Draft Environmental Compliance Audit Report (ECAR)

Project Number: 50330-001
March 2017

Proposed Loan
Rantau Dedap Geothermal Power Project (Phase 2) (Republic of Indonesia)

Prepared by Mott MacDonald for PT Supreme Energy Rantau Dedap (PT SERD)

MOTT MACDONALD

Rantau Dedap Geothermal Power Project

Environmental Compliance Audit

March 2017

Confidential

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Executive summary

Overview

PT Supreme Energy Rantau Dedap (SERD), a company owned by Supreme Energy, Engie Energy Asia, and Marubeni Corporation (the "Sponsors"), is developing the Rantau Dedap geothermal power project with a design capacity of 92MW, located in South Sumatra Province, Republic of Indonesia (the "Project"). The Project's implementation is proposed in two phases, whereby Phase I constitutes the geothermal resource exploration phase, while steamfield development and power plant construction will be undertaken in Phase II.

The Asian Development Bank (ADB) provided 50 million USD as early stage financing in 2014 to facilitate Phase I. For financing Phase II, ADB requires an Environmental Compliance Audit (ECA) to be undertaken to determine whether the Project has complied with ADB Safeguard Requirement 1: Environment (SR1) during Phase I.

Summary of findings

The table below summarises the findings of the ECA against and, where necessary, describes the corrective actions recommended.

ADB Safeguard Requirement	Compliance rating	Corrective action	Timeline to resolve
1. Environmental Assessment	**Compliance**	No further action required.	N/A
2. Environmental Planning and Management	**Non-compliance**	Revise the site specific ESMP in accordance with SR1, for implementation during Phase II.	Complete prior to ADB Final ICM
3. Information disclosure	**Compliance**	No further action required.	N/A
4. Consultation and Participation	**Non-compliance**	• Stakeholder engagement log to be developed to track and report on all stakeholder engagement activities. • The Stakeholder Engagement Plan (SEP) aspects relating to engagement of vulnerable groups to be implemented and reported	Complete prior to ADB Final ICM
5. Grievance Redress Mechanism	**Non-compliance**	• Develop information leaflets to provide to community members which provides key SERD contact details • SERD to ensure that all grievances received from the community are entered into the grievance log	Complete prior to ADB Final ICM
6. Monitoring and Reporting	**Non-compliance**	Update the bi-annual monitoring report as follows: • New template for reporting social aspects • Include a section relating to cultural heritage and chance finds • Timely on-going disclosure	Complete prior to ADB Final ICM
		Produce a Socio-economic Impact Monitoring Report	Complete prior to ADB Final ICM
7. Unanticipated Environmental Impacts	**Non-compliance**	Within the ESMP, institute specific mechanism to manage unexpected impacts.	Complete prior to ADB Final ICM

ADB Safeguard Requirement	Compliance rating	Corrective action	Timeline to resolve
8. Biodiversity Conservation and Sustainable Natural Resource Management	**Non-compliance**	The following improvements are recommended to ensure full compliance: • Review Critical Habitat Assessment (CHA) to ensure all trigger species are identified • Develop offsetting plan • Develop actions to achieve no net loss of natural habitat • Prepare and implement alien invasive species plan	Complete prior to ADB Final ICM
9. Pollution Prevention and Abatement	**Non-compliance**	Update the Revegetation Plan, with timeline, responsibilities, and provisions.	Complete plan prior to Phase II construction commencing – with implementation of revegetation as proposed in plan
10. Health and Safety	**Non-compliance**	Disclosure of the Emergency Response Plan (ERP) to be undertaken once Phase II works commence.	Complete prior to Phase II construction commencing
		Health Impact Assessment to be undertaken within the scope of the ESIA for Phase II, addressing impacts of the workforce on local health services	Complete prior to Phase II construction commencing
11. Physical Cultural Resources	**Compliance**	Include a section relating to cultural heritage and chance finds	Complete prior to ADB Final ICM

Source: Mott MacDonald

1 Introduction

1.1 Overview

PT Supreme Energy Rantau Dedap (SERD), a company owned by Supreme Energy, Engie Energy Asia, and Marubeni Corporation (the "Sponsors"), is developing the Rantau Dedap geothermal power project (i.e. design capacity of 92MW, located in South Sumatra Province, Republic of Indonesia (the "Project"). The Project implementation is proposed in two phases, whereby Phase I constitutes the geothermal resource exploration phase, while steamfield development and power plant construction will be taken up as part of Phase II.

The Sponsors are seeking finance for the construction and operation of the Project from commercial banks, with Mizuho Bank Ltd (Mizuho) as the mandated lead arranger (MLA), as well as international development banks and financial organisations, including the Asian Development Bank (ADB), Japan Bank for International Cooperation (JBIC) and Nippon Export and Investment Insurance (NEXI), collectively referred to as "the Lenders".

The ADB provided 50 million USD as early stage financing in 2014 to facilitate the exploration phase (Phase I). SERD was required to comply with the requirements of ADB's Safeguard Policy Statement (SPS) 2009 and was subject to an Initial Environmental Examination (IEE) (May 2014) and Social Compliance Audit Report (SCAR) (June 2014)[1].

Despite this, for financing Phase II, ADB requires an Environmental Compliance Audit (ECA) to be undertaken to determine whether the Project has complied with ADB's SPS 2009 during Phase I.

1.2 Definition of terms

For avoidance of doubt, the definitions of the following terms as used in this report are:

- Project – the Rantau Dedap geothermal power project (i.e. design capacity of 92MW), located in South Sumatra Province, Republic of Indonesia
- Phase I, or the 'exploration phase' – this covers the infrastructure works (e.g. roads, well pads, water intakes, supporting facilities) as well as the exploratory drilling activities, between 2013 and 2015.
- Phase II or the 'exploitation phase' – this covers the currently planned future activities (expected to commenced in 2017, completing in 2020), which include development drilling (i.e. drilling of production and reinjection wells), and construction of operational components (e.g. power plant)
- Existing Assets –the Project components constructed/completed during Phase I, and are existing as of March 2017 (see Table 2). This scope also includes any land acquisition conducted by the Project during Phase I.
- Associated Facilities – this refers to the proposed 39km transmission line (consisting of 116 towers) between the Project and the future Lumut Balai substation. It is to be noted that this is only relevant in the context of Phase II (i.e. the transmission line is considered an Associated Facility of Phase II only).

[1] The full name of the document is titled "Social Safeguards Compliance Audit Report and Corrective Action Plan". However, this is classified as a Social Compliance Audit Report (SCAR) for document type by ADB.

1.3 Objectives of the ECA

The objectives of this ECA are to:

- Review environmental compliance of the Existing Assets against the requirements of ADB SR1: Environment, with consideration of international best practice (see Section 1.5.6.2).
- Propose a corrective action plan (CAP) that sets out the actions that the Project needs to implement to achieve compliance with ADB SR1.

This ECA has been prepared on the basis that ADB will disclose this document for the purpose of fulfilling ADB's safeguard policies/requirements (with regard to project financing) in order to obtain loan approval for Phase II during Investment Committee Meeting (ICM) in July 2017.

1.4 Scope

This ECA focuses on the compliance status of the Existing Assets and their on-going management (against the requirements of ADB SR1), with activities and/or plans currently under development mentioned only where relevant to their potential effects on the Existing Assets.

Full details of the Project components included in the scope of the audit are provided in Table 2. The audit was conducted between January and March 2017 and involved desk based review of documentation (see Section 2.1.1) and a site visit undertaken from 9 January 13 January.

1.5 Project Description

The following subsections present a description of the Project's status, location and components. The scope of the ECA only includes components of the Existing Assets, as defined above.

Details of Project participants (see Section 1.5.3) and a review of safety, health and environment (SHE) capacity of SERD (see Section) are also provided.

1.5.1 Project Status

Rantau Dedap Geothermal Working Area (known as a *Wilayah Kerja Pertambangan* – WKP) was awarded in December 2010, with initial phases of the exploration programme commencing in 2011. This included topographic survey and civil engineering assessments, with an initial heat loss survey, report and geoscientific interpretation of the WKP completed in February 2012. Following the approval of the Power Purchase Agreement (PPA – see below) and Business Viability Guarantee Letter (BVGL) in November 2012, PT Leighton Contractors Indonesian (LCI) was engaged as civil contractor in January 2013 to develop access roads, well pads and a range of other facilities such as the administration and staff accommodation complex, yard and workshop areas, security posts and water supply and treatment facilities. Supported by a loan from ADB, exploration drilling was undertaken in 2014 and 2015 resulting in the development of six full diameter wells: B1, B2, C1, C2, I1 and I2.

At the completion of the exploration drilling programme, GeothermEx was engaged as the Lender's Resource Consultant to undertake a technical due diligence utilising data gathered during exploration. The report submitted in October 2015 applied numerical simulations and suggested that the western portion of the field could sustain an output level of 92 MW based on the use of dual flash technology.

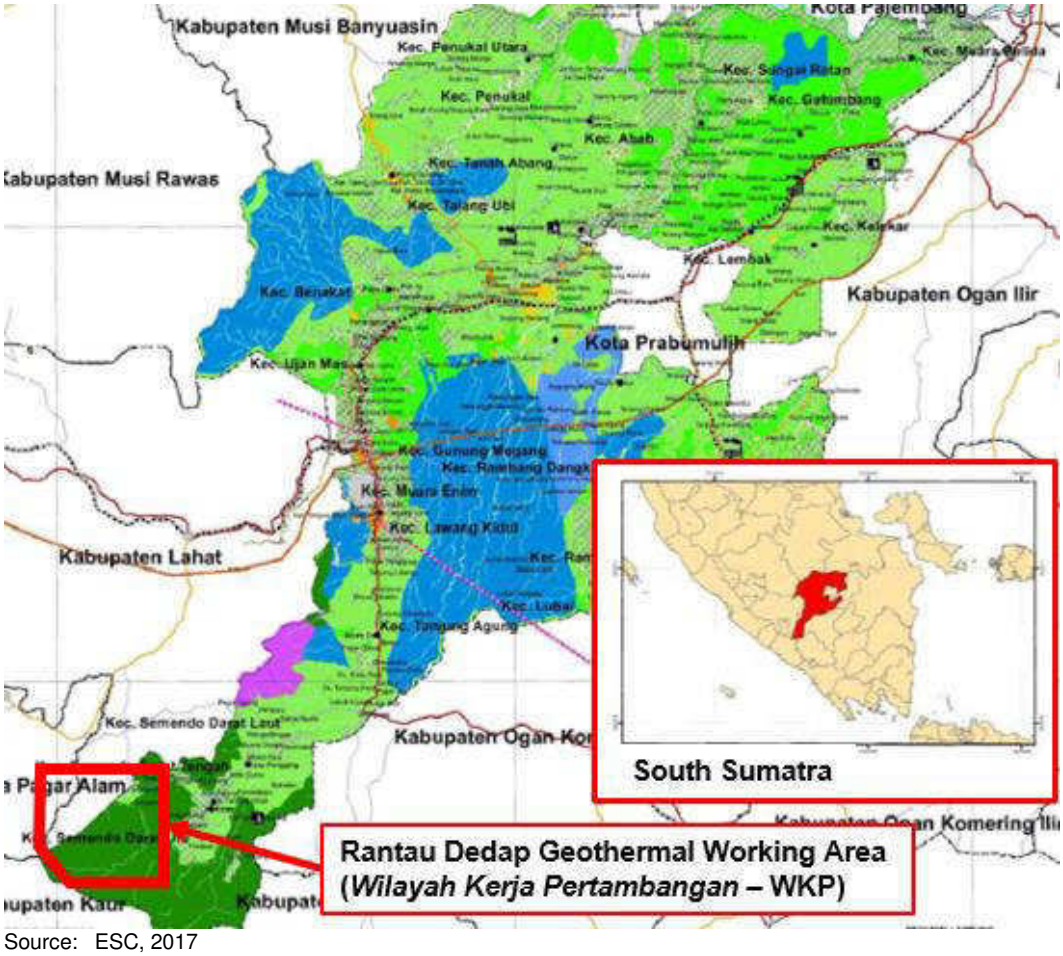
SERD entered a PPA with PT Perusahaan Listrik Negara (PLN) on 12 November 2012. As part of this PPA, PLN has responsibility for construction of the transmission infrastructure for the Project which is a 39km 150kV transmission line to the Lumut Balai substation. Mott MacDonald understands that SERD is presently in the process of re-negotiating aspects of the PPA with PLN, however this does not include changes to obligations regarding the transmission line.

1.5.2 Project Location

The Project is located approximately 225km to the southwest of Palembang across the administrative areas of Muara Enim Regency, Lahat Regency and Pagar Alam City in South Sumatra Province, Indonesia. The Project's location and layout are presented in Figure 1 and Figure 2.

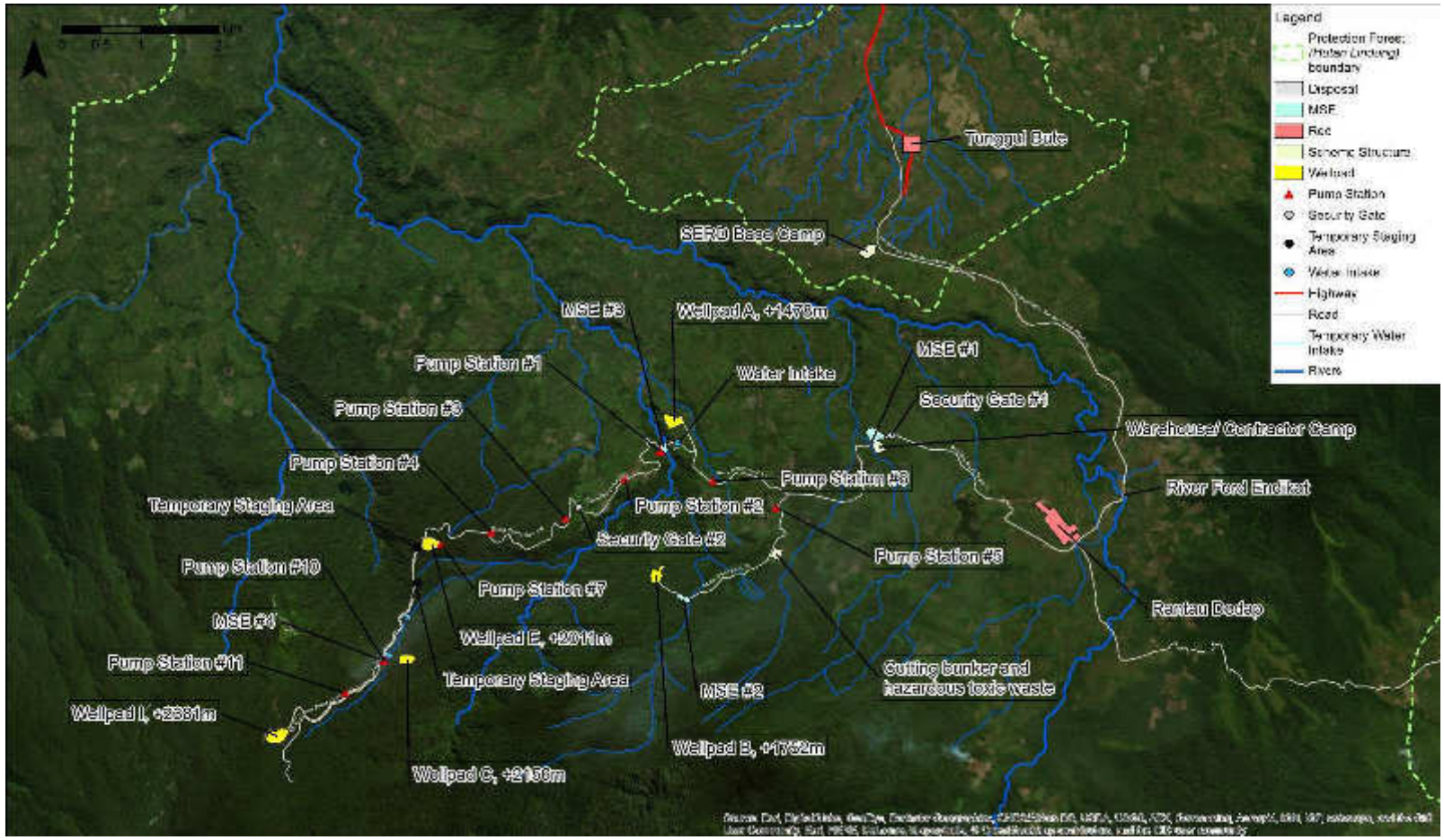
The Project is situated within the 353km^2 Rantau Dedap WKP, which is situated along the Great Sumatran Fault that runs parallel to the southwestern coast of Sumatra. Within the WKP, the Project covers an area of approximately 124km^2 in the Bukit Barisan mountain range at an altitude of between 1,500m and 2,600m above sea level. It covers privately held land (primarily coffee plantations) and protected forest which includes disturbed areas (again used primarily for coffee plantations) as well as areas of secondary forest.

Figure 1: Project Location



Source: ESC, 2017

Figure 2: Project Layout of Existing Assets



Note: "MSE" = Mechanically stabilised earth, which is used to refer to river crossings.
Source: Mott MacDonald, with information from SERD

The Project is located in a relatively sparsely populated area, with only 5 villages. The total population is approximately 6,500 people in the area directly surrounding the 124ha Project area. Most residents engage in agriculture as their primary livelihood.

1.5.3 Project participants

The Project participants are as follows:

- Sponsor – SERD
- MLA – Mizuho
- Lenders – Mizuho, ADB, JBIC and NEXI
- Owner's Engineering Services - PT Aecom Indonesia.
- development of the AMDAL, ESIA and associated documents - PT ESC
- Civil contractor for exploration phase - PT Leighton Contractors Indonesia (LCI)

LCI commenced works for the Project on 1 January 2013 (i.e. after the Protected Forestry Area Permit was obtained in November 2012).

SERD issued an Invitation to Bid Enquiry Document on 2 June 2016 (SERD Tender No. 15000105-OQ-10103) for the Engineering Procurement and Construction (EPC) Contract for the construction of the Project. Information provided by SERD during Mott MacDonald's site investigations stated that the selection process is still ongoing and is anticipated to be concluded within the first quarter of 2017.

For the Operations and Maintenance (O&M) of the power plant, it is understood that this will be managed internally by SERD with personnel recruited from the energy industry (geothermal and thermal power generation and oil and gas industries) as required and trained by SERD. Only specific functions such as monitoring, inspection and facilities maintenance, well testing, geochemistry sampling and analysis, micro-gravity and levelling surveys will be outsourced to external contractors as required.

1.5.4 Project components and status

1.5.4.1 Existing assets

As mentioned above, LCI (i.e. SERD's civil contractor) commenced civil and infrastructure works for the Project on 1 January 2013. By the time of the issuance of the Initial Environmental Examination (IEE) for Phase I in May 2014, the following works had been completed:

- Road improvement on two sections of existing roads, which include:
  - Lahat to Kota Agung,
  - Kota Agung to Tunggul Bute
- Road construction of two sections of access roads within the Project area, which include
  - Tunggul Bute to Rantau Dedap
  - Rantau Dedap to facilities area (e.g. warehouse, cutting bunker)
- Road construction of an access road to well pad B
- Construction of well pad B and the spud for Well RD B-1
- Water intake/supply system #1 (i.e. abstracting from a branch of Cawang Tengah River near well pad B) and water pipelines to well pads

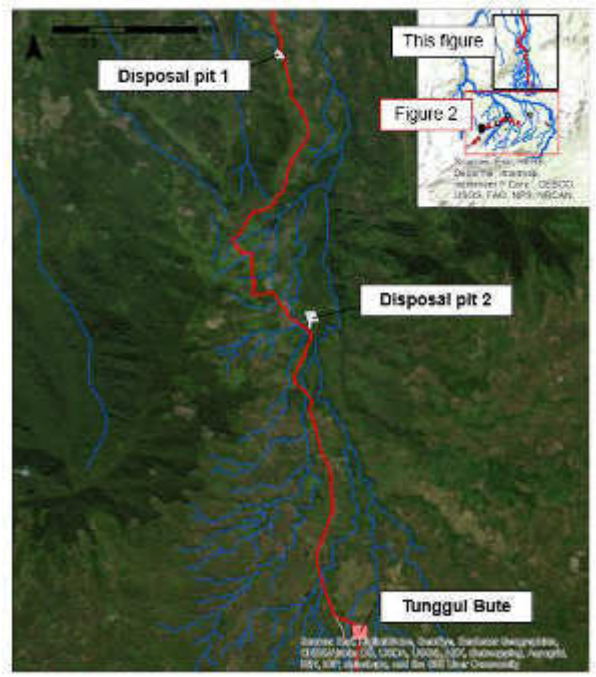
Subsequently, further infrastructure works were then completed prior/during the exploratory drilling, such as:

- Road construction of access roads to respective well pads (i.e. well pads C, E and I)
- Construction of well pads C, E and I – the cleared area of well pad E includes areas for the proposed power plant, temporary stage areas, and spaces for two backup wells
- Water intake/supply system #1[2], #2 and #3 (i.e. abstracting from branch of, or directly from, Cawang Tengah River) and water pipelines (i.e. for drilling water) to well pads.
- Pumping stations

Upon the completion of the above works, exploration drilling took place between February 2014 and April 2015 whereby a total of six production wells (i.e. two each at well pads B, C and I) were drilled. Supporting facilities constructed during this period includes:

- SERD facilities at Talang Pisang (i.e. office and accommodation camp)
- Security posts
- Warehouse and accommodation camp (i.e. for drilling team)
- Temporary staging area
- Temporary hazardous waste storage area and explosive bunker (near well pad B)
- Two atmospheric flash tanks
- Two disposal pits outside of the main working area (i.e. disposal pits 1 and 2) (see Figure 3) – used for temporary soil disposal (i.e. only during the exploration phase)

Figure 3: Location of disposal pits



Source: Mott MacDonald with inputs from SERD

[2] As based on the document "Rantau Dedap Stage 1 Development & EPC construction Surface Water Usage" (dated 19 September 2016), the numbering of water intakes seems to be have been amended. The original Water Intake #1 near well pad B is no longer anticipated to be used for future drilling. The water intake near well pad C had since been renamed Water Intake #1, while the water intakes near well pad E and A are named Water Intake #2 and #3 respectively.

In addition to the above works, land clearing was undertaken for well pad A (i.e. a 2.85ha area), but has since been deemed to be no longer required for the Project. Re-vegetation is in progress at this well pad.

The above components, as summarised in Table 2, form the Existing Assets.

1.5.4.2 Future Assets

For Phase II, we understand SERD intends to construct two new well pads (i.e. well pads L and M) two further well pads for contingency (well pads N and X), and associated access roads. The power plant and associated generating equipment will also be constructed at well pad E, alongside the pipelines, scrubbers and separators. For the development phase, a total of fourteen production wells are to be drilled, with four further wells designated as contingency. The wells currently considered for the Project are as follows:

Table 1: Number of wells in the Project

Type of well	Existing	Proposed – Phase II	Proposed – Phase II contingency
Production wells	Four wells: • Well pad I (2 no.s) • Well pad C (2 no.s)	Twelve wells: • Well pad I (2 no.s) • Well pad L (5 no.s) • Well pad M (4 no.s) • Well pad C (1 no.s)	Three contingency wells at well pad N. No wells allocated for well pad X yet, but the well pad is identified as a possible contingency.
Brine injection wells	• Well pad B (2 no.s)	One additional back-up brine injector well at well pad E	One additional contingency well at well pad B
Condensate injection wells	-	One additional well at well pad E	-
Total	6	14	4
	24		

Source: SERD

It is to be noted that the above wells and well pads are future planned activities to be undertaken in Phase II (i.e. exploitation phase). Hence, these components (and their associated drilling and construction) are assessed as part of this ECA.

As previously noted, PLN is responsible for building the transmission line and associated infrastructure for the Project; the interface between PLN and SERD's responsibilities is the power plant switchyard. PLN has indicatively identified the transmission line alignment as well as transmission tower locations – 39.11km long with 116 towers. The transmission line will connect the Project to the proposed Lumut Balai substation which is approximately 15km northeast of the Project. At the current point, the transmission line's sole purpose (although there might be other future connection possibilities) is to cater for the Project's connection to Lumut Balai substation. Therefore, this transmission line is considered an 'associated facility' of Phase II of the Project. Furthermore, no physical work or land acquisition has commenced on this scope at the time of writing. Hence, the transmission line is not assessed as part of this ECA.

1.5.4.3 Project timeframe

ADB intends to obtain loan approval for Phase II financing during its ICM in July 2017. Engineering procurement and construction (EPC) and development drilling is scheduled to

commence shortly thereafter, with Substantial Completion Date expected to be 28 months after issuance of Notice to Proceed (NTP) to the contractor.

1.5.4.4 Summary

For the scope of the ECA, the Project components assessed only cover the existing (and constructed) elements (collectively known herein as "Existing Assets"), as defined above. These components are summarised in Table 2 below.

The overall Project layout is presented in Figure 2, showing the components within the Existing Assets.

Table 2: Project components considered Existing Assets

Component	Description
Access roads	
Road improvement	Two sections of existing (public) roads: • Lahat to Kota Agung, • Kota Agung to Tunggul Bute
New road construction	Two sections of new Project roads: • Tunggul Bute to Rantau Dedap • Rantau Dedap to facitlies area (e.g. warehouse, cutting bunker)
River crossings	Where the access roads cross over a major waterway (i.e. Cawang Tengah River and/or its tributaries), a river crossing, consisting of slope stabilisation (i.e. gabion wall) and flow diversion (i.e. culvert pipes), is constructed. These are named as "mechanically stabilised earth" (MSE). The four existing crossings are at: • MSE #1 - near the warehouse • MSE #2 - near (and leading to) well pad B • MSE #3 - near well pad A (i.e. crossing Cawah Tengah River) • MSE#4 – near well pad C
Well pads, wells and associated roads	
Well pad A	Previously cleared, but no longer required. Revegetation is in progress.
Well pad B	Reinjection well pad. Two existing wells (RD-B1 and RD-B2) drilled during exploration phase.
Well pad C	Production well pad. Two existing wells (RD-C1 and RD-C2) drilled during exploration phase.
Well pad E	Reinjection well pad (back-up wells). The area is also expected to hold the following components for construction works of Phase II: • Spoil disposal • Laydown area • Concrete batching plant (for power plant construction) The power plant (for development phase) is also expected to be constructed at this location. The above elements will be constructed during Phase II of the Project, and are not assessed in the ECA. However, the currently acquired and cleared areas at well pad E are considered part of the Existing Assets.
Well pad I	Production well pad. Two existing wells (RD-I1 and RD-I2) drilled during the exploration phase.
Water intakes and associated works	
Water intake	There are currently three existing water intakes constructed. They were used for exploratory drilling during Phase I, and are expected to be utilised again for Phase II drilling. These water intakes are located at: • Water intake #1 - near the warehouse and MSE #1 • Water intake #2 - between well pad C and E • Water intake #3 - near well pad C
Pumping stations	Due to the elevation of the well pads relative to the water intakes, several pumping stations were required to be located intermittently between the intakes and well pads. There are currently eight

Component	Description
	such pumping stations, all located next to the Project's access road. Each pumping station consists of: • A pump • A fuel tank, to hold fuel for power generation • A break tank (i.e. water holding tank), approximately 15 x 3 x 3m dimension Concrete pads were constructed for each the components above.
Water pipelines	Water pipelines were laid between the water intakes and well pads (i.e. well pad B, C and I), during Phase I, for exploratory drilling. These pipelines will be continued to be used for Phase II drilling, and removed upon completion of drilling (i.e. these pipelines are considered "temporary", and not part of the Project's operational design).
Other supporting facilities	
Project facilities	The following components were constructed during the exploration phase, and expected to be utilised for Phase II's construction phase as well: • SERD base camp at Talang Pisang, which includes: – Site office – Accommodation camp – approximate capacity of 31(i.e. only for SERD staff during Phase I) – currently only 7 SERD staff are based on-site • Security posts/gates (i.e. one at drilling contractor base camp, one prior to reaching well pad E) • Drilling contractor base camp (at entrance to main working area), approximately 2km northwest of Rantau Dedap, which mainly consist of the warehouse building
Phase I disposal pits	There are two existing "disposal pits" located north of Tunggul Bute (i.e. 5 and 9km respectively). These were used during Phase I earthworks and drilling acitivities. Despite the naming convention, only one disposal pit (i.e. Disposal pit 1) was used for soil disposal. The other "disposal pit" (i.e. Disposal pit 2) was used as an explosive bunker and temporary rock crushing area. They are not expected to be used for Phase II works.
Other construction related facilities	Several areas or components had already been cleared, completed or mobilised, for construction purposes either for works during the exploration phase, or in preparation for development phase. These are: • Well pad E (as described above – which covers proposed laydown and spoil disposal areas) • Temporary staging area (i.e. 500m south of well pad E) • Two atmospheric flash tanks, used during the exploration phase • Temporary hazardous waste storage area and explosive bunker (near well pad B)

Source: Mott MacDonald, based on information provided by SERD

1.5.5 SERD safety, health and environment resources

The individual responsible for safety, health and environment (SHE) for the project is the Senior SHE Manager who is based in Jakarta and is supported by a Safety Engineer and two Environmental Engineers. This team is responsible for overseeing SHE at Supreme Energy's three geothermal sites in Sumatra: Muara Laboh, Rantau Dedap and Raja Basa.

SHE at the Project site is overseen by the Site Support Manager, who reports to the Rantau Depdap Project Manager and Senior SHE Manager based in Jakarta. However, this position is currently vacant. This responsibility is currently being undertaken by the Field Representative. As informed by SERD, during drilling and construction (for Phase II), additional SHE members will be allocated to the site to provide additional support. SHE organograms describing roles and reporting structure for the team in Jakarta and the Project team have been provided for our review; this information is reproduced in Appendix A.

1.5.6 Applicable legislation

This section summarises the national and international laws, regulations and standards which are relevant to the Project. Further details of the regulatory framework for the Project can be found in Appendix B.

1.5.6.1 National legislation

Key national legislation which is applicable to this Project is as follows:

- Geothermal Law (Law 21/2014)
- Environmental Protection and Management Law (Law 32/2009)
- Land Procurement for Development in the Public Interest (Law2/2012)
- Presidential Decree regarding Land Procurement Procedures for Development and the Public Interest (Perpres 71/2012)
- Presidential Decree regarding Land Acquisition Law (30/2015)
- Ministry of Environment Decree regarding Types of Business and/ or Activities Subject to AMDAL (Permen 5/2012)
- Ministry of Energy and Mineral Resources (38/2013) regarding Compensation of Land, Building and Plants within Right-of-way Under High Voltage Lines
- Regulation regarding Environmental Permits (Peraturan 27/2012)

1.5.6.2 International standards and guidelines

The international guidelines applicable to this review are ADB Safeguard Policy Statement (2009) and specifically Safeguard Requirement (SR) 1 (Environment). Consideration has also been given to recognised international best practice, such as IFC General Environmental, Health, and Social (EHS) Guidelines (2007), IFC EHS Guidelines for Geothermal Power Generation (2007) and IFC EHS Guidelines for Electric Power Transmission and Distribution. The IFC General EHS Guidelines state that where nationally legislated host country standards for air quality do not exist, international guidelines such as the World Health Organisation (WHO) Ambient Air Quality Guidelines should be used instead.

2 Approach

2.1 Overview

The audit approach has involved a desk based review and a site visit to obtain information. This report has been informed by the review of Project documentation and questions and answers with SERD. In addition, clarifications and additional information have been sought through meetings with local village leaders, people affected by land acquisition and corporate social responsibility (CSR) beneficiaries. The information obtained has been compared against the individual requirements of SR1 to make informed, evidence-based judgements as to whether the Project is compliant or not. The findings of the compliance audit have been used to identify recommendations that form the basis of the corrective action plan, which is presented in Section 4.

2.1.1 Desk-based review

The desk based review of project documentation included the following key documents:

- Initial Environmental Examination (IEE), May 2014
- Report and Recommendation of the President to the Board of Directors, June 2014
- Safeguard and Social Monitoring Report (i.e. bi-annual), for 1st semester 2015, 2nd semester 2015 and 1st semester 2016
- UKL-UPL (i.e. bi-annual), for 1st semester 2015, 2nd semester 2015, 1st semester 2016 and 2nd semester 2016
- Environmental and Social Impact Assessment: 250 MW Rantau Dedap Geothermal Power Plant (Phase 1 – 92MW) South Sumatra, Indonesia DRAFT FINAL (December 2016)
- PT SERD Biodiversity Action Plan, Interim report, November 2016
- PT SERD Stakeholder Engagement Plan (December 2016)
- PT SERD Grievance Log
- Supreme Energy's Safety Health and Environment (SHE) Policy and Manual

Throughout the audit process, additional documents and revised versions of the earlier draft documents have been made available and considered in the audit findings.

2.1.2 Site visit

The site visit was undertaken from 9 to 13 January 2017 and was attended by an environmental specialist, a social safeguards specialist and a biodiversity specialist from Mott MacDonald. Mott MacDonald staff were accommodated in the town of Lahat approximately 90 minutes from the Project site office.

The following subsections provide further information on the consultation undertaken during the site visit.

2.1.2.1 Internal stakeholder consultation

The following Supreme Energy/SERD personnel with responsibilities relating to social safeguards compliance matters facilitated the Mott MacDonald social safeguard specialist during the site visit and provided responses to questions before, during and after the site visit:

- Erwin Patrisa (Supreme Energy Head of Community Relations and Affairs)
- Ismoyo Argo (Supreme Energy Senior Manager of Business Relations)
- Muhammad Goerillah Tan (SERD Community Relations Officer)

In addition, Muhammad Zaki, a social community specialist from PT ESC was also present and consulted with extensively during the site visit.

2.1.2.2 External stakeholder consultation

A number of external stakeholders were consulted during the site visit. An overview of these stakeholders is provided within Table 3 below.

Table 3: Stakeholder Meetings

Date and Time	Location	Participants
11 January 3pm – 5pm	Site Office	• Erwin Partisa Floris – Head of Community Relations and Affairs, Supreme Energy • Ismoyo Argo – Senior Manager of Business Relations, Supreme Energy • Muhammad Goerillah Tan – Community Liaison Officer, SERD • Muhammad Zaki – Social and Community Consultant, PT ECS
12 January 2017 9am – 10am	Tunggul Bute Head of Village Office	• Pak Jutawan – Head of Village (HoV) Tunggul Bute
12 January 2017 9am – 10am	Tunggul Bute Head of Village Office	• Tunggul Bute Women's Organisation (CSR Beneficiary)
12 January 2017 10.30am – 11.30am	Ibu Sonah's House – Tunggul Bute	• Ibu Sonah – Head of Household (Elderly, widowed) which had land acquired for Phase I
12 January 2017 11.30am to 12.30pm	Site Office – Tunggul Bute	• Pak H Tawil - Head of Household which had land acquired for Phase I • Pak Ardiansih - SERD Employee and Head of Household which had land acquired for Phase I • Pak Dirman – SERD Employee and Head of Household which had land acquired for Phase I • Pak Prayitno – Mosque Representative (CSR Benefiiciry)
12 January 2017 2.00pm to 3.30pm	Head of Sub-Village House (Dusun IV Yayasan)	• Pak Markun – Head of Sub Village Dusuan IV Yayasan • Tarmiz – Head of household with more than 50% of initial land holding acquired for Phase I • Icha – Midwife and Public Health Official for Segamit Village
12 January 2017 4.00pm – 5.00pm	Pak Kaluri's House – Dusun IV Yayasan	• Pak Kaluri – Head of household (Elderly) hich had land acquired for Phase I
13 January 2017 9.00am to 12.00pm	Transmission Line – Segamit Village and Project Area	• PLN Topographic Survey Personnel
13 January 2017 7.30pm – 9.00pm	Lahat District Secretary House, Lahat	• Secretary of Regency Pak Nasrun Aswari

2.1.3 Compliance rating

The compliance audit findings are presented in Section 3 alongside an overall compliance determination which has been assigned on the following basis:

- Compliance: taking account of ADB's policies and requirements, the Project's practices, documents reviewed and our own observations, we consider the Project, on the whole, to be compliant with SR1.
- Non-compliance: taking account of ADB's policies and requirements, the Project's practices, documents reviewed and our own observations, we consider the Project has at least one area that is not being performed to the required standard of SR1 and that this is of sufficient importance as to prevent compliance with SR1.

2.2 Information gaps and limitations

The limitations of the audit approach are that of the duration of the site visit and, based on the timeframes inherent in the audit process, the audit only presents a snapshot of the Project's performance during the review period.

SERD have been forthcoming with the provision of information when requested and information gaps we have identified throughout the audit represent items that are yet to be produced rather than items that have simply not been made available to us.

3 Audit findings and areas of concern

3.1 Overview

This section presents the findings of the ECA for each component of SR1 and provides recommendations where compliance gaps are identified.

3.2 Environmental audit findings

The findings of the environmental audit are presented in Table 4 for each component of SR1, namely:

1. Environmental Assessment
2. Environmental Planning and Management
3. Information Disclosure
4. Consultation and Participation
5. Grievance Redress Mechanism
6. Monitoring and Reporting
7. Unanticipated Environmental Impacts
8. Biodiversity Conservation and Sustainable Natural Resource Management
9. Pollution Prevention and Abatement
10. Health and Safety
11. Physical Cultural Resources

Within ADB's document, "Report and Recommendations of the President to the Board of Directors", key issues highlighted as relevant to SR1 are:

- habitat values should be protected during Phase I and better targeted baseline biodiversity surveys are to be initiated for a robust environmental impact assessment for Phase II
- road crossings have been constructed to ensure that river flows are maintained
- erosion and sediment impacts are to be minimized, whereby plans to rehabilitate, and revegetate disturbed areas at the completion of the exploration phase should be in place

Assessment of the Project's compliance status against the aspects above have been included within the respective commentary within Table 4.

As a general approach, where gaps have been identified in Phase I's assessment or existing management systems, actions to address these are to be included in Phase II documentation which are expected to be implemented for the overall Project going forward.

Table 4: Environmental compliance audit findings and areas of concern

ADB Safeguard Requirement (Environment)	Audit findings and areas of concern	Compliance Finding	Recommendation
1. Environmental Assessment: Conduct environmental assessment to identify potential direct, indirect, cumulative, transboundary and induced impacts and risks. Include analysis of alternatives	**Overall finding: Gaps in the environmental assessment are not considered a material risk to the project and therefore the Existing Assets are considered compliant** • **National environmental assessment:** A UKL/UPL[3] covering the exploration drilling (i.e. Phase I) was produced and approved in 2011. A UKL/UPL is a limited scope AMDAL/EIA process. As per Law 32/2009, proposed projects categorised as having no significant impacts are only required to have a UKL/UPL. It is also aligned with the Minister of Environment Regulation 5 Year 2012, states that geothermal projects in the exploration phase do not need to prepare AMDAL/ EIA. The Environmental Licence (for exploration drilling) was obtained in August 2014, as based on the UKL/UPL approval. As the exploration phase works planned to clear areas within the Protected Forest (Hutan Lindung), a Forest Management Plan was prepared and approved prior to commencement of works for the exploration phase. For the development phase, the KA-ANDAL[4] was issued on August 2016. Subsequently, the draft AMDAL[5] (i.e. required for development phase) was issued in November 2016, with approval to be obtained. • **International environmental assessment:** In addition to the UKL/UPL, an Initial Environmental Examination (IEE) was undertaken for Phase I. This IEE serves as an environmental assessment for the Phase I works (i.e. including Existing Assets). General commentary on the IEE is as follows: – While the analysis of alternative was very brief, it did highlight that the “no project” options was not preferred, as it does not align with environmental improvement or government development objectives of increasing renewable energy capacity. – Given the nature and location of Existing Assets, there is no potential for transboundary impacts. – The environmental aspects (e.g. air, noise, water quality) and potential impacts assessed are considered adequate in scope, although it should be noted that assessment itself still has room for improvement (see below). The social aspects have been more thoroughly investigated through separate Project reports (i.e. Social Safeguards Compliance Audit Report and Corrective Action Plan)[6] (the review of which is being covered through a Social Compliance Audit – 379968/02/A -for the Existing Assets). Some aspects have been addressed in the IEE but could have been expanded or improved. These include: – The impacts were categorised as “low”, however, no elaboration was provided on the method, criteria, or significance of such rating. There was only a single impact rating assigned to most aspects being regarded as “low” (i.e. except social and occupational health) with no differentiation or explanation on categorisation for unmitigated and residual impacts.	**Compliance**	The environmental assessment for Phase I works is considered largely compliant. It should be noted that the ESIA for Phase II should assess and propose mitigation any on-going and/or existing issues from Phase I works.

[3] UKL/UPL (Upaya Pengelolaan Lingkunga/ Upaya Pemantauan Lingkungan) stands for “Environmental Management Effort” and “Environmental Monitoring Effort”. This is a reduced scope environmental impact assessment in Indonesia. Further information is provided in Appendix B.

[4] KA-ANDAL (Kerangka Acuan Analisis Dampak Lingkungan Hidup) stands for EIA Terms of Reference. This is the scoping document for the national EIA process. Further information is provided in Appendix B.

[5] AMDAL (Analisi dampak lingkungan) is the national environmental impact assessment process in Indonesia. Further information is provided in Appendix B

[6] Supreme Energy. (2014). *Rantau Dedap Geothermal Development Project Phase 1 – Exploration: Social Safeguards Compliance Audit Report and Corrective Action Plan.* Retrieved from ADB website: https://www.adb.org/projects/documents/rantau-dedap-geothermal-development-project-phase-1-ipsa. (Accessed 13 December 2016).

ADB Safeguard Requirement (Environment)	Audit findings and areas of concern	Compliance Finding	Recommendation
	– The impact assessment was based on qualitive commentary and the assessment did not comment on specific receptor or site within the analysis, with the mitigations proposed generally being high level, good practice. – Some of the components and activities of the Existing Assets (i.e. roads, disposal pits, rock crushing) were not included within the IEE's assessment (i.e. no component or activities-specific impact assessment or mitigations). – An additional well pad was developed (i.e. well pad I) after the IEE was issued, and hence, it was not covered in the assessment. – Cumulative impacts were not considered in the IEE The level of assessment (i.e. IEE) is in line with the ADB categorisation (i.e. category B for environment [7,8]) for the exploratory phase. Although there are considerable improvements possible for the IEE, these shortcomings are not considered material in the current context. Of more significance is the mitigation measures recommended in the IEE which have been implemented on site. Commentary of the Existing Assets' E&S performance is as detailed in item 2 below.		
2. Environmental Planning and Management: Avoid, minimize, mitigate, and/or offset adverse impacts and enhance positive impacts by means of environmental planning and management. Prepare an environmental management plan (EMP)	**Overall finding: The IEE and Supreme Energy's documents contain a site specific environmental management plan (EMP) and management system which in part address the requirements of SR1 but is lacking key information – as outlined below - resulting in a non-compliance.** • **Corporate-level policy:** SERD's parent company, Supreme Energy, has a well-established overarching corporate Environmental and Social Management System (ESMS) in place. This is documented in the Safety Health and Environment (SHE) Policy and Manual, Standard Operating Procedures (SOPs) and associated documentation. Information on management measures and procedures specific to the Project is available but from a variety of different sources including the UKL-UPL, SHE Policy, SHE SOPs. The corporate systems at the framework level are considered generally appropriate to apply to the Project. • **Project EMP:** An UKL-UPL and an IEE was produced as part of Phase I's environmental assessment. As stated in the IEE , its purpose is to build on the relevant elements of the national environmental requirements (i.e. UKL-UPL and the Forest Management Plan) to meet the requirements of the ADB SPS. Within the IEE, Section 5.5 contains an EMP which draws on the assessment in the IEE. However, the IEE (and consequently the ESMP) do not contain key information required for an EMP by SR1, namely institutional or organizational arrangements, capacity development and training measures, implementation schedule (frequency), detailed description of monitoring programmes, performance indicators and cost estimates. It is understood from our discussion with SERD that this information is known and could be collated. The EMP does not contain management measures or procedures to manage unexpected impacts, for example biodiversity measures in the event of the discovery of species previously thought to not exist within the Project area. However, it does refer to the need to develop such adaptive management measures in the Biodiversity Action Plan (BAP) with respect to alien invasive species.	**Non-compliance**	Revise the site specific EMP in accordance with SR1, for implementation during Phase II

[7] ADB. (2014). *Project Data Sheet - Indonesia: Rantau Dedap Geothermal Power Project (Phase I).* Retrieved from ADB website: https://www.adb.org/projects/47937-001/main#project-pds. (Accessed 9 March 2017).

[8] As per ADB's report, "Report and Recommendation of the President to the Board of Directors" (June 2014), it is unlikely that short-term exploration will cause significant adverse environmental impacts that are irreversible, diverse, or unprecedented. The category is likely to be revised for Phase II (i.e. exploitation phase), whereby the impacts such as habitat loss, will become "permanent".

ADB Safeguard Requirement (Environment)	Audit findings and areas of concern	Compliance Finding	Recommendation
	• **Monitoring requirements:** Bi-annual (every 6 months) UKL-UPL monitoring reports are produced by SERD and copies provided to the Environment Agency and other relevant local Government departments such as the Mining Department. Bi-annual Safeguard and Social Monitoring Report were also prepared for reporting to ADB. • **Emergency Response Procedure (ERP):** SERD has developed a site-specific ERP; this is designed to deal with events such as volcanic eruptions, earthquakes, major hydrogen sulphide (H_2S) releases, fire, plant failure, explosions, chemical/fuel spills and bomb threats. In addition to specific measures to take in the event of each of these emergencies, the ERP covers responsibilities, defines the role of the Emergency Response Team, staff evacuation procedures and training required. The ERP has limited reference to the community with respect to communication routes to inform and evacuate community members where necessary. We understand from information gathered during the site visit that Project staff will consult with community leaders prior to undertaking well testing to inform them of the activity and what to do in the event of an emergency. However, the ERP was stated to be first issued in December 2016, and hence taken to have been developed for implementation during Phase II's works. This document was unlikely to have been used during Phase I's work itself. • **Contractors' responsibilities:** We understand from discussion during the site visit that contractors are required to produce their own EMPs and that they are required to adhere to the Project requirements (i.e. mitigation and commitment from the UKL-UPL, IEE and Forest Management Plan) through obligations laid out in the contractor's contract.		
3. Information disclosure: Disclose a draft environmental assessment (including the EMP).	**Overall Finding: The Project is compliant with respect to information disclosure requirements** The following documents have been prepared and disclosed on the ADB website in accordance with the requirements of SR1: • Initial Environmental Evaluation (Dated May 2014) • Social Compliance Audit Report (Dated April 2014) • Initial Poverty and Social Analysis (Dated June 2014) • Safeguard and Social Monitoring Reports for 1st Semester 2015, 1st Semester 2016 and 2nd Semester 2016. The 2nd Semester 2015 document is not available on the ADB website for disclosure purposes. The UKL-UPL for Phase 1 is available in both English and Bahasa Indonesia, but not known to be publicly disclosed. ADB's SPS (2009) states "*for projects with significant adverse environmental, involuntary resettlement or indigenous peoples impacts, ADB project teams will participate in the consultation activities to understand the concerns of affected people and ensure that such concerns are addressed in project design and safeguard plans*". SERD must therefore seek to involve the ADB project team in arranging consultation activities. This was effectively shown during the site visit which included two ADB personnel participating in an engagement activity with a range of Project stakeholders. The inclusion of the ADB project team should form a key part of planning for engagement activities.	**Compliance**	N/A

ADB Safeguard Requirement (Environment)	Audit findings and areas of concern	Compliance Finding	Recommendation
4. Consultation and Participation: Carry out meaningful consultation with affected people and facilitate their informed participation.	**Overall Finding: SERD has demonstrated a commitment to ensuring that meaningful consultation is undertaken with affected people within the area, which is evident through the stakeholder events recorded in the Stakeholder Engagement Log, the activities of their CLO and the level of understanding interviewed stakeholders had of the Project and its present status. However, further recommendations are made for improvement within the logging and reporting of stakeholder engagement activities.** **Project consultation and participation:** There have been no community protests which would indicate any form of widespread community opposition to the Project. Based on the Stakeholder Engagement Log and the outcomes of the consultation during the site audit it is considered that the Project has developed and maintained community support during the exploration phase. Key stakeholders were asked to explain their understanding of the present status of the Project and all were able to provide an accurate overview of the Project's current activities. This reflects the effectiveness of the role that the SERD Community Liaison Officer (CLO) has been playing during exploration phase. Planning for effective engagement for development phase is being undertaken through the present AMDAL and ESIA process. A Village Forum (*Forum Desa*) was established in 2013 and continued through until it was disbanded in June 2015. This is considered appropriate given the present status of the Project. SERD staff interviewed during the audit process noted a strong commitment to reactivate the Village Forum platform prior to commencing Phase II. **Documentation**: The current stakeholder engagement plan (SEP) was developed in late 2016 and was implemented in December 2016. Prior to this, the engagement undertaken by SERD was within the context of the Forum Desa, disclosure of AMDAL documents, Integrated Social Development Plan (ISDP) development and implementation, socio-economic baseline surveys and ongoing face to face meetings with key stakeholders. The stakeholder log shows a strong commitment to ongoing engagement with stakeholders, particularly with regards to communicating the Project's status, forward plans and the development and monitoring of key CSR activities. It is noted that the stakeholder log tracks only multi-stakeholder meetings and events, and not individual engagements. During the site audit, it was shown that the CLO plays an active role in the community meeting with village heads and land holders on a regular basis. These have not been tracked and should be included in a more detailed stakeholder engagement tracking and reporting mechanism to meet the requirements of SR1. This should include matters such as the name of the stakeholder, location, date, key points discussed and actions arising. This was discussed with the SERD CLO and the Supreme Energy Manager of Business Relations and Head of Community Relations and Affairs, and there is a strong commitment to improve the documentation process. **Engaging with vulnerable and minority groups:** Presently the SEP does not detail how vulnerable and minority groups will be engaged. The SEP identifies vulnerable groups, and how to engage with them, although reporting provides little indication of how this has occurred. As noted within the Social Compliance Audit (SCA) prepared by Mott MacDonald, there was a low participation of affected people (many of who are likely to be categorised as vulnerable or Indigenous) within the programmes implementing the ISDP. **Ongoing reporting:** The bi-annual Safeguard and Social Monitoring Reports developed and disclosed on the ADB website include a section (Section 5.2) summarising information disclosure, consultation and participation activities. The three monitoring reports reviewed as part of this audit only provide a general overview of consultation activities which have been undertaken (e.g. "*Relation Team continuously participate in consultation with the village head, district head, regent and also the military heads in Lahat, Muara Enim regencies as well as Pagar Alam city as attendees*"), with	**Non-compliance**	The following improvements are recommended to ensure Full Compliance: • Stakeholder engagement log to be developed to track and report on all stakeholder engagement activities. • The SEP aspects relating to engagement of vulnerable groups to be fully implemented and reported upon • A new template for the social aspects of the bi-annual Monitoring reports to be developed and submitted for approval. This is to include reporting of all stakeholder engagement activities and status updates on implementation of the ISDP

ADB Safeguard Requirement (Environment)	Audit findings and areas of concern	Compliance Finding	Recommendation
	statements regarding the Integrated Social Development Program and improvement processes being the same across all monitoring reports. Improvements to the reporting are necessary; they need to provide accurate reporting of all the stakeholder engagement activities which have occurred over the previous six months and corrective actions arising from such activities. This needs to occur in conjunction with the improvement to the documentation system noted above. The SEP adopted in December 2016 contains new commitments to report stakeholder engagement activities (amongst other matters such as environmental performance) through the Supreme Energy website (www.supreme-energy.com). Presently, the website does not contain the bi-annual reports or any other reports relating to the Project. As part of future reporting, SERD should make more effective use of its website by either uploading all its externally disclosed environmental and social reporting, or provide links for external websites where these reports are available (e.g. the ADB Project site for Rantau Dedap). **Land acquisition consultation:** As confirmed within the scope of SCA (Mott MacDonald 2017), there has been no additional land acquisition undertaken since the Phase I's SCAR was completed. There was no information uncovered during this audit that is inconsistent with previous findings that consultation was undertaken in accordance with SR1, SR2 and SR3. As detailed within the SCA (Mott MacDonald 2017) there has been ongoing community engagement with regards to the development and implementation of the ISDP which is the primary measure to mitigate livelihood impacts.		
5. Grievance Redress Mechanism: Establish a grievance redress mechanism to receive and facilitate resolution of the affected people's concerns and grievances regarding the project's environmental performance.	**Overall Finding: The Project has a grievance mechanism in place and members of surrounding communities have displayed strong knowledge of how they would effectively relay grievances to the Project. Of minor concern is the Forum Desa was created to resolve major grievances but is currently not taking place. It is recommended that an alternative mechanism be developed to respond to major grievances.** **Context:** SERD has been implementing a grievance mechanism (GM) since exploration activities commenced in 2011. The GM was initially disclosed during village level consultation in June 2012. The June 2014 SCAR concluded that there was generally a high awareness of the grievance mechanism and recommended basic training for field staff involved in its implementation in relation to recording and tracking grievances once lodged. The GM has not been disclosed further by placing it in community notice boards or providing flyers. SERD has noted it has not placed a heavily reliance on written feedback as utilising village heads and the CLO has been more effective. Recommendations were discussed with SERD during the audit process to develop information cards for the CLO to distribute during any stakeholder meetings, detailing key contact points to lodge any grievances. The grievance log was provided for review and it showed that there had been no grievances lodged since 2014. No grievances or underlying community discontent with the Project were observed during consultation activities undertaken during the audit. **Grievance Log:** The review of SERD's grievance log showed a total of five grievances and none since the June 2014 SCAR. All of these grievances were related to the land acquisition process and have been appropriately logged and closed out by SERD. The lack of recent major grievances (none reported since April 2014) is suggestive of a project that is performing well in terms of managing community relations and adverse social impacts (refer to the SCA). During discussions with SERD, it was noted that small grievances that were able to be immediately resolved (e.g. blocked drainage line on a SERD road) or were eventually not classed as grievances (i.e. one instance where community members complained about water quality, which was not related to Project activities) were not being logged. SERD has made a commitment to log all grievances received in the future to enable accurate reporting.	**Non-compliance**	The following improvements are recommended to ensure full compliance: • Develop cards to provide to community members which provides key SERD contact details to lodge grievances with • SERD to ensure that all grievances received from the community are entered into the grievance log

ADB Safeguard Requirement (Environment)	Audit findings and areas of concern	Compliance Finding	Recommendation
	Grievance Redress Process: The GM as contained within the SEP reviewed by Mott MacDonald contains separate processes for resolving grievances defined as either minor or major. A Site Grievance Committee undertakes classification of grievances in the first instance. For those defined as major, an external body known as the Forum Desa is to respond, manage and track actions. As noted above, the Forum Desa was discontinued in June 2015 given the low level of Project activities. During the time in which Forum Desa remains discontinued, major grievances are instead managed by the head of Village or other relevant government authority. This is considered an appropriate mechanism until such stage as the Forum Desa is reconstituted. **Current Status:** There are presently no outstanding grievances. As noted above, this is not unexpected given the present status of the Project. As part of stakeholder meetings during the site audit, individuals were asked how they would lodge a grievance if they had any with the Project. In each instance local communities were able to note the prominent role and contact details of the SERD CLO and that they felt comfortable lodging grievances directly with SERD, or with their respective village heads. The interviewed village heads also noted that in the event they received a grievance from the local community they were able to immediately contact the SERD CLO.		
6. Monitoring and Reporting: Implement the EMP and monitor its effectiveness. Document monitoring results, including the development and implementation of corrective actions, and disclose monitoring reports.	**Overall finding: The Project is non-compliant with respect to monitoring and reporting. Environmental monitoring and reporting requirements are currently not disclosed in a timely manner. Socio-economic monitoring is not being effectively undertaken.** • **Environmental monitoring:** UKL-UPL monitoring reports are produced every six months and copies are being provided to local Government offices; the public can view the reports at these offices but the monitoring reports are not otherwise publicly disclosed. The bi-annual Safeguard and Social Monitoring Reports (i.e. from 1st semester 2015 to 1st semester 2016) are disclosed on the ADB website[9], however, these reports were made available only from March 2017. Timeliness in on-going disclosure for future reports should be improved. • **Socio-economic monitoring:** The Phase I's SCAR contains a comprehensive assessment of the socio-economic monitoring processes that have been established by SERD. In accordance with the requirements of the 2014 SCAR, SERD have established a socio-economic baseline profile of affected and non-affected households in the community as a basis for ongoing monitoring. Socio-economic monitoring is presently undertaken as part of the implementation of the ISDP. Key findings from the SCA will require changes to be made to the socio-economic monitoring programme, specifically: – Monitoring undertaken not only to determine the performance of the ISDP (e.g. if programmes have been delivered, how many people attended, what changes in crop yields results), but also the impacts to participant's livelihoods – Monitoring needs to better differentiate ISDP participant's according to their status as affected or non-affected people – Monitoring methodologies must better directly engage affected people and Indigenous People – Tracking and reporting on the participation of affected people within the Project workforce.	**Non-compliance**	The following improvements are recommended to ensure full compliance: • Timely disclosure of regular monitoring reports • Produce a socio-economic Impact Monitoring Report

[9] https://www.adb.org/projects/47937-001/main#project-documents

ADB Safeguard Requirement (Environment)	Audit findings and areas of concern	Compliance Finding	Recommendation
7. Unanticipated Environmental Impacts: Update EA and EMP or prepare new EA and EMP to address unanticipated environmental impacts that become apparent during project implementation	**Overall finding: The Project does not have a specific mechanism in place to deal with unexpected impacts but these aspects can potentially be managed through mitigation prescribed in the Phase II ESIA and EMP to achieve compliance.** • **Context:** Changes to the Phase I design (i.e. well pad I) and location-specific impacts (i.e. exposed slopes, areas) since the IEE issuance have been noted. These details and their corresponding impacts were not captured in the IEE's assessment, but the nature and magnitude of these additional activities are not deemed significant. No unanticipated environmental impacts were otherwise identified. • **Procedures in place:** There is no evidence that the Project has a specific mechanism in place to be able to identify and address unanticipated impacts.	**Non-compliance**	Inclusion of dynamic measures in the future Phase II ESMP
8. Biodiversity Conservation and Sustainable Natural Resource Management: Ensure specific requirements are met for developments in critical habitats or areas of natural habitats. Apply a precautionary approach to the use of renewable natural resources.	**Modified and natural habitats. Overall findings: The Project is located predominately within natural habitat (primary montane forest). Mitigation including offsetting is therefore required for areas of temporary and permanent habitat loss as the Project moves into exploitation phase. Actions are included within the BAP; however, details of how the offsetting has been or will be implemented have not been provided. A feasibility evaluation is required to determine if it can be achieved to meets is aims. Therefore, until developed further the Project is not considered to be compliant.** • **Context:** The Project was assigned as category B during exploratory phase (i.e. impacts considered reversible if the Project do not proceed to exploitation stage). The majority of the biodiversity assessments and surveys undertaken were part of either the AMDAL or the Critical Habitat Assessment (CHA)/BAP of Phase II (as the land had already been cleared during the exploration phase). The AMDAL and CHA/BAP identifies modified and natural habitats in the Project area. High-level habitat mapping is provided in relation to the location of the Project; areas of permanent and temporary habitat loss are also calculated. The site covers approximately 124ha; of which 115ha is located within primary montane forest (natural habitat) and 9ha within predominantly agricultural land (modified habitat). • **Findings:** Mitigation is required for the temporary and permanent loss of natural habitat. Reinstatement measures have already been undertaken in some areas of temporary habitat loss which are no longer required for Project activities. No offsetting has been undertaken to date and the offsetting plan is still in its early stages of development. It is recommended that an initial feasibility study is undertaken following guidance outlined by the Business and Biodiversity Offsets Programme (BBOP), 2012.[10]	**Non-compliance**	The following improvements are recommended to ensure full compliance: • Develop offsetting plan. • Demonstration of actions to achieve no net loss of natural habitat.
	Critical habitats. Overall finding: the presence of IUCN Red List Critically Endangered (CR) and Endangered (EN) species, and endemic species within the Project area triggers critical habitat requirements. Mitigation actions are included within the BAP. However, further details are required, including offsetting measures, to demonstrate no net less/net gain for these species. The Project is therefore considered not compliant. • **Critically Endangered and Endangered species:** The biodiversity desktop study, baseline surveys and consultation identified three IUCN Red List CR and five EN species as occurring within or in proximity to the Project area.	**Non-compliance**	Review CHA to ensure all trigger species correct; develop offsetting measures to achieve no net loss/net gain

[10] Business and Biodiversity Offsets Programme (BBOP) (2012) Resource Paper: Limits to What Can Be Offset. BBOP, Washington, D.C. Available on-line at: http://www.forest-trends.org/documents/files/doc_3128.pdf

ADB Safeguard Requirement (Environment)	Audit findings and areas of concern	Compliance Finding	Recommendation
	• **Endemic species:** Six endemic bird and one endemic mammal species were also identified as occurring within - or in proximity to - the Project area. • **Legally protected area:** The Project is not located directly within an internationally recognised protected area (IUCN categories I-VI); however, the forest is protected at national level (Hutan Lindung) and qualifies for additional measures due to its high biodiversity value which includes its recognition as a Tiger Conservation Landscape.[11]		
	Legally protected areas. Overall finding: The Project is located within nationally designated forest area (Hutan Lindung) , but all regulatory requirements have been complied with. This is considered compliant. • **Legally protected area:** As mentioned above, the Project is not located directly within an internationally recognised protected area (IUCN categories I-VI); however, the forest is protected at national level (Hutan Lindung). • **Cooperation with authorities:** For usage of land within the Hutan Lindung, several requirements are required to be fulfilled (e.g. Borrow-Use Permit, Forest Management Plan). All regulatory requirements associated with usage of land in Hutan Lindung have been satisfied.	**Compliance**	N/A.
	Invasive alien species. Overall finding: No assessment has been undertaken. The Project is not considered compliant. No assessment has been undertaken for the accidental introduction and control of invasive species into the Project area. No invasive species mitigation measures have been identified in the IEE. Therefore, the Project is therefore not considered to be compliant.	**Non-compliance**	Assess potential for introduction of alien invasive measures, prepare and implement alien invasive species plan.
	Management and use of renewable natural resources. Overall finding: the Project design considers sustainable resource use and is generally compliant. • **Project design:** The Project is designed to manage natural resources in a sustainable manner, for example through re-using drilling water to minimise water consumption and reinjecting drilling fluids to avoid discharges to the environment. Further details of these measures are provided below under '9. Pollution prevention and abatement'. • **Ecosystem services:** An ecosystem services assessment was not included within the IEE, the SCAR or the UKL/UPL. Evidence gathered during the site audit indicates that aside from areas of land acquired which were used for agricultural practices (and therefore compensated for), the areas where the well pads and other key Phase I components are situated, are routinely used for other provisioning services (e.g. forest goods, food). In practice, ecosystem services impacts (particularly regulatory and supporting) are largely managed through successful implementation of the UKL/UPL, as reported throughout the ECA. Future assessments, including the ESIA for Phase II, should include specific consideration of ecosystem services within the impact assessment and development of management and mitigation measures.	**Compliance**	No further action required.

[11] World Wildlife Fund: Tiger Conservation Landscape. http://www.worldwildlife.org/publications/tiger-conservation-landscape-data-and-report

ADB Safeguard Requirement (Environment)	Audit findings and areas of concern	Compliance Finding	Recommendation
9. Pollution Prevention and Abatement: Apply pollution prevention and control technologies and practices consistent with international good practices.	**Overall finding: Most of the Project design and measures implemented are considered compliant.** • **Resource conservation and energy efficiency:** There is minimal discussion on resource efficiency in the IEE. However, this is not deemed a risk as exploration drilling is not considered resource intensive in terms of energy use, water use or other resource or material use. Furthermore, SERD has undertaken inherent resource efficiency measures such as the re-use of drilling water to reduce water consumption. • **Wastes:** A waste management plan is included in Supreme Energy's SOPs. Domestic waste is stored in a municipal waste container on site and when full this is collected by a licenced waste contractor for disposal off site. • **Hazardous materials:** Drilling cuttings from drilling activities using water-based drilling muds are not classed as a hazardous material under Indonesia regulations. Drilling cuttings are temporarily stored prior to their reuse for fill during earthworks or disposal in the disposal pits. Explosives (as emergency provisions for dislodgement of drilling pipes) are stored in the explosive bunker at disposal pit 2, which is subject to security and storage requirements approved by the government. • **Pesticide use and management:** There are no documented use of pesticides for Phase I activities. • **Greenhouse gas emissions:** This aspect is not a concern for the exploration phase of the Project. • **Hydrogen sulfide (H_2S):** For Phase I works, H_2S release may only occur during accidental well-blow out (when drilling) and well testing. No such incidents were reported. • **Dust:** The bi-annual UKL-UPL does not report any exceedances in total suspended particulates (TSP). • **Water resources:** Although no quantitative assessment for the water usage during exploratory drilling was presented in the IEE, such assessment was conducted for the exploitation drilling.[12] As it was demonstrated that exploitation drilling (which uses more water than exploratory drilling) is not likely to impact water resources taken from the same water intake points, it is unlikely that water resources would have been adversely impacted during Phase I. • **Hydrology:** The MSE constructed by SERD at various river crossings ensure that the existing waterways in the Project area are not altered. • **Traffic:** No grievances related to traffic issues were recorded in the grievance log. • **Noise:** The bi-annual UKL-UPL monitoring does not report any exceedances. In any event, as the drilling activities are undertaken at least 3km away from residential settlements, noise is unlikely to be a concern for human receptors. Noise disturbance of sensitive fauna could occur although these impacts would be of a temporary nature. • **Land/groundwater contamination:** Fuel tanks at the pumping stations are stored on concrete foundations with the appropriate containment measures. No major spillage or leakage incidents have been reported in the Safeguard and Social Monitoring report.	**Compliance**	No further action required.
	Overall finding: The erosion and sedimentation aspect of the Project's environmental management can be improved based on recent observations. • **Erosion and sedimentation:** All of the well pads (i.e. well pads B, C, E and I) are currently exposed surfaces, however, the ground has been packed and perimeter drainage constructed. There are various other areas, such as road sides and slopes which are yet to be fully revegetated. SERD has identified these	**Non-compliance**	The following improvements are recommended to ensure Full Compliance:

[12] See memorandum "Rantau Dedap Stage 1 Development & EPC construction Surface Water Usage", dated 19 September 2016

ADB Safeguard Requirement (Environment)	Audit findings and areas of concern	Compliance Finding	Recommendation
	areas in their "Regreening Area Plan- Phase 1" (June 2014), and "Regreening Area Plan- Phase 2" (August 2014). Revegetation is currently in progress, with the revegetation of several areas yet to be completed. At this point, the timeline, and responsibilities (i.e. SERD or contractor) to undertake the revegetation have yet to be clearly defined.		• Incorporate regular site inspections into the project specific ESMP to be produced. To include frequency of inspections, locations, responsibilities, performance indicators, monitoring and reporting requirements and budget • Set out plan clearly demonstrating timeline, responsibilities, methodology and provisions for completion of revegetation • Investigate the possibility of aligning the current revegetation plan with on-site restoration possibilities described in the BAP.
10. Health and Safety: 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	**Overall Findings: Health and safety procedures are in place and effectively implemented for Phase I. While an ERP is in place, it remains to be disclosed to the local community to ensure that any risks can be successfully avoided or minimised. Impacts to the local health care system (i.e. overloading of capacity with workers' influx) occurred during Phase I. This will require further consideration when planning for Phase II** During Phase I, both SERD and LCI worked in accordance with detailed health, safety and environment plans. The SERD document (titled "Supreme Energy Safety, Health and Environmental Manual") and LCI document ("SERD Civil and Construction Project Health and Safety Plan") were provided for review and are considered to be robust documents, suited to providing workers with safe and healthy working conditions. Health and safety statistics provided by SERD show over 3,500,000 hours have been worked (including all contractors) since the last lost time accident (LTA) in 2013.	**Non-compliance**	The following improvements are recommended to ensure Full Compliance: • Disclosure of the ERP to be undertaken once Phase II works commence.

ADB Safeguard Requirement (Environment)	Audit findings and areas of concern	Compliance Finding	Recommendation
avoidance is not possible, to minimize, adverse impacts and risks to the health and safety of local communities.	As described previously, SERD has in place a site specific Emergency Response Plan. The document appears focused entirely on emergency response in the context of occupational health and safety of workers, however reference to the potential impact on the local community in responding to emergencies is not described. There is no evidence that the ERP has been disclosed to the local community, or that members of the local community were involved in emergency response drills. It is acknowledged that a large proportion of the workforce is comprised of people from within the WKP and would therefore have participated in worker emergency response drills, however consultation with key community figures (including village heads) needs to be undertaken and included within the ERP. Non-emergency health risks to the local community can be a result of the development of a project. While there were no community grievances which would indicate health impacts associated with dust generation, interviews with a local health official based in Segamit village noted that there was a 35% increase in appointments/consultations at the local health clinic during the peak of Phase I. This was noted to be primarily from contractors to LCI residing in the local area who utilised local health care services rather than the clinic on-site. This represents a potential adverse risk to the health of the local community as it places additional pressure on what is already a limited local health care network. Measures need to be implemented to ensure that the influx of workers, and people seeking work, to the area does not impact on health care services.		• Health Impact Assessment to be undertaken within the scope of the ESIA for Phase II, addressing impacts of the workforce on local health services
11. Physical Cultural Resources: Conserve physical cultural resources. Provide for the use of “chance find” procedures that include a pre-approved management and conservation approach for materials that may be discovered during project implementation.	**Overall Finding: No tangible or intangible assets were identified within the IEE or the Phase II ESIA. A chance finds procedure has been developed and implemented. No chance finds were encountered during Phase I of the Project.** **Initial Environmental Evaluation/Environmental and Social Impact Assessment:** The IEE did not contain any reference to the presence of cultural heritage within the Phase I area. It is not clear whether scoping precluded the consideration of cultural heritage. The ESIA submitted for Phase II provides evidence that there are no items of cultural heritage within the Project area. **Site Observations:** Consultation with village heads did not identify any tangible or intangible cultural heritage impacts or risks. **Chance Finds:** A chance finds procedure has been developed and was implemented during Phase I. SERD has reported that there were no incidents of chance finds to date.	**Compliance**	It is recommended that the bi-annual reporting from SERD include a section relating to cultural heritage and chance finds.

3.3 Summary

presents a summary of the overall finding and compliance rating for each component of Safeguard Requirement 1 (Environment).

Table 5: Summary of audit findings

ADB Safeguard Requirement		Compliance rating	Overall findings
1. Environmental Assessment		**Compliance**	Gaps in the environmental assessment are not considered a material risk to the Project; the Project is considered compliant
2. Environmental Planning and Management		**Non-compliance**	The site specific EMP partially addresses the requirements of SR1 but is lacking key information resulting in a non-compliance
3. Information disclosure		**Compliance**	The Project is currently in compliance with respect to information disclosure requirements
4. Consultation and Participation		**Non-compliance**	SERD has demonstrated a commitment to ensuring that meaningful consultation is undertaken with affected people within the area. However, further recommendations are made for improvements to the logging and reporting of the stakeholder engagement activities.
5. Grievance Redress Mechanism		**Non-compliance**	ERD may not be able to effectively respond to major grievances. It is recommended that an alternative mechanism is developed to respond to major grievances.
6. Monitoring and Reporting		**Non-compliance**	Environmental documentation is currently not being disclosed in a timely manner. Socio-economic monitoring has not been effectively carried out.
7. Unanticipated Environmental Impacts		**Non-compliance**	The Project does not have a specific mechanism in place to deal with unexpected impacts.
8. Biodiversity Conservation and Sustainable Natural Resource Management	Modified and natural habitats:	**Non-compliance**	Offsetting is required due to ensure no net loss of biodiversity values due to the Project activities. Details of the offsetting are not currently available. A feasibility evaluation is required to determine if it can be achieved to meets is aims (i.e. no net loss).
	Critical habitats	**Non-compliance**	Further details are required, in particular offsetting measures, to demonstrate no net less/net gain for targeted species. These measures are not sufficiently developed yet at this point. The Project is therefore considered not compliant.
	Legally protected areas	**Compliance**	The Project is located within nationally designated forest area (Hutan Lindung), but all regulatory requirements have been complied with. This is considered compliant.
	Invasive alien species	**Non-compliance**	No assessment has been undertaken. The Project is not considered compliant.
	Management and use of renewable resources	**Compliance**	The Project design considers sustainable resource use and is therefore compliant.
9. Pollution Prevention and Abatement	Resource conservation and energy efficiency	**Compliance**	Most of the Project design and measures implemented are considered compliant.
	Wastes		
	Hazardous materials		
	Pesticide use and management		
	Greenhouse gas emissions		
	Hydrogen sulfide (H_2S)		
	Dust		
	Water resources		

ADB Safeguard Requirement		Compliance rating	Overall findings
	Hydrology		
	Traffic		
	Noise		
	Land/groundwater contamination		
	Erosion and sedimentation	**Non-compliance**	The erosion and sedimentation aspect of the Project's environmental management can be improved as based on the currently observed status (i.e. revegetation not fully completed).
10. Health and Safety		**Non-compliance**	While an ERP is in place, it must be disclosed to the local community. Impacts to the local health care system were noted to occur during Phase I. This will require further consideration when planning for Phase II
11. Physical Cultural Resources		**Compliance**	No tangible or intangible assets were identified within the IEE A chance finds procedure was developed and implemented during all Project activities to date. No chance finds were encountered during Phase I of the Project.

Source: Mott MacDonald

4 Corrective action plan

4.1 Overview

This section presents a corrective action plan (CAP) setting out the actions needed for the Project to comply with ADB Safeguard Requirement 1.

4.2 Corrective action plan

The CAP sets out:

- The corrective actions based on the findings of the compliance audit and recommendations to achieve compliance with SR1
- The deliverable or key performance indicator (KPI) that demonstrates the corrective action has been completed
- Responsibility for implementing the corrective action
- Timeline to resolve the corrective action, usually referencing financial close, commencement of construction or operation (expected calendar dates for these project milestones are provided in Section 1.5.4.3 – Project timeframe)
- Estimated budget to achieve the deliverable or KPI, stated as a range or estimated limit.

The CAP is presented in Table 6. As a note, all estimated budgets within Table 6 are indicative, and should be clarified with SERD's environmental consultant (and EPC contractor)

Table 6: Corrective Action Plan (CAP)

No.	Corrective action	Deliverable/KPI	Responsibility	Timeline to resolve	Estimated budget
1	Revise the site specific ESMP in accordance with SR1, for implementation during Phase II. These plans should address: • Biodiversity mitigation measures and actions, which should follow on from the impact assessment to prioritise actions to address significant impacts • Detailed description of additional monitoring programmes including sampling locations, detection limits and action in the event of an exceedance • Regular site investigations carried out by the SHE team and SERD's process for incident reporting, including performance indicators to monitor their effectiveness. • Performance indicators and a description of the monitoring and reporting procedures required to document the progress and results of mitigation • Estimates of the capital and recurrent costs and funding sources for implementing the environmental management plan • Implementation schedule of mitigation measures showing phasing and coordination with overall project programme • Description of any capacity deficits and training requirements and provision of an indicative schedule, budget and performance indicators for the management measures proposed. • Project specific plans for traffic management and ERP. Revised ERP including site specific details such as communication routes to inform the community in the event of an emergency and the names and contact details of key personnel at the site. • Management measures that adaptable to manage unexpected environmental impacts. • Measures to ensure compliance with labour laws and KPIs, timeframes and responsibilities for monitoring their effectiveness. • List of all plans, procedures and programmes that contractors will be required to produce (such as flood risk, ERPs, dust management plans, traffic management plans, waste management plans, chance finds procedure etc.) and description of the process in place for reviewing and approving these plans (i.e. formally document the 'Bridging Document' process that SERD undertakes).	ESMP (from SERD and EPC Contractors)	• SERD • EPC Contractor	Complete prior to ADB Final ICM	• <$50,000 • Included within cost of EPC contact award

No.	Corrective action	Deliverable/KPI	Responsibility	Timeline to resolve	Estimated budget
2	• Stakeholder engagement log to be developed to track and report on all stakeholder engagement activities. • The SEP aspects relating to engagement of vulnerable groups to be fully implemented and reported within the bi-annual Safeguards and Social Monitoring Report	• Stakeholder engagement log • SEP reporting on engagement of vulnerable groups to be fully implemented	SERD	Complete prior to ADB Final ICM	<$20,000
3	Updates to the bi-annual monitoring report, whereby: • A new template for the social aspects of the bi-annual monitoring reports to be developed and submitted for approval by Lenders Independent Engineer. This is to include reporting of all stakeholder engagement activities and status updates on implementation of the ISDP • Include a section relating to cultural heritage and chance finds • Timely on-going disclosure (i.e. semi-annual)	Updated bi-annual monitoring report	SERD	Complete prior to ADB Final ICM	<$10,000
4	The following improvements are recommended to ensure full compliance: • Develop information leaflets to provide to community members and key SERD contact details to lodge grievances • SERD to ensure that all grievances received from the community are entered into the grievance log	• Contact detail cards for community members • Updated grievance log	SERD	Complete prior to ADB Final ICM	<$10,000
5	Produce a socio-economic Impact Monitoring Report, to monitor: • Performance of the ISDP, and impacts to participant's livelihoods • Monitoring needs to better differentiate ISDP participant's according to their status as affected or non-affected people • Monitoring methodologies must better directly engage affected people and Indigenous People • Tracking and reporting on the participation of affected people within the Project workforce.	• Socio-economic Impact Monitoring report	SERD	Complete prior to Phase II construction commencing	<$20,000
6	The below should be addressed in the BAP/CHA of the Project: • Review CHA to ensure all trigger species are included and develop offsetting measures to achieve no net loss/net gain • Develop offsetting plan. • Demonstration of actions to achieve no net loss of natural habitat.	• BAP/CHA	SERD	Complete prior to ADB Final ICM	<$50,000
7	Assess potential for introduction of alien invasive measures, prepare and implement alien invasive species plan.	• Alien invasive species plan	SERD	Complete prior to ADB Final ICM	<$20,000

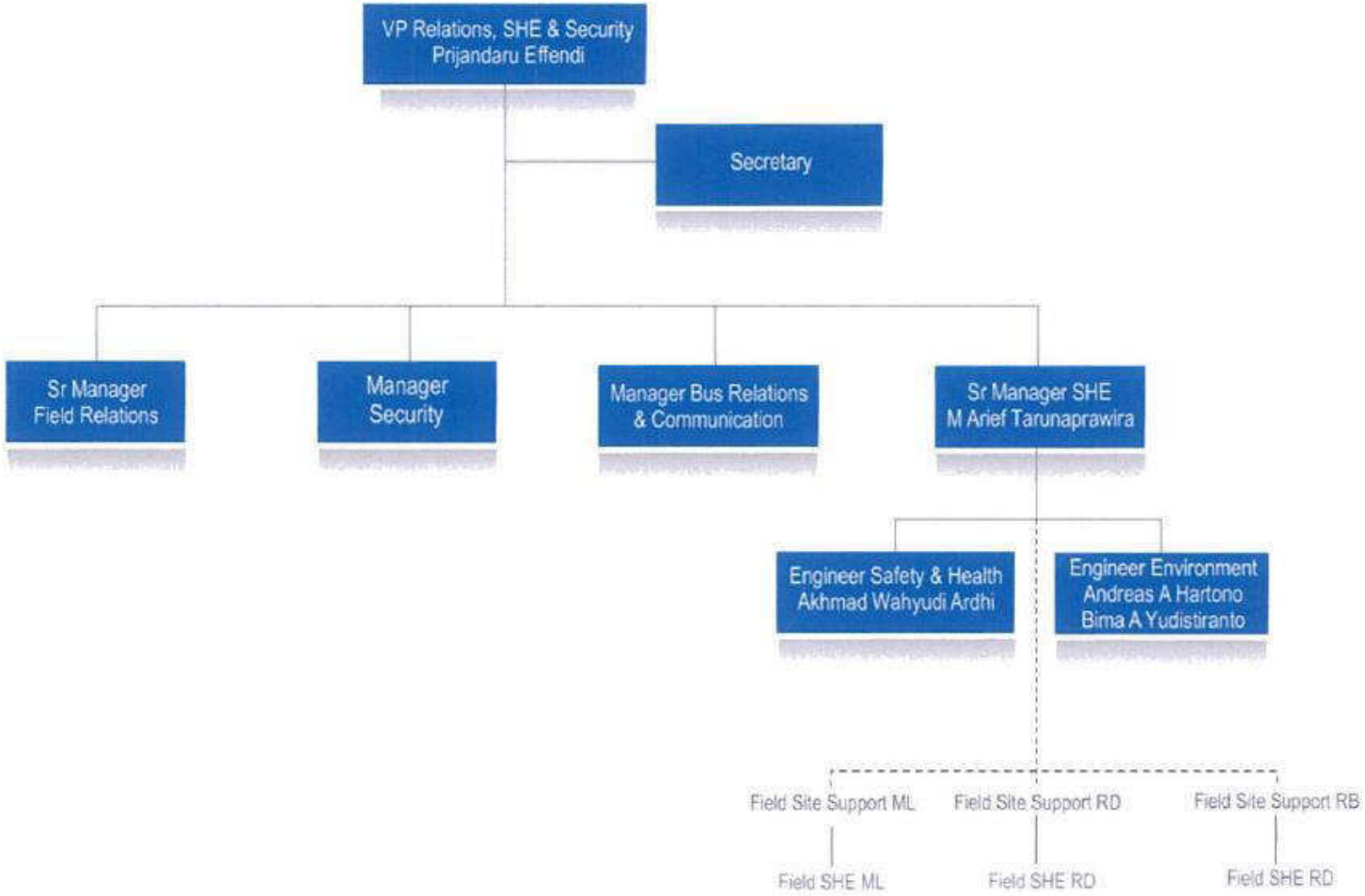
No.	Corrective action	Deliverable/KPI	Responsibility	Timeline to resolve	Estimated budget
8	• Incorporate regular site inspections into the project specific ESMP to be produced. To include frequency of inspections, locations, responsibilities, performance indicators, monitoring and reporting requirements and budget • Set out revegetation plan clearly demonstrating timeline, responsibilities, methodology and provisions for completion of revegetation • Investigate the possibility of aligning the current revegetation plan with on-site restoration possibilities described in the BAP.	• Updated revegetation plan, with subsequent implementation of revegetation efforts	SERD	Complete plan prior to Phase II construction commencing – within implementation of revegetation as proposed in plan	As based on site-based costs
9	Disclosure of the ERP to be undertaken once Phase II works commence.	• Disclosure of ERP	SERD	Complete prior to Phase II construction commencing	Staff time.
10	Health Impact Assessment to be undertaken within the scope of the ESIA for Phase II, addressing impacts of the workforce on local health services	• Health Impact Assessment	SERD	Complete prior to Phase II construction commencing	<$20,000

Source: Mott MacDonald

Appendices

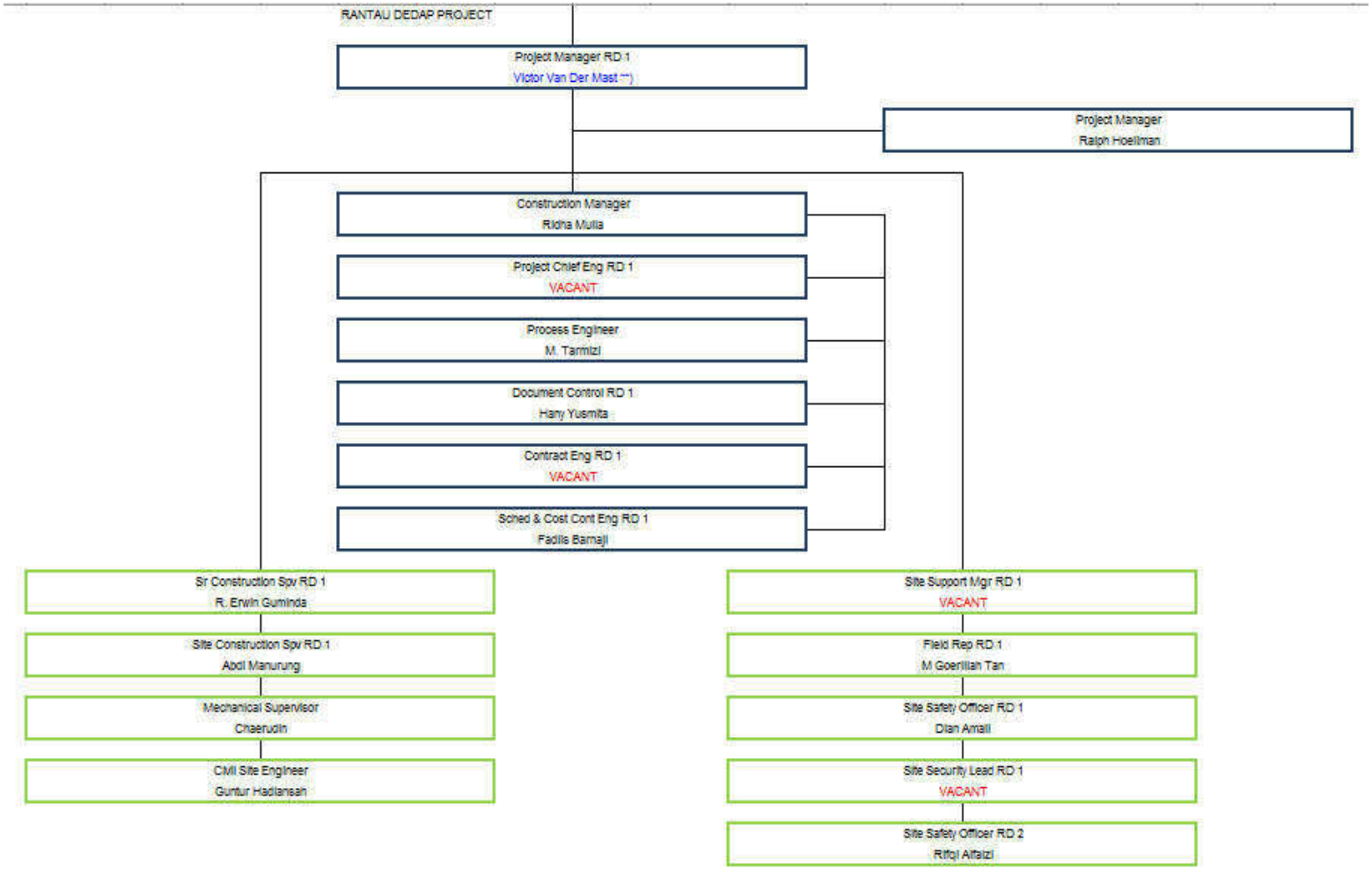
A. SERD SHE organograms

Figure A.1: Organogram of Supreme Energy SHE in Jakarta



Source: SERD

Figure A.2: Organogram of SERD at Rantau Dedap site



Source: SERD, as of January, 2017

B. Regulatory setting

B.1 Overview

This appendix details the key national and international legislation, standards and guidelines applicable to the Project.

B.2 National legislation

B.2.1 Overview of relevant legislation

Geothermal development is specifically addressed in Indonesia by Law No. 21 of 2014 (the New Geothermal Law) which replaces the previous Geothermal Law No. 27 of 2003. The Geothermal Law recognises that Indonesia has abundant geothermal resources and encourages the development of geothermal energy generation as a sustainable and environmentally friendly approach to meet Indonesia's growing energy demand.

The New Geothermal Law relaxes the old legal and regulatory framework. The main changes introduced by the new law include:

- Geothermal activities are no longer considered 'mining activities'; mining activities are prohibited in protected forest and conservation areas and therefore the previous classification of geothermal as mining imposed severe restrictions on geothermal development activities.
- The New Law introduces different licences for direct and indirect utilization[13]. Indirect utilization (i.e. producing electricity) requires a Geothermal Licence (Izin Panas Bumi), which is issued by the central Government.
- New restrictions on the transfer of licenses and shares in entities holding such licenses

The Environmental Protection and Management Law (Law 32/2009; formerly the Environmental Management Act 23/1997) provides the overarching framework for Indonesian environmental legislation. Law 32/2009 is intended to strengthen the authority of the Ministry of Environment (MoE) and other provincial agencies to enforce environmental regulations. It is also intended to clarify ambiguities over levels of authority introduced with regional autonomy. Law 32/2009 requires the preparation, for certain development projects, of an environmental impact assessment (AMDAL) or environmental management and monitoring plan (UKL/UPL) with approval by the AMDAL Appraisal Commission (Komisi Penilai AMDAL).

Law 32/2009 has the following key provisions relevant to the Project:

- The AMDAL or UKL/UPL will be presented to the AMDAL Appraisal Commission for approval. (Article 29). The AMDAL document will be evaluated by the AMDAL Appraisal Commission established by the Minister, Governor, or Regent/Mayor based on their authority which is primarily based on the area covered by the Project, e.g. If it covers two provinces then it would be the Environmental Minister;

13 Direct utilization is geothermal resource utilization for purposes other than for producing electricity, such as tourism, agribusiness or industry. Indirect geothermal utilization is geothermal resource utilization for electricity generation.

- Every business or project that requires an AMDAL or UKL/UPL must have an Environmental Permit issued by the Minister, Governor or Regent/Mayor. (Article 36);
- The government shall request parties responsible for business and/or activity to conduct an environmental audit in the framework of enhancing environmental performance. (Article 48);
- The Minister shall require environmental audits for certain businesses and/or activities which pose a high level of risk to the environment; and/or parties responsible for businesses and/or activities which fail to comply with the legislation. (Article 49). It should be noted that this is at the ministerial level;
- The Minister may supervise the compliance of parties if the government considers serious violations to have occurred. (Article 71);
- Investigators within government institutions in charge of environmental protection and management are authorised to act to investigate environmental crimes (Article 94).

B.2.2 Land acquisition and compensation

B.2.2.1 Law on Land Acquisition No.2/2012

On January 14, 2012, the Government of the Republic of Indonesia (GoI) issued Law No.2 of 2012 on Land Procurement for Development in the Public Interest ('Land Acquisition Law') to help secure land for infrastructure projects to aid the country's economic development. This law provides for a process of land acquisition that should take less than two years. The GoI subsequently issued Presidential Regulation No.71 of 2012 concerning Land Procurement Procedures for Development and the Public Interest ('Perpres 71/2012') as an implementing regulation of the Land Acquisition Law[14]. Perpres 71/2012 prescribes legally defined time periods for each stage of the land acquisition process. The Land Acquisition Law and Perpres 71/2012 are intended to promote good planning and legal certainty as well as fair compensation. Under the new law compensation may be in the form of money, replacement land, resettlement, stock ownership, or other forms as agreed between the affected persons and the expropriating body.

Perpres 71/2012 is amended by Presidential Decree No. 30 of 2015, which introduces a procedure for private investment during the land acquisition process. The new regulation also enables infrastructure projects at any stage in their development to make use of the Land Acquisition Act; the Act can now be applied to projects that commenced prior to its introduction if 75% of the necessary land has already been acquired. The 2015 amendment also introduces greater transparency regarding compensation payments to land owners and the introduction of a strict timetable for the completion of the land acquisition process.

B.2.2.2 Compensation for Assets under the Right of Way

Peraturan Menteri Energi Dan Sumber Daya Mineral (ESDM) No.38/2013 which replaces the previous Permen ESDM No.975/1999 covers compensation for assets under the right of way of transmission line with an operating voltage of between 35kV and 245kV (SUTT) and greater than 245kV transmission line (SUTET). This law stipulates that valuations must be carried out by the Office of Appraisal Services and independent professionals who can perform assessments of market value for land, buildings and plants. Consultation requirements, inventory activities, calculation of compensation and compensation payment procedures are all outlined within the law.

[14] The Land Acquisition Law and Perpres 71/2012 also have a technical implementation guide: 'Peraturan Kepala Badan Pertanahan Nasional No.5/2012'.

B.2.3 Permitting

B.2.3.1 AMDAL process and permit

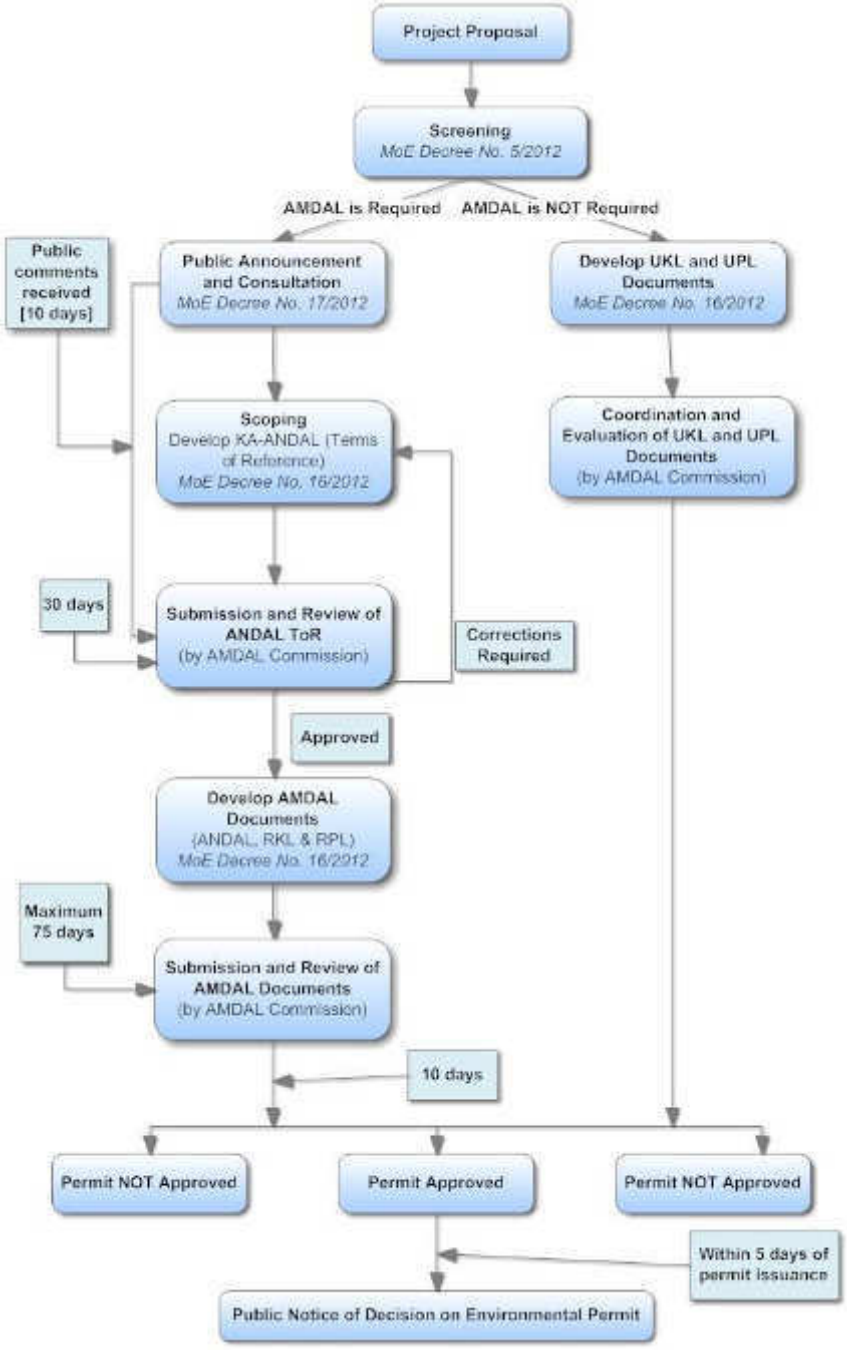
Ministry of Environment (MoE) Decree No. 5 of 2012 (5/2012) concerning the types of Businesses and/or Activities that require AMDAL states that geothermal power generation projects greater than 55MW and transmission lines greater than 150kV require an AMDAL. An AMDAL is also required where the Geothermal Working Area (WKP) is greater than 200 hectares or where the total area open to geothermal business is greater than 50 hectares. Projects under this threshold are only required to prepare environmental management and monitoring plans known as UKL (Upaya Pengelolaan Lingkungan) and UPL (Upaya Pemantauan Lingkungan).

In addition, MoE Decree 5/2012 states that geothermal projects located in or close to the boundary of protected areas also require an AMDAL. Regional Ministries are then responsible for defining the distance from the boundary at which the requirement for an AMDAL is triggered, taking account of local knowledge of the activity and the area involved.

On February 23, 2012, the Government of Indonesia issued regulation No. 27 of 2012 on Environmental Permits (GR 27/2012). GR 27/2012 is an implementing regulation of the Environmental Law (32/2009) and revokes Government Regulation No. 27 of 1999 (GR 27/1999) which previously regulated the AMDAL process. The key requirement of the new regulation is the Environmental Permit; this was introduced by the 2009 Environmental Law but it had not been implemented until the introduction of 27/2012. Activities which currently require either an AMDAL or an UKL/UPL now also require an Environmental Permit. The Environmental Permit required by GR 27/2012 must be attached to all AMDAL documents submitted to the KLH (Kementerian Lingkungan Hidup, Ministry of Environment).

In the event the business is also required to obtain other Environmental Protection and Management (EPM) permits, then the Environmental Permit will also contain the type and number of permits required. EPM permits cover aspects such as hazardous waste storage and disposal, emissions, wastewater discharge, surface water utilisation (SIPPA) and nuisance/disturbance. EPM permits are issued by the Minister of Environment, Governor or Regent/Mayor depending on the level of authority required for approvals. Following approval of the necessary environmental permits, an applicant must also apply for separate business and / or activity permits (for construction and operation) from the relevant Government Ministries before site work can commence; this process will typically involve the Ministry of Environment, the Ministry of Energy (Energy Sumber Daya Mineral, ESDM) and the Directorate General of Renewable Energy and Energy Conservation (Energi Baru Terbarukan dan Konservasi Energi, EBTKE), amongst others.

Figure B.1: AMDAL Process Overview (based on GR27/2012)



Source: MML

B.2.3.2 Permit status

A permitting matrix has been developed for the Project and has been made available to Mott MacDonald for our review. Information contained within this matrix and other information on permits provided by SERD is summarised in Table B.1 below, which presents an overview of the current status of licenses and permits for the Project.

Table B.1: Permitting register

No.	Document Number	Subject	Issued by	Valid From	Valid To	Status
1	2953K/30/MEM/2015	Geothermal License (IPB/ Ijin Panas Bumi PT Supreme Energy Rantau Dedap di Wilayah Kerja Rantau Dedap, Kabupaten Muara Enim, Kabupaten Lahat, Kota Pagar Alam, Provinsi Sumatera Selatan)	Minister of ESDM	29/12/2010	28/12/2045	CLOSED
2	07.Ket.60/KTPB/DEP/2015"	Technical Head of Geothermal (Kepala Teknis Panas Bumi - KTPB)	Directorate General of New Renewable Energy and Energy Conservation - Minister of ESDM	14/07/2015	14/07/2045	CLOSED
3	08.Ket.160.WKTPB/DEP/2015	Technical Head of Geothermal (Kepala Teknis Panas Bumi (KTPB)	Directorate General of New Renewable Energy and Energy Conservation - Minister of ESDM	14/07/2015	14/07/2045	CLOSED
4	293 TAHUN 2014	Environmental License (Izin Lingkungan atas Rencana Kegiatan Tambahan Eksplorasi Pengusahaan Panas Bumi Di Wilayah Kota Pagar Alam)	Mayor of Pagar Alam	19/08/2014	19/08/2044	CLOSED
5	1.026135	Customs Registration Number or Nomor Induk Kepabeanan	Directorate General of Customs and Excise - Minister of Finance	31/01/2013	31/12/2030	CLOSED
6	01.09.01224-P	Producer Importer - Iron/Steel or Importir Produsen Besi atau Baja	Directorate General of Trade - Ministry of Trade	22/03/2013	31/12/2030	CLOSED
7	503.3/452/BPPT&PMD/2012	Principle License of Access Road Improvement	Regent of Lahat	20/06/2012	06/06/2030	CLOSED
8	112/KPTS/Dispertamben/2016	Power Plant's Operating License (Izin Operasi Pembangkit Listrik)	Regional Government of South Sumatera	24/08/2016	23/08/2021	CLOSED
9	JJ131725	BPJS Employment Membership (Kepesertaan BPJS Ketenagakerjaan)	BPJS	01/08/2011	31/12/2020	CLOSED
10	KEP-1033/WP.04/2011	Minister of Finance Decision on the English and USD Bookkeeping (Keputusan Menteri Keuangan Izin Menyelenggarakan Pembukuan dengan Menggunakan Bahasa Inggris dan Satuan Mata Uang Amerika Serikat)	Directorate General of Tax - Ministry of Finance	01/01/2012	31/12/2019	CLOSED
11	941/KPTS/BLH/2014	PT SERD TPS Waste B3 (Other Waste)	Regent of Muara Enim	17/11/2014	17/11/2019	CLOSED

No.	Document Number	Subject	Issued by	Valid From	Valid To	Status
12	NPWP: 02.742.114.8-012.000	Taxpayer Identification Number or Nomor Pokok Wajib Pajak (NPWP)	Directorate General of Tax - Ministry of Finance	07/08/2008	06/08/2019	CLOSED
13	S-588KT/WPJ.30/KP.03030/2016	Registered Notification Letter (Surat Keterangan Terdaftar)	Directorate General of Tax - Ministry of Finance	24/03/2016	06/08/2019	CLOSED
14	016/KPTS/DISPERTAMBEN/2014	Liquid Fuel Storage Permit	Directorate General of New Renewable Energy and Energy Conservation - Minister of ESDM	28/05/2014	27/05/2019	CLOSED
15	TDP No. 09.03.1.35.60476	TDP	Ministry of Trade	17/04/2014	17/04/2019	CLOSED
16	090500106-D	Importer Identification Number for Producer (Angka Pengenal Impor - Produsen)	Directorate General of Trade - Ministry of Trade	26/12/2012	25/12/2017	CLOSED
17	KEP.1185/PHIJSK-PK/PP/X/2015	Ratification of Company Regulation (Pengesahan Peraturan Perusahaan)	Ministry of Manpower	21/10/2015	20/10/2017	CLOSED
18	193/PTSP-BP3MD/IX2015	Permits to use of surface wate (Perpanjangan Surat Ijin dan Pemanfaatan Air Permukaan)	Regional Investment Coordination Board	22/09/2015	21/09/2017	CLOSED
19	317100-1404	Obligation Report (Wajib Lapor UU07)	Ministry of Manpower	04/09/2016	03/09/2017	CLOSED
20	No. 18/74/DKSP/Srt/B	Rupiah Liabilities Letter (Surat Permohonan Terkait Kewajiban Penggunaan Rupiah)	Bank of Indonesia	20/01/2016	30/03/2017	CLOSED
21	1/1/IPPKH-PB/PMA/2015	Extension and Revision of Borrow and Use Permit of Forest Area (Perpanjangan dan Revisi Ijin Pinjam Pakai Kawasan Hutan Seluas 82 Hektar)	Investment Coordination Board	19/03/2015	18/03/2017	CLOSED
22	01710123-000SU/2620142019	Radio Trungking System (Izin Stasiun Radio)	Communication and Information RI Ministry	19/03/2015	18/03/2017	CLOSED
23	PRINCIPAL LICENSE No. 2122/1/IP/PMA/2013	Principal License (Izin Prinsip)	Investment Coordination Board	12/08/2014	28/02/2017	CLOSED
24	88/5.16.0/31.74.07.1001/1.711.53/2016	Certificate of Company's Domicile (Surat Keterangan Domisili Usaha-SKDP)	Regional Investment Coordination Board	21/01/2016	21/01/2017	EXPIRED
25	1/1/IUPTL-S/PMA/2017	Extension of Electric Power Supply Business License (Perpanjangan Ijin Usaha Penyediaan Tenaga Listrik Sementara PT SERD)	Director General of Electricity	10/01/2017	10/01/2020	CLOSED

No.	Document Number	Subject	Issued by	Valid From	Valid To	Status
26	No.1024-1-IP-PB-PMA-2016	Principle License (Izin Prinsip SERD Perubahan ke-5)	Investment Coordination Board	23/03/2016	31/12/2016	CLOSED
27	652K/30/MEM/2016	First Extension of Exploration Period (Perpanjangan Kesatu Jangka Waktu Eksplorasi PT SERD di WKP Rantau Dedap)	Minister of ESDM	26/02/2016	28/12/2016	EXPIRED
28	15 Tahun 2015	Terms of Reference of Environmental Impact Assessment (KA-ANDAL)	AMDAL Commission	22/04/2015	22/04/2018	CLOSED
29	18/16/DPG-DKSP/Srt/B	Utilization of Rupiah for Geothermal (Pengecualian Penggunaan Mata Uang Rupiah Untuk Panas Bumi)	Bank of Indonesia	27/12/2016	23/02/2026	CLOSED
24	88/5.16.0/31.74.07.1001/1.711.53/2016	Certificate of Company's Domicile (Surat Keterangan Domisili Usaha-SKDP)	Regional Investment Coordination Board	21/01/2016	21/01/2017	EXPIRED

Source: SERD

Depending on the nature of the construction activities, further permits may be required in the future. However our review indicates that all permits required to date by SERD have been obtained. Some permits, such as those for the storage of explosives on site, have expired but we understand these will be renewed prior to any explosives being purchased for the next stage of construction. In addition, the EPC Contractor must obtain all necessary permits as applicable to their scope of works, including those specified in the Environmental Permit. We recommend that the permit matrix is further developed to include any additional permits /approvals as these are required, applied for and obtained.

B.3 International standards and guidelines

The international guidelines applicable to this review are the ADB Safeguard Policy Statement (2009) and specifically Safeguard Requirement 1 (Environment). The policy principle and triggers of these requirements are described in more detail in the following subsection.

B.3.1 Asian Development Bank Safeguard Policy Statement

In 2009 ADB produced their Safeguard Policy Statement (SPS), which builds upon and supersedes their previous three safeguard policies on Environment, Involuntary Resettlement and Indigenous Peoples. The SPS applies to all ADB-supported projects; it aims to integrate sound environmental and sustainability considerations into all project decision making processes.

The SPS requires each project to be assigned to one of four categories depending on its potential to have significant adverse environmental impacts. The categories are defined as follows:

- **Category A.** A proposed project is classified as category A if it is likely to have significant adverse environmental impacts that are irreversible, diverse, or unprecedented. These impacts may affect an area larger than the sites or facilities subject to physical works. An environmental impact assessment is required.
- **Category B.** A proposed project is classified as category B if its potential adverse environmental impacts are less adverse than those of category A projects. These impacts are site-specific, few if any of them are irreversible, and in most cases mitigation measures can be designed more readily than for category A projects. An initial environmental examination is required.
- **Category C.** A proposed project is classified as category C if it is likely to have minimal or no adverse environmental impacts. No environmental assessment is required although environmental implications need to be reviewed.
- **Category FI.** A proposed project is classified as category FI if it involves investment of ADB funds to or through a FI (paras. 65-67).

The three previous safeguard policies are now referred to as Safeguard Requirement 1 to 3 respectively. The scope of this environmental compliance audit is specifically Safeguard Requirement 1, as described in Table B.2.

Table B.7: Overview of ADB Safeguard Requirement 1, Environment

Objective	Scope and triggers	Policy principles
To ensure the environmental soundness and sustainability of projects and to support the integration of environmental considerations into the project decision-making process	Environmental safeguards are triggered if a project is likely to have potential environmental risks and impacts.	• Screening • Environmental assessment • Examine alternatives • Mitigation of adverse impacts according to a mitigation hierarchy (avoid, minimise, mitigate and/or offset) • Prepare an environmental management plan (EMP) • Carry out meaningful consultation • Timely disclosure of draft environmental documentation • Implement the EMP and monitor its effectiveness • Apply pollution prevention and control practices consistent with international standards e.g. the IFC EHS Guidelines • Provide workers with safe and healthy working conditions • Prepare emergency preparedness and response plans • Conserve physical cultural resources and develop a chance finds procedure

Source: Mott MacDonald, adapted from ADB SPS 2009

B.3.2 Biodiversity definitions and requirements

SPS 2009 defines critical habitat as follows:

"*Critical habitat is a subset of both natural and modified habitat that deserves particular attention. Critical habitat includes areas with high biodiversity value, including habitat required for the survival of critically endangered or endangered species; areas having special significance for endemic or restricted-range species; sites that are critical for the survival of migratory species; areas supporting globally significant concentrations or numbers of individuals of congregatory species; areas with unique assemblages of species or that are associated with key evolutionary processes or provide key ecosystem services; and areas having biodiversity of significant social, economic, or cultural importance to local communities. Critical habitats include those areas either legally protected or officially proposed for protection, such as areas that meet the criteria of the World Conservation Union classification, the Ramsar List of Wetlands of International Importance, and the United Nations Educational, Scientific, and Cultural Organization's world natural heritage sites.*"

SPS 2009 has different requirements for management measures depending on the habitat type affected:

- In areas of modified habitat, SPS 2009 states: "*the borrower/client will exercise care to minimize any further conversion or degradation of such habitat, and will, depending on the nature and scale of the project, identify opportunities to enhance habitat and protect and conserve biodiversity as part of project operations.*"
- Regarding natural habitat, SPS 2009 states: "*In areas of natural habitat, the project will not significantly convert or degrade such habitat, unless the following conditions are met:*
  - *i. No alternatives are available*
  - *ii. A comprehensive analysis demonstrates that the overall benefits from the project will substantially outweigh the project costs, including environmental costs*
  - *iii. Any conversion or degradation is appropriately mitigated*

  Mitigation measures will be designed to achieve at least no net loss of biodiversity."
- With respect to critical habitats, SPS 2009 states: "No project activity will be implemented in areas of critical habitat unless the following requirements are met:
  - *iv. There are no measurable adverse impacts, or likelihood of such, on the critical habitat which could impair its high biodiversity value or the ability to function.*

v. *The project is not anticipated to lead to a reduction in the population of any recognized endangered or critically endangered species6 or a loss in area of the habitat concerned such that the persistence of a viable and representative host ecosystem be compromised.*

vi. *Any lesser impacts are mitigated in accordance with para. 27.*"

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