# **New Planting Procedure - Summary of Assessments**

<b>RSPO</b> Roundtable on Sustainable Palm Oil	<b>KLK</b>
NPP Reference Number:	RSPO-PC-FQ1-NPP-AUDRPFIN-ms-RB for RSPO New Planting Procedure (NPP) 2021
Country of the NPP submission:	Indonesia
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#### Section 1: General Information

In this report it is intended that PT Putra Bongan Jaya (PT PBJ) - extention areas and Koperasi Produsen Ingkang Muntis Jaya and Koperasi Sawit Gusik Mandiri Sejahtera with partnership areas (scheme smallholder areas) will carry out New Planting Procedure (NPP) activities in PT PBJ extension areas with the propose of NPP areas is 1,472.50 Ha. NPP areas is extension areas from PT PBJ and it will be purposed for PT PBJ areas and scheme smallholder areas (Koperasi Produsen Ingkang Muntis Jaya and Koperasi Sawit Gusik Mandiri Sejahtera). This NPP area of PT PBJ located in West Kutai Region, East Kalimantan Province with geospatial coordinate is 116° 19' 20.156" - 116° 22' 42.0" E; 00° 37' 44.0" -00<sup>0</sup> 44' 01.447" S. Whereas, PT PBJ is a member of the RSPO under its parent company, Kuala Lumpur Kepong Berhad (KLK Bhd) since October 17, 2004. In its plantation operations, PT PBJ have a Plantation Bussiness Permit (Izin Usaha Perkebunan, IUP) which first issued on 17 May 2019 and the latest revision on 25 May 2021, Location Permit (Izin Lokasi) based on Head of Investment and Integrated One Stop Service Agency Decree in Kutai Barat District No.525.29/K.64/2017 dated on 16 June 2017, and has carried out the Environmental Impact Assessment (EIA/UKL-UPL) & has approved by local government on 22 March 2019 (no. 660/001/AMDAL/III/2019) and feasibility environmental based on Head of Investment and Integrated One Stop Service Agency Decree in Kutai Barat District No.660/06/DPMPTSP-III.SP/II/2020 dated on 27 February 2020. PT PBJ have MoU with Koperasi Produsen Ingkang Muntis Jaya regarding cooperation of scheme smallholder partnership pattern through the provision of technical information on development, finance and management of oil palm plantation and have agreement with Koperasi Sawit Gusik Mandiri Sejahtera regarding partnership for developing oil palm plantation with total of 154.33 Ha.

Proposed time plan for this NPP development is :

- 1. Phase 1 (Jun-Dec 2025) : **± 374,16 Ha** (145,44 Ha -nucleas & 228,72 Ha -scheme smallholder)
- 2. Phase 2 & 3 (Jan-Dec 2026) : ± 832,42 Ha (245,80 Ha -nucleas & 586,62 Ha scheme smallholder)
- 3. Phase 4 (Jan-Jun 2027) : ± 265,92 Ha (115,31 Ha -nucleas & 150,61 Ha scheme smallholder)

It is not covering cleared or developed area and/or oil palm plantation by communities.(figure 1).

PT PBJ (has covered Koperasi Produsen Ingkang Muntis Jaya and Koperasi Sawit Gusik Mandiri Sejahtera areas too) in its integrated High Conservation Value-High Carbon Stock (HCV-HCS) assessment, Social Impact Assessment (SIA), Land Use Change Analysis (LUCA), Soil and Topography Study, Greenhouse Gas Assessment (GHG) for new plantings, assessment on the FPIC principal implementation has done as preliminary assessment on Integrated HCV-HCS Assessment. The result of each assessment will be displayed in this NPP summary of assessment report.

HCV-HCS assessments conducted in 2020 remain unchanged. However, the Land Use Change (LUCA) study and Greenhouse Gas Assessment (GHG) carried out in the same year were updated in 2024 according to current conditions and situations to reflect the area of interest. They are presented in section 7 and section 8 of this summary, respectively.



**Figure 1.** Overlay HCV-HCS & NPP Proposed Area of PT PBJ and Scheme Smallholders (Plasma)

The land clearing plans divided in 4 phases. 1<sup>st</sup> phase planned to be in January-December 2025, 2<sup>nd</sup> phase in January-June 2026, 3<sup>rd</sup> phase in July-December 2026 and 4<sup>th</sup> phase in January-June 2027.

#### Section 3: SEIA

## Environmental Impact Assessment (EIA)

## 1. Timeline and Parties Involved

Environmental Impact Assessment (EIA) of PT PBJ was carried out by expert team on year 2018 in-form of framework of reference (KA), Environmental Impact Assessment (AMDAL) consist of environmental impact analysis (ANDAL) and environmental management & monitoring plan (RKL-RPL). Scope of assessment is PT PBJ areas (extension areas) referring to location permit No. 525.29/K.64/2017 dated on 16 June 2017 with total areas is 4,460 Ha in Village of Bukit Harapan, Jambuk Makmur, Jambuk, Muara Gusiq and Pering Talik, Sub District of Bongan, District of Kutai Barat, Province of Kalimantan Timur, Indonesia. Document of environmental impact assessment (AMDAL) has approved by local government on 22 March 2019 (no. 660/001/AMDAL/III/2019). Whereas, the feasibility of the framework of reference for environmental impact analysis has been issued by local government dated on 02 October 2018 (no. 660/04/KA-ANDAL/X/2018).

The expert team from PT Puskotling Indonesia have competency certificate i.e No. Reg.LHK.642.00047.2018 (Andi Nurhayati), No. Reg.LHK.642.00043 2018 (Lamidi) and A.010.03.10.17.000163 (Wartomo). Location of PT Puskotling Indonesia's office is Plaza Pondok Indah 3 Block E No.2, Jl. TB Simatupang, Jakarta Selatan. The list of expert team as below :

Name	Function	Competence Certificate	Expertise
Andi Nurhayati, ST	Leader	No.Reg. LHK.642.00047 2018	
Ir Wartomo, MP	Member No.A.010.03.10.17.000163		Social-economic & culture expert, education is master of agriculture and have certificate of AMDAL A
Dr. Ir. Lamidi, MTP, MM	Member	No. Reg. LHK.642.00043 2018	Physical-Chemical expert, education is doctor of agriculture and have certificate of AMDAL A
Ali Akbar Amriza, S.Hut	Biology expert	-	Education is degree of forestry and have certificate of AMDAL A
Stey Franky, S.Hut	Physical-Chemical expert	-	Education is degree of forestry and have certificate of AMDAL A
Rasmun, S.Kes, M.Kes	Public health - expert		Education is master of public health and have certificate of AMDALA
Drs Ragil Harsono, MM	Social-economic & culture expert	- Education is master international management ar have certificate of AMDAI A & E	
Budi Darmono, S.Pi	Water quality expert	-	Education of Fishery degree
Febriyanto Mauldansyah, S.Hut	Mapping expert	-	Education of forestry degree (mapping)

# 2. Method

The Environmental Impact Assessment (AMDAL) Document has been prepared in accordance with the prevailing laws and regulations of the Indonesian government. The data collection process was strongly associated with the type of data that were collected. Generally, studies will be conducted based on primary data and secondary data. Primary data were obtained through observation, measurements and field interviews, while secondary data were obtained from the literature collected, either from the company, or directly from related institutions in the study of this area. The methods that were used to collect the data were adjusted with the components that can be studied. The data must be accurate and reliable so that it could be used to analyse, measure, and observe the environmental components which were predicted to be affected and components of action plan which were predicted to give significant impacts to the surrounding environment. The collected data were as follow :

- Geo-physical-chemical components (climate, rainfall, temperature & humidity, air quality, noise, manage of land use, topography/slope, hydrology & soil and quality of surface water)
- Biological components (vegetation/flora, animal/fauna and water biota)
- Socio-economic cultural components (demography/population, social, economic and socialcultural)
- Environmental health and public health components (environmental sanitation, public health level, level of public health services)

The study of the important source of impact and hypothetical impact can identify the key issue that needs to be managed. The results of the important impact evaluation are also expected to assist the decision-making process in the selection of a viable alternative plan that considers environmental aspects of the proposed area.

The assessment result has been reviewed by assessment team dated on 28 September 2018 from representative of local government i.e some agencies in district level, from Bongan Sub District and from Kampung Jambuk (Head of Village), Muara Gusiq village (Head of Village) and representative agency in village level (BPK) from Jambuk, Chairman of Koperasi Sawit Gusik Mandiri Sejahtera.

# 3. Result

Plantation activities were predicted to impact the environment; thus it needs to be explored in depth including the four phases of activities : Pre-Construction Phase, Construction Phase, Operational Phase antd Post-Operational Phase. Detail of hipotetik important impact each phase of activities as below :

phase of activities	hipotetik important impact
I. Pre-Construction Phase,	A. Fisic-chemical
<ul> <li>Licensing management</li> </ul>	<ul> <li>Decrease of ambien quality</li> </ul>
<ul> <li>Socialization of public consultation</li> </ul>	<ul> <li>Increse of noise intensity</li> </ul>
Land acquisition	<ul> <li>Increase/descrease soil erosion rate and</li> </ul>
II. Construction Phase,	sendimentation
<ul> <li>employee recruitment</li> </ul>	<ul> <li>Increase of soil fertility rate</li> </ul>
• opening and preparing land (land	<ul> <li>Increase of volume of run off</li> </ul>
clearing)	<ul> <li>Decrease of water quality</li> </ul>
Procurement of facilities and	B. Biology
infrastructure	<ul> <li>Decrease of biodiversity for flora type</li> </ul>
Procurement of seedlings and nurseries	<ul> <li>Migration of fauna on land habitat</li> </ul>
Planting	<ul> <li>Degradation of aquatic biota abundance</li> </ul>
<ul> <li>Soil and water conservation</li> </ul>	C. Social-economic-culture & public health
<ul> <li>Workshop and genzet activities</li> </ul>	<ul> <li>Increase of community income</li> </ul>
III. Operational Phase and	<ul> <li>Open work and bussiness opportunity</li> </ul>
Mantenainance of plantation (mature	<ul> <li>Increase of infrastucture</li> </ul>
and immature)	<ul> <li>Perseption and relationship of</li> </ul>
<ul> <li>Harvesting of fresh fruit bunches (FFB)</li> </ul>	community
Transportation of FFB to collection point	<ul> <li>Public health disorders</li> </ul>
CSR programme	
IV. Post-Operational Phase	
Renewal of land title	

#### Social Impact Assessment (SIA)

#### 1. Timeline and Parties Involved

Social Liability Assessment was carried out by PT Gagas Dinamika Aksenta on 28 jan – 6 Feb 2019 inform of Integrated HCV-HCS Assessment. The list of expert team as below :

Name	Function Competence		Expertise	
		Certificate		
Idung Risdiyanto	Lead Assessor	ALS license No.	Hidrology, Forestry ecology, Spatial	
		(ALS15029IR)	Modeling, Carbon Stock, Land	
		HCS Registered	Suitability, Peat Assessment, River	
		Practitioner	Basin Management, Land & water	
			Conservation	
Bias Berlio Pradyatma	GIS & Remote	HCS Registered	Remote Sensing, GIS, Saptial Analysis,	
	Sensing Expert	Practitioner	Carbon Stock, Land Use Change	
Tedi Setiadi	<b>Biodiversity Expert</b>	N.A	Fauna identification, wildlife ecology	
			and conservation, HCV 1-3	
Anwar Muzakkir	<b>Biodiversity Expert</b>	N.A	Flora Identification, Ecology,	
			Ecosystem Management, HCV 1-3	
Ali Akbar Hutzi	Soci-economy Expert	N.A	Environmental Economy, Socio-	
			economy, Social institution, HCV 5-6	

Heidei Putra Hutama	GIS & Remote	N.A	Remote Sensing, GIS, Saptial Analysis,		
	Sensing Expert		Land Use Change		
Noor Rakhmat Danumiharja	Soci-economy Expert	N.A	Socio-economy, Social Impact Management, socio-cultural, participatory mapping		
Martinus Sidik Purnomo	Soci-economy and	N.A	Environmental Economy, Socio- economy Social institution HCV 5-6		
Priyo Dwi Utomo	GIS, Flora and Carbon Stock expert	N.A	Carbon Stock Assessmen, GIS spatial analysis, Land Use Change		
Teungku Haikal	Soil and Carbon Stock Expert	N.A	Land Suitability Assessment, Peatland survey and management, Carbor Stock		
Ahmad Syirojudin	Flora and Carbon Stock expert	N.A	Flora Identification, ecology, carbon stock		
Rahmat Darmawan	Flora and Carbon Stock expert	N.A	Flora identification and Carbon Stock		

## 2. Method

- a) Document Review/Dekstop Study This method is used to gain an understanding of the social and environmental context of the study area, conducted as a preliminary stage before fieldwork and results analysis
- b) Participatory Mapping To bring together information on the management of indigenous lands gathered from local communities and other key stakeholders.

# c) Interview

Explored and gained a deep understanding of the information that emerged by conducting indepth interviews with selected key figures who became interviewees, where the selection of interviewees was based on their knowledge.

# Field Observation This method is used to directly see and understand the facts in the field that indicate Social Liability.

# 3. Result

PT Putra Bongan Jaya has no social liability, as no HCV 4, HCV 5 and HCV 6 areas were lost during the development of the oil palm plantation in the Company's Izin Lokasi area. In addition, during the period of land acquisition and development of oil palm plantations, the Company has carried out CSR programs by providing social assistance to the community in the villages around the company's operations. Land acquisition is also carried out by applying the principle of FPIC.

Section 4: HCV-HCSA Assessment; OR ALS HCV and Standalone HCSA assessment

## 1. Timeline and Parties Involved

The HCV-HCS assessment was carried out by PT Gagas Dinamika Aksenta on 14-20 January 2019 (for desk study, collecting & analyst for secondary data and designing), 23-26 January 2019 (for scoping study) and 28 January - 6 February 2019 (for field assessment) with the scope of assessment is concession areas of PT Putra Bongan Jaya with the total area 19.689,4 ha. Location of assessment in Kutai Barat District – East Kalimantan Province.

The list of HCV-HCS assessor as below :

Name	Function	Competence Certificate	Expertise
Idung Risdiyanto	Lead Assessor	ALS license No. (ALS15029IR) HCS Registered Practitioner	Hidrology, Forestry ecology, Spatial Modeling, Carbon Stock, Land Suitability, Peat Assessment, River Basin Management, Land & water Conservation
Bias Berlio Pradyatma	GIS & Remote Sensing Expert	HCS Registered Practitioner	Remote Sensing, GIS, Saptial Analysis, Carbon Stock, Land Use Change
Tedi Setiadi	Biodiversity Expert	N.A	Fauna identification, wildlife ecology and conservation, HCV 1-3
Anwar Muzakkir	Biodiversity Expert	N.A	Flora Identification, Ecology, Ecosystem Management, HCV 1-3
Ali Akbar Hutzi	Soci-economy Expert	N.A	Environmental Economy, Socio- economy, Social institution, HCV 5- 6
Heidei Putra Hutama	GIS & Remote Sensing Expert	N.A	Remote Sensing, GIS, Saptial Analysis, Land Use Change
Noor Rakhmat Danumiharja	Soci-economy Expert	N.A	Socio-economy, Social Impact Management, socio-cultural, participatory mapping
Martinus Sidik Purnomo	Soci-economy and social liability Expert	N.A	Environmental Economy, Socio- economy, Social institution, HCV 5- 6
Priyo Dwi Utomo	GIS, Flora and Carbon Stock expert	N.A	Carbon Stock Assessmen, GIS spatial analysis, Land Use Change
Teungku Haikal	Soil and Carbon Stock Expert	N.A	Land Suitability Assessment, Peatland survey and management, Carbon Stock
Ahmad Syirojudin	Flora and Carbon Stock expert	N.A	Flora Identification, ecology, carbon stock
Rahmat Darmawan	Flora and Carbon Stock expert	N.A	Flora identification and Carbon Stock

The report of HCV-HCS assessment has reviewed by ALS HCV-RN where first submission is 5 September 2019 and the latest of submission is 30 September 2020. The final of feedback is satisfactory dated on 9 October 2020 (link : <u>Laporan Kajian HCV-HCS Terpadu PT Putra Bongan Jaya, Kabupaten Kutai Barat, Kalimantan Timur, Indonesia, versi 1.0 | HCV Network</u>)

## 2. Method

In general, the HCV assessment process according to HCVRN guidancee is included pre-assessmen phase, scoping study, HCV identification/HCV assessment and stakeholder consultation. Whereas, The HCS studies was carried out using secondary data analysis and field surveys covering several aspects, including :

Table 1. List of Assessments Conducted

No	Assessment
1	Land Use Change Assessment (LUCA)
2	High Conservation Value (HCV)

3	High Carbon Stock (HCS) Identification
4	Carbon Stock Assessment
6	Social Impact Assessment (SIA)
7	FPIC Verification

#### 3.Result

The HCV type 1, 3, 4, 5 and 6 are found in PT PBJ. Total area identified as HCV is 5,549 ha and HCS is 3,750 ha. Both of HCV and HCS areas are overlapping, thus the total conservation area in PBJ is 6,175 ha. Total of HCV-HCS areas identified and management areas described in the following table :

Type of value	Identified areas (ha)	Management areas (ha)
HCS forest	3,750.0	3,750.0
Peat	0.0	0.0
HCV1	5,092.6	5,121.1
HCV2	0.0	0.0
HCV3	5,128.5	5,157.0
HCV4	4,921.1	4,956.0
HCV5	1,736.6	1,736.6
HCV6	5.2	5.2
Local community land	665.8	665.8
Total Netto (excluded		
overlapped areas)	6,175.0	6,213.0

Whereas, total of HCV-HCS areas within the NPP is as follow:

a. 45.72 Ha - nucleas area, and

b. 569.47 Ha - scheme smallholder area.

Detail of information as below :

Table 2. Distribution of HCV-HCS in scope of NPP assessment areas

ID	Name	Area	Туре
The allocation of PT PBJ areas			
1	Lowland Dipterocarps Forest	27,98	3
2	Sri Bongkok River & Riparian	17.50	3, 4, HCS
3	Pris Swamp	0,24	1, 3, 4
Total		45,72	

ID	Name	Area	Туре
The allo	ocation of scheme smallholder areas		
1	Lowland Dipterocarps Forest	2,92	3; HCS
2	Pris Swamp	536,20	1; 3; 4; 5; HCS
3	Derungan River and Riparian	27,39	1; 3; 4;
4	Prodan River and Riparian	2,95	4
Total		569.47	





Figure 2. FPIC Process Flow based on RSPO guidelines

## 3. Result

Based on this study, it is known that the community agrees on the development of oil palm plantations and land acquisition is carried out with the consent of the relevant community. The identification of affected communities is carried out by the Company using two approaches, namely (i) identification based on the location of the company's operational area to the village administrative area, and (ii) identification of land use by the community within the company's operational area.

Since obtaining the first Location Permit in 2007, the Company has initiated FPIC processes regarding the presence and operations of the Company, including public consultations on the impacts of the operations. Management and monitoring plans based on the results of studies and consultations are implemented by the company. The entire process is recorded in the AMDAL documentation. Regarding the new location permit issued in 2017 (SK 525.29/K.64/2017), the company has also conducted socialization activities to all village governments and community representatives in the company's operational area. Socialization was conducted to the affected communities

## 4. Summary

Through the review on implementation of FPIC process since the land acquisition for developing oil palm plantation, it can conclude that:

- a) The company is committed to implement environmental and social protection.
- b) The company has committed to conduct no land clearing before the Integrated Plan for Conservation and Land Use has been completed or finalized.
- c) FPIC process has been initiated by the Company

#### Section 6: Soil and topography

#### 1. Timeline and Parties Involved

Soil and topography studies were carried out in June 2019 by AARI (Applied Agricultural Resources Indonesia). The study was carried out covering PT Putra Bongan Jaya Location Permit area with the total area of 19.689,4 ha.

# 2. Method

For topography assessment, a computer-generated Digital Elevation Model (DEM) based on LIDAR data and aerial drone survey was used to define the general topography and slopes throughout the study area.

For soil assessment, two soil survey reports were referred namely:

- a) Semi detailed soil survey report by Param Agricultural Soil Survey Sdn. Bhd. with auger check point in every 9 ha (300 m x 300 m) conducted in September 2014,
- b) Semi detailed soil survey report by Faculty of Agriculture Institut Pertanian Bogor with auger check point in every 20 ha (400 m x 500 m) conducted in May 2016

Soil report No 1 covers the HGU areas whilst No 2 covers the ILOK areas. PT AARI has made some adjustment and modification on both soil maps using the digital elevation model (DEM) to get more precisely on soil boundaries, soil extents and land types as well as to update block boundary etc. Some extrapolation of soil map was done by PT AARI to cover especially non-surveyed areas.

## 3. Result

a. Distribution of Soil Types

From the results of soil type analysis, 7 types of soil were found in the Location Permit Area. However, only 4 types found in proposed NPP Area for Inti PBJ, as follows.





c. Marginal Soil

Based on the assessment, no steep areas of >40% and no fragile/marginal soils for the assessed area (HGU and ILOK PBJ).

Date of Assessment: June 2019

Name of Assessor: Marda Deta and Arif Sugandi

Assessor Designation and Company: PT Applied Agricultural Resources Indonesia

Section 7: Greenhouse Gas (GHG)

#### 1. Timeline and Parties Involved

GHG Assessment for the NPP area (PT PBJ extension areas -nucleas and scheme smallholder areas) has been conducted in August 2024 by expert team from PT Aihika Sawala Ekotropika (Ecotrop). The team consists of Mr Bias Berlio PR (team leader) and Mr M.Farid Al-Faritsi (team member). Mr Bias Berlio PR have experience related to carbon stock assessment and GHG emission under RSPO requirement and he is a qualified ALS assesor. Whereas, Mr M.Farid Al-Faritsi have experience related to image/GIS analysis, mapping and carbon calculation.

The scope of this assessment is part of the compay's location permit area, that is  $\pm$  2,523.07 Ha (based on the result of GIS analysis). The proposed area for new planting are 1,472.50 Ha.

## 2. Method

GHG assessment make reference to RSPO GHG Assessment Procedure for New Development version 4, July 2021. All information used in this assessment is sourced from other assessment that have been carried out in the company's areas and data related to operational activities prepared by the company's management. Data analysis carried out to produce alternative scenarios and recommendations for management and monitoring in efforts to mitigate GHG emissions.

Informations used for this assessment are as follow : the clasification of land cover, carbon stock of biomass from land cover, carbon stock of biomass from oil palm plantation, map of NPP areas, projection of FFB production, fossil fuel in plantation, volume of fertilizer, content of fertilizer, peat areas (if any), projection of extraction rate (OER & KER), managing POME, electricity (if any), managing excess of electricity, managing shell and managing EFB.

The land cover classification is based on the classification in the LUC assessment and the result of carbon measurements in the HCV-HCS assessment is seven classes of land covers consist of secondary forests, old shrubs, young shrubs rubber, shrubs and bareland. The carbon value for each land cover is equivalent to the land cover class based on the HCS stratification in PT PBJ's HCV-HCS report. Recapitulation of land cover consist of secondary forest is 66.93 Ha, old shrubs is 151.48 Ha, young shrubs is 1,553.27 Ha, rubber is 12.24 Ha, bushes is 265.55 Ha and bareland is 38.13 Ha.

Scenario of management plan consist of scenario of baseline (S0) and scenario of alternative (S1). Scenario of baseline is management scenario plan based on estimates set by the manager or the company without consideration of efforts to reduce GHG emissions. Scenario of alternative in the GHG assessment is a simulation base on the value was generated from operational activities by making effort to reducing GHG emissions.

#### 3. Result

Development scenarios are part of the recommendations provided. This is part of the GHG mitigation plan for PT PBJ areas (extension areas) and scheme of smallholder areas. The proposed development

scenario is based on the results of carbon storage studies and the results of carbon balance calculations through the new development GHG calculator (PalmGHG version 4 on September 2021). Scenarios that can be proposed from the results of the study are divided into 2 (two) proposed scenarios, presented according to the tabulation below:

Scenario 0 (baseline)	Developing to all potensial of new planting areas beside of oil palm plantation as their land cover is 2,087.61 Ha
Scenario 1	<ul> <li>Developing new planting area beside of oil palm plantation and HCV-HCS areas is 1,472.50 Ha</li> <li>Areas will be conserved / do not carried land clearing on HCV-HCS areas is 615.2 Ha</li> </ul>

The best scenario for development is obtained. Then, the area of each land cover will be calculated again using the NPP area proposed by the PT PBJ (extension areas-nucleas) & scheme smallhodler areas for new planting is 1,472.50 Ha. Whereas, total of areas that will be protected (ie. HCV-HCS) is 615.2 Ha (refer to table 2 on section 4 above).

The projection of GHG emision each scenarios, as below :

	Amount of GHG emission (t	onCO₂e/ton FFB)
Source of GHG emission	SO	S1
(A) Developmentary from managing plantation (FED a	(Baseline)	
(A) Parameter from managing plantation (FFB p	broduction in plantation)	
Land conversion	0.17	0.16
Sequestration by new trees	-0.45	-0.45
Fertilizer	0.05	0.05
N <sub>2</sub> O	0.03	0.03
Fosil fuel in plantation	0.00	0.00
Peat land	0.00	0.00
Sequestration in conversion areas	0.00	-0.17
Sub-total (A) (tonCO₂e/ton FFB)	0.25	-0.38
(B) Parameter from managing palm oil mill (CP	D & PK production in mill)	
POME	0.19	0.19
Fosil fuel in mill	0.01	0.01
Buying electricity	0.00	0.00
Credit from export of electricity	0.00	0.00
Credit from selling shell	0.00	0.00
Sub-total (B) (tonCO2e/ton FFB)	0.20	0.20
Total (A+B) (tonCO₂e/ton FFB)	0.45	-0.18
Total Emisi (tonCO₂e)	17,045	7,351
Total Emisi (tonCO <sub>2</sub> e/ton CPO)	1.74	1.06
Total Emisi (tonCO₂e/ton PK)	1.74	1.06

Total of GHG emission for scenario 0 is 17,045 ton  $CO_2e$  and scenario 1 is 7,351 ton  $CO_2e$ . Indicator of land conversion have GHG emission highest if compared with other GHG indicator. The spatial design of new development based on S1 scenario is describe on map below.



Date of Assessment : August 2024

Name of Assessor: Mr Bias Berlio PR (team leader) and Mr M.Farid Al-Faritsi (team member)

Assessor Designation and Company : PT Aihika Sawala Ekotropika (Ecotrop)

Section 8: Land Use Change Analysis (LUCA)

# 1. Timeline and Parties Involved

LUCA was conducted in 2 January – 14 March 2019 by PT Gagas Dinamika Aksenta covering Location Permit area of PBJ (ILOK) with the total area of 4.460,0 ha. Since PT PBJ will propose only on specific area which intended for the new development, and the old analysis has been more than 2 years so the company has done additional analysis of LUCA for the preparation of NPP on August 2024 by PT Aihika Sawal Ekotropika (Ecotrop).

# 2. Method

The stages and process of land cover and use change analysis (LUCA) make reference to the Remediation and Compensation Procedures published by the RSPO on page 27 of the document. Overall, the stages and process of LUCA analysis are presented in Figure 5 with the following details:

- Stage 1: Procurement process, including downloading satellite image data with resolution specifications minimum 30 meters.
- Stage 2: Pre-processing or initial processing, including atmospheric effect correction, geometric correction, and satellite image data processing operations from the period to be used.
- Stage 3: Interpretation, includes the process of interpreting land cover from pre-processed satellite image data, by referring to the vegetation coefficients determined in the remediation and compensation procedures. The process of interpreting land cover from complete image data is carried out in 3 stages which include:

- Detection is an effort to determine visible and invisible data globally. Detection also means determining the existence of an object, what that object is
- Identification is an activity to recognize an object depicted in an image through recording by a sensor. This stage is semi-detailed and we can recognize objects based on three main characteristics (Spectral, Spatial and Temporal)
- Analysis is a learning activity and decomposition of identification data so that can be produced in the form of tables, graphs or thematic maps.
- Stage 4: Ground truthing (field verification), includes verification activities in the field with verification of field conditions based on the results of initial interpretation of satellite imagery of land cover.
- Stage 5: Image validation and re-interpretation, including the process of validating the interpreted satellite images previously by making corrections referring to the results of field checks.
- Stage 6: Create a map of the results of the change analysis, including the process of creating a layout of the results map land cover that has been validated with the results of field checks to be displayed in the report.



Figure 6. LUCA Process Flowchart

Additional analysis consisted of a systematic land use changes analysis with the use of comparative satellite imagery, which shows the land use of the proposed area for the period 2005 – 2013. The LUCA consist of 6 periods i.e. November 1, 2005 until November 30, 2007; December 1, 2007 until December 31, 2009; January 1, 2010 until May 8, 2014; May 9, 2014 until August 31, 2018; September 1, 2018 until February 8 (Acquisition of PBJ), 2019 (HCV/HCSA assessment), and February 9, 2019 (HCV/HCS assessment to NPP submission audit). Image processing using radiometric correction and image analysis using object based visual interpretation. Sampling method using stratified random sampling with intensitas sampling is 1% for land cover in-form of non oil palm plantation which has identified via satelite imagery. Field verification is purposing to validating the land cover data, validating the corporate and non-corporate land clearance, compling information related to historical land use in the study area and identifying the loss of areas. Whereas, determining sample point for land cover in-form of flow process referring to figure 6 above.

# 3. Result

# First of LUCA

# 3.1 Current land cover conditions

To find out the current (latest/updated) condition of land cover, it is necessary to carry out ground truthing (field verification). This activity includes verification activities in the field by proving field conditions based on the results of initial interpretation of satellite imagery of land cover. Observations in the field aim to see the actual land cover conditions in the field with the results of satellite image interpretation. Based on the results of observations, 7 land cover classes were obtained.

# 3.2 Land Cover Changes

Changes in land cover that occur in PBJ area tend to occur as a result of activities carried out by humans intentionally in the context of land use. This activity can take the form of land clearing by the community for monocultural plantations. Until the study was carried out, there had been no land clearing activities carried out by the company (Corporate clearance), although there was land cover for oil palm plantations in the study area, but these were plantations that managed by the local community.

Land Cover	Before Nov 2005	Nov 2005 - Nov 2007	Dec 2007 - Dec 2009	Jan 2010 - May 2014	May 2014 - 2018	2018 - 2019	2019 - 2024
Secondary Forest	14.10	14.10	14.10	14.10	0,00	0,00	0,00
Old Shrub	39.34	20.75	12.72	12.72	21.23	21.23	26.30
Young Shrub	361.68	300.92	334.74	334.74	381.90	381.90	457.44
Rubber	0.00	0.00	0.00	0.00	0.00	0.00	11.06
Bush	74.22	118.61	136.13	136.13	46.85	46.85	10.02
Bareland	17.23	52.18	8.87	8.87	56.57	56.57	1.74
Total	506.55	506.55	506.55	506.55	506.55	506.55	506.55

Table 3.a. Land Cover Change 2005 – 2024 NPP PT PBJ - nucleas area

Table 3.b. Land Cover Change 2005 – 2024 NPP PT PBJ - smallhoder area

Land Cover	Before Nov 2005	Nov 2005 - Nov 2007	Dec 2007 - Dec 2009	Jan 2010 - May 2014	May 2014 - 2018	2018 - 2019	2019 - 2024
Secondary Forest	23.38	0,00	0,00	0,00	0,00	0,00	0,00
Old Shrub	139.02	131.03	113.83	113.83	90.14	90.14	68.52
Young Shrub	632.18	616.81	654.28	653.91	700.78	700.78	752.96
Rubber	0.01	0.00	0.00	0.00	0.00	0.00	0.33
Bush	150.42	159.89	123.21	123.21	132.34	132.34	119.89
Bareland	20.94	58.22	74.63	75.00	42.69	42.69	24.25
Total	965.95	965.95	965.95	965.95	965.95	965.95	965.95

3.2.1 Land Cover Change 2005-2007

Table 4.a Land Cover Change 2005-2007 NPP PT PBJ - nucleas area

	2007								
	LANDCOVER	Secondary Forest	Old Shrub	Young Shrub	Rubber	Bareland	Grand Total		
	Secondary								
	Forest	14.10					14.10		
005	Old Shrub		20.75	0.38	2.23	15.97	39.34		
2	Young Shrub			298.37	33.02	30.29	361.68		
	Rubber			1.58	71.30	1.34	74.22		
	Bush			0.58	12.07	4.58	17.23		
	Grand Total	14.10	20.75	300.92	118.61	52.18	506.55		

Tabel 4.b Land Cover Change 2005-2007 NPP PT PBJ - smallhoder area

			2007								
	LANDCOVER	Old Shrub	Young Shrub	Rubber	Bush	Bareland	Grand Total				
	Secondary										
	Forest	7.24	0.74		10.83	4.57	23.38				
005	Old Shrub	123.79	0.37		1.50	13.36	139.02				
200	Young Shrub		563.76		42.47	25.95	632.18				
	Rubber			0.01			0.01				
	Bush		51.01		88.49	10.92	150.42				
	Bareland		0.93		16.59	3.42	20.94				
	Grand Total	131.03	616.81	0.01	159.88	58.22	965.95				

#### 3.2.2 Land Cover Change 2007-2009

Table 5.a Land Cover Change 2007-2009 NPP PT PBJ - nucleas area

			Dec 2009							
	LANDCOVER	Secondary Froest	Old Shrub	Young Shrub	Bush	Bareland	Total			
	Secondary									
	Forest	14.10					14.10			
007	Old Shrub		12.72	8.03			20.75			
2	Young Shrub			280.01	16.27	4.63	300.92			
	Bush			36.75	78.72	3.14	118.61			
	Bare Land			9.95	41.14	1.10	52.18			
	Grand Total	14.10	12.72	334.74	136.13	8.87	506.55			

Tabel 5.b Land Cover Change 2007-2009 NPP PT PBJ - smallhoder area

	Dec 2009							
	LANDCOVER	Old Shrub	Young Shrub	Rubber	Bush	Bareland	Total	
	Secondary							
	Forest	113.83	15.68		1.20	0.32	131.03	
2007	Young Shrub		508.91		41.49	66.42	616.81	
	Rubber			0.001			0.001	
	Bush		97.66		57.77	4.46	159.89	
	Bareland		32.03		22.75	3.44	58.22	
	Grand Total	113.83	654.28	0.001	123.21	74.63	965.95	

3	.2.3 Land Cov	ver Change 2009-2014						
_		Table 6.a. Land Cover	Change 2009	-2014 NPP PT PE	3J - nuclea	as area		
	2014							
	LANDCOVER	Secondary Forest	Old Shrub	Young Shrub	Bush	Bareland	Total	
	Secondary							
60	Forest	14.10					14.10	
5 20	Old Shrub		12.72				12.72	
Dec	Young Shrub			334.74			334.74	
	Bush				136.13		136.13	
	Bareland					8.87	8.87	
	Grand Total	14.10	12.72	334.74	136.13	8.87	506.55	

#### Table 6.b. Land Cover Change 2009-2014 NPP PT PBJ - smallhoder area

			2014								
	LANDCOVER	Old Shrub	Young Shrub	Rubber	Bush	Bareland	Grand Total				
Jec 2009	Old Shrub	113.83					113.83				
	Young Shrub		653.91			0.37	654.28				
	Rubber			0.001			0.001				
	Bush				123.21		123.21				
	Bareland					74.63	74.63				
	Grand Total	113.83	653.91	0.001	123.21	75.00	965.95				

#### 3.2.4 Land Cover Change 2014-2018

Table 7.a. Land Cover Change 2014-2018 NPP PT PBJ - nucleas area

			2018							
	LANDCOVER	Old Shrub	Young Shrub	Bush	Bareland	Grand Total				
	Secondary Forest	14.10				14.10				
2014	Old Shrub	7.13	4.57	0.60	0.41	12.72				
	Young Shrub		292.36	25.53	16.84	334.74				
	Bush		82.03	17.86	36.24	136.13				
	Bareland		2.93	2.86	3.08	8.87				
	Grand Total	21.23	381.90	46.85	56.57	506.55				

Table 7.b. Land Cover Change 2014-2018 NPP PT PBJ - smallhoder area

			2018						
	LANDCOVER	Old Shrub	Young Shrub	Rubber	Bush	Bareland	Total		
2014	Old Shrub	90.14	23.64		0.02	0.02	113.83		
	Young Shrub		542.75		83.42	27.75	653.91		
	Rubber			0.001			0.001		
	Bush		72.65	0.001	38.81	11.75	123.21		
	Bareland		61.74		10.10	3.16	75.00		
	Grand Total	90.14	700.78	0.002	132.34	42.69	965.95		

3	.2.5 Land Cove	er Change 2018-20	19						
	Tal	ole 8.a. Land Cove	r Change 2018-2019 N	PP PT PBJ	- nucleas area				
			2019						
2018	LANDCOVER	Old Shrub	Young Shrub	Bush	Bareland	Grand Total			
	Old Shrub	21.23				21.23			
	Young Shrub		381.90			381.90			
	Bush			46.19	0.66	46.85			
	Bareland				56.57	56.57			
	Grand Total	21.23	381.90	46.19	57.24	506.55			

Table 8.b. Land Cover Change 2018-2019 NPP PT PBJ - sma	allhoder area

		2019					Grand
	LANDCOVER	Old Shrub	Young Shrub	Rubber	Bush	Bareland	Total
	Old Shrub	90.14	23.64		0.02	0.02	113.83
18	Young Shrub		542.75		83.42	27.75	653.91
20	Rubber			0.00			0.00
	Bush		72.65	0.00	38.81	11.75	123.21
	Bareland		61.74		10.10	3.16	75.00
	Grand Total	90.14	700.78	0.00	132.34	42.69	965.95

#### 3.2.6 Land Cover Change 2019-2024 (Updated)

Table 8.a. Land Cover Change 2018-2019 NPP PT PBJ - nucleas area

		2024					Grand
	LANDCOVER	Old Shrub	Young Shrub	Rubber	Bush	Bareland	Total
6	Old Shrub	21.23					21.23
019	Young Shrub	5.07	370.73	3.61	1.19	1.30	381.90
2	Bush		40.75	0.66	5.00	0.44	46.85
	Bareland		45.96	6.79	3.82		56.57
	Grand Total	26.30	457.44	11.06	10.02	1.74	506.55

# Table 8.b. Land Cover Change 2018-2019 NPP PT PBJ - smallhoder area

		2024					Grand
	LANDCOVER	Old Shrub	Young Shrub	Rubber	Bush	Bareland	Total
	Old Shrub	64.12	17.23		8.79		90.14
19	Young Shrub	4.39	667.63		13.69	15.07	700.78
20	Rubber			0.00			0.00
	Bush		37.97		91.95	2.42	132.34
	Bareland		30.13	0.33	5.47	6.76	42.69
	Grand Total	68.52	752.96	0.33	119.89	24.25	965.95



## 4. Conclusions and recommendations

## 4.1 Conclusion

- The land cover interpretation from each cut off period of the remaining development area (NPP area) of PBJ indicated no Primary Forest.
- There is changes in land cover that occurred from 2005 to 2019 were caused by community activities, which are related to monoculture plantation. Significant land use change for period 2014-2018 is bush and young shrub to bareland (44.59 ha), this land clearance was done by the local community.
- There is no compensation and remediation area for the above as the land clearance was conducted entirely by the local community.
- 4.2 Recommendations

When develop the potential remaining development area (NPP area) of PT PBJ, it is hoped that the high conservation value and high carbon stock areas are avoided.

Date of RSPO approval as satisfactory : -

Name of Assessor : Mr Bias Berlio PR (team leader-2019 & 2024) and Mr M.Farid Al-Faritsi (team member-2024)

Assessor Designation and Company: PT Gagas Dinamika Aksenta (March 2019) & PT Aihika Sawal Ekotropika (Ecotrop) (August 2024)

#### Section 9: Conclusions

PT PBJ as a subsidiary of Kualau Lumpur Kepong Berhad (KLK Bhd), which is a member of the RSPO since October 17, 2004. PT PBJ is conducts plantation operations (allocated for PT PBJ extension areas & scheme smallholder areas) with a commitment to the KLK Policy and adheres to the required sustainability principles.

This study and assessment in the context of PT PBJ's plantation operations has been carried out based on the prevailing laws and regulations in Indonesia, as well as international regulations that have been ratified. The study was conducted using a standard toolkit that has been recognised/endorsed by global institutions and the RSPO.

Some findings from various assessments and FPIC processes above has incorporated into the development and operations planning of proposed new development by identifying the source of the impact in order to minimize or mitigate the impact that will arise; and management recommendations from the various assessments and FPIC processes has integrated into the NPP Integrated Management Plan. Detail of management & monitoring plan has stated on NPP Integrated Management Plan.

Issue(s) to be prioritized :

- Have potential the change of perception and relationship of community because the community has long waited the realization of developing plantation for community (scheme smallholder areas).
- Still any land of community which do not want to be compensated by the company where land has cleared or has not been cleared.
- Protecting HCV-HCS areas especially is Pris Swamp from land clearing activities or land use change by irresponsible personnel during land clearing activities because it have total of areas is 0.25 Ha on the allocation of PT PBJ areas and 434.82 Ha on the allocation of scheme smallholder areas.
- PT PBJ will be implementing commitment by consistency as example environmental and social protection, no land clearing before the integrated plan for conservation and land use has been completed or finalized, FPIC process will be initiate by the company, etc.
- HCV-HCS areas will be protected / do not carried out land clearing so that developing new planting areas is 1,396.06 Ha only. It is scenario 1 so that impactof GHG emission can be reduced

Going forward, as a form of implementation of PT PBJ policy that PT PBJ' Mill will not receive and process external FFB(s) originating from new land clearings in HCV areas.

#### Section 10: Confirmation of Report

This document is the summary of assessment result on Enviromental Impact Assessment (EIA), Social Impact Assessment (SIA), Integrated High Conservation Value (HCV) – High Carbon Stock (HCS), FPIC, Fragile/Marginal Soils Survey, GHG assessment and Land Use Change Analysis (LUCA) in PT Putra Bongan Jaya (PT PBJ) extension areas (allocation as nucleus areas and as scheme smallholder areas (Koperasi Produsen Ingkang Muntis Jaya & Koperasi Sawit Gusik Mandiri Sejahtera)) which done for NPP process.

Assessment result / findings above was accepted and will be applied as one of the guidelines in managing oil palm plantation.

Date of Completion	20 February 2025
Signature	Xuntur
Name	Jason Long Huey Yuan
Position	Agricultural Director