

# Environmental Monitoring Report – Part 1

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# Semiannual Report  
January – June 2019  
June 2019

## INO: West Kalimantan Power Grid Strengthening Project

Prepared by Pusat Manajemen Proyek (Pusmanpro) for the PT PLN and the Asian Development Bank.

### **CURRENCY EQUIVALENTS**

(as of 30 June 2019)

Currency unit	–	Indonesian rupiah (Rp)
Rp1.00	=	\$ 0.0000708215
\$1.00	=	Rp 14,120

### **NOTE**

- (i) In this report, "\$" refers to United States dollars

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**PT PLN (PERSERO) UIP KALBAGBAR**

Jl. Letjend Suprpto No. 50 G, Pontianak  
Kalimantan Barat

**West Kalimantan Power Grid Strengthening Project  
Semi-Annual Environmental Monitoring Report  
January to June 2019**



**ADB Loan No. 3015-INO  
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**Submitted by:  
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## ABBREVIATIONS

ADB	-	Asian Development Bank
AFD	-	Agence Française de Développement
CHSP	-	Community Health and Safety
EHS	-	Environmental Health and Safety
EHVTL	-	Extra High Voltage Transmission Line
EMF	-	Electric and Magnetic Fields
EMP	-	Environmental Management Plan
HIV/AIDS	-	Human Immunodeficiency Virus/Acquired Immune Deficiency Syndrome
HVDC		High Voltage Direct Current
HVTL		High Voltage Transmission Line
IEE	-	Initial Environmental Examination
OHSP	-	Occupational Health and Safety
SS	-	Substation
TL	-	Transmission Line
UPP KBB	-	PT PLN (Persero) <i>Unit Pelaksana Proyek Kalimantan Bagian Barat</i> (West of Kalimantan Region)
UIP KALBAGBAR	-	PT PLN (Persero) <i>Unit Induk Pembangunan Kalimantan Bagian Barat</i> (West of Kalimantan Region)
OHSMS	-	Occupational Health and Safety Management System (known as <i>Sistem Manajemen Keselamatan Kerja</i> or SMK3 according to the requirement of Indonesian Government)
PIC	-	Project Implementation Consultant
PLN	-	PT Perusahaan Listrik Negara (Persero) is the state-owned electricity company
PMU		Project Management Unit
ROW	-	Right of Way
UKL -UPL	-	<i>Upaya Pengelolaan Lingkungan and Upaya Pemantauan Lingkungan</i> (environmental management and monitoring effort document)
UP3B KALBAR	-	<i>Unit Pelaksana Penyaluran dan Pengaturan Beban</i> (West of Kalimantan Region)

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## Chapter 1 Introduction

**Project Background.** The Government of the Republic of Indonesia has signed the loan agreements with Asian Development Bank (ADB) and the Agence Française de Développement (AFD) for an amount of US\$ 49.5 million each to provide funding required by PT Perusahaan Listrik Negara (Persero), hereafter referred to as 'PLN', for the Strengthening West Kalimantan Power Grid Project ("the Project"). The project includes construction of 82-km long of 275 kV power transmission line from the border of Sarawak in Mambong (East Malaysia) to Bengkayang (West Kalimantan of Indonesia) and 275/150 kV substation at Bengkayang. In addition, the construction of 145-km long of 150 kV transmission line from Bengkayang - Ngabang – Tayan as well as installation of 150/20 kV substations at Ngabang and Tayan are financed by this loan. The location of the Project is presented in **Map 1**.

PT PLN (Persero) PUSMANKON (*Pusat Manajemen Konstruksi*) as the construction management unit of PLN has been conducting project supervision including environmental, health and safety monitoring of the project since August 2017. Since then, PUSMANKON as the Project Implementation Consultant (PIC) has been producing the semi-annual environmental monitoring report (SAEMR) for the implementation of the environmental management plan (EMP) included in the Initial Environmental Examination (IEE) documents prepared for the Project. Since September 2018, the name of PUSMANKON has been changed to PUSMANPRO (*Pusat Manajemen Proyek*).

**Scope and Management of the Project.** As agreed with ADB, the SAEMR for the first semester (January to June) of each year should report the implementation of the EMP for the work packages that are in the construction phase, including:

- Package 5: Extension of 150/20 kV Tayan substation and construction of new 150/20 kV Sanggau and Sekadau substations;
- Package 6: Construction of 150/20 kV power transmission line from Tayan to Sanggau; and
- Package 7: Construction of 150/20 kV power transmission line from Sanggau to Sekadau.

The EMP implementation, including environmental, health, and safety aspects of the Project is managed by PLN Head Office, represented by HSSE Division as the Project Management Unit (PMU). The PMU is supported by PT PLN (Persero) UIP KALBAGBAR in Pontianak as the the Project Implementation Unit (PIU) for the work package 5, 6, and 7. The environmental and OSH implementation and Management organization chart is detailed in **Appendix 1**.



## Map 1 PLN Power Grid Strengthening Project in West Kalimantan

(Packages 5 to 7 are Sanggau and Sekadau substations, extension of Tayan substation including the transmission lines from Tayan to Sekadau)



## Chapter 2 Summary of the Work Progress

The progress of the West Kalimantan Power Grid Strengthening Project for January - June 2019 period is summarized in **Table 2.1** and primarily includes construction of substations and power transmission lines from Tayan, Sanggau up to Sekadau.

**Table 2.1 Summary of the Work Progress (as of June 2019)**

Project Packages	Status	Responsible Party (as of June 2019)
Package 5: 150/20 kV Sanggau and Sekadau Substations and extension of Tayan substation	Construction, including: commissioning of the extended Tayan substation; ongoing construction of the foundation for the equipment to be installed at the switchyard and control panel building. The overall progress was 67.965%.	PT Siemens Indonesia and Siemens Malaysia Bhd (Contractor) supervised by UIP KALBAGBAR (Project Implementation Unit)
Package 6: 150/20 kV Tayan – Sanggau Power Transmission Line	Construction – tower erection and stringing. The overall progress was 62.033%.	PT Krakatau Engineering and PT Citramas Heavy Industries (Contractors) supervised by UIP KALBAGBAR (Project Implementation Unit)
Package 7: 150/20 kV Sanggau – Sekadau Power Transmission Line	Construction – construction of the tower's foundation and tower erection. The overall progress was 52.70%.	

### **Chapter 3 Environmental Mitigation Status**

The status and outcomes of the environmental mitigation conducted for the Packages 5, 6, and 7 in the period of January - June 2019 is described in the following sub-chapters of this report. Therefore, the environmental mitigation measures defined in Construction Phase section of Table 28 Environmental Management Plan of the IEE (2016) apply for the mentioned work packages. These work packages include construction of substations and power transmission lines from Tayan, Sanggau to Sekadau.

### 3.1 Package 5: Tayan, Sanggau, and Sekadau Substations

As of the end of June 2019, the Sanggau and Sekadau substations (new construction) and the extension of Tayan substation were under construction, and the overall progress was 67.965%. UIP KALBAGBAR is responsible for the development of these substations. **Table 3.1** describes the mitigation measures implemented by the Project during construction phase, including its compliance status against the mitigation requirements defined in the IEE (2016).

**Table 3.1 Environmental Mitigation Status of Package 5**

No	Potential Impacts / Mitigation Requirements per IEE (2016)	Mitigation Implemented	Compliance Status / Remarks
<b>1.</b>	<b>Vegetation Clearing (HVTL alignments, substations)</b>		
	<ul style="list-style-type: none"> <li>Vegetation removal will be allowed with the designated width of the RoW and the minimum area required for other infrastructure and activities.</li> <li>Vegetation cutting within the RoW will be undertaken to achieve the required clearances.</li> <li>For transmission lines, tree removal and trimming will only be undertaken by hand tools, including chain saws.</li> </ul>	These mitigation requirements are not applicable for the construction of substations reported herein as those are intended for the construction of transmission lines.	Not applicable.
	<ul style="list-style-type: none"> <li>For substation, vegetation clearing will be conducted with the combination of cutting trees with hand and chainsaw, while the stump removal will be conducted by bulldozer.</li> </ul>	Vegetation clearing for the substation has been completed and therefore, this mitigation requirement is not applicable.	Not applicable.
	<ul style="list-style-type: none"> <li>The use of herbicides will be strictly prohibited</li> </ul>	Prohibition of using herbicides has been implemented. On each construction site the warning sign has been made. The awareness about the prohibition of herbicide use is also delivered by the contractor in the toolbox meeting. Relevant evidence can be seen in <b>Appendix 2.a</b> .	The mitigation implemented with this regard is compliant with its requirement.
	<ul style="list-style-type: none"> <li>Local people will be allowed access to cleared vegetation for the collection of building materials and firewood.</li> </ul>	The clearing of vegetation for the substation construction has been completed, and therefore this mitigation requirement does not apply.	Not applicable.
	<ul style="list-style-type: none"> <li>Burning of cleared vegetation will not be allowed; instead this material will be used to protect the soil from erosion, particularly in steeper slope areas, until more permanent soil protection</li> </ul>	The vegetation clearing has been completed for the areas require for the substation. Therefore, this requirement is not applicable.	Not applicable.

No	Potential Impacts / Mitigation Requirements per IEE (2016)	Mitigation Implemented	Compliance Status / Remarks
	measures are in place.		
<b>2.</b>	<b>Soil Erosion (HVTL alignments, substations)</b>		
	<ul style="list-style-type: none"> <li>Soil erosion control measures have been incorporated into the engineering design, including the use of adjustable height tower which allow the tower to conform to the slope of the site, thereby reducing land cutting and erosion.</li> </ul>	This mitigation requirement is not applicable for the construction of the substation reported herein as it is intended for that of the transmission line.	Not applicable.
	<p><i>a) Transmission line:</i></p> <ul style="list-style-type: none"> <li>On steep slope: minimizing the extent and duration of land disturbance; using sandbags, banks or channels to divert water flows from upslope around the disturbed area; using vegetation cut or foliage to protect disturbed ground on a temporary basis</li> <li>On dry flat area, using vegetation cut or foliage to protect disturbed ground from rain water gives impact on a temporary basis</li> <li>Rice field and wet area no significant erosion is anticipated</li> </ul>	This mitigation requirement is not applicable for the construction of the substation reported herein as it is intended for that of the transmission line.	Not applicable.
	<p><i>b) Substation area:</i></p> <ul style="list-style-type: none"> <li>Compaction the soil will be conducted in the embankment areas, and embankments should be re-vegetated with local grasses, and covered with protecting layers of rice straw or similar material to guard against rapid gully and rill erosion.</li> </ul>	The current activity on substation is foundation works. In order to prevent erosion, in the early construction phase, compaction has been carried out in the embankment of the construction site (as shown in <b>Appendix 2.b</b> ).	The mitigation implemented with this regard is compliant with its requirement.
	<ul style="list-style-type: none"> <li>Construction of slope protection (e.g. retaining wall, gabions etc.) and planting of vegetation strips shrubs and grasses across contours of exposed slopes.</li> </ul>	As stated earlier, there is no construction of slope protection yet; therefore, this mitigation is not applicable for this period.	Not applicable.
	<ul style="list-style-type: none"> <li>Under the outdoor equipment there will be deployed gravel over the land; the unused open area will be covered with grass and small plants.</li> </ul>	At this moment the civil construction works is still on progress so this mitigation is not applicable for this period.	Not applicable.
	<ul style="list-style-type: none"> <li>The soil erosion control measures will be regularly inspected and maintained during construction and until the area is stabilized or re-vegetated.</li> </ul>	<ul style="list-style-type: none"> <li>Soil erosion control have been carried out and monitored regularly during this construction period.</li> <li>The implementation of soil erosion control measure has been reported in the HSE quarterly report. The</li> </ul>	The mitigation implemented with this regard is compliant with its requirements.

No	Potential Impacts / Mitigation Requirements per IEE (2016)	Mitigation Implemented	Compliance Status / Remarks
		checklist related to this mitigation is shown in <b>Appendix 2.b.</b>	
<b>3.</b>	<b>Drainage (substations)</b>		
	Site drainage plans will be developed in accordance with good drainage practices management for each substation, including constructing above flood levels and ensuring drainage around the site is provided for high storm flows.	<ul style="list-style-type: none"> <li>• The contractor has submitted engineering drawing for the site drainage plan and approved by PLN in September 5, 2018.</li> <li>• The drawing ensures that site drainage and is discharged in a controlled manner into the nearby natural watercourses.</li> <li>• The drainage is still on construction in Sanggau and Sekadau substation as shown in <b>Appendix 2.c.</b></li> </ul>	The mitigation implemented with this regard is compliant with its requirements.
<b>4.</b>	<b>Water Quality Impacts (HVTL alignments, substations)</b>		
	<ul style="list-style-type: none"> <li>• Mitigation measures to protect water quality from erosion are the same as "Vegetation Clearing" and "Soil Erosion, above. To protect against impacts on water quality arising from spillage of oil, fuel and other hazardous materials, good international practices will be adopted, including:</li> <li>• Fuel, oil and hazardous materials will be stored in designated areas with temporary impermeable bunds in accordance with international standards and at distance of at least 100 m from any water course.</li> <li>• Refueling of machinery, equipment and vehicles will be undertaken at distance of at least 100 m from any water course.</li> <li>• Any major work including oil changing and engine maintenance with the potential for oil to be spilled will be done in designated areas at distance of at least 100 m from any water course with containment to prevent any oil spills washing.</li> <li>• Waste oil shall be collected and taken away for recycling.</li> <li>• Oil contaminated material shall be disposed of at designated waste disposal facilities.</li> </ul>	<ul style="list-style-type: none"> <li>• Fuel, oil and hazardous materials and wastes were stored in the temporary hazardous material warehouse with proper segregation at the contractor's warehouse.</li> <li>• Refueling of vehicles was undertaken at the public fuel station.</li> <li>• Oil changing was conducted on site, and to prevent the potential for oil to be spilled, the oil was flowed through the hose and protected using oil secondary containment underneath.</li> <li>• Relevant evidences related to the above descriptions are shown in <b>Appendix 2.d.</b></li> </ul>	The mitigation implemented with this regard is compliant with its requirements.



No	Potential Impacts / Mitigation Requirements per IEE (2016)	Mitigation Implemented	Compliance Status / Remarks
	<ul style="list-style-type: none"> <li>Herbicides will not be used in the Project.</li> </ul>	Prohibition of using herbicides has been implemented. On each construction site, the warning sign has been made and the awareness was delivered during toolbox meeting for workers, the example is provided earlier in <b>Appendix 2.a</b> .	The mitigation implemented with this regard is compliant with its requirement.
<b>5.</b>	<b>Air Quality Impacts (HVTL alignments, substations)</b>		
	<ul style="list-style-type: none"> <li>Spray the dusty soil within substation construction area with water</li> </ul>	The contractor has been spraying the construction site using water periodically or when the dust level considered high, as shown in <b>Appendix 2.e</b> .	The mitigation implemented with this regard is compliant with its requirement.
	<ul style="list-style-type: none"> <li>Accumulated soil and debris should be cleaned from adjacent asphalt roads in the entrance of substation.</li> </ul>	Accumulated soil and debris has been cleaned from adjacent asphalt roads in the entrance of substation as shown in <b>Appendix 2.e</b> .	The mitigation implemented with this regard is compliant with its requirement.
	<ul style="list-style-type: none"> <li>Truckloads with dusty soil should be covered, except for on-site or local trips.</li> </ul>	In the Sanggau SS, the quarry is located 1 km through the existing local road, so the material transportation was covered (as shown in <b>Appendix 2.e</b> )	The mitigation implemented with this regard is compliant with its requirement.
	<ul style="list-style-type: none"> <li>Cut and fill should be balanced to the maximum extent possible at each site in order to minimize the need for fill and spoil disposal.</li> </ul>	In the Sanggau SS, based on the engineering calculation of cut and fill, it needed to fill from other quarries. The relevant evidence had been reported in the previous semester. In the meantime, cut material in Sekadau SS has been used for fill material, and this eliminates the need for spoil disposal.	The mitigation implemented with this regard is compliant with its requirement.
	<ul style="list-style-type: none"> <li>Construction waste and garbage burning are prohibited.</li> </ul>	The contractor has provided the warning sign that the burning of cleared vegetation and waste is prohibited during this project. The awareness about the prohibition of burning vegetation and waste is delivered by the contractor in the toolbox meeting. Relevant evidence related to the above descriptions can be seen in <b>Appendix 2.a</b> .	The mitigation implemented with this regard is compliant with its requirement.
<b>6.</b>	<b>Construction Waste Management (HVTL alignments, substations)</b>		
	<ul style="list-style-type: none"> <li>Solid wastes generated from construction activities should not be haphazardly left around construction sites.</li> <li>Construction waste will be contained in a designated area on each site (tower site, substation).</li> </ul>	<ul style="list-style-type: none"> <li>The contractor has provided separate trash bins for organic and non-organic wastes, placed at designed areas within the construction site. Trash bins that have been full of construction waste on regular basis have been disposed to the Sei Kosak final disposal for Sanggau SS and Sekadau final disposal for Sekadau SS. Supporting</li> </ul>	The mitigation implemented with this regard is compliant with its requirements.

No	Potential Impacts / Mitigation Requirements per IEE (2016)	Mitigation Implemented	Compliance Status / Remarks
	<ul style="list-style-type: none"><li>Wastes will be routinely collected and disposed of at safe waste disposal facilities indicated by the District Environmental agencies</li><li>Construction waste burning is prohibited</li></ul>	<p>documents related to this mitigation are shown in <b>Appendix 2.f</b>.</p> <ul style="list-style-type: none"><li>The contractor has provided the warning sign that the burning of waste is prohibited during this project. The awareness about the prohibition of burning vegetation and waste is delivered by the contractor in the toolbox meeting.</li><li>Relevant evidence related to the waste burning prohibition was shown earlier in <b>Appendix 2.a</b>.</li></ul>	
7.	Domestic Waste Management (HVTL alignments, substations)		
	<ul style="list-style-type: none"><li>Temporary worker camps will be required to be provided with appropriate sanitation facilities, including water supply, and washing facilities, temporary toilets, and waste containers.</li></ul>	The contractor rented a house from the local community for its employees. The house is equipped with adequate water supply (obtained from groundwater), washing and toilet facilities, and a trash bin to collect domestic waste as shown in <b>Appendix 2.g</b> .	The mitigation implemented with this regard is compliant with its requirement.
	<ul style="list-style-type: none"><li>Domestic waste will be routinely collected and disposed of at safe waste disposal facilities</li></ul>	Domestic wastes generated by the construction employees were collected in trash bags and disposed to Sei Kosak and Sanggau final disposal sites as shown in <b>Appendix 2.g</b> .	
	<ul style="list-style-type: none"><li>Garbage burning is prohibited.</li></ul>	The contractor has provided the warning sign that the burning of waste is prohibited during this project. The awareness about the prohibition of burning vegetation and waste is delivered by the contractor in the toolbox meeting. Relevant evidence related to the above descriptions was shown earlier in <b>Appendix 2.a</b> .	
8.	Roads and Infrastructure Impacts (HVTL alignments, substations)		
	<ul style="list-style-type: none"><li>A mapping of the locations of expected heavy equipment mobilization is needed versus settlement area locations. This needs inventory and monitors the potential damage to existing roads.</li></ul>	In this reporting period, there is no heavy equipment mobilization because it was done in the previous semester.	The mitigation implemented with this regard is compliant with its requirement.
	<ul style="list-style-type: none"><li>Any damaged infrastructure, after heavy equipment mobilization, will be repaired to at least the same standard and condition on completion of the Project, especially caused by</li></ul>	As stated above, there is no heavy equipment mobilization and no road damage occurred. As shown in <b>Appendix 2.h</b> is the road condition which functions as access to the substation site.	Not Applicable



No	Potential Impacts / Mitigation Requirements per IEE (2016)	Mitigation Implemented	Compliance Status / Remarks
	the transportation of heavy equipment e.g. 150 kV power transformer.		
<b>9.</b>	<b>Encroachment into Protected Forests, Hunting, Wood Collection (HVTL alignments, substations)</b>		
	<ul style="list-style-type: none"> <li>Hunting extraction by workers of forest products such as firewood, and keeping of firearms on the Project, will be prohibited.</li> <li>To avoid impact on ecological valuable sites, habitats, natural forest, flora and fauna, this risk should be particularly be monitored along the ecologically sensitive alignments of the transmission line: <ul style="list-style-type: none"> <li>along the 35 km between Tayan and Sosok where the alignment passes close by secondary forest within production forest reserves; along the alignment which runs close (3.5. and 11 km) to the primary forest within <i>Gunung Tiong Kandang</i> and <i>Gunung Sanggau</i>; and</li> <li>along the alignment which passes close (1.5-km distant) to the primary forests of the 'Pancur Aji' Forest Recreation Reserve.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>The construction sites of the substations are not located in the forest area. Nevertheless, the contractor has provided the signs stating that hunting is prohibited in the project areas. The awareness about the prohibition of hunting and wood collection is delivered by the contractor in the toolbox meeting. Relevant evidence related to the above descriptions can be seen in <b>Appendix 2.i.</b></li> </ul>	The mitigation implemented with this regard is compliant with its requirement.
<b>10.</b>	<b>Impacts on Cultural Heritage Sites (HVTL alignments, substations)</b>		
	<p>The Project area falls closely adjacent several notable heritage sites:</p> <ul style="list-style-type: none"> <li>Although, it is unlikely to suffer impact from Project due to separation distance (as a mitigation measure for these sites), Project workers should be made aware that these sites should not be disturbed, or material extracted if visited.</li> <li>Project construction traffic and heavy equipment should also not be routed anywhere near these sites to avoid vibration damage.</li> </ul>	During this monitoring period, there was no cultural heritage found. However, the contractor already delivered awareness related to cultural heritage during toolbox meeting for workers. The evidence related to this mitigation can be seen in <b>Appendix 2.j.</b>	Not applicable.
	<ul style="list-style-type: none"> <li>The transmission line construction should also take care not to make impact on the potential un-mapped locally important cultural sites, such as</li> </ul>	To anticipate the existence of the potential un-mapped locally important cultural sites, the contractor has consulted on this matter with the customary head and conducted the <i>Ngudas</i> event prior to the start of	Not applicable.

No	Potential Impacts / Mitigation Requirements per IEE (2016)	Mitigation Implemented	Compliance Status / Remarks
	community sacred forest groves (hutan adat) and sacred grave sites (tempat keramat). Consultation should be conducted with local Traditional Leaders (Temengung) for each indigenous ethnic group to identify and avoid any such sites prior to construction of all project works.	the construction activities. The conduct of this event does not indicate that such culturally important sites are present within the construction site. The <i>Ngudas</i> event was no longer conducted in this reporting period.	
11.	<b>Occupational Health and Safety (HVTL alignments, substations)</b>		
	<p>Prior to the commencement of civil works a construction phase Occupational Health and Safety Plan (OHSP) will be developed. The OHSP should:</p> <ul style="list-style-type: none"> <li>• identify and minimize, so far as reasonably practicable, the causes of potential hazards to workers, including communicable diseases and vector borne diseases;</li> <li>• provide preventive and protective measures, including modification, substitution, or elimination of hazardous conditions, with attention to live power lines, working at height, working during thunderstorms (lightning strikes), EMFs, and exposure to chemicals;</li> <li>• provide measures for the management and appropriate disposal of hazardous wastes to ensure protection of the workforce and the prevention, and to control of releases and accidents;</li> <li>• provide the provision of appropriate personal protective equipment (PPE) to minimize risks;</li> <li>• provide training for workers, and establish appropriate incentives to use and comply with health and safety procedures and utilize PPE;</li> <li>• include procedures for documenting and reporting occupational accidents, diseases, and incidents;</li> <li>• include emergency prevention, preparedness, and response arrangements in place.</li> </ul>	<ul style="list-style-type: none"> <li>• PT Siemens as the contractor of Tayan, Sanggau and Sekadau substations (Package 5) have developed an environmental health &amp; safety (EHS) plan (covering OHSP) that has been reviewed and approved by PLN UPP 2 Sintang and PUSMANPRO on October 16, 2018. <ul style="list-style-type: none"> <li>– The Siemens' EHS plan provides guidance and procedures which are considered adequate for mitigating environmental and OHS risks associated with the nature and scale of the substation construction.</li> </ul> </li> <li>• PT Siemens has implemented the EHS plan (covering OHSP) by, among others: <ul style="list-style-type: none"> <li>– Providing safety induction to workers on OSH rules and use of PPE properly;</li> <li>– Providing appropriate PPE to workers;</li> <li>– Submitting monthly reports including documenting and reporting occupational accidents, diseases, and incidents;</li> <li>– Establishing emergency response procedures including provision of first-aid kits, fire extinguishers, and emergency call lists at construction sites; and</li> <li>– Conducting HIV/ AIDS awareness session for workers.</li> </ul> </li> <li>• Relevant evidence of this event is included in <b>Appendix 2.k</b>.</li> </ul>	The mitigation implemented with this regard is compliant with its requirements.

No	Potential Impacts / Mitigation Requirements per IEE (2016)	Mitigation Implemented	Compliance Status / Remarks
12.	<b>Community Health and Safety (HVTL alignments, substations)</b>		
	<p>Prior to the commencement of civil works a construction phase Community Health and Safety Plan (CHSP) will be developed. The CHSP should include:</p> <ul style="list-style-type: none"> <li>• procedures to identify and minimize, so far as reasonably practicable, the causes of potential Project related hazards to local communities, including communicable diseases such as HIV/AIDs and vector borne diseases;</li> <li>• the houses and settlements in close location from the transmission line should be clearly spatially mapped in order to better inventory and address the EMF (electro-magnetic fields) health and safety impact risk.</li> <li>• an effective socialization program should follow in this at the mapped locations to address community concerns in regard to the EMF effects of transmission line operation.</li> <li>• specific emergency response procedures</li> <li>• relevant emergency equipment.</li> <li>• protocols for emergency vehicle services; and</li> <li>• put safety sign.</li> </ul>	<ul style="list-style-type: none"> <li>• The CHSP developed by Siemens were being reviewed by PLN (as of June 2019). The plan is to finalize and approve the CHSP by July 2019.</li> <li>• In the light of the CHSP, Siemens has installed safety signs and high fences surrounding the substation site as a measure to mitigate safety risk exposure to the community. Relevant evidence of these mitigation measures is shown in <b>Appendix 2.I.</b></li> </ul>	<p>The mitigation implemented with this regard is <b>partially compliant</b> with its requirements.</p>
13.	<b>Employment Opportunities (HVTL alignments, substations)</b>		
	<ul style="list-style-type: none"> <li>• To communicate about employment opportunities on a regular basis and to demonstrate the efforts are made to accommodate as many people as possible.</li> <li>• Be clear about the limited possibility and communicate this limitation during the meetings.</li> <li>• Give priority to impact affected people to participate with the project works e.g. in transmission work the material transportation from roadside to tower site, and other unskilled and semi-skilled available labor –either transmission line or substation works.</li> </ul>	<ul style="list-style-type: none"> <li>• The contractor has delivered the employment opportunity with the village officials before the construction started.</li> <li>• Local people who have been hired to become laborers in the project have the skill as needed, such as earthworks and construction work. In Semester 1/2019, the percentage of local workers employed for the construction of substation has reached 100%.</li> </ul>	<p>The mitigation implemented with this regard is compliant with its requirement.</p>

No	Potential Impacts / Mitigation Requirements per IEE (2016)	Mitigation Implemented	Compliance Status / Remarks
14.	<b>Physical Cultural Resources (HVTL alignments, substations)</b>		
	<p>Awareness to all workers concerning chance find physical cultural resources during construction implementation:</p> <ul style="list-style-type: none"> <li>• If physical cultural resources are encountered during the construction phase, all works at the find site should be immediately halted.</li> <li>• The find should be assessed by a competent expert, and procedures to avoid, minimize or mitigate impacts to the physical cultural resources should be developed by the expert in cooperation with the relevant local heritage authority, proportionate to the value of the resource in question and the nature and scale of the Project's potential adverse impacts on it.</li> <li>• The find should be assessed in consultation with local Traditional Leaders (<i>Temenggung</i>) for each indigenous ethnic group to identify the local cultural significance and obtain guidance on what follow-up actions to conduct under supervision of local communities.</li> <li>• Work should not begin until the procedures to avoid, minimize or mitigate impacts to the physical cultural resources have been implemented.</li> <li>• In case avoidance is not feasible, no alternatives to removal exist, and the Project benefits outweigh the anticipated cultural heritage loss from removal; the physical cultural resource should be removed and preserved according to the best available technique.</li> <li>• Any removal should be conducted in accordance with relevant provisions of national and/or local laws.</li> <li>• Records should be maintained of all finds, including chain of custody instructions for movable finds.</li> </ul>	<ul style="list-style-type: none"> <li>• A chance find procedure from PT Siemens has been developed (Ref: page 50 chapter 5.32 about Unexpected Discovery). The contractor has conducted the awareness to the employee during toolbox meeting. Relevant documents related to this mitigation are shown earlier in <b>Appendix 2.j</b>.</li> <li>• During Semester 1/2019 reporting period, there are no cultural physical resources found yet in project location.</li> </ul>	<p>The mitigation implemented with this regard is compliant with its requirement.</p>

No	Potential Impacts / Mitigation Requirements per IEE (2016)	Mitigation Implemented	Compliance Status / Remarks
	<ul style="list-style-type: none"> <li>All Project workers and staff should be made aware of the chance-find procedure.</li> </ul>		

### 3.2 Packages 6 and 7: Tayan – Sanggau and Sanggau – Sekadau Transmission Lines

The Tayan – Sanggau (Package 6) and Sanggau - Sekadau (Package 7) transmission lines were in the construction phase with foundation work and tower erection as the primary activity in the semester 1/2019. UIP KALBAGBAR is responsible for the development of these power transmission lines. The progress of these construction packages was reported 62.033% for Package 6 and 52.70% for Package 7 as of the end of June 2019. **Table 3.2** describes the mitigation measures implemented by the Project at the construction phase, including its compliance status against the mitigation requirements defined in the IEE (2016).

**Table 3.2 Environmental Mitigation Status of Packages 6 and 7**

No	Potential Impacts / Mitigation Requirements per IEE (2016)	Mitigation Implemented	Compliance Status / Remarks
<b>1.</b>	<b>Vegetation Clearing (HVTL alignments, substations)</b>		
	<ul style="list-style-type: none"> <li>Vegetation removal will be allowed with the designated width of the RoW and the minimum area required for other infrastructure and activities.</li> <li>Vegetation cutting within the RoW will be undertaken to achieve the required clearances.</li> <li>For transmission lines, tree removal and trimming will only be undertaken by hand tools, including chain saws.</li> </ul>	<ul style="list-style-type: none"> <li>Vegetation cutting within the RoW was conducted to achieve the required clearance in accordance with the requirements of the MEMR Regulation No. 18/2015.</li> <li>In the PT Krakatau Engineering (KE) or KE's HSE plan (page 27, chapter 7.22), it is stated that vegetation clearing such as cutting trees can only be done manually (using a chainsaw).</li> <li>During this foundation work phase, tree removal and trimming process were only undertaken by hands tools, including chain saw. Subsequently, the local people are allowed to collect the remaining vegetation, as shown in <b>Appendix 3.a</b>.</li> </ul>	The mitigation implemented with this regard is compliant with its requirement.
	<ul style="list-style-type: none"> <li>For substation, vegetation clearing will be conducted with the combination of cutting trees with hand and chainsaw, while the stump removal will be conducted by bulldozer.</li> </ul>	This mitigation requirement is not applicable for the transmission line construction reported herein as it is intended for the substation construction.	Not applicable.
	<ul style="list-style-type: none"> <li>The use of herbicides will be strictly prohibited.</li> </ul>	<ul style="list-style-type: none"> <li>In the KE's HSE plan (page 28, chapter 7.22) it is stated that the use of herbicides is prohibited in vegetation clearing process.</li> <li>The prohibition on the use of herbicides is also made in the form of warning sign, and communicated to the workers in each construction site as shown in <b>Appendix 3.a</b>.</li> </ul>	The mitigation implemented with this regard is compliant with its requirement.

No	Potential Impacts / Mitigation Requirements per IEE (2016)	Mitigation Implemented	Compliance Status / Remarks
	<ul style="list-style-type: none"> <li>Local people will be allowed to access to cleared vegetation for the collection of building materials and firewood.</li> <li>Burning of cleared vegetation will not be allowed; instead this material will be used to protect the soil from erosion, particularly in steeper slope areas, until more permanent soil protection measures are in place.</li> </ul>	<ul style="list-style-type: none"> <li>In the KE's HSE plan (page 28, chapter 7.22) it is stated that the use of vegetation cleared for buildings or firewood was only allowed to be used by the surrounding people.</li> <li>The land owner and local people participated during vegetation removal process and took the cut wood or the vegetation for their domestic purposes as shown in <b>Appendix 3.a</b>.</li> </ul>	The mitigation implemented with this regard is compliant with its requirement.
<b>2.</b>	<b>Soil Erosion (HVTL alignments)</b>		
	<ul style="list-style-type: none"> <li>Soil erosion control measures have been incorporated into the engineering design, including the use of adjustable height tower which allow the tower to conform to the slope of the site, thereby reducing land cutting and erosion.</li> <li>In addition, mitigations, designed in accordance with relevant guidelines and good construction practices adapted to suit the requirements at each site as follows:</li> </ul>	<ul style="list-style-type: none"> <li>Due to requirement of RoW clearances, adjusting of tower height has been applied to Tower T.133 at Binjai Village. It allows the tower to conform the slope of the site and reduce soil erosion as well. The documentation can be seen in <b>Appendix 3.b</b>.</li> </ul>	The mitigation implemented with this regard is compliant with its requirement.

No	Potential Impacts / Mitigation Requirements per IEE (2016)	Mitigation Implemented	Compliance Status / Remarks
<b>3.</b>	<b>Drainage (substations)</b>		
	The mitigation requirements for drainage are intended for the operation of substations, and therefore not applicable for the operation of transmission lines reported in this table.		Not applicable.
<b>4.</b>	<b>Water Quality Impacts (HVTL alignments, substations)</b>		
	<ul style="list-style-type: none"> <li>Mitigation measures to protect water quality from erosion are the same as “Vegetation Clearing” and “Soil Clearing”, above</li> </ul>	The prevention to protect water quality from erosion during vegetation clearing as described before in Chapter 3.2, Number 1 and 2	The mitigation implemented with this regard is compliant with its requirement.
	<ul style="list-style-type: none"> <li>To protect from impacts on water quality arising from spillage of oil, fuel and other hazardous materials to be taken away by licensed third party.</li> </ul>	<ul style="list-style-type: none"> <li>In the KE's HSE plan (page 29, chapter 7.22) it is stated that fuel, oil and hazardous materials must be taken away by licensed third party and managed according to Government Regulation no. 101/2014 concerning Management of Hazardous and Toxic Wastes.</li> <li>At this moment, the hazardous waste is still insignificant quantity and has been stored in the dedicated temporary storage area and away from any water courses. . The evidence related to this mitigation is presented in <b>Appendix 3.c</b>.</li> </ul>	The mitigation implemented with this regard is compliant with its requirement.
	<ul style="list-style-type: none"> <li>Refueling of machinery, equipment and vehicles will be undertaken at distance of at least 100 m from any water course.</li> </ul>	<ul style="list-style-type: none"> <li>Refueling of the vehicles is undertaken at the public fuel station. However, refueling the concrete mixer machine is carried out at site, at the time, refueling used external drum and provide secondary containment to accommodate in case of oil spill, as shown in <b>Appendix 3.c</b>.</li> </ul>	The mitigation implemented with this regard is compliant with its requirement.
	<ul style="list-style-type: none"> <li>Any major work including oil changing and engine maintenance with the potential for oil to be spilled will be done in designated areas at distance of at least 100 m from any water course with containment to prevent any oil spills washing away.</li> </ul>	<ul style="list-style-type: none"> <li>Any oil changing and engine maintenance carried out at the off-site workshop far away from the nearest water course.</li> <li>The concrete mixer machines' oil changing was conducted in the site location, secondary containment was provided to contain any oil spills.</li> </ul>	The mitigation implemented with this regard is compliant with its requirement.
	<ul style="list-style-type: none"> <li>During the construction of tower sites at rice fields and wet areas, extra measures shall be applied to prevent water contamination by the oil drip or spilled wastewater from cement mixers and</li> </ul>	Since there is no construction work located at rice field and wet areas during this period, therefore this mitigation measure is not applicable.	Not applicable



No	Potential Impacts / Mitigation Requirements per IEE (2016)	Mitigation Implemented	Compliance Status / Remarks
	concrete.		
	<ul style="list-style-type: none"> <li>Herbicides will not be used in the Project</li> </ul>	In the contractor's HSE plan (page 28, chapter 7.22) it is stated that herbicides are prohibited in vegetation clearing process. The prohibition on the use of herbicides is also made in the form of warning sign and has been delivered to the workers in each construction site, as shown earlier in <b>Appendix 3.a</b> .	The mitigation implemented with this regard is compliant with its requirement.
<b>5.</b>	<b>Air Quality Impacts (HVTL alignments)</b>		
	<ul style="list-style-type: none"> <li>Truckloads with dusty soil should be covered, with the exception of on-site or local trips.</li> <li>Cut and fill should be balanced to the maximum extent possible at each site in order to minimize the need for fill and for spoil disposal.</li> </ul>	During the construction of tower foundation, excavated soil is not transported away from the construction site but used as a fill material when the tower construction has been completed. Therefore, this mitigation requirement is not applicable during this reporting period.	Not applicable
	<ul style="list-style-type: none"> <li>Construction waste and garbage burning are prohibited.</li> </ul>	In the KE's HSE plan (page 17, chapter 7.8) it is stated that no materials should not be burned. The prohibition on burning of cleared vegetation and waste is also made in the form of warning sign and has been delivered to the workers in each construction site as shown earlier in <b>Appendix 3.a</b> .	The mitigation implemented with this regard is compliant with its requirement.
<b>6.</b>	<b>Construction Waste Management (HVTL alignments, substations)</b>		
	<ul style="list-style-type: none"> <li>Solid wastes generated from construction activities should not be haphazardly left around construction sites.</li> <li>Construction waste will be contained in a designated area on each site (tower site, substation).</li> <li>Wastes will be routinely collected and disposed of at safe waste disposal facilities indicated by the District Environmental agencies.</li> </ul>	The contractor has provided a trash bag to collect the garbage contained at each tower construction site and routinely dispose of the waste routinely to Sei Kosak final disposal owned by Sanggau district and Sekadau final disposal owned by Sekadau district, as shown in <b>Appendix 3.d</b> .	The mitigation implemented with this regard is compliant with its requirement.
<b>7.</b>	<b>Domestic Waste Management (HVTL alignments, substations)</b>		
	<ul style="list-style-type: none"> <li>Temporary worker camps will be required to be provided with appropriate sanitation facilities, including water supply, and washing facilities, temporary toilets, and waste containers.</li> </ul>	For Package 6, the contractor's temporary worker is rented house from local people in Binjai Village, Tayan Hulu district, which has been equipped with good sanitation facilities including adequate water supply, toilet facilities and a trash bin to collect	The mitigation implemented with this regard is compliant with its requirement.

No	Potential Impacts / Mitigation Requirements per IEE (2016)	Mitigation Implemented	Compliance Status / Remarks
		domestic waste as shown in <b>Appendix 3.e</b> . Meanwhile, during this monitoring period, in the package 7, the workers were from local community, hence there was no worker camp provided.	
	<ul style="list-style-type: none"> <li>Domestic waste will be routinely collected and disposed of at safe waste disposal facilities.</li> </ul>	Domestic wastes generated by the construction employees were collected in trash bags, for package 6 it was disposed to Sei Kosak, Sanggau final disposal sites, as shown in <b>Appendix 3.e</b> .	
	<ul style="list-style-type: none"> <li>Garbage burning is prohibited.</li> </ul>	In the KE's HSE plan (page 17, chapter 7.8) it is stated that materials should not be burned. The prohibition on burning of cleared vegetation and waste is also made in the form of warning sign and has been delivered to the workers in each construction site as shown earlier in <b>Appendix 3.a</b> .	The mitigation measures implemented with this regard is compliant with its requirements.
<b>8. Roads and Infrastructure Impacts (HVTL alignments, substations)</b>			
	<ul style="list-style-type: none"> <li>A mapping of the locations of expected heavy equipment mobilization is needed versus settlement area locations. This needs inventory and monitors the potential damage to existing roads.</li> </ul>	<ul style="list-style-type: none"> <li>During this semester, there was some material transport conducted on the same road. The material transport maps already submitted in the previous semester (2/2018) report.</li> </ul>	The mitigation implemented with this regard is compliant with its requirement.
	<ul style="list-style-type: none"> <li>Any damaged infrastructure after heavy equipment mobilization will be repaired to at least the same standard and condition on completion of the Project, especially caused by the transportation of heavy equipment e.g. 150 kV power transformer.</li> </ul>	<ul style="list-style-type: none"> <li>In the contractor's HSE plan document in chapter 7.22 page 31 of Environmental Management has been mentioned that the construction activities and transportation of building materials (rock, sand, and cement) from supplies and heavy equipment could cause damage to roads and other local infrastructure. To reduce its impact, the contractor must repair the damage at least with the same standards and conditions as before. Mapping the location of heavy equipment mobilization needs to consider the location of settlements.</li> <li>In the TL construction site, the access road is not always in the form of pavement, some of them still a dirt road. The contractor has made a temporary access road to avoid the damaged. If the damaged road occurred, it would be immediately repaired by the contractor. The documentation is</li> </ul>	The mitigation implemented with this regard is compliant with its requirement.

No	Potential Impacts / Mitigation Requirements per IEE (2016)	Mitigation Implemented	Compliance Status / Remarks
		presented in <b>Appendix 3.f.</b>	
<b>9.</b>	<b>Encroachment into Protected Forests, Hunting, Wood Collection (HVTL alignments, substations)</b>		
	<ul style="list-style-type: none"> <li>Hunting extraction by workers of forest products such as firewood, and keeping of firearms on the Project, will be prohibited.</li> <li>To avoid impact on ecological valuable sites, habitats, natural forest, flora and fauna, this risk should be particularly be monitored along the ecologically sensitive alignments of the Transmission line: along the 35 km between Tayan and Sosok where the alignment passes close by secondary forest within production forest reserves; along the alignment which runs close (3.5. and 11 km) to the primary forest within Gunung Tiong Kandang and Gunung Sanggau; and along the alignment which passes close (1.5 km distant) to the Pancur Aji Forest Recreation Reserve.</li> </ul>	<ul style="list-style-type: none"> <li>In the contractor's HSE plan (chapter 7.22, page 31) it is stated that the contractor must ensure that the project work does not interfere with or pass through areas that have status as protection forests, wildlife reserves, national parks or other ecologically sensitive areas.</li> <li>Although that the project site is not located in the forest area, the contractor has provided the warning sign that hunting is prohibited during this project to avoid impact on ecological valuable sites.</li> <li>The awareness about the prohibition of hunting and wood collection is delivered by the contractor in the toolbox meeting.</li> </ul> <p>Relevant evidences related to the above description is shown in <b>Appendix 3.g.</b></p>	The mitigation implemented with this regard is compliant with its requirement.
<b>10.</b>	<b>Impacts on Cultural Heritage Sites (HVTL alignments, substations)</b>		
	<p>The Project area falls closely adjacent several notable heritage sites:</p> <ul style="list-style-type: none"> <li>Although unlikely to suffer impact from Project due to separation distance, as a mitigation measure for these sites, Project workers should be made aware that these sites should not be disturbed, or material extracted if visited. Project construction traffic and heavy equipment should also not be routed anywhere near these sites to avoid vibration damage.</li> </ul>	Contractors have been transported heavy equipment and material away from cultural heritage sites and delivered awareness related to this mitigation during toolbox meeting for workers.	The mitigation implemented with this regard is compliant with its requirement.
	<ul style="list-style-type: none"> <li>The project construction should also take care not to make impact on the potential un- mapped locally important cultural sites, such as community sacred forest groves (<i>hutan adat</i>) and sacred grave sites (<i>tempat keramat</i>). Consultation should be conducted with local Traditional Leaders (<i>Temengung</i>) for each indigenous ethnic group to identify and avoid any such sites prior to</li> </ul>	In package 6 there was a sacred cemetery in T. 158 area, Palem Jaya village and T. 168, Sebara village. The contractor has coordinated with the society and the local customer leader related this issue. Also, the contractor conducted the Ngudas ceremony in April 2019. The evidence related to the above description can be seen in <b>Appendix 3.h.</b>	The mitigation implemented with this regard is compliant with its requirement.

No	Potential Impacts / Mitigation Requirements per IEE (2016)	Mitigation Implemented	Compliance Status / Remarks
	construction of all project works.		
<b>11.</b>	<b>Occupational Health and Safety (HVTL alignments, substations)</b>		
	<p>Prior to the commencement of civil works a construction phase Occupational Health and Safety Plan (OHSP) will be developed. The OHSP should:</p> <ul style="list-style-type: none"> <li>• identify and minimize so far as reasonably practicable, the causes of potential hazards to workers, including communicable diseases and vector borne diseases;</li> <li>• provide preventive and protective measures, including modification, substitution, or elimination of hazardous conditions, with particular attention to live power lines, working at height, working during thunderstorms (lightning strikes), EMFs, and exposure to chemicals;</li> <li>• provide preventive and protective measures, including modification, substitution, or elimination of hazardous conditions, with particular attention to live power lines, working at height, working during thunderstorms (lightning strikes), EMFs, and exposure to chemicals;</li> </ul>	<p>PT KE as the contractor of Packages 6 and 7 has developed an environmental health &amp; safety (EHS) plan (covering OHSP) in January 2017. The HSE plan has been reviewed and approved by PLN UPP 2 in October 2017, and found to be adequate in terms of providing procedures on:</p> <ul style="list-style-type: none"> <li>• The procedure to identify potential hazard for workers is available in HIRAC (Hazard Identification Risk Assessment Control) and JSA (Job Safety Analysis), as seen in <b>Appendix 3.i</b>.</li> <li>• Eliminating hazardous condition with attention to high risk activities, including working at height and handling of hazardous chemical and materials;</li> <li>• Management related to disposal of hazardous wastes is stated on hazardous waste management;</li> <li>• Personal protective equipment to minimize risk; and</li> <li>• Communication and training establish awareness on site;</li> </ul>	<p>The mitigation implemented with this regard is compliant with its requirement.</p>
	<ul style="list-style-type: none"> <li>• Provide measures for the management and appropriate disposal of hazardous wastes to ensure protection of the workforce and the prevention and control of releases and accidents;</li> </ul>	<ul style="list-style-type: none"> <li>• In PT KE's HSE plan (page 26, chapter 7.21) it is stated that the Contractor has established procedures for the management and appropriate disposal of hazardous wastes to ensure protection of the workforce and the prevention and control of releases and accidents;</li> <li>• The contractor has made hazardous waste warehouse and provides labeling (MSDS) according to the type and characteristic, as the documentation shown in <b>Appendix 3.i</b>.</li> </ul>	<p>The mitigation implemented with this regard is compliant with its requirement.</p>
	<ul style="list-style-type: none"> <li>• Provide for the provision of appropriate personal protective equipment (PPE) to minimize risks;</li> </ul>	<ul style="list-style-type: none"> <li>• In implementation workers have used PPE in accordance with the type of work, as the documentation is shown in <b>Appendix 3.i</b>.</li> </ul>	<p>The mitigation implemented with this regard is compliant with its requirement.</p>

No	Potential Impacts / Mitigation Requirements per IEE (2016)	Mitigation Implemented	Compliance Status / Remarks
	<ul style="list-style-type: none"> <li>Provide training for workers, and establish appropriate incentives to use and comply with health and safety procedures and utilize PPE;</li> </ul>	<ul style="list-style-type: none"> <li>During this period the contractor had held in house training regarding to working at height, as the documentation shown in <b>Appendix 3.i</b>.</li> </ul>	The mitigation implemented with this regard is compliant with its requirement.
	<ul style="list-style-type: none"> <li>Include procedures for documenting and reporting occupational accidents, diseases, and incidents; and</li> </ul>	<ul style="list-style-type: none"> <li>The contractor makes a report related to accidents, disease and incidents and reports it to the HSE supervisor monthly, as the documentation shown in <b>Appendix 3.i</b>.</li> </ul>	The mitigation implemented with this regard is compliant with its requirement.
	<ul style="list-style-type: none"> <li>Include emergency prevention, preparedness, and response arrangements in place.</li> </ul>	<ul style="list-style-type: none"> <li>In the contractor's HSE document on page 34 chapter 8 concerning Emergency Condition, contractor has provided procedure for emergency prevention, preparedness and response arrangements in place.</li> <li>The contractor has set up the emergency team which equipped with emergency training procedure and emergency equipment (first aid kit box, fire extinguisher, evacuation route, safety sign, etc.) that can be used in emergency conditions, as shown in <b>Appendix 3.i</b>.</li> </ul>	The mitigation implemented with this regard is compliant with its requirement.
<b>12.</b>	<b>Community Health and Safety (HVTL alignments, substations)</b>		
	<p>Prior to the commencement of civil works a construction phase Community Health and Safety Plan (CHSP) will be developed. The CHSP should include:</p> <ul style="list-style-type: none"> <li>Procedures to identify and minimize, so far as reasonably practicable, the causes of potential Project related hazards to local communities, including communicable diseases such as HIV/AIDs and vector borne diseases;</li> <li>Specific emergency response procedures;</li> <li>Relevant emergency equipment;</li> <li>Protocols for emergency vehicle services; and</li> <li>Put safety sign.</li> </ul>	<ul style="list-style-type: none"> <li>The CHSP developed by PT Krakatau Engineering was being reviewed by PLN (as of June 2019). The plan is to finalize and approve the CHSP by July 2019. As shown in <b>Appendix 3.j</b>.</li> <li>The contractor's CHSP had included procedures related to communicable diseases such as HIV/AIDS and vector-borne disease; and specific emergency response procedures.</li> <li>Each construction site has been equipped with emergency equipment in the form of first aid kit that can be used in minor accident and also fire extinguisher (as shown earlier in <b>Appendix 3.i</b>).</li> <li>The contractor has provided the emergency vehicle services as transportation in case of emergency (as shown in <b>Appendix 3.j</b>).</li> <li>Safety signs have been installed, to warn the community on the potential risk of entering the</li> </ul>	The mitigation implemented with this regard is <b>partially compliant</b> with its requirement.

No	Potential Impacts / Mitigation Requirements per IEE (2016)	Mitigation Implemented	Compliance Status / Remarks
		project sites. Location that having potential danger, as shown in <b>Appendix 3.j</b> .	
	<ul style="list-style-type: none"> <li>The houses and settlements in close location from the transmission line should be clearly spatially mapped in order to better inventory and address the EMF (electro-magnetic fields) health and safety impact risk.</li> <li>An effective socialization program should follow in this at the mapped locations to address community concerns in regard to the EMF effects of transmission line operation.</li> </ul>	<ul style="list-style-type: none"> <li>Mapping of houses and settlements located close to the transmission lines has not been conducted as the construction of the transmission lines from Tayan – Sanggau – Sekadau (Packages 6 and 7) is still progressing (as of June 2019).</li> <li>PLN has conducted the dissemination regarding EMF for the construction of the transmission line. The socialization regarding to EMF always incorporated in the compensation, land payment, and ROW socialization in each village traversing by Transmission line. i.e. Sungai Ringin village, Sanggau district which was held on March 28, 2019 (as shown in <b>Appendix 3.j</b>).</li> </ul>	The mitigation implemented with this regard is <b>partially compliant</b> with its requirement.
<b>13.</b>	<b>Employment Opportunities (HVTL alignments, substations)</b>		
	<ul style="list-style-type: none"> <li>Communicate about employment opportunities on a regular basis and demonstrate the efforts being made to accommodate as many people as possible.</li> <li>Be clear about the limited possibility and communicate this limitation during the meetings.</li> <li>Give priority to impact affected people to participate with the project works e.g. in transmission work the material transportation from roadside to tower site, and other unskilled and semi-skilled available labor either transmission line works, or substation works.</li> </ul>	<ul style="list-style-type: none"> <li>The contractor disseminated about the employment opportunity with the village apparatus before the construction started. i.e. socialization carried out in the Binjai village, Tayan Hulu sub-district that shown in <b>Appendix 3.k</b>. At the beginning the contractors started to recruit local people for unskilled work, such as transporting materials and then they also trained for making concrete. Before starting work on the project, safety induction was carried out first by the HSE team. The current composition of the workforce for the Package 6 is 79% of local people and 21% from outside the project area; and for the Package 7 is 92% of local people and 8% from outside the project area.</li> </ul>	The mitigation implemented with this regard is compliant with its requirement.
<b>14.</b>	<b>Physical Cultural Resources (HVTL alignments, substations)</b>		
	<p>Awareness to all workers concerning chance find physical cultural resources during construction implementation:</p> <ul style="list-style-type: none"> <li>If physical cultural resources are encountered</li> </ul>	<ul style="list-style-type: none"> <li>In the KE's HSE plan (page 31, chapter 7.22) there are procedures incorporated for finding chance regarding physical cultural resources. This procedure gives guidance for someone who</li> </ul>	The mitigation implemented with this regard is compliant with its requirement.

No	Potential Impacts / Mitigation Requirements per IEE (2016)	Mitigation Implemented	Compliance Status / Remarks
	<p>during the construction phase, all works at the find site should be immediately halted.</p> <ul style="list-style-type: none"> <li>• The find should be assessed by a competent expert, and procedures to avoid, minimize or mitigate impacts to the physical cultural resources should be developed by the expert in cooperation with the relevant local heritage authority, proportionate to the value of the resource in question and the nature and scale of the Project's potential adverse impacts on it.</li> <li>• The find should be assessed in consultation with local Traditional Leaders (<i>Temenggung</i>) for each indigenous ethnic group to identify the local cultural significance and obtain guidance on what follow-up actions to conduct under supervision of local communities.</li> <li>• Work should not begin until the procedures to avoid, minimize or mitigate impacts to the physical cultural resources have been implemented.</li> <li>• Where avoidance is not feasible, no alternatives to removal exist, and the Project benefits outweigh the anticipated cultural heritage loss from removal; the physical cultural resource should be removed and preserved according to the best available technique.</li> <li>• Any removal should be conducted in accordance with relevant provisions of national and/or local laws.</li> <li>• Records should be maintained of all finds, including chain of custody instructions for movable finds.</li> <li>• All Project workers and staff should be made aware of the chance-find procedure.</li> </ul>	<p>working on the project finds a physical cultural resource, then he has to stop all the activities within the discovery, marking the site area found, secures the site area, prevents the collection of objects by labor or other person, notify the nearest cultural management agency within 24 hours, reminds all project personnel of the finding and carry out temporary protection measures, submitted the object found to local cultural management agency, record all the findings and actions taken.</p> <ul style="list-style-type: none"> <li>• There were sacred cemetery found at Tower T. 158 area, Palem Jaya village and T. 168, Sebara village. The contractor has coordinated with the affected people and the local customer leader related to this issue. And then, the contractor conducted the Ngudas (customary ceremony) as the settlement.</li> <li>• The contractor has conducted the awareness to the employee related physical resources during toolbox meeting.</li> </ul> <p>The evidence related to the above description is shown in <b>Appendix 3.h</b>.</p>	

## **Chapter 4 Environmental Monitoring Status**

The outcomes of the environmental mitigation conducted for the Work Packages 5 to 7 in the period of January – June 2019 were monitored to ensure its effectiveness and compliance with the requirements of the environmental monitoring plan defined in the Table 29 on the EMP of the Project's IEE (2016). Sub-chapters 4.1 to 4.2 describe the environmental monitoring implemented and its compliance status for the mentioned work packages.



#### 4.1 Package 5: Tayan, Sanggau, and Sekadau Substations

Sanggau and Sekadau substations and Tayan substation (extension) was in the construction phase in Semester 1/2019 and under the supervision of UIP KALBAGBAR. The **Table 4.1** describes the environmental monitoring implemented by the Project including its compliance status against the mitigation requirements defined in the Project's IEE (2016).

**Table 4.1 Environmental Monitoring Status of Package 5**

No	Aspect and Means of Monitoring	Monitoring Implemented	Compliance Status / Remarks
<b>1.</b>	<b>Vegetation Clearing (RoW)</b>		
	<ul style="list-style-type: none"> <li>Ensure that vegetation removal mitigations are implemented.</li> <li>Monitor effectiveness of vegetation removal control measures.</li> </ul>	This monitoring is intended for the ROW of transmission lines, and therefore not applicable for the substation construction reported herein.	Not applicable.
<b>2.</b>	<b>Drainage (Substations)</b>		
	<ul style="list-style-type: none"> <li>Ensure drainage plans are implemented.</li> </ul>	The drainage for Sanggau SS and Sekadau SS have been implemented according to drawing approved. The documentation can be seen in <b>Appendix 2.c</b> .	The implementation of this monitoring is compliant with the mean of monitoring defined herein.
	<ul style="list-style-type: none"> <li>Monitor effectiveness of drainage system.</li> </ul>	As the drainage for Sanggau SS has been implemented the water springs can flow though it to the natural ditch. The constructed drainage in Sanggau and Sekadau SS will be cleaned if there is encroachment from the remains of plants, weeds, or other obstructions that disrupt water flow. The drainage is monitored periodically as presented in <b>Appendix 4.a</b> .	The implementation of this monitoring is compliant with the mean of monitoring defined herein.
<b>3.</b>	<b>Soil Erosion (Tower and Substation Sites)</b>		
	<ul style="list-style-type: none"> <li>Ensure soil erosion control measures are applied.</li> </ul>	Based on the results of monitoring by the environmental supervisor from PIC at the location of the Sanggau substation, erosion prevention has been carried out by creating an embankment that functions as a sediment trap. The monitoring, as described above, is shown in <b>Appendix 2.b</b> .	The implementation of this monitoring is compliant with the mean of monitoring defined herein.
	<ul style="list-style-type: none"> <li>Monitor effectiveness of soil erosion control measures.</li> </ul>	Sediment traps could restrain the dugout soils before flowing out into the nearby natural watercourses. This evidence can be seen in <b>Appendix 4.b</b> .	The implementation of this monitoring is compliant with the mean of monitoring defined

No	Aspect and Means of Monitoring	Monitoring Implemented	Compliance Status / Remarks																									
			herein.																									
4.	Water Quality (Construction Sites and Storage Areas)																											
	<ul style="list-style-type: none"><li>Ensure mitigation measures are in place with respect to oil, fuel and other hazardous materials storage, handling, disposal; and fueling and maintenance of equipment</li></ul>	The oil, fuel and other hazardous materials storage and handling have been done as the mitigation requirement (as shown earlier in <b>Appendix 2.d</b> ) and have been well implemented with providing secondary containment to prevent an oil spill.	The implementation of this monitoring is in compliant with the mean of monitoring defined herein.																									
	<ul style="list-style-type: none"><li>Monitor effectiveness of mitigation on water quality</li></ul>	In addition, based on the results of measurements of water quality at the Sanggau substation conducted on November 09, 2018 in collaboration with the University of Tanjung Pura, it was stated that all parameters were still under the threshold for water quality grade 1, according to Government Regulation 82/2001. The water quality measurement result is shown in <b>Appendix 4.c</b> .																										
5.	Air Quality (Construction Sites and Storage Areas)																											
	<ul style="list-style-type: none"><li>Ensure mitigation measures with respect to dust control, truck cleaning, load covering, and soil and spoil pile management are in place</li></ul>	The contractor has already ensured mitigation measures to dust control with spraying water in the construction site periodically, as shown earlier in <b>Appendix 2.e</b> . The spoil pile management was implemented well by the contractor as shown in <b>Appendix 4.d</b> .	The implementation of this monitoring in compliant with the mean of monitoring defined herein.																									
	<ul style="list-style-type: none"><li>Monitor effectiveness of mitigation on air quality</li></ul>	<p>According to the air quality monitoring conducted in Sanggau Substation by Senanyan Pembangunan in March 2019 at Sei Mawang village, Sanggau District, the concentrations measured as shown below:</p> <table><tr><th>No</th><th>Parameter</th><th>Unit</th><th>Result</th><th>Threshold value*</th></tr><tr><td>1.</td><td>Dust</td><td>µg/Nm<sup>3</sup></td><td>12.5</td><td>230</td></tr><tr><td>2.</td><td>Nitrogen Oxide (NO<sub>x</sub>)</td><td>µg/Nm<sup>3</sup></td><td>11.0</td><td>400</td></tr><tr><td>3.</td><td>Sulfur Dioxide (SO<sub>2</sub>)</td><td>µg/Nm<sup>3</sup></td><td>8.5</td><td>900</td></tr><tr><td>4.</td><td>Carbon Monoxide (CO)</td><td>µg/Nm<sup>3</sup></td><td>10.3</td><td>30,000</td></tr></table>	No	Parameter	Unit	Result	Threshold value*	1.	Dust	µg/Nm <sup>3</sup>	12.5	230	2.	Nitrogen Oxide (NO <sub>x</sub> )	µg/Nm <sup>3</sup>	11.0	400	3.	Sulfur Dioxide (SO <sub>2</sub> )	µg/Nm <sup>3</sup>	8.5	900	4.	Carbon Monoxide (CO)	µg/Nm <sup>3</sup>	10.3	30,000	The implementation of this monitoring in compliant with the mean of monitoring defined herein.
No	Parameter	Unit	Result	Threshold value*																								
1.	Dust	µg/Nm <sup>3</sup>	12.5	230																								
2.	Nitrogen Oxide (NO <sub>x</sub> )	µg/Nm <sup>3</sup>	11.0	400																								
3.	Sulfur Dioxide (SO <sub>2</sub> )	µg/Nm <sup>3</sup>	8.5	900																								
4.	Carbon Monoxide (CO)	µg/Nm <sup>3</sup>	10.3	30,000																								

No	Aspect and Means of Monitoring	Monitoring Implemented	Compliance Status / Remarks																									
		<p>According to the air quality quarterly monitoring conducted in Sekadau Substation by Senayan Pembangunan in March 2019 at Mungguk village, Sekadau Hilir District, the concentrations measured as shown below:</p> <table><tr><th>No</th><th>Parameter</th><th>Unit</th><th>Result</th><th>Threshold value*</th></tr><tr><td>1.</td><td>Dust</td><td>µg/Nm<sup>3</sup></td><td>11.5</td><td>230</td></tr><tr><td>2.</td><td>Nitrogen Oxide (NO<sub>x</sub>)</td><td>µg/Nm<sup>3</sup></td><td>6.2</td><td>400</td></tr><tr><td>3.</td><td>Sulfur Dioxide (SO<sub>2</sub>)</td><td>µg/Nm<sup>3</sup></td><td>5.0</td><td>900</td></tr><tr><td>4.</td><td>Carbon Monoxide (CO)</td><td>µg/Nm<sup>3</sup></td><td>5.9</td><td>30,000</td></tr></table> <p>Note: *Ambient air quality Government Regulation No. 41/1999.</p> <p>Relevant air quality measurement result is shown in <b>Appendix 4.e</b>. Based on the above data, all parameters analyzed are well below the threshold values stipulated in the Government Regulation No. 41/1999.</p>	No	Parameter	Unit	Result	Threshold value*	1.	Dust	µg/Nm <sup>3</sup>	11.5	230	2.	Nitrogen Oxide (NO <sub>x</sub> )	µg/Nm <sup>3</sup>	6.2	400	3.	Sulfur Dioxide (SO <sub>2</sub> )	µg/Nm <sup>3</sup>	5.0	900	4.	Carbon Monoxide (CO)	µg/Nm <sup>3</sup>	5.9	30,000	
No	Parameter	Unit	Result	Threshold value*																								
1.	Dust	µg/Nm <sup>3</sup>	11.5	230																								
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3.	Sulfur Dioxide (SO <sub>2</sub> )	µg/Nm <sup>3</sup>	5.0	900																								
4.	Carbon Monoxide (CO)	µg/Nm <sup>3</sup>	5.9	30,000																								
6.	Waste Management (Construction Sites and Worker Camps)																											
	<ul style="list-style-type: none"><li>Ensure construction and domestic waste management collection, storage and disposal mitigations are in place.</li></ul>	<p>The contractor provides a separate trash bins for organic and non-organic wastes generated by construction activities and the worker's camp. The organic wastes will be piled up in the worker camp backyard, and non-organic wastes to Sei Kosak and Sekadau final disposal. Relevant evidences of this monitoring described are shown in <b>Appendix 2.f and 2.g</b>.</p>	<p>The implementation of this monitoring in compliant with the mean of monitoring defined herein.</p>																									
	<ul style="list-style-type: none"><li>Monitor effectiveness of mitigation on waste management</li></ul>	<p>Implementation of mitigation measures related to waste management has been well-implemented and effective based on the information and evidence provided in this</p>																										

No	Aspect and Means of Monitoring	Monitoring Implemented	Compliance Status / Remarks
		report.	
7.	<b>Roads and Infrastructure (Construction Sites, Access Roads, Relevant District Roads)</b>		
	<ul style="list-style-type: none"> <li>Ensure mitigation measures are in place with respect to road and infrastructure damage by heavy equipment transport (monthly during construction).</li> <li>Ensure any damage does is documented and repaired</li> <li>Monitor effectiveness of mitigation on road and infrastructure</li> </ul>	During this monitoring period, there was no heavy equipment mobilization because this activity was conducted in the previous semester.	Not applicable.
8.	<b>Encroachment (Gunung Condong in West Kalimantan, Areas adjacent to RoW)</b>		
	<ul style="list-style-type: none"> <li>Ensure mitigation measures are in place with respect to no hunting or wildlife collection, plant or timber collection, or lighting of fires, or possession of firearms, traps or snares, by workers.</li> </ul>	<ul style="list-style-type: none"> <li>Monitoring indicates that, the location of the substation on package 5 is entirely in the plantation land that has been bought by PLN.</li> <li>The contractor has delivered awareness related to this mitigation and there was no hunting or wildlife collection, plant or timber collection, or lighting of fires, or possession of firearms, traps or snares that has been reported. .</li> </ul> <p>Relevant evidence of this monitoring is shown in <b>Appendix 2.i.</b></p>	The implementation of this monitoring is in compliant with the mean of monitoring defined herein.
	<ul style="list-style-type: none"> <li>Monitor effectiveness of mitigation on encroachment impact.</li> </ul>	Monitoring indicated that the workers obey with the mitigation as there was no report related to hunting animals or wildlife collection, plant or timber collection, or lighting of fires, or possession of firearms, and traps or snares during this period.	The implementation of this monitoring is in compliant with the mean of monitoring defined herein.
9.	<b>Occupational and Community Health and Safety (Construction Sites and Worker Camps)</b>		
	<ul style="list-style-type: none"> <li>Ensure mitigation measures are in place with respect to construction phase and OHS and CHS have been developed and are being implemented</li> </ul>	The OHS for the construction of substations have been implemented as reported in Sub-chapter 3.1 of this report. However, the CHS was being reviewed and has not been effectively implemented at this reporting period.	The implementation of this monitoring is <b>partially compliant</b> with the mean of monitoring defined herein.
	<ul style="list-style-type: none"> <li>Monitor effectiveness of mitigation on</li> </ul>	The mitigation of OHS has been effectively implemented as evidenced because there was no accident reported during	

No	Aspect and Means of Monitoring	Monitoring Implemented	Compliance Status / Remarks
	Occupational and Community Health and Safety.	this monitoring period.	
<b>10.</b>	<b>Physical Cultural Resources (Construction Sites)</b>		
	<ul style="list-style-type: none"> <li>Ensure mitigation measures are in place with respect to implementation of chance-finding physical cultural resources awareness and applied if required.</li> </ul>	Monitoring indicates that mitigation measures on the chance-find of physical cultural resources are in place and applied if it's required. The workers have been informed related to this mitigation during toolbox meeting as shown earlier in <b>Appendix 2.j</b> .	The implementation of this monitoring is compliant with the mean of monitoring defined herein.
	<ul style="list-style-type: none"> <li>Monitor effectiveness of mitigation on physical cultural resources.</li> </ul>	This monitoring is not applicable because there were no physical cultural resources found in this reporting period.	Not applicable.

## 4.2 Packages 6 and 7: Tayan – Sanggau and Sanggau – Sekadau Transmission Lines

The Tayan - Sanggau and Sanggau - Sekadau transmission lines were in the construction phase with foundation and tower erection as the primary activity conducted in the Semester 1/2019 period. These construction works are under the responsibility of UIP KALBAGBAR. **Table 4.2** describes the environmental monitoring implemented by the Project at the construction phase, including its compliance status against the mitigation requirements defined in the Project's IEE (2016).

**Table 4.2 Environmental Monitoring Status of Package 6 and 7**

No	Aspect and Means of Monitoring	Monitoring Implemented	Compliance Status / Remarks
1.	Vegetation Clearing (RoW)		
	<ul style="list-style-type: none"><li>Ensure that vegetation removal mitigations are implemented.</li></ul>	Monitoring indicates that the vegetation removal mitigations are implemented, as shown earlier in <b>Appendix 3.a</b> .	The implementation of this monitoring is compliant with the mean of monitoring defined herein.
	<ul style="list-style-type: none"><li>Monitor effectiveness of vegetation removal control measures.</li></ul>	Implementation of mitigation measures related to vegetation removal control has been well-implemented and effective since the mitigation removal in construction site only used hand tools as shown earlier in <b>Appendix 3.a</b> .	
2.	Drainage (Substations)		
	The monitoring requirement defined under this subject is intended for the construction of substation, and therefore not applicable for that of transmission lines reported herein.		Not applicable.
3.	Soil Erosion (Tower and Substation Sites)		
	<ul style="list-style-type: none"><li>Ensure soil erosion control measures are applied.</li></ul>	Monitoring indicates that the soil erosion control mitigation measures are implemented, as shown earlier in <b>Appendix 3.b</b> .	The implementation of this monitoring is compliant with the mean of monitoring defined herein.
	<ul style="list-style-type: none"><li>Monitor effectiveness of soil erosion control measures.</li></ul>	Implementation of mitigation measures related to soil erosion control has been well-implemented and effective since there was no significant soil erosion occurred in the tower base that has been constructed which is monitored periodically as presented in <b>Appendix 4.f</b> .	
4.	Water Quality (Construction Sites and Storage Areas)		
	<ul style="list-style-type: none"><li>Ensure mitigation measures are in place with respect to oil, fuel and other hazardous materials storage, handling, disposal; and fueling and maintenance of equipment.</li></ul>	Monitoring indicates that the mitigation measures are in place with respect to oil, fuel and hazardous materials storage. To prevent oil spill contact with soil and water, the contractor has provided secondary containment as shown earlier in <b>Appendix 3.c</b> .	The implementation of this monitoring is compliant with the mean of monitoring defined herein.

No	Aspect and Means of Monitoring	Monitoring Implemented	Compliance Status / Remarks																																																				
	<ul style="list-style-type: none"><li>Monitor effectiveness of mitigation on water quality</li></ul>	Monitoring indicates that contractor already had procedure regarding with this mitigation. In the implementation, the hazardous waste was stored in contractors' temporary warehouse because the amount is relatively small.																																																					
5.	Air Quality (Construction Sites and Storage Areas)																																																						
	<ul style="list-style-type: none"><li>Ensure mitigation measures with respect to dust control, truck cleaning, load covering, and soil and spoil pile management are in place.</li></ul>	This mitigation measure is not applicable for the construction of transmission line because the excavated soil is used as a fill material when the tower construction has been completed.	Not applicable.																																																				
	<ul style="list-style-type: none"><li>Monitor effectiveness of mitigation on air quality.</li></ul>	<p>According to the air quality quarterly monitoring conducted by Senayan Pembangunan in March 2019 at Sanggau Subdistrict for package 6, the concentrations measured are shown below:</p> <table><tr><th rowspan="2">No</th><th rowspan="2">Parameter</th><th rowspan="2">Unit</th><th colspan="2">Result</th><th rowspan="2">Threshold values*</th></tr><tr><th>Settlement area</th><th>T.185</th></tr><tr><td>1.</td><td>Dust</td><td>µg/Nm<sup>3</sup></td><td>29.3</td><td>14.63</td><td>230</td></tr><tr><td>2.</td><td>Nitrogen Oxide (NO<sub>x</sub>)</td><td>µg/Nm<sup>3</sup></td><td>17.8</td><td>12.9</td><td>400</td></tr><tr><td>3.</td><td>Sulfur Dioxide (SO<sub>2</sub>)</td><td>µg/Nm<sup>3</sup></td><td>13.5</td><td>10.5</td><td>900</td></tr><tr><td>4.</td><td>Carbon Monoxide (CO)</td><td>µg/Nm<sup>3</sup></td><td>15.4</td><td>12.7</td><td>30,000</td></tr></table> <p>According to the air quality quarterly monitoring conducted by Senayan Pembangunan in March 2019 at Sekadau Subdistrict for package 7, the concentrations measured are shown below:</p> <table><tr><th rowspan="2">No</th><th rowspan="2">Parameter</th><th rowspan="2">Unit</th><th colspan="2">Result</th><th rowspan="2">Threshold value*</th></tr><tr><th>T.103</th><th>T. 117</th></tr><tr><td>1.</td><td>Dust</td><td>µg/Nm<sup>3</sup></td><td>16.2</td><td>15.6</td><td>230</td></tr><tr><td>2.</td><td>Nitrogen Oxide</td><td>µg/Nm<sup>3</sup></td><td>15.8</td><td>13.4</td><td>400</td></tr></table>	No	Parameter	Unit	Result		Threshold values*	Settlement area	T.185	1.	Dust	µg/Nm <sup>3</sup>	29.3	14.63	230	2.	Nitrogen Oxide (NO <sub>x</sub> )	µg/Nm <sup>3</sup>	17.8	12.9	400	3.	Sulfur Dioxide (SO <sub>2</sub> )	µg/Nm <sup>3</sup>	13.5	10.5	900	4.	Carbon Monoxide (CO)	µg/Nm <sup>3</sup>	15.4	12.7	30,000	No	Parameter	Unit	Result		Threshold value*	T.103	T. 117	1.	Dust	µg/Nm <sup>3</sup>	16.2	15.6	230	2.	Nitrogen Oxide	µg/Nm <sup>3</sup>	15.8	13.4	400	The implementation of this monitoring is in compliant with the mean of monitoring defined herein.
No	Parameter	Unit				Result			Threshold values*																																														
			Settlement area	T.185																																																			
1.	Dust	µg/Nm <sup>3</sup>	29.3	14.63	230																																																		
2.	Nitrogen Oxide (NO <sub>x</sub> )	µg/Nm <sup>3</sup>	17.8	12.9	400																																																		
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			T.103	T. 117																																																			
1.	Dust	µg/Nm <sup>3</sup>	16.2	15.6	230																																																		
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No	Aspect and Means of Monitoring	Monitoring Implemented						Compliance Status / Remarks
			(NO <sub>x</sub> )					
		3.	Sulfur Dioxide (SO <sub>2</sub> )	µg/Nm <sup>3</sup>	11.8	8.3	900	
		4.	Carbon Monoxide (CO)	µg/Nm <sup>3</sup>	13.3	10.2	30,000	
		Note: *Ambient air quality Government Regulation No. 41/1999. Based on the data, the detected values of all parameters were still well below the threshold value stipulated in the Government Regulation No. 41/1999. . The relevant air quality measurement result is shown in <b>Appendix 4.g</b> .						
6.	Waste Management (Construction Sites and Worker Camps)							
	<ul style="list-style-type: none"><li>Ensure construction and domestic waste management collection, storage and disposal mitigations are in place.</li></ul>	Monitoring result indicates that the construction sites have been provided with trash bags and the waste collected are disposed regularly to the final disposal site operated by Sekadau Regency. Relevant evidence of the monitoring described is shown in <b>Appendix 3.d and 3.e</b> .						The implementation of this monitoring is compliant with the mean of monitoring defined herein.
	<ul style="list-style-type: none"><li>Monitor effectiveness of mitigation on waste management.</li></ul>	Implementation of mitigation measures related to waste management has been well-implemented and effective based on the information and evidence provided in this report.						
7.	Roads and Infrastructure (Construction Sites, Access Roads, Relevant District Roads)							
	<ul style="list-style-type: none"><li>Ensure mitigation measures are in place with respect to road and infrastructure damage by heavy equipment transport.</li></ul>	The contractor has provided maps of the material transport process from port to warehouse and site that passes through settlement area location. The map regarding material transport processing has already submitted in the previous report.						The mitigation implemented with this regard is compliant with its requirement.
	<ul style="list-style-type: none"><li>Ensure any damage is documented and repaired.</li></ul>	The monitoring indicates that there is no significant road damage occurred and the contractor has repaired the damage road immediately, as shown in <b>Appendix 3.f</b> .						The implementation of this monitoring is compliant with the mean of monitoring defined herein.
	<ul style="list-style-type: none"><li>Monitor effectiveness of mitigation on road and infrastructure.</li></ul>	The access road is not always in the form of pavement, some of them still dirt road. The monitoring indicates that, if the damaged road occurred, it would be immediately repaired and						The implementation of this monitoring is in compliant with the mean of monitoring defined



No	Aspect and Means of Monitoring	Monitoring Implemented	Compliance Status / Remarks
		there is no complaint filed by community, as presented earlier in <b>Appendix 3.f</b> .	herein.
8.	<b>Encroachment (Gunung Condong in West Kalimantan, Areas adjacent to RoW)</b>		
	<ul style="list-style-type: none"><li>Ensure mitigation measures are in place with respect to no hunting or wildlife collection, plant or timber collection, or lighting of fires, or possession of firearms, traps or snares, by workers.</li><li>Monitor effectiveness of mitigation on Encroachment impact.</li></ul>	Monitoring indicates that the project site constructed to date is not located in the forest area, the contractor has provided the warning sign that hunting is prohibited during this project to avoid impact on ecological valuable sites. The awareness about the prohibition of hunting and wood collection is delivered by the contractor in the toolbox meeting, as shown earlier in <b>Appendix 3.g</b> , and there have been no cases with this regard reported.	The implementation of this monitoring is compliant with the mean of monitoring defined herein.
9.	<b>Occupational and Community Health and Safety (Construction Sites and Worker Camps)</b>		
	<ul style="list-style-type: none"><li>Ensure mitigation measures are in place with respect to construction phase and OHS and CHS have been developed and are being implemented.</li></ul>	<ul style="list-style-type: none"><li>The monitoring results show that the OHS plans have been developed and well implemented in the construction phase. The use of PPE is monitored before the work started. The inspection was conducted daily, as reported in the <b>Appendix 4.h</b>.</li><li>The statistical data from the contractor HSE report, informed that there is no accident occurred in this monitoring period, based on the related report in the <b>Appendix 4.h</b>.</li><li>The contractor has been informed workers related to this mitigation, such as using PPE and obeys the procedure in the construction area.</li><li>The Community Health, Safety, and Security Management Plan were provided by the contractor to cover the CHS procedure. After all, it still needs revision. Therefore, it could not be implemented yet.</li></ul> <p>The relevant evidence related to above description can be seen in <b>Appendix 3.i and 3.j</b>.</p>	The implementation of this monitoring is <b>partially compliant</b> with the mean of monitoring defined herein.
	<ul style="list-style-type: none"><li>Monitor effectiveness of mitigation on Occupational and Community Health and Safety.</li></ul>	The mitigation of OHS has been effectively implemented as evidenced there is no accident reported during this monitoring period.	
10.	<b>Physical Cultural Resources (Construction Sites)</b>		
	<ul style="list-style-type: none"><li>Ensure mitigation measures are in place with respect to implementation of chance find physical cultural resources awareness and</li></ul>	Based on the result of monitoring, there were findings related to physical cultural resources and had been completed by the contractor by conducting the Ngudas ceremony in the	The implementation of this monitoring is compliant with the mean of monitoring defined

No	Aspect and Means of Monitoring	Monitoring Implemented	Compliance Status / Remarks
	applied if required.	construction area after discussing with the local community and customary leader, as shown earlier in <b>Appendix 3.h</b> .	herein.
	<ul style="list-style-type: none"> <li>• Monitor effectiveness of mitigation on physical cultural resources.</li> </ul>	The contractor had handled the physical cultural resources following the existing procedures and has been reported in the contractor's monthly report. In March 2019, sacred cemetery had found in Palem Jaya Village and the Ngudas has been conducted in the T.158 construction site, as reported that shown in <b>Appendix 4.j</b> .	The implementation of this monitoring is compliant with the mean of monitoring defined herein.

## **Chapter 5 Findings on EMP Implementation and Required Corrective Actions**

As described in Chapters 3 and 4 on the environmental mitigation and monitoring conducted by the Project in the January to June 2019, related PLN units and contractors involved have primarily conducted these requirements according to the Project's IEE (2016) document. Most mitigation and monitoring implemented are in compliant with the requirements of IEE. However, few remains partially or not compliant due to unawareness, delay in the planning or operational constraints encountered.

The following table summarizes the environmental mitigation and monitoring that are not compliant or partially compliant identified in Chapters 3 and 4 of this monitoring report, as well as recommend corrective actions that should be implemented by PLN including its associated units and contractors. Corrective actions that have been closed out or remain pending should be reported in the next SAEMR of Semester 2/2019.

**Table 5.1 Findings on EMP Implementation and Required Corrective Actions**

No	Aspects / Findings	Corrective Actions	Responsible Parties (and Due Date)	Remarks
<b>Package 1: Bengkayang – Jagoibabang Transmission Lines (Operation Phase); Package 2: Bengkayang Substation (Operation Phase)</b>				
<b>Package 3: Bengkayang – Ngabang – Tayan Transmission Lines (Operation Phase); and Package 4: Ngabang – Tayan Substations (Operation Phase)</b>				
<b>3.</b>	<b>Occupational and Community Health and Safety (HVTL alignment, Substations)</b>			
	The current OHSMS of PLN's UP3B is also used as the community health & safety plan, and it does not include specific procedures on, among others: live power line, working at height, electromagnetic field; and community safety.	Review the current OHSMS to identify the gaps (in detail) against the requirements of the IEE; and subsequently close these gaps by developing the required procedures or other documents; and conduct and report the monitoring results in a formal manner supported by written evidence. Up to this reporting period, there is a procedure related to working at height that can be seen in <b>Appendix 5.a</b> , however for other procedures not yet available.	PLN UP3B KALBAR (Q2/2018)	<b>This aspect remains pending from the previous semesters.</b>
<b>Package 5: 150/20 kV Sanggau and Sekadai Substations (Construction Phase)</b>				
<b>1</b>	<b>EMP Incorporation into Detailed Project Design</b>			
	There is no evidence suggesting that monitoring has been conducted to ensure that EMP is incorporated into detailed design of the substation.	The EMP certainty monitoring has been incorporated when the detail design of Sanggau substation was carried out in the UKL-UPL document for Sanggau Substation. The examination parameter was following the table of content of environmental permit. The documentation related to above description is shown in the <b>Appendix 5.b</b> .	PLN UIP KALBAGBAR, PLN DIV HSSE (Q4/2018)	<b>Completed.</b>
<b>2.</b>	<b>Community Health and Safety</b>			
	The CHSP that had been provided by the contractor but still need some revision after reviewed by UPP.	After correction finished, the contractor will be submitted the approved CHSP in July 2019.	Siemens Indonesia (Q3/2019)	
<b>Package 6 &amp; 7: 150 kV Tayan – Sanggau &amp; Sanggau – Sekadai Transmission Line (Construction Phase)</b>				
<b>1.</b>	<b>Community Health and Safety</b>			
	The CHSP that had been provided by the contractor but still need some revision after reviewed by UPP.	After correction finished, the contractor will be submitted the approved CHSP in July 2019.	Krakatau Engineering (Q3/2019)	
	The houses and settlements in close location from the transmission line should be clearly spatially	Mapping of houses and settlements located close to the transmission lines has not been	PLN UIP KALBAGBAR (Q3/2019)	

No	Aspects / Findings	Corrective Actions	Responsible Parties (and Due Date)	Remarks
	mapped in order to better inventory and address the EMF (electro-magnetic fields) health and safety impact risk. The socialization program should follow in this at the mapped locations to address community concerns in regard to the EMF effects of transmission line operation.	conducted as the construction of the transmission lines from Tayan – Sanggau – Sekadau (Packages 6 and 7) is still progressing (as of June 2019).		

## Chapter 6 ADB Mission Findings

A joint review mission from ADB and PLN had been conducted in March 2019 to assess the Project's progress and constraints including implementation of the EMP as required by the Project's IEE (2016). Key findings of the Mission including corrective actions, schedule and the party assigned to implement these actions are presented in Table 6.1. The findings of the previous missions that have been completed in the SAEMR of the 2<sup>nd</sup> semester/2018 monitoring report are not presented in this 1<sup>st</sup> semester/2019 report.

**Table 6.1 ADB Mission Findings**

No	Findings	Responsible Party	Corrective Action (and status)
1	Conduct an EHS awareness session, particularly on the IEE requirements applicable for the substation operation. This action also applies for the operator of the transmission lines.	PLN (HSSE)	<b>Completed</b> –The EHS awareness session to the UP3B operator was conducted in May 16, 2019 for the operators related to this project, the documentation as seen in <b>Appendix 6.a</b> .
2	Provide a secondary containment and pit system to contain and control spills and leaks at the fuel storage area at Ngabang substation.	PLN (HSSE)	<b>Completed</b> - The design of the secondary containment system has been submitted in the previous report. The secondary containment and pit system have been constructed at Ngabang Substation (as reported in <b>Appendix 6.b</b> ).
3	Develop and implement a standardized solid waste management procedure including prohibition on waste burning at substation.	PLN (HSSE)	<b>Completed</b> - Solid waste has been cleared from the Ngabang substation. The procedures on waste management have been developed by UP3B. The documentation related to above description can be seen in <b>Appendix 6.c</b> .
4	Conduct a periodic site visit to transmission towers (already in the operation phase) to document natural vegetation regrowth in the proximity that may be previously disturbed at the time of construction (Jagoibabang-Benkayang TL and Bengkayang-Ngabang-Tayan TL).	UIP KALBAGBAR KITLUR Kalimantan	<b>Completed</b> – The foreman already conduct a periodic site visit to document natural vegetation regrowth and check the height of the vegetation in accordance with ROW requirement, as seen in <b>Appendix 6.d</b> .
5	Tayan – Clear the vegetation grown within the drainage system within the site perimeter so that it can function properly.	UIP KALBAGBAR	<b>Completed</b> - The vegetation grown within the drainage system in the Tayan SS has been cleared so it can function properly and will be monitored periodically. It shown in Appendix 6.e.
6	Tayan - Provide the valid license for the excavator.	UIP KALBAGBAR	<b>Pending</b> – The license for the operator of the excavator was not available. At this time the excavator already moved since there was no activity (soil cutting and filling) using the excavator.

No	Findings	Responsible Party	Corrective Action (and status)
7	Sanggau - Additional, temporary drainage channel and sedimentation trap should be constructed to control runoff towards the southeast corner of the substations site – at the construction period.	UIP KALBAGBAR	<b>Completed</b> – The contractor already added the length to the temporary drainage channel and sediment trap to control runoff towards the southeast corner of the substation site as shown in <b>Appendix 6.f</b> .
8	Sanggau - Submit the engineering drawing of the underground oil-water separator to be constructed for the transformer. The drawing should be reviewed by the Contractor and PLN prior to submission to ADB.	UIP KALBAGBAR	<b>Pending</b> – The engineering drawing of the underground oil-water separator has not submitted yet until this reporting period.
9	Sanggau - Conduct water spraying at the construction site on as required basis	UIP KALBAGBAR	<b>Completed</b> – The water spraying has been conducted periodically or when the dust is considered high, as shown earlier in <b>Appendix 2.e</b> .
10	Tayan, Sanggau and Sekadau - Community Health & Safety Plan for the substation construction/operation has not been developed.	UIP KALBAGBAR	Pending – Both of the contractors already submit Community Health, Safety and Security Management Plan regarding to CHSP, however still need revision and planned to be approved in mid of July. The related document is shown earlier in <b>Appendix 2.i and 3.j</b> .
11	Sekadau – Construct a temporary drainage ditch and sedimentation trap for controlling the runoff during the construction phase.	UIP KALBAGBAR	<b>Completed</b> – contractor already construct a temporary drainage ditch and sedimentation trap for controlling the runoff as shown in <b>Appendix 6.g</b> .
12	Sekadau – Conduct a geotechnical assessment to determine whether the large area of steep-slope wall will need some slope stabilization (e.g. retaining wall, engineered compaction).	UIP KALBAGBAR	<b>Completed</b> – Geotechnical assessment has been conducted by PLN as shown in <b>Appendix 6.h</b> .
13	Packages 6 and 7 – enforce the use of retaining wall/structures to mitigate the risk of landslides when working at the pits for constructing the tower foundation.	UIP KALBAGBAR	<b>Completed</b> – To mitigate the risk of landslide, the contractor was using structures (turap) in the entire excavated tower base, as shown in <b>Appendix 6.i</b> .
14	Develop a SOP to manage soil stockpiles and define rehabilitation activities that need to be conducted upon completion of tower construction.	UIP KALBAGBAR	<b>Completed</b> – SOP to manage soil stockpiles and the rehabilitation activities has been developed by contractor as shown in <b>Appendix 6.j</b> .
15	Overlay in a map the location of all tower sites (Packages 6 and 7) that are potentially located in forest and peatland areas prohibited for development according to the Forest/Peatland Moratorium Map Revision XV (issued by MOEF in December 2018).	UIP KALBAGBAR	<b>Partially Completed</b> – There is five towers site that indicated towers in the peat land area based on an indicative map according to the map issued by MOEF as shown in <b>Appendix 6.k</b> .
16	Develop SOP on the use a safe tripod system as lifting equipment.	UIP KALBAGBAR	<b>Completed</b> – Contractor has provide and develop SOP on the use a safe tripod system for lifting equipment as shown in <b>Appendix 6.l</b> .

No	Findings	Responsible Party	Corrective Action (and status)
17	Provide checklist or SOP on the compliance for the use of standard body harness (fall arrest system) adopted by PLN and its contractor.	UIP KALBAGBAR	<b>Completed</b> – Contractor has provide checklist inspection of body harness as shown in <b>Appendix 6.m</b> .
18	Provide a detailed review of the EHS and community risk and corresponding mitigation of PT Krakatau Engineering's EHS plan, particularly for the tower construction that will cross Kapuas River. The results of the review should be appropriately communicated to key Project's stakeholder.	UIP KALBAGBAR	<b>Partially Completed</b> – The related JSA (Job Safety Analysis) including the EHS of Packages 6 & 7 was submitted in the previous report. The socialization to the community will be conducted before the constructions begin. It is scheduled on semester 2/2019.



## **Chapter 7 Conclusions and Recommendations**

The 1<sup>st</sup> semester/2019, environmental monitoring report describes the environmental mitigation and monitoring conducted by the PLN West Kalimantan Power Grid Strengthening Project from January to June 2019 and evaluates its compliance against the Initial Environmental Examination (IEE) 2016.

UIP KALBAGBAR (in charge of the construction of packages 5 to 7) has been primarily implementing the environmental mitigation and monitoring, and therefore considered compliant with the environmental requirements and mission findings.

Nevertheless, few partial compliant with the requirements of IEE are identified as those related to, i.e., implementation of community health and safety aspects.

The key issues associated with the above shortfalls are incomplete evidence; shortage of competent project supervision and reporting.

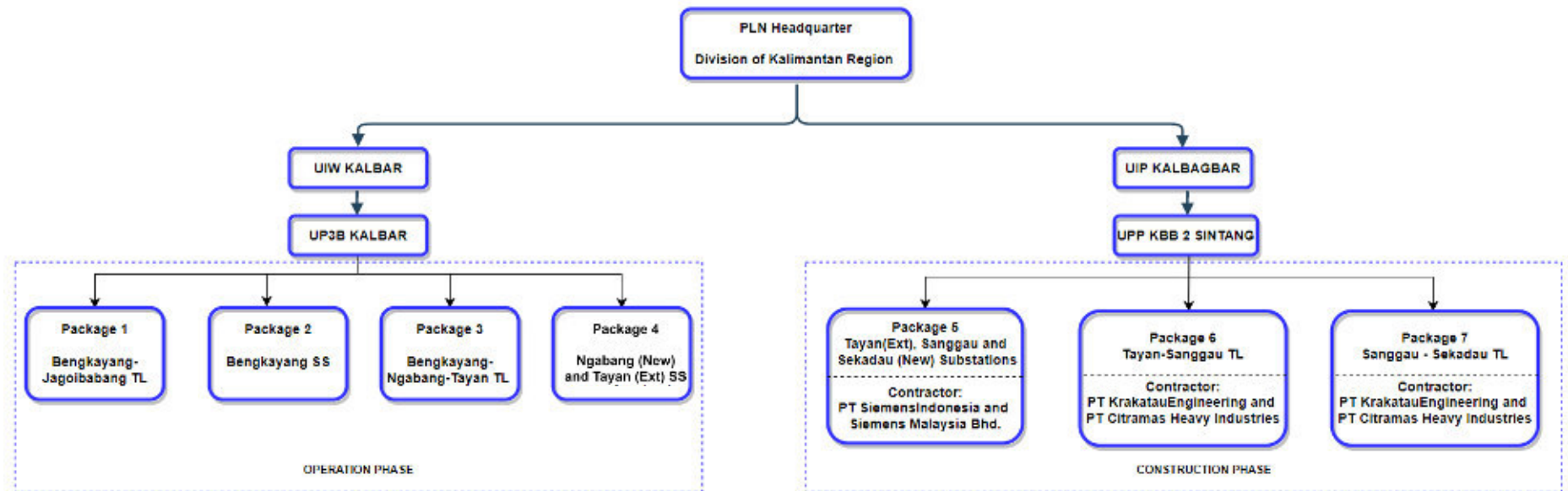
The contractors shall improve their performance in presenting monthly reports submitted to PLN, including complete and accurate data of the mitigation items following the requirements mentioned in the IEE 2016 documents completely. Also, complete evidence of the implementation of mitigation measures in the form of photos, supporting documents as well as relevant drawing.

Related PLN units in charge of the project and operations for West Kalimantan areas should cooperate closely in addressing the key non-compliances or outstanding items that have not been addressed since 2017.

## **APPENDIX 1**

### **PROJECT ORGANIZATION CHART**

## PROJECT ORGANIZATION CHART



**Note:**

TL : Transmission Line

SS : Substation

## **APPENDIX 2**

### **THE MITIGATION IMPLEMENTATIONS OF 150 kV TAYAN EXTENSION, SANGGAU AND SEKADAU SUBSTATIONS (CONSTRUCTION PHASE)**

## **2.a Vegetation Clearing**




**Attendance List of Toolbox Meeting for socializing the prohibition of herbicides use and burning vegetation and waste**

**SIEMENS**

**Tool Box Safety Meeting Record Sheet**  
**Lembar Rekaman Pertemuan Keselamatan "Tool Box"**

Date :  
 Tanggal : 17 Juni 2019

Reference No : No. Referensi :	Contract No : No. Kontrak : 0691.PJ/DAN.02.02/DIR/2017
Division, Department / Contractor Company: Divisi / Departemen / Perusahaan Kontraktor PT Bumi Kapuas daya sejahtera	Production Line / Project: Unit Produksi / Proyek 150 kV Sanggau New Project
Name of tool box meeting leader, Date and Signature Nama pemimpin tool box meeting: Tanggal dan Tanda	
Erfan Iswahyudi / Siemens	

No	Peserta / Participant		Tanda tangan Signature	Tool box meeting topic Topik pertemuan toolbox
	Name / Nama	Position / Jabatan		
1	Rusli	Mandor Suwidyad		larangan penggunaan herbisida
2				
3				
4				
5				
6				
7				larangan pembakaran sampah dan Vegetasi
8				
9				
10				
11	Rusli	Mandor 20 kV CB		larangan Berburu
12				
13				larangan merokok tanpa izin
14				
15				
16				
17				
18				
19				
20	Mamar	Mandor Genny		
21				
22				
23				
24				
25				
26				

## 2.a Vegetation Clearing



Prohibition of herbicide usage around the Sanggau Substation (April 15, 2019)



Prohibition of burning waste around the Sekadau Substation (April 16, 2019)

## 2.b Soil Erosion



Compacted land in Sanggau Substation (May 7, 2019)

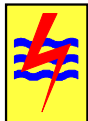


Soil Compaction in Sekadau Substation (February 5, 2019)



## **2.b Soil Erosion**

**The Checklist Related to Soil Erosion Control in Quarterly Report**



**PT PLN (PERSERO) PUSAT MANAJEMEN KONSTRUKSI**

**SISTEM MANAJEMEN K3**

**FORMULIR CHECK LIST INSPEKSI LINGKUNGAN**

**TEMPAT KERJA - PROYEK GARDU INDUK**





Tgl. Berlaku :

No. Dok. :

Edisi :

Hal :1 dari 2

## 2. EROSI TANAH

2A	Langkah-langkah pengendalian erosi tanah telah dimasukkan ke dalam desain rekayasa, (misalnya ketinggian kaki menara yang dapat disesuaikan). (Transmisi)	-	-	-	-	-
2B	<p>b) Area Gardu Induk:</p> <ul style="list-style-type: none"><li>Pemadatan tanah di daerah tanggul, harus ditanami kembali dengan rumput lokal, dan ditutupi dengan lapisan jerami padi atau bahan serupa untuk mencegah erosi.</li><li>Pembangunan perlindungan lereng (misalnya dinding penahan, bronjong dll). Dan penanaman semak belukar vegetasi dan rumput di kontur lereng yang terbuka.</li><li>area terbuka yang tidak digunakan akan ditutupi rumput dan tanaman kecil.</li></ul> <p>Langkah-langkah pengendalian erosi tanah akan secara teratur diperiksa dan dipelihara selama konstruksi dan sampai area tersebut stabil atau ditanami kembali.</p>	√		<p><b>Gardu Induk Sanggau</b></p> <p>Pada area gardu induk dilakukan pemadatan tanah dan di buatkan sediment trap (drainase temporary) sebagai upaya pengendalian erosi</p> <p><b>Gardu Induk Sekadau</b></p> <p>Pada area gardu induk dilakukan pemadatan tanah dan di buatkan sediment trap (drainase temporary) sebagai upaya pengendalian erosi</p>	<p>Lakukan perawatan berkala terhadap saluran sediment trap agar selalu bekerja efektif.</p>	<p>GI Sanggau</p>  <p>GI Sekadau</p> 

## 2.c Drainage



Drainage construction in the Sanggau Substation (June 24, 2019)



Drainage construction in the Sekadau Substation (May 29, 2019)



## 2.d Water Quality Impacts



Temporary oil and fuel storage at Sanggau SS (April 12, 2019)



A container wrapped with tarpaulin is used to prevent oil spill during oil changing in Sanggau SS (April 13, 2019)



Oil changing using hose in the Sekadau SS, to prevent oil spill using oil secondary containment underneath. (May 12, 2019)



Temporary oil and fuel storage at Sekadau SS equipped with sign, MSDS, spill kit, and fire protection system (Portable Fire Extinguisher type DCP) (April 24, 2019)

## 2.e Air Quality Impacts



The water spraying was conducted at the Sanggau SS construction site, since dust level is considered high (May 19, 2019)



The water spraying was conducted at the Sekadau SS construction site (April 22, 2019)



Scraping debris that fell when transporting soil material in Sanggau Substation (June 14, 2019)



Spraying water on the road to remove the remaining soil in Sanggau Substation (June 14, 2019)



## 2.e Air Quality Impacts



The truck that used as material transport in Sanggau SS was covered to prevent dust pollution (April 16, 2019)

## 2.f Construction Waste Management



Organic and non-organic waste has already separated in Sekadau SS (March 4, 2019)



Sekadau Final disposal facilities, in Sekadau-Sanggau street Km. 6, Sekadau Hilir Sub-district (March 4, 2019)



## 2.g Domestic Waste Management



Worker camp in Sekadau (May 23, 2019)



Sanitation facilities in the Sekadau's work camp (May 23, 2019)



Trash bin in Sanggau's worker camp (May 23, 2019)



Sekadau Final disposal in Sekadau-Sanggau st. Km. 6, Sekadau Hilir Sub-district (March 4, 2019)



## 2.h Roads and Infrastructure Impacts



The road access in Sanggau Substation (June 17, 2019)



The road access in Sekadau Substation (June 15, 2019)

## **2.i Encroachment into Protected Forests, Hunting, Wood Collection**

**Attendance List of Toolbox Meeting for socializing the prohibition of hunting and wood collection**

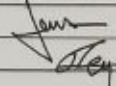

**SIEMENS**

**Tool Box Safety Meeting Record Sheet**  
**Lembar Rekaman Pertemuan Keselamatan "Tool Box"**

Date : 20 Mei 2019

Tanggal :

Reference No : No. Referensi :	Contract No : No. Kontrak :0691.PJ/DAN.02.02/DIR/2017
Division, Department / Contractor Company: Divisi, Departemen / Perusahaan Kontraktor:PT Bumi Kapuas daya sejahtera	Production Line / Project: Lini Produksi / Proyek:150 kV Sanggau New Project
Name of tool box meeting leader, Date and Signature Nama pemimpin tool box meeting: Tanggal dan Tanda	
Erfan Kusahjudi / Siemens	

No	Peserta / Participant		Tanda tangan Signature	Tool box meeting topic Topik pertemuan toolbox
	Name / Nama	Position / Jabatan		
1	Rusdi	Team Leader		larangan penggunaan herbisida  larangan pembakaran sampah dan Vegetasi  larangan berburu  larangan penebangan pohon.
2	Nasrun	Team Leader 20 kv CB		
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15	II Mamat /sumhyrd	Mandor SWITCH		
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				

## 2.i Encroachment into Protected Forest



Prohibition of hunting in Sanggau Substation (June 18, 2019)

## **2.j Impacts on Cultural Heritage Sites**

### **Attendance List of Toolbox Meeting for Socializing Related to Cultural Heritage**



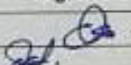

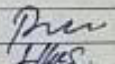

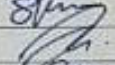


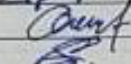


SIEMENS

**Tool Box Safety Meeting Record Sheet**  
**Lembar Rekaman Pertemuan Keselamatan "Tool Box"**

Date : 22 / 6  
 Tanggal : 19

Reference No. No. Referensi	Contract No. No. Kontrak : 0691.PJ/DAN 02.02/DIR/2017
Division, Department / Contractor Company Divisi, Departemen / Perusahaan Kontraktor: PT Mitra Pembangunan Kalbar	Production Line / Project Lini Produksi / Proyek: 150 kV Sekaduu New Project
Name of tool box meeting leader, Date and Signature Nama pemimpin tool box meeting, Tanggal dan Tanda	

DKA.

No	Peserta / Participant		Tanda tangan Signature	Tool box meeting topic Topik pertemuan toolbox
	Name / Nama	Position / Jabatan		
1	Dian	Tl Steel roof frame		01 JSA Drainase 02 Dilarang Berburu 03 Cagar Budaya (Pengertian, Jenis)
2	Santo	Steel roof frame workers		
3	Sefri	Steel roof frame workers		
4	Rabuan	Steel roof frame workers		
5	Hendra	Steel roof frame workers		
6	Pak De	Steel roof frame workers		
7	Arman	Team Leader Drainage		
8	Edi	Drainage Workers		
9	Madi	Drainage Workers		
10	Darul	Drainage Workers		
11	Santo	Drainage Workers		
12	Irvan	Drainage Workers		
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				

## 2.j Impacts on Cultural Heritage Sites



Awareness regarding cultural heritage and resources during toolbox meeting in Sekadau Substation  
(June 22, 2019)

## 2.k Occupational Health and Safety



PPE usage for the workers (June 24, 2019)



First aid kit (June 10, 2019)

EHS STATISTIC BOARD	
Project name	ADB P5 PROJECT
Location	SEKADAU KALBAR
Month	JUNE
Year	2019
Total manpower this month	50
Total manhours this month	5058
Total manhours during project	71188
No. of Fatality	0
No. of Lost Time Case	0
No. of Restricted Work Case	0
No. of Medical Treatment	0
No. of Property Damage	0
No. of Environmental Case	0
No. of First Aid Case	0
No. of Near-miss	1

EHS statistic board (June 18, 2019)

**ERP EMERGENCY RESPONSE PLAN FOR EVALUATION**  
**RENCANA TANGGAP DARURAT UNTUK EVALUASI**  
 For project / untuk proyek :

**ALL EMPLOYEES / WORKERS:**  
 This ERP is in place to save your life. Please follow them strictly.

**IF YOU DISCOVER A FIRE OR OTHER EMERGENCY ISSUES:**

- Identify your workplace & it is safe before you enter panic.
- Sound the whistle in case of emergency.
- Inform security or Emergency Response Team, or First Aid in case of injury.
- Use fire extinguisher to put out fire, if safe to do so.

**HEARING THE WHISTLE OR BEING CALLED TO EVACUATE:**

- Keep calm.
- Shut down all machines before you leave the working area.
- Close all telephone conversations immediately.
- Assume responsibility over your values during evacuation and assembly.
- Escape through the nearest emergency exit and assemble at the meeting point.
- Contractor shall be available under the direction of Emergency Team Coordinator and maintain all working area.
- In case of fire and smoke in indoor area, stay down in the floor.
- Emergency Team Coordinator will direct all workers to evacuate and the evacuation team will conduct through search of all areas of the premises to ensure all workers have been evacuated.

**THE EMERGENCY ASSEMBLY POINT IS IN FRONT OF SECURITY POINT.**

**PLEASE FOLLOW BELOW SIGN TO FIND THE EVACUATING ROUTE AND FIND THE ASSEMBLY POINT.**

**SELURUH KUTUMAH / PERUSAHA:**  
 ERP ini dibuat untuk melindungi jiwa anda. (harap ikuti!)

**JIKA ANDA MENGETAHUI TERJADINYA KESEKAMAN ATAU KEADAAN DARURAT LAINNYA :**

- Identifikasi tempat kerja anda sebelum anda memasuki keadaan darurat.
- Bunyikan peluit dalam keadaan darurat.
- Melaporkan segera kepada tim tanggap darurat atau petugas P3K pada kasus cedera.
- Gunakan APAR untuk memadamkan api jika aman untuk melakukannya.

**BILA MENDENGAR PELUIT ATAU RANGGILAN UNTUK DIKLUKASI:**

- Tetaplah tenang.
- Matikan semua mesin sebelum anda meninggalkan tempat kerja.
Matikan segera semua percakapan melalui telepon.
- Bersikaplah penuh tanggung jawab atas semua aset pribadi dan perusahaan.
- Evakuasi melalui pintu darurat terdekat dan berkumpul di tempat yang ditentukan.
- Konfirmasi kehadiran semua anggota dari perusahaan ke tanggap darurat dan berkumpul di tempat yang telah ditentukan.
- Dalam keadaan kebakaran, jangan berdiri di lantai, merangkai di lantai.
- Konfirmasi tim tanggap darurat akan mengkonfirmasikan dengan Anda dan memastikan bahwa semua orang telah dievakuasi.

**TEMPAT TITIK BERKUMPUL DIBARAH DI DEPAN POS KEAMANAN.**

**HARAP IKUTI PETUNJUK DI BAWAH INI UNTUK MENGETAHUI JALUR EVAKUASI DAN BERKUMPUL. TITIK TITIK BERKUMPUL.**

Emergency response procedures (June 18, 2019)



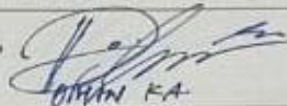
## **2.k Occupational Health and Safety**

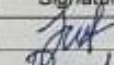
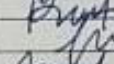
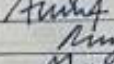
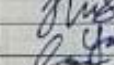
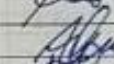

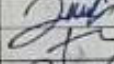


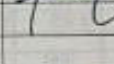
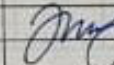
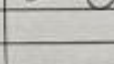
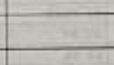
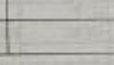
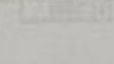




**Training attendance list regarding to HIV/AIDS awareness**

**SIEMENS**
**Tool Box Safety Meeting Record Sheet**  
**Lembar Rekaman Pertemuan Keselamatan "Tool Box"**

 Date :  
 Tanggal : 28/06/2019.

Reference No. No. Referensi :	Contract No. No. Kontrak : 0691.PJ/DAN.02.02/DIR/2017
Division, Department / Contractor Company Divisi, Departemen / Perusahaan Kontraktor PT Mitra Pembangunan Kalbar	Production Line / Project Lini Produksi / Proyek 150 kV Sekedau New Project
Name of tool box meeting leader, Date and Signature Nama pemimpin tool box meeting, Tanggal dan Tanda Tangan	

  
 PT MITRA K.A.

No	Peserta / Participant		Tanda tangan Signature	Tool box meeting topic Topik pertemuan toolbox
	Name / Nama	Position / Jabatan		
1	Dang dang	Team Leader Building		" Heat Stress wajib sedia air mineral saat bekerja
2	Rahmat	Building worker		
3	Sukisman	Building worker		
4	Anwan	Building worker		
5	Restu	Building worker		
6	Long Inu	Building worker		" HIV / AIDS (pengenalan, bahaya, pencegahan).
7	Yandi	Building worker		
8	Muza	Building worker		
9	Ali	Building worker		
10	Acun	Building worker		
11	Agung	Building worker		" Dilarang Membakar Sampah.
12	Teguh	Building worker		
13	Nurdin	Building worker		
14	Puad	Building worker		
15	Risal	Building worker		
16	Darmawan	Building worker		
17	Koba	Building worker		
18	Ruhe	Building worker		
19	Rio	Building worker		
20	Iwan	Building worker		
21		Building worker		
22		Building worker		
23		Building worker		
24		Building worker		
25		Building worker		
26		Building worker		

## **2.1 Community Health and Safety**

### **PT Siemens Indonesia's Community Health, Safety and Security Management Plan**

Community health, safety and Security Management Plan /  
Rencana Manajemen Kesehatan, keselamatan dan Keamanan Masyarakat

Project name / Nama projek : Package 5 Design, Supply, Installation, Testing  
and Commissioning of 150kV Substation at  
Tayan, Sanggau and Sekadau


Contract No. /No. Kontrak : 0691.PJ/DAN.02.02/DIR/2017

End Customer / Pelanggan Akhir : PT. PLN Persero

Customer / Pelanggan : PT. PLN Persero

Location/lokasi : Tayan,Sanggau and Sekadau West Kalimantan

Doc. Issue date/ tanggal pengeluaran dok.: 12 April 2019

	Name, Company and Organization Unit	Signature	Date
Prepared by	Rahmat Amar		15/3
Prepared by			
Reviewed by			
Reviewed by			
Reviewed by			
Reviewed by			
Approved by	Heru Aprijadi		15/3
Approved by	APDIPUS Aqshani (PT PLN UP2)		
Approved by	ALVIN ROSY F (PT PLN PUSMANPRO)		

Distribution List / List Distribusi	Name / Nama
RC-ID EM TS	Jitendra Pratap Singh
RC-ID EM TS PE	Patrick Hirter

Unrestricted No Contract: 0691.PJ/DAN.02.02/DIR/2017	No. Copy: 00	Page: 1 of 17
(4)TYN-SGG-SKD-L84041-G00-	No. Revision: 00	Issue Date: 12 April 2019

## 2.1 Community Health and Safety



Emergency vehicle services in Sanggau Substation (June 18, 2019)



Emergency vehicle services in Sekadau Substation ( June 18, 2019)



Provide Fire Extinguisher in Sanggau Substation (April 4, 2019)



Fire Extinguisher Inspection in Sekadau Substation (May 26, 2019)



## 2.1 Community Health and Safety



Safety sign around construction site in Sanggau substation (June 25, 2019)



Safety sign around construction site in Sekadau substation (May 10, 2019)

## **APPENDIX 3**

### **THE MITIGATION IMPLEMENTATIONS OF 150 kV TAYAN – SANGGAU – SEKADAU TRANSMISSION LINE (CONSTRUCTION PHASE)**

### 3.a Vegetation Clearing



The remaining vegetation removal woods will be used by the people around the project (May 2, 2019)



The remaining vegetation removal woods will be used by the people around the project in T. 99 (May 5, 2019)



Warning sign related to the prohibition of herbicide and hunting animal in T. 164, Parindu Village (June 18, 2019)



### **3.a Vegetation Clearing**

**Attendance list of toolbox meeting for socializing prohibition of herbicides use, hunting animal  
and burning vegetation and waste**

Tanggal : 27/5/2019  
Lokasi : T.93  
Waktu : 11.00 - 12.00

Proyek : SUTT 150 kv Sanggau - Sekadau  
Civil work  
Jumlah Peserta : 5 orang  
Disampaikan oleh : Dwi Angling - S

[illegible]

Tembusan :  
1. Project Manager  
2. Arsip

Signed 27/5/2019

Dwi Agung Subrata  
HSE/ Supervisor

### 3.b Soil Erosion



Tower adjusting was done in the location that the land is steep, it located in T.133 Binjai Village  
(April 24, 2019)



The vegetation cut was used to protect disturbed ground in T. 137R Sei Ringin Village

### **3.b Soil Erosion**

**The Soil Erosion Report in the Contractor's Monthly Report**





PT. PLN  
(Persero)

## West Kalimantan Power Grid Strengthening

Project Package 6 : Design, Supply, Installation and Commissioning Of 150 Kv Overhead

Transmission Line Tayan - Sanggau

REPORT OF HEALTH SAFETY ENVIRONMENTAL (HSE) MONITORING



ENGINEERING & CONSTRUCTION

Consortium PT. KE - CHI

### CONSTRUCTION PHASE PACKAGE 6

Period June 2019

No	PACKAGE	LOCATION	DESCRIPTION	ENVIRONMENTAL PARAMETERS IMPACT	MAGNITUDE OF IMPACT	ENVIRONMENTAL MONITORING AND MANAGEMENT EFFORT	PERIOD OF ENVIRONMENTAL MONITORING
				c. Soil Erosion	Tidak ditemukan, Soil erosion yang terjadi pada area tower.	Pemantauan yang dilakukan berupa identifikasi area pekerjaan pondasi pada tower, identifikasi berupa kondisi lahan atau tanah, kondisi kemiringan lahan, kondisi vegetasi sekitar dan kondisi penggunaan lahan sekitar towe. Jika dibutuhkan penggunaan turap atau retaining wall akan diterapkan berdasarkan teknis akan didiskusikan dengan team engineering.	Selama konstruksi berlangsung / laporan setiap 1 bulan
				d. Water Impact Quality	Tidak ditemukan pencemaran air pada area proyek Tower 05A, 07A, 19, 50, 51, 52, 53, 55, 57, 58, 59, 60, 61, 62, 63, 64, 72, 73, 80, 83, 84, 86, 89, 90, 152, 153, 158, 163, 168, 167, 169, 170, 171, 173, 176, 187, 188, 189, 190, 197, 198 dan 199. Lokasi area proyek berada di perkebunan dan semak belukar serta sedikit yang berdekatan dengan sumber air. Jika ada lokasi yang berdekatan dengan sumber air terlebih air yang dimanfaatkan masyarakat kita selalu melakukan pemantauan dan pengelolaan area konstruksi sehingga tidak berdampak terhadap pencemaran air.	Tidak ada pemantauan khusus. Jika lokasi berdekatan dengan sungai, potensi pencemaran yang berasal dari tumpahan minyak, oil dll tidak akan terjadi karena penempatan material B3 ditempatkan pada secondary containment serta berhati-hati dalam pengisian BBM.	Selama konstruksi berlangsung / laporan setiap 1 bulan
				e. Air Quality Impact	Ditemukan pada tower 05A, 62, 83, 84, 86, 89, 163, 168, 176, 189 dan 197 aktifitas pada tower ini yaitu pengecoran dimana pencemaran udara dihasilkan dari debu semen pada saat penuangan ke mesin molen maupun saat mixing. Selain dari pada itu paparan asap dari mesin molen selama dioperasikan. Sifat pencemaran ini hanya lingkup area tower saja, karena jauh dari pemukiman warga.	Pemantauan yang dilakukan berupa mewajibkan menggunakan masker kepada pekerja terutama pekerja yang mengoperasikan mesin molen.	Selama konstruksi berlangsung / laporan setiap 1 bulan



PT. PLN  
(Persero)

## West Kalimantan Power Grid Strengthening

Project Package 7 : Design, Supply, Installation and Commissioning Of 150 Kv Overhead

Transmission Line Sanggau Sekadau

REPORT OF HEALTH SAFETY ENVIRONMENTAL (HSE) MONITORING



ENGINEERING & CONSTRUCTION  
Consortium PT. KE - CHI

### CONSTRUCTION PHASE PACKAGE 7

Period June 2019

				b. <i>Increased Noise</i>	<p><b>Ditemukan pada Tower 86, 131, 132, 143 dan 146</b> karena pekerjaan pengecoran menggunakan mesin molen. Berdasarkan referensi pengambilan sampel pada package 6 tower 107 besarnya tingkat kebisingan yang dihasilkan oleh aktifitas mesin sebesar 87.5 dBA. Rata rata aktifitas pekerjaan ini dilakukan dalam 6 jam sehari. Selain dari pada itu kebisingan juga dihasilkan oleh aktivitas vegetation clearing jalur ROW pada tower 132, 133 dan 135. Saat ini belum ada pengukuran kebisingan yang dihasilkan dari aktivitas tersebut, akan tetapi berdasarkan referensi jurnal tingkat kebisingan yang dihasilkan oleh alat pemotong mesing (chainsaw) yaitu 118.77 dB dan jika dibandingkan dengan tingkat baku mutu kebisingan melebihi NAB.</p>	<p>Berdasarkan lampiran PERMENAKER no 5 tahun 2018 NAB Intensitas kebisingan yang dengan waktu paparan yang diperbolehkan berdasarkan nilai intensitas kebisingan saat pekerjaan pengecoran yaitu 4 jam. Aplikasi lapangan dengan waktu terlama proses pengecoran yaitu 6-8 jam, dengan waktu istirahat 30'-1 jam masih dalam skala tingkatan aman. Kemudian pada saat pekerjaan site clearing ROW dengan intensitas 118.77 dBA harus dibantu dengan APD berupa earplug yang dapat mereduksi intensitas kebisingan 20-25 dBA, dengan seperti itu didapatkan nilai intensitas kebisingan menjadi 93 dBA dengan waktu pekerjaan yang diperbolehkan selama 1-2 jam dengan catatan boleh dilanjutkan tetapi harus mengatur waktu istirahat. Sedangkan dampak untuk kebisingan terhadap pemukiman tidak ada karena jarak area jauh dari pemukiman. Jadi tingkat kebisingan berdasarkan pemantauan yang dilakukan masih dalam NAB normal. Kemudian jika dibandingkan dengan ambang batas yang ditetapkan oleh KEM-48/MENLH/11/1996 pada area perumahan atau pemukiman yaitu 55 dBA.</p>	Selama konstruksi / laporan setiap 1 bulan
				c. <i>Soil Erosion</i>	<p><b>Tidak ditemukan</b>, Soil erosion yang terjadi pada area tower.</p>	<p>Pemantauan yang dilakukan berupa identifikasi area pekerjaan pondasi pada tower, identifikasi berupa kondisi lahan atau tanah, kondisi kemiringan lahan, kondisi vegetasi sekitar dan kondisi penggunaan lahan sekitar tower. Jika dibutuhkan penggunaan turap atau retaining wall akan untuk alasan teknis akan didiskusikan dengan team</p>	Selama konstruksi berlangsung / laporan setiap 1 bulan



### 3.c Water Quality Impacts



Temporary hazardous waste shelter located in Keadu Village (January 16, 2019)



Oil and other hazardous materials was stored with temporary bunds (January 16, 2019)



Refueling of machinery using external drum to prevent oil spill contaminate soil in T.203, Sebarra Village (April 29, 2019)



Under the drum engine for stringing work is covered by tarp to prevent oil spill in T.130 (March 24, 2019)

### 3.d Construction Waste Management



Trash bags that are distinguished based on type of the waste in T. 57 Keadu Village, Sanggau District (June 19, 2019)



Waste collected, routinely dispose to the nearest final disposal (March 18, 2019)



Waste disposal to Sei Kosak disposal in Sanggau District (March 18, 2019)



Waste disposal to Sekadau disposal in Sekadau District (March 18, 2019)



### 3.e Domestic Waste Management



The condition of the stringing worker camp in Binjai Village, Sanggau District (March 25, 2019)



Trash already provided in the worker camp (March 25, 2019)



Waste disposal to Sei Kosak final disposal in Sanggau District (March 18, 2019)



Sanitation conditions in the worker camp that rented from the local community (March 25, 2019)

### 3.f Roads and Infrastructure Impacts



The contractor has been repaired the access road in Empawek Village (May 8, 2019)



The contractor has been repaired the access road to T. 121 in Peniti Village, Sanggau District (June 19, 2019)

**3.g Encroachment into Protected Forest, Hunting and Wood Collection**

**Attendance List of Toolbox Meeting for Hunting and Wood Collection**



PT. PLN  
(Persero)



ENGINEERING & CONSTRUCTION  
Consortium PT. KE - CHI

## SAFETY INDUCTION REPORT

Tanggal : 24/6/2019  
Lokasi : T53  
Waktu : 09.00 - Selesai

Proyek : Perchaya 6 Tayau-Sagayan

Jumlah Peserta : 3

Disampaikan oleh : Ani Agnes Subroto

URAIAN YANG DISAMPAIKAN	NAMA	PARAF
1. Kebijakan HSE PT. KE (SMKE & SMSEL)	Purces ANJAL	Prof
2. Peraturan terkait dengan HSE	Kuyin	Amme
3. Pengendalian faktor bahaya	Kicwang	Fofz.
4. Penggunaan APD		
5. Peraturan perlindungan lingkungan		
a. pengolahan sampah		
b. larangan berbau		
c. larangan membuang sampah		
d. larangan menggunakan herbisida		
e. larangan melakukan pencemaran air, tanah dan udara		
7. Dilarang melakukan penambangan liar		
Dikur area project		

**Komitmen Karyawan :**

1. Karyawan telah memahami kebijakan HSE PT. Krakatau Engineering & peraturan terkait HSE
2. Karyawan sanggup mematuhi dan menjalankan syarat, ketentuan yang telah ditetapkan berdasarkan kebijakan dan peraturan yang terkait dengan HSE
3. Karyawan sanggup menerima sanksi jika melakukan pelanggaran terhadap peraturan yang telah ditetapkan

Tembusan :

1. Project Manager
2. Arsip

Signed 24/6/2013

  
HSE Koordinator

### **3.h Impacts on Cultural Heritage Sites**

#### **Attendance List of Toolbox Meeting for Socializing Related to Cultural Heritage**

## TOOLBOX MEETING

Tanggal : 20 Juni 2019  
Lokasi : T. 53  
Waktu : 08.00

Package	: <b>SUTT PACKAGE #7 SANGGAU - SEKADAU</b> <b>WEST KALIMANTAN</b>
Jumlah Peserta	: <b>6</b>
Disampaikan oleh	: <b>Ariya A</b>

MATERI YANG DISAMPAIKAN	NAMA	PARAF
- House Keeping	IGHUSIUS JIMAN	<i>[Signature]</i>
- Pura tua dan Perundagan k3	RICONG	<i>[Signature]</i>
- Kesehatan Lapangan	JUMBING	<i>[Signature]</i>
- Pelestarian Penemuan Bendera bersejarah	ANJUL	<i>[Signature]</i>
- Pelestarian Cagar Budaya	LUKAS	<i>[Signature]</i>
	AYIN	<i>[Signature]</i>
	JUSU	<i>[Signature]</i>

embusan :  
Project Manager  
Arsip

Koblenz 20-06-2019

HSE Manager



### 3.h Impacts on Cultural heritage Sites



Ngudas ceremony was conducted because the sacred cemetery is located near the tower area in T.158 Palem Jaya Village, Sanggau District (April 2, 2019)



Ngudas ceremony was conducted because the sacred cemetery was found near T.168 Sebarra Village, Sanggau District (April 7, 2019)



### **3.h Impacts on Cultural Heritage Sites**

**Acknowledgment related to Discussion prior Ngudas Ceremony**

Pada hari ini hari Senin, tanggal 26 November 2018, telah dilaksanakan mupakat berkaitan dengan pengerjaan jalur Sutt yang melewati dusun Layau, Desa Palem Jaya. Berkaitan dengan hal tersebut diatas kami telah sepakat/menyampaikan prihal adat guna untuk mengibau tanam tumbu, lokasi bantan (Tembawang Keladan yang dianggap sakral oleh masyarakat dusun Layau). Adapun rincian peradat yang digunakan untuk kegiatan tersebut diatas adalah sebagai berikut.

No	NAMA BARANG	SATUAN	HARGA	JUMLAH
1.	BABI			
2.	ANJING			
3.	AYAM KAMPUNG			
4.	TUAK			
5.	BERAS			
6.	BERAS KETAN (PULUT)			
7.	GULA			
8.	KOPI/TEH			
9.	TELUR			
10.	LILIN			
11.	BUMBU			
12.	KELENGKAPAN PERADAT, PEMBUAR PERABOT ADAT			
Total				

Demikian daftar rincian adat mengibau tanam tumbuh warga dusun layau (termasuk Tembawang Keladan yang dianggap sakral oleh masyarakat dusun Layau) ini kami sampaikan atas kerjasama yang baik kami ucapkan terima kasih.

Yang mengajukan :

1. Kawil Layau B. Manah

3. RT 02 K. AKON

2. RT 01 \_\_\_\_\_

4. RT 03 H. puyu

Perwakilan Warga Terkenal Jalur SUTT.

G. GULU

Mengesahkan

Kadat Dusun Layau

Ist. Rahmah

Mengetahui

Pj. Kepala Desa Palem Jaya

Manah G. Gul  
Nip. 19860617 201001 003

# DAFTAR HADIR MUYAWARAH

Tanggal 26 November 2018

No	Nama	Jabatan	Tanda Tangan
1	K. AKON	R.T. 02	
2	T. S. Cuweh	KADAO	
3	G. Guul	Masyarakat	
4	D. Manalu	Kawil	
5	A. puyu	RT 03	
6	Guradi	Masyarakat	
7	A. Sued	Masyarakat	
8	M. Pang	Rt. 01	
9			
10			
11			
12			
13			
14			
15			

### **3.i Occupational Health and Safety**

#### **PT Krakatau Engineering Job Safety Analysis**



# JOB SAFETY ENVIRONMENT ANALYSIS



TGL/ BLN/ TH :	01 Juni 2019	PERUSAHAAN / COMPANY :	PT. Krakatau Engineering	Diperiksa Oleh :	Nama	Tanda Tangan
DISIAPKAN OLEH/ PREPARED BY	PACKAGE & LOKASI PEKERJAAN	:	Package 6 Tayan - Sanggau	1. Site Manager PT. Krakatau Engineering	1. (Yudi H-1)	1. (Signature)
				2. HSE Koordinator PT. Krakatau Engineering	2. (Ani Agus S)	2. (Signature)
NAMA / NAME	AREA TOWER	:	All Area Construction Tower	3. Supervisor PT. Krakatau Engineering	3. (Bardi Kurniawan)	3. (Signature)
				Disetujui Oleh :		
				1. UPP	1. (Signature)	1. (Signature)
NOMOR JSA / JSA NUMBER	PERPANJANGAN	:	18/JSA-KE/PLN/P6/6/2019	2. PUSMANKON	2. (Angga Satir)	2. (Signature)
					2. (Signature)	2. (Signature)
Jenis Pekerjaan / Scope Of Work :	Persiapan, Site Clearing/ROW, Penggalian, Mobilisasi, Fabrication, Pembesian, Bekisting, Pengecoran and Backfill	APD YANG DIPERLUKAN : <input type="checkbox"/> Topi Keselamatan <input type="checkbox"/> Sepatu Keselamatan <input type="checkbox"/> Pakaian Pelindung <input type="checkbox"/> Pelindung Badan <input type="checkbox"/> Sarung Tangan <input type="checkbox"/> Pelindung Pernafasan <input type="checkbox"/> Pelindung Muka <input type="checkbox"/> Pelindung Pendengaran <input type="checkbox"/> Pelindung Diri Terhadap Radiasi <input type="checkbox"/> Pelindung Mata				

NO	Urutan Langkah-langkah Pekerjaan / Squence Of job Steps	Bahaya potensial / Potential Hazard	Tindakan Pencegahan / Preventive Measures	Pelaksanaan Oleh/Action By	Diperiksa Oleh
LANGKAH KERJA					
1	Pekerjaan Persiapan	<ul style="list-style-type: none"> <li>Kekurangan alat kerja dan APD yang akan digunakan</li> <li>Peralatan, kendaraan dan APD yang digunakan tidak standar</li> <li>Bekerja tanpa ijin</li> </ul>	<ul style="list-style-type: none"> <li>Pastikan peralatan kerja sudah dilengkapi sebelum pekerjaan dimulai</li> <li>Melakukan check list peralatan dan APD yang diperlukan</li> <li>Inspeksi kelayakan semua APD, kendaraan, peralatan, dan alat bantu kerja sesuai dengan standar PT. PLN sebelum pekerjaan dimulai</li> <li>Ijin kerja disiapkan sebelum pekerjaan dimulai</li> <li>Dokumen pendukung (JSA dan drawing) izin kerja dipenuhi sesuai dengan persyaratan kerja</li> <li>Melakukan toolbox meeting dan safety talk untuk semua pekerja yang terlibat</li> </ul>	PT.KMP	PT. KE (Site Manager, HSE), PUSMANPRO dan PT.PLN
2	Site Clearing Area Tower/ ROW	<ul style="list-style-type: none"> <li>Sengatan matahari dan dehidrasi</li> <li>Tertusuk duri atau ranting</li> <li>Terpotong alat potong mesin</li> <li>Terpapar kebisingan mesin potong</li> <li>Tergores/ terpotong alat potong manual</li> <li>Tersengat binatang/ lebah</li> </ul>	<ul style="list-style-type: none"> <li>Pastikan pekerja disediakan air minum yang cukup</li> <li>Pastikan pekerja menggunakan APD lengkap</li> <li>Penggunaan APD dan penerapan metode kerja yang benar</li> <li>Menggunakan ear plug</li> <li>Penggunaan APD dan penerapan metode kerja yang benar</li> <li>Menggunakan APD dan seragam lengan panjang</li> </ul>	PT.KMP	PT. KE (Site Manager, HSE), PUSMANPRO dan PT.PLN

THINK SAFETY. BEFORE YOU START