report, was developed with the Client.

In preparing this report, Jacobs has relied upon, and presumed accurate, any information (or confirmation of the absence thereof) provided by the Client and/or from other sources. Except as otherwise stated in the report, Jacobs has not attempted to verify the accuracy or completeness of any such information. If the information is subsequently determined to be false, inaccurate or incomplete then it is possible that our observations and conclusions as expressed in this report may change.

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The report is based on information supplied by Jacobs' Client and from information held by Jacobs for the Riau Project.

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1. Introduction

1.1 Preamble

This Stakeholder Engagement Plan (SEP) supports an Environmental and Social Impact Assessment (ESIA) for the construction and operation of the Riau 275 MW Combined Cycle Gas Fired Power Plant IPP Project (Riau 275 MW CCPP). The Project consists of a 275 MW combined cycle power plant and ancillary facilities, a 40 km long 12-inch gas pipeline, and a switchyard and 150 kV transmission line - collectively referred to hereafter as the 'Project'. 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 PLN.

This SEP outlines the process for engagement with key stakeholders and communities potentially affected by the Project. Specifically, it relates to the environmental assessments required, including baseline investigations and the preparation of the AMDAL and ESIA. The proposed stakeholder engagement programme has been developed to comply with both environmental impact assessment legislation in Indonesia, and international guidance notes such as the Asian Development Bank (ADB) Safeguard Policy Statement, International Finance Corporation (IFC) Performance Standards and the Equator Principles.

1.2 Project Description and Scope

The Project will be located approximately 10 km due east of Pekanbaru city, approximately 3 km south of the Siak River and 2 km south of the existing Tenayan Coal Fired Power Plant (CFPP). The power plant and switchyard well be comfortably accommodated inside approximately 9.1 ha of land being procured by the Sponsors. It should be noted that at this stage of the Project, the estimated size and type of components of the Project are estimates only. Key components of the project will comprise the following:

- Power generated by 2 x 1 combined cycle plant, delivering up to 275 MW;
- River water intake and outlet;
- Air emissions will be released to the atmosphere via 2 x 45 m tall, 3.8 m diameter chimneys;
- Wet mechanical draft cooling tower;
- Earthworks to level and raise the power plant platform to approximately 28 m above mean sea level;
- Gas will be supplied from TGI Gas Station 40 km from the powerplant via a 12-inch diameter pipeline (gas is the only fuel for the project.); and
- a 150 kV switchyard at the plant, with a 750 m double-phi connection to intercept the Tenayan – Pasir Putih 150 kV transmission line.

The Power Plant site is located to the east of Pekanbaru City, in Tenayan Industrial Village (previously known as Sail Village), Tenayan Sub District (Figure 1.1). The site bounded by palm oil plantation to the west, south and east and Road 45 on the North.

MRPR proposes to construct a 750 m long 150 kV transmission line to tie in to Tenayan – Pasir Putih 150kV existing transmission line. Four transmission towers will be erected between the power plant and the existing transmission line.

MRPR also proposes to seek gas supply from TGI Perawang Station in Siak Regency, about 40 km on the north-east from the power plant. The gas will be delivering by pipe, mostly underground and follow the road reserve. At the time of writing MRPR is still in the process of finalising the land acquisition process. An outline of the Project area is provided in Figure 1.1.

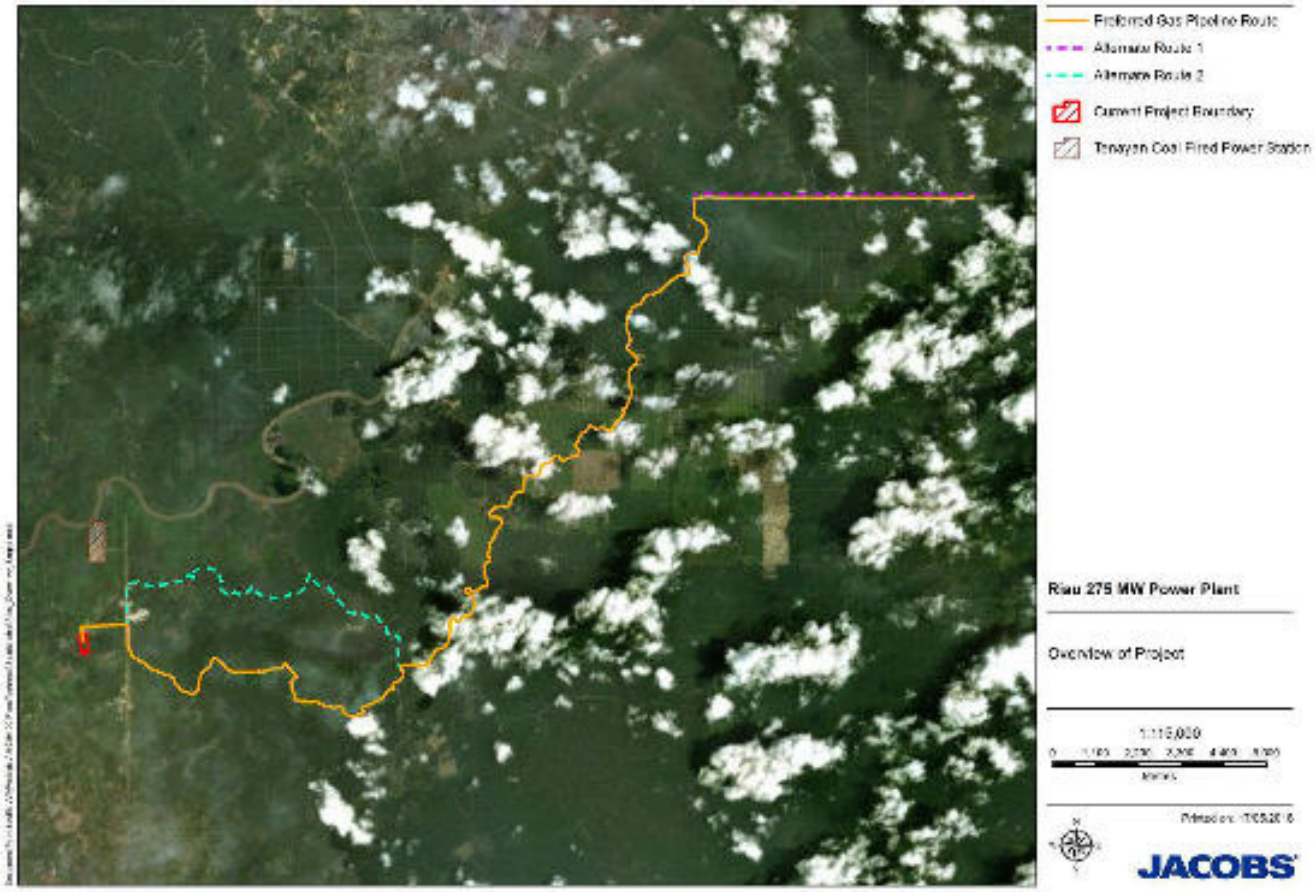

Figure 1.1 : Outline of Proposed Project Area

Figure 1.2 shows the power plant site in relation to the general area and proposed connections to services.

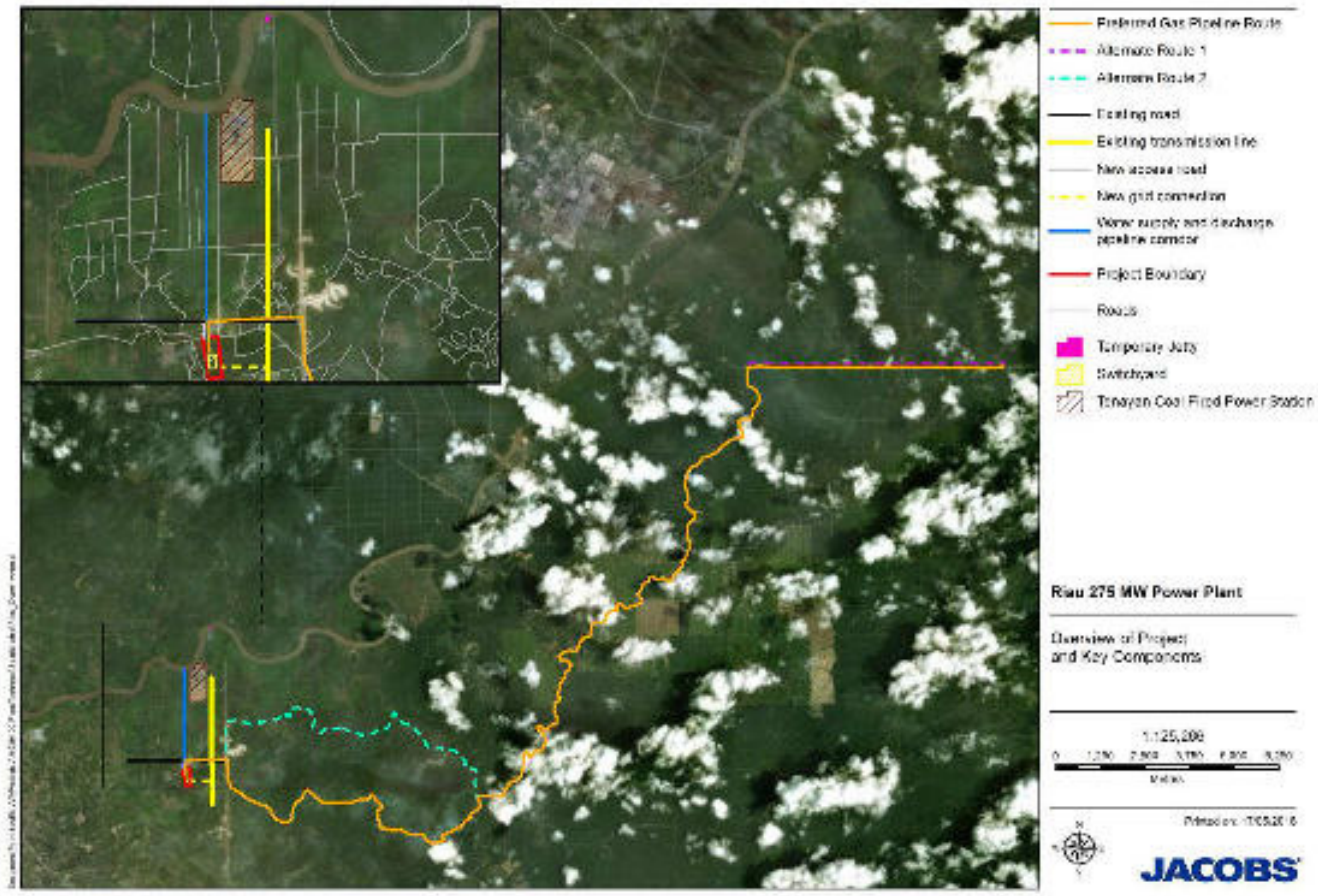

Figure 1.2: Site – General Area, Plant footprint and Service Connections

1.3 Purpose

This SEP has the following key objectives:

- describes the proposed methods and processes by which local communities, stakeholders and interested parties will be consulted in relation to the Project throughout the pre-construction, construction and operation phases;
- outlines the means and locations of information disclosure; and
- outlines the grievance mechanism by which stakeholders and/or interested parties can raise their concerns and observations.

Community and stakeholder engagement is a key component of the AMDAL and ESIA investigations. Objectives of the SEP are to:

- provide timely and relevant information about the Project, process for the feasibility investigations and decision-making, and activities to be conducted for the feasibility investigations;
- provide relevant information about potential Project impacts to allow stakeholders and community members to provide feedback;
- provide opportunities for feedback from a broad range of stakeholders, particularly those most likely to be affected by Project activities; and

- ensure early identification of potential stakeholder issues to inform the feasibility investigations and technical assessments.

The purpose of the stakeholder engagement programme is to ensure that all key stakeholders are involved early in the consultation process and remain involved throughout the development of the Project, to canvas their views and concerns and to minimise the impact on key stakeholders, including landowners, nearby communities etc.

The stakeholder engagement programme is about building and maintaining constructive relationships with project stakeholders throughout the duration of the Project, including ensuring stakeholders are engaged in a culturally appropriate manner and that relevant and understandable information is provided in a timely fashion.

1.4 Structure of this Plan

This SEP is structured as follows:

- Section 2: Regulations and Requirements
- Section 3: Stakeholder Analysis
- Section 4: Stakeholder Engagement Program
- Section 5: Ongoing Stakeholder Engagement Activities
- Section 6: Resources and Responsibilities
- Section 7: Grievance Mechanism
- Section 8: Monitoring, Reporting and Management Functions

2. Regulations and Requirements

The purpose of this section is to set out the requirements that apply to stakeholder engagement for the Project. These are driven by:

- Asia Development Bank (ADB) Safeguard Policy Statement (Section 2.1);
- Principles and procedures specified by the Equator Principles, which integrate the IFC's Social and Environmental Policy and Performance Standards (Section 2.2);
- World Bank Environmental, Health and Safety Guidelines (Section 2.3);
- Good international industry practice (Section 2.4); and
- The legal framework for AMDAL in Indonesia (Section 2.5).

2.1 Equator Principles

To comply with environmental and social performance requirements of potential Project partners, the Project must comply with the Equator Principles, which have been developed by the Equator Principles Financial Institutions (EPFIs) to ensure that projects are developed in a manner that is socially responsible and reflects sound environmental and socially responsible management practices.

There are ten Equator Principles:

- Principle 1: Review and Categorisation
- Principle 2: Environmental and Social Assessment
- **Principle 3: Applicable Environmental and Social Standards**
- Principle 4: Environmental and Social Management System and Equator Principles Action Plan
- **Principle 5: Stakeholder Engagement**
- **Principle 6: Grievance Mechanism**
- Principle 7: Independent Review
- Principle 8: Covenants
- Principle 9: Independent Monitoring and Reporting
- Principle 10: Reporting and Transparency

The key principles that are relevant to stakeholder engagement are presented in the following paragraphs:

2.1.1 Principle 3: Applicable Environmental and Social Standards

Projects located in 'non-designated countries' must be evaluated for compliance with the applicable IFC Performance Standards on Environmental and Social Sustainability (IFC Performance Standards) and the World Bank Group Environmental, Health and Safety Guidelines (WBG EHS Guidelines). Indonesia is considered a non-designated country by the IFC and consequently the IFC Performance Standards and EHS Guidelines apply.

2.1.2 Principle 5: Stakeholder Engagement

Principle 5 requires the following:

"For all Category A and Category B Projects, the EPFI will require the client to demonstrate effective Stakeholder Engagement as an on-going process in a structured and culturally appropriate manner with Affected Communities and, where relevant, Other Stakeholders. For Projects with potentially significant adverse impacts on Affected Communities, the client will conduct an Informed Consultation and Participation process.

The client will tailor its consultation process to: the risks and impacts of the Project; the Project's phase of development; the language preferences of the Affected Communities; their decision-making processes; and the needs of disadvantaged and vulnerable groups. This process should be free from external manipulation, interference, coercion and intimidation. To facilitate Stakeholder Engagement, the client will, commensurate to the Project's risks and impacts, make the appropriate Assessment Documentation readily available to the Affected Communities, and where relevant Other Stakeholders, in the local language and in a culturally appropriate manner. The client will take account of, and document, the results of the Stakeholder Engagement process, including any actions agreed resulting from such process."

2.1.3 Principle 6: Grievance Mechanism

Principle 6 requires the following:

"For all Category A and, as appropriate, Category B Projects, the EPFI will require the client, as part of the ESMS, to establish a grievance mechanism designed to receive and facilitate resolution of concerns and grievances about the Project's environmental and social performance. The grievance mechanism is required to be scaled to the risks and impacts of the Project and have Affected Communities as its primary user. It will seek to resolve concerns promptly, using an understandable and transparent consultative process that is culturally appropriate, readily accessible, at no cost, and without retribution to the party that originated the issue or concern. The mechanism should not impede access to judicial or administrative remedies. The client will inform the Affected Communities about the mechanism in the course of the Stakeholder Engagement process.'

2.2 ADB Safeguard Policy Statement

The ADB Safeguard Policy Statement (2009) covers the following:

- **Environmental** - To ensure the environmental soundness and sustainability of projects and to support the integration of environmental considerations into the project decision-making process;
- **Involuntary Resettlement** - To avoid involuntary resettlement wherever possible; to minimize involuntary resettlement by exploring project and design alternatives; to enhance, or at least restore, the livelihoods of all displaced persons in real terms relative to pre-project levels; and to improve the standards of living of the displaced poor and other vulnerable groups; and
- **Indigenous Peoples Safeguards** - To design and implement projects in a way that fosters full respect for Indigenous Peoples' identity, dignity, human rights, livelihood systems, and cultural uniqueness as defined by the Indigenous Peoples themselves so that they (i) receive culturally appropriate social and economic benefits, (ii) do not suffer adverse impacts as a result of projects, and (iii) can participate actively in projects that affect them.

2.2.1 ADB Safeguard Policy Statement Requirements

All three ADB Safeguard Policy Statement requires the following in relation to stakeholder engagement:

- **Information disclosure** – i.e. displaying the ESIA or IEE on the Project Sponsor/ADB website;
- **Consultation and participation** - The Project Sponsor will carry out meaningful consultation with affected people and other concerned stakeholders, including civil society, and facilitate their informed participation; and
- **Grievance redress mechanism** - borrower/client will establish a mechanism to receive and facilitate resolution of affected peoples' concerns, complaints, and grievances about the project's environmental performance.

2.3 IFC Performance Standards

Compliance with the IFC Performance Standards is a requirement of Equator Principle 3. There are eight Performance Standards with the Performance Standards that are relevant to stakeholder engagement being Performance Standard 1 and Performance Standard 5.

2.3.1 IFC Performance Standard 1: Assessment and Management of Environmental and Social Risks and Impacts

IFC Policy requires project proponents to engage with affected communities through disclosure of information, consultation, and informed participation, in a manner commensurate with the risks to and impacts on the affected communities. This Performance Standard contains clear requirements for community engagement, disclosure of information and consultation. The key objectives are:

- 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; and
- 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.

Performance Standard 1 requires that particular attention be given to:

- *Vulnerability:* As part of ESIA, individuals and groups that may be differentially or disproportionately affected by the project because of their disadvantaged or vulnerable status must be identified. Where groups are identified as disadvantaged or vulnerable, the project must propose and implement differentiated measures if necessary so that adverse impacts do not fall disproportionately on them and they are not disadvantaged in sharing development benefits and opportunities;
- *Community engagement:* Community engagement must be undertaken with affected communities on an ongoing basis and must include disclosure of information. Engagement must be free of external manipulation, interference, coercion or intimidation, and must be conducted on the basis of timely, relevant, understandable and accessible information;
- *Disclosure:* The ESIA and ESMP must be publicly disclosed. If communities may be affected by risks or adverse impacts from the Project, the Project Sponsor must provide such communities with access to information on the purpose, nature and scale of the project, the duration of proposed project activities, and any risks to and potential impacts on such communities. This must be undertaken in a manner that allows sufficient time for the affected communities to consider the issues and provide feedback. For projects with adverse social or environmental impacts, disclosure must occur early in the ESIA process, in any event before the project construction commences, and on an ongoing basis;
- *Community risk and impact:* If affected communities may be subject to risks or adverse impacts from a project, the proponent must undertake a process of consultation in a manner that provides the affected communities with opportunities to express their views on project risks, impacts, and mitigation measures, and allows proponents to consider and respond to any comments received. Consultation must be undertaken in a manner that is inclusive and culturally appropriate;
- *Informed participation:* For projects with significant adverse impacts on affected communities, the consultation process must ensure that free, prior and informed consultation with affected communities occurs and that processes exist to facilitate participation by those affected. Informed participation involves organized and iterative consultation, leading to the proponent incorporating into their decision making process the views of the affected communities on matters that affect them directly, such as proposed mitigation measures, sharing of development benefits and opportunities, and implementation issues;
- *Grievance mechanism:* The proponent must establish a grievance mechanism to receive and facilitate resolution of the affected communities' concerns and grievances regarding the project's social and environmental performance. The grievance mechanism must be scaled to the risks and adverse impacts of the project. It must address concerns promptly, using an understandable and transparent process that is

culturally appropriate and readily accessible to all segments of the affected communities, at no cost and without retribution;

- *Broader stakeholder engagement:* The proponent must identify and engage with stakeholders that are not directly affected by the Project but those that have established relationships with local communities and/or interest in the Project – local government, civil society organisations, etc. – and establish a dialogue; and
- *External reporting:* The proponent must provide periodic reports that describe progress with implementation of the Environmental and Social Management Plan on issues that involve ongoing risk to or impacts on affected communities, and on issues that the consultation process or grievance mechanism has identified as of concern to those communities. These reports must be in a format accessible to the affected communities. The frequency of these reports must be proportionate to the concerns of affected communities but not less than annually. During the construction period of the Project, feedback must be provided to the affected communities on a monthly basis.

2.3.2 IFC Performance Standard 5: Land Acquisition and Involuntary Resettlement

The main objectives of Performance Standard 5 are to avoid where possible, and otherwise minimise, the need for involuntary resettlement and to mitigate the adverse social and economic impacts of land acquisition or restrictions on affected persons' use of land. This should be done by: 1) providing compensation for loss of assets at replacement cost; and 2) ensuring that resettlement activities are implemented with appropriate disclosure of information, consultation, and the informed participation of those affected. The overarching intent is to improve or at least restore the livelihoods and standards of living of displaced persons prior to their resettlement.

2.4 Good International Industry Practice

The preparation of this SEP has been informed by the following IFC good practice guidance documents:

- Stakeholder Engagement: A Good Practice Handbook for Companies Doing Business in Emerging Markets (May 2007); and
- Doing Better Business Through Effective Public Consultation: A Good Practice Manual (November 1998).

2.5 Indonesian AMDAL Process

The AMDAL (Environment Impact Assessment) is the key Government of Indonesia regulatory approval process required for the Project to proceed. The process is illustrated in the schematic provided in Figure 2.1 below.

The AMDAL process includes a comprehensive consultation programme with stakeholders at local, provincial and central levels. Prior to commencing the environmental studies required by AMDAL, the Project Sponsor must conduct Project consultation including a public meeting to inform the potentially affected communities about the proposed activities. As part of this process, the community are able to express their comments, concerns and expectations within a 30 day period and the Project Sponsor is to take the community inputs into consideration in preparing the AMDAL report. It is important to note that all information regarding the AMDAL report, including comments from the communities and AMDAL committee, and the decision on the AMDAL report, must be disclosed to the public.

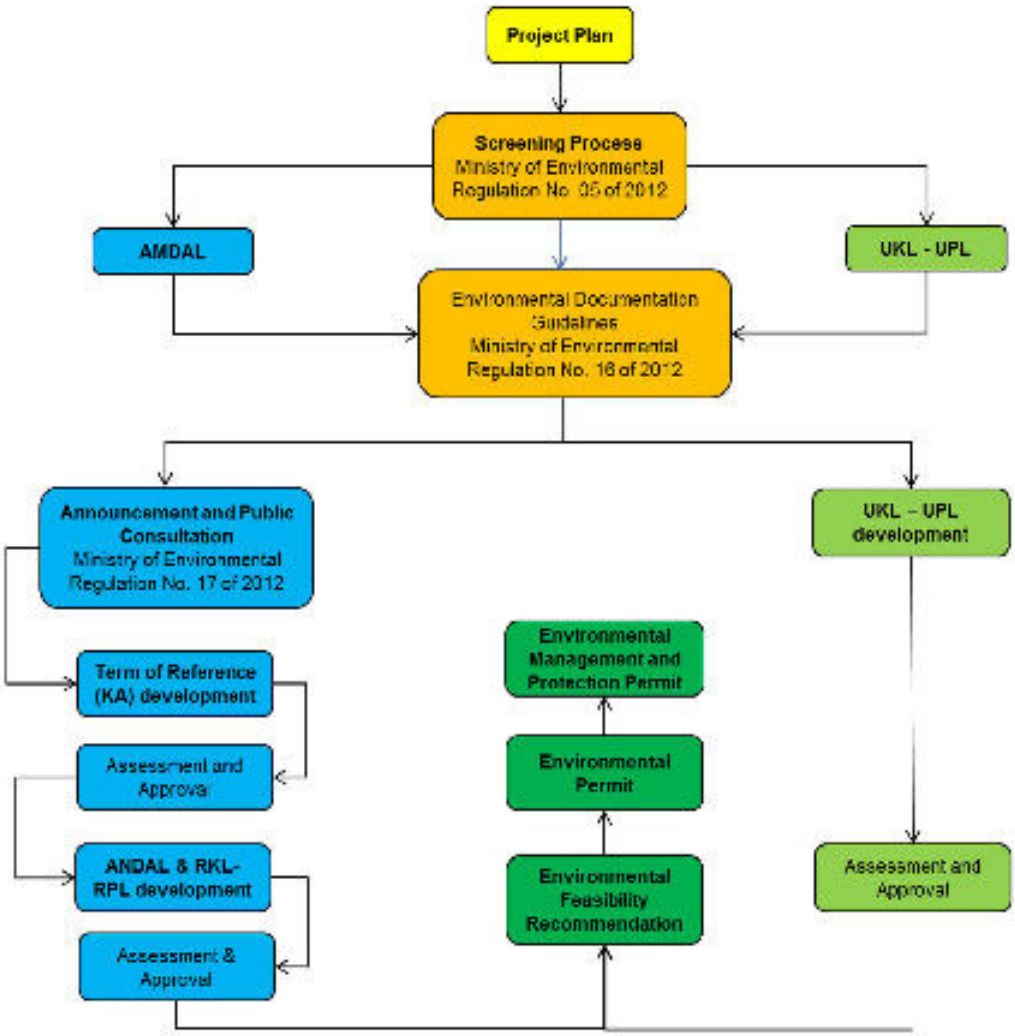

Figure 2.1 : The AMDAL Process

The environmental regulatory agency for Pekanbaru City is under Local City Level (Pekanbaru City). Accordingly, the AMDAL process for Power Plant site will be managed by Environmental Agency of Pekanbaru City (DLH – Kota Pekanbaru). For the transmission line a separate UKL UPL process will be undertaken under DLH Kota Pekanbaru and pipeline gas corridor which runs across the Siak Regency and Pekanbaru City and as the regulatory will be the Environmental Agency of the Province of Riau.

3. Stakeholder Analysis

3.1 Categories of Stakeholders Involved

Stakeholders are persons or groups who are directly or indirectly affected by a project, as well as those who may have interests in a project and/or the ability to influence its outcome, either positively or negatively. Stakeholders may include locally affected communities or individuals and their formal and informal representatives, national or local government authorities, politicians, religious leaders, civil society organizations and groups with special interests, the academic community, or other businesses.

The relevance of each stakeholder to the Project will be considered in terms of whether they are:

- "Impact based" (typically primary stakeholders): directly affected stakeholders through adverse and beneficial Project impacts such as physically or economically displace groups or individuals – the intensity of engagement will be greatest with impact based stakeholders and special efforts will need to be made to reach out to disempowered, socially excluded and/or vulnerable groups who may not have a good understanding of their rights or entitlements and may not be familiar with engagement activities;
- "Interest based" (typically secondary stakeholders): who may have an interest to influence the Project for their own objectives and be able to influence the Project or public perception, for example NGOs – it is important to ensure that potential critics of the Project and those who can positively influence the Project design are appropriately engaged at the correct moments in order to facilitate their effective input and to manage potential negative perceptions or outcomes (such as organised objection/disruption); or
- "Influence based" (typically secondary stakeholders): includes organisations such as: local authorities and administrations; local and province level regulatory agencies and other ministries and government organisations that have high interest in the Project and have the potential to influence Project both positively and negatively. It is important to ensure that potential critics of the Project and those who can positively influence the Project design are appropriately engaged at the correct moments in order to facilitate their effective input and to manage potential negative perceptions or outcomes (such as organised objection/disruption).

It is important to note that "impact based" stakeholders are on the whole "interest based" as well; for example local communities may be impacted by construction activities and effects such noise and dust, whilst at the same time they have an interest in leveraging community benefits and employment opportunities.

3.2 Stakeholder Identification and Analysis

Throughout the course of the Project, there are likely to be interactions with an extensive range of stakeholders who hold varying levels of interest and influence in relation to the Project objectives. Stakeholders' interest and influence can change depending on the issue, at what point in the process they are being engaged and who is affected. Stakeholder identification will therefore be conducted in an ongoing process to determine the parties who should be engaged. This is likely to be the one of the keys to the overall success of the engagement process.

An initial list of potential stakeholders and key interest groups affected by the Project has been prepared. This 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.

Stakeholder identification must be comprehensive and include identification and verification of key stakeholder representatives (especially community leaders, elected public representatives and traditional representatives) and vulnerable stakeholder groups (including women). Stakeholder identification activities build on the stakeholder consultation activities already conducted by the Project Sponsor through the AMDAL process.

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 3.1.

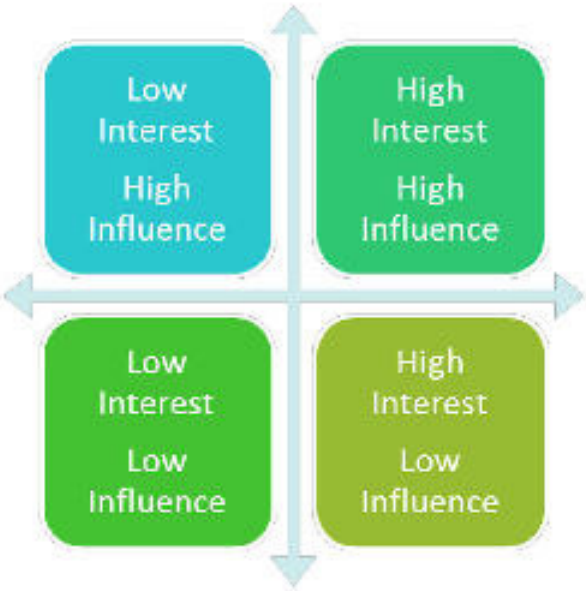

Figure 3.1 : Stakeholder Interest and Influence

Levels of engagement would range 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 to continuously reassess and identify new stakeholders and the level of stakeholder engagement at different stages of the Project.

3.2.1 Consultation Activities

Key stakeholder consultation activities during the stakeholder identification period include:

Task 1 - Identifying stakeholders who will be directly or indirectly affected by the Project.

A systematic approach should be taken to identifying stakeholders who will be directly or indirectly affected by the Project. The approach includes:

- Delineating the Project's geographic sphere of influence to identify who might be affected and in what way; and
- Undertaking stakeholder mapping using the Impact Zoning Technique[1] to refine the areas impacted by the Project.

When identifying stakeholders, it is also important to consider who the vulnerable stakeholder groups, such as locally disadvantaged, women and youth groups.

Task 2 - Identifying stakeholders who have an "interest" in the Project or Project Sponsor

These stakeholders can be identified through local knowledge and "interest based" analysis and mapping, which helps to clarify the motivations of different actors and their interest in the Project.

Task 3 - Identifying and verifying the stakeholder representatives

[1] Stakeholder Engagement: A Good Practice Handbook for Companies Doing Business in Emerging Markets (IFC, 2007)

Identifying and verifying stakeholder representatives and consulting with them throughout the stakeholder engagement process will be an efficient way to disseminate and receive information from stakeholder groups. Aside from the more prominent people in the community, it is also important to consider who the vulnerable (and potentially voiceless) stakeholder groups will be represented by.

Stakeholder representatives can be identified and verified through community meetings and discussions with key community members. Verification that the right representatives have been selected can be undertaken by talking directly to a sample of project-affected people to ensure that their views are being represented accurately.

3.2.2 Information to be Disclosed / Disclosure Methods

During the initial stakeholder identification exercise, key information about the Project and the anticipated environmental and social effects should be disclosed to potential stakeholders. This information can be made available to stakeholders online or through public areas, such as local agencies and public libraries.

3.3 Stakeholders Mapping

3.3.1 Landowner – Power Plant and Transmission Line

Land for power plant will be acquired from six owners. The land acquisition process by MRPR will be negotiated settlement on a 'willing seller – willing buyer' basis without recourse to government-led expropriation processes.

Table 3.2 : Stakeholder Groups and Likely Areas of Interest / Influence – Power Plant

Stakeholder Group		Likely area of Interest	Likely level of interest	Likely level of influence
A. Directly and Indirectly affected by the Project	A.1 Landowners and landowner family owners for power plant	Land acquisition, compensation	High	Low (as only one person for power plant)
	A.2 Rejosari and Sail Sub-District as nearest communities for power plant	Compensation, environmental impact, employment and community benefits	Low	Low
	A.3 Tenayan District and Pekanbaru City as communities affected by the traffic of the construction and the transport of all materials for power plant	Environmental impact, employment and community benefit	Medium	Low
	A.4 Regulatory Agencies (DLH Kota Pekanbaru, DLH Kabupaten Siak, DLHK Riau Province), Spatial Plan Agencies,	Environmental impact, economic development, regulate project	High	High
	A.5 Local Authorities and Administration	Social & environmental impact, employment and community benefit, economic development	High	Medium
	A.6 Central authorities and administrative (Ministry of Environment, Ministry of Energy and Mineral Resources, PLN)	Environmental responsibility, economic development	High	Medium
B. Have 'interest' in Project or parent company	B.1 Local NGO's, local political or community organizations (e.g. youth associations, IPM (Ikatan Pemuda Melayu), PP (Pemuda Pancasila),	Environmental and social impacts	Medium	Low
	B.2 International NGO's with general	Environmental and social impacts	Medium	Low

Stakeholder Group		Likely area of Interest	Likely level of interest	Likely level of influence
	interest in Power Plant (e.g. Greenpeace, Friend of the Earth, Walhi – National NGO for Wahana Lingkungan Hidup)			
	B.3 Media	Already aware of the project	Medium	Medium
C. Have potential to influence Project Outcomes	C.1 Local and province level regulatory agencies	See A.4 above	High	High
	C.2 Local authorities and administrations	See A.5 above	High	Medium
	C.3 Other Ministries and government organizations	See A.6 above	High	Medium

3.3.2 Landowners – Gas Pipeline Route

Land will be acquired or rented from the areas where there the routes of pipeline outside the road reserve. A number of the landowners affected by route will be subject to an acquisition and/or negotiation process by MRPR on a 'willing seller – willing buyer' basis without recourse to government-led expropriation processes. Currently MRPR is in the process of confirming the gas pipeline route and the associated land owners; this SEP will be revised once the gas pipeline route is confirmed and the number of landowners that will be affected is determined.

Table 3.2 : Stakeholder Groups and Likely Areas of Interest / Influence – Gas Pipeline Route

Stakeholder Group		Likely area of Interest	Likely level of interest	Likely level of influence
A. Directly and Indirectly affected by the Project	A.1 Landowners and landowner family owners for gas pipeline	Land acquisition, compensation	High	Low (for gas pipeline as goes down public roads)
	A.2 Sail and Tebing Tinggi Okura Sub-District, Pinang Sebatang Barat and Perawang Barat Village communities for gas pipeline route	Compensation, environmental impact, employment and community benefits	High	Low
	A.3 Tualang, Rumbai Pesisir and Tenayan Raya District as communities affected by the traffic of the construction and the transport of all materials for pipeline construction	Environmental impact, employment and community benefit	Medium	Low
	A.4 Regulatory Agencies (DLH Kota Pekanbaru, DLH Kabupaten Siak, DLHK Riau Province), Spatial Plan Agencies,	Environmental impact, economic development, regulate project	High	High
	A.5 Local Authorities and Administration	Social & environmental impact, employment and community benefit, economic development	High	Medium
	A.6 Central authorities and administrative (Ministry of Environment, Ministry of Energy and Mineral Resources, PLN)	Environmental responsibility, economic development	High	Medium
B. Have 'interest' in Project or	B.1 Local NGO's, local political or community organizations (e.g. youth associations, IPM (Ikatan Pemuda	Environmental and social impacts	Medium	Low

Stakeholder Group		Likely area of Interest	Likely level of interest	Likely level of influence
parent company	Melayu), PP (Pemuda Pancasila),			
	B.2 International NGO's with general interest in Power Plant (e.g. Greenpeace, Friend of the Earth, Walhi – National NGO for Wahana Lingkungan Hidup)	Environmental and social impacts	Medium	Low
	B.3 Media	Already aware of the project	Medium	Medium
C. Have potential to influence Project Outcomes	C.1 Local and province level regulatory agencies	See A.4 above	High	High
	C.2 Local authorities and administrations	See A.5 above	High	Medium
	C.3 Other Ministries and government organizations	See A.6 above	High	Medium

3.3.3 Local Communities

Early identification that the local communities from Pinang Sebatang Barat Village (Tualang District), Perawang Barat Villages (Tualang District); Sail Sub-District (Tenayan Raya District) and Tebing Tinggi Okura Sub-District (Rumbai Pesisir District) around the gas pipeline route will all be considered stakeholders for the gas pipeline development. The construction and operation of the gas pipeline will have different levels of impacts on each community, primarily depending on proximity to the route. It should be noted that all the communities identified above will not be affected to the same extent by the construction and operation of the gas pipeline.

The impact on the communities will be identified through the ESIA process, and mitigation measures will be included to avoid, reduce, and mitigate these impacts. A hierarchy based approach based on the impact extent will be used to determine the level of engagement required for the different communities along the route. This extent will be incorporated in later revision of the SEP.

Any impacts, including health and safety issues from construction, will be disclosed and discussed with local communities through implantation of the Stakeholder Engagement Program (refer to Section 5). A Corporate Responsibility Program will be implemented to ensure there are benefits to the directly affected communities.

4. Stakeholder Engagement Programme

4.1 Purpose

This section presents a programme for engaging stakeholders by describing the broad activities to be undertaken throughout the ESIA process and on an on-going basis throughout the life of the Project. The SEP will be reviewed and updated every three months during the ESIA process.

The purpose of stakeholder engagement for this project is primarily for transparency to the community, to inform them of the project ongoing and the impacts it has on them and the environment. A key aim of the stakeholder engagement is to provide stakeholder the opportunity for comment. Their comments/views will be considered by MRPR.

All consultation is to be undertaken in a manner that is “free”, “prior” and “informed”, consistent with the Equator Principles. The key principles of stakeholder engagement are:

- Providing meaningful information in a format and language that is readily understandable and tailored to the needs of the target stakeholder group(s);
- Providing information in advance of consultation activities and decision-making;
- Disseminating information in ways and locations that make it easy for stakeholders to access it;
- Respect for local traditions, languages, timeframes, and decision-making processes;
- Two-way dialogue that gives both sides the opportunity to exchange views and information, to listen, and to have their issues heard and addressed;
- Inclusiveness in representation of views, including women, vulnerable and/or minority groups;
- Processes free of intimidation or coercion;
- Clear mechanisms for responding to people’s concerns, suggestions, and grievances; and
- Incorporating feedback into Project design, and reporting back to stakeholders.

4.2 Stakeholder Consultation Stages

Stakeholder consultation activities under this SEP are separated into different consultation stages, namely:

1) Stakeholder identification (described in Section 3) - Completed
2) Further refinement of the SEP - Completed
3) Scoping the ESIA - Completed
4) AMDAL community meetings - Completed
5) Preparing the draft ESIA and ESMP – Completed
6) Consultation and disclosure of the draft ESIA and ESMP – To be completed
7) Finalisation of ESIA and ESMP – To be completed
8) Consultation during construction – To be completed

The following section discusses each of the stakeholder engagement stages, including the objectives, the consultation activities, the type of information to be disclosed and the disclosure methods. For completeness stage 1 to 6 have been retained in this document.

4.3 Refinement of the SEP

4.3.1 Objectives

Stakeholder identification (Section 3) will continue throughout the Project, the SEP can be further refined to incorporate more stakeholders as they are d identified through the project life.

4.3.2 Consultation Activities

The consultation activities undertaken during this period included:

- Gathering any further information about the potential stakeholders;
- Finalising the consultation team; and
- Updating and refining the SEP and proposed consultation activities.

4.3.3 Information to be Disclosed / Disclosure Methods

At this stage, a preliminary SEP has been circulated to potential stakeholders for discussion. Stakeholders were able to provide feedback on the stakeholder identification and consultation activities going forward, which were incorporated into the SEP where relevant. The grievance mechanism has been disclosed to stakeholder representatives.

4.4 Scoping the ESIA

4.4.1 Objectives

Scoping was the first activity carried out for the ESIA and ESMP. The main objective of scoping was to make a preliminary identification of the environmental and social impacts that may be caused by the Project, and who might be affected by these impacts. Public consultation during this stage ensured that the ESIA takes full account of stakeholder concerns and more accurately identifies the range of potential impacts.

4.4.2 Consultation Activities

Consultation activities undertaken during this period included:

1) *Consulting with affected stakeholder groups and, where appropriate, working through stakeholder representatives*

Stakeholders likely to be affected by the Project were able to input into determining the scope of the ESIA.

The Project Sponsor has held public meetings in the main community centre(s), which was led by the stakeholder representatives, with an open invitation for all potential stakeholder groups. At themeetings, stakeholders were asked to list and rank to range of environmental and social impacts that they consider likely to occur as a result of the Project for including in the ESIA Terms of Reference.

2) *Consulting with other relevant stakeholder groups*

The workshop provided an opportunity for other stakeholder groups, e.g. NGO's and public interest groups, to identify their concerns with the Project.

3) *Update SEP*

The results of the consultation activities were used to update the SEP and the list of identified stakeholders, where appropriate.

4) *Finalising the ESIA Terms of Reference*

Following public consultation, the preliminary impacts identified during consultation were used to define the ESIA Terms of Reference. The consultation activities proposed in the updated SEP were incorporated into the Terms of Reference.

4.4.3 Information to be Disclosed / Disclosure Methods

Before consulting on the scope of the ESIA, information about the Project were prepared for disclosure to affected communities, and includes:

- A description of the Project and its objectives;
- An explanation of the SEP, including the timing of consultations, the process and deadlines for public comment, estimated dates for final decision-making, and the grievance mechanism;
- An outline of the impacts to be assessed in the ESIA; and
- Any existing proposals for mitigation measures.

All information was presented in Bahasa-Indonesian and, where possible, in the local dialect. Visual information (for example, diagrams and maps) was presented to communicate to people who have poor literacy levels.

Written information was disseminated to all parties prior to engaging in consultation. Information was distributed through stakeholder representatives but only where the Project Sponsor is sure this information will reach the intended parties. Alternatively, information was made available in public areas and delivered by hand to affected stakeholders.

4.5 Preparing Draft ESIA and ESMP

4.5.1 Objectives

The key consultation objectives during the preparation stage were to ensure the Project's environmental and social impacts are fully assessed and that the proposed mitigation measures are acceptable. During this stage, the Project Sponsor maintained involvement in the process, particularly during stakeholder meetings. This was primarily through the Project Sponsor Community Liaison Officer.

4.5.2 Consultation Activities

Key consultation activities undertaken during this period were:

1) Targeted consultation to reach priority stakeholders, displaced people and vulnerable stakeholders.

Targeted consultation included meetings with stakeholder representatives, focus groups, household questionnaires, public meetings and visits to the Project site. Targeted consultation included responding to comments received by the public and stakeholders through the communications protocol.

2) Development of the Livelihood Restoration Plan (LRP)

The land acquisition process, as stated in Section 3.3.1 and 3.3.2, will be by negotiated settlement on a willing seller – willing buyer basis and therefore the Project will not result in permanent physical displacement and therefore a RAP will not be required. The land acquisition process may result in a number of people being affected by economic displacement, including farmers who utilise areas in the Project site. To address economically displaced people, a LRP will be developed based on information obtained through consultation activities and ESIA preparation activities, including baseline surveys.

The LRP will identify who will be directly affected by the Project and propose compensation and livelihood restoration measures. The compensation measures and the livelihood restoration activities may include:

- eligibility to benefit from a development programme;
- offering employment opportunities in the Project;

- specific assistance; and
- access to alternative land, resources and means of livelihoods.

Alternatively, "cash" compensation could be possible for loss of assets (e.g. cash compensation for the loss of coffee or cocoa trees).

The Project Sponsor will undertake several specific consultation activities with people affected by economic and/or physical displacement in order to:

- Define compensation measures for loss of assets;
- Define livelihood restoration measures and activities;
- Reach an agreement with representatives of people affected by economic displacement and individuals regarding their measures;
- Schedule implementation of the measures in a timely manner; and
- Monitor the livelihood restoration process and undertake corrective actions if necessary.

Engagement activities could include:

- Identifying and verifying displaced people;
- Establishing a Livelihood Restoration Committee (LRC);
- Holding LRC meetings to discuss compensation and restoration strategies;
- Asset surveys to identify land that will be required for the Project;
- Disclosure of the LRP to any displaced people;
- Negotiations with individual landowners or people who will be economically displaced;
- Development of compensation packages and implementation of LRP; and
- Monitoring.

3) Plan for consultation once ESIA process is complete

The ESIA and ESMP has incorporated any updates to the SEP, including how the Project Sponsor will carry out ongoing consultation throughout the Project development and operation periods.

4.5.3 Information to be Disclosed / Disclosure Methods

Information about the Project has been provided to all stakeholders. However, further information will be provided as details of the Project or social and environmental impacts become more refined. Any updated information, including the draft LRP and proposed mitigation packages, will be disseminated prior to any further consultation meetings.

4.6 Consultation and Disclosure of Draft ESIA

4.6.1 Objectives

Once the draft ESIA and ESMP have been produced, the draft documents will be disclosed to all identified stakeholders for consultation prior to be finalised. The objective of consultation and disclosure at this stage is to allow stakeholders to comment on the potential impacts and proposed actions for the Project, have an input on Project design and express their preference for mitigation activities.

4.6.2 Consultation Activities

The key consultation activities during this stage are:

1) Review the effectiveness of the public consultation to date

The effectiveness of public consultation to date can be reviewed to ensure it is effective and meeting the desired objectives**.** The review will help identify any improvements required to the consultation activities in this stage.

2) *Hold public meetings to disclose draft ESIA*

The Project Sponsor will hold public meetings (in one or more of the affected villages) to inform affected parties of the results of the draft ESIA and provide a forum for parties to provide comments and feedback on the Project.

3) Conduct any other targeted consultation where appropriate

Public meetings with be supplemented by more targeted, one-on-one consultation methods, particularly with displaced people and vulnerable stakeholder groups. The focus of these activities will be to address issues that require more specific attention and report back to stakeholders.

4) Responding the comments received during consultation

The Project Sponsor and ESIA Consultant will respond to all comments received in accordance with the communications protocol (Appendix B).

5) Ongoing LRP activities and further refinement of the LRP

LRP activities will continue throughout the ESIA draft disclosure consultation activities as appropriate, with a view to finalising the ESIA.

6) Document the results of consultation in the final ESIA report

All public consultation to this stage should be documented in the final ESIA report in accordance with the communications protocol provided in Appendix B.

4.6.3 Information to be Disclosed / Disclosure Methods

During this stage, the draft ESIA (Executive Summary) and ESMP will be disclosed to the public for review and comment. The draft ESIA is a non-technical executive summary in the predominant language of the stakeholders. The document will be in Bahasa-Indonesian and where appropriate the local dialect. The summary will be short, simple and precise, and focus on key impacts and mitigation measures, and provide an outline for future consultation.

The Project Sponsor will ensure the information is available in publicly accessible locations (such as local authority officers, public libraries, village centres, and through NGOs). Information will also be available on the Project's website. Culturally appropriate advertisements will be placed in local and national newspapers explaining where and when the information may be reviewed, and the avenue and timeframe for making comments. Advertisements will also notify the public of public disclosure meetings.

Public meetings will be designed to ensure that:

- Stakeholders are informed about the environmental and social impacts in the ESIA report in advance of the meeting;
- The meeting venues are accessible to the Project-affected population;
- Meetings are held at times most convenient for Project-affected groups;
- Clear, non-technical information is presented in the local language with the assistance of visual aids;
- Those attending are genuine representatives of the Project-affected population;
- All those participants who wish to raise their concerns are able to do so;

- The issues raised are answered at the meeting or actively followed up; and
- The Project Sponsor communicates to the participants, and others affected by the Project, design changes that result from the meeting.

4.7 Construction and operation

4.7.1 Objectives

The objective of stakeholder consultation during construction and operation is 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.

4.7.2 Consultation activities

The consultation activities during this stage will be further defined in the ESMP, and will likely include:

- Maintaining open lines of communication with stakeholders;
- Information stakeholders about changes to the Project;
- Consulting with stakeholders to identify impacts as they arise;
- Assist affected and displaced people adapt to change;
- Establish formal grievance mechanism; and
- Record the results of ongoing consultation.

4.7.3 Information to be Disclosed / Disclosure Methods

Any updates on the Project will be disclosed as and when required in the manner described in the ESMP.

4.8 Type of Information to be Disclosed

The type of information to be disclosed to stakeholders is the following:

- Project information leaflet;
- Community consultation package in compliance with AMDAL process;
- Information on land acquisition needed for the Project;
- ESIA scoping report;
- ESIA Non-Technical Summary; and
- The Project ESMP.

4.9 Method of Engagement

As part of this process, stakeholders have initially been identified and the general level of engagement required for each type has been prescribed as appropriate. Choosing a suitable method of engagement can be structured according to the following five engagement levels (inform, consult, involve, collaborate and empower) (Table 5.1). There will also be a Senior Manager and Community Liaison Officer (CLO), which will be a direct point of contact for people to ask questions of pass on comments.

Table 4.1 : Public Participation Spectrum

	Inform	Consult	Involve	Collaborate	Empower
Stakeholder Engagement Goal	Provide balanced, objective, accurate and consistent information to assist stakeholders to understand the problem, alternatives, opportunities and/or solutions.	To obtain feedback from stakeholders on analysis, alternatives and/ or outcomes.	To work directly with stakeholders throughout the process to ensure that their concerns and needs are consistently understood and considered.	To partner with the stakeholder including the development of alternatives, making decisions and the identification of preferred solutions.	To place final decision-making in the hands of the stakeholder.
Methods of Engagement	• Fact sheets • Websites • Open houses • Newsletters, bulletins,	• Public comment • Focus groups Survey • Public meetings • Web sites	• Workshops • Polling • Web tools • Public Forums	• Web tools • Citizens advisory • Participatory Decision Making	• Local governance • Joint planning

Source: Adapted from the International Association for Public Participation (IAP2) spectrum (2007).

The methods of engagement shown in Table 4.2 have been selected with consideration of each stakeholder group's relevance (the extent to which the Project will influence them or to which they can influence the Project), their level of literacy, comfort with engagement culture and environment (e.g. office meetings vs. community meetings) and the need for focussed topic specific meetings as opposed to disclosure of general information. It should be noted that the methods of engagement will be modified appropriately as the Project progresses.

Table 4.2 : Stakeholder Groups and Methods of Engagement

Stakeholder Group	Public Meetings and Exhibitions	Private Meetings and Workshops	Focus Groups	Mass Media Communications	Disclosure of Written Information	Community Liaison
Local Communities	✓	✓	✓	✓	✓	
National Bodies	✓	✓		✓	✓	
Provincial / Local Government Departments	✓	✓		✓	✓	
Donors	✓	✓		✓	✓	
Any physically and economically displaced Project Affected Persons (PAPs)	✓	✓	✓	✓	✓	✓
Civil Society, NGOs & Research Bodies	✓	✓	✓	✓	✓	
Employees and labour	✓	✓	✓	✓	✓	
Industry & Business	✓	✓	✓	✓		
Media & Press	✓			✓		

4.10 Project Affected Parties

Potentially affected landowners that will be directly affected by the development either by physical or economic displacement have been engaged via an initial survey conducted to understand current land use and ownership in the Project area. Following up on this process, the Project Affected Persons (PAPs) have been identified and a detailed socio-economic survey has been conducted as part of the land assessment process. All PAPs have been interviewed by Project consultants and socio-economic data collected for each. Details of the proceedings and responses from these discussions have been recorded and included in the ESIA findings and subsequent livelihood restoration plans if required. As the final gas pipeline route is still to be determined, the final PAPs are also still to be confirmed. This will be confirmed during the ESIA disclosure period.

4.11 Individual Meetings and Workshops

Individual meetings are targeted ways in which to engage with stakeholders. They permit in-depth meetings about Project plans and allow the opportunity to go into more detail about technical aspects of the Project or address specific concerns raised by one or a group of stakeholders. These meetings mainly involve interest-based stakeholders who have most influence over the Project such as government regulatory bodies or relevant industry leaders.

Regular workshops are also a constructive way in which to involve key stakeholders throughout the duration of the ESIA, construction and operation periods so that issues and any grievances can be raised and addressed as they emerge.

One-to-one meetings with individual stakeholders have been undertaken for the project and will continue to be undertaken to inform the ESIA process and to discuss specific Project elements or concerns. One to one meetings with relevant government ministries should be continued to update parties on progress, schedule details and project developments trough the life of the Project. Individual meetings will continue throughout the Project development phases as needed.

A series of workshops and /or public meetings have been conducted during the ESIA process with each affected community to discuss the background and benefits of the Project as well as to address any concerns that community members may have. This has been followed by regular update meetings with each community during the ESIA process and will be continued throughout the life of the project. At each initial workshop, an overview of the construction process and estimated timing and report on the outcome of the various Phases once complete and the next steps that this might signify was provided.

4.12 Focus Groups with the Affected Community

Focus groups allow targeted dialogue with key stakeholders. They provide an opportunity to explore community concerns in further detail and facilitate better understanding of the Project components, the ESIA process and its requirements. Familiar locations in each target community should be used for the focus group meetings as these are conducive to productive and interactive consultation for the following reasons:

- They lend transparency to the process: community members can witness the process and stay informed about what is being discussed on their behalf, and what has been agreed at the close of consultation or negotiations;
- They increase accountability of local leaders: community members will know what they are entitled to, and they will be able to monitor its delivery;
- They send the message that companies value the input of communities enough to travel there and spend time there;
- They contribute to community members' empowerment and feeling of ownership over the engagement process: community members say that the opportunity to have input into the public meetings gives them a sense of having a role in the outcome of decisions; and
- Finally, they allow community members to identify their own representatives, preventing illegitimate representation from persons claiming that they speak for communities.

For this Project focus groups include: local businesses, community leaders, village elders, relevant departments and other interest groups. Targeted focus groups of 8-12 people have been conducted in the affected communities described above to capture input from women, youth, elderly and vulnerable or disadvantaged members of the community. It is important to get participation from a good cross section of these communities. Focus groups were conducted during the ESIA process and as needed during later phases of the Project.

4.13 Community Development and Community Benefits Initiatives

It is also useful to think about other ways that the Project can support the local community by bringing tangible sustainable benefits and contributing to the broader socio-economic development of the country. Community betterment initiatives provide an opportunity to show support to the community and do not need to be major investments to be meaningful. Sometimes education initiatives, job development programmes or even contributions to sports or social activities can be an effective means in gaining community support. It is important that the initiatives selected are generated by the community themselves and are not, therefore, viewed as simple 'handouts,' but that beneficiaries of any such community initiatives can take ownership of them as a means of empowerment. Community development and benefits initiatives will be considered further as the Project progresses.

4.14 Communication Tools

4.14.1 Community Visual Aids

Visual aids have been produced to support community engagement. Visual aids included a description of the Project and impacts using images and photographic examples of the types of activities and infrastructure planned. Images were used to facilitate discussion on potential impacts.

4.14.2 Community Meeting Records

Records of community consultation meetings, meetings with government and civil society are kept in a separate document with a detailed database of all stakeholders engaged. All records include attendance lists and photos.

4.14.3 Other Media and Disclosure of Written Information

A Project specific website should be developed which is regularly updated highlighting progress, minutes of meetings that have taken place, and other issues as appropriate. This site will be functional throughout the duration of the construction periods and for at least the first years of operation. Project materials should specify a dedicated point of contact for public inquiry.

4.14.4 Language

All community materials were translated into the local dialect to meet the needs of local stakeholders. Meetings were conducted in the local dialect as necessary. Materials for government and civil society stakeholders were in the local dialect.

4.14.5 Community Notice Boards

Posting a community notice board in a prominent area such as a community centre in the affected communities is an effective means of presenting information and noting the procedures for grievances and the latest news related to the Project.

4.15 Timetable for Stakeholder Engagement Activities

The program for stakeholder engagement activities is presented in the Table 5.3 below.

Table 5.3: Initial Program for Disclosure and Consultation

Activity	Type of information disclosed	Period	Location
Initial disclosure	Start of the AMDAL, UKL UPL and ESIA program of the consultation as part of the AMDAL and UKL UPL process	Undertaken Q3 2017	Community affected by the project, DLHD Kota Pekanbaru and Kabupaten Siak, DLHK Riau Province
Community consultation as part of the AMDAL process	Proposed AMDAL TORs, community consultation package	Undertaken Q3 2017 (for duration of 30 days)	Communities affected by the project (Sail and Tebing Tinggi Okura Sub-District; Pinang Sebatang Barat and Perawang Barat villages)
Baseline surveys and ESIA	Restitution and validation of baseline studies results with local communities and regulatory agencies	Undertaken Q4 2017, Q1 2018	Community affected by the project, DLHD Kota Pekanbaru and Kabupaten Siak, DLHK Riau Province
Focus Group Discussions if required based on initial consultation results	Discussion on proposed development and potential impacts to the FGD	Undertaken Q4 2017, Q1 2018	Community affected by the project, DLHD Kota Pekanbaru and Kabupaten Siak, DLHK Riau Province
Development of and disclosure of Safety Plan for communities near the pipeline route	Information on the safety risks posed by interferring or damaging the pipeline and what steps should be followed if there are to be excavations near the pipeline route.	Undertaken prior to construction and operation of the gas pipeline	Along the gas pipeline route
ESIA disclosure	ESIA non-technical summary and ESAP (Environmental and Social Action Plan) which includes a discussion on mitigation measures in response to issues raised in consultation to date with affected communities. List of people affected by compensation	To be undertaken Q3 2018	Project website, local authorities and local village leaders
Disclosure of grievance mechanism and CSR program	Grievance mechanism CSR activities	Grievance Mechanism socialised in Q4 2017	Communities affected by the project
Periodic meetings with local communities	These meetings are intended to discuss progress and level of community satisfaction in the implementation of compensation as set out in ESIA/ESMP	Six monthly basis during construction and annually during operation	Communities affected by the project, City level and Provincial level
External periodic reporting of the project environmental and social performance to affected communities	Environmental and social performance of the project to local communities including results of monitoring, changes to the project design, CSR programs and how local community concerns have been addressed	Start of construction until end of the project. During construction a minimum of every six months and annually during operation	Project website, local authorities, via village leaders and local community meetings

Note: this SEP program may if necessary be revised during the implementation phase of the project

4.16 Engagement Activities for Land Acquisition and Compensation

Parallel to the ESIA process, a strategy for land acquisition and compensation has been developed by the Project Sponsor. Based on the findings of the social baseline surveys, the SEP identifies whose land will be acquired for the power plant. As the land acquisition process for the gas pipeline is ongoing the final land owners are still to be confirmed along with the proposed compensation measures (including those land owners associated with the power plant).

5. Ongoing Stakeholder Engagement Activities

5.1 Stakeholder Engagement

The Project has a wide variety of stakeholders, people, agencies and organisations that could be directly or indirectly affected by the Project, that could be interested in the Project or that could influence the Project. An initial number of organisations have been identified and split into five key stakeholder groups as shown in Table 4.1. This initial list will be updated as the project progresses and further organisations are identified.

Table 4.1: Initial List of Stakeholders

Stakeholder group	Organisation
Government authorities	• Riau Province Environmental Agency (DLHKD – Riau Province) • Pekanbaru City Environmental Agency (DLHD – Kota Pekanbaru) • Siak Regency Environmental Agency (DLHD – Kabupaten Siak);Dinas Bina Marga Riau/Road Management Division Agency of Riau • Riau Port Office • Siak River Authority • Mayor of Pekanbaru • Pekanbaru Land Board Agency • Pekanbaru Transportation Agency • Department of Road Management Kota Pekanbaru and Kabupaten Siak • DLHK Riau Province, DLHD Kota Pekanbaru and Kabupaten Siak
Local communities	• Local community representatives (Sail and Tebing Tinggi Okura Sub-District; Pinang Sebatang Barat and Perawang Barat villages)
Interest groups	• Department of Transportation Riau Province • Journalist Print • Local NGOs
General community	• Kota Pekanbaru • Riau Province
Donors	• ADB • Commercial Banks

5.2 Public Engagement to Date

5.2.1 Public Meetings

The first public consultation for the Project was conducted on 11th October 2016 and was attended by 78 participants including 11 women, 2 non-governmental organisations (NGO) and a University of Riau lecturer in Kelurahan Bencah Lesung Office, see Figure 5.1 below.

Suggestions from the communities for the Project include:

- Expectation that the MRPR improve the bridge at Tenayan Jaya road;
- Based on community experiences from similar Project development activities, many community members did not know the route of the gas pipeline. They hoped that signs will be produced indicating where the pipeline route is located;
- Would like to see local community members being employed. They want to ensure the bad practices of Tenayan CFPP who only employed three villagers as security officers will not be followed.

- In order to formulate CSR activities, it is hoped that the MRPR Community Liaison Officer will discuss proposals with Sub-District and District Government Officers in order to fulfil the needs and aspirations of the villagers.
- The MRPR project office should be accessible to local communities in order to build good relationships
- Villagers would like to know what impact the power plant will have on the palm oil plantations surrounding the site.
- Improve the condition of roads used to transport heavy equipment to the power plant site.
- MRPR to conduct training to improve the capacity building of local human resources.
- Women to have the opportunity to apply for jobs.

MRPRs representative responded to all questions and queries raised by the community at the meeting and noted that any concerns will be considered a priority. MRPR Community Liaison Officer will also continue to discuss any further issues raised by the villagers.

Figure 5.1 : Public Consultation Board used in Meetings with the Community

5.2.2 Progress to Date

MRPRs Community Liaison Officer have visited most of the villages around the power plant and along the gas pipeline in order to maintain communications and provide ongoing information related to the Project.

During the lender's visit on the 11th – 15th of December 2017, two community member meetings at two locations along the gas pipeline and one meeting in the office of Kelurahan Tenayan Raya were conducted. A social survey of Tuah Negeri, Bencah Losing and Industri Tenayan Villages adjacent to the power plant and the five villages along the gas pipeline route Kuala Gasib, Pinang Sebatang, Meredan, Tualang Timur and Melebung was conducted by NBC. During the social surveys any community concerns in relation to the Project were recorded. Figure 5.2 below shows the public consultation event undertaken at Industri Tenayan Kelurahan.

Figure 5.2 : Public Consultation at Industri Tenayan Kelurahan

5.3 Community Perceptions of the Project

From the social survey conducted at the power plant approximately 60% of respondents in Tuah Negeri, 70% of respondents in Bencah Lesung and 40% of respondents in the Industri Tenayan administrative areas did not know about the power plant development. However, when the goals of the project were explained, the majority of respondents seemed in favour of the Project as it would provide benefit to local communities. The respondents who were not in favour cited a lack of clarity concerning benefits and fear of environmental impacts.

Based on the social survey along the gas pipeline route, approximately 45% of the respondents were aware of the Project. An estimated 32% of the respondents confirmed knowledge of the Project from the power plant employees, 9% respondents knew the Project from their friends, and 2% of the respondents knew the Project from the village or Sub-District officers. Only 1% of the respondents knew the Project from the Sub-District officers. Approximately 96% respondents along the gas pipeline route approved of the project.

Community concerns and suggestions in relation to the Project which were raised by respondents during social surveys are detailed in Table 5.1 below along with how the ESIA will address these concerns and suggestions.

Table 5.2 : Community Concerns / Suggestions raised during Social Survey and how the ESIA Addresses them

Community Concerns / Suggestions	How the ESIA has Addressed the Concerns / Suggestions
They are afraid that the project might impose danger to the nearby settlement.	The ESIA assesses the potential environmental and social impacts from the Project and recommends mitigation measures to reduce any significant impacts identified that are not already addressed through the design of the Project.
They disapprove of cutting down their privately-owned trees. They want MRPR to request the village official's permission and to act respectively in the village.	Any vegetation required to be removed will be noted in the ESIA and in the Analisis Mengenai Dampak Lingkungan (AMDAL) which will require approval prior to work commencing. Ongoing community engagement will be conducted through MRPR's Community Liaison Officer and any community concerns identified will be addressed.
They demanded appropriate compensation for their loss and refused to be dislocated if the Project development trespasses their private	MRPR is addressing this through the land acquisition process on a case by case basis. Any compensation would be dealt with

Community Concerns / Suggestions	How the ESIA has Addressed the Concerns / Suggestions
territory.	through a Livelihood Restoration Plan (LRP).
They demanded for MRPR to be honest and to bring benefit to the public.	MRPR will be honest and open about all matters relating to the Project that may impact on local communities. Ongoing community engagement will be conducted through MRPR's Community Liaison Officer and any community concerns identified will be addressed.
They demanded for MRPR to confirm to the village officials regarding any issues, and not to take personal gains, and not to lie to them.	
There should be an announcement and meeting with the villagers about the impact and benefits of the Project.	Following completion of the ESIA, a meeting will be conducted with the local communities to communicate the findings of the ESIA.
There should be precaution measures to the gas pipeline and prevention of black out.	The gas pipeline will be designed to avoid any impacts to the local communities including for example being trenched and buried. The transmission and distribution of power are the responsibility of PT Perusahaan Listrik Negara (Persero) (PLN). The power station will contribute to the security of supply in the region and so help prevent black outs.
The presence of the gas pipeline for generating electricity should guarantee availability of electricity in the village.	The distribution of electricity generated by the Project will be determined by PLN.
There should be job opportunities for the villagers.	MRPR will seek to employ members of the local community as far as possible. There will be approximately 60 permanent employees at the power plant, and others will be required to assist with maintenance from time to time. The local community and villagers will be encouraged to apply for jobs at the power plant and suitably qualified applicants will be hired where appropriate.
There should be a significant approach to help the villagers. The Project authority should provide support to the villagers during the development of the Project.	MRPR will ensure that local communities are supported through ongoing consultation with MRPR's Community Liaison Officer and through MRPRs CSR programs.
The construction of the Project should not trespass on the villagers' settlement and they should avoid disrupting the public facilities.	The power station, transmission line and water pipelines are not close to any current settlements. The gas pipeline route will pass through several villages and settlements, but any disruption will be temporary, during construction. Where the gas pipeline design cannot be altered to avoid existing structures, MRPR will address any issues through the land acquisition process on a case by case basis. Any compensation would be dealt with through a LRP.
The Project should ensure safety and assist villages' public facilities such as electricity and freshwater.	MRPR and their Engineering Procurement Construction (EPC) Contractors will ensure public health and safety is maintained via management plans. The provision of electricity and water to villages is not MRPR's responsibility. However, the power plant will contribute to the security of supply in the region.
There should be fair compensation and secrecy of personal data.	MRPR will ensure any compensation necessary is fair and that any data disclosed by the local communities is kept securely.
MRPR has to be responsible for any problems that may occur as a result of the Project and provide early warning before disrupting the villagers.	Ongoing community engagement will be conducted through MRPR's Community Liaison Officer and any community concerns identified will be addressed.
MRPR should be aware of the economic conditions of people in the plantation. Many are poor and some are elderly.	This SIA highlights the economic conditions of the local communities within the Project AoI and any potential impacts to vulnerable people will be avoided or mitigated as far as possible.

Community Concerns / Suggestions	How the ESIA has Addressed the Concerns / Suggestions
The gas pipeline should be monitored on monthly basis.	MRPR will ensure appropriate maintenance of Project facilities including the gas pipeline are conducted on a regular basis.

6. Resource and Responsibilities

6.1 Overview

This section presents a preliminary structure for management and responsibilities in relation to the SEP. The Project Team structure will be confirmed in accordance with the consultation activities. Specific members of the Project Team will be responsible for implementation of the SEP. The Project Team, including the following:

- The Project Sponsor's Executive Management Team;
- The Senior Manager;
- The CLO; and
- ESIA Consultants/Technical Specialists.

6.2 Executive Management Team

The Project Sponsors Executive Management Team has the overall responsibility for stakeholder engagement. Its role is to provide the guiding principles for the stakeholder engagement allocate budget for the effective implementation of the SEP and if necessary participate in the dialogue with administrations in the resolution of any issues.

6.3 Senior Manager

The Senior Manager will be responsible for the implementation of the SEP. His or her tasks will comprise of overseeing the work carried out by the CLO and the ESIA Consultant/Technical Specialists. He or she will be the point of contact with the regional and local authorities with respect to public consultation. The Senior Manager's tasks will include:

- Implementation of the SEP, as well as organising the consultation activities;
- Responding to concerns and ideas raised through public consultation;
- Allocating Project finance to public consultation, community development and training;
- Undertaking frequent and regular visits to the Project site and local communities with CLO to demonstrate the Project's commitment of to the local economy;
- Liaising between the CLO and the Executive Management Team; and
- Ensuring that all public consultation and information disclosure requirements of investors have been met, including the documentation of results.

6.4 Community Liaison Officer

The CLO will execute and further develop the SEP. The CLO will be trained or employed to undertake the following tasks:

- Supporting the ESIA Consultants/Technical Specialists in their tasks, both to lend local knowledge and learn relevant skills;
- Supporting the ESIA Consultants/Technical Specialists to ensure that the positive aspects of the Project (employment and training opportunities, infrastructure improvements) are conveyed to affected people and interested parties at the same time; and to facilitate public involvement in verifying impact predictions and weighing mitigation and environmental monitoring options;
- Providing 'familiarity of face' and 'consistency of message' to stakeholders throughout the life of the Project;
- Addressing any grievances expressed through the grievance mechanism and assisting other Project Team members resolve disputes and grievances;

- Documenting the results of public consultation; and
- Preparing internal and external reports for disclosure.

6.5 AMDAL and ESIA Consultant

The ESIA (Jacobs) and AMDAL consultant (Nusa Buana Cipta) will assist the project throughout the AMDAL and ESIA processes. The consultant will produce the draft and final document of KA, ANDAL, RKL, RPL and ESIA. The consultant responsibilities will be:

- Provision of advice on the mechanism for the consultation process;
- To undertake community consultation as part of the AMDAL process and as part of the ESIA process;
- To undertake environmental and social baseline studies;
- To prepare KA, ANDAL report and ESIA; and
- To prepare RKL, RPL and an Environmental and Social Management Plan (ESMP).

7. Grievance Mechanism

7.1 Purpose

The purpose of the grievance procedure is to ensure that all issues and complaints from local communities are dealt with, and that appropriate corrective actions are taken by the Project Sponsor. The grievance mechanism will be applicable for all complaints received from any affected or interested communities. The establishment of a grievance mechanism is required as part of environmental and social performance standards in Equator Principle 6.

The grievance mechanism establishes a method to receive and facilitate resolution of the concerns and complaints about the environmental and social performance of the Project. The grievance mechanism seeks to resolve concerns promptly, using an understandable and transparent consultative process that is culturally appropriate, readily accessible, at no cost, and without retribution to the party that originated the issue or concern. The mechanism should not impede access to judicial or administrative remedies.

The Project Sponsor will inform the Affected Communities about the mechanism in the course of the stakeholder engagement process, as defined in Section 5.

7.2 Responsibilities

The Senior Manager will be responsible for managing and overseeing complaints made by the community. This should include the use of oral and visual methods to explain information to non-literate people, and processes for assisting community members in completing forms. The Senior Manager will work with the wider Project Team, and others to ensure that complaint forms are easily available to affected parties and that assistance in completing forms is available if required.

The Senior Manager will be responsible for collating written complaints and co-ordinating responses to all complaints in accordance with the timeframes identified below.

7.3 Types of Potential Grievances

In practice, complaints and conflicts that appear during the implementation of the Project may include:

- Environmental Impact Study
  - Challenge the assessment of impacts, particularly concerning nuisances associated with construction (dust, noise, traffic, flora and fauna) from communities close to the works.
- Compensation processes:
  - Errors in the identification and evaluation of assets;
  - Disagreement of parcel boundaries, between affected person and the agency managing expropriation, or between neighbours;
  - Dispute over ownership of properties;
  - Disagreement on the evaluation of the value of plots or properties; and
  - Family disputes, resulting in conflicts between heirs or members of the same family, over property, and sharing of properties and assets.

7.4 Proposed Grievance Mechanism

7.4.1 General View

The proposed complaints handling mechanism covers the various aspects of the project, i.e:

- The project in general, including planning, construction and operation;

- The process of environmental impact assessment; and
- The compensation negotiation process.

In projects such as this, many complaints and disputes arise from misunderstandings or lack of information regarding management policies, mitigation, and compensation process, or general social tension – sometimes unrelated to the project. Most of these issues can often be resolved by good faith discussion, arbitration, or mediation by local authorities. Thus, many disputes can be resolved:

- By additional communication (e.g providing detailed information regarding how the project has assessed the environmental impacts and mitigation and compensation measures planned; and
- Through arbitration, appealing to local authorities.

The Project will establish a grievance mechanism. Each affected person is free to register a grievance, in accordance with procedures specified below. This mechanism covers any type of complaint, and includes three main steps:

- The registration of the complaint or dispute;
- The amicable resolution of the complaint; and
- Use of mediation if necessary.

However, some issues may only be able to resolve through a formal legal process.

7.4.2 Recording of Complaints

The Project will use the following means to register complaint from affected people:

- Provision of a complaints box in each directly affected village and in the villages in the vicinity of the Project. This box will be check once a week by the Project's Senior Manager, this mechanism and the information needed to register a complaint (at least name and contact of the complainant) will be explained in details during a community meeting;
- Provision of a dedicated phone number to provide information on the Project, and register complaints;
- Provision of a complaints register at the entrance of the Project boundary once the construction has started; and
- Oral complaint given to the Senior Manager or CLO will also be registered. Other employee can receive the complaint, they must report to Senior Manager to be registered.

The existence of this register and access conditions will be widely disseminated to affected populations during consultation activities.

External complaints relating to the environmental and social impact of the project will be recorded and kept in a communications/ complaints log book and in a database. Appendix A provides a model of a complaint form. A quarterly report monitoring the complaints record will be generated for the attention of the management of the Project and lenders.

7.4.3 Involvement of District Authorities

If the solution proposed by the Project is rejected by the complainant, and no amicable solution can be found, the issue will be transmitted to the district authorities. All evidence and documentation will be transmitted, in order to allow the district authorities to understand the issue at stake. The district authorities will then propose a solution.

If this solution is rejected by the complainant or by the Project, a judicial appeal can be undertaken.

7.4.4 Complaint Processing Time

All communications or complaints will be acknowledged within five business days and a response within 30 business days. A communications procedure and log will be developed for use during the period of the SEP. This will be used to log all significant incoming and outgoing communications.

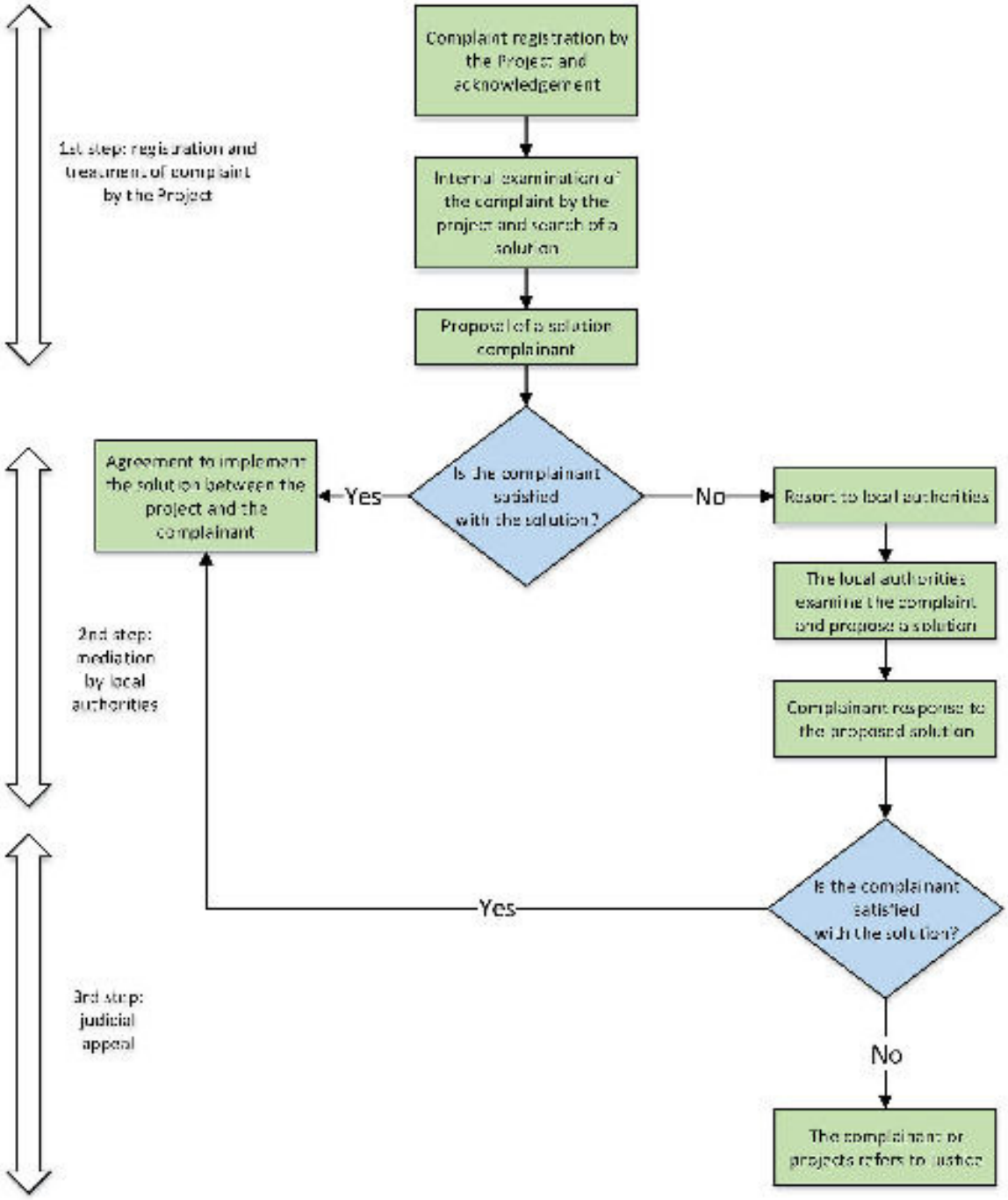

Figure 7.1 : Grievance Mechanism Overview Chart

8. Monitoring, Reporting, and Management Functions

8.1 Communications

Relevant communications with identified stakeholders should be recorded and documented in a timely manner during the ESIA process and beyond. Records should include stakeholder comments and responses given. To ensure this is carried out consistently, a Communications Protocol should be developed (see Appendix B). The Communications Protocol establishes how different communications are to be documented during the Project. The purpose of the Communications Protocol would be to provide a documented record of the communications that are involved in community consultation for the Project, in keeping with the requirements of the Equator Principles. A general communications flow chart is provided below in Figure 8.1. Details of the Communications Protocol are provided in Appendix B.

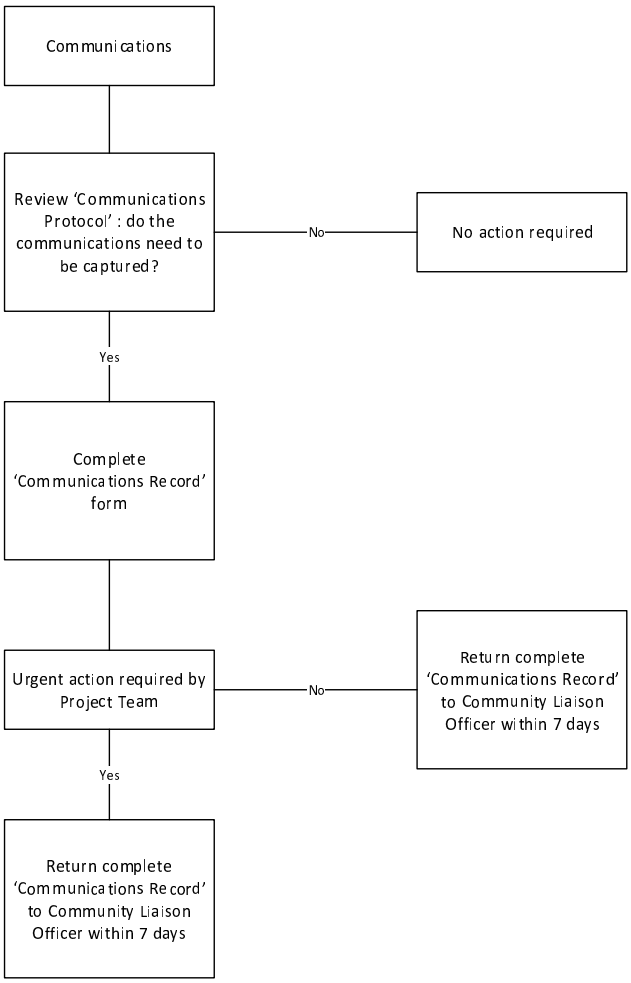

Figure 8.1 : Communications Protocol

8.2 Monitoring

Monitoring during the construction and operation of the project, monitoring will comprise:

- Monitoring of environmental and social performance indicators defined in both AMDAL and ESIA. This will be done by the with help from CLO;
- On-going monitoring of grievances through the grievance mechanism. All grievances will be recorded in a grievance register and database. This will be done by with the help from CLO; and
- Monitoring of matters raised by concerns or issues expressed by local or governmental authorities. This monitoring will be done by the Senior Manager with help from CLO.

8.3 Reporting

For notification of the AMDAL and ESIA, the reporting will follow Indonesian procedures for public consultation, and the Equator Principles (Principle 5, see Section 2).

During the construction and operation of the project, the Senior Manager with help from CLO will prepare a monthly report to the Executive Management Team. This report will address social and environmental performances, and any concerns regarding grievances. A summary of stakeholder engagement activities will be included in quarterly and annual reports issued on the Project.

Periodic reports will be provided by MRPR to the local communities on the environmental and social performance of the development, progress on livelihood initiatives and on concerns raised by the communities. During construction the periodic reports will be socialised with the communities by the Senior Manager on a six monthly basis and annual during operation.

8.4 Management Functions

The key elements of the management of the stakeholder engagement are the following:

- The Project Executive Management Team will oversee the SEP, which will be implemented by the Senior Manager and the CLO. During the AMDAL and ESIA phase, Jacobs has assisted the Project.
- The Senior Manager will report to the Health and Safety Manager who in turn will report to the Managing Director.
- The Project's SEP will be communicated internally within the Project by the Managing Director, and will be addressed to all managers.
- All documents produced or received in relation to the stakeholder engagement (including the grievance register) will be filled in accordance with the Project's document control system.
- A grievance register and database will be established and maintained by the Senior Manager.
- A log and procedure for tracking all incoming and outgoing communications regarding stakeholder engagement will be established and maintained by the Senior Manager.
- The effective management of contractors with respect to local residents and the maintaining of good relations will be ensured through the following actions:
    - Awareness training of all contractors to the respect of local people and communities' culture, way of life and beliefs.
    - Preparation of a good practice charter for contractors regarding relations with local people and communities.
    - Making the respect of this charter a contractual obligation for all contractors.
    - Briefing the Project's supervisors on the requirement and importance that contractors comply with the good practice charter.

Appendix A. Grievance Form

GRIEVANCE REGISTRATION		
Date:	Filled by:	
Plaintiff's name :	Plaintiff's gender: M / F	Plaintiff occupation:
Plaintiff's contact (address, tel. number):		
ı The plaintiff is filling an individual complain		
¬ The plaintiff is representing a group or a community - Name of the group or community: - Nature of the group or community: - Location/address: Description of the grievance:		

GRIEVANCE TREATMENT	
Date of the response:	Filled by:
Proposed action(s) to remedy to the grievance:	
Plaintiff's acceptance of the proposed action:	

GRIEVANCE CLOSURE	
Date of grievance closure:	Filled by:
Ending of the grievance treatment:	

Appendix B. Communications Protocol

B.1 Introduction

Relevant communications with identified stakeholders must be documented in a timely manner. The purpose of this protocol is to create a documented record of the communications that are involved in the community consultation for the project. This is a requirement under the IFC Performance Standards and needs to be followed.

When a piece of communications is to be conducted, a member of the Project Team should review the "Communications Flow Chart", see Figure 7, to ascertain if the communications needs to be documented as per the communications protocol.

The attached "Communications Record" reference in Appendix C is to be used when communications between a member of the Project Team and the wider community. Any communications that have been recorded are to be documented and forwarded as soon as practicable.

At all times the Project Team should make information free, prior and informed. Meaning that information supplied "should be "free" (free of external manipulation, interference or coercion, and intimidation), "prior" (timely disclosure of information) and "informed" (relevant, understandable and accessible information)".

This communications protocol is a fluid document which will be changed and updated as required.

B.2 Stakeholders Involved

The following have been identified as stakeholders who are or are likely to be involved within the consultation process:

- Local community
- Local business and interest groups
- Local government
- Regional, Provincial and National government
- NGOs/Media
- General public
- Vulnerable people
- People affected by economic or physical displacement.

B.3 Communications Capture

B.3.1 What communications and consultation are to be captured?

The information supplied to the wider community is to be documented and recorded. When there is engagement with the community and disclosure about Project relevant information, these need to be captured by the "Communications Record". Examples of communications that must be captured are:

- Information exchange with the community: All information verbally or written that is supplied to the community about the Project must be captured. For example if a member of the local community requests information, questions, issues or makes comment on the Project, these communications must be recorded.
- Information exchange with government agencies: For example where a government agency contacts the Project Team for information, raises issues or makes statements regarding the Project
- Media requests: Any information placed in the media or when the media has requested information to be supplied must be recorded.

- Workshops: Responses from the wider community at the workshops.
- Individual meetings and interviews must be recorded including responses to community questions and concerns.
- Approvals from government departments or agencies: Agreements reached with government departments and/or agencies.
- Requests for action from the community: If an action is requested by the Project Team by the local community then this needs to be recorded.
- Formal meetings with community and government.

B.3.2 What communication does not need to be captured?

When information about the Project is not supplied but communications have occurred with the community, this does not have to be captured. Examples of communications that does not need to be captured are:

- Meeting requests/appointments: For example, communications arranging an open day or meeting with the community
- Information about the process or Project Team Members: If the wider community is asking specific information on the process or the Project Team Members
- Data collection: Teams collecting data for the Project.

B.3.3 Style of Communications Stakeholders

- The following methods for communication to stakeholder may be used:

- Emails
- Phone
- Fax
- Face to face meetings
- Letter
- Media (Newspaper ads).

B.4 How to capture the information

Appendix C provides the “Communications Record”. This sheet needs to be filled in the relevant areas to explain the communications that has occurred. If there are documents that are relevant to the communications (i.e. emails, faxes, letter, minutes of meetings etc) please make copies of the relevant documents and forward with the “Communications Record”. The “Communications Record” does not replace current practices (i.e. minutes of meetings) but is an extra document to track the flow of communications. Copies should be made both of the communications record and the documents supplied so both the Project Team and the person making the communications has a record.

The “Communications Record” will be kept by the Community Liaison Team and a communication spreadsheet will be created to track the communications and consultation documents for the project.

Time Frames

“Urgent” communications that require action from a member of the Community Liaison team needs to be forward to the Project Team within 24 hours.

“Non-Urgent” communications needs to be forwarded to the Project Team within 5 working days.

B.5 Communications Contact List

B.5.1 Points of contact

Points of contact for the communications protocol are provided in Table B1.

Table B1: Communications contact table

Name	Position	Company	Role in Project	Email	Phone No.

Appendix C. Communications Record

COMMUNICATIONS RECORD

Riau 275 MW Gas Combine Cycle Power Plant IPP Project

Project Team Member*							
Company							
Correspondence Type (Please Circle)*:	Email	Fax	House Call	Letter	Meeting	Phone	Other
Date of Communication*:							

Stakeholder Details*			
Name*:			
Position:			
Organisation:			
Phone:		**Fax:**	
Mobile:		**Email:**	

Property Address (If required)	
Address:	

Issue Raised in Communication (Please Circle)*					
Property Value	Access	Water Pollution	Noise	Dust	Complaint
Employment Issues	Economic Effects	Traffic	General Information	Hours of Operation	Regulatory Requirements
	Other (Please list)				
What they said*:					

What we said*:	
Urgent Communications* (Report within 24 hours)	
Actions Requested:	

Document Attached?	**Yes**	**No**	
If yes, please state document title			
Document Reference Number (Office use only):	**#**		

Appendix J. Chance Find Procedure

Riau 275MW Gas Combined Cycle Power Plant IPP - ESIA

Medco Ratch Power Riau

Chance Find Procedure

AM039100-400-GN-RPT-1015 | V0

April 2018

Document history and status

Revision	Date	Description	By	Review	Approved
V0	06/04/2018	First Draft for MRPR Review	A Kubale	B Clarke	B Clarke

Distribution of copies

Revision	Issue approved	Date issued	Issued to	Comments

Riau 275MW Gas Combined Cycle Power Plant IPP - ESIA

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Document Title:	Chance Find Procedure
Document No.:	AM039100-400-GN-RPT-1015
Revision:	V0
Date:	April 2018
Client Name:	Medco Ratch Power Riau
Project Manager:	Eamonn Morrissey
Author:	Anthony Kubale
File Name:	I:\AENVW\Projects\AM039100 Riau\Deliverables\ESIA\Volume 5 - Technical Appendices\Chance Find Procedure\AM39100_Riau ESIA - Chance Find Procedure_V0_Draft for MRPR Review.docx

Jacobs New Zealand Limited

Level 3, 86 Customhouse Quay,
PO Box 10-283
Wellington, New Zealand
T +64 4 473 4265
F +64 4 473 3369
www.jacobs.com

Contents

Important note about your report

The sole purpose of this report and the associated services performed by Jacobs New Zealand Limited (Jacobs) is to describe the Environmental and Social Impact Assessment (ESIA) for the Riau Project, in accordance with the scope of services set out in the contract between Jacobs and the Client. That scope of services, as described in this report, was developed with the Client.

In preparing this report, Jacobs has relied upon, and presumed accurate, any information (or confirmation of the absence thereof) provided by the Client and/or from other sources. Except as otherwise stated in the report, Jacobs has not attempted to verify the accuracy or completeness of any such information. If the information is subsequently determined to be false, inaccurate or incomplete then it is possible that our observations and conclusions as expressed in this report may change.

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1. Introduction

1.1 Company Statement

Medco Ratch Power Riau ("MRPR" or the "Company") is committed to the highest form of integrity, excellence, and professional and ethical standards in the operations and management of its power plant business.

MRPR is committed to protect the health and safety of those who play major parts in our operations, and those who live in areas where operate or use our products. Wherever we operate, we will conduct our business with respect and care for both the local and global environment and systematically manage risks so as to ensure a sustainable business growth. We will not be satisfied until we manage to eliminate any injury, occupational illness, unsafe practices and incidents of environmental harm from our activities.

1.2 Context

The Riau 275 MW Combined Cycle Gas Fired Power Plant Independent Power Producer (IPP) IPP Project (referred to hereafter as the 'Project') consists of a 275 MW combined cycle power plant and ancillary facilities, a 40 km long 12-inch gas pipeline, a switchyard, a water intake and discharge pipeline, temporary jetty and a 750 m long 150 kV transmission line. This Chance Find Procedure has been prepared to provide a framework for potential archaeological and/or culturally significant finds during the construction phase of the Project.

1.3 Purpose

The Chance Find Procedure will be implemented to avoid or reduce adverse effects to any archaeological or heritage resources discovered during construction, and to identify roles and the responsibilities of person(s) designated by staff and the archaeological consultant.

1.4 Scope

The following mitigation measures will be employed during construction to reduce potential impacts on undiscovered cultural heritage and archaeological assets:

- MRPR will define and implement a Chance Find Procedure for all the Project components. This Procedure will be applied by the EPC Contractor and all sub-contractors for all excavation works at the power plant site, along the transmission line route, 40 km gas pipeline route, and water intake and discharge pipeline route and temporary jetty.
- 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 Worker's Code of Conduct and awareness sessions will be organised for all new recruits.
- If any element of cultural heritage or archaeological artefacts 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.
- This procedure covers the find/feature/site such as:
    - i. Human remains from burials (of any kind);
    - ii. ancient hearth features, assessed as burnt wood, ash, and red sediments larger than 50cm in diameter;
    - iii. ancient posts/postholes assessed in the field as yielding preserved wood vertically truncating the soil;

iv. buried megalithic structures assessed as unnatural to alluvial and or tidal environments; and archaeological artefacts such as ancient waste middens, pottery or ancient village foundations.

2. Procedure

During the project induction meeting, all contractors will be informed of Chance Find Procedure by MRPR and the EPC contractor.

In the event of a significant chance finding during excavation works at the power plant site or along the transmission line route the following actions should be implemented:

1) Cease immediately all construction activity in the vicinity of the find/feature/site;
2) Rope of the immediate area surrounding the find to prevent further damage and limit access to the site;
3) Hire immediately a professional archaeologist to ensure the following actions are carried out:
   i. Delineate the discovered find/feature/site;
   ii. Record the coordinates of the find location, and ensure all remains are to be left in place;
   iii. Secure the area to prevent any damage or loss of removable objects;
   iv. Assess, record and photograph the find/feature/site;
   v. Undertake the inspection process in accordance with all Project health and safety protocols under direction of the Health and Safety Officer;
   vi. Contact and inform immediately the local museum in Riau; and
   vii. Coordinate and consult with the museum to determine the appropriate course of action to take.
4) Implement the following strategy for finds retrieval:
   i. Conduct all investigation of archaeological soils by hand;
   ii. Keep all finds, osteological remains and samples and submit to the museum as required;
   iii. In the event that any artefacts need to be conserved, secure approval from the museum;
   iv. Provide an on-site office and finds storage area to allow storage of any artefacts or other archaeological material recovered during the monitoring process;
   v. In the case of human remains, in addition to the above, contact the museum and adhere to the guidelines for the treatment of human remains; and
   vi. If skeletal remains are identified, contact an osteo-archaeologist to examine the remains.
5) Implement the following process for conservation:
   i. Hire a conservator, if required;
   ii. The consulting archaeologist completes a report on the findings and submits to the museum; and
   iii. Museum reviews the report and informs when works can resume