ROUNDTABLE ON SUSTAINABLE PALM OIL

NEW PLANTING PROCEDURE

SUMMARY OF ASSESSEMENT REPORTS AND

MANAGEMENT PLANS

PT. BIMA PALMA NUGRAHA

Kutai Timur District, East Kalimantan - Indonesia

Prepared by :

PT. BIMA PALMA NUGRAHA, March 2021

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1. Overview and background

1.1. Area of New Planting and Development Plan

PT Bima Palma Nugraha (hereinafter referred to "PT BPN" or the "Company") was acquired by PT Dharma Satya Nusantara, Tbk. ("DSN Group") in December 2018. Before the acquisition, the Company has had a High Conservation Value ("HCV") assessment carried out in 2012 by a team led by an RSPO-approved assessor. The assessment's scope was yet to include some parts of the planned plantation development area, which were lands of community members to enter the partnership with the Company. However, this Integrated HCV and High Carbon Stock Approach ("HCSA") Assessment is not meant to serve as an update to the previous assessment; but rather, it is a completely new assessment against the new guidance (Common Guidance HCV, 2017) involving new phases that include an integration into HCSA (HCV-HCSA Assessment Manual, 2019). The previous assessment is used as one of the references in this Integrated HCV-HCSA Assessment ("Assessment").

PT Bima Palma Nugraha conducted an environmental impact analysis (EIA) carried out in January 2008, a LUCA (Land Use Change Analysis) assessment based on the RSPO Guidance for Land Use Change Analysis Revised version March 2017 conducted in January 2020, Greenhouse Gas Assessment conducted in 2021, social impact assessment conducted in 2015 and updated in 2021 and soil and topographic surveys.

The environmental impact analysis conducted in January 2008 measured the positive and negative impacts of oil palm plantation operations, both in environmental and social aspects. The positive impacts include improving road infrastructure, increasing community income, obtaining job opportunities, etc. Meanwhile, negative impacts such as increased community consumptive power, decreased environmental quality, high potential for social conflict, reduced community access to land ownership, etc.

LUCA Assessment conducted in January 2020 was conducted to see changes in land cover since November 2015, November 1, 2005-November 31, 2007, December 1, 2007-December 31, 2009, January 1, 2010-September 2012, After HCV areas identified, Latest satellite image used for ground truthing. In addition, the LUCA Assessment was conducted to assess the compensation and remediation areas.

The greenhouse gas assessment was carried out using the HCS calculation method and the RSPO GHG Calculator conducted by PT Gagas Dinamiga Aksenta. The HCS assessment is carried out in conjunction with the HCV assessment (HCV HCS Integration Assessment 2020). This greenhouse gas assessment is to see the carbon availability of each land cover and the new planting scenario in areas that have low carbon availability.

The social impact assessment conducted in 2015 and updated in 2021 was carried out to see the positive and negative impacts of oil palm plantation development from a social perspective. The positive impacts of oil palm development include Job opportunities for around community (availability of employment), Opening access of road and entry transmigrants is an opportunity for PT BPN fulfilling needs of employees, Territorial openness and CSR assistance provided by the company (road repairs, schools, mosques, assistance for funds for village / customary activities and health assistance), Oil palm plantation will reduce unemployment rate of rural communities, while reducing exodus of villagers out of village looking for decent livelihoods, Oil palm plantation based on plasma, is expected to encourage increase in income in society, Opening access for new economic activities for the community around the oil palm plantation (increased business opportunities), Chance and certainty of getting cash with periodic fixed (salary paid every month). Meanwhile, the negative impact caused by oil palm development, namely The

community concerns over declining forest area and conversion of land to oil palm plantation will result in the loss of full ownership of community land, Concerns of pollution in river water, Public perception if the company has operating can decreasing empty. land to be processed, The awareness of the existence of layoffs of local workers with the presence of workers from outside the village / outside East Kutai because quality of workers, To bring in labor from outside the village can provoke emotion, social jealousy and weaken the bargaining position of some local people to become a workforce in the company, Concerns about the location of plasma far from village, Community concerns about changes in farming patterns from rice cultivators, planters and rubber plantations to oil palm plantations, Negative attitudes towards CSR programs that have not been realized, The community considers that the company has not been seri ous in handling programs that lead to the development, improvement of village physical facilities (roads, educational facilities, infrastructure, health, worship, etc.), although the community is aware that PT BPN is still in the process of preparing and has not operated the process development of oil palm plantations, The drying up of Lake Padang.

Soil and topographic surveys were carried out in conjunction with the HCV HCS Integration Assessment 2020, the soil and topography survey to see marginal soils and areas with slopes that are not recommended for planting oil palm within the company's concessions.

This Assessment aims to meet one of the requirements under the Roundtable for Sustainable Palm Oil ("RSPO") certification scheme, including New Planting Procedure (NPP), identify and map the presence of HCV-HCS areas, identify any pressure against or threat to the areas' sustainability, and make recommendation for HCV-HCS protection, management and monitoring. This Assessment implementation and reporting uses the following guidance: (i) Common Guidance for the Identification of High Conservation Values (Brown et al., 2017) for identifying HCV 1, HCV 2, HCV 4, HCV 5, and HCV 6; (ii) Guidelines for the Identification of High Conservation Values in Indonesia (The Consortium for Revision of the HCV Toolkit for Indonesia, 2008) for identifying HCV 3; (iii) Common Guidance for the Management and Monitoring of High Conservation Values (Brown et al., 2018); (iv) HCV-HCSA Assessment Manual (HCV Resource Network/"HCVRN", 2017); (v) Guidance for Using the HCV-HCSA Assessment Report Template (HCVRN, 2018); (vi) HCV-HCSA Assessment Report Public Summary Template with Guidance (HCVRN, 2018); (vii) the HCS Approach Toolkit v2.0 (Rosoman et al., 2017) for identifying HCS areas; and (viii) Advice Notes 01-05 HCV-HCSA (2019-2020).

Project Status, Scale and Intensity

The assessment area scope (Management Unit or **"MU"**) includes PT BPN Concession Area (**"HGU"**), as well as lands of community members who are to have partnership with the Company. Lands of those who are already in the partnership with the Company are now oil palm plantations managed by Tepian Prima Cooperative, while others to develop are the potential partnership areas which will also become parts of the cooperative's plantations. Because this Assessment's context includes development or expansion plan, some parts of the Assessment area are considered greenfield.

To March 2021, PT BPN is yet to clear new lands. Plantation development is planned to take place in 2021 upon meeting all land clearing requirements. Other than considering agronomic aspects and the Company's commitment to sustainability, the development plan also takes into account the issuance of environmental permits and meeting of certification scheme requirements.

PT BPN MU operational scale and intensity include several areas by the legal status. Its operational area includes HGU concession of 11,661.69 ha (11,650.9 ha according to GIS), the partnership area and potential partnership area of 2,435.00 ha (partnership area 1,912.1 ha and potential partnership area of 522.9 ha according to GIS). However, the planted areas will not be entirely cleared for oil palm plantations. The development plan will be referring to the plantation spatial plans based on this Assessment.

Information on the Assessment-Requesting Organisation

PT BPN is a subsidiary to PT Dharma Satya Nusantara, Tbk. (DSN Group), which is a company that operates oil palm and wood production industries. Up to 2018, DSN Group already had oil palm plantations with planted areas of more than 108,400 ha consisting of nucleus (>84,300 ha) and plasma (24,000 ha) plantations. The group has 15 estates, mostly located in East Kalimantan, while the remaining are in Central, West and North Kalimantan. Other than plantations, DSN Group also has nine oil palm mills with total production capacity of 560 tonnes/hour. The company also has kernel crushing plants that process Palm Kernel (PK) into Palm Kernel Oil (PKO) with capacity of 200 tonnes/day or 60,000 tonnes/year. DSN Group has already become an RSPO member since 28 July 2008 (Membership ID No. 1-0135-12-000-00).

PT BPN MU includes its HGU concession, in addition to Tepian Prima Sawit Cooperative actual and potential partnership areas. All of the actual and potential partnership areas are and will be fully managed by PT BPN. To the date of this Public Summary, the Company has taken Indonesian Sustainable Palm Oil (ISPO) audit, pending ISPO certificate issuance by certification body. The Company also in a preparation of RSPO certification, including this Assessment.

Assessment Location

PT BPN MU is located in Tepian Langsat Village, Bengalon Sub-District, East Kutai District. However, the Assessment scope also includes three villages around Tepian Langsat, namely Tebangan Lembak, Tepian Indah and preparatory village of Tepian Raya,[1] all of which are located in Bengalon Sub-District, East Kutai District, East Kalimantan Province, Indonesia. The MU is located at 0°38'53.9"-0°48'54.6"N 117°19'0.9"-117°28'30.6". The Assessment's total area is 14,086 ha (GIS area) that includes HGU concession (11,650.9 ha)[2], actual partnership area (1,912.1 ha) and potential partnership area (522.9 ha). PT BPN has operational areas with Land Permit 353/02.188/HK/X/2005 dated 24 October 2005, for 15,000 Ha published by Bupati Kutai Timut and the Decree of the Regent of Kutai Timur No: 188.4.45/032/Eko.1-II/2015 concerning Plantation Business Permit (IUP) covering an area of 11.661,69 ha. Decree letter of National Land Agency No. 39-HGU-BPN RI-2007regarding land use rights approval for PT BPN, located in Kutai Timur district. This decree mentioned approved the total area of 11.661,69 ha, The nucleus plantation that has been planted with oil palm is 10.249 ha. Meanwhile, the determination of the Plasma Area for the Tepian Prima Sawit Cooperative in Partnership with PT BPN is 337.6 ha (East Kutai Regent Decree No 525.26 / K.1105 / HK / XII / 2013) and an area of 1,609.06 ha (East Kutai Regent Decree No 525.26 / K .367 / HK / VI / 2018) with a planted area of 1,364 ha; and the determination of the Plasma area for the Tepian Prima Sawit Partnership Cooperative with PT BPN covering an area of 347.31 ha (East Kutai Regent Decree No 525.26 / K.527 / HK / IX / 2020), all of which have not yet been planted. Currently there is a planting area at PT. BPN covering an area of 11,613 ha (This area is purely planted area and does not include infrastructure (roads, buildings, etc.)

National and Regional Contexts

Borneo, where the MU is located, is one of the regions with globally high biodiversity riches. It is part of biodiversity hotspots in Sunda Shelf, that becomes one of the global conservation priorities (Myers, *et al.*, 2000). At species level, this island is home to one of the species with the highest conservation status, i.e., orangutan *(Pongo pygmaeus)* listed under The International Union for Conservation of Nature (**"IUCN"**) Red List. See detail of Ecological and biological aspects of the MU and its surroundings.

Concerning the national policy on new permit issuance moratorium, new permit issuance moratorium has been in effect since 2011, which is also the year of improvement of primary natural forest and peat governance in Indonesia.

[1] To the date of this Assessment, no definitive boundaries has been recorded for local villages.

[2] The HGU concession area is GIS area based on spatial data, while the legal area is 11,661.69 ha.

The regulation was issued to balance and harmonise economic, social, cultural and environmental development, and reduce Greenhouse Gas (GHG) emission through reduction of emission from deforestation and forest degradation. Based on Indicative Map of New Permit Issuance Moratorium (15th revision), the MU area is entirely located outside the primary forest and peat moratorium areas

At the district level, based on East Kalimantan Provincial Spatial Plan 2015-2035, East Kutai is a district with the largest area of plantation in East Kalimantan. Plantation area in this district accounts for 24% of its total area. At the sub-district level, plantation area accounts for 39.6% of Bengalon Sub-District total area. This indicates that plantation sector, including oil palm, is one of the major factors in social and economic aspects in the Assessment area.

A comprehensive and participatory independent Social Impact Assessment (SIA) and Integrated High Conservation Value-High Carbon Stock Approach Assessment which internal and external stakeholders (by Aksenta) were conducted by licensed from HCVRN. For Analisis Dampak Lingkungan (AMDAL/ EIA) conducted by PT Agro Trimitra Konsultan. Based on decree of ministry of forestry, the location PT BPN is a part of land zoned for agriculture development (APL = Area Penggunaan Lain).
Based on the HCV HCS Assessment in the PT BPN concession, the existing HCV HCS were identified, namely HCV 1, HCV 3, HCV 4, HCV 5, HCV 6, HCS Forest and Local People Lands. Whereas HCV 2 & peat areas was not found. So the total identified HCV HCS area is 802.8 ha. The details of the HCV area can be seen in Table 48 Recapitulation of size of conservation and management areas in the assessment area (page 125).

PT BPN to open new area for oil plantation by 2021. Based on HCV, SIA, and FPIC that potentially area for new planting PT BPN are 286 Ha. New planting area consists of plasma as mentioned in Table 1 and Figure 2.

Table 1 New Planting PT BPN on 2021

No	Plantation	Planted	New Planting Plan		Total
			2021	Sub Total	
1	Nucleus	10,249	-	-	10,249
2	Smallholder	1,364	286.00	286.00	1,650
	Total	11,613	286.00	286.00	11,899

Note: This area is purely planted area and does not include infrastructure (roads, buildings etc.)

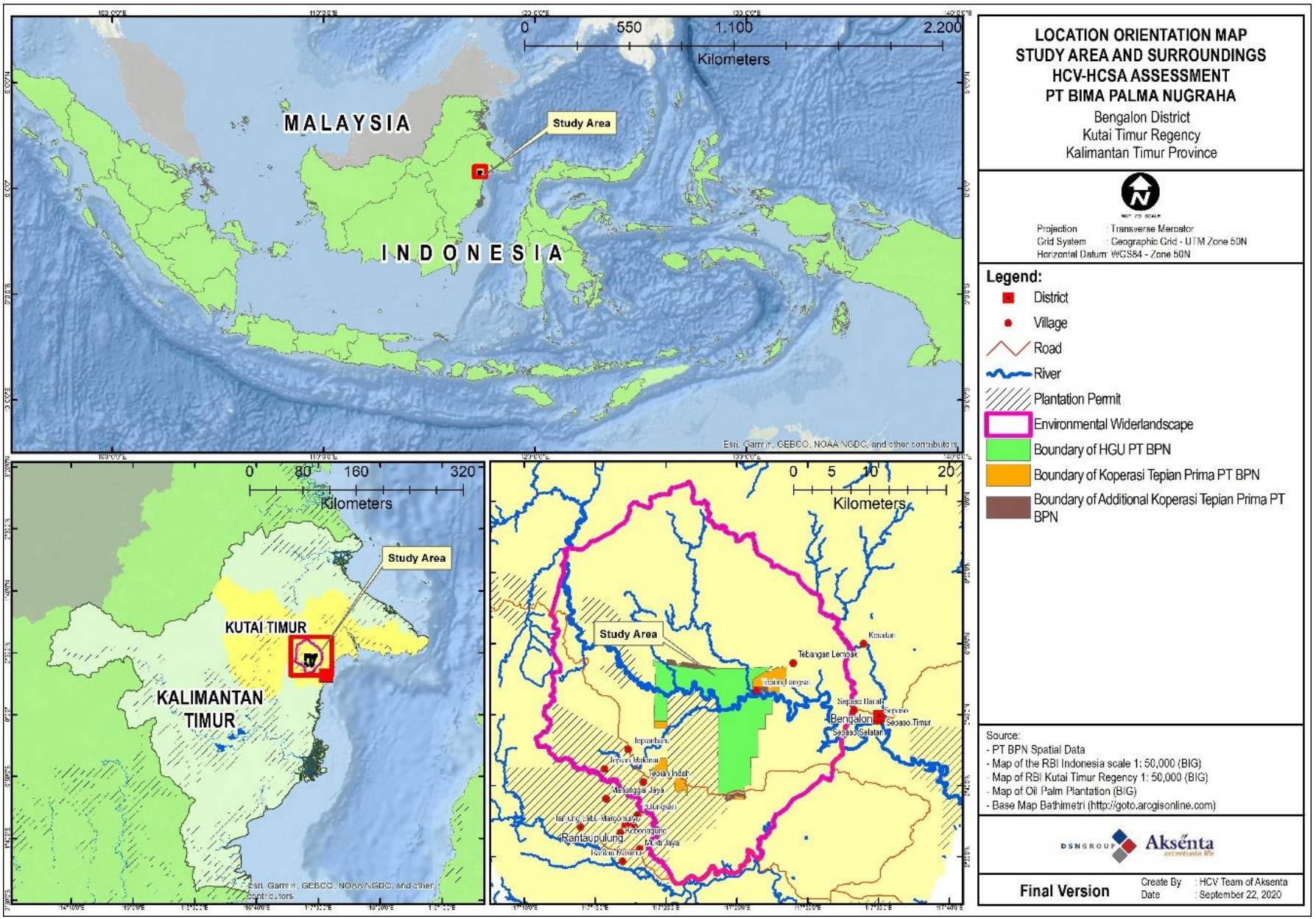

Figure 1 The Assessment area in PT BPN MU

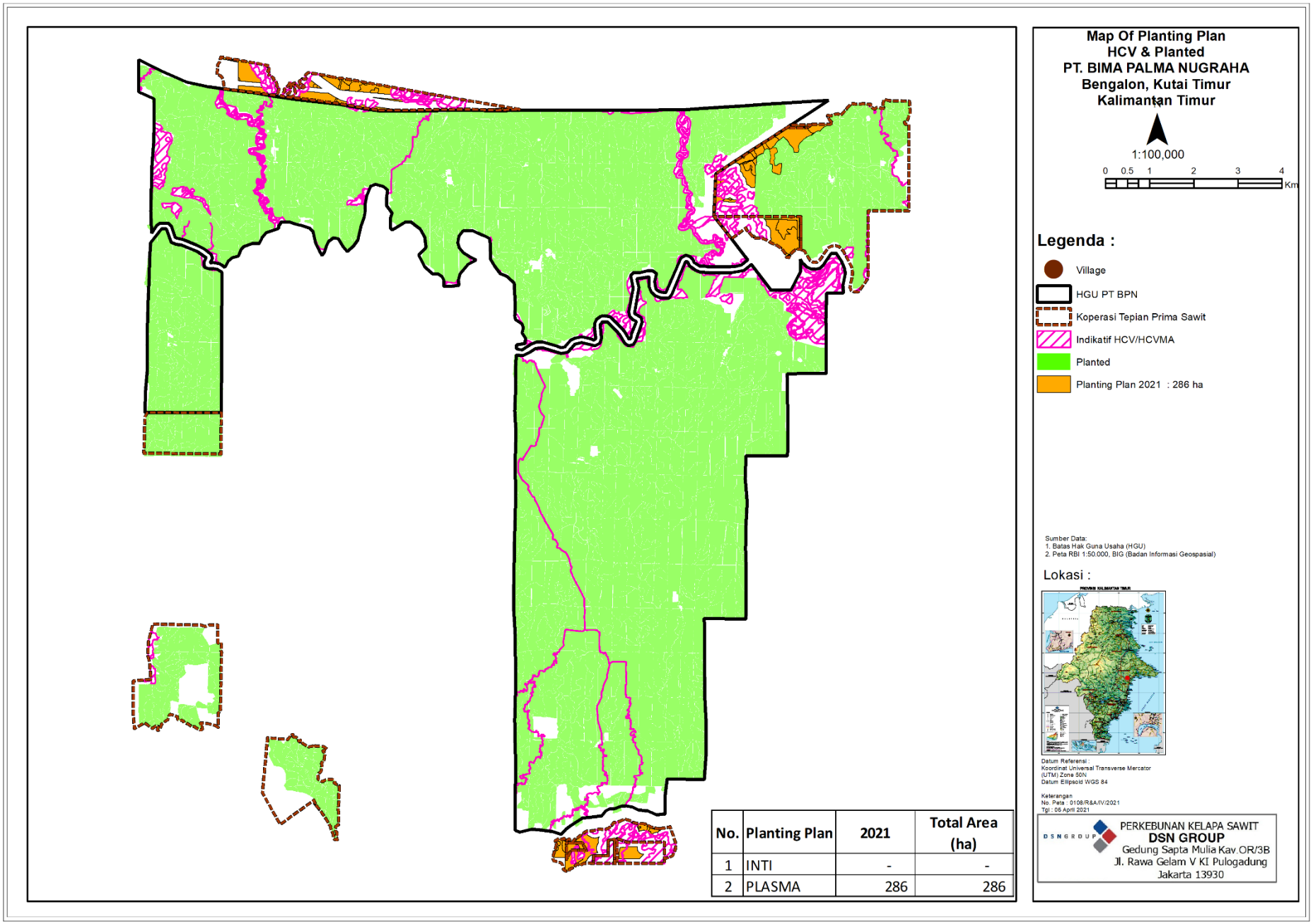

Figure 2 Map of Planting Plan PT BPN

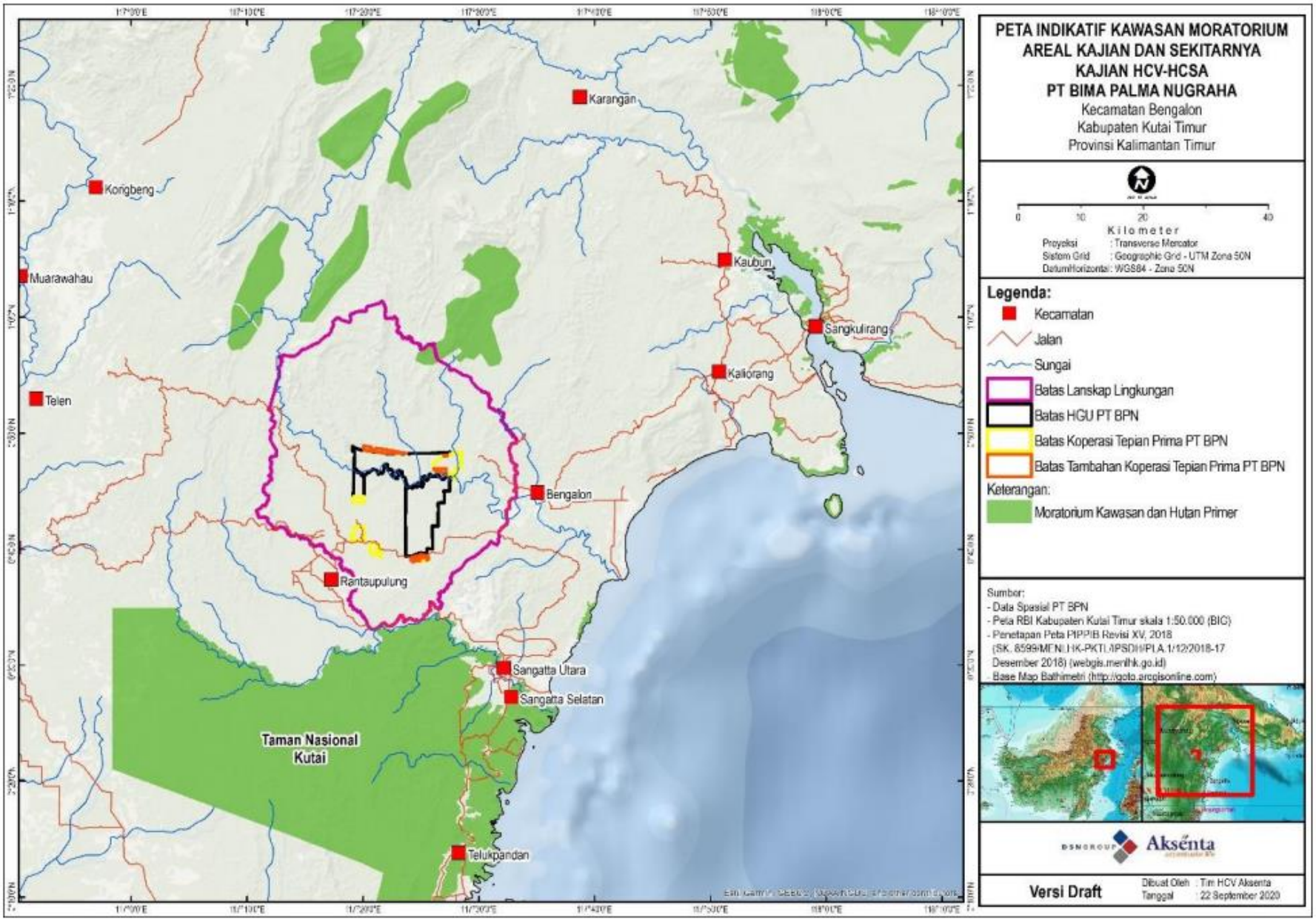

Figure 3 Forested Area in around PT BPN

1.2. Land Cover

Furthermore, the land cover analysis is carried out at a certain time period using Landsat imagery for certain years. Based on the 2010 Landsat image, PT BPN area is dominated by palm oil of 9,618.2 ha (Nucleus 8,665 ha, smallholder Tepian Prima Sawit 943.2 ha & Addational Smallholder Tepian Prima Sawit 10.4 ha). In 2010, no secondary forest was found. The land cover is shown in Table 2, Table 3 & Table 4.

Table 2 Land Cover PT BPN (Nucleus) at Nov 2005, Dec 2007, Jan 2010, Sept 2012, Feb 2020

Land cover	November 1, 2005	December 1, 2007	January 1, 2010	September 2012	February 2020
Scrub	9,125.9	7,078.2	1,996.2	369.6	369.6
Shrubs	1,803.6	930.9	816.9	476.5	100.9
Bush	240.6	315.4	61.7	61.3	135.9
Open field	383.4	225.4	27.2	97.1	32.2
Water body	97.5	32.8	81.9	50.4	8.2
Palm Oil PT BPN	-	3,068.2	8,665.0	10,594.0	10,784.4
Palm Oil Community	-	-	2.0	2.0	183.2
Palm Oil PT AEP	-	-	-	-	9.3
Total	**11,650.9**				

Table 3 Land Cover PT BPN (KUD Tepian Prima Sawit) at Nov 2005, Dec 2007, Jan 2010, Sept 2012 & Feb 2020

The Area of KUD Tepian Prima Sawit					
Land cover	**November 1, 2005**	**December 1, 2007**	**January 1, 2010**	**September 2012**	**February 2020**
Scrub	1,277.0	985.9	691.0	414.6	113.9
Shrubs	443.5	503.7	192.7	141.3	101.1
Bush	83.2	63.3	49.7	62.9	11.1
Open field	108.4	65.7	35.6	54.4	7.6
Palm Oil KUD TPS	-	293.6	943.2	1,239.0	1452.1
Palm Oil Community	-	-	-	-	153.6
Palm Oil PT KAN	-	-	-	-	72.4
Agroforests	-	-	-	-	0.3
Total	**1,912.1**				

Table 4 Land Cover PT BPN (Areal Tambahan KUD Tepian Prima Sawit) at Nov 2005, Dec 2007, Jan 2010, May 2014, Dec 2018 & Feb 2020

Additional area of KUD Tepian Prima Sawit						
Land cover	**November 1, 2005**	**December 1, 2007**	**January 1, 2010**	**May 10, 2014**	**December 2018**	**February 2020**
Scrub	392.3	359.8	440.3	325.9	87.6	88.8
Shrubs	74.4	119.7	49.2	137.0	300.4	256.0
Bush	26.6	18.4	1.7	22.2	40.0	83.3
Open field	29.6	25.1	21.4	26.3	12.2	12.1
Palm Oil KUD TPS	-	-	10.4	11.5	11.5	11.5
Palm Oil Community	-	-	-	-	71.3	71.3
Total	**522.9**					

1.3. Soil Map

All soil types in the AoI are mineral soils. The dominant soil associations in the MU and AoI are tropudults and dystropepts.

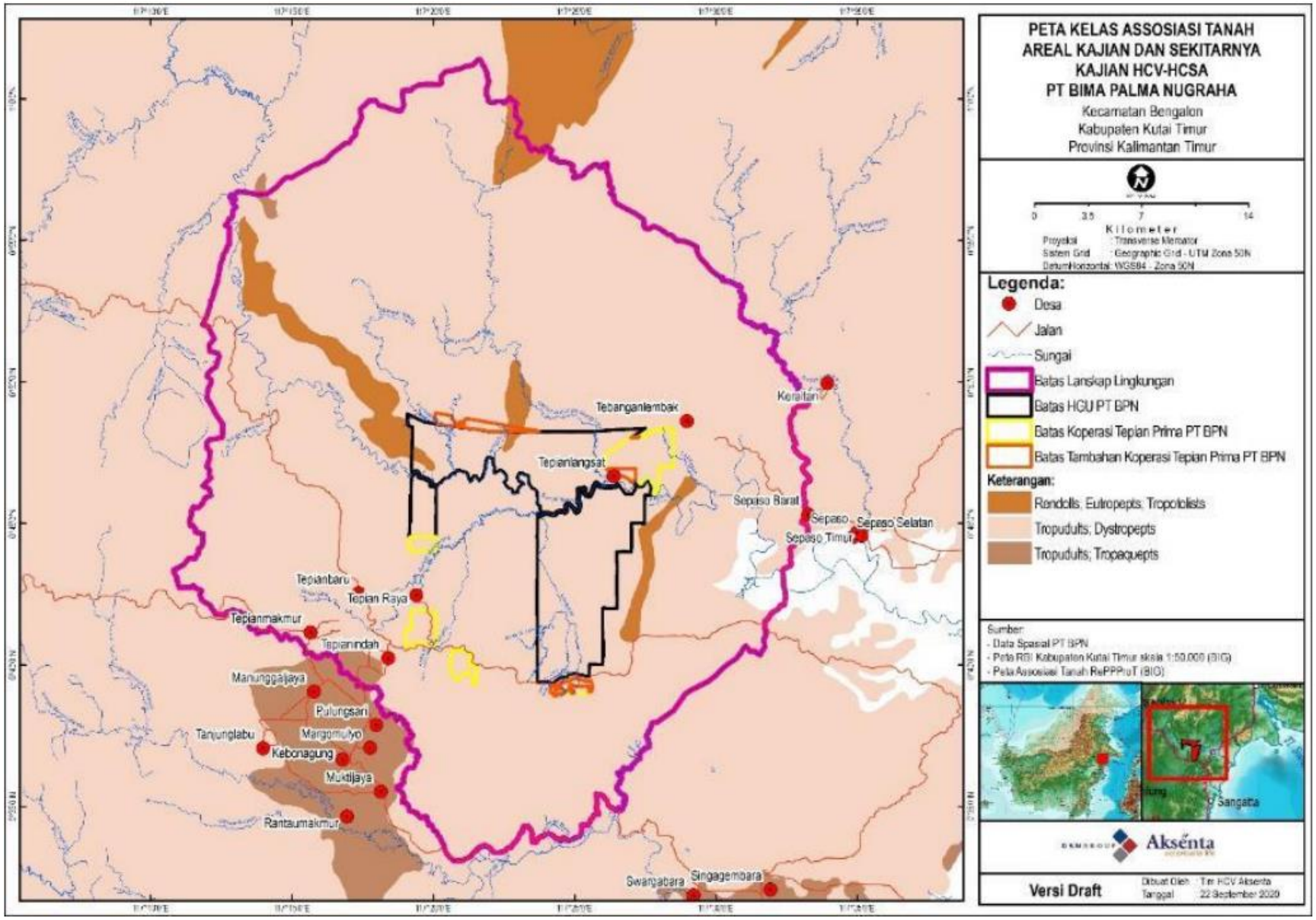

Figure 4 Maps of Soil Type PT BPN

Chapter 2

2. Assessment Process and methods

2.1. SEIA Assessment

2.1.1 Assesor Credentials

a. AMDAL conducted by :

Composition team of AMDAL (PT AGRO TRIMITRA KONSULTAN) :

Leader	:	Ir. Darul Aksa, MP
Physical chemistry	:	Ir. Darul Aksa, MP
	:	Dr. Amir Masruhim
Biology	:	Ir. Hj. Hastaniah, MP
	:	Drs. Rudi Kartika, M.Si
Social, Economic, Cultural & Healthy	:	Dr. Jawatir Pardosi, M.Si
	:	Dra. Marisi N, M.Kes

b. SEIA (Social Environmental Impact Assessment) conducted by :

BIOREF - Faculty of Forestry IPB (2017)

Address	:	Jl Lingkar Kampus IPB, Dramaga Bogor 16680
Telp	:	62-251-8621677
Email	:	bioref.center@gmail.com
Assesor	:	Dr. Ir. Tutut Sunarminto, MSi (Leader)
	:	Joko Mijiarto, S.Hut, MSi (Member)

c. Update EIA - Environmental Impact Analysis & content of AMDAL (PT. Bhumi Pasa Hijau)

Leader	:	Yanto Ardianto
Quality Control	:	Idung Risdiyanto
Member	:	Fersely Getsemani Feliggi
	:	Aulia Bahadori Mukti
	:	Hariadi Propantoko
	:	Priyo Dwi Utomo
	:	Heidei Putra Hutama
	:	Muhamad Fakhrul
	:	Ryan Karida Pratama

d. Update SIA conducted by :

PT Gagas Dinamiga Aksenta (2021)

Address	:	Lindeteves Trade Center Lantai UG Blok A26 No. 2, Jl. Hayam Wuruk No.127 RT/RW 001/006, Mangga Besar Tamansari, Jakarta Barat DKI Jakarta
Telp	:	
Email	:	*hilman@aksenta.com*
Assesor	:	Ahmad Arief Hilman (Leader)
	:	Noor Rakhmat Danumiharja (Member)
	:	Chandra Darmawan (Member)

2.1.2 Methodology

The EIA study was conducted on August 2015 and SIA was conducted on July 2017 & February 2021. Village assessment including Tepian Langsat, Tebangan Lembak, Tepian Indah, Tepian Raya (preparatory village) villages on Bengalon Sub District, Kutai Timur District, East Kalimantan PT BPN. The study done in six methods are :

a. Library Studies; This method is used to gain an understanding of the social and environmental context of the identification area, carried out in the early stages prior to the field and at the stage of yield analysis;

b. Dialogue; This method is used to identify stakeholders, explore the issues that impact, explore expectations, ideas and aspirations to get a solution to the issues that occur, conducted through meetings both formal and non-formal and on specific topics (Focussed Group Discussion);

c. Field Observation; This method is used to directly understand the field facts which indicate the occurrence of social issues and impacts that occur;

d. In-depth Interviews; To explore and gain a deeper understanding of the issues raised by in-depth interviews with selected key figures who were respondents. Respondents' choice is based on the knowledge they have or the perpetrator or the direct feelings of an impact.

e. Triangulation; The above methods are done in an integrated way to verify each other against the issues, opinions, and emerging ideas.

f. Social-Learning Cycle; Social Impact Assessment is not a one-time linear process, but a cyclic process that serves as social learning processes to respond to the environmental changes that occur.

Stages of Social Impact Assessment activities refer to A Comprehensive Guide for Social Impact Assessment (2006).

a. **Study Preparation and Pre-assessment.** This activity aims to collect basic information (both spatial and non-spatial information), either in the form of information data sourced from publications (study reports, journals, books, statistical data, etc.) or through communications with parties deemed to have information , Knowledge, or experience related to social issues at the study site (socio-cultural of the local community, community history and demography, history of social conflict, regional development, government policies and plans, etc.). Activities identifying community profiles, identifying potential key stakeholders, defining the scope of the study, defining methods, and designing social surveys are conducted through a Focussed Group Discussion (FGD) process which is attended by all team members and headed by the team leader. If required, the team may invite related parties or other related parties as resource persons.

b. **Field Activity.** This activity aims to collect data and information and examine the social impact directly in the field. The sequence of activities in the field is as follows:

   1) **Opening Meeting.** This activity is intended to convey the purpose of Social Impact Assessment, scoping, arranging field work teams, and agreeing on daily activity schedules. In this activity also carried out basic training activities (introduction) about Social Impact Assessment: about the background, purpose and objectives, concepts and how to identify it.

   2) **Social Mapping and Participatory Stakeholders (Mapping and Participatory Stakeholders).** This activity aims to identify: 1) key parties that will or have been affected (both positive and negative) or will or have impacted (both positive and negative) on the Company's presence and operations, 2) key parties Expedite / support or otherwise or potentially impede the presence and operation of the Company and 3) the portrait of life (socio-cultural and socio-

economic) of the community in and around the corporate governance area.

3) **Field Observation.** This activity aims to collect and explore information relating to social impact (primary) directly in the field, which examines three sub-studies of the Social-Culture and Community Empowerment; Socio-Economic & Rural Development; as well as Employment & Social Relations. The review will involve counter parts from PT BPN and local communities with the coordination of experts from Gagas Dinamiga Aksenta.

4) **Focussed Group Discussion.** This activity aims to collect information and opinions from its participants, and clarify, confirm, complement and depend the results of field findings in the form of brainstorming discussions on several social issues recorded, both positive and negative.

5) **Analysis and identification records in the field**. This activity aims to process and analyze the data and information obtained from field activities and then compile them into an "identification record" containing the findings while in the field such as social issues, social impact predictions, conclusions, and justification or argument to be submitted to management unit PT BPN. In this activity, clarification of the results of temporary findings and data / information is still needed.

6) **Closing Meeting.** This activity aims to deliver temporary results, in the form of brief information on social portraits, social issues and predictions of social impacts to the Management Unit. The purpose of this activity is for the Management Unit to get the substance of the identification results and can follow up important or urgent things done, without waiting for the final Results Report is completed.

c. **Social Impact Assessment, Analysis and Prediction of Social Impact**. This activity aims to process and analyze more comprehensively and thoroughly on all field results and to confirm, clarify, and revise on special cases based on the opinion of employee and community around PT BPN. The results are then re-presented PT BPN for inputs and improvements. Social impact analysis and prediction activities were conducted at the BIOREF in Bogor & PT Gagas Dinamiga Aksenta in Jakarta. Whereas if necessary presentation / expose can be done in Company office.

d. **Report Writing (Draft).** This activity is in the form of writing workshop, ie all members of the SIA Team meet, discuss, review together, and test the results of analysis and mapping, to then prepare a report. Reports are prepared in a format and systematics that can be accounted for, but also coherent and simple, accompanied by a visual presentation, so easy to read and understood by the Management Unit of the garden and company. The output of this stage is the Draft Report. Furthermore, Draft Reports are submitted to the Company for scrutiny, input and correction if there is any error in the data and information. Furthermore, this draft report document is sent back to the Bioref SIA Team to be refined.

e. **Report Writing (Final).** This activity is focused on incorporating relevant suggestions from the company and from others considered important to be included as part of the Final Report. The output of this stage is the Final Report.

2.2. LUC Assessment

2.1.3 Assessor Credentials

Land Use Change conducted by :
PT Gagas Dinamiga Aksenta
Alamat Lindeteves Trade Center Lantai UG Blok A26 No. 2
Jl. Hayam Wuruk No.127 RT/RW 001/006, Mangga Besar Tamansari, Jakarta Barat DKI Jakarta

Composition team :

1. Ryan Karida Pratama
2. Ferri Agus

2.1.4 Methodology

LUCA has 11 steps for identify and categorize land cover. LUCA Analysis carried out remote sensing, Land use change analysis are as follows :

a. Choosen Relevant time of clearance period
   The assessment was conducted over several cut-off period refers to the RSPO Remediation and Compensation procedures, namely (i) before November 2005 (RSPO Principles & Criteria was first applied), (ii) November 2007 (deadline for the trial of RSPO Principles & Criteria implementation), (iii) January 2010 (the RSPO New Planting Procedure was effective), (iv) July 2008 (PT Dharma Satya Nusantara as holding company became a member of RSPO), and (v) April 2020 (interim report of HCV HCS Assessment was received by PT BPN).

b. Date of satellite image acquisition for each time of clearance period
   Land use change analysis was done by using satellite images from several dates of acquisition. Ideally, the use of satellite image is acquired in the cut-off date (November 2005, December 2007, January 2010, September 2012, February 2020). However, in some cases, the quality of satellite images in cut-off acquisition date did not qualify for land cover change analysis (eg the satellite image was dominated by cloud cover). So that the satellite image used was the nearest satellite image acquisition of cut-off date.
   In the land cover change analysis, three types of satellite images were used, namely (i) Landsat 5 TM with 30 m spatial resolution and (ii) Landsat 7 ETM + with 30 m spatial resolution, and (iii) Landsat 8 OLI with 30 m resolution. Satellite images of Landsat 7 ETM + has a very high noise level, because there were pixels that were not interpreted due to stripping, so it took some satellite images as fillers.

c. Analysis Stages and Process

   The process of remote sensing on Landsat satellite images and spatial analysis were performed by using ERDAS Imagine 9.1 software and Global Mapper V.13. Analysis was performed by using spatial operations with ArcGIS v.10.1 software. All of supporting vector data was processed using the ArcGIS device. The stages taken were started from pre-processing to the application of the compensation scheme. The following are descriptions of the stages performed in the land use change analysis (LUCA).

   1) Image PreProcessing

      - **Satellite image acquisition**. The process of downloading and ordering of satellite images.
      - **Rectification.** The process of geometric correction is done if satellite image with geometric shifting is found where the object's position on a satellite image is not the same as the position of the corrected image. The allowed value of RMSE in this process is 0.05, where the RMSE value of the object's position in a satellite image overlaps with other.

- **Root Mean Square Error (RMSE) Classification.** Errors that may be done during classification, this value is obtained when the rectification on the satellite image is conducted.
- **Image Filling.** Inserting process on each satellite image noise that has stripping by using image filler with mosaic method.
- **Resolution Sharpening.** Performed only on the latest satellite images, which are the satellite images in 2014, using Landsat satellite image panchromatic band 8 with 15 m spatial resolution, generating multispectral satellite image with 15 m resolution.
- **Histogram Equalization**. Equalization of contrast and brightness on the entire satellite images used in the analysis.

2) Image Classification: Supervised Classification/ Visual Interpretation

Land cover classification was done under guidance (supervised classification) followed by visual correction (visual interpretation) applied to satellite images which were ready to be processed. Classification was done by using ERDAS Imagine 9.1 and ArcGIS v.10.1 software.

d. Field & Verification

1) Sampling Method

Determination of the number of sample points that must be verified is done by using the formula of Taro Yamane (1967). The mathematical formulation as follows:

$$n = \frac{N}{N.d^2 + 1}$$

Where:

n = Number of samples

N = Number of populations

d^2 = Assigned precision (in this case, the specified minimum and maximum precision is in 95% and 90% confidence interval)

Placement of the observation point on calculations was done by using purposive sampling technique, in accordance with the area of land cover were found and divided proportionally by considering the focus of study that will be observed in the field is known (Expert judgment).

e. Validating the land cover data

Visual Observation. It is a direct observation on the field in determined areas based on the survey design. The observation location were focussed in location with similar/equal land covers to November 2005, then sampling was performed outside the assessment location.

f. Compiling information related to historical land use in the study area

Visual Observation. It is a direct observation on the field in determined areas based on the survey design> The observation location were focused in location with similar/equal land covers to November 2005 land covers to verify the loss land cover. If the land covers in the assessment do not represent the land cover in November 2005, then sampling was performed outside the assessment location.

g. Identifying the loss of social HCVs

In-depth Interviews. Performing verification with regards to the possibility of the social function loss of the HCV 4,5, and 6 due to Land clearing

h. Identifying the loss of areas where planting is prohibited by RSPO P&C or by country's specific legislation (e.g. riparian zones, steep slope, deep peat)

Spatial Analysis. Data overlay of land clearing and/or interpretation of satellite images by the river banks, slope maps and map of soil types

i. Vegetation Coefficients

Land cover class	Vegetation Coefficient	Encountered/Not Encountered
Primary Forest	1	
Secondary Forest	0.7	
Thicket	0.7	
Agroforest	0.4	
Shrub	0	
Bush	0	
Open Land	0	

2.3. Soil & Topography

2.3.1. Assesor Credentials

Soil & Topography Assessment conducted at the same time with Integrated High Conservation Value-High Carbon Stock Approach Assessment by :
PT Gagas Dinamiga Aksenta
Alamat Lindeteves Trade Center Lantai UG Blok A26 No. 2
Jl. Hayam Wuruk No.127 RT/RW 001/006, Mangga Besar Tamansari, Jakarta Barat DKI Jakarta
Table 5 Composition team Fragile Soil Assessment

Team leader and GIS expert

Name	Role	Organisation	Expertise	Experience
Idung Risdiyanto	Lead Assessor (ALS15029IR); HCS registered practitioner	PT Gagas Dinamiga Aksenta	Hydrology, forest ecology, spatial modelling, carbon stock, land suitability, peat survey, watershed management, and soil and water conservation.	Country: Indonesia and Papua New Guinea Language: Indonesian and English
Ryan Karida Pratama	GIS and remote sensing expert HCS registered practitioner	PT Gagas Dinamiga Aksenta	Remote sensing, GIS, spatial analysis, carbon stock, and landuse change	Country: Indonesia and Malaysia Language: Indonesian and English

Environmental and social experts in the Assessment team

Name	Role	Organisation	Expertise	Experience
Fersely Getsemani Feliggi	Ecosystem service expert	PT Gagas Dinamiga Aksenta	Hydrology, watershed management, soil and water conservation, and spatial analysis	Country: Indonesia and Malaysia Language: Indonesian and English
Resit Sözer	Biodiversity and ecological expert	PT Gagas Dinamiga Aksenta	Wildlife identification, ecology, conservation, management and conflict resolution	Country: Indonesia, Malaysia, and Papua New Guinea Language: English, Dutch and Indonesian

Name	Role	Organisation	Expertise	Experience
Tedi Setiadi	Biodiversity and ecological expert	PT Gagas Dinamiga Aksenta	Wildlife identification, ecological landscape and ecosystem management	Country: Indonesia and Papua New Guinea Language: Indonesian and English
Rahmat Darmawan	Flora and ecological expert	PT Gagas Dinamiga Aksenta	Flora identification, ecological landscape and ecosystem management	Country: Indonesia Language: Indonesian and English
Miranty Magetsari	Social, economic and cultural expert	PT Gagas Dinamiga Aksenta	Social-economic aspect, social impact management, socio-cultural aspect, and participatory mapping	Country: Indonesia and Malaysia Language: Indonesian and English
Ahmad Arief Hilman	Social and economic expert	PT Gagas Dinamiga Aksenta	Social-economic, tenurial assessment and participatory mapping	Country: Indonesia Language: Indonesian and English
Heidei Putra Hutomo	GIS and remote sensing expert	PT Gagas Dinamiga Aksenta	GIS, remote sensing, spatial analysis and landuse change	Country: Indonesia and Malaysia Language: Indonesian and English
Nurani Hardikananda	Flora and carbon expert	PT Gagas Dinamiga Aksenta	Flora identification, mangrove management, silviculture and carbon stock	Country: Indonesia Language: Indonesian and English
Zakaria Al Anshori	Flora and carbon expert	PT Gagas Dinamiga Aksenta	Identifikasi flora, silvikultur, ekologi hutan, *carbon stock*	Country: Indonesia Language: Indonesian and English
Pungky Alim Febriani	GIS and remote sensing expert	PT Gagas Dinamiga Aksenta	GIS, *remote sensing*, *carbon stock*, perubahan tutupan lahan	Country: Indonesia and Malaysia Language: Indonesian and English

Forest inventorying team

Name	Position
Ryan Karida Pratama	Team leader
- Nurani Hardikananda - Zakaria Al Anshori	Species Identification technician
Amri Zakaria	Measuring assistant
Rusdi	Plot cleaner
Feri	Hip chain operator
Pungky Alim Febriani	Compass man
Geby	Line cutter

2.3.2. Methodology

The assessment process described in this report is as follows:

a. Compilation of secondary and available primary data, including preliminary stakeholder consultation during a short term pre-visit to the survey site
b. Team formation and project scope briefing
c. Team to assess the accuracy of topographical conditions described in secondary DEM data, general field observations
d. Analysis and Mapping

2.4. GHG Assessment

2.4.1. Assesor Credentials

GHG Assessment based on at the same time with Integrated High Conservation Value-High Carbon Stock Approach Assessment by :

PT Gagas Dinamiga Aksenta

Alamat Lindeteves Trade Center Lantai UG Blok A26 No. 2

Jl. Hayam Wuruk No.127 RT/RW 001/006, Mangga Besar Tamansari, Jakarta Barat DKI Jakarta

Team leader and GIS expert

Name	Role	Organisation	Expertise	Experience
Idung Risdiyanto	Lead Assessor (ALS15029IR); HCS registered practitioner	PT Gagas Dinamiga Aksenta	Hydrology, forest ecology, spatial modelling, carbon stock, land suitability, peat survey, watershed management, and soil and water conservation.	Country: Indonesia and Papua New Guinea Language: Indonesian and English
Ryan Karida Pratama	GIS and remote sensing expert HCS registered practitioner	PT Gagas Dinamiga Aksenta	Remote sensing, GIS, spatial analysis, carbon stock, and landuse change	Country: Indonesia and Malaysia Language: Indonesian and English

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Name	Role	Organisation	Expertise	Experience
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Pungky Alim Febriani	GIS and remote sensing expert	PT Gagas Dinamiga Aksenta	GIS, *remote sensing*, *carbon stock*, perubahan tutupan lahan	Country: Indonesia and Malaysia Language: Indonesian and English

Forest inventorying team

Name	Position
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- Nurani Hardikananda - Zakaria Al Anshori	Species Identification technician
Amri Zakaria	Measuring assistant
Rusdi	Plot cleaner
Feri	Hip chain operator
Pungky Alim Febriani	Compass man
Geby	Line cutter

2.4.2. Methodology

a. Methods and Carbon Stock Assessment Procedures

1. Approach

Inventory data collected in inventory plots was entered and checked in an excel spreadsheet, and then imported into an Access database for analysis. Biomass and carbon content is initially calculated by tree using the Allometric Equations method. This data is then used to calculate the following:

- Total biomass and carbon mass per plot
- Strata averages of total biomass and carbon mass per ha, as well as strata averages distributed by diameter class
- 90% confidence intervals
- Statistical difference (or not) between strata using the Scheffé's test.
  Biomass is reported in bone dry tonnes per ha. The Carbon (C) fraction of biomass is reported in tonnes of C/ha (Mg C/ha).
  - **Stems per hectare**
    Stems per hectare is calculated from the plot size. The equation used is:
    Stems per hectare = (Count of trees in the plot) / (Plot size in hectares)
  - **Tree Biomass**
    Tree biomass was estimated for the living trees with DBH larger or equal to 5 cm using the Allometric Equations method. The following equation for wet tropical forests (Chave, et. al. 2005) was applied. This widely used equation relates DBH, total tree height and species-specific wood density (ρ) to estimate Above Ground Live Biomass (AGLB) per tree measured in the forest plots. The resulting AGLB is the total biomass of the stem, crown, and leaves for trees in kilograms.

    AGLBi = 0.0776[ρ*i D2iHi]0.940*

Where: AGLB = Above ground live biomass in kilograms

D = Diameter at breast height (1.3m above ground) in centimetres

H = Total tree height in metres

ρ = Specific gravity in grams per cubic centimetre

Chave et al. (2005) found that locally, the error on the estimation of a tree's biomass was of ± 5%.

Genus and/or species-specific gravity values were determined for the species observed in the inventory from the following sources in order of priority:

1. Global Wood Density Database. Chave J, Coomes DA, Jansen S, Lewis SL, Swenson NG, Zanne AE (2009), Towards a worldwide wood economics spectrum. Ecology Letters 12(4): 351-366.
2. Preference is given to wood density estimates from Indonesia and South-East Asia, in order of priority. IPCC (2006): 2006 IPCC Guidelines for National Greenhouse Gas Inventories. Volume 4. Table 4.13 – Basic Wood Density of Tropical Tree Species.
3. Where no wood density was available for the species, there were assigned a wood density value of 0.585 g/cm3.
4. This figure was derived from the weighted average wood density of tree species in the forest inventory with identified wood density estimates.

a. Palm Biomass

The equation used for estimating palm biomass was:

Palm Biomass1 (tonne) **= [Specific gravity] * D2/40000*(palm height)**

For palms, specific gravity is assumed to be 0.247 tonne per green m^3

b. Tree and Palm Carbon Content

The C fraction of biomass is calculated in tonnes of C (Mg C). The equation used for estimating Tree and Palm Carbon Content was:

Carbon Mass (tonne) = Biomass * (Carbon conversion factor)

The carbon conversion factor estimates the carbon component of the vegetation biomass. This can be derived for specific forest types or the IPCC standard value of 0.47 can be used. In this case the IPCC standard value has been used

c. Carbon Mass per Hectare

The equation for estimating tree carbon mass per hectare in each plot is:

Total Carbon (tonne/ha) = Σ ([Tree Carbon]) / [Plot size in hectares]

Separate calculations of volume are made for estimating tree volume in sub-plots because the plot size differs between the main and subplot.

d. **Analysis of Carbon Estimate Precision and Significant Difference between Strata**

Carbon Estimate Precision

The target precision level for carbon stock estimates is 90% confidence intervals within 10% of the average total carbon stock per ha in each strata for the designated above ground carbon pools.

90% confidence intervals (CI) were calculated for each land cover strata from the calculated carbon per ha in each plot using the following standard formula:

CI = $t\alpha/2 \cdot s/\sqrt{n}$

Where: t is the Student's t value,

α determines the level of confidence

s is the standard deviation of the sample and n is the sample size.

Significant Difference between Strata

Following completion of processing of raw data and estimation of average carbon stocks per stratum, two tests are performed to assess significant difference between strata:

1. The ANOVA test is applied to determine whether there are significant differences between the strata carbon estimates.
2. A Scheffé's pairwise multiple comparisons test is conducted to determine which groups are significantly different. The Scheffé's test is a method for statistical comparison of multiple strata

Reff:

Integrated High Conservation Value-High Carbon Stock Approach Assessment Report by Gagas Dinamiga Aksenta, Feb 2021

b. Methods and procedures GHG assessment

Net GHG emissions are calculated by adding the emissions released during land clearing, crop production and crop processing, and subtracting from these emissions the sequestration of carbon in the standing crop and in any conservation areas. Stages of activity measurement and mapping GHG assessment in the concession area of PT. BPN as system boundary for the greenhouse gas calculation in Palm GHG. GHG Calculation stages are divided into input, output agricultural. This emission sources included in the calculator are:

I. Land clearing
II. Manufacture of fertilisers and transport to the plantation
III. Nitrous oxide and carbon dioxide resulting from the field application of fertilisers and mill by-products and other organic sources such as palm litter
IV. Fossil fuel used in the field (mainly for collection of FFB)
V. Methane produced from palm oil mill effluent (POME); and
VI. Carbon dioxide and nitrous oxide generated by the cultivation of peat soils.

In addition, the following GHG fixation and credits are considered:

I. Carbon dioxide fixed by oil palm trees, ground cover and carbon sequestered in plantation litter (see crop sequestration, below);
II. Carbon dioxide fixed by biomass in conservation areas;
III. GHG emissions avoided by the selling of mill energy by-products
IV. electricity sold to the grid; palm kernel shell sold to industrial furnaces

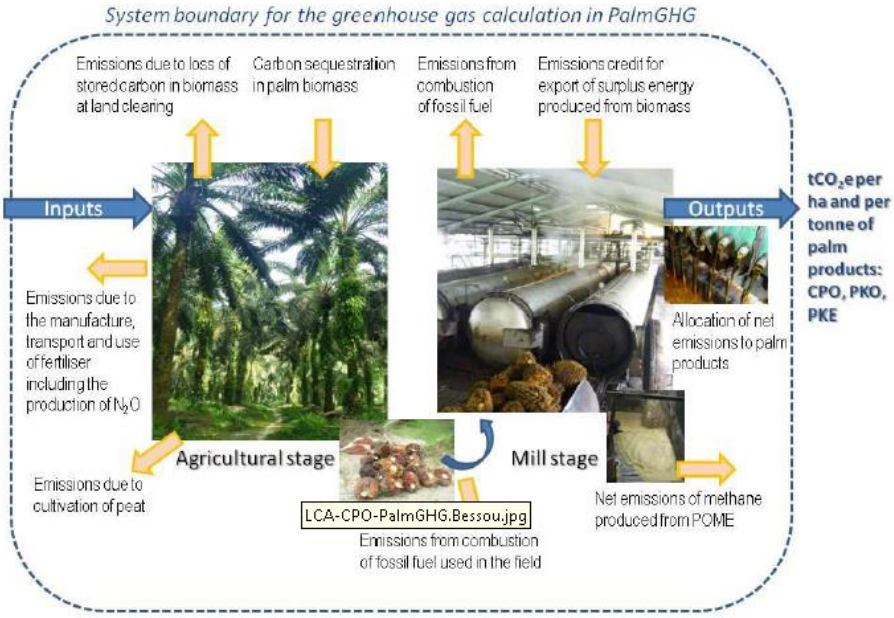

Figure 5 System Boundary of Palm GHG

2.5. HCV & HCS Assessment

2.5.1. Assesor Credentials

Integrated High Conservation Value-High Carbon Stock Approach Assessment by:
PT Gagas Dinamiga Aksenta
Alamat Lindeteves Trade Center Lantai UG Blok A26 No. 2
Jl. Hayam Wuruk No.127 RT/RW 001/006, Mangga Besar Tamansari, Jakarta Barat DKI Jakarta

Table 6 Composition team HCV & HCS Assessment

Team leader and GIS expert

Name	Role	Organisation	Expertise	Experience
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Forest inventorying team

Name	Position
Ryan Karida Pratama	Team leader
- Nurani Hardikananda - Zakaria Al Anshori	Species Identification technician
Amri Zakaria	Measuring assistant
Rusdi	Plot cleaner
Feri	Hip chain operator
Pungky Alim Febriani	Compass man
Geby	Line cutter

2.5.2. Methodology

This Assessment is carried out from December 2019 to May 2020(Table 7). Its implementation involves three main phases, i.e. pre-assessment, scoping study and full assessment.

Table 7 Phases of HCV-HCSA Assessment in PT BPN MU

Phase	Activity	Location	Timeline
PREASSESSMENT			
Information exchange and desktop study	▪ Collecting initial data and information from the Company concerning the project status	Aksenta, Jakarta	19 December 2019-10 January 2020
	▪ Collecting initial data from secondary sources (reports, journals, books, statistics, basemap) from informants. Secondary data collected in this phase includes Land Use Change Analysis (LUCA), Social Liability Assessment, Tenurial Assessment and Participatory Mapping, Social Impact Assessment and HCV Assessment.		
	▪ Data and spatial analyses, as well as due diligence.		
SCOPING STUDY			
Scoping study	▪ Field visit and initial consultation with community representatives, cooperatives, government agencies and Non-Governmental Organisations (NGOs). ▪ Initial checking of land cover resulted from the desktop study. ▪ Verifying due diligence. ▪ Identifying biophysical, ecological and social important features.	Tepian Langsat, Tepian Raya, Tebangan Lembak and Tepian Indah Villages; Sangatta and Samarinda Cities	12-17 January 2020
	▪ Survey and field assessment support facility design	Jakarta	18-22 January 2020
FULL ASSESSMENT			
Field survey	▪ Checking of the corrected land cover ▪ Field data collection ▪ Interview using triangulation technique and confirmation with stakeholder ▪ Field data compilation and team's internal coordination	Tepian Langsat, Tepian Raya, Tebangan Lembak and Tepian Indah Villages	5-19 February 2020
Participatory mapping	Workshop with informants and community members who have knowledge and experience on the Assessment area.	Tepian Langsat, Tepian Raya, Tebangan Lembak and Tepian Indah Villages	10-18 February 2020
Closing meeting	▪ Presentation and discussion with the MU ▪ Submission of interim report	PT BPN Office	19 February 2020
Stakeholder consultation	Direct meeting with key stakeholder representatives including local communities, village government, governmental agencies, NGOs and companies operating around the Assessment area.	Four assessment villages; and Sangatta and Samarinda Cities	22 April-5 May 2020
Analysis and reporting	▪ Field and spatial data analysis ▪ Preparing draft report and Aksenta's internal QC ▪ Submission of the first report to HCVRN	Jakarta	February-May 2020

Other studies in the Assessment area include Social Environmental Impact Assessment Review Update (2021), tenurial assessment and participatory mapping (2019), Land Use Change Analysis /LUCA (2020) and Social Liability Assessment (2020), the results of which are used as supporting data and information for this Assessment.

The assessment process described in this report is as follows:

1. Pre Assessment.

Preassessment is the initial phase carried out before agreement is reached by the Assessment team and

the Company. Two major aspects are assessed in this phase, i.e., (i) meeting of precondition (due diligence) for implementing Assessment (table 8); and (ii) the Company approval and commitment to meeting the requirements in the Assessment implementation. Activities in this phase include: collecting initial data and information concerning the MU and the planned development area, collecting information and reviewing the Company policies relating to the Assessment implementation, reviewing the process of Free, Prior and Informed Consent (**"FPIC"**) that the Company has carried out; and initial assessment of spatial data and satellite imagery.

Table 8 Due diligence against four preconditions

Precondition	Due Diligence
1. Commitment to environmental and social conservation.	▪ The company has commitment to environmental and social safeguards, as represented by DSN Group's Sustainability Policy (http://www.dsn.co.id/sustainability/policy.php).
2. Company commitment to a moratorium on any land clearing or land preparation until the proposed Integrated Conservation and Land Use Plan (**"ICLUP"**) has been completed or finalised.	▪ The Company is committed to avoiding land clearing prior to the completion or finalisation of ICLUP. This is as written in PT BPN statement of moratorium of land clearing or land preparation for operational area, which will be verified in scoping study phase.
3. Demonstration of legal rights to or permit for exploring the Area of Interest (**"AoI"**)	▪ PT BPN obtained a Rights to Cultivation (HGU) concession base on National Land Agency Head Decree No. 39-HGU-BPN RI-2007, covering an area of 11,661.69 ha. In addition, the MU also comprises both actual and planned partnership areas. However, no legal document is found in this phase (e.g., Plasma Allocation Decree or cooperation agreements). This will be verified during scoping study phase. ▪ Permission to explore the AoI pertaining this Assessment has been expressed by community representatives through the village governments, such as a response letter on permission for HCV-HCSA assessment in Tepian Langsat Village. Community permission will be confirmed during the scoping study.
4. FPIC process has been initiated with full disclosure of the proposed project, with all potentially affected communities, and the process for further negotiation and consent is already agreed upon, with fairly appointed representatives.	▪ Under DSN Group, PT BPN has already initiated an FPIC process through comprehensive dissemination of project information to all potentially affected communities and stakeholders. The dissemination events concerning the planned plantation development and partnership strengthening were carried out 20 January 2019, 21 February 2019, 7 March 2019 and 29 November 2019. ▪ Concerning partnership plantation development plan, it has been agreed that all negotiations and approvals for the partnership programme would be represented by the management or representatives of the cooperation or smallholder group members that they have appointed themselves. Document available at this phase includes the Memorandum of Understanding (MoU) between the Company (under the previous management) and Tepian Langsat community. ▪ In 30 December 2019, the Company initiated proposal for permission from community representatives through village governments concerning the implementation of this Assessment in Tepian Langsat Village area. The permission will be confirmed during the scoping study activity.

Based on the due diligence, the Company is considered to have met the four preconditions. Further, the Assessment Team confirms that the Company has approved the entire activity process to be carried out in the Assessment, completely agreed with all Assessor Licencing Scheme (ALS) procedures and requirements including the timeline and review costs, and understood the consequence of the Assessment result, including the size of the development area, conservation area, and recommendation for managing and monitoring conservation areas, particularly those located within the MU. This preassessment concludes that the Assessment may proceed to the next phase.

2. Scooping Study

a. Summary of Activity and Conclusion from the scoping study

Activities carried out in this phase include information collection, initial field survey, visit to sample community members, initial groundtruthing of land cover, key stakeholder identification and initial consultation. These activities are carried out to verify the due diligence output, understand the landscape context, define the landscape/AoI boundaries, design the survey for full assessment and perform initial identification of any potential presence of HCV and HCS areas.

Table 9 Summary of description of activities in the scoping study

Activity	Description	Timeline
Information collection	Desktop study in Jakarta: ▪ Initial review of the project status and development plan ▪ Document and statistic review ▪ Spatial analysis of the basemap including the initial land cover	19 Desember 2019-10 January 2020
Initial field survey	▪ Understanding the landscape context and desktop study output ▪ Identifying potential HCV and HCS ▪ Initial land cover groundtruthing ▪ Visit to sample community members ▪ Stakeholder identification and initial consultation	12-17 January 2020
Visit to sample community members	▪ Field interview and orientation in Tepian Langsat Village. ▪ Field interview and orientation in Tebangan Lembak Village. ▪ Field interview and orientation in Tepian Raya Village. ▪ Field interview and orientation in Tepian Indah Village.	12-17 January 2020
Initial land cover map groundtruthing	Initial verification: ▪ Low-density secondary lowland forest in Tebang Lungun Hill, Bengalon, Koran and Mengkupa riparian areas, and Padang lake bank. ▪ Settlement distribution. ▪ Sample for validating the initial land cover	12-17 January 2020
Stakeholder identification and initial consultation	▪ Interview and discussion with cooperative management. ▪ Interview and discussion with traditional leaders. ▪ Interview and discussion with the neighbouring companies. ▪ Interview and discussion with government agencies. ▪ Interview and discussion with NGOs.	12-17 January 2020

This Assessment has 420 spots for field verification, comprising 66 biodiversity and biophysical survey spots, 17 social survey spots and 337 land cover verification spots. Vegetation or land cover in the Assessment area resulted from the groundtruthing includes six cover types: low-density secondary lowland forest, shrub, bush, oil palm, cleared areas (including developed areas, roads and settlements) and water body (Figure 6). The soundest land cover class is lowland secondary forest, while primary forest is no longer found in this area. Only relatively few parts of natural vegetation (forest) remain and they are distributed in several locations, i.e., Bengalon, Mengkupa and Koran riparian areas; another around Lake Padang; at the hill top of Tebang Lungun; dan di area kemitraan 2 km 93 (Figure 6). Identified as an HCV area in 2012, today Lake Padang almost gets dried, leaving few ponds of swamp.

From the tracing and review of documents in this phase, such as Minutes of Data Processing (RPD) of East Kalimantan Provincial Land Office dated 22 May 2007, assignment of Tepian Prima Sawit Cooperative plasma area, and Cooperation Agreement between the Company and Tepian Prima Sawit Cooperative in 2007, it is confirmed that the affected community is only found in one village, namely Tepian Langsat. In the Cooperation Agreement, it is mentioned that village officials are community representatives.

Tepian Langsat Village Head, Zeky Hamzah, advises that stakeholders to involve in this Assessment include traditional leaders, Tepian Prima Sawit Cooperative management as plasma smallholder representative, a community leader familiar with the MU area and developing cooperation earlier with PT BPN, and migrant community groups living by the asphalt roads. In Tebangan Lembak, the Village Secretary directed Dayak Basap Indigenous Peoples' Chief to become a stakeholder representing the village. According to Village Secretaries of Tepian Indah and Tepian Raya, because transmigrant communities have had no interaction and cooperation with PT BPN, the village officials will be competent enough to represent their communities in this Assessment. Concerning the presence of important species such as orangutan and conservation issues, there have been identified key stakeholders that include East Kalimantan Provincial Natural Resources Conservation Agency ("BKSDA"), Konservasi Alam Nusantara Foundation as an environmental and social conservation NGO which is affiliated with The Nature Conservancy (TNC) and Borneo Orangutan Survival Foundation, and PT Multi Kusuma Cemerlang that shares a direct boundary with the MU to the north.

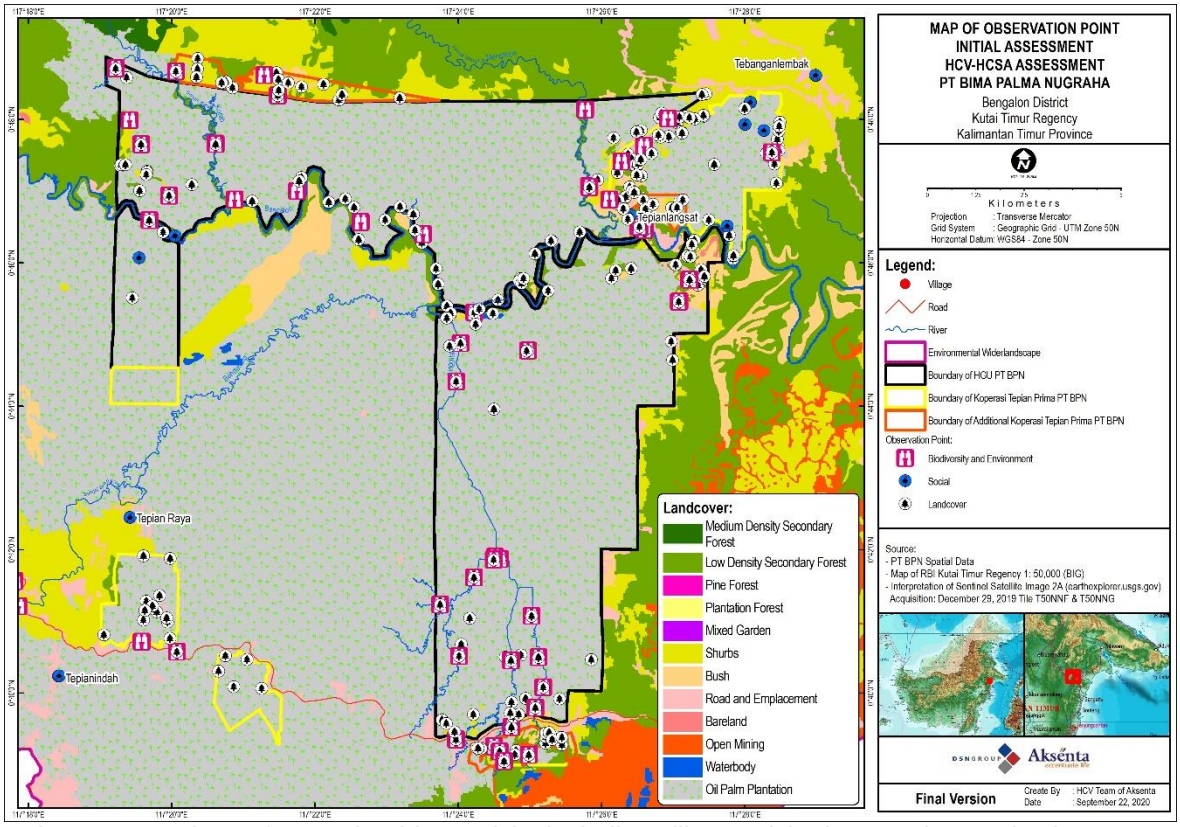


Figure 6 Locations of groundtruthing activity including villages visited at scoping study phase

Conclusion is drawn from the initial visit and consultation that issues that should be explored in the next phase include the following.

- HCV 1: Potential presence of charismatic species, i.e., orangutan and Rare, Threatened and Endangered (**"RTE"**) species such as crocodile and Proboscis monkey, as well as assessment of orangutan corridor.
- HCV 2: Karst landscape in the wider scope should be assessed further.
- HCV 3: Potentially rare or threatened ecosystems, i.e., Lowland Dipterocarp Forest and Karst Forest ecosystems.
- HCV 4: Presence of rivers, lakes and their banks, as well as potential conservation values in karst areas
- HCV 5: Presence of River Bengalon as source of water.
- HCV 6: Presence of old villages and burial grounds that are of historical values to Tepian Langsat and Tebangan Lembak communities.

- HCS: Carbon value samples that represent land cover types based on the initial verification of land cover
- Participatory mapping concerning landuse, important areas to community, conservation areas, and sub-district development plan.
- Verification if FPIC principle application.

The scoping study also concludes that the four preconditions have already been met (Table 10), meaning that this Assessment can proceed to the full-assessment phase.

Table 10 Field verification of the preconditions

Precondition	Verification during scoping study
1. Commitment to environmental and social conservation.	▪ It has been confirmed that the Company is committed to environmental and social safeguards. Field observation indicates that the company has allocated hill, lake, riparian and burial ground areas as HCV areas, based on the 2012 HCV assessment. HCV signboards are also found around River Bengalon, Koran and Mengkupa.
2. Company commitment to a moratorium on any land clearing or land preparation until the proposed ICLUP has been completed or finalised.	▪ Land cover verification in the initial visit confirms that no land clearance has been carried out by the Company prior to this Assessment or prior to its finalisation. ▪ Other than plantation operational activities in planted areas, activities that have been carried out and ongoing activities include: information dissemination, collection of data on community lands to be put under the cooperation, and environmental and social assessments such as HCV-HCSA assessment.
3. Demonstration of legal rights to or permit for exploring the AoI.	▪ It has been confirmed that the legal status of PT BPN concession is HGU. Cadastral process took place in 2007 based on Minutes of Data Processing (RPD) of East Kalimantan Provincial Land Office dated 22 May 2007 ▪ See below the history of permit issuance over the partnership areas. In 2005, PT BPN cooperated with Tepian Langsat community to develop a partnership plantation of 1,503.89 ha through nucleus-plasma scheme. In 2010, East Kutai District Head issued a Decree No. 518.111/170/2010 on Candidate Plasma Smallholder, as well as a Location Permit for Areas of Tepian Prima Sawit Cooperation Plasma Plantation later on that includes an additional area by ± 337,6 ha, as per East Kutai District Head Decree No. No. 525.26/K.1105/HK/XII/2013 dated 24 December 2013. In the progress, another addition was made to the cooperative plantation area, increasing the total area up to ± 1,609.06 ha. From the interview with Tepian Langsat Village Head, it is confirmed that the Company has requested permission for the implementation of this Assessment, which was responded by Village Head as the community representative who granted the permission through a letter No. 09.2004/670/KD-TPL/XII/2019 on response to request for HCV-HCSA assessment in Tepian Langsat Village. The village government also gave permission to the Assessment Team to conduct the Assessment.
4. FPIC process has been initiated with full disclosure of the proposed project, with all potentially affected communities, and the process for further negotiation and consent is already agreed upon, with fairly appointed representatives.	▪ The cooperation agreement between the Company and Tepian Prima Sawit Cooperative was expressed in the contract No. 001/BPN-TLS/MOA/XI/ 2007. The agreement process serves as a follow-up that refers to the cooperation agreement that the company has initiated with Tepian Langsat Village based on letter No. 001/BPN-TLS/MOU/09/2005. ▪ Field visit also confirms that the Company has initiated an FPIC process concerning the plan to develop plantations and strengthen partnership, as mentioned by Zeky Hamzah, Tepian Langsat Village Head, and Edy Wahyudi. Other than formal meetings, information is also disseminated informally through village meetings. ▪ Concerning the Assessment implementation, the interviewed informants were also aware of the environmental and social assessments, including this Assessment, and gave permission to Aksenta to conduct this Assessment in their respective area.

The FPIC process during the scoping study led to the permission from the representatives of all villages for conducting this Assessment in their respective area. Community could understand the team's explanation on HCSA, CSA and FPIC. They allow participatory mapping to be carried out so

long as their norms, ethics, tradition and culture remain upheld and respected. They agreed that the Assessment output would be thoroughly communicated to them through public consultation events upon the completion of the draft report to allow them to provide input to and confirm the output. Based on the preassessment followed by document review, interview and field observation in the scoping study, it is concluded that this Assessment could proceed to the phase of full-assessment.

b. Summary of Consultation in the Scoping Study

This phase involves consultation with stakeholders to gain knowledge over important issues regarding the Assessment substance (Table 11). They are selected taking into account their major activities and concern relative to the MU, as well as potential HCV and HCS elements.

Table 11 Summary of consultation in the scoping study

Name	Role	Organisation/ Social Group	Major Concern/Recommendation
Zeky Hamzah Deby N. Golbi	Village Head Village Secretary	Tepian Langsat village officials	• PT BPN concession is entirely located in Tepian Langsat Village • Other than PT BPN, there are also seven oil palm plantation companies and one coal mining company (PT KPC) that operate in Tepian Langsat. • Tepian Langsat has a 7,800-ha village forest named Seribu Menara Karst, located by Tewet Karst in Mt. Gergaji Karst area. • Settlements are distributed in four sub-villages and 15 Neighbourhood Units. Tepian Baru and Tepian Indah Villages were administratively excluded from Tepian Langsat in 2005. Both were initially units of transmigration settlement. • Tepian Langsat has a plan to develop its seat in Lake Padang area (an approximately 170-ha HCV area based on 2012 assessment). • According to the village official, Lake Padang got dried in 2014. It was a fishing ground to community in Tepian Langsat and its surroundings. If possible, PT BPN should help restore the condition. • No Tepian Langsat community members have plantation activities in PT BPN HGU concession. Migrant community groups own oil palm plantations to the south of the HGU concession (near Wahau Bengalon main road). • The Company has held information dissemination events through formal meetings in 2019, in addition to informal ones in local villages. • Community members to visit for this Assessment are traditional chief responsible for social and cultural affairs, Hadenan (a community leader who has had relationship with PT BPN since the beginning), Edi Wahyudi (Tepian Prima Sawit Cooperative management) and Lamba (concerning land tenure by migrant communities). • Giving permission to Aksenta Team to conduct the HCV-HCSA Assessment.
Madok H. Akim	Village elder	Community leader	• This area was previously a forest. From *'banjir kap'* (timber booming era) to 1969, logging companies came over. Until 2004-2005, local community had logging as their source of livelihood. • Tepian Langsat community used to practice rotating farming. The area included locations along River Bengalon, going 2-3 km inland.

Name	Role	Organisation/ Social Group	Major Concern/Recommendation
			• In the past, community fished and hunted to meet their basic needs. These activities were carried out in *rapak* (ever-wet swamp), rivers, and Lake Padang. They hunted deer and ox using snares installed by River Bengalon and its tributaries. • Giving permission to Aksenta Team to conduct the HCV-HCSA Assessment.
H. Akim	Traditional Chief	Traditional organisation	• Tepian Langsat is an old village. In 1917, the Dutch already identified local villages and appointed *petinggi* (village heads) to levy tax. • Kutai peoples are natives to this area. Because they are all Muslims, their tradition follows the religion. Other than holidays, they also have a tradition of torch parade every 1 Muharram. • They only have one rule for land ownership. Those who plant a land will become the owner. • Community has no indigenous lands. They communally manage forests in karst area (i.e., Seribu Menara Karst Village Forest). • There are old burial grounds in PT BPN HGU concession. The location was once an old village in Benua Tunu (around the mill). • In Tebang Lungun Hill (an HCV 6 designated by 2012 assessment), there are no *lungun* (Dayak Basap people's coffin). In the past, community of Tebangan Lembak (a village neighbouring Tepian Langsat) who are of Dayak Basap ethnic group, extracted the timber to create *lungun.*
Hadenan AS	Villager who follows the progress of PT BPN plantation development	Community leader	• There were no land compensations. But this was no problem to Tepian Langsat community because they had agreement to receive plasma plantations instead. • Before the plantation development, community informed the Company of important sites that should not be cleared, i.e., old burial grounds marked with red plastic ropes. • Other features that should not be cleared include mango and kwanyi trees that mark the boundaries of their ancestors' ex farms.
Edi Wahyudi	Director of Tepian Prima Sawit Cooperative	Cooperative in partnership with the Company	• Giving permission to Aksenta Team to perform this HCV-HCSA Assessment. • Community plantations developed by PT BPN are managed by Tepian Prima Sawit Cooperative. The plasma smallholders (661 people) are Tepian Langkat Village native community. • Based on East Kutai District Head Decree on Spatial Designation of Plasma for Oil Palm Plantation to Tepian Prima Sawit Cooperative, the area is 1,609.06 ha. • The area is yet to be sufficient, so that the Cooperative and the Company (under the new management) are still searching for/acquiring lands for the plasma plantation development. • The Company has held information dissemination events through formal meetings in 2019, in addition to the informal ones in local villages.
Lamba	Land user in the HGU concession	Group of migrant community who settled down and have plantations in Tepian Langsat Village	• Migrant community groups formed smallholder groups and asked for permission from South Sepaso Village to cultivate lands to search for timber in 1996. They had no idea that the area was still part of Tepian Langsat Village that remained isolated at that time.

Name	Role	Organisation/ Social Group	Major Concern/Recommendation
			• Today, the migrant community cultivate oil palm plantations on the lands (within the company HGU concession).
Rusliansyah Rusdiansyah	Gunung Koran Smallholder Group	Smallholder group whose lands are to be cleared for partnership plantations.	• These lands were previously farmed by their fathers. The area is about 130 ha and will be put under the partnership with PT BPN. • Nobody farms in these lands, except Mr Ti (not a native to Tepian Langsat Village). And it is Ti himself who planted durian in 2005. • Giving permission to Aksenta Team to conduct the HCV-HCSA Assessment.
Kusmin	Caretaker of Sangkulirang Mangkalihat Karst	Cultural Reserve	• Tepian Langsat has established a cooperation programme with Cultural Reserve Conservation Agency of East Kalimantan in 2007 to conserve Tewet karst area being part of Gergaji Karst area. • Tewet Cave, Liang Karim and Teet Cave are sites where ancient rock drawings are found. The locations can only be accessed through Bengalon, about 3 hours from Tepian Langsat.
Taswin Benang	Village Secretary Dayak Basap Community's Traditional Chief	Tebangan Lembak village official	• As many as 82 out of 124 families in Tebangan Lembak Village are from Dayak Basap ethnic group, which are native community. • Boundaries of Dayak Basap group's area in Tebangan Lembak are River Mengkupa to Lembak. • The main livelihood of Tebangan Lembak community is hunting. They have this activity in the remaining forest locations towards direction of PT Anugerah Energitama and PT MKC. • There are old burial grounds in Tepian Prima Sawit Cooperative plantations (Partnership 1). They belong to Dayak Basap community in Tebangan Lembak. • Giving permission to Aksenta Team to conduct the HCV-HCSA Assessment.
Rahmadi Agus Gobang	Village Secretary Head of Government Affairs Section	Tepian Indah village officials	• Tepian Indah is a village that formed out of transmigration settlement units in 2003. Its territory was given from Tepian Langsat Village. The Transmigration Settlement Units (UPTs) became a definitive village in 2008. • Tepian Prima Sawit Cooperative plantations (Partnership 2 Division at KM102) are located in Tepian Indah village territory. The land acquisition for the oil palm plantation development was carried out by Tepian Langsat Village. • Giving permission to Aksenta Team to conduc the HCV-HCSA Assessment.
Rohmat Hamidi	Village Secretary Head of Government Affairs Section	Tepian Raya village officials (preparatory village)	• Tepian Raya was administratively excluded from Tepian Indah in 2017. • No part of PT BPN and Tepian Prima Sawit plantations is located within its territory, but it has a business area that has been put under cooperation with PT Anugerah Energitama. • The village environment remains unaffected by Tepian Prima Sawit Cooperative activities, except FFB transportation route that goes through the village road, continuing to the main road and heading the mill. • Giving permission to Aksenta Team to conduct the HCV-HCSA Assessment.
Wahab Muhdan	GIS staff Ranger	PT Multi Kusuma Cemerlang (PT	• PT MKC already had Tropenbos to conduct an HCV-HCSA assessment in 2014 and ReMark Asia to conduct the

Name	Role	Organisation/ Social Group	Major Concern/Recommendation
		MKC)	reassessment in 2019. The identified HCV-HCS area is around 3,000 ha in Block 1 and around 5,900 ha in Block 2 • PT MKC has a regular monitoring activity in conservation areas using Smart Patrol application. • In 2016 land clearing, banteng was still found in Block 2, to the north of PT BPN concession. However, monitoring activities has not seen this species since then.
Didik Prayitno	Head of Protection Section	East Kutai District Plantation Office	• Sustainable plantation should take into account environmental conservation. • There is a regulation, namely Local Regulation No. 6/2005, that requires allocating 10% conservation area. This regulation is planned for revision this year, so that conservation areas to protect are not limited to the size, but also considers the function, so that it could be more or less than 10%, depending on the location. • Environmental Impact Assessment (AMDAL) also already requires riparian conservation. • In 2020-2024, there is a 'Strengthening Forest Area Planning and Management in Kalimantan' (also known as Kalimantan Forest Project/Kalfor) initiated by Ministry of Environment and Forestry and United Nations Development Programme (UNDP). In East Kalimantan, this programme will be implemented in East Kutai District. It aims at conserving forest outside forest areas so that it could be in synergy with HCV/HCS areas. Initial identification was conducted by Mulawarman University.
Suryadi Yoyok	Forest ranger Staff	East Kalimantan BKSDA	• A report came in on orangutan two days ago in the concession of PT MKC, the Company's neighbour. • In the future, HCV monitoring should involve BKSDA. • Potential key species in the area: orangutan, crocodile, Sunda pangolin, and sun bear. • Concerning orangutan, there should be a joint management for conflict mitigation. Translocation will be the last option. • Install HCV signboards in riparian areas. These should include information on criminal sanctions. • A circular was issued in 2015 from Minister of Agrarian Affairs and Spatial Planning/Head of National Land Agency on HCV Conservation.
Arif Rifqi	Staff	Konservasi Alam Nusantara Foundation (affiliated with The Nature Conservancy)	• The Assessment area is part of orangutan distribution area. Kutai National Park area up to River Bengalon is the species' population pouch in East Kalimantan. • Bengalon Sub-Dsitrict is one of Kalimantan Forest Project (Kalfor) sites. • Another key species is crocodile. Overfishing situation may threaten their presence or may potentially lead to conflict between crocodile and human.

c. Social Part: Method and output

1. Social assessment method

Considering that this Assessment is a rapid assessment that takes into account time efficiency in data collection, it uses descriptive-qualitative method prioritising qualitative approach towards select respondents. Soemantri (2005) mentions that a researcher using qualitative method is required to put forward voluntary principle in addition to the principle of the research subject's informed consent. This is in accordance with the approach that the Guide recommends, where FPIC principle

is applied to HCV 5 and 6 identification, where local community is participatorily engaged.

Information on HCV is information that is specific and subject-specific and only known by specific individuals as well. Therefore, respondents in all Assessment phases are selected firstly through 'purposive sampling' method. This technique is applied taking into account the limited time and resources, and subjects/samples are selected against specific goals (Nurdin and Hartati, 2019) which, in this case, are specific concerning HCV. Criteria of respondents in this Assessment are individuals who have information on local village territories, village landuse and its history, local community culture, areas important to community and presence of forest areas. As such, village heads and staff, traditional staff or religious leaders, community elders or leaders, smallholders/SGs and management of cooperative in partnership with the Company are selected as key respondents.

Respondents are selected based on key stakeholder representative from social and gender groups that represent administrative area in social landscape and social groups in the assessed villages. Further, 'snowball sampling' (Nurdin and Hartati, 2019; Kirchherr J and Charles K, 2018; Sugiyono, 2017; Noy, 2008; Hendriks *et al*., 1992) is conducted towards the respondents, accompanied with triangulation method to reduce bias (Nurdin and Hartati, 2019; Sugiyono, 2017; Olsen, 2004). Snowball sampling allows tracing the most competent respondents to answer questions on HCV presence and direct consultation with stakeholders relevant to HCV/HCS areas. For example, information on the presence of HCV 6 (historical burial ground or old village) is collected from village head. This information is then traced up to traditional leader. Such tracing of information is not found in quantitative method based on random sampling.

Limiting factors in qualitative and snowball sampling methods, whose samples[3] are relatively small in number or do not represent the entire population, are balanced with the use of purposive sampling and triangulation. HCV-HCSA Assessment Manual (2017) mentions that triangulation should be applied to field activities to verify FPIC, outputs of other social assessments, and this Assessment. Therefore, assessment is not a census, and number of respondents are not defined on a quantitative basis to represent the entire population. Number of respondents develop and they represent the AoI from spatial aspects, and it can be qualitatively accounted for to represent social groups.

Types of data used in this Assessment include primary and secondary data. The former is collected through in-depth interview, participatory mapping and field observation. Survey form is used not as the questionnaire, but as an interview framework and output note, although the discussion topic could practically develop and go beyond the questions in the form. Table 12 presents secondary data used in this Assessment. All data and information collected are correlative to and correct each other to meet the triangulation principle.

Table 12 Types of data and information collected and analysed for the Assessment's social field

Type	Data and information types	Data source	Remark
HCV 4	1. Watershed boundary map	1. Ministry of Environment and Forestry (MoEF) (2017)	Initial description on the Assessment area position and characteristics
	2. Land system map	2. RePPProt (1990)	Indication of land form and soil type
	3. River network map	3. Geospatial Information Agency (BIG) (2017)	Presence of rivers
	4. KHG map	4. MoEF (2017)	Indication of peat area distribution
	5. Digital Elevation Model 30 metres, SRTM	5. USGS; (www.earthexplorer.usgs.gov)	Topographic and slope profile
	6. Sentinel-2 satellite image dated 29 December 2019	6. USGS (www.earthexplorer.usgs.gov)	Land cover interpretation

[3] Although 'social situation' is used in qualitative research, instead of 'population', samples in such research are not statistical samples (Sugiyono, 2017). Sampling with qualitative method is characterised with only few samples, and while they are not representative (Nurdin and Hartati, 2019) they focus on exploring specific issues.

Type	Data and information types	Data source	Remark
	7. Rainfall measurement data	7. PT BPN (2011-2019)	Climate characteristics
	8. 2009-2019 hotspot data	8. NASA (www.firms.modaps.eosdis.nasa.gov)	Land fire history and pattern
	9. Land Use Change Analysis	9. Aksenta (2020)	Cover change history
	10. HCV Presence Identification	10. Forestry Faculty of Bogor Agricultural University (2012)	Initial information on the presence of HCV
	11. A Guide to Constructing and Maintaining Fire-breaks	11. Government of Western Australia; (https://www.dfes.wa.gov.au/)	Indication of firebreak functions
	12. RSPO Manual on Best Management Practices (BMPs) for the Management and Rehabilitation of Riparian Reserves	12. Barclay *et al.* (2017)	Guide to designing the width of riverbanks of conservation values
HCV 5	1. Map of settlement and road network distribution	1. BIG (2017)	Initial indication of interaction with and use of natural and land resources
	2. River network map	2. BIG (2017)	
	3. Kabupaten Kutai Timur dalam Angka tahun 2019	3. East Kutai District BPS (2019)	Profile of population concerning socio-economic context
	4. Kecamatan Bengalon Dalam Angka Tahun 2019	4. East Kutai District BPS (2019)	
	5. HCV Presence Identification	5. Forestry Faculty of Bogor Agricultural University (2012)	Initial information on HCV presence
	6. Tenurial Assessment and Participatory Mapping	6. PT BPN (2019)	Use of natural and land resources
	7. Social Liability Assessment	7. Aksenta (2019)	Landuse history and indication of HCV presence
	8. Social Impact Assessment	8. Bioref (2017)	Socio-economic information
HCV 6	1. Map of settlement and river network distribution	1. BIG (2017)	Initial indication of interaction with and use of natural and land resources
	2. Kecamatan Bengalon dalam Angka tahun 2019	2. East Kutai District BPS (2019)	Population profile concerning socio-cultural aspects
	3. Kewarganegaraan, Suku Bangsa, Agama dan Bahasa Sehari-hari Penduduk Indonesia	3. BPS (2011)	
	4. World Heritage Sites	4. UNESCO (www.whc.unesco.org)	Sites of global historical-cultural values
	5. Borneo Menyingkap Gua Prasejarah	5. Fage *et al.* (2010)	Indication of the presence of prehistoric caves
	6. HCV Presence Identification	6. Forestry Faculty of Bogor Agricultural University (2012)	Initial information on HCV presence
	7. Tenurial Assessment and Participatory Mapping	7. PT BPN (2019)	Use of natural and land resources.
	8. Social Liability Assessment	8. Aksenta (2019)	Landuse history and HCV presence indication
	9. Social Impact Assessment	9. Bioref (2017)	Socio-cultural information
	10. Cultural Sites Protected by the Government	10. Ministry of Education and Culture (www.kebudayaan.kemdikbud.go.id)	Sites of regional historical-cultural values
	11. Totemism	11. Lévi-Strauss (1991)	Definitions for identifying the presence of totemic values

d. Assessment's Environmental Field : Method and Output

1. Environmental Assessment Method

The collection of HCV-HCSA environmental data aims at two types of data, namely primary and secondary data. Relevant information is collected through desktop review, thematic maps of biodiversity in Borneo, and the updated information on important species in both global and national contexts (Table 13). Specifically, references on orangutan get highlighted because of the species' conservation status. Concerning forest inventorying and carbon accounting, relevant references are collected, particularly those that concern with method and allometric equation for biomass estimation.

Table 13 Types of data and information collected and analysed on the environmental assessment field

Category	Types of data and information	Source of data
HCV 1	▪ Map of forest area and conservation area ▪ Sentinel-2 satellite image (dated 29 December 2019) ▪ IUCN Red List ▪ Convention on International Trade in Endangered Species of Wild Fauna and Flora (**"CITES"**) Appendices (valid as of 1 January 2017) ▪ List of protected flora and fauna species ▪ SKJB Bird Fieldguide ▪ List of Bird Species in Indonesia ▪ Fieldguide: Snake of Borneo ▪ *Pengenalan Jenis Tumbuhan Kalimantan* ▪ *Kura-kura dan buaya Indonesia dan Papua Nugini* ▪ IBA; EBA; KBA Maps ▪ Ramsar ▪ *Panduan Survei Sarang Orangutan* ▪ *Land Use Change Analysis*	▪ KLHK (2014) ▪ USGS (www.earthexplorer.usgs.gov) ▪ IUCN (www.iucnredlist.org) ▪ CITES (2017) ▪ Minister of Environment and Forestry Regulation No. 106/2018 ▪ MacKinnon *et al.*, 2010 ▪ Sukmantoro *et al.*, 2006 ▪ Stuebing and Inger, 1999 ▪ Ferry Slik (asianplant.net) ▪ Iskandar, 2000 ▪ BirdLife International (www.birdlife.org) ▪ Ramsar (www.ramsar.org) ▪ Atmoko and Rifqi, 2012 ▪ Aksenta, 2020
HCV 2	▪ Conservation area map ▪ Sentinel-2 satellite image (dated 29 December 2019) ▪ Intact Forest Landscape (IFL) map ▪ *Land Use Change Analysis*	▪ Ministry of Environment and Forestry Regulation (2014) ▪ USGS (www.earthexplorer.usgs.gov) ▪ IFL (www.intactforests.org) ▪ Aksenta, 2020
HCV 3	▪ Sentinel-2 satellite image (dated 29 December 2019) ▪ Land system map ▪ Map of Borneo ecoregion ▪ Land Use Change Analysis	▪ USGS (www.earthexplorer.usgs.gov) ▪ RePPProt, 1990 ▪ Ministry of Environment and Forestry Regulation (2018) ▪ Aksenta, 2020
Forest inventorying and carbon stock estimation	▪ Procedure of Greenhouse Gas (GHG) assessment for New Development-version 3 ▪ *Monograph: Allometric Models for Estimating Tree Biomass at Various Forest Ecosystem Types in Indonesia* ▪ Sentinel-2A satellite image, dated 29 December 2019 ▪ Guide to Use of Allometric Model for Estimating Forest Biomass and Carbon Stock in Indonesia.	▪ RSPO, 2016 ▪ Krisnawati *et al.*, 2012 ▪ USGS (www.earthexplorer.usgs.gov) ▪ Regulation of Head of Forestry Research and Development Agency No. P.01/VIII-P3KR/2012

Land cover is verified through two methods, i.e., visual field verification (Congalton & Green, 2009) and field measurement through biomass measurement (Bakker *et al.*, 2009). Number of forest

inventorying plots is set using experimental design method taking into account the Above Ground Biomass (AGB) carbon amount standard deviation variables by land cover. Based on the corrected land cover classification (from scoping study), there has been identified natural vegetation cover classes that include low-density secondary lowland forest, shrub, and bush. Followingly, a design is prepared for number of spots, producing 172 spots for vegetation inventorying sample, as can be seen in Table 14 See Figure 7 for distribution of samples of land cover verification and forest inventorying plots.

Forest inventorying plots are distributed on random and systematic bases (HCSA Toolkit v2, 2017). The combined method is meant to improve data accuracy and make sure that plots are distributed in the entire naturally vegetated area (polygon). Random positioning of plots is a more comprehensive and statistically robust approach. As for systematic plot distribution, this is used to maximise the number of plots to measure. Random placing is used in areas relatively small in size (polygons), while systematic placing is used in areas relatively big using transect line with regular distance.

Forest/vegetation inventorying data is collected using circle plot (Figure 8) and the samples taken only the AGB. The size of circle plot design is 500 m^2 and the sub-plots are 100 m^2 each. Sub-plot is used to measure trees classified based on the diameter class. Biomass variables of each plot and sub-plot (e.g., DBH, tree height vegetation species name and percentage of canopy cover) are measured

Table 14 Design of inventorying plot number in naturally vegetated land cover

Corrected initial land cover classification	t Value*	Standard Deviation (tonne-C/ha)*	Mean (tonne-C/ha)*	Range of AGB Carbon Stock (tonne-C/ha)**	Number of Plot
Low-density secondary lowland forest	1.66	31.63	70	35-75	**56**
Shrub	1.66	14.14	25	15-35	**88**
Bush and bare soil	1.66	3.16	10	5-15	**27**
Total					**172**

Note: *Clarification on HCV-HCSA Manual Requirements; ** HCSA Toolkit v2, Module 4, p.23

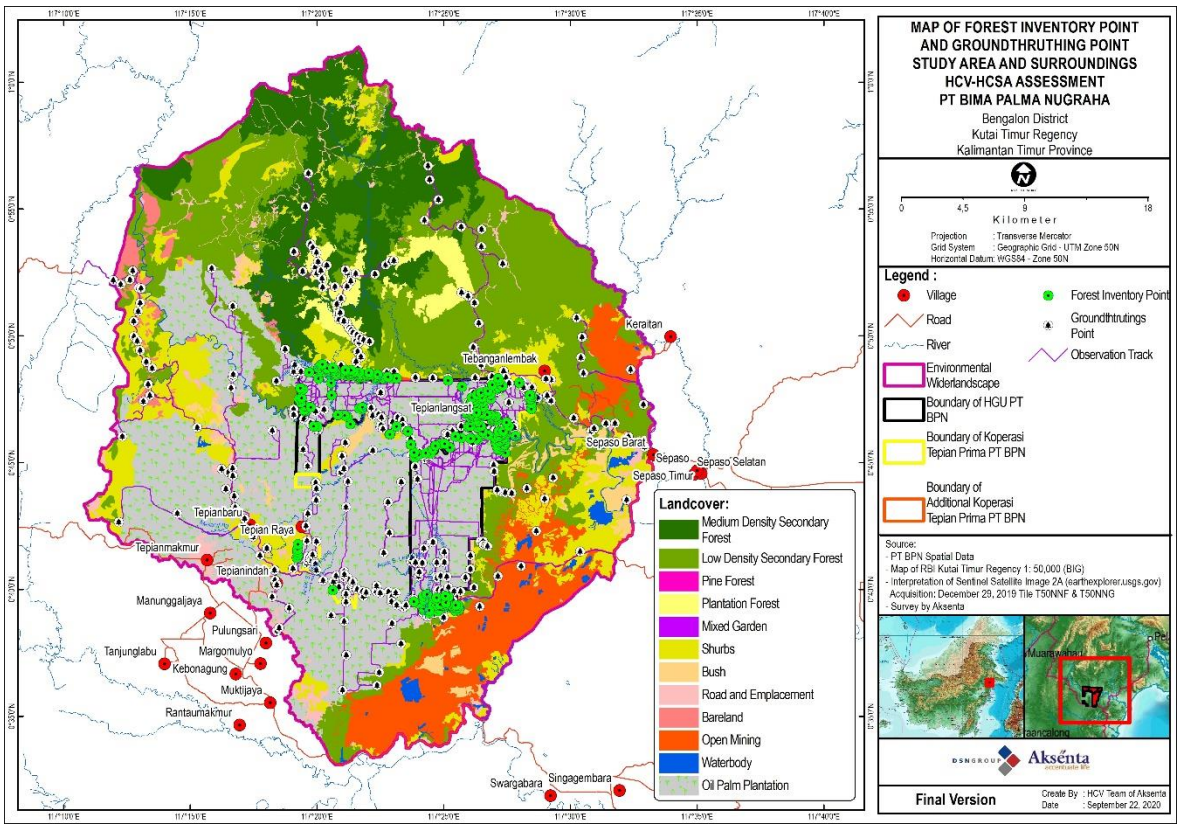


Figure 7 Location of land cover verification samples and forest inventorying plots

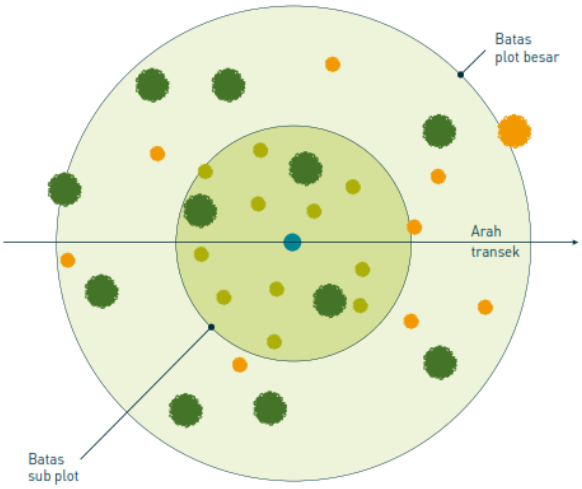


Figure 8 Form and size of plots and sub-plots

Carbon stock amount estimate is gained through allometric equation for estimating biomass, i.e., general allometric for secondary forest (Adinugroho, 2009) with DBH value as the parameter (*equation 1)*. Further, the biomass value gained from the allometric equation is derived using coefficient of 0.47 (HCSA Toolkit v2, 2017) to gain the carbon stock amount. Upon estimating carbon stock amount for each tree individual, the next is estimating carbon stock amount per hectare using *equation 2*.

$$Biomass\ (kg) = 0.19999 * DBH^{2.14} \qquad (equation\ 1)$$

$$Total\ Carbon\ (tonne/ha) = \frac{\Sigma([Tree\ Carbon\ Stock])}{Size\ of\ plot\ in\ ha} \qquad (equation\ 2)$$

Data from forest inventorying plot is analysed using Important Value Index (IVI) and Summed

Dominance Ratio (SDR) to identify the vegetation structure and composition, as well as estimation of number of stands per hectare. This analysis aims to describe a plant species domination in a community (Soegianto, 1994 in Indriyanto, 2006) and identify composition of species found in every land cover/ type of vegetation. As for the estimate of number of stands per hectare is used as a guide to HCS land cover classification. Statistical test is then performed to identify the quality and distribution of data from the carbon value estimation. This test includes simple statistical test, Anova test and Scheffee analysis.

2.6. FPIC Process

2.6.1. Assessor Credentials

FPIC Assessment were conducted by:
Dept. CSR of PT Bima Palma Nugraha
Address: Gedung Sapta Mulia Center Jl. Rawa Gelam V Kav. OR/3B Kawasan Industri Pulogadung
Telp: 62-21- 4618135
Email: agustinus.triwibowo@dsngroup.co.id

Composition Team:

1. Imanuel Tibian, Trained by LINKS
2. Pandu Satria Wibowo

For implementation of FPIC, DSN Team accompanied with Gagas Dinamiga Aksenta.

2.6.2. Methodology

The assessment process described in this report is as follows

A. Community Engagement Activities

Community engagement activities included the following

1. Initial socialisation of HCS program, field work plan and schedules at Kabupaten level (Opening Stakeholder Consultation Meeting) and village level.
2. Focus Group Discussions (FGD) at Desa level with Kepala Desa, support staff and a range of community members, including representatives of various key groups (youth, women, farmers).
3. In-field participatory mapping of land cover and land use together with community representatives, with focus on identifying and describing current and future community land use plans.
4. Socialisation of draft ICLP. This was carried out in a second separate site visit once HCV and HCS results had been developed.

B. Opening meeting

The primary objectives of the Opening Meeting were:

1. To introduce and broadly describe BPN planned project development.
2. To describe BPN environmental and social commitments, including commitment to the principles of FPIC.
3. To describe the assessments to be carried out before development can begin (HCV, SIA, HCS) including assessment objectives, processes and time schedules.
4. To seek input and feedback from attendees.

C. Initial Consultation and Focus Group Discussions (FGD) at village level

Initial consultations were started with introductions and a dicussion about the HCS, HCV and SIA assessment processes, activities and outcomes, and the rights and roles of communities in the

assessment process. This was followed by a question and answer session. After the initial discussion, FGD were held to collect information focussing on land use, land tenure, food and water security, sacred site identification and concerns and expectations

D. Participatory mapping

Participatory mapping was carried out collaboratively at Desa level by teams consisting of community members, PT Gagas Dinamiga Aksenta surveyors and BPN field staff. Objectives of the Participatory Mapping activities were as follows:

- Ground truthing of land cover and land use maps.
- Identification of land areas communities currently use or plan to use for long term agriculture and as such are important for food security.
- Identification of any additional no-go areas not captured during HCV assessment, with major focus on community/customary land use aspects.
- Identification of sensitive sites land uses requiring additional joint discussion with communities before being classed as "go – area". In particular, padi fields (sawah) and other food production areas (related to food security and Government rice field rehabilitation programs) productive rubber plantation land, and tembawang areas.
- Identification of settlement areas and land for planned expansion of settlements.
- Improved mapping of rivers and streams requiring buffering, with particular focus on streams used for water suuply.
- Checking identification and boundaries of steep land, peat land areas and other potential conservation areas (if any).
- Identifying areas of land areas Communities currently use for collection of forest products (timber and non-timber).

The participatory mapping exercise included the following activities:

1. Detailed mapping of land cover from aerial photography and satellite imagery (desk top activity prior to field visit).
2. Initial socialisation (during FGD), including listing of target areas for field survey, and selection of the Desa team to be involved in the field mapping.
3. GPS surveys in the field to identify and ground truth land cover and land use, and map streams and no-go areas.
4. Integration of results into the draft Integrated Land Use Plan. (Office based activity after the first field visit).
5. Participatory review of draft land use plans with communities (during the second field visit).

Chapter 3

3. Summary of Finding

3.1 SEIA

Existence of PT BPN Oil Palm Plantation in Bengalon Subdistrict will certainly have a positive and negative impact for community and environment in the village located around area of the company.

a. Positive Impact

There is balance results for (potential) positive and negative impacts at PT BPN based on Bioref & PT Gagas Dinamiga Aksenta studies, i.e

1. Job opportunities for around community (availability of employment)
2. Opening access of road and entry transmigrants is an opportunity for PT BPN fulfilling needs of employees
3. Territorial openness and CSR assistance provided by the company (road repairs, schools, mosques, assistance for funds for village / customary activities and health assistance)
4. Oil palm plantation will reduce unemployement rate of rural communities, while reducing exodus of villagers out of village looking for decent livelihoods
5. Oil palm plantation based on plasma, is expected to encourage increase income in society
6. Opening access for new economic activities for the community around the oil palm plantation (increased business opportunities)
7. Chance and certainty of getting cash with periodic fixed (salary paid every month).

b. Negative Impact

The result of interview and Focus Group Disscusion (FGD) with most of the people in villages around PT BPN has negative impact, i.e:

1. The community concerns over declining forest area and conversion land to oil palm plantation will results the loss of full ownership of community land
2. Concerns of pollution in river water
3. Public perception if company has operating can decreasing empty land to be processed.
4. The awareness of the existence of layoffs of local workers with the presence of workers from outside the village / outside East Kutai because quality of workers
5. To bring in labor from outside the village can provoke emotion, social jealousy and weaken the bargaining position of some local people to become a workforce in the company
6. Concerns about the location of plasma far from village.
7. Community concerns about changes in farming patterns from rice cultivators, planters and rubber plantations to oil palm plantations
8. Negative attitudes towards CSR programs that have not been realized.
9. The community considers that the company has not been serious in handling programs that lead to the development, improvement of village physical facilities (roads, educational facilities, infrastructure, health, worship, etc.), although the community is aware that PT BPN is still in the process of preparing and has not operated the process development of oil palm plantations.
10. The drying up of Lake Padang

c. Public Expectations

With a wide range of impacts, then the public has the expectation that negative impact can be minimalize and positive impact can be enhanced. From the interview results with people in nine village, community expectation are follow as:

1. Educational programs (honorariums for elementary school teachers, assistance for teaching and

learning tools, PAUD building assistance, kindergartens and facilitation of elementary education infrastructure facilities, awarding scholarships for outstanding students)

2. Health program (development assistance and facilities of polindes, guidance of posyandu, free medical treatment from company, assistance for clean water infrastructure).
3. Economic program (Plasma scheme).
4. Environmental programs, such as: support for the improvement of village facilities and infrastructure, such as (facilitation infrastructure, repair and maintenance of rural roads, making roads to other villages, building roads to community farms, facilitation of mini tower signal HP). Village support / activation concerns fire (the formation of community teams concerning fire in each village). Agricultural support (fertilizer assistance for rice fields).
5. Programs of religion, culture, social and sport, such as (assistance of village events / PHBN and PHBA, if there is a problem between the community and the company then resolved with customs / respect the customs in the local area)

d. Company Social Activities

Social activities is a part invitation of PT BPN. Based on report company social activity over the past few years, the company's social activity programs are :

1. Develop productive economic business to villagers
2. Develop entrepreneur intergrated agricultural
3. Strengthening capacity of economic business and smallholder
4. Strengthening community aware zero burning of land
5. Social visit to around village
6. Assistance to cost of education, education campaign, the provision of educational facilities.
7. Assistance for socio – cultural (donation or support for traditional ceremonies, feast day, etc)

3.2 HCV HCS Assessment

a. Description of AoI

1. AoI boundaries

AoI boundaries are gained from aggregation of the boundaries of biodiversity, hydrological and social landscapes. In this Assessment, the AoI landscape is defined by taking into consideration watershed/sub-watershed boundaries, the presence of natural ecosystem, landuses around the MU, and land cover and/or locations that may potentially serve as habitats to wildlife, particularly areas of connectivity to the MU. Based on these criteria, Central Bengalon sub-watershed becomes the basis of AoI boundaries, especially in its western and northern boundaries. The sub-watershed boundaries are then adjusted to the presence of roads and rivers in the eastern and southern parts of the area. In the southeastern part, the AoI also includes PT Kaltim Prima Coal's mining sites, but this is limited based on the appearance of bare soil on satellite image.

The social landscape includes four villages, i.e., Tepian Langsat, Tebangan Lembak, Tepian Raya and Tepian Indah.[4] Another two villages are also located in the AoI, namely Tepian Baru and Tepian Makmur. However, both have no interaction with the MU and are transmigration settlements whose social characteristics are already represented by Tepian Indah and Tepian Raya, so that they are excluded from the social assessment's scope. The total area of the AoI or this Assessment's landscape is 137,419.2 ha with a wide range of land cover types (Figure 7).

[4] PT BPN's MU is entirely situated in Tepian Langsat Village, while the other three villages are around the MU. To the date this Assessment is carried out, no definitive boundaries have been defined for villages in this area.

2. Landscape context

Physical landscape

Characteristics of physical environment in the Assessment area and its surroundings are as follow.

- The entire area of the AoI belongs to Bengalon watershed. Based on its position against the sub-watershed, most part of the area is located in Middle Bengalon sub-watershed.
- Based on Koppen climate classification, it is known that the climate in the AoI is Af type (tropical rainforest climate) (Koppen, 1900 in Kottek *et al*., 2006), and based on Schmidt & Ferguson's it falls under Type A. This means that it is a heavily wet area that is subject to year-round rainfall. Months of rainfall in this area are completely considered wet season months (> 100 mm).
- The AoI landscape is situated in a lowland with elevation of < 500 m a.s.l. The elevation profile gradually increases up to the north and south of the MU area. Hills with steep slopes (>40%) are found in the northwestern part of the HGU concession and northern part of the AoI.
- Based on land system map (RePPProT, 1990), the AoI is divided into 9 land systems with 4 major forms, i.e., (i) alluvial plain, (ii) hills; (iii) mountains; and (iv) flatland. The dominant land physiography in this area is undulating to rolling sediment plain in areas with LWW, TWB and TWH land systems.
- Based on Sangatta Sheet Geological Map, it is known that the AoI is dominated by five geological formations, i.e., Balikpapan, Mangkupa, Pamaluan, Lebak and Pulau Balang Formations. Located in the eastern and southern parts of the AoI, Balikpapan and Pulau Balang Formations are the main formation that contains coal layer in Kutai Basin.
- All soil types in the AoI are mineral soils. The dominant soil associations in the MU and AoI are tropudults and dystropepts.

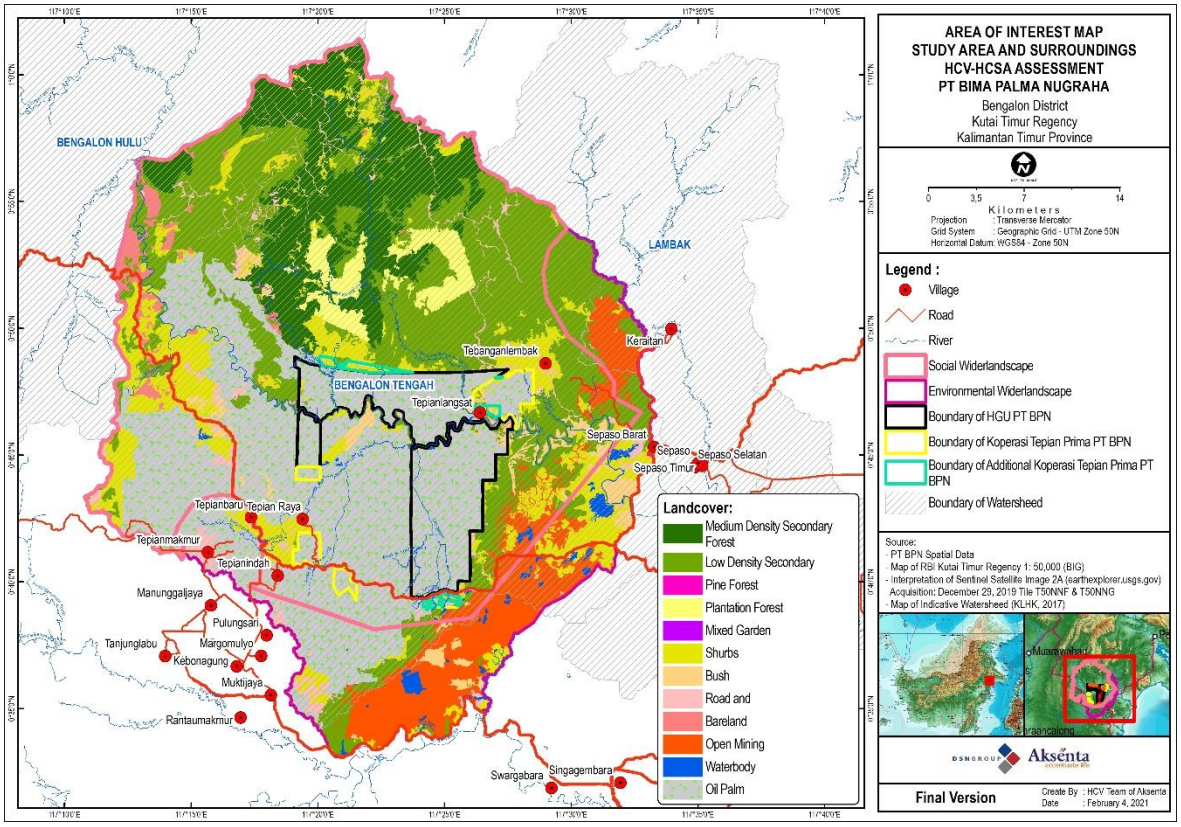


Figure 9 AoI boundaries in the HCV-HCSA Assessment for PT BPN MU

Biodiversity landscape

The AoI is located in Borneo which biogeographically belongs to oriental Asia biogeographic zone. Borneo's biodiversity is considered high because of, among others, the presence of quite vast tropical forests. As an illustration, this island has about 14,500 plant species, 4,000 out of which are endemics (Roos *et al.*, 2004). In flora group, Dipterocarpaceae in this island is recorded to include 291 species out of 386 global species, and 156 species out of these species are endemics (Soepadmo and Wong, 1995). In mammal group, there has been recorded 225 terrestrial mammal species, 44 out of which are endemics (Payne *et al.*, 2000). Relatively high richness is also found in other groups. This includes 639 bird species (MacKinnon *et al.*, 2000), 166 snake species (Stuebing and Inger, 1999), and ±140-150 amphibian species (Inger and Stuebing, 1997).

The AoI borders a conservation area (Nature Reserve Area/KSA and Nature Conservation Area/KPA), i.e., Kutai National Park to the south. However, the MU area is located more than 10 km away from the national park boundary, separated by PT Kaltim Prima Coal's coal mining concession. Other than Kutai National Park, no conservation areas are found in the neighbourhood. In regional context, the AoI position against key biodiversity areas is as follow.

1. Key Biodiversity Area (KBA), Important Bird Area (IBA) and Endemic Bird Area (EBA): AoI is located adjacent to Kutai National Park that is both a KBA and IBA. However, both areas are separated by a coal mining concession and most of the AoI is already in the form of farmlands. In addition, few parts of the AoI belong to Borneo Mountains EBA (BirdLife International, 2020), characterised by hill mixed dipterocarp rainforest habitats.
2. Ramsar Site: Borneo has 4 sites of Ramsar Convention. Out of the four sites, two are found in Indonesia while the other two in Malaysia. The two Ramsar sites in Indonesia include Lake Sentarum and Tanjung Putting National Park. However, AoI is located outside the Ramsar sites.
3. Intact Forest Landscape (**"IFL"**): the AoI is located outside any IFL. The nearest IFL from the AoI is 118 km away northwest (IFL, 2016). The IFL is located within the Heart of Borneo (HoB). The shortest distance between the AoI and HoB is 92 km.
4. Peat Hydrological Unit (KHG): AoI is located outside KHG. The nearest KHG area from the AoI is River Sabintulung KHG (70 km away).
5. Migration corridor: Syartinilia *et al*. (2015) maps the distribution of Crested honey buzzard that is known to come to visit this island based on the coordinate data generated by satellite-tracked individuals. However, the AoI is located outside the migration line and the species' migration destination in this island. The nearest migration destination is located ±150 km northwest.

Referring to the important-valued biodiversity distribution listed under IUCN Red List, it is known that RTE species are indicated to be distributed and the distribution area includes the AoI. The species wildlife groups include Sunda pangolin *(Manis javanica)* and orangutan *(Pongo pygmaeus morio)* bearing Critically Endangered (**"CR"**); Proboscis monkey *(Nasalis larvatus)* and East Bornean Grey Gibbon *(East Bornean Grey Gibbon)* with Endangered (**"EN"**) status; and sun bear *(Helarctos malayanus)*, sambar deer *(Rusa unicolor)* and Amboina box turtle *(Cuora amboinensis)* with Vulnerable (**"VU"**) status. In plant group, several RTE species such as belangiran *(Shorea balangeran)*, bangkirai *(Shorea laevis)* and ulin *(Eusideroxylon zwageri)*.

Social, economic and cultural contexts

Based on Statistics Indonesia (**"BPS"**) and field assessment, the largest village is Tepian Langsat, while the smallest is preparatory village of Tepian Raya. The largest population is found in Tepian Indah, while the smallest is in Tebangan Lembak (Table 15). Settlement areas are mostly located by Bengalon-Muara Wahau main road located to the south of the HGU concession.

Indigenous peoples in the AoI include Kutai and Dayak Basap/Lebo' communities. According to H.

Akim (Traditional Chief), the village communities are Kutai ethnic group who are already Muslims and they are the descendants of Kutai royal family. According to Zeky Hamzah, Tepian Langsat Village Head, Dayak Basap ethnic group is the same as Dayak Lebo'. At the time this Assessment is carried out, Bengalon is already a multi-ethnic sub-district. Tepian Indah was administratively excluded from Tepian Langsat in 2005, while preparatory village of Tepian Raya was excluded from Tepian Indah in 2017. These villages were initially transmigration settlement units mostly populated by Javanese community.

Table 15 Demographic aspects of the local villages (and non-autonomous villages) in the Assessment area

Village	Area (ha)	Population	Number of Family	Main Ethnic Group *	Majority Religion*
Tepian Langsat	83,640	1,181	291	Kutai	Islam
Tebangan Lembak	46,400	232	124	Basap	Islam
Tepian Indah	19,700	2,270	649	Javanese	Islam
Preparatory village of Tepian Raya*	1,584.5	1,511	300	Javanese	Islam

Source: *Kabupaten Kutai Timur dalam Angka 2019*, *Kecamatan Bengalon dalam Angka 2019*; *field survey (2020)

The main economic characteristics in the AoI generally includes oil palm plantation, forestry and coal mining sectors. Community livelihoods are earned from rice farming, farms, non-rice crop, oil palm and rubber plantations, swiftlet farming, and working for local companies in the area. Oil palm plantations in the AoI include PT Kutai Bulian Nauli, PT Anugerah Energitama and PT Dinamika Prima Artha. In addition, there are also Industrial Plantation Forest (HTI) companies (PT Selaras Silva Utama and PT Cahaya Mitra Wiratama) and the largest coal mining company in Indonesia, PT Kaltim Prima Coal.

Basic needs are met through local shophouses or kiosks available in every village. Several community members sell refill water. Local villages and large plantations are connected with sound asphalt or dirt roads, especially in Tepian Indah and preparatory village of Tepian Raya. Sub-district capital, public clinic and high school are found in Sepaso, while a teacher vocational school is located in the AoI, i.e., in Tepian Indah. Every village currently has auxiliary public clinic (healthcare facilities) as well as kindergarten, State elementary school and junior high school remote class.

Spatial planning and landuse history

Based on East Kalimantan 2015-2035 East Kalimantan Provincial Spatial Planning Map, it is known that the AoI is allocated for plantation, settlement and forestry cultivation areas. The AoI is dominated by plantations, particularly from the centre to the south. Permanent and Limited Production Forests are found in the northern part of the AoI.

Historically, intensive landuse activities in the AoI have taken place since 1970s, starting with the operation of logging companies (Forest Concession/HPH). These companies are PT Barito Utara and PT Porodia that controlled lands in Kutai, including the majority of Tepian Langsat area. In 1980 to 1990s, small-scaled logging companies emerged. It is the era that community refers to as the 'illegal logging era'. A great fire broke out in 1982, so that many community members were displaced to Bengalon area.

In the beginning of 2000s, logging activity saw a reduction. Some community members remained with small-scaled logging, while some others turned to trade activities. In 2005, they made initiative to go to Sangatta city in search of logging investors, but met oil palm plantation investors instead (PT BPN under the previous management). Both agreed to cooperate in managing lands in Tepian Langsat (15,000 ha) under nucleus-plasma partnership scheme. Oil palms were planted by PT BPN gradually from 2007 to 2014.

3. Image analysis and land cover classification

The satellite images used in landuse analysis are Sentinel-2 Level-2A (acquired on 29 December 2019) and Landsat 8 OLI-TIRS (12 May 2019) from the US Geological Survey (USGS; https://earthexplorer.usgs.gov/), as well as hi-res image (2017) from Google Earth and aerial photograph (2016), particularly in the MU. alarming Sentinel-2A is used as the main satellite image in land cover analysis (Figure 8), while Landsat 8 is used as an additional image for analysing parts of Sentinel-2A images that are covered by clouds.

Image preprocessing involves image composite, where band 11, 8 and 4 are combined on Sentinel-2A image and band 6, 5 and 3 are combined on Landsat 8 image to obtain pseudo-natural colours (Zhang, 2017). Image mosaic (combination) is carried out towards both Sentinel-2A image scenes. The output of initial process of Sentinel-2A and Landsat 8 satellite images is used to analyse land cover segmentation.

Land cover analysis involves the combination between object-based visual interpretation and visual interpretation with on-screen manual digitising of satellite images. To differentiate land cover types, this method takes into account the colours, textures, forms, locations and sizes of the objects that appear on the satellite images (Bakker *et al.*, 2009). The process of land cover segmentation and combination uses ArcGis 10.5 software. Land cover classification used refers to Indonesia's National Standard (SNI) 7645-1:2014 on Land Cover Classification-Section 1: Small and Medium Scale (Table 16).

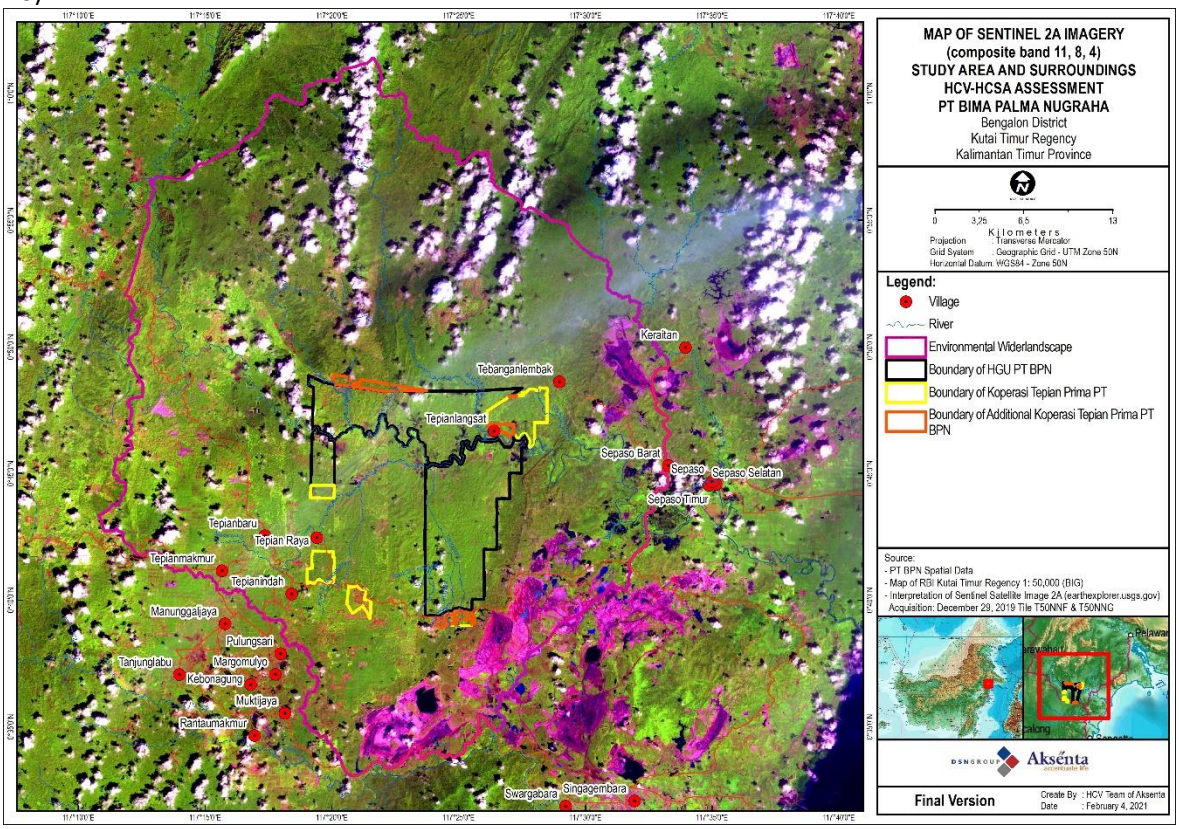


Figure 10 Sentinel-2 December 2019 satellite image on the Assessment area and its surroundings

Table 16 Classification of land cover based on Indonesia National Standard (SNI) and its equals in HCS land cover classification

No.	Land Cover	SNI Definition*)	HCS Cover Class	HCS Definition **)
HCS Class				
1	Medium to high-density primary lowland forest	Forest that grows and develops in dryland habitat that takes form of lowland forest that is yet to undergo human intervention. Density is low if 10%-40%, medium if 41%-70%, and high if >70%.	High-Density Forest (HDF)	Natural forest with closed to open canopy and high-density. Inventorying data indicates the presence of trees with diameter >30 cm dominated by climax species. Carbon amount: >150 Ctonnes/ha.
2	Medium to high-density secondary lowland forest	Forest that grows and develops in dryland habitat that takes form of lowland forest and has undergone human intervention. Density is medium if 41%-70%, and high if >70%.	Medium and low-density forest (MDF & LDF)	Natural forest with closed to open canopy, ranging from low to medium-density forests. Inventorying data indicates the presence of trees with diameter >30 cm dominated by climax species. Carbon amount range: 75-90 Ctonnes/ha (LDF), 90-150 Ctonnes/ha (MDF).
3	Low-density secondary lowland forest	Forest that grows and develops in dryland habitat that takes form of lowland forest, has undergone human intervention, and the density is 10%-40%.	Young Regeneration Forest (YRF)	Severely disturbed forest or otherwise forest areas that are in the regeneration process towards their original structure. The diameter distribution is dominated by trees with Diameter at Breast Height (**"DBH"**) of 10-30 cm and with pioneer species frequency higher than that of HK1. In this land cover class, it is likely to find small areas that take form of farmlands or plasma plantations. Carbon amount range: 35-75 Ctonnes/ha
Non-HCS Class				
4	Shrub	Vegetation formation or structure that takes form of groups of shrubs with height ranging from 50 cm to 2 m, dominated by woody vegetation alternated with very short trees (≤5 m tall). Or: Dryland on which various heterogeneous and homogeneous natural vegetation already grows with low to high density. Such area is dominated by (natural) short vegetation.	Shrub (S)	Lands that were once a forest that has been cleared not so long ago. Dominated by short shrubs with limited cover of canopy, they include areas with tall grasses as well as distributed ferns and pioneer tree species. Several old forest patches are also likely to find under this land category. Carbon amount range: 15-35 Ctonnes/ha
5	Bush	Land cover that takes form of natural plants with average height of 0.5-2 m, some of which are woody while some are not.	Bare Soil (OL)	Recently cleared lands, most of which are in the form of grass or plants and few woody plants. Carbon amount range: 0-15 Ctonnes/ha
6	Pine forest	Vegetation that takes form of forests consisting of one pine species *(Pinus mercusii)* intentionally planted in a vast stretch of lands comprising blocks, and	Plantation Forest (FP)	Vast area planted with trees (e.g., rubber, acacia).

No.	Land Cover	SNI Definition*)	HCS Cover Class	HCS Definition **)
		managed to extract its timber products.		
7	Plantation forest	Area managed for forest plant cultivation that takes the form of a vast stretch of lands managed to extract its timber products and comprising of only one homogeneous plant species.		
8	Oil palm plantation	Land planted with oil palms in a vast area and regular, industry-oriented planting scheme.	Agricultural Area (AGRI)	E.g., large-scaled oil palm plantation overlapping with developed areas.
9	Mixed garden	Drylands planted with annual plants (trees) in combination with seasonal plants. Annual plants (trees) include fruit tree or other trees, while seasonal plants include chili pepper and cassava.		
10	Open pit mining	Bare soil with a relatively large area, managed through excavation to extract the material content, excluding ordinary rocks, soils and sands.	Mining site (MINE)	Distinction can be made further between legal and illegal mining sites.
11	Roads and settlement areas	**Road network:** Developed area comprising one or more lanes on both sides that can still be developed for non-railway transportation. These lanes may take form of concrete, asphalt or hardened and consolidated soil. For areas which are less than 1 mm wide on image, they need to be represented with straight line, and if they are too small to be seen on the image, data can be taken from basemaps such as Indonesia Topographic Map (RBI) or other topographic maps. **Urban settlement:** Manmade land cover taking the form of buildings mainly used by urban population for their dwelling. Urban settlement buildings are characterised with high building density and made out of permanent/long-lasting materials such as brick wall, tile/concrete/zinc roof. **Rural settlement:** Manmade land cover in the form of premises for rural population's residence. Rural settlement is characterised with relatively low density of building, can be constructed out of not only permanent/long-lasting materials such as concrete wall, roof tile/concrete roof/iron roof sheet, but also non-permanent materials such as wooden wall, and thatched roof, and is associated with use of agricultural lands such as rice field, dry rice field, or mixed garden and house yard.	Others	Water bodies such as rivers and lakes. Development area, settlement, etc.
12	Bare soil	Cleared areas that generally are consolidated, resulted from human engineering, and managed or used for particular purposes.		
13	Water body	Any naturally occurring body of water		

No.	Land Cover	SNI Definition*)	HCS Cover Class	HCS Definition **)
		(including natural lake/pond, river/stream, marine waters and swamp).		

Note: *) SNI 7645-1:2014 Land Cover Classification – Section 1: Small and Middle Scale; **) HCSA Toolkit Module 4

Initial land cover analysis is carried out through object-based visual interpretation, combined with 53 training samples in the form of imaginary spots which are spots of land cover verification through hi-res images from Google Earth and aerial photograph. In addition, spatial data of PT BPN oil palm planting year is also employed in validating oil palm cover. The initial land cover classification is then verified through visual observation (Congalton and Green, 2009) and biomass measurement (Bakker *et al.*, 2009).

There are 1,201 samples/spots for land cover groundtruthing, comprising 337 spots for land cover verification during scoping study and 864 others for land cover verification during full assessment consisting of 608 visual observation spots and 256 spots for forest inventorying plot (including cover observation). Locations of the groundtruthing spots are selected based on purposive sampling, taking into consideration land cover classes that are yet to be visited during scoping study phase.

The accuracy assessment used in this Assessment is 'overall accuracy' and 'Kappa accuracy (Cohen, 1960). The overall accuracy to meet is 70% for the corrected initial land cover and 80% for final land cover. The overall and Kappa accuracies for final land cover are respectively 98.3% and 97.9%. These values already meet HCSA Toolkit's requirements. Output of final land cover classification (Table 14 and Figure 11) is then used to classify HCS cover.

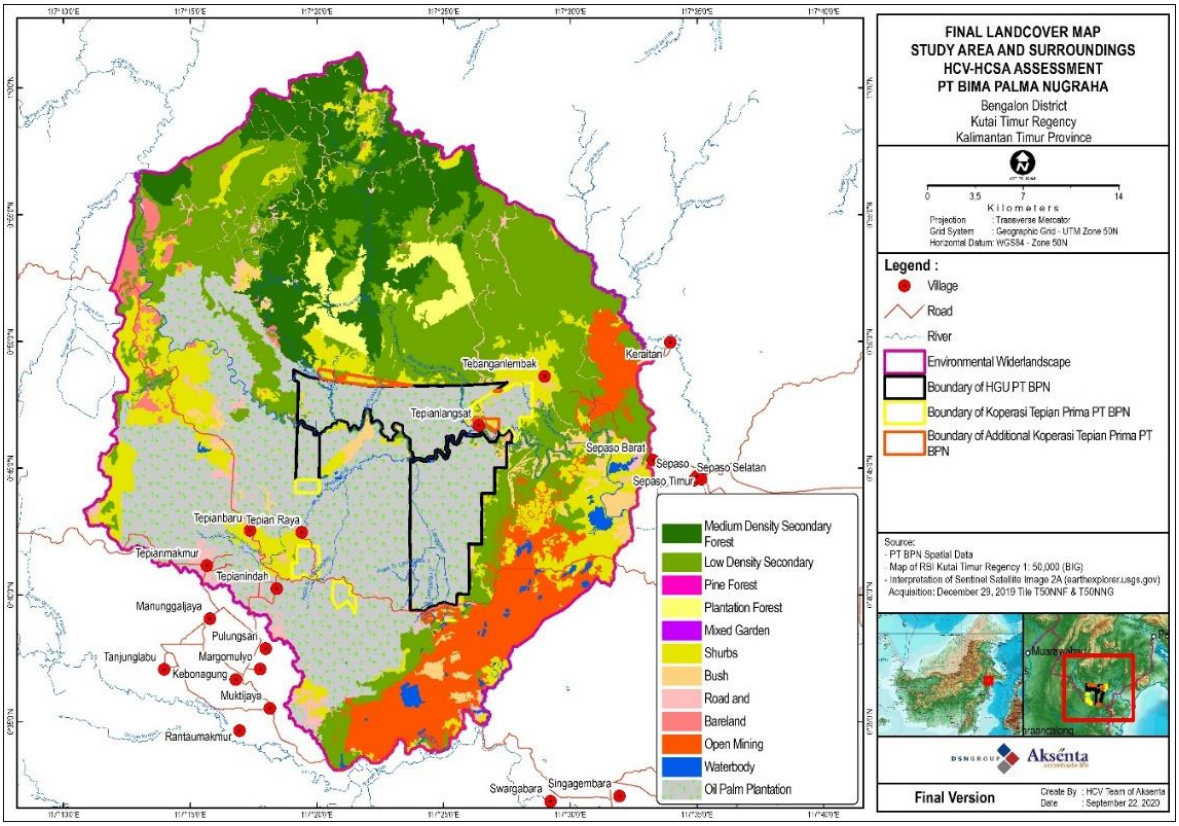


Figure 11 Final land cover map of the Assessment area

Table 17 Final land cover area and classification

Land Cover Class*	HCS Cover Class**	Area (ha)	Area (%)
Low-density secondary lowland forest	Young Regeneration Forest (YRF)	486.5	3.5
Shrub	Shrub (S)	496.9	3.5
Bush	Bare soils (OL)	294.0	2.1
Pine forest	Plantation forest (FP)	3.9	0.03
Mixed garden	Agricultural area (AGRI)	0.3	0.002
Oil palm plantation		12,742.7	90.5
Roads and settlement areas	Others	44.1	0.3
Bare soils		9.5	0.1
Water body		8.2	0.1
Total		**14,086.0**	**100.0**

Note: *) SNI 7645-1:2014 Land Cover Classification – Section 1; **) HCSA Toolkit v2 (HCSA Steering Group, 2017)

There are 162 spots for social field activity. Field assessment was carried out upon receiving information on locations indicated to have HCV from preassessment, interview, discussion/FGD and participatory mapping. Interview/FGD is carried out in12 locations, while participatory mapping and field observation are in respectively 10 locations and 136 spots (Figure 12), including potential areas for plantation development. Field social observation also includes locations that may potentially have value of ecosystem services (HCV 4), e.g., the presence of river and springs as sources of water, as well as hills as catchment areas.

The relatively short time for field activity limits the chance for collecting primary data. However, this is no problem because the Assessment villages are located near from one another and easy to access. In addition, the respondents are willing to participate in this Assessment, so that all respondents are reached out as planned. Another limiting factor in the social assessment/analysis concerns with the Assessment villages' administrative boundaries that has yet to be definitive. Village boundaries use secondary data such as land tenurial assessment (PT BPN, 2019) and Village Potentials (BPS, 2014). However, Tepian Indah and Tepian Raya boundaries as administratively excluded villages cannot be drawn on the map because of no available data.

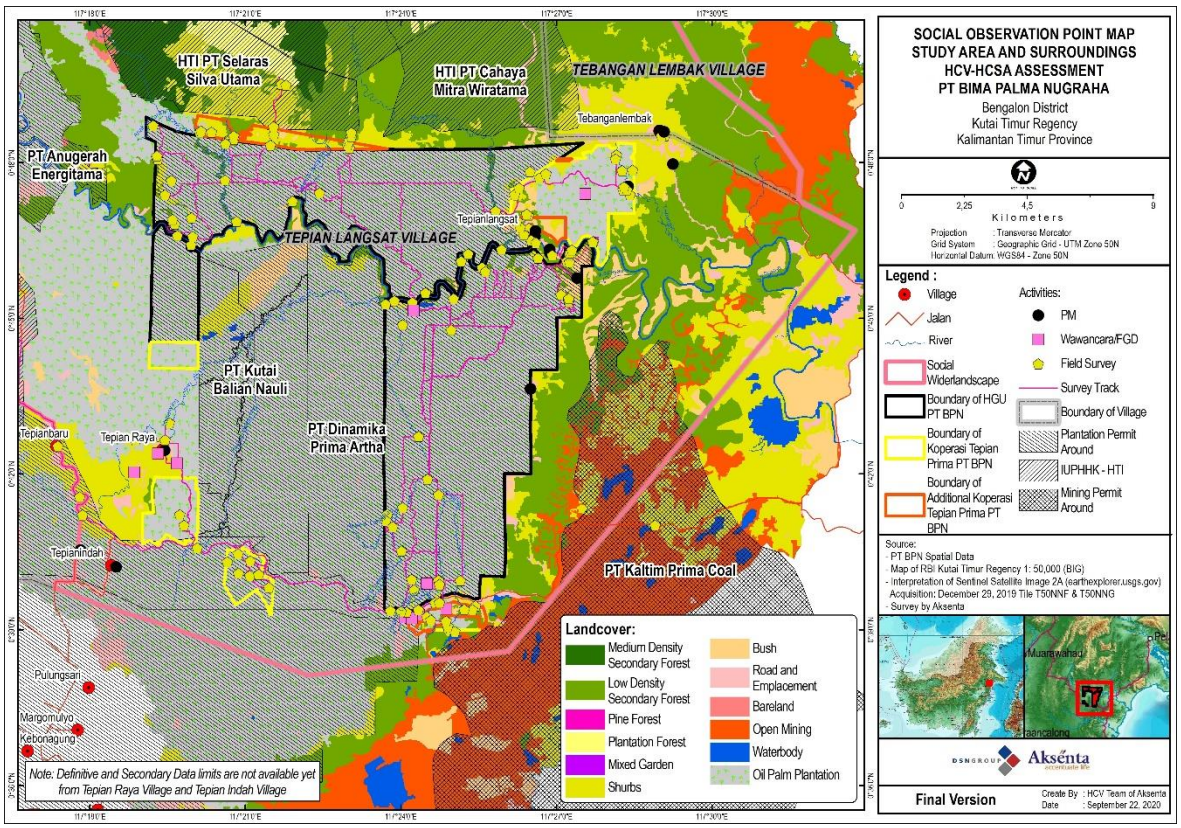


Figure 12 Map of field activities for the Assessment's social field

Interview and discussion are organised in four Assessment villages where 77 stakeholders are involved. All social groups/stakeholders in the affected communities in the AoI have already been represented by respondents from 14 social groups/communities/stakeholders. Some of the respondents belong to two or more social groups, e.g., Edi Wahyudi and Hadenan who are community leaders, plasma smallholders, Tepian Prima Sawit Cooperative management, and representatives to native communities, and they are aware of changes in land cover. All social groups/communities who were planned as respondents are willing to be met and provide necessary information. See Table 18 for summary of interview with respondents. This, however, is yet to include other stakeholders who are involved in final consultation, such as local governments, East Kalimantan BKSDA, neighbouring companies, NGOs and CSOs.

Participatory mapping is carried out since scoping study through several meetings with the Company management and others with local community and village governments. Participatory mapping topics mainly relate to community's landuse as well as locations of important values to them, i.e., areas concerning HCV 4, 5 and 6, and community lands from which they will be earning livelihoods in the future. The AoI is mapped, focusing on the MU and its surroundings. From the activity, it is known that the MU and its surroundings has rivers and springs as the community source of water, sacred sites that are mostly located by River Bengalon, rice farming areas around Tepian Langsat settlements, and Lake Padang area that is planned to become the sub-district's new centre of development.

Table 18 Summary of interview and discussion during the assessment phase

Expert/Organisation /Social Group	Name (Position/Role)	Type of Interaction	Comment and/or Recommendation
Tepian Langsat Village Officials	Zaky Hamzah (Village Head), Deby (Village	Direct meeting (interview, participatory	• Lake Padang was once Tepian Langsat Village's landmark. It is planned for territorial development and seat of the sub-district.

Expert/Organisation /Social Group	Name (Position/Role)	Type of Interaction	Comment and/or Recommendation
	Secretary)	mapping)	• Village short-term programme in Lake Padang area is development of agrotourism through planting various fruit tree species. • The village would expect that PT BPN able to restore Lake Padang to its original condition. • Around the lake there are typical plant species named *tunjuk langit* by native community. It is normally cooked and served in traditional celebration events. • Village infrastructures are intensely developed. In 2019 there has been a clean water facility construction (PAMDES) at River Mengkupa estuary and village road construction. In 2020, it was planned that the village would get electrified by PLN. • Native community's source of livelihood includes swiftlet farm business (there are 50 swiftlet houses/farms out of 70 village houses). Migrant community's source of livelihood is oil palm. No area contains HCV 5 in PT BPN's HGU concession and cooperative plantations.
Tepian Langsat Village Officials; Plasma Smallholder	Kusmin (Head of Village Council), Maddok (community leader)	Direct meeting (interview)	• Tepian Langsat community neither farm nor have their own oil palm plantation business. Normally they have plasma plantations managed by the Company. • Needs for food are met through buying. Community buys rice, side dish and vegetables. We have rice fields, but only five families maximum work at the fields. They are not much productive because the locations often get flooded.
Traditional Chief of Tepian Langsat Village, Tepian Langsat community leaders who understand the village history and represent native communities; community members who have cultural interaction with lands and natural resources; plasma smallholder	H. Akim (Traditional Chief), Abdul Rahim (Elder), Hadenan (community leader)	Direct meeting (FGD, participatory mapping, field check)	• Sites of important values to Tepian Langsat community include Benua Tunu (old village). It is located near the mill. There are many sites of old burial ground and they are still visited at certain times. • Other sites of burial ground (public cemetery whose tombs read their deaths in 1909 AD and 1322 Islamic Year) are located at Block D49 of partnership plantation. In the area there is also the tomb of Habib Hasan Al Idrus who spread Islam in Tepian Langsat. • No sites have sacred values other than the old burial grounds. • There are five locations of old burial grounds in Bengalon riverbank. Most of their tombstones are missing because of fire in 1982. • There were once many *perondongan* (fruit garden) here, but none of them remains because of fire in 1997
Community members who use lands or natural resources	Dalim (Tepian Langsat community member)	Direct meeting (interview, field check)	• Source of clean water is provided by the village government. PAMDES is under construction and the water is sourced from River Bengalon, at the estuary of River Mengkupa. • For cooking and drinking, Tepian Langsat village community normally buy refill water. There is a

Expert/Organisation /Social Group	Name (Position/Role)	Type of Interaction	Comment and/or Recommendation
			spring in Abdul Halim backyard. The water is year-round.
Community plantation development SG which is in partnership with the cooperative and PT BPN (Koran SG)	Rusdiansyah, Ti (smallholder in Koran SG area)	Direct meeting (participatory mapping, field check)	• Lands of Koran SG once got burnt. • The lands have already been cleared at the time of Rusdiansyah's father. Now the lands are to be put under partnership with PT BPN to make it productive. • Only two people have plantations in the area. Rusliansyah has a durian plantation that he planted a couple years ago. Ti (a Buginese) has an oil palm plantation of 4-5 ha.
Community members who traditionally use lands or natural resources; who represent native community and understand changes in land cover	Rafiansyah (Head of Sub-Village 1, village development programme executor), Abdul Halim (rice farmer)	Direct meeting (interview, field check)	• Community still practiced rotating cultivation up until 2001-2002. Afterwards, there was a village development programme by PT Panambangan to construct rice fields and this has managed to increase rice productivity and made it abundant. Unfortunately, the community has no access through which they could sell the excess of the production. • Rice fields in RT 03 area started being farmed by 20 people in 2007. Today, only 5 families work in the rice fields because the location often gets flooded. • Today, community no longer practices slash and burn when clearing lands for rice fields because the Government's prohibition gets increasingly clear.
Community plantation development SG in partnership with the cooperative and PT BPN (Koran SG)	Rusliansyah (community leader)	Direct meeting (interview, participatory mapping)	• During the era of logging companies, community only fished, hunted and trapped animals in PT Porodisa and PT Panambangan concessions. They used to extract timber from the area before logging companies entered the area (*banjir kap* era in 1960s) and after the area status changed in 2001. • A great fire broke out in 1982, devastating forest areas from which community earned livelihood, such as rattan, honey tree, karst cave (where swiftlets nested) and *perondongan*. Many people of Tepian Langsat moved out to Bengalon to do logging work in PT Porodisa. • Timber is the main material for house construction. Normally Tepian Langsat community members have ironwood stock, which is what remained from the logging era. For constructing swiftlet houses, they buy the construction materials. • Before PT BPN established its plantations, there was an ever-wet swamp (known as *rapak*) in which community fished and made dried fish to make cash. • During the process of land clearing, some community members' lands also got cleared. However, the land claims were resolved through compensation in 2012 and 2013.
Plasma smallholder, Tepian Prima Sawit Cooperative management, individuals who represent native	Edi Wahyudi (Chief) Hadenan (Treasurer)	Direct meeting (interview)	• PT BPN today (under DSN Group Management) is more open and transparent. Activity plan and issues are discussed in the first place with the cooperative.

Expert/Organisation /Social Group	Name (Position/Role)	Type of Interaction	Comment and/or Recommendation
community and understand changes in land cover			• In the partnership plantation area, there is a public cemetery by River Bengalon. There are hundreds of tombs of Tepian Langsat community ancestors. Community often visits the location before Ramadan or on Eid al-Fitr holiday. • In 2005, representatives of Tepian Langsat Village community made an initiative to search for timber investors in Sangatta City. However, they met oil palm plantation investor instead (PT BPN under the previous management). Community was informed of cooperation in developing oil palm plantations under nucleus-partnership scheme.
Tepian Langsat Village youth	Fery Wahyudi Oji	Direct meeting (interview)	• No Tepian Langsat youths work at the plantations (including PT BPN plantation) and rice fields once they graduate from high school. Even if one finds them at farms, that is because they are helping their parents.
Migrant community who settled down and farm within the HGU concession and its surroundings, minority group	Lamba (migrant community leader)	Direct meeting (interview, participatory mapping and field check)	• In the Assessment area, there are no locations of important values (HCV) to migrant community. • Lands currently controlled by migrant community (previously logged) are oil palm plantations. All daily needs are met through buying and the money is earned from oil palm farming).
Tepian Langsat community member who traditionally use lands or natural resources.	Slamet (swiftlet farmer)	Direct meeting (interview)	• Tepian Langsat native community's main sources of livelihood. • Daily needs are sufficiently met by earnings from swiftlet farming.
Tepian Langsat community leader who understands village history and represent native community; who uses land or natural resources	Kusmin (Cave Tewet caretaker)	Direct meeting (interview)	• Tepian community once collected swiftlet nests in Mt. Gergaji karst area. However, the great fire in 1997 destroyed the ecosystem so that people left it behind. • Since 2010, community constructs swiftlet houses and they collect the nests only around their settlements.
Tebangan Lembak Village officials; Dayak Basap community elders or leaders who understands village history and represent native community; individuals who have cultural interaction with land and natural resources; minority group; Tebangan Lembak Village officials	Benang (Dayak Basap Traditional Chief, Tebangan Lembak Village), Konyok (community leader), Taswin (Village Secretary), and Ruyeng, Mil, Lebar, Mancil (community member/smallholder)	Direct meeting (interview and participatory mapping)	• Dayak Basap community here are all Muslims. Basap peoples in Tebangan Lembak have been Muslims since the 1970s. • In the past, Tebangan Lembak's village boundaries with Tepian Langsat was River Mengkupa. At KT1 of partnership plantation, there are 2 sites of burial ground, where Basap ancestors who farmed in the locations were buried. • Today, only few people have farming activities. Most of Dayak Basap community hunt for deer in locations near PT Anugerah and to the north of the AoI (outside the AoI). • Basap peoples have no activities within PT BPN HGU concession or Tepian Prima Sawit Cooperative plantations. • It is difficult to get water here. Villagers normally collect rainwater. No one has managed to have dug well. We once drilled until 20 m depth but what we got was oil instead of water. In 2020, an aid came from PT KPC's sub-contractor to construct clean water facility sourced from River Bengalon.

Expert/Organisation /Social Group	Name (Position/Role)	Type of Interaction	Comment and/or Recommendation
Housewives/women groups of Tebangan Lembak Village; community members who use land or natural resources	Linda, Armah (community member), Sofia (women group/ teacher), Ramli (smallholder)	Direct meeting (interview, participatory mapping)	• Dayak Basap as the native community earns livelihood from hunting activities, and most of them work for mining companies (PT KPC contractor). Community has hunting activities in the remaining forests around Tebangan Lembak (outside, to the north of the AoI) • No parts of Tebangan Lembak territory are within PT BPN MU area. • Clean water is gained through buying. There are two dug wells from PT KPC aid programme but they are no longer functional. During dry seasons, many community members get water from the rivers and buying. • Educational facilities: there is 1 kindergarten, 1 State elementary school and 1 junior high school (remote class). • The community has no culture to clear lands communally for farming. Consequently, land clearing costs gets high.
Tepian Indah Village officials; migrant/transmigrant community	Parningotan Siregar (Village Head), Satriani (Treasurer), Ngasino (Head of Economy and Development Section), Daliyo (Head of General Affairs), Boimin (Head of RT 02 neighbourhood unit) Rahmadi (Village Secretary)	Direct Meeting (interview)	• There are no traditional lands and/or entitlement, lands are owned individually. That is, because this village was originally an area of transmigration programme. • Tepian Indah community members are mostly farmers. Some of them have their own oil palm plantations, while some others mostly have plantations in partnership with oil palm companies (not PT BPN). • Clean water is rather difficult to collect. Community meets their needs for water by collecting rainwater and buying. • No community members have activities in PT BPN HGU concession and partnership plantations. Some of them already become plasma smallholders managed by Tepian Prima Sawit Cooperative. • Village environment and community is not affected at all by PT BPN operational activities.
Migrant/transmigrant community in preparatory village of Tepian Raya; housewives; women group; minority group	Rohmat (Village Secretary), Gyanto (Head of Community Welfare Section), Suhari (Village Administration), Hamidi (Head of Development Section), Nuryadi (community leader), Siti (Treasurer)	Direct meeting Interview and participatory mapping)	• Tepian Raya territory was initially parat of Transmigration programme in 2003. Before it was administratively excluded as preparatory village, the area belonged to Tepian Indah Village. • Tepian Raya community are mostly farmers. Some of them have their own oil palm plantations, while some others mostly have partnership plantations managed by oil palm companies (not PT BPN). • It is rather difficult to have water. Community meets these needs by collecting rainwater and buying. • No community members have activities in PT BPN HGU concession and partnership plantations. No community members of Tepian Raya become members of Tepian Prima Sawit Cooperative. Their plasma plantation cooperation is with PT Anugerah Energitama, PT BPN's neighbour.

Expert/Organisation /Social Group	Name (Position/Role)	Type of Interaction	Comment and/or Recommendation
			• Village environment and community is not affected at all by PT BPN operational activities.

2. FPIC Status

The Assessment team's FPIC principle verification method is applied through consultation and discussion with community representatives. In consultation, the team explains the Assessment's definition and objectives and requests feedback from local community for managing locations identified as HCV-HCS areas. Respondents are free whether to answer or not to answer, or delay the answer for each question from the Assessment team. The team also provides complete information to respondents concerning this Assessment and give freedom to them to ask. FPIC status at the time this Assessment is carried out is quite satisfactory, in which local communities in all Assessment villages warmly welcome the presence of the Company and the team. They participate in the Assessment process and help the team map landuses in the AoI and land tenure and uses in the Assessment area, along with other necessary information.

Based from desktop review and interview/consultation with respondents during the Assessment, the elements of 'Free', 'Prior' and 'Informed' in FPIC have been sated. This makes the decision made by community members who express their willingness to release their lands and cooperation under the partnership scheme with Tepian Prima Sawit Cooperative under the Memorandum of Understanding (MoU) No. 001/BPN-TLS/MOA/XI/2007 to follow up the Agreement No. 001/BPN-TLS/MoU/09/2005 between PT BPN and Tepian Langsat Village a quality consent/decision.

'Free' element is applied to the Company plantation development process because it is their own initiative to invite investors to their village. Upon information dissemination event in which information was disclosed in the beginning, the Company gave community freedom to think carefully.

'Prior' element has already been met once the information dissemination event is done by the Company upon invitation by the village community leaders. Other community members were then given time and space they needed to explore the information and discuss with their families or other stakeholders. The Company did not apply any restriction that narrowed down community's movement and freedom to consider before decision was made. This is proven with the presence of community's enclaved areas within the MU based on Land Tenure Study Report (PT BPN, 2019), which is confirmed during the participatory mapping activity. The Company gave freedom to community, whether or not they were to release their lands. Those who were unwilling to do so would have their lands excluded/enclaved by the Company.

'Informed' element of the FPIC principles is already met, particularly after the company was taken over by DSN Group in December 2018, as documented through meeting recordings by the Company. According to H. Akim, a local traditional leader, PT BPN in 2005 held an information dissemination event in the Tepian Langsat. They disclosed their purpose and objective to come to the village. Other than formal information dissemination event, the Company also assigned Public its Relation (PR) staff, assisted by the village team consisting the village community member, to follow up the event and explain the partnership scheme. PT BPN under DSN Group management then continued the FPIC processes that the previous management has taken through a series of meetings with community in January-November 2019.

3. HCV 4

HCV 4 in the MU is found in 28 locations, with total area of 468.9 ha. Most of them take the form of rivers and their riverbanks, while the others are hills, lakes and swamps (Figure 13). In addition, there

are also potential HCV 4 area (58.2 ha). Almost all HCV 4 indications are found in the MU, save for pollination service that may potentially be present outside the MU but still within the AoI (Table 19).

Riparian areas that remain covered by shrub have important values as areas for maintaining water quality characteristics. As for river (and lake) banks already planted with oil palms, they still have potential HCV 4 area, provided that efforts are made to protect and manage these areas. For this reason, all water bodies' banks that are covered by oil palms are potential HCV 4 area as well as HCV Management Area (**"HCVMA"**). These areas are not recommended for replanting.

Riverbank widths are set through the approach of important function and value in riparian areas as well as RSPO Manual on Best Management Practices (BMPs) for the Management and Rehabilitation of Riparian Reserves (Barclay et al., 2017) and Simplified Guide Management and Rehabilitation of Riparian Reserve (Lucey et al., 2018). Another reference used is Riparian Buffers: A Livestock Best Management Practice for Protecting Water Quality (Gumbert et al., 2009). HCV 4 indicative area is gained through buffering process using GIS tools.

Table 19 Indication of HCV 4 presence in the MU and AoI

HCV 4	Finding
Basic ecosystem services in critical situations, including protection of water catchments and control of erosion of vulnerable soils and slopes.	**Present:** Area with important ecosystem services in the form of river, lake, water body banks and steep slopes. **Potential:** Oil palm-covered riparian areas still have potentials as HCV 4 area. In addition, secondary forest area may also potentially support pollination service.
Situations that qualify as HCV 4	**Indication in the Assessment area**
Managing extreme flow events, including vegetated riparian buffer zones or intact floodplains	**Present.** There are water bodies in the form of rivers, lakes and swamps that play role in controlling surface runoff. This function is also supported by the presence of natural vegetation in several riverbanks and lake banks.
Maintaining downstream flow regimes	**Present.** The Assessment area is situated in the middle of Bengalon watershed, so that the water bodies in this area still contribute to the downstream flow fluctuation. Hilly areas also play role as flood regulator through their catchment function.
Maintaining water quality characteristics	**Present.** There remain riverbanks covered by shrubs and secondary forests that function as filter against soil erosion. **Potential.** Oil palm-covered riverbanks that still have potentials as water body buffer zones.
Fire prevention and protection	**Present.** Bengalon, Koran and Mengkupa are considered to function as natural firebreaks.
Protection of vulnerable soils, aquifers and fisheries	**Present.** The presence of hills has important value as aquifer catchment (recharge area)
Provision of clean water, and natural ecosystems that play an important role in stabilising steep slopes.	**Present.** There are rivers and springs that serve as source of water for community, as well as steep-sloped (>40%) hilly areas.
Protection against winds, and the regulation of humidity, rainfall and other climatic elements.	**Present.** There remain naturally vegetated riparian areas that play role in microclimate regulation.
Pollination services, for example exclusive pollination of subsistence crops	**Present.** Secondary forests in Koran SG area may potentially support pollination services.

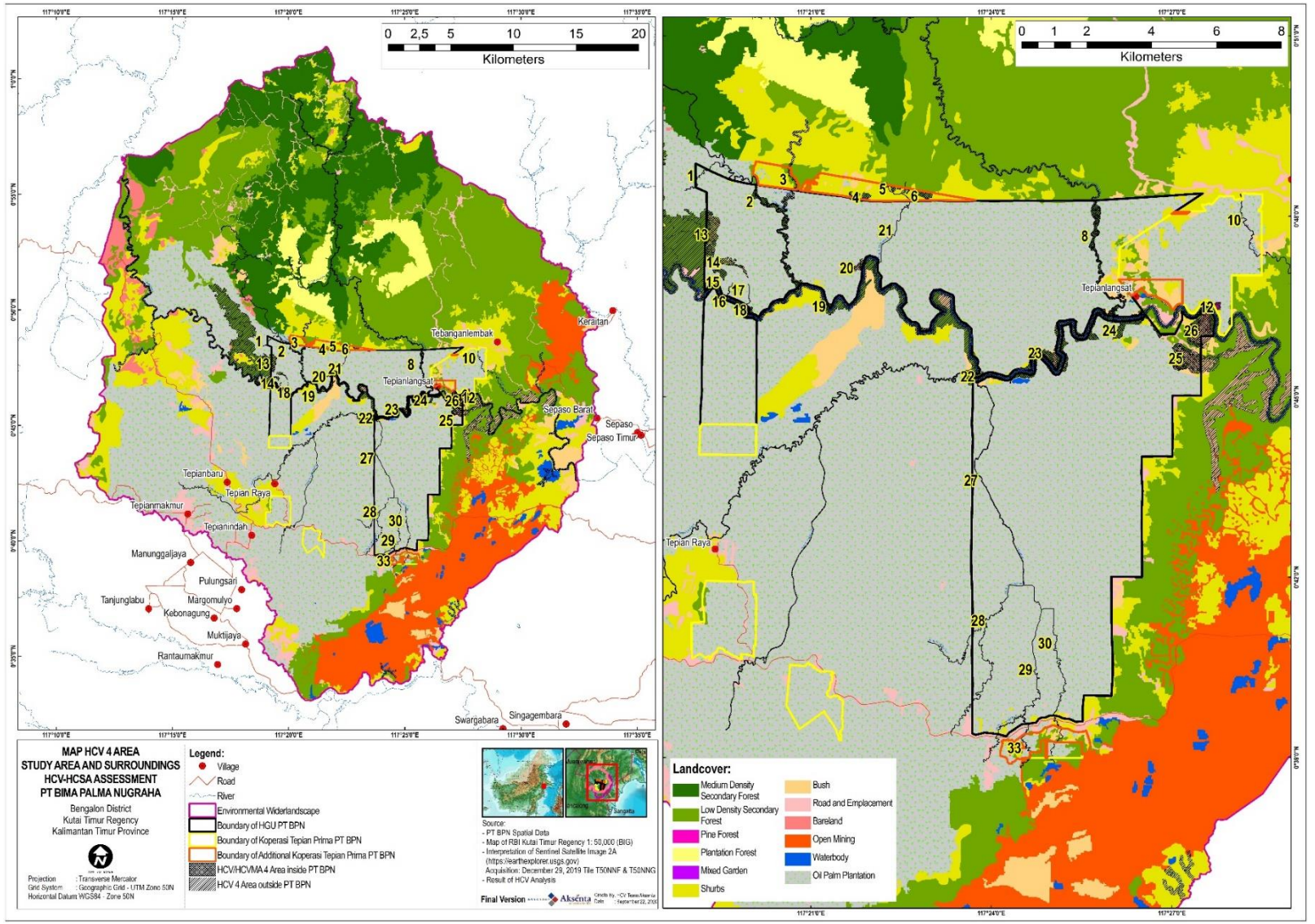


Figure 13 Map of HCV 4 areas in the MU and its surroundings

4. HCV 5

Study, observation and consultation with local community (village community members and officials, and local indigenous community) produce an output indicating that local community does not depend on forest resources to meet their life needs. In the past (between 1970-2005), timber from forest became the main source of livelihood of local community (both native Kutai ethnic group and migrant community). Other than timber, the community also had rattan and agarwood for trade, although only few did this. The community has long left behind these activities.

Local community basic needs are easily met through buying from markets in Bengalon City. This is as indicated from settlement distribution and road network map (BIG, 2017) as well as scoping output indicating that the Assessment area has moderately open access and is not an isolated area. Almost all local community members meet their basic needs through buying from local shops or kiosks in their neighbourhood. Tepian Langsat community (RT 01 to RT 03 neighbourhood units) earns an adequate livelihood from swiftlet farming. Out of 70 families who live in the village, there are around 50 swiftlet houses that are located in and around the local settlement. As for those who live by Bengalon main road, they earn livelihood form oil palm commodity.

As can be seen in Table 20, the indication of HCV 5 area presence within the AoI includes rivers and springs as sources of clean water. According to local community, they find it difficult to get clean water from their wells, making River Bengalon and springs in Tepian Langsat and Tebangan Lembak important areas for meeting community's needs for water or, in short, they are HCV 5 areas (Table 20). Nonetheless, these sources of water are located outside the MU but still within the AoI. Sources of water in the MU include River Kesingal 1 and Kesingal 2 used by PT BPN workers, especially those who live in Region 5. Total HCV 5 area in the MU is 0.2 ha, with HCVMA (potential HCV) of 1.4 ha in total.

Table 20 Indication of the HCV 5 presence in the MU and AoI

HCV 5	Finding
Sites and resources fundamental for satisfying the basic necessities of local communities or indigenous peoples (for livelihoods, health, nutrition, water, etc...), identified through engagement with these communities or indigenous peoples	**Present:** There are sources of water used by community, i.e., River Bengalon, a spring in Tepian Langsat, another in Tebangan Lembak, and two streams from Kesingal Hill that are used by PT BPN workers. **Potential:** - **Absent:** -
Situations that qualify as HCV 5	**Indication in the Assessment area**
Hunting and trapping grounds (for game, skin and furs)	**Absent.** Tepian Langsat community no longer hunts and gather forest products. As for Dayak Basap community members in Tebangan Lembak who still hunt for meeting their needs for protein and earning livelihood, their hunting ground does not include the AoI, but other areas upstream Bengalon and forest to the north of the AoI instead.
Non-Timber Forest Products (NTFP) such as nuts, berries, mushrooms medicinal plants and rattan	**Absent.** There are no NTFPs. Local community does not gather any natural resources for their consumption and medicines.
Fuel for household cooking, lighting and heating	**Absent.** Energy for lighting is provided independently (electrification from PLN has been planned in 2020. There is no need for energy for heating. The majority of the community use Liquefied Petroleum Gas (LPG) for cooking. Only few of them use firewood as the alternative.
Fish (as essential sources of proteins) and other freshwater species relied on by local communities	**Absent.** Fish is an alternative source of protein, other than poultry and cows that are easy to buy. Despite their settlement by the rivers, they do not fish.
Building materials (poles, thatching, timber)	**Absent.** Although most of the local buildings are made out of wood, Tepian Langsat community has been keeping stock of timber from a long time ago. Much of their needs for timber is meant for constructing swiftlet houses, but these are bought from other locations.
Fodder for livestock and seasonal grazing	**Absent.** There are no seasonal grazing activities. They obtain fodders from buying, their own house yards or bushes that they find among oil palms.

HCV 5	Finding
Water sources necessary for drinking water and sanitation	**Present.** Tepian Langsat community uses water from springs and bottled water for consumption, while others who live along Bengalon main road have clean water from drilled wells. Tepian Langsat and Tebangan Lembak develop their clean water facilities from River Bengalon. Each house has its own toilet for bathing, washing and toilet, so that they have no such activities in the river.
Items which are bartered in exchange for other essential goods, or sold for cash which is then used to buy essentials including medicine or clothes, or to pay for school fees	**Absent.** Swiftlet nests and oil palm Fresh Fruit Bunch (FFB) are the main commodity community trades to meet their domestic needs.

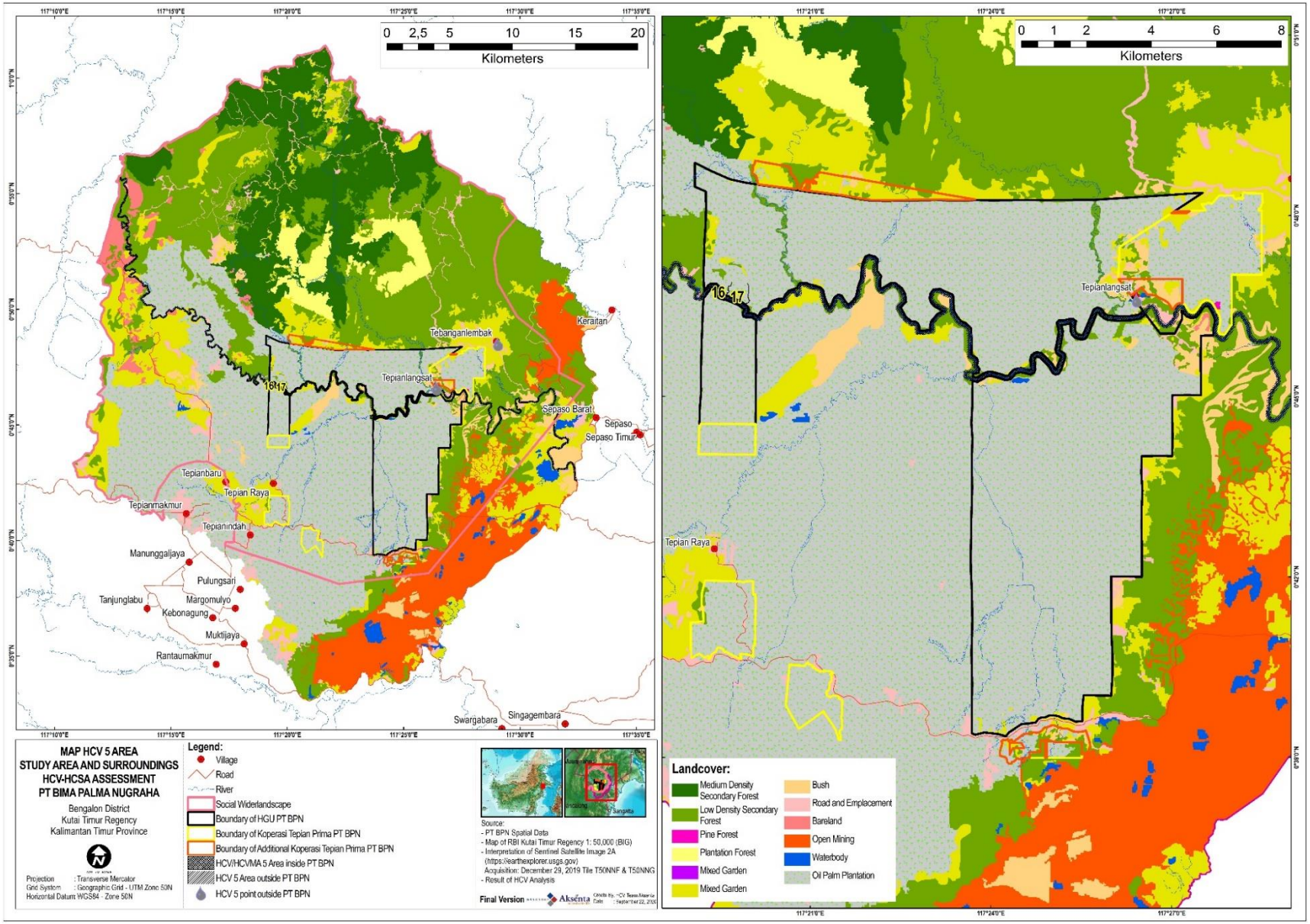


Figure 14 Map of HCV 5 areas in the MU and its surroundings

5. HCV 6

There are two situations in the AoI that qualify as HCV 6 (Table 21). The first is sites with recognised and important historical or cultural values, even if they remain unprotected by legislation; second is religious sites, burial grounds that have importance to local community or indigenous peoples. Both values are found in Tepian Langsat. The presence of HCV 6 areas and objects in the MU and its surroundings are reconfirmed by seven people from Tepian Langsat and the other five from Tebangan Lembak during final consultation. As for cave paintings in Mt. Gergaji that belongs to Sangkulirang-Mangkalihat karst area, it is located to the northwest (outside) of the AoI.

All HCV 6 areas are cultural objects of native community, i.e., Kutai ethnic group in Tepian Langsat and Dayak Basap in Tebangan Lembak. In the area where transmigrant community lives, no objects have been identified meeting HCV 6 criteria; this information is given by Rahmadi (Tepian Indah Village Secretary), Wis (Kutai Kartanegara resident who has worked in the Assessment area since 1990s and currently lives in Tepian Indah), Rohmad (preparatory village of Tepian Raya Village Secretary), and Nuryadi (Tepian Raya community leader), in in-depth interview. This transmigrant group is the newcomers in the Assessment area (they came in 2003). Lands allocated for their settlement and farms are part of Tepian Langsat territory.

HCV 6 areas within the MU include Benua Tunu burial ground, Habib's tomb and Tepian Lembak burial ground, Tebangan Lembak old village, and old burial ground of Basap community from Tebangan Lembak. Most of the sites are located by River Bengalon, i.e., outside the MU but within the AoI (Figure 15). It is estimated that total area of HCV 6 in the MU is 4.7 ha.

Table 21 Indication of HCV 6 presence in the MU and AoI

HCV 6	Finding
Sites, resources, habitats and landscapes of global or national cultural, archaeological or historical significance, and/or of critical cultural, ecological, economic or religious/sacred importance for the traditional cultures of local communities or indigenous peoples, identified through engagement with these local communities or indigenous peoples.	**Present:** There are sites of historical and cultural values, as well as religious or sacred sites, i.e., the tomb of Habib Hasan Al-Idrus, in addition to old tombs in Tepian Langsat. **Potential:** - **Absent:** -
Situations that qualify as HCV 6	**Indication in the Assessment area**
Sites recognised as having high cultural value within national policy and legislation.	**Absent.** An archaeological site in Sangkulirang-Mangkalihat area is already registered by Cultural Reserve Conservation Agency. This area is huge, some locations of its southern part (Mt. Gergaji) are also part of Tepian Langsat. It is located outside the AoI.
Sites with official designation by national government and/or an international agency like UNESCO.	**Absent.** Sangkulirang-Mangkalihat karst area is still being proposed to become the world's heritage so that it could be recognised by UNESCO.
Sites with recognised and important historical or cultural values, even if they remain unprotected by legislation.	**Present.** The tomb of Habib Hasan Al-Idrus, a cleric who spread Islam in the Assessment area and its surroundings, is located in Tepian Langsat, in addition to public burial ground of Tepian Langsat community, dated early 1900s.
Religious or sacred sites, burial grounds or sites at which traditional ceremonies take place that have importance to local or indigenous people.	
Plant or animal resources with totemic values or used in traditional ceremonies.	**Absent.** Local community has no cultural values that depend on plant or animal.

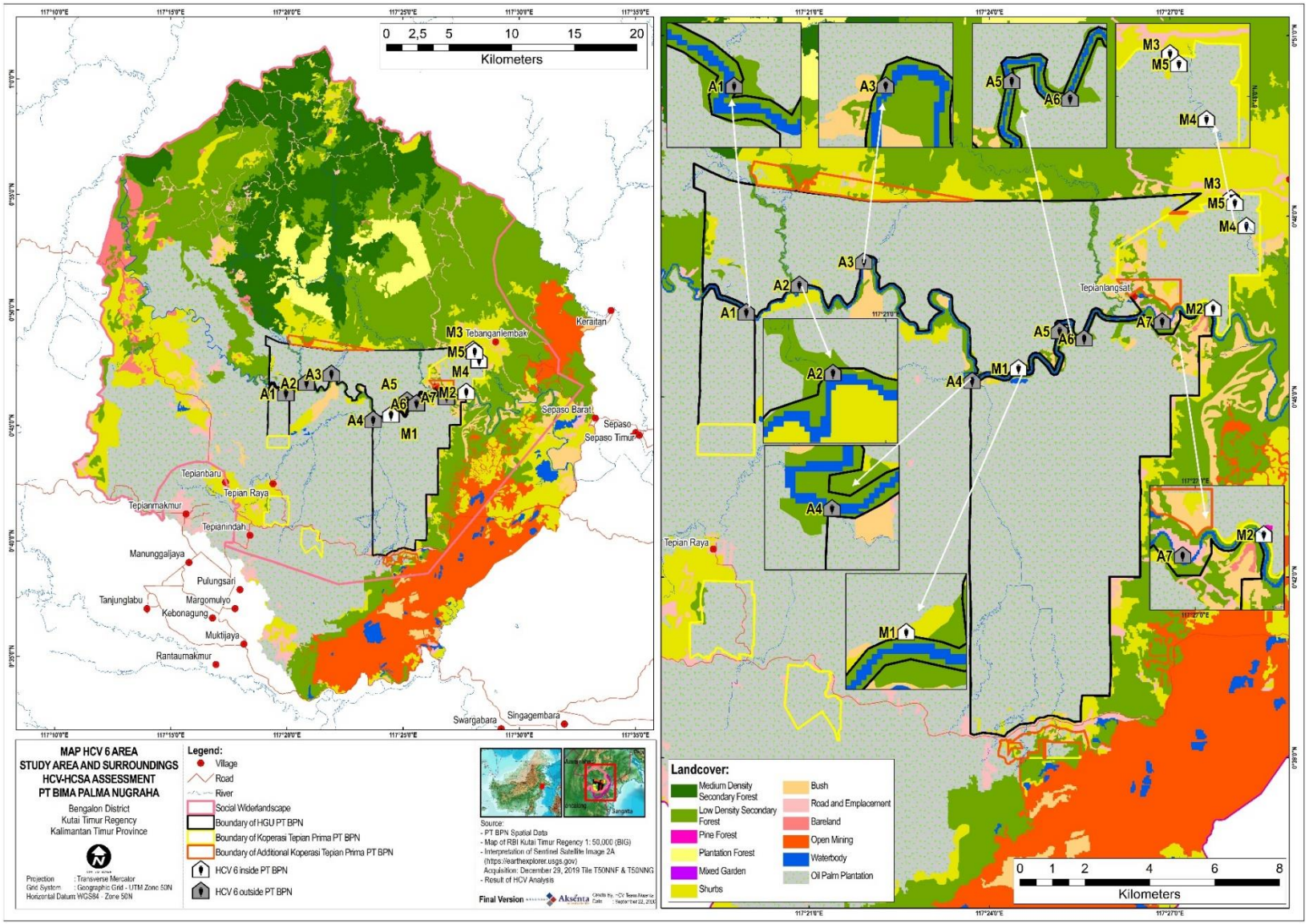


Figure 15 Map of HCV 6 areas in the MU and its surroundings

6. Community Lands and Their Future Sources of Livelihood

In general, community earns livelihood from the yield of oil palm under the cooperation programme with the Company, while some of them work as farm labourers, plantation workers, trader and have swiftlet farm business. These sources of livelihood are able to guarantee the community's buying power against the needs for food, although some of them still farm rice in both irrigated and non-irrigated fields.

Referring to the social landscape that includes four villages in Bengalon Sub-District, the population (5,194 people) needs 805.6 tonnes of rice in a year. Using the same assumption of calculation of the sub-district's needs for rice, it is known that the needs of the four villages in the AoI for rice will should be represented by rice fields with total area of 182 ha. Participatory mapping and field survey indicate that Tepian Langsat has two locations of rice fields or potential rice fields. The community proposes both locations to be allocated for community lands. The first location is for modern rice field construction aided by local government and this is because Tepian Langsat Village Government would like to have its own area of rice fields. The second one is the area planned through sub-district territorial development. The total area to allocate for Tepian Langsat community, including rice fields, is 207.9 ha, 190.3 ha out of which is located within PT BPN MU. Out of 190.3 ha (community lands), 145.2 ha is in overlap with HCV-HCS areas.

Referring to the HCV-HCS Assessment Toolkit (0.5 ha/person), the total area to allocate for the food security in the AoI is 2,597 ha. Based on analysis of potential community land at the level of social AoI, it is known that a potential area of 6,966.1 ha in total is available in the Assessment landscape for the reserve of source of livelihood to guarantee the community's sources of livelihood in the future. In the future, they will be relying on food crop farming and other land cultivations such as oil palm, rubber and fruit cultivation, as well as swiftlet farming, for their livelihood. In addition, the presence of several companies (plantation, forestry and mining companies) also becomes an alternative for community to make additional income, such as what is happening already at the time this Assessment is carried out. This includes the scheme of nucleus-plasma partnership with oil palm companies.

HCV 1: Wildlife and Plant

Field data collection focuses on inventorying high-level wildlife (for three groups: mammal, bird and reptile) and plant species. Once the species inventorying data is collected, each species is given its conservation status that include RTE category based on IUCN Red List, distribution level (endemic or restricted range), CITES and national protection. Based on the scoping study, species with the highest profile in the AoI is orangutan (*Pongo pygmaeus morio*; CR, Endemic, CITES App. I and protected). Therefore, orangutan is prioritised in field data collection at the full assessment phase.

Biodiversity species presence is identified through the following evidences: (i) direct encounter; (ii) sound; and (iii) footprint or mark they leave. Other data collected include qualitative condition of natural vegetation land cover that includes vegetation structure (vegetation stand stratification), succession stages (primary, secondary and climax), and vegetation stand quality (intact, relatively intact, slightly disturbed, disturbed, degraded, and severely degraded). Field data is collected through survey method: (i) measurement spot in 100-200 m transect; (ii) opportunistic exploration; (iii) interview; and (iv) plant inventorying data.

HCV 2

HCV 2 is identified through spatial analysis and field observation. The former is performed to identify the position of MU and AoI against the surrounding wide natural landscape. The data is collected by preparing land cover map that contains information including IFL, conservation area and potential habitats to wide-ranging species. The land cover data is then groundtruthed through visual

observation. Field observation is carried out to collect the following information: (i) the presence of wide natural ecosystem landscape; (ii) level of anthropogenic activities in the natural landscape; (iii) level of connectivity between two or more areas that may potentially become part of the wide landscape or habitat to wide-ranging species; and (iv) the presence of natural ecosystems small in size but providing key functions to landscape such as connectivity and buffering. If any natural ecosystem in the AoI is found becoming part of the wide natural landscape, the area in question will be considered an HCV 2 area.

HCV 3

HCV 3 is identified through a combination between spatial analysis and field observation methods. Spatial analysis method is conducted through application of precautionary approach, referring to HCV Toolkit for Indonesia (Consortium for Revision of the HCV Toolkit for Indonesia, 2008). This approach is applied through: (i) mapping of ecosystem types in the entire AoI based on land system map and field observation; (ii) determination of threatened and/or rare ecosystem types; (iii) overlay of map of threatened and/or rare ecosystem type and map of the remining natural vegetation produced from land cover interpretation combined into the forest inventory team's field observation and analysis. The final output of the analysis is naturally vegetated areas in threatened and/or rare ecosystems containing HCV 3.

Hydrological and Environmental Service Function

Field activities to identify hydrological functions and environmental services, including soil type observation, are carried out based on the assessed object. Each Assessment's object type has questions to answer, including 'what kind of vital environmental service values, functions and benefits that the Assessment object can produce?'. Each Assessment object found must have the following information: (i) toponym; (ii) location description; (iii) current status; (iv) actual and potential threats; (v) coordinates; and (vi) field photograph documentation. Soil types are observed mainly to verify the presence/absence of peat soils.

Field Activity Output: Interview/Discussion and Field Survey

Environmental field survey is carried out in eight locations, i.e., Tebang Lungun Hill, Koran SG, Partnership 1, Lake Padang, KM93 of Partnership 2, KM102 of Partnership 2, River Bengalon, Mengkup, Koran and Tebengan. Field activity includes forest inventorying plots (256 spots); land cover groundtruthing (608 spots) and HCV 1-3 observation spots (184 spots) that include flora/fauna identification and rare and threatened ecosystem presence verification (Figure 16). Field observation concerning river and lake and soil type verification are carried out at 60 spots.

As many as 20 respondents are interviewed (Table 22). In general, important information collected from the activity is about the presence of orangutan and other important species, the current and previous landscape conditions, and threats to the presence of the important species and their habitats.

Table 22 Summary of interview during the field data collection

Expert/ Organisation/ Social Group	Name	Type of Interaction	Concern and/or Recommendation
Smallholders in Bengalon riparian areas (outside the MU)	Mr & Mrs Hamzah	Interview	▪ Farming in the area (south of Tebang Lungun Hill) since 2017 ▪ Several months (before interview), orangutan came over their plantations to eat oil palm shoots ▪ When orangutan appears, they are left be because we are afraid, they would attack.

Expert/ Organisation/ Social Group	Name	Type of Interaction	Concern and/or Recommendation
			▪ Several wildlife species still appear in Tebang Lungun Hill, including lutung and *kalawiat* (Bornean white-bearded gibbon) ▪ In this location there is another two farms, only migrant people work there.
Koran SG member	Wisran	Interview	▪ Started farming and plantation since the beginning of 2000s before the area was cleared for oil palm plantation. ▪ Commodity planted: pepper, jackfruit, durian, stinky beans, etc. ▪ Wildlife presence reduced since the opening of oil palm plantation (after 2005). ▪ Orangutan still appears, especially during fruit seasons. They lastly showed more than six months ago. ▪ They came over from the north of the MU. ▪ Other wildlife species: *owa* from the north of River Koran, *beruk* (southern pig-tailed macaque) and crab-eating macaque often appear.
Worker of PT BPN Region 05	Jasman, Anton, Herdiansyah	Interview	▪ There are forest areas to the west of PT BPN concession and shrubs in Tebang Lungun Hill and Bengalon riparian area. Outside the Company plantation, a large forest is found to the north heading to PT Barito (PT MKC) concession ▪ Wildlife species are already rare to find in the plantations, except bird species. To the north, there is a forest where we can still find wildlife species including orangutan that sometimes come to plantations to eat oil palm shoots. To the north there are also deer, muntjac, Sunda pangolin, etc. ▪ Some community members still hunt animals (deer, muntjac, mousedeer) in the forest to the north of PT BPN concession.
Security officer of PT BPN Region 08 (Tepian Langsat villager)	Andi Sofyan and Erwin	Interview	▪ Community members still hunt wildlife species. They used to be able to have their catch within less than a week, but now it could take 1-2 months. ▪ Wild animals they catch include deer, muntjac, mousedeer and greater mousedeer. Their hunting ground is Barito forest area to the north of PT BPN concession.
Logging worker from Bengalon	Bojes and Rahim	Interview	▪ We just came for the past few days in Koran SG to log in Danag's land (a Bengalon resident). ▪ Trees to take are ironwood and meranti.
Worker of PT BPN Region 06 (maintenance section)	Flori and Maksi	Interview	▪ Orangutan was once sighted at the boundary between the plantation and Koran SG area (Block A). ▪ The forest to the north of Koran SG. The SG area has partly become bushes and cleared for community plantation.
Worker of PT BPN Region 08 (maintenance section)	Khaidil and Dicky	Interview	▪ A local villager (often called Bibi) saw crocodile in River Mengkupa (around 1 week before the full assessment activity). ▪ Sometimes orangutan appear in Tepian Langsat SG, particularly when fruit trees such as cempedak bear fruits. ▪ In the northern part of Mengkupa riparian area that remain connecting to a large forest area to the north (known as Barito), orangutans are still found.
Worker of PT BPN Region 01	Mr and Mrs. Mustafa (also owning plantation at	Interview	▪ Orangutan often come out from a secondary forest fragment to the south of the area (KM93 of Partnership 2)

Expert/ Organisation/ Social Group	Name	Type of Interaction	Concern and/or Recommendation
	KM93), Azwar, Alias		▪ During fruit season, e.g., rambutan, sometimes orangutan could reach fruit gardens near settlement. ▪ Another wildlife species found in the secondary forest fragment at KM93 of Partnership 2 area is sun bear. We still can see many of their scratch marks on the tree.
Tepian Langsat Village	Hamzah	Participatory mapping and interview	▪ A great fire broke out in the village area in 1982. The 1980-1990 period is known as an 'illegal logging' era in the area where PT Barito Pasifik and PT Porodisa operated. Ironwood is the dominant tree species. ▪ Around 2005, PT BPN started its operation in this village, thanks to invitation from the village community members. ▪ In this village, there is a karst ecosystem area (7,800 ha) to the northeast of and outside the AoI, named Seribu Menara Karst (A Thousand Tower of Karst) in Gergaji Karst area.
PT MKC; Conservation Assistant	Rohim	Interview	▪ PT MKC is having an HCV-HCSA assessment conducted. There is a potentially large conservation area to the north of PT BPN. ▪ PT MKC once installed camera trap in cooperation with Dr. Yaya Rayadin (Mulawarman University), documenting several important wildlife species such as orangutan, clouded leopard and sun bear. ▪ PT MKC is willing to cooperate with PT BPN to manage conservation areas, particularly in case of any areas connected to each other between both concessions.

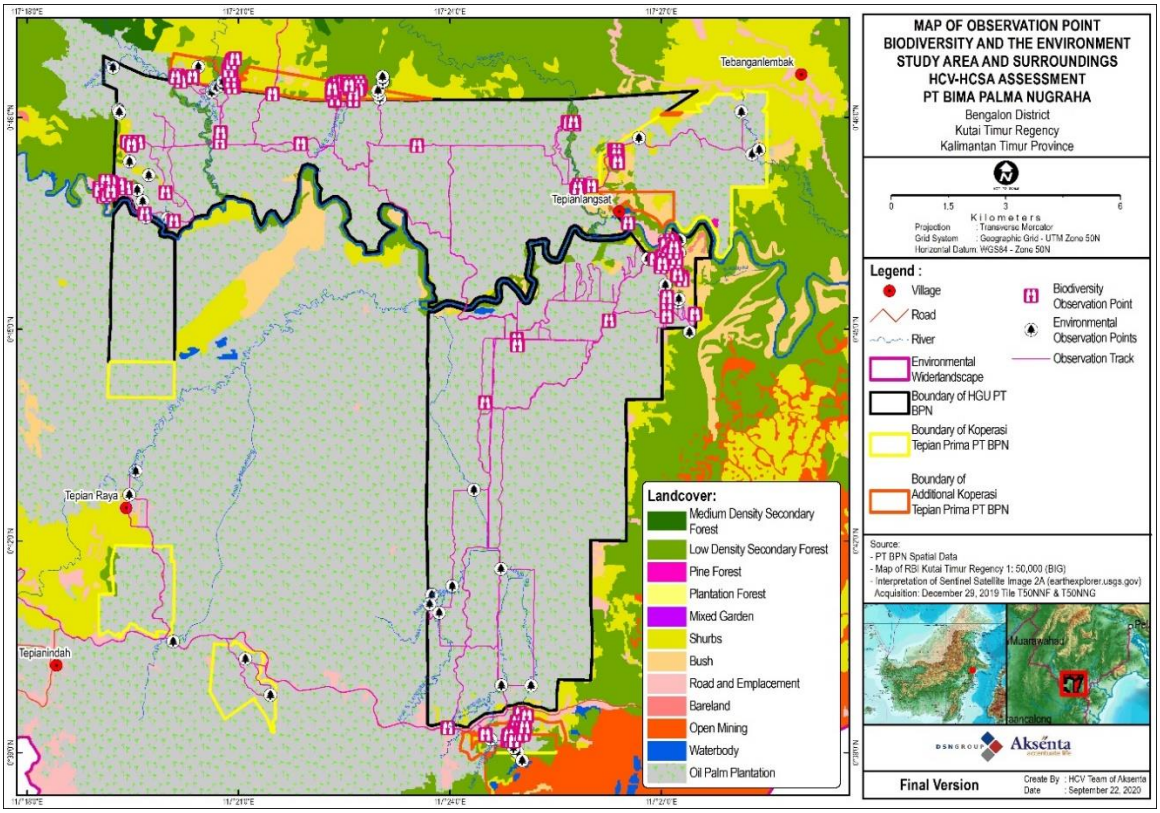


Figure 16 Map of field survey locations for the Assessment's environmental field (including HCV 4)

2. HCS Classification and Carbon Assessment

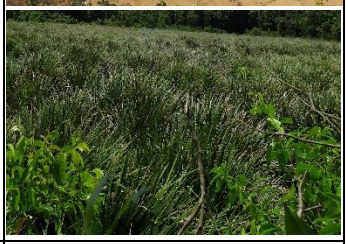
a. Strata Description

Table 23 Land cover description and photograph documentation in the Assessment area

HCS Land Cover Class	Land Cover Class	Average Carbon Amount (tonne-C/ha)	Description	Photograph
Potential HCS Class				
High-Density Forest (HDF)	-	-	*Not found.*	-
Medium-Density Forest (MDF)	-	-	*Not found.*	-
Low-Density Forest (LDF)	Medium-density secondary lowland forest	Outside the MU	Medium-density secondary lowland forest is found outside the MU but within the AoI. Its location is to the north of PT BPN MU concession. Ironwood *(Eusideroxylon zwageri)*, *Keruing (Dipterocarpus cornutus)*, *Keruing batu (Dipterocarpus crinitus)*, Meranti *(Shorea parvifolia)* and *Kapur (Dryobalanops lanceolata)* are still found in medium-density secondary lowland forest, dominated by plants with DBH 10-30 cm.	 
Young Regeneration Forest (YRF)	Low-density secondary lowland forest	49.1	Low-density secondary lowland forest is found in the form of small fragments in Koran, Mengkupa and Bengalon riparian areas. In addition, it is also found in Tebang Lungun Hill area, Block D2, Koran SG area, Tepian SG area, and Lake Padang area. Its area is 486.5 ha, or 3.5% of the Assessment area. As many as 152 species are found in this land cover, consisting of 43 families dominated by plants with DBH 10-30 cm. Dominant vegetation species found include *seroa (Macaranga gigantea)*, *leban (Vitex pinnata)*, *seda/bekatan (Paranephelium xestophyllum)* and *kernanga (Cananga odoraa)*.	 
Non-HCS Class				

HCS Land Cover Class	Land Cover Class	Average Carbon Amount (tonne-C/ha)	Description	Photograph
Shrub (S)	Shrub	23.1	Shrubs are found taking form of small fragments along the banks of Koran's tributaries and Bengalon, in addition to Tebang Lungun hill area, C2-C3 blocks, Koran SG area, Tepian SG area and Lake Padang area. Its total area is 496.9 ha or 3.5% of the Assessment area. As many as 159 species are found in this land cover, comprising 44 families that are dominated by plants with DBH<15 cm. Dominant vegetation species found include *leban (Vitex pinnata)*, *seroa (Macaranga gigantea)*, *sumpalabu daun kecil (Homalanthus populneus)* and *nayub (Callicarpa pentandra).*	
Bare Soil (OL)	Bush	5.3	Bush is found taking form of small fragments by River Bengalon, as well as in Tebang Lungun hill area, Koran SG area, Tepian SG area and Lake Padang area. Its total area is 294.0 ha (2.1% of the Assessment area). As many as 51 species are found in this land cover, comprising 24 families dominated by DBH<8 cm. Dominant vegetation species found include *kedemba (Mitragyna speciosa), leban (Vitex pinnata), sempalabu (Macaranga tanarius)* and *ara kendang (Ficus variegata).*	
Plantation Forest (FP)	Pine forest	-	Pine forest is found in the form of small fragments in Block D52-D53 area. Its total area is 3.9 ha or 0.03% of the Assessment area. It is composed of only one species, i.e., pine *(Pinus merkusii)* and dominated by plants with DBH >30 cm.	
	Plantation forest	-	Plantation forest is found outside the Assessment area but within the AoI. This forest is considered industry with rubber commodity, managed by PT Multi Kusuma Cemerlang (PT MKC). It is located to the north of the Assessment area.	

HCS Land Cover Class	Land Cover Class	Average Carbon Amount (tonne-C/ha)	Description	Photograph
Agriculture (AGRI)	Oil palm plantation	-	Oil palm plantation is the most dominant land cover in the Assessment area. Its total area is 12,742.7 ha (90.5%) of the Assessment area. Oil palms were planted in eight planting years, i.e., 2007, 2008, 2009, 2010, 2011, 2012, 2013 and 2014.	
	Mixed garden	-	Mixed gardens are found in small fragments in Block B55 block. Its total area is 0.3 ha (0.002% of the Assessment area). It is dominated by fruit trees such as jackfruit, mango, cempedak, durian and banana that are planted by local community.	 
Others	Open pit mining	-	Open pit mining sites are found outside the Assessment area but within the AoI, i.e., in PT Kaltim Prima Coal (PT KPC) located to the east to south of the MU.	 
	Roads and settlements	-	Roads and settlements are found taking form of roads, location planned for sub-district capital development, and settlement areas. Roads 20 m wide and the planned location for the sub-district capital development are located within the MU. As for settlements, these are located outside the MU but within the AoI.	 

HCS Land Cover Class	Land Cover Class	Average Carbon Amount (tonne-C/ha)	Description	Photograph
	Bare soil	-	Bare soils are found taking form of areas that previously were rice fields, and have yet been brought back to use by community. They are located in the area planned for sub-district capital development.	 
	Water body	-	Water bodies are found in the form of manmade and natural lakes. The former is located at Block G31-G32 and used by oil palm mill as the source of water, while the latter (Lake Padang) is located around Tepian Langsat. Water body total area is 8.2 ha (0.1% of the Assessment area).	

b. Estimation of area for vegetation stratification

Table 24 Classification of HCS areas in the Assessment area

HCS Land Cover Class	Land Cover Class	Area (ha)	% Total Assessment Area
Potential HCS Class			
High-Density Forest (HDF)	-	-	-
Medium-Density Forest (MDF)	-	-	-
Low-Density Forest (LDF)	-	-	-
Young Regeneration Forest (YRF)	Low-density secondary lowland forest	486.5	3.5
Sub-Total		**486.5**	**3.5**
Non-HCS Class			
Shrub (S)	Shrubs	496.9	3.5
Bare Soil (OL)	Bush	294.0	2.1
Plantation Forest (FP)	Pine forest	3.9	0.03
Agriculture (AGRI)	Mixed garden	0.3	0.002
	Oil palm plantation	12,742.7	90.5
Others	Roads and settlements	44.1	0.3
	Bare soil	9.5	0.1

HCS Land Cover Class	Land Cover Class	Area (ha)	% Total Assessment Area
	Water body	8.2	0.1
Sub-Total		**13,559.6**	**96.5**
Total		**14,086.0**	**100.0**

c. Vegetation Stratification Map

Vegetation stratification map is shown by Figure 17

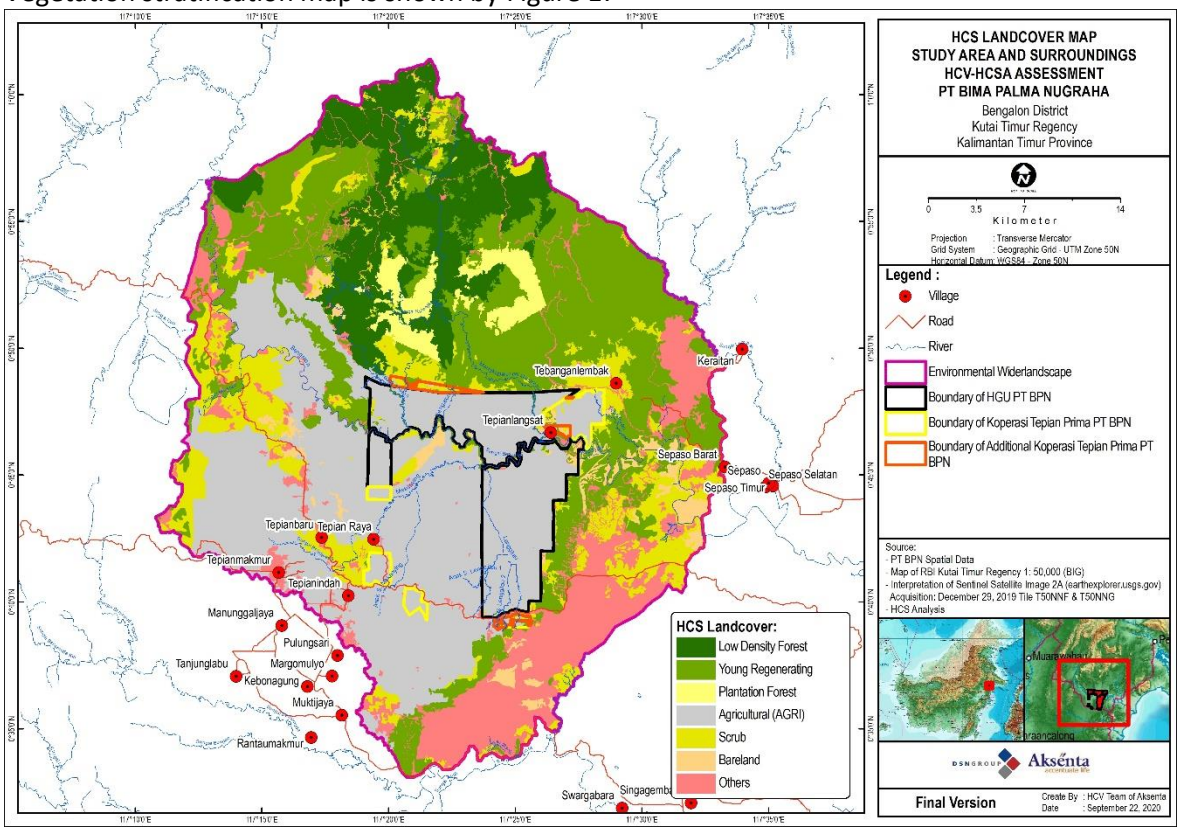


Figure 17 Map of vegetation stratification (HCS class) in the Assessment area

d. Carbon Stock Estimate for Vegetation sratification

Table 25 Estimated carbon stock by HCS land cover class

HCS Land Cover Classification	Area (ha)	Number of Plot	Carbon Stock Average (Tonne-C/ha)	Standard error of the mean	Confidence limits (90%)		Total Carbon Stock (Kilotonne-C)
					Lower	Upper	
Potential HCS land cover class							
High-Density forest (HDF)	-	-	-	-	-	-	-
Medium-Density forest (MDF)	-	-	-	-	-	-	-
Low-Density Forest (LDF)	-	-	-	-	-	-	-
Young Regeneration Forest (YRF)	486.5	72	49.1	0.8	47.8	50.5	23.9
Land cover class without potential HCS							
Shrub (S)	496.9	115	23.1	0.6	22.0	24.1	11.5
Bare Soil (OL)	294.0	69	5.3	0.8	3.9	6.7	1.6
Plantation Forest (FP)	3.9	-	-	-	-	-	-
Agriculture (AGRI)	12,743.0	-	-	-	-	-	-
Others	61.8	-	-	-	-	-	-

e. Statistical analysis of carbon stock

Table 26 Anova test

Source	SS	df	MS	F	P-value	F_90% CL	Significance
Between Groups	68,987.5	2	34,493.8	765.5	5.6×10^{-8}	2.3	Significant
Error	11,414.6	253	45.1	-	-	-	-
Total	**80,402.1**	**255**	**315.3**				-

Table 27 Scheffe analysis

Variables	N	SS	Avg
YRF	72	6,068.9	49.1
S	115	4,172.5	23.1
OL	69	1,173.3	5.3
	SSE	11,414.6	
	MSE	45.1	
	p	0.1	
	k-1	3.0	
	N	256.0	
	F	2.3	
Pair Wise Difference (Absolute values)			
Type	**YRF**	**S**	**OL**
YRF	-	26.1	43.8
S	-	-	17.7
OL	-	-	-
Scheffe Comparison Values			
Type	**YRF**	**S**	**OL**
YRF	-	2.2	2.4
S	-	-	2.2
OL	-	-	-
Significant Differences			
Type	**YRF**	**S**	**OL**
YRF	-	Significant	Significant
S	-	-	Significant
OL	-	-	-

Plot-level carbon stock estimation indicates that each HCS land cover (HRM, B and LT) are significantly different from one another. The highest carbon stock is found in HRM area having canopy cover percentage of 31%-50%, and 297 trees from 72 plots are found with DBH >30 cm. As for shrub (B) land cover, its canopy cover is 10%-20% and no trees are found with DBH >30 cm.

3. HCV 1

Criteria of HCV 1 in the Assessment area are met by the presence of RTE and endemic species, as well as important genetic sub-species or variety (Table 28). Features of ecosystems that may potentially become locations of biodiversity concentration include secondary forest as natural vegetation cover and rivers and their riparian areas. Total HCV 1 area within the MU is 709.3 ha while the HCVMA is 364.2 ha.

Table 28 Indication of HCV 1 presence in the MU and AoI

HCV 1	Finding
Concentrations of biological diversity including endemic species, and rare, threatened or endangered species, that are significant at global, regional or national levels.	**Present:** Population of RTE and/or endemic species, including orangutan, Proboscis monkey, Bornean white-bearded gibbon, sun bear, crocodile, *keruing*, *kapur* and ironwood. **Potential:** - **Absent:** -
Situations that qualify as HCV 1	**Indication in the Assessment area**
A high overall species richness, diversity or uniqueness.	**Absent.** Most of the Assessment is already in the form of oil palm plantation. Actual condition indicates that only few locations allow the presence of quite sound biodiversity, i.e., lowland secondary forest area to the north of Koran SG, secondary forest in the bank of Lake Padang and Bengalon riparian area. However, almost all of the forest patches already get disconnected from the natural vegetation outside, except the secondary forest in Koran SG area.
Populations of multiple endemic or RTE species.	**Present.** RTE and endemic species, i.e., orangutan, Proboscis monkey, Bornean white-bearded gibbon, *Teijsmanniodendron havilandii*, and *ketiau*. Species with only endemic status: painted treeshrew, dusky munia and *kapur*. Species with only RTE status: sun bear, Asian small-clawed otter, deer, lesser adjutant, *keruing* and ironwood.
Important populations or a great abundance of individual endemic or RTE species.	**Absent.** Endemic and/or RTE species are documented, but with small population.
Small populations of individual endemic or RTE species, in cases where the national, regional or global survival of that species is critically dependent on the area in question	**Present.** There has been recorded a small population of Bornean orangutan *(Pongo pygmaeus)* that is a part of Bengalon orangutan population pouch.
Sites with significant RTE species richness.	**Absent.** RTE species are not concentrated only in specific locations; but rather, they are distributed in several locations in the Assessment area.
Particularly important genetic variants, subspecies or varieties.	**Present.** The presence of orangutan sub-species population, i.e., orangutan *(Pongo pygmaeus morio)* is documented in the Assessment area. Its distribution includes only the eastern and northern parts of Borneo.

As many as 21 RTE species (based on IUCN status) are documented in the Assessment area, including 13 fauna species and 8 flora species (Table 29). As for endemic species, there has been documented 19 species that include 4 mammal species, 1 bird species and 14 flora species (Table 29)

The presence of orangutan *(Pongo pygmaeus morio)* becomes the strongest consideration in designing HCV 1 area both within the MU and in the wider landscape. HCV 1 area boundaries include all secondary forest-covered areas (low and medium-density as can be found in the AoI), which are the habitats to orangutan. As for oil palm plantation, bush and shrub that border the secondary forest (orangutan habitat), these areas are recommended to be made HCVMAs, especially to provide connectivity. As a form of precautionary principle application, the additional management area should be buffers of 100 m wide from the orangutan habitat boundary (Acrenaz *et al*., 2014; HCS Toolkit Module 5, 2017).

Conservation areas are defined by taking into consideration the connectivity between habitat fragments, be it in the form of linear habitat corridor and stepping stone. Such corridor is located in the areas that, to the best extent possible, do not cross or are not located too near from the centre of areas where anthropogenic activities take place (such as oil palm plantation, main road, developed area, and plantation division office premises). The main objective of HCVMA 1 designation is to create connectivity for the

movements of orangutan (and other RTE species) to allow them to easily move between habitat fragments, particularly from small to large fragments. Increased connectivity of orangutan habitat in the cultivation landscape is one of the conservation effort priorities, other than suppressing threats from hunting (Spehar *et al.*, 2018). The Assessment area has no large habitat fragments, but Koran SG has a secondary forest cover (ID 5 and 6) that is connected to the larger secondary forest to the north. The latter becomes the most ideal habitat to orangutan in the AoI. In addition, potential areas of orangutan habitat that are not excessively fragmented are found to the east of the MU but still within the AoI. However, the areas belong to coal mining concessions where they are facing potential clearing in the future.

Other than habitat to terrestrial wildlife species, the presence of aquatic RTE species such as saltwater crocodile *(Crocodylus porosus)*, Asian small-clawed otter *(Aonyx cinereus)* and Asiatic softshell turtle *(Amyda cartilaginea)* indicates that rivers and their riparian areas have an important value to serve as habitats to RTE aquatic wildlife species.

Table 29 List of important species in the Assessment area

No.	Scientific Name	Indonesian Name	Status				Remark
			Distribution	IUCN	CITES	Law	
Mammal							
1	*Pongo pygmaues*	Orangutan	E	CR	I	+	Direct
2	*Hylobates funereus*	Kalawiat	E	EN	I	+	Information
3	*Nasalis larvatus*	Bekantan	E	EN	I	+	Direct
4	*Trachypithecus cristatus*	Lutung	<	NT	II	+	Information
5	*Macaca nemestrina*	Beruk	<	VU	II	-	Direct
6	*Macaca fascicularis*	Monyet ekor panjang	<>	LC	II	-	Direct
7	*Helarctos malayanus*	Beruang	<	VU	I	+	Footprint
8	*Prionailurus bengalensis*	Macan akar	<	LC	II	+	Footprint
9	*Aonyx cinereus*	Sero ambrang	<	VU	II	-	Direct
10	*Rusa unicolor*	Rusa	<	VU	-	+	Information
11	*Sus barbatus*	Babi janggut	<	VU	-	+	Direct
12	*Tupaia picta*	Tupai tercat	E	LC	nl	-	Direct
Bird							
1	*Leptoptilos javanicus*	Bangau Tongtong	<>	VU	nl	+	Direct
2	*Elanus caeruleus*	Elang Tikus	<>	LC	II	+	Direct
3	*Ichthyophaga ichthyaetus*	Elang-ikan kepala-kelabu	<>	LC	II	+	Direct
4	*Spilornis cheela*	Elang-ular Bido	<	LC	II	+	Direct
5	*Ictinaetus malayensis*	Elang hitam	<>	LC	II	+	Direct
6	*Nisaetus cirrhatus*	Elang Brontok	<	LC	II	+	Direct
7	*Nisaetus nanus*	Elang Wallace	<	VU	II	+	Direct
8	*Accipitrer trivirgatus*	Elang-alap jambul	<	LC	II	+	Direct
9	*Microhierax fringillarius*	Alap-alap Capung	<	LC	II	+	Direct
10	*Loriculus galgulus*	Serindit melayu	<	LC	II	-	Direct
11	*Tyto alba*	Serak Jawa	<>	LC	II	-	Direct
12	*Anthracoceros albirostris*	Kangkareng Perut-putih	<	LC	II	+	Direct
13	*Anthracoceros malayanus*	Kangkareng hitam	<	NT	II	+	Direct
14	*Buceros rhinoceros*	Rangkong badak	<	NT	II	+	Direct
15	*Megalaima rafflesii*	Takur tutut	<	NT	*nl*	+	Direct
16	*Hirundo rustica*	Layang-layang Api	M	LC	*nl*	-	Direct
17	*Lonchura fuscans*	Bondol Kalimantan	E	LC	*nl*	-	Direct

No.	Scientific Name	Indonesian Name	Status				Remark
			Distribution	IUCN	CITES	Law	
18	*Acridotheres javanicus*	Kerak Kerbau	<	VU	*nl*	-	Direct
Reptile							
1	*Crocodylus porosus*	Buaya muara	<>	LC	II	+	Direct
2	*Varanus salvator*	Biawak	<>	LC	II	-	Direct
3	*Coura amboinensis*	Kura-kura	<>	VU	II	-	Information
4	*Amyda cartilaginea*	Labi-labi	<>	VU	II	-	Information
5	*Phyton reticulatus*	Ular sawah	<>	LC	II	+	Information
6	*Naja sumatrana*	Ular kobra	<	LC	II	-	Direct
7	*Ophiophagus hannah*	Ular sapan	<>	LC	II	-	Information
Plant							
1	*Saurauia glabra*	Jerang	E	*n/a*	*nl*	-	Direct
2	*Saurauia ridleyi*	Bungur	E	*n/a*	*nl*	-	Direct
3	*Dracontomelon costatum*	Sengkuang	<	EN	*nl*	-	Direct
4	*Melanochyla castaneifolia*	Rengas Putih	E	*n/a*	*nl*	-	Direct
5	*Dipterocarpus cornutus*	Keruing	<	CR	*nl*	-	Direct
6	*Dryobalanops lanceolata*	Kapur	E	LC	*nl*	-	Direct
7	*Diospyros perfida*	Kayu Hitan	E	*n/a*	*nl*	-	Direct
8	*Fordia splendidissima*	Tonggolok	E	LC	*nl*	-	Direct
9	*Pterocarpus indicus*	Angsana	<>	EN	*nl*	-	Direct
10	*Teijsmanniodendron havilandii*	*Unknown*	E	EN	*nl*	-	Direct
11	*Eusideroxylon zwageri*	Ulin/Telihan	<>	VU	*nl*	-	Direct
12	*Pentace laxiflora*	Takalis	E	LC	*nl*	-	Direct
13	*Artocarpus longifolius*	Tebaur	E	*n/a*	*nl*	-	Direct
14	*Syzygium creaghii*	Jambu-jambu	E	*n/a*	*nl*	-	Direct
15	*Aporosa granularis*	*Unknown*	E	*n/a*	*nl*	-	Direct
16	*Baccaurea odoratissima*	Asam-asam	>	VU	*nl*	-	Direct
17	*Pinus merkusii*	Pinus	<>	VU	*nl*	-	Direct
18	*Xanthophyllum neglectum*	Kayu Lempung Bulan	E	NA	*nl*	-	Direct
19	*Neonauclea gigantea*	*Unknown*	E	NA	*nl*	-	Direct
20	*Madhuca glabrescens*	Ketiau	E	VU	*nl*	-	Direct

Note: E: Borneo endemic; <: also distributed in the western part of the island; >: also distributed in the eastern part of the island.

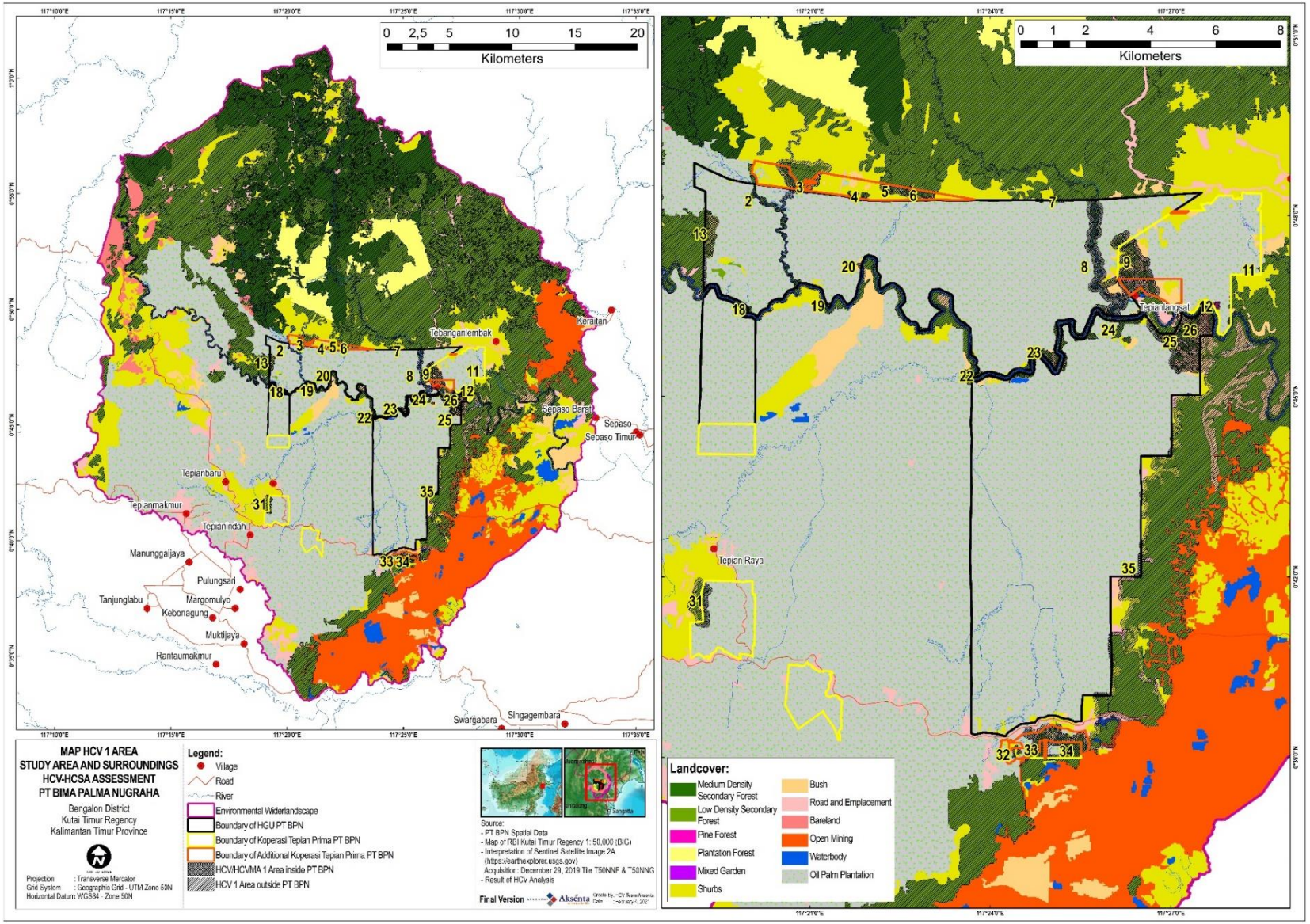


Figure 18 Map of HCV 1 areas in the MU and its surroundings

4. HCV 2

The Assessment indicates that no situations are qualified for HCV 2 in the MU and AoI (Table 30). Most of the Assessment area currently already take form of cultivation area dominated by oil palm plantation. The Assessment area no longer contains natural ecosystems or mosaics that are significant at landscape level. In addition, no parts of ecosystem are found functioning as corridor or buffer to the remaining natural areas around the Assessment area. The natural ecosystem here refers to protection/conservation areas based on the criteria of international and national bodies, with habitats of high values such as IFL and Conservation Area (CA). The largest IFL in Borneo is situated at the centre of the island and becomes the main natural landscape of the Heart of Borneo (HoB). The nearest distance between the Assessment area and the IFL is 118 km west (Figure 19)

Table 30 Indication of HCV 2 presence in the MU and AoI

HCV 2	Finding
Large landscape-level ecosystems and ecosystem mosaics that are significant at global, regional or national levels, and that contain viable populations of the great majority of the naturally occurring species in natural patterns of distribution and abundance.	**Present:** - **Potential:** - **Absent:** There are no IFL around the Assessment area. In the AoI there are protection, production and limited production forests. These forest areas have undergone timber extraction, some of which already become industrial plantation forest, making them no longer intact. In addition, quite good road access is already available.
Situations that qualify as HCV 2	**Indication in the Assessment area**
Large areas (e.g., could be greater than 50,000ha, but this is not a rule) that are relatively far from human settlement, roads or other access.	**Absent.** The Assessment area has partly become cultivation land with settlements, other developed areas and road access in its neighbourhood. There is a stretch of secondary forest in the AoI, but the area is not too large (<50,000 ha).
Smaller areas that provide key landscape functions such as connectivity and buffering	**Absent.** There are no natural landscapes to connect to.
Large areas that are more natural and intact than most other such areas	**Absent.** There are no areas more natural and intact from their surroundings. The remaining secondary forest to the north of the AoI is small (<50,000 ha) and is already provided with quite good access. Logging activities take place with moderately high intensity.

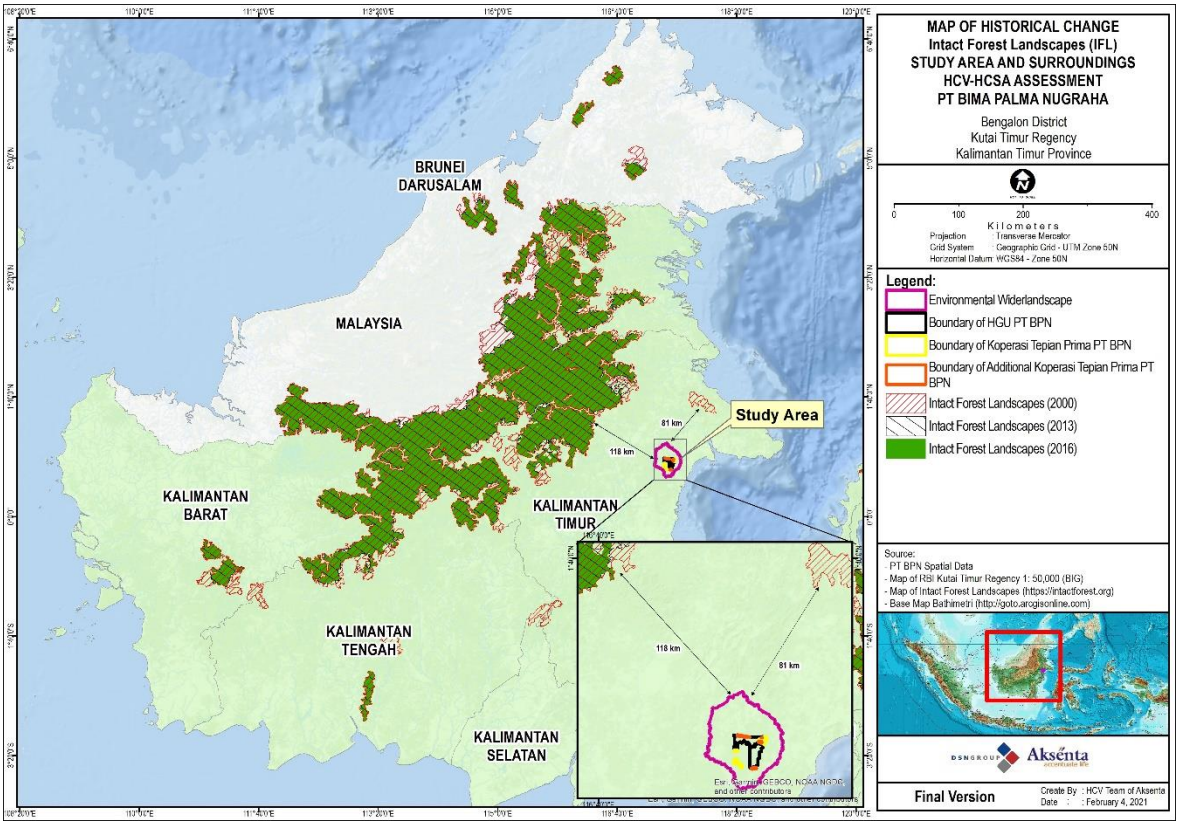


Figure 19 AoI position against 2000, 2013 and 2016 IFL maps

5. HCV 3

This Assessment refers to the list of threatened ecosystems at national level in Indonesia under the *Guidelines for the Identification of High Conservation Values in Indonesia* (The Consortium for Revision of the HCV Toolkit for Indonesia, 2008). Consequently, HCV 3 presence is identified through the toolkit's precautionary principles.

Ecosystem type identification and field verification of the land system map (RePPProT, 1990) indicate that the AoI also contains three types of ecosystem that belong to rare/threatened ecosystem. However, the MU only has one ecosystem type, i.e., mixed dipterocarp lowland forest on sedimentary rock. The other two ecosystems in the wider landscape include karst forest ecosystem on limestone rock and riparian forest ecosystem.

Using the precautionary approach (*HCV Toolkit Indonesia*, 2008), the analysis finds the indication of HCV 3 presence in the Assessment area. *First*, mixed-dipterocarp lowland forest ecosystem on sedimentary rock found in several fragments such as shrub fragment in Koran SG area, Partnership 1 and Lake Padang area, including secondary forest fragment in the AoI. *Second*, karst forest ecosystem on limestone rock located in an area in the northern part of the wider landscape, outside the MU. *Three*, riparian forest in Bengalon riparian area in the eastern part of the wider landscape, outside the MU. The total HCV 3 area is 592.1 ha, with potential HCV area of 10.3 ha. See Figure 20 for HCV 3 area distribution.

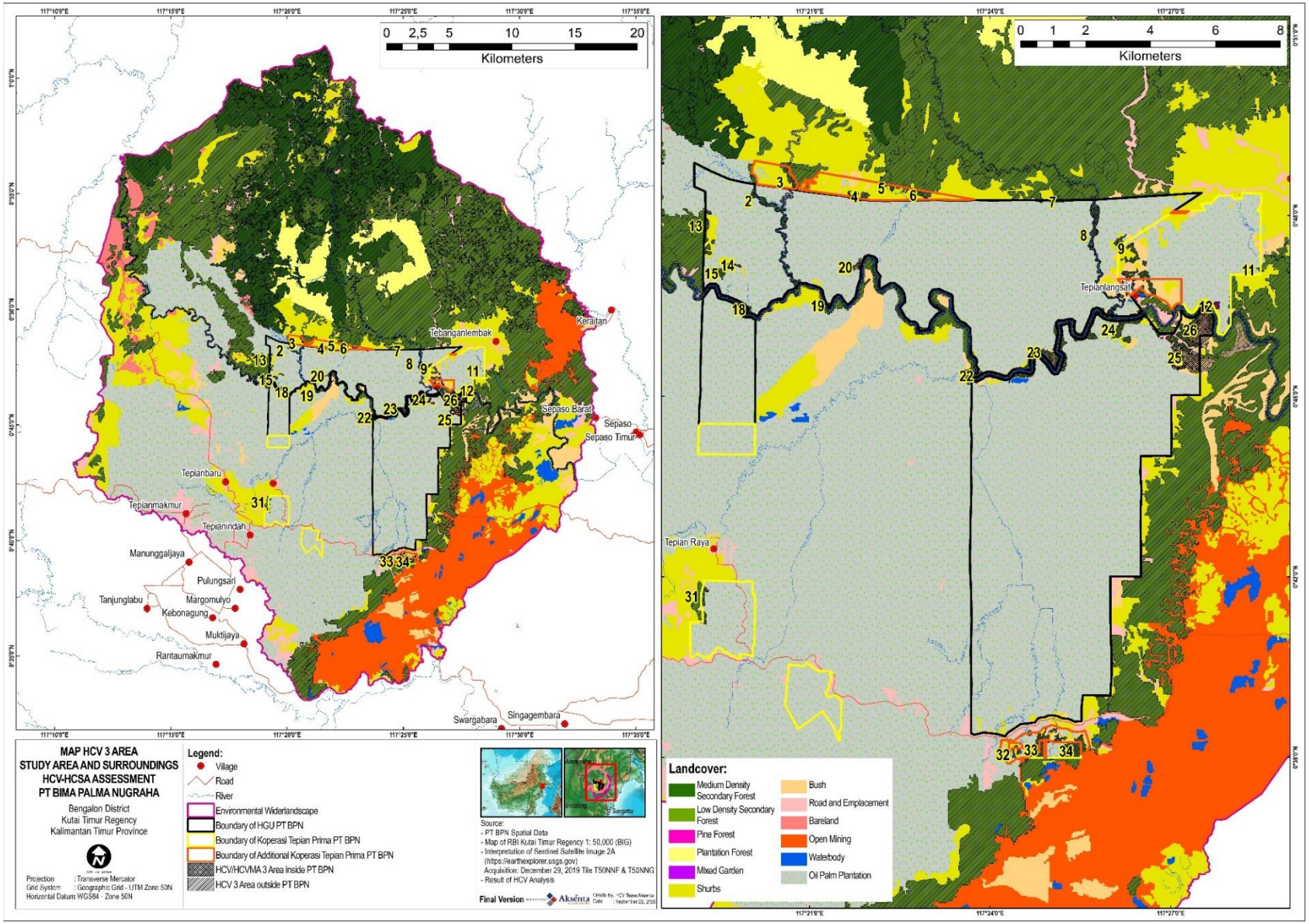


Figure 20 Map of HCV 3 areas in the MU and its surroundings

6. Peat

The entire Assessment area is neither situated on nor borders peats. Its soil is entirely mineral soil. Field surveys during scoping study and full assessment also confirm that the entire Assessment area has mineral soils dominated by ultisol and inceptisol soil orders. The absence of peat in this area is also evidenced by 1:250,000-scaled Peat Hydrological Unit (KHG) (Ministry of Environment and Forestry, 2017).[5] The nearest KHG area from the AoI is ±114 km away east and ±70 km southwest (Figure 21).

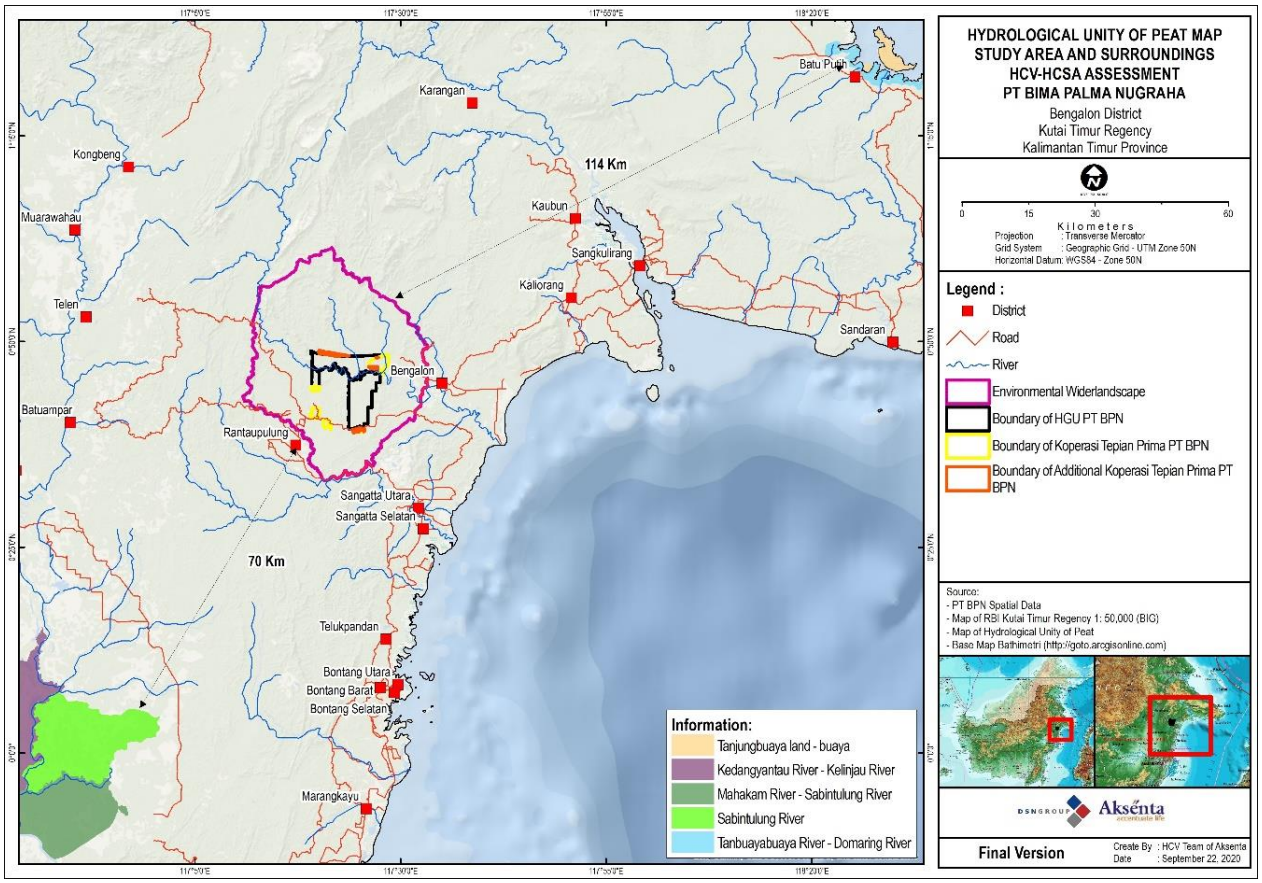


Figure 21 Position of the nearest Peat Hydrological Unit from the Assessment area

7. Patch Analysis

'Decision tree' phases are applied to 61 patches of HCS in the MU and others outside the MU with the scope of 1 km from the unit (Figure 22). This includes the application of phases 1-5, 11 and 13. Phases 6-12 are excluded because all HCS patches have been designated HCS conservation area. HCS land cover at phase 1 is 486.5 ha, but it overlaps with community lands (61 ha), so that the remaining area of HCS land cover to analyse through the decision tree is 425.5 ha.

The decision tree of the HCS patches indicates that seven patches (i.e., ID 1, 9, 34, 54, 59, 60, and 61) are high priority as HCS conservation area considering the size of their core areas. As for the other 54 patches, they are connected to or in overlap with HCV/HCVMA areas, so that they are designated HCS conservation areas (Figure 23).

[5] Minister of Environment and Forestry No. SK.129/MENLHK/SETJEN/PKL.0/2/2017 on National Peat Hydrological Unit Map. This decree is a derivative to Government Regulation No. 71/2014 on Peat Ecosystem Protection and Management revised by Government Regulation No. 57/2016 (known as Peat Government Regulation).

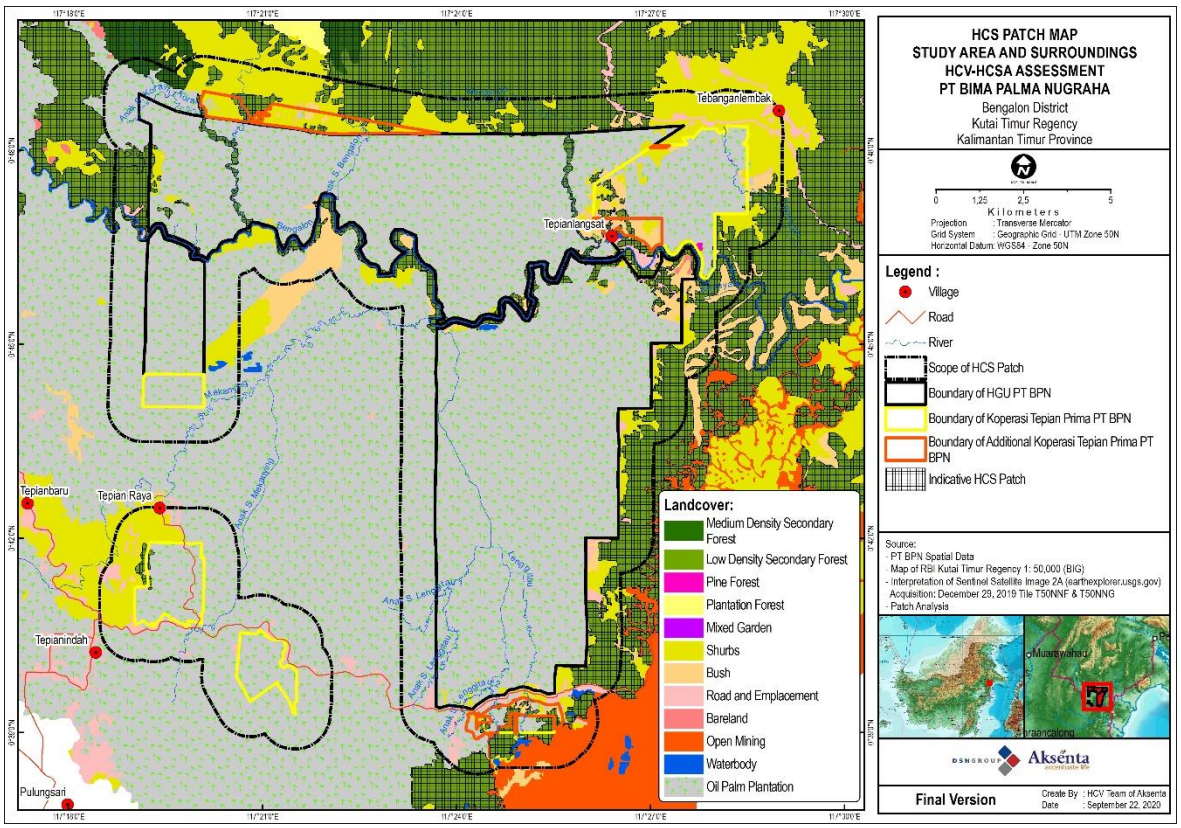


Figure 22 HCS cover in the MU and its surroundings (1-km buffer)

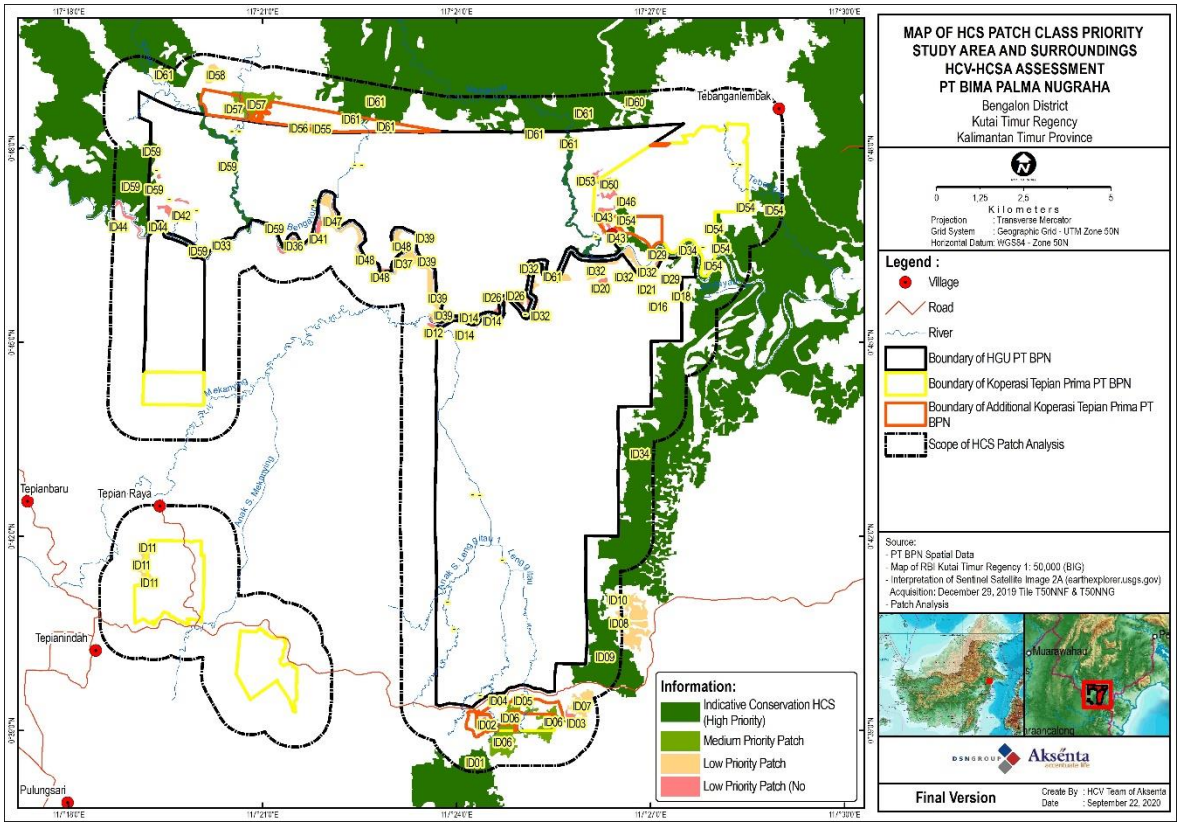


Figure 23 Map of priority patches based on the size of nucleus plantations in the Assessment area and its surroundings

Integration of conservation area into the planned landuse in the MU indicates that the nett sizes of the

conservation area (HCV/HCVMA and HCS) is 743.7 ha, community lands is 190.3 ha (185.8 ha of which is in overlap with HCV area), and potential area for development is 479.5 ha (Table 31 and Figure 24).

Table 31 Integration of conservation area into potential development area

No.	Description	Area (ha)
1	Management Unit	14,086.0
2	HCV Area/HCVMA*	743.7
3	HCS Conservation Area**	425.5
4	Peat	-
Nett Conservation Area		**743.7**
5	Community land***	190.3
6	Planted area (total 12,742.7 ha)****	12,446.3
7	Planted area in overlap with HCVMA 'Go'	226.2
8	Potential area for development	479.5

Note:

* Total HCV Area /HCVMA is 1,155.7 ha, 185.8 ha out of which are in overlap with community lands and 226.2 ha out of which are in overlap with planted area (HCVMA 'Go').

** The entire HCS conservation area overlaps with HCV area.

*** Community lands in the MU take the form of roads and the area planned for sub-district capital development, including the planned rice field area.

**** The planted area partially overlaps with HCV/HCVMA (Note: This area is the gross area (including infrastructure in the form of roads, buildings etc.)

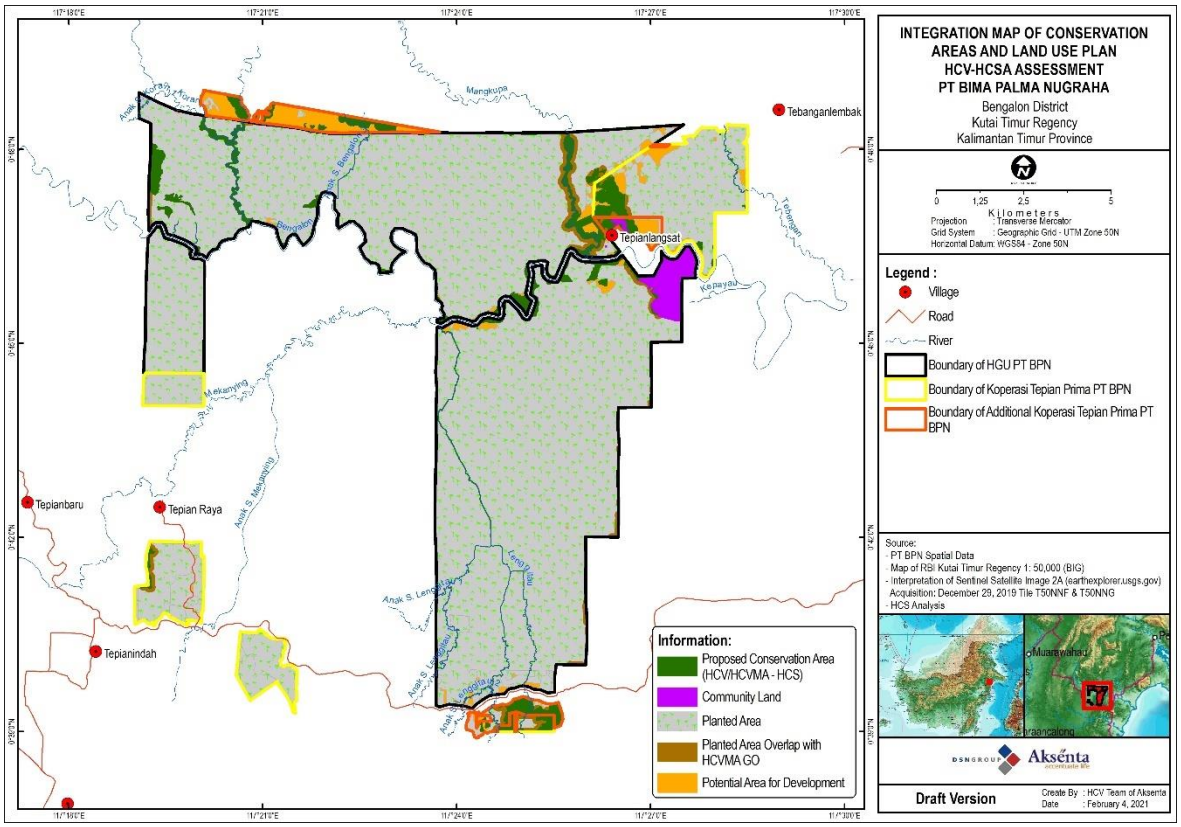


Figure 24 Map of integration of conservation areas into the landuse plan

8. Overall Summary

a. Summary on conservation area

The Assessment indicates that there are 40 areas in the MU that contain HCVs, with total area of 744.6 ha. However, some of the locations are in overlap with community lands, so that the nett HCV area in total is 594.6 ha. As for the identified HCV area/HCVMA 'No Go', the total area is 802.8 ha with management area of 352.9 ha (HCVMA 'Go'), so that the total management area is 1,155.7 ha (Table 32). Some of the HCV areas/HCVMAs are in overlap with community lands, so that the nett area of HCVMA 'No Go' is 652.8 ha with management area (HCVMA 'Go') of 317.1 ha.

All of the HCS areas identified as indicative conservation areas overlap with HCV areas, and peats are not found in the Assessment area. Areas that have been identified of important values to community is 190.3 ha, some of which (150 ha) overlap with HCV area/HCVMA 'No Go' while the other 35.8 ha overlap with HCVMA 'Go'. According to the HCV-HCS integration result, the nett of proposed conservation area is 743.7 or 5.3% of the Management Unit area (Table 32). This proposed area is the sum of the net area of HCV/HCVMA 'No Go' (652.8 ha) and HCVMA 'Go' (90.9 ha). See Figure 25 for map summarising the recommended conservation areas and Figure 426 for map of HCVMAs within the MU.

Table 32 Location and size of the recommended conservation and management areas (HCVMA No Go Area)

ID	Description	Conservation Area Type	Area (ha)		
			HCV	HCVMA 'No Go'	HCVMA 'Go'
1	Koran tributaries (1) and their riparian areas	HCV 4	0.2	1.2	-
2	River Koran and its riparian areas; Koran tributaries (2) and their riparian areas	HCV 1; 3; 4	53.6	61.4	-
3	Koran tributaries (2) and their riparian areas; secondary forest in Koran SG; orangutan buffer	HCV 1; 3; 4; HCS	37.3	37.3	3.6
4	Low-density secondary forest in Koran SG	HCV 1; 3; 4; HCS	9.6	9.6	-
5	Bengalon tributaries (3) and their riparian areas; secondary forest in Koran SG; orangutan buffer	HCV 1; 3; 4; HCS	24.2	24.2	-
6	Secondary forest in Koran SG, orangutan buffer	HCV 1; 3; 4; HCS	16.2	16.2	0.7
7	Low-density secondary lowland forest	HCV 1; 3; HCS	6.5	6.5	-
8	Mengkupa and its riparian area; orangutan buffer	HCV 1; 3; 4	62.6	62.7	97.0
9	Secondary forest as orangutan stepping stone; orangutan buffer	HCV 1; 3; HCS	81.4	81.4	90.1
10	Tebangan and its riparian area	HCV 4	0.9	3.8	-
11	Secondary forest that connects to the outside	HCV 1; 3; HCS	1.3	1.3	-
12	Bengalon riparian area	HCV 1; 3; 4	9.4	9.4	-
13	Tebang Lungun Hill	HCV 1; 3; 4	45.7	45.7	9.6
14	Kesingal Hill 1	HCV 3; 4	11.1	11.1	-
15	Kesingal Hill 2	HCV 3; 4	6.5	6.5	-
16	Kesingal 1 and its riparian area	HCV 4; 5	0.1	0.6	-
17	Kesingal 2 and its riparian area	HCV 4; 5	0.1	0.9	-
18	Secondary forest in Bengalon riparian area	HCV 1; 3; 4; HCS	5.3	5.3	-
19	Secondary forest in Bengalon riparian area	HCV 1; 3; 4; HCS	1.8	1.8	-
20	Swamp area (Bengalon floodplain)	HCV 1; 3; 4	8.1	8.1	-
21	Bengalon tributaries (3) and their riparian areas	HCV 4	0.6	3.4	-
22	Secondary forest in Bengalon riparian area	HCV 1; 3; 4; HCS	10.5	10.5	-

ID	Description	Conservation Area Type	Area (ha)		
			HCV	HCVMA 'No Go'	HCVMA 'Go'
23	Secondary forest in Bengalon riparian area	HCV 1; 3; 4; HCS	54.8	54.8	-
24	Secondary forest in Bengalon riparian area; orangutan buffer	HCV 1; 3; 4; HCS	47.3	47.3	7.1
25	Lake Padang and secondary forest in its riparian area; orangutan buffer	HCV 1; 3; 4; HCS	67.5	69.8	27.5
26	Lake Bual-Bual and secondary forest in its bank; orangutan buffer	HCV 1; 3; 4; HCS	82.3	82.3	7.0
27	Lenggitau and its riparian area	HCV 4	3.0	18.2	-
28	Lenggitau tributaries (1) and their riparian areas	HCV 4	1.7	10.0	-
29	Lenggitau tributaries (2) and their riparian areas	HCV 4	1.5	8.8	-
30	Lenggitau and its riparian areas	HCV 4	1.3	7.7	-
31	Secondary forest at KM102 of Partnership 2 area; orangutan buffer	HCV 1; 3; HCS	11.6	11.6	21.1
32	Secondary forest as orangutan stepping stone at KM93 of Partnership 2 area	HCV 1; 3; HCS	4.9	4.9	-
33	Lenggitau tributaries (2) and their riparian areas; Lenggitau and its riparian area; secondary forest at KM93 of Partnership 2 area; orangutan buffer	HCV 1; 3; 4; HCS	40.9	43.5	40.6
34	Secondary forest as orangutan stepping stone at KM93 of Partnership 2 area; orangutan buffer	HCV 1; 3; HCS	34.2	34.2	18.0
35	Orangutan buffer	HCV 1	-	-	30.7
M1	Benua Tunu burial ground	HCV 6	0.4	0.4	-
M2	Old burial ground and Habib tomb	HCV 6	*	*	-
M3	Tebangan Lembak 2 burial ground	HCV 6	0.02	0.02	-
M4	Tebangan Lembak old village	HCV 6	0.3	0.3	-
M5	Tebangan Lembak old burial ground	HCV 6	0.2	0.2	-
Total HCV Area /HCVMA			**744.6**	**802.8**	**352.9**
HCV Area/HCVMA in overlap with community lands**			**150.0**	**150.0**	**35.8**
Nett Area of HCV/HCVMA			**594.6**	**652.8**	**317.1*****
Nett Area of Proposed Conservation			**743.7********		
% Proposed Conservation Area (nett) against the Assessment area			**5.3**		

Note: All areas are GIS areas

* ID M2 overlaps with ID 12

** Community lands that overlap with HCV Area/HCVMA i.e. around the area of Lake Padang and its surroundings.

*** There are 226.2 ha out of HCVMA that overlap with the planted area, so that the net area is 90.9 ha

**** Consisting of 652.8 ha HCV/HCVMA 'No Go' (nett) and 90.9 ha HCVMA 'Go'

See below the summary concerning this Assessment for PT BPN:

- Total Assessment area (MU): 14,086.0 ha
- Total (nett) proposed conservation area (HCV-HCS): 743.7 ha
- Total proposed development area: 479.5 ha
- Total planted area: 12,742.7 ha (Note: This area is the gross area (including infrastructure in the form of roads, buildings etc.)
- Community lands for future sources of livelihood: 190.3 ha.

- Total HCVMA under strict protection: 652,8 ha
- Total HCVMA converted/convertible with management prescription: 317.1 ha.

Table 33 Recapitulation of size of conservation and management areas in the Assessment area

Environmental and Social Conservation Values	Size (ha) of conservation areas within the Assessment area	Size (ha) of management area within the Assessment area
Forest HCS *	486.5	486.5
Peat	-	-
HCV 1	709.3	1,073.5
HCV 2	-	-
HCV 3	592.1	602.4
HCV 4	468.9	527.1
HCV 5	0.2	1.6
HCV 6	4.7	4.7
Community lands**	190.3	190.3
Total nett (combined)	**802.8**	**1,155.7**

Note:

* Total HCS forest area is 486.5 ha; there is an overlap of 61.0 ha with community lands, so that the nett HCS area is 425.5 ha based on PADT. The nett HCS area is entirely in overlap with HCV area.

** Total area of community lands within the MU is 190.3 ha, 150 ha out of which are in overlap with HCV area/HCVMA 'No Go', while the other 35.8 ha overlap with HCVMA 'Go'.

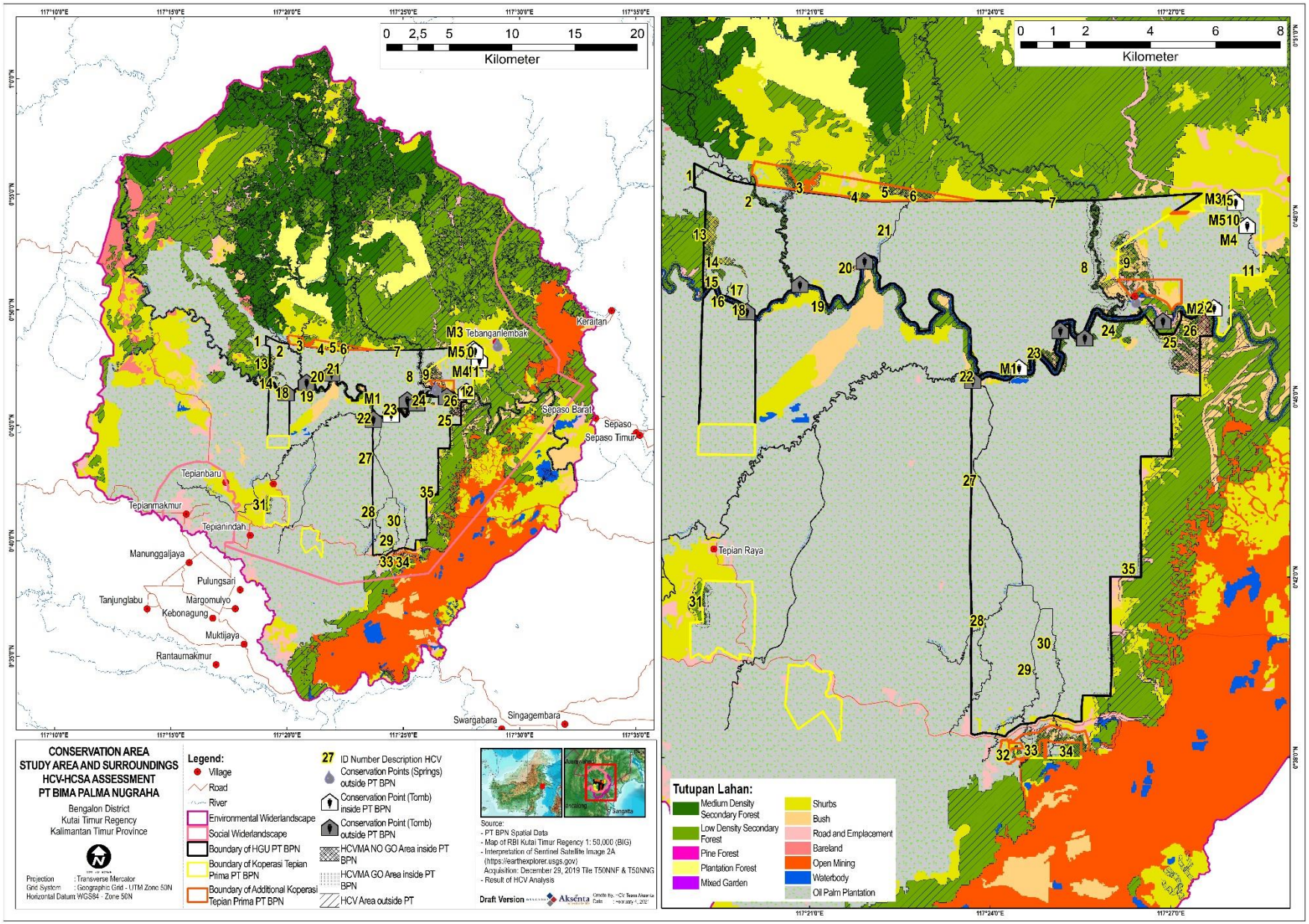


Figure 25 Summary map of the recommended conservation areas

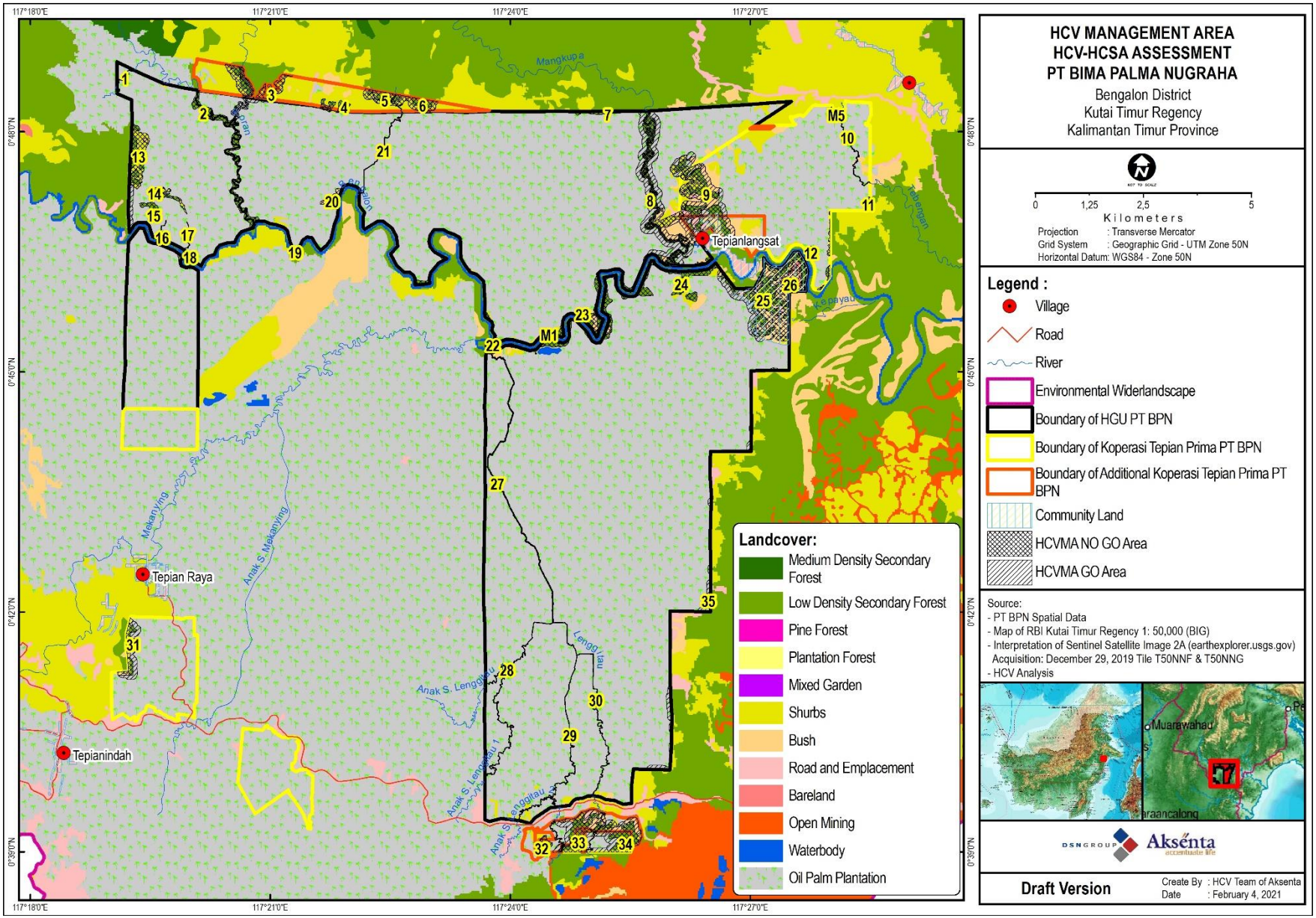


Figure 26 Map of HCV Management Area (HCVMA) in the Assessment area

b. Alarming issues related to HCV

Some of the alarming issues related with HCV:

1. Potential presence of charismatic species, i.e., orangutan and Rare, Threatened and Endangered (**"RTE"**) species such as crocodile and Proboscis monkey, as well as assessment of orangutan corridor.
2. Karst landscape in the wider scope should be assessed further.
3. Potentially rare or threatened ecosystems, i.e., Lowland Dipterocarp Forest and Karst Forest ecosystems.
4. Presence of rivers, lakes and their banks, as well as potential conservation values in karst areas
5. Presence of River Bengalon as source of water.
6. Presence of old villages and burial grounds that are of historical values to Tepian Langsat and Tebangan Lembak communities.

c. Summary of Final Consultation

Final consultation is carried out online on 22 April-5 May 2020. The approach used includes (i) group consultation through Focus Group Discussion (online meeting) using Google Meet application; (ii) individual consultation (discussion) through video conference; and (iii) individual workshop through interview and discussion (by phone, WhatsApp application and email correspondence).

Stakeholders engaged in the final consultation are classified by their relations to and interest in the Assessment are and the assessed objects. Consultation is carried out towards six stakeholder groups, i.e., local community, organisations that represent them, stakeholders with rights to access natural resources, conservation NGOs or Civil Society Organisation (CSO), neighbouring companies and district and central government bodies that are relevant to the context of this Assessment. Stakeholders express their consent to be involved in final consultation in consultation form or statement of willingness to attend online meetings. Before online meetings, the Assessment team sends the following documents to stakeholders and PT BPN team helps distribute them: (i) invitation letter; (ii) consultation materials in printed slides of presentation; and (iii) consultation form. During consultation, the team presents the activity purpose and objectives, field assessment output, types of HCV found, the identified HCV and HCS areas, as well as HCV-HCS area (draft) indicative map, and discusses on the Assessment output. The discussion topics are adjusted to each stakeholder's role or expertise. The team also confirms for toponyms such as name of rivers, lakes and hills, field findings and Assessment output, and asks the relevant stakeholders to respond and make recommendation concerning conservation area management and monitoring. Output of the stakeholder consultation activity becomes the team's reference and concerns. Relevant information has been considered as part of findings in this report, including conservation area (HCV-HCS) management and monitoring recommendations.

Stakeholders consulted confirm the presence of important species in the Assessment area such as orangutan, silvery gibbon and crocodile. It is also confirmed that forested areas in the Assessment area are found in several locations as presented. In landscape context, forest areas are found to the north and east of the MU. The presence of River Bengalon has been confirmed to becomes source of water to Tepian Langsat community. As for historical and cultural sites, it has been confirmed that they are located at both sides of River Bengalon and in Partnership 1 area around River Tebangan. In addition, it is also confirmed that no peats are found in the Assessment area or the AoI.

Group consultation

Name	Position/Role	Organisation/Social Group	Venue	Date
1. Hadenan (M) 2. Deby (F) 3. Satriadi (M) 4. Kusmin (M) 5. Masnian (F) 6. Rusdiansyah (M) 7. Rabu (M)	1. Traditional organisation; community leader; Tepian Prima Sawit Cooperative; owner of enclaved land. 2. Village Secretary; owner of enclaved land. 3. Community leader; Tepian Prima Sawit Cooperative; owner of enclaved land. 4. Former caretaker of Mt. Gergaji Karst; Head of Village Council (BPD); Tepian Prima Sawit Cooperative 5. Women leader. 6. Koran SG, BPD member. 7. Community leader; owner of enclaved land.	Tepian Langsat Village	PT BPN Office meeting room	22 April 2020

Consultation method: online presentation and FGD

Recommendation and major concern:

- Correction: name of the hill in Block C2-C4/D-2-D4 is Kesingal, and the tributary that flow from the hill is Kesingal.
- Names of other locations are already correct (river, hill and lake, including River Lenggitau). Community refers to all Lenggitau tributaries as Lenggitau.
- Community expects that the area in Koran SG be cleared for partnership area.
- In this area, many orangutans are still found, as well as other wildlife species just mentioned. That is, because Kutai community here never disturbs or hunts them, or even consumes them as they are not allowed to be consumed by the community religion (Islam).
- Concerning the issues of wildlife species mentioned in the presentation, why can't community lands be cleared for oil palm plantation, when was such regulation issued? Why would we want to be controlled? These are our lands. Please explain.
- Concerning River Bengalon, trees will be planted in its riparian area under Forest and Land Rehabilitation Programme from East Kutai District Environment Office (DLH). This is carried out to maintain the quality and hygiene of the river because community still uses it as their source of water. We will also communicate the planned joint management of riparian area to PT BPN.
- It is confirmed that the sites that are sacred and contain cultural values (HCV 6) are located at both sides of River Bengalon.
- Before PT BPN (under the previous management) cleared land, Lake Padang never got dried. But today, the lake has water only during wet seasons. Community expects that the lake's water be restored. We have already planned this with the Company to construct a water gate in the eastern and southern parts of Lake Padang. Other than as the sub-district capital, Lake Padang area is also planned to become the destination of ecotourism.
- Concerning wildlife (e.g., orangutan) protection, there should be a cooperation between the Company and Tepian Langsat village (government and community).

Team's response:

- Thank you for your input. The hill name will be corrected.
- Thank you for your confirmation.
- The company plans to develop partnership plantations. However, as presented in the beginning, clearing new area for plantation will be subject to requirements and phases to meet in the first place including this Assessment, in addition to the applicable laws and regulations. This HCV-HCSA Assessment is important to plan for sustainable and environmentally and socially friendly oil palm plantation development.
- Thank you for your information.
- Under the new management (DSN Group), PT BPN joins RSPO, an international oil palm organisation committed to sustainable oil palm plantations. In 2005, this organisation started developing rules on oil palm governance standard, and the rules were enforced gradually. Today they are getting wider and stricter to oil palm and palm oil producers.

- Collaborative management plan is important to river conservation because the company authority is limited only to HGU concession and partnership plantations. Thank you for the additional information. If you do not mind, please advise where the planting location is so that we could synchronise with the Assessment result.
- Thank you for your confirmation concerning HCV 6.
- The planned remediation in Lake Padang is already good, which is about the water gate as water inlet to Lake Padang. This way, water from the plantation canal does not go directly to River Bengalon, but flowed through the lake in the first place. Therefore, more detailed technical plan will be necessary concerning the lake's water management. [
- Thank you for your input. A collaboration is necessary between the village government, community and the Company to support wildlife conservation. We will note and recommend this to the Company.

Note: (M) Male; (F) Female

Name	Position/Role	Organisation/Social Group	Venue	Date
1. Sunaryo (M) 2. Rohmad (M) 3. Hamidi (M) 4. Giyanto (M) 5. Siti M. (F) 6. Nurmukliatim (M) 7. Rahmadi (M) 8. Daliyo (M) 9. Ida Indrawati (F)	1. Village Head 2. Village Secretary 3. Community leader 4. Village staff 5. Women leader 6. Village Head 7. Village Secretary 8. Community leader 9. Women leader; BPD member	Desa (Persiapan) Tepian Raya (no 1-5) Tepian Indah (No. 6-9)	PT BPN office meeting room	22 April 2020

Consultation method: online presentation and FGD

Recommendation and major concern:

- Regarding the HCV area that has been described as a hill. Is Mt. Putri in Desa (persiapan) Tepian Raya not considered HCV category? This site is for cultural tourism and located around River Mengkanying near settlement but outside PT BPN plantation boundaries.
- Correct. Only River Mengkanying flows through Tepian Raya and Tepian Indah.
- Needs for rice is met through buying. No community member has rice field. But few of them, around 5 families, farm rice. LU 1 land (house yard) is normally planted with fruits such as rambutan, jackfruit and durian. LU2 (0.5 ha) has been planted with oil palm and LU 3 (2 ha) has been put under a cooperation with PT Anugerah Energitama through nucleus-plasma scheme.
- Source of water is the collected rainwater, while there are also dug wells.
- Regarding community lands for their source of livelihood as mentioned, e.g., rice field. Can we make the area frequently getting flooded in PT BPN plasma plantation (KM102 in Partnership 2 area) rice fields for Tepian Indah community?
- In Tepian Indah and Tepian Raya, the rare wildlife species mentioned are no longer found because the village area has entirely become farmlands (plantation/farm) and settlements.
- Tepian Raya community expects that PT BPN be able to help them out in dealing with flood in the village, although it is located outside (upstream) PT BPN HGU concession.

Team's response:

- Thank you for you input. Biophysically, criteria for hills with HCV are those that remain covered by forest vegetation and with slope >40%. The hill's slope, however, is 15%-25% and covered with cultivation areas. As for cultural value, this should be explored further because according to other respondents, the area is not a cultural site. If this is only a tourist destination with no historical value, the area does not meet HCV 6 criteria. However, we can make sure that the area is outside PT BPN MU.
- Thank you for confirming.
- Thank you for the information that confirms our survey.
- Thank you for your information. It has been confirmed that Tepian Indah and Tepian Raya communities do not use river as their source of water.

- The area is legally a partnership area. However, if it is less than suitable for oil palm plantation because it frequently gets flooded and the community expects they be able to plant rice in it, an agreement should be reached between the Company, cooperative, village government and community, including agreeing upon the landuse rules and management. Based on this Assessment, the area is not a conservation area so that it could be developed into farmlands.
- Thank you for confirming. Habitats to rare wildlife species in this area are mostly situated in Tepian Langsat village's administrative territory, such as in Bengalon riparian area or Lake Padang area.
- The Company has authority but limited only in the HGU concession and partnership plantations. However, efforts in managing river with other stakeholders should be made in synergy with community, village government and neighbouring companies. Concerning the aid, this will be communicated to the Company.

Note: (M) Male; (F) Female

Name	Position/Role	Organisation/Social Group	Venue	Date
1. Cut Nurhayati (F) 2. Benang (M) 3. Aulia Tri Prasetya (F) 4. Bastani (M) 5. Ardiansyah (M)	1. Women leader, village staff 2. Traditional chief 3. Village midwife 4. Community leader 5. Head of Government Affair Section	Tebangan Lembak Village	PT BPN office meeting room	22 April 2020

Consultation method: online presentation and FGD

Recommendation and major concern:

- The correct name is River Tebangan, not Tebengan.
- In Tebangan Lembak there are rivers such as Tebangan, Kekeres, Senyiur and Arasan; as well as Mt. Batu Mati and Tentudung Cave and a burial ground by upstream Mengkupa.
- The burial ground and old village in the Company operational area should be conserved and given fence and roof.
- Some people still trap deer and search for timber (ironwood, *kapur*) around KM13 around the sides of community plantations.
- Source of water in Tebangan Lembak is unlimited. For consumption community buys drinking water. For sanitation (bathing, washing and toilet), some of them use water from River Tebangan.
- Information should be disseminated to community to allow them to better identify rare or protected flora and fauna species.

Team's response:

- Thank you for the correction. The report will be revised.
- Thank you for the information. However, the areas are located outside the Assessment area, except River Tebangan whose name has already been corrected.
- The recommendation for the burial ground and old village will be documented in management and monitoring plan.
- The additional information has been documented. It has been confirmed that the area is located outside PT BPN operational area.
- Thank you for the additional information.
- The input is well noted and will be recommended in management and monitoring plan.

Note: (M) Male; (F) Female

Individual Consultation

Name (Gender)	Position/Role	Organisation/Social Group	Venue	Date
Didik Prayitno (M)	Head of Protection Section	East Kutai District Plantation Office	Sangatta	23 April 2020

Consultation method: interview and discussion by phone, supported by material document and consultation form as the tool.

Recommendation and major concern:

- The material from this Assessment is already well presented. Names of rivers and places are already correct.
- It is expected that this will be more then sheer assessment; but rather, as a reference for management to make conservation area management an inseparable part of plantation development.
- Collaboration should be established in HCV-HCS management, according to relevant stakeholders' tasks and authorities.

Team's response:

- Thank you for the confirmation.
- The input is well noted and will be included by the management plan.
- Thank you for your input. This will be recommended in management and monitoring plans. Collaboration and cooperation become important in the context of environmental conservation at landscape level.

Note: (M) Male; (F) Female

Name (Gender)	Position/Role	Organisation/Social Group	Venue	Date
Mangasa Siregar (M)	Supervision Section	East Kutai District Environment Office	Sangatta	23 April 2020

Consultation method: interview and discussion by phone, supported by material document and consultation form as the tool.

Recommendation and major concern:

- The Assessment output (field assessment): from HCV 1 to 6 and HCV area is already correct. I will make one addition on important species. The environment office team once tracked Bengalon and collected information that Siamese crocodile *(Crocodylus siamensis)* is already considered threatened species in the river.
- There should be information on the impacts of the Company operational activities to date on changes in HCV-HCS (baseline).
- There should be an additional information concerning HCV-HCS quality management and improvement, especially in HCV 3 areas (rare and threatened ecosystems).
- HCV 4 relating to ecosystem services can be taken into account when assessing groundwater flow that is part of hydrological system.
- Are riparian area widths already in line with the applicable laws and regulations? 50 m for tributaries and 100 m for major river?
- It is correct that there are no peats in the Assessment area. In Bengalon Sub-District, peats are found in PT Kemilau Indah Nusantara concession located at downstream Bengalon.
- This HCV-HCSA Assessment could serve as one of the bases to PT BPN's environmental management and monitoring efforts.

Team's response:

- Thank you for the confirmation and input. The additional information on the presence of Siamese crocodile is noted for further assessment based on the species distribution data/information and other references or assessments.
- The majority of areas having been identified as HCV-HCS areas have (cover) condition that is relatively the same as the baseline before the Company started to operate. Exception is made for Lenggitau riparian area that have already been planted with oil palms and Lake Padang whose water discharge fluctuates. Necessary activities to restore the functions of conservation areas affected by the Company operation will be included by the management and monitoring plan.
- Efforts to manage and enhance the quality of HCV-HCS areas, including HCV 3 area, will be included by the report.
- This HCV-HCSA Assessment is a rapid assessment whose scope identifies the presence of important areas including HCV 4 areas. In assessing HCV 4, areas playing important roles for groundwater have been taken into account following the toolkit used. In this Assessment such areas are found in Tebang Lungun and Kesingal Hills.
- Width of riparian areas which are HCV area are defined based on each river's functions. Rivers assessed in the Environmental Impact Assessment (AMDAL) have riparian area widths which are in accordance with the applicable regulations, i.e., 50 m for small rivers and 100 m for the big ones. As for the rivers that previously remained unidentified, their riparian area widths will follow RSPO's best practice for riparian management. This Assessment is expected to serve as an input to relevant authorities in defining the width of riparian area in each river segment.

- Thank you for your confirmation.
- Thank you for your input and information. It is expected that this Assessment could be an input to the environmental management and monitoring integrated into other assessments.

Note: (M) Male; (F) Female

Name	Position/Role	Organisation/Social Group	Venue	Date
Rohimanfir (M)	Conservation staff	PT Multi Kusuma Cemerlang	Bengalon	24 April 2020

Consultation method: discussion through video conference

Recommendation and major concern:

- Is the status of Mt. Koran SG area already HGU concession? When it is planned to be cleared?
- Where are the locations of important wildlife species concentration based on field survey? In PT MKC concession, there is a forest fragment that becomes habitats to various important wildlife species including orangutan. The southern tip of the forest fragment is located partially in Mt. Koran SG area.
- Between PT MKC concession and the Assessment there is another company's HPH concession that has long been inactive. Some parts of the area are covered by shrubs. Shrubs could potentially be converted into farmlands.
- PT MKC has a conservation section. One of its activities is management and monitoring of conservation area. The section is willing to cooperate in managing and monitoring conservation areas, particularly areas that connects PT MKC concession to the Assessment area, relating to the presence of orangutan. PT MKC would recommend a cooperation where conservation data would be shared (e.g., orangutan monitoring). The species main habitats in this area include forest blocks in PT MKC conservation area. Chance is high for orangutan individuals move from PT MKC conservation area up to PT BPN concession. It would be better for both companies to have monitoring activity and share data to improve the monitoring output.
- Conservation area designation is followed by installation of information board in the area in question and appropriate information dissemination.

Team's response:

- Mt. Koran SG area does not belong to the Company HGU concession and is an area where partnership area development is planned. Cooperation agreement between the Company and community (SG members) in underway, including option of legal status of the lands to be included by the cooperative HGU concession or land certificate (SHM) of the cooperative members individually. This is planned to be implemented immediately once all requirements are met.
- Important wildlife species concentration is found in a block of low-density secondary forest in Mt. Koran SG area, which is the southern tip of a forest fragment in PT MKC concession.
- Both companies (PT BPN and PT MKC) only have management authority within their operational areas, so that potential conservation areas located outside the Company operational area need to be managed in collaboration with the land stakeholders in the area, including community and village community. In the context of wildlife corridor, areas that may potentially serve as corridors are located in the riparian area of River Mengkupa that connects both companies' conservation areas.
- Management and cooperation recommendation is made input to the preparation of the management and monitoring plan in this Assessment.
- Thank you for the input. Information dissemination and information board installation will be recommended in the management plan.

Note: (M) Male; (F) Female

Name	Position/Role	Organisation/Social Group	Venue	Date

Yoyok S. (M)	Staff	East Kalimantan BKSDA	Samarinda	23-30 April 2020

Consultation method: email correspondence and WhatsApp

Recommendation and major concern:

Response concerning the recommended conservation area (the Assessment result) and whether there are important values that remain unidentified:

- The conservation area designation and design are already correct and there is no further response.

Recommendation regarding the recommended HCV-HCS management and monitoring:

A. HCV area outside PT BPN HGU concession (and Partnership area).

- The management of HCV areas outside PT BPN concession requires coordination with the concession holder. This is meant to make sure that stakeholders have the same perception and HCV area management activities are synergised so that HCV area could be designated.
- HCV areas located around PT KPC and PT MKC concessions are one of the habitats to important species, i.e., orangutan. It is likely that the species will enter PT BPN HGU concession from PT MKC concession although it might be temporary because of the presence of forested area in PT MKC concession. However, PT KPC's mining activities definitely lead to the disturbance to the species habitats and would end up in human-orangutan conflict. Therefore, we would like to advise that HCV area identification and management take into account human-wildlife conflict handling and mitigation.
- The management of HCVs in riparian areas should involve native plant enrichment. That is, in order to maintain the quality of habitats to wildlife species that inhabit the riparian areas, such as Proboscis monkey *(Nasalis larvatus)* which is a Borneo endemic species. In addition, wildlife species in the HCV areas should also be inventoried and monitored concerning the types and potential conflict between them and humans because the rivers are also one of the important habitats to saltwater crocodile *(Crocodylus porosus)*.

B. HCV areas within PT BPN HGU concession (and partnership area)

- The presence of HCV areas near community partnership plantations should be informed to the local community as to their roles to participate in maintaining the areas. That is, to avoid potential damage to the HCV areas because of the activities of the community who might think that these areas are abandoned and remain unused by the Company
- HCV area management activities should be carried out consistently involving community, local governments and relevant stakeholders who can help in HCV area management as required by Minister of Agriculture Regulation No. 11/2015 on Indonesian Sustainable Palm Oil (ISPO) Certification System.
- Monitoring and evaluation should be continuously carried out towards the HCV areas that PT BPN has designated. The activities should involve technical organisations so that the activity implementation report can be used for ISPO or RSPO audits.

Team's response:

- Thank you for your response to the Assessment.
- The recommendation is well noted and will be made input to management and monitoring recommendation, especially concerning the importance of cooperation with: local concession holders (e.g., PT MKC); technical organisations (BKSDA & Environment Office; disseminate information to local community concerning the presence of HCV-HCS areas; and mitigation of human-wildlife conflict, particularly with orangutan.
- Some rivers (and their riparian areas) are outside the MU, e.g., Bengalon, so that coordination will be necessary with relevant stakeholders in case of plan for vegetation enrichment.
- Recommendation on continuous monitoring is well noted and will be recommended in HCV-HCS area monitoring, involving the technical organisations.

Note: (M) Male; (F) Female

Name	Position/Role	Organisation/Social Group	Venue	Date
Eko Prasetyo (M)	Staff of Best Management	Borneo Orangutan Survival Foundation	Bogor	24 April-4 May 2020

	Practices (BMP) for Orangutan Conservation			

Consultation method: email correspondence and WhatsApp

Recommendation and major concern:

Response concerning the recommended conservation area (the Assessment result) and whether there are important values that remain unidentified:

- No further response for the Assessment result.

Recommendation regarding the recommended HCV-HCS management and monitoring:

- *Population and Habitat Viability Assessment* (FORINA, 2016), the MU area is included in *Pongo pygmaeus morio* distribution area. This species has moderately high population number (green category).
- According BOSF survey (2016), not only does Bengalon riparian area provide functions of corridor to important wildlife species, including orangutan, but it also becomes potential habitats to protected and threatened bird species, including alcedinidae, anhingidae and Ardeidae families.
- Maintain and enhance orangutan habitats in banks of the rivers that pass through the HGU concession and partnership area, along with their tributaries, particularly River Bengalon, and fragmented forests in partnership areas (KM93 and KM102 of Partnership 2 area and Mt. Koran SG area).
- Make the said areas the Company's conservation areas that are protected and managed through designation by the MU (this could be through decree/management decree, public statement, and publication on media). The MU need to provided assistance to partnership areas that still have forests in their management areas.
- Banks of the rivers that flow down the HGU concession and partnership areas, along with their tributaries, can function as wildlife corridor (with linear corridor) and fragmented forests within the partnership areas could function as stepping stone corridor. Both are important to protect and conserve.
- Enrich the habitats to orangutans and other wildlife species in riparian areas with the recommended food tree species, such as *Artocarpus* spp., *Nephelium* spp., *Shorea* spp., *Ficus* spp., etc.
- Practice Best Management Practice (BMP) for orangutan conservation to minimise potential human-orangutan conflict by developing a management plan, wildlife habitat management (monitoring and patrol), building worker capacity concerning the importance of wildlife conservation and the mitigation, information dissemination and awareness raising, as well as SOP development.

Team's response:

- Recommendation is well noted and will be considered in developing the recommended HCV area management and monitoring, particularly concerning the presence of orangutan.
- Fragments of natural vegetation cover in riparian areas and partnership areas are identified as HCV areas.

Note: (M) Male; (F) Female

Name	Position/Role	Organisation/Social Group	Venue	Date
Selvi Indah Ria (F)	Sustainability staff	PT Anugerah Energitama (neighbouring company)	Bengalon	4 May 2020

Consultation method: discussion through WhatsApp and email, supported by material document and consultation form as the tool.

Recommendation and major concern:

- What will be the potential impacts on PT BPN HCS patch line?
- No conservation areas directly connect PT BPN to PT AE, including Tebang Lungun Hill (ID#13)
- PT AE experience concerning orangutan management is particularly conflict mitigation and monitoring through indication of active or inactive nests.

Team's response:

- Based on the manual and toolkit, HCV-HCS are identified not only in the Company operational areas (MU), but also includes their surroundings. This way, areas that have been identified with conservation values are classified as the recommended conservation areas, including PT BPN HCS patch lines. However, it is admitted that the Company

only has the authority for its own operational area, so that collaboration will be necessary with local stakeholders (community, cooperative, village government or neighbouring companies) to manage the conservation areas at landscape level.

- Thank you for your information.
- Thank you for your information. The management experience in PT AE concession could be considered for the management and monitoring plan for the Assessment area.

Note: (M) Male; (F) Female

3.3 Soil and topography

The presence of hills has important value as aquifer catchment (recharge area) which is part of HCV 4

3.4 Summary of carbon stock assessment and GHG emissions

a. Land Cover Classification

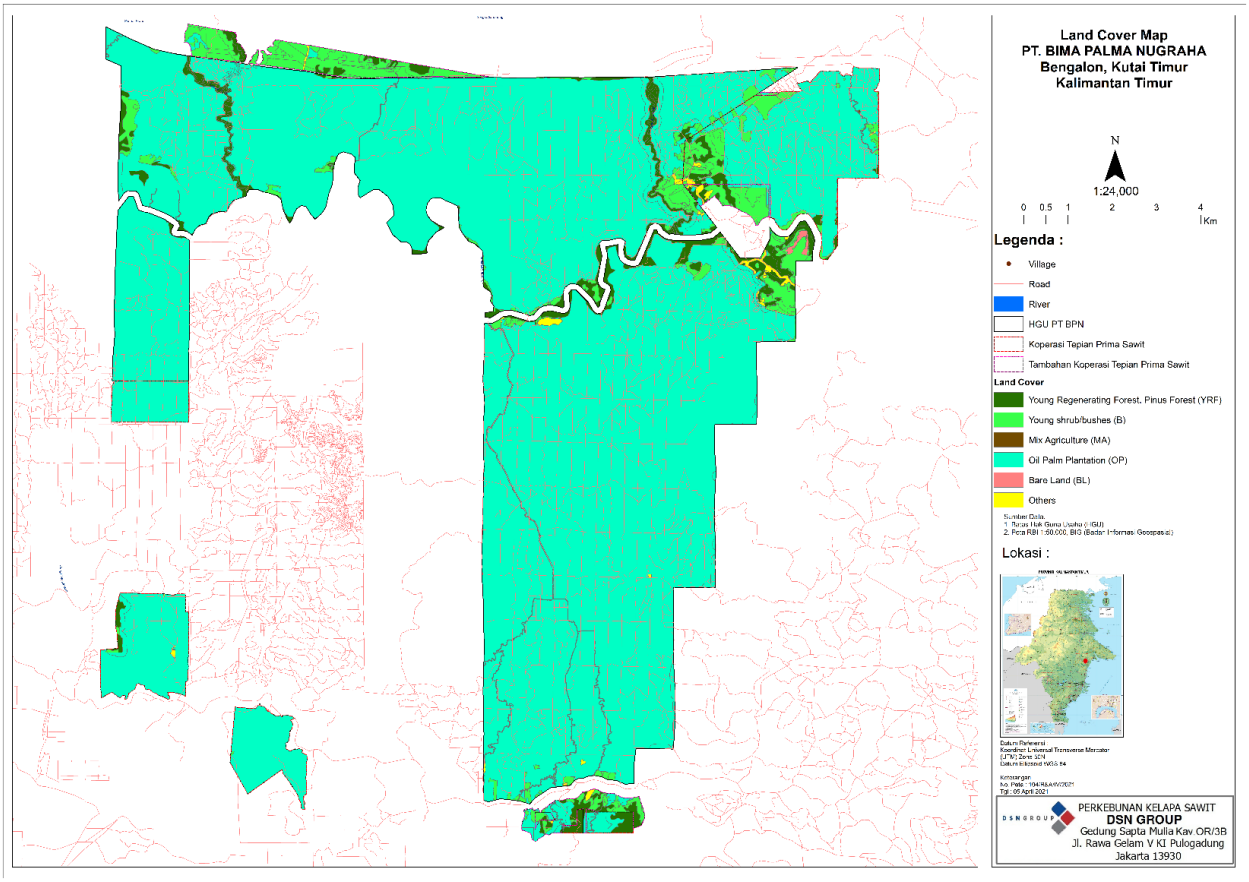


Figure 27 Land cover classification map of PT BPN

Table 34 show the results of the forest inventory carried out in the study area. After removal of plots in the MAF strata, sample size is 89 inventory plots. The YRF strata has an average carbon stock of 49.1 tonnes per ha, while the scrub stratum has an average carbon stock of open land 5.3 tonnes per ha.

Table 34 Summary of statistical analysis of carbon stock results per vegetation class

HCS Land Cover Classification	Area (ha)	Number of Plots	Average carbon stock (Ton-C/ha)	*Standard error of the mean*	*Confidence limits* (90%)		Total Carbon Stock (Kilo Ton-C)
					Lower	*Upper*	
Potential HCS land cover class							
High density forest (HDF)	-	-	-	-	-	-	-
Medium Density Forest (MDF)	-	-	-	-	-	-	-
Low Density Forest (LDF)	-	-	-	-	-	-	-
Young Regenerating Forest (YRF)	486,5	72	49,1	0,8	47,8	50,5	23,9
Land cover class has no potential for HCS							
Scrub (S)	496,9	115	23,1	0,6	22,0	24,1	11,5
Open Land (OL)	294,0	69	5,3	0,8	3,9	6,7	1,6
Plantation Forest (PF)	3,9	-	-	-	-	-	-
Agricultural Plantation (AGRI)	12.743,0	-	-	-	-	-	-
Others	61,8	-	-	-	-	-	-

b. Carbon Stock Estimated

Table presenting carbon stock estimated per ha (tC/ha) per land cover class

Table 35 Carbon stock and land cover type in concession PT BPN

No	Land Cover	Area (ha)	Carbon Stock (t C/ ha)		TOTAL
			AGB	BGB	
1	Young Regeneration	4,586.50	49.10	8.84	57.94
2	Shrubs	496.90	23.10	4.16	27.26
3	Plantation (Agri)	12,743.00	5.10	0.92	6.02
4	Open Land	294.00	-	-	-
5	Plant Forest	3.90	5.30	0.95	6.25
6	Others	61.80	-	-	-

c. Carbon stock estimated per ha for peat soil

No peat area on the PT BPN and the Community Concession

d. Total new development areas (ha) and carbon stock estimated per land cover class

Table 36 Total new development areas (ha) and carbon stock estimated per land cover class

Land Cover	Carbon Stock (t C/ ha)	New Planting Plan	
		2021	Total
Shrubs	27.26	206	**206**
Plantation (Agri)	6.02	77	**77**
Open Land	-	3	**3**
Total		**286**	**286**

e. GHG Emissions Asssesment for New Development

Table 37 Total development areas (ha) and carbon stock estimated per land cover class

No	Land Cover	Carbon Stock (t C/ ha)	Land Use Plan		Carbon Planting Plan (t C/ ha)
			Planting Plan	HCV-HCS	
1	Young Regeneration	57.9		487	-
2	Shrubs	27.3	206	174	5,629
3	Plantation (Agri)	6.0	77	12	464
4	Open Land	-	3	10	-
5	Plant Forest	6.3		4	-
6	Others	-		4	-
Grand Total			**286**	**691**	**6,092**

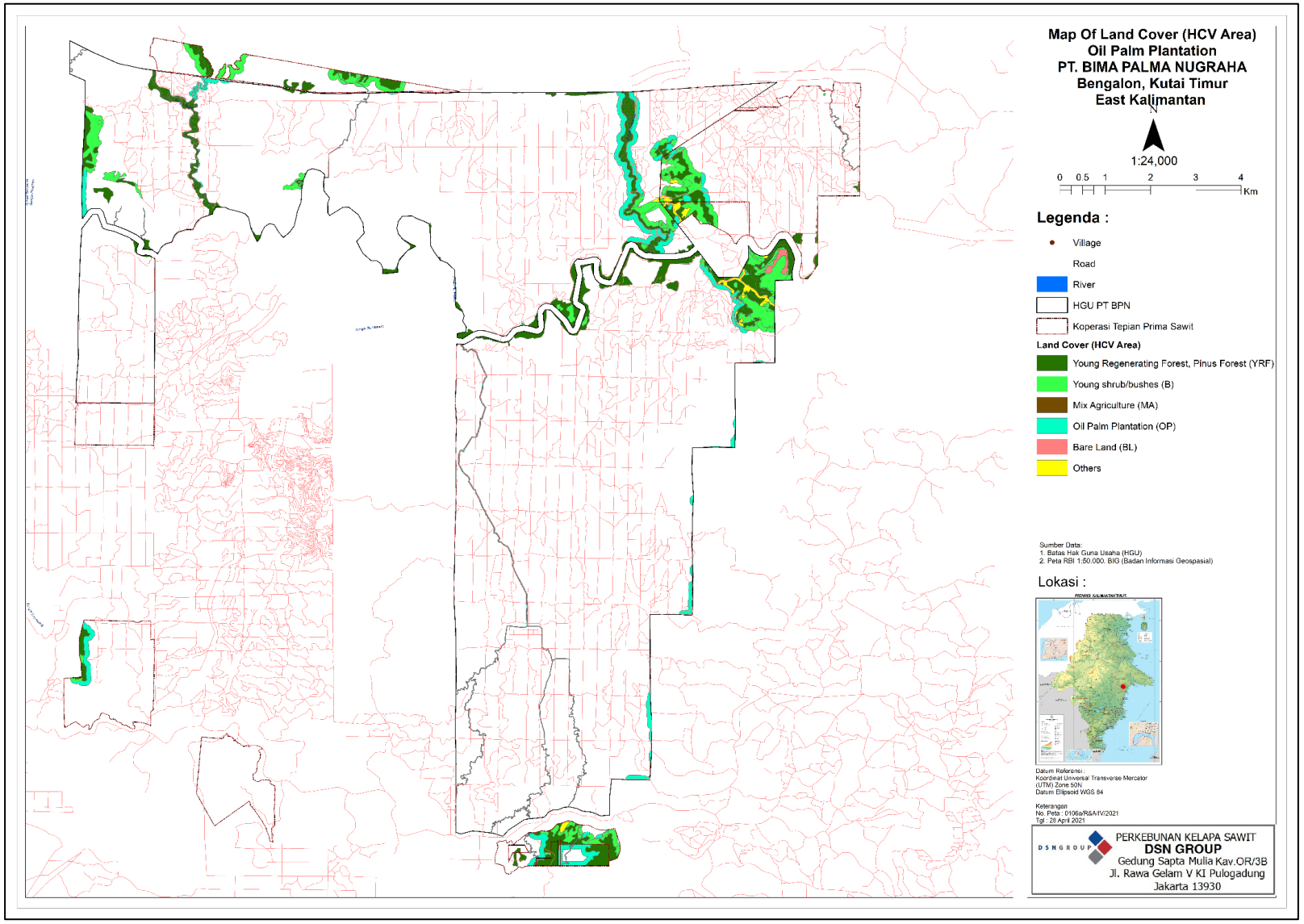
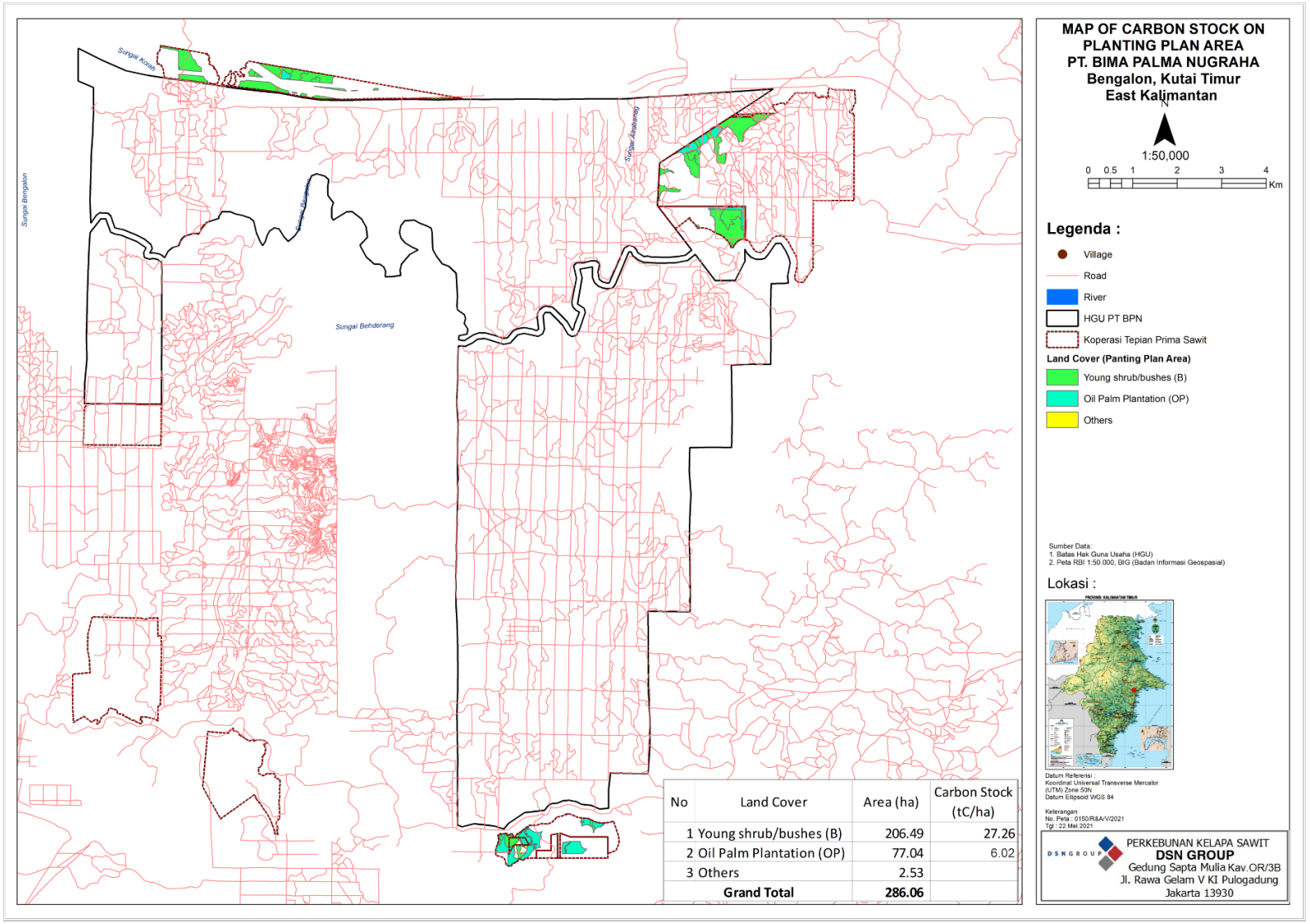


Figure 28 Map indicates areas be avoided and potential areas for new development



No	Land Cover	Area (ha)	Carbon Stock (tC/ha)
1	Young shrub/bushes (B)	206.49	27.26
2	Oil Palm Plantation (OP)	77.04	6.02
3	Others	2.53	
	Grand Total	**286.06**	

Figure 29 Carbon stock map of potential new planting area

f. The Summary of GHG emissions associated with development scenarios created

New development of PT BPN will be set up for 1 year on 2021. For minimize GHG emission from land clearing, the new development plan will be starting at land cover which have a low carbon stock.

Scenario testing

Table 38 Description of new development scenarios in PT BPN

No.	Scenario	Explanation
1	Scenario 1	Mixed vegetation types (non-forest areas) cleared for oil palm development, excluded reserve area**.** No methane capture facility planned for the mill. No clearing of HCV areas and community areas as identified in HCV-HCS Assesment and SEIA • Planned planted area = 286 ha (2.0%) oil palm. • Planned conservation area = 764 ha (5.4 %) • Planted = 12,742.7 ha (90.5 %) oil palm • Others = 293.3 (2.1 %)
2	Scenario 2	Mixed vegetation types (non-forest areas) cleared for oil palm development. No methane capture facility planned for the mill. No clearing of HCV areas and community areas as identified in HCVA and SEIA. • Planned planted area = 458 ha (3.3 %) oil palm. • Planned conservation area = 745 ha (5.3 %) • Planted = 12,742.7 ha (90.5 %) oil palm • Others = 140.3 (1.0 %)

Table 39 The Land Covers of Two Scenarios New Planting Plan of PT BPN

		S1	S2
Area avoided for developments		764	745
Potential areas for new development	Shrubs	206	306
	Plantation (Agri)	77	121
	Open Land	3	31
POME Treatment	Open Pond	Y	Y
	Methane Capture	-	-

Table 40 Projection of Two Scenarios GHG Emission

	S1	S2
Land conversion	0.55	0.05
Crop sequestration	-1.56	(1.56)
Peat oxidation	0.00	-
Conservation Sequestration	-2.38	(1.38)
Fertiliser (mineral soil; manufacture & transport)	0.19	0.23
N20 Emissions	0.15	0.18
Fuel Consumption	0.01	0.01
Net estate emission	-3.04	(2.47)
POME	0.82	0.82
Mill Diesel fuel	0.04	0.04
Purchased Electricity	-	-
Credit	-	-
Net Mill emission	0.86	0.86
Net GHG emission	(1.9)	(1.4)

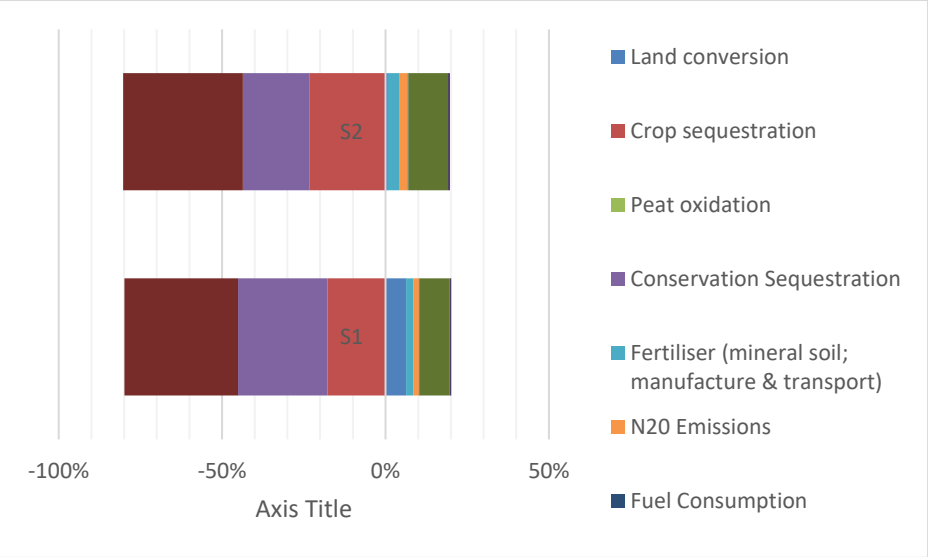


Figure 30 The Charts of Two Scenarios GHG Emission

g. The Selection of Optimal Scenario

Scenario 1 (S1) is stipulated for GHG calculation and mitigation plan of PT BPN, because it still resulting a low (negative) emission. The prediction of PT BPN GHG emission from POME is calculated from RSPO GHG Calculator default value emission factor. Based on HCS studies conducted by PT Gagas Dinamiga Aksenta, then planting plan in PT BPN will be prioritized in the area of open land, scrub, and mixed agroforestry. In the scenario, GHG emission from land clearing and operation can be covered by carbon sequestration from oil palm and conservation area.

h. GHG Emission and development map of PT BPN

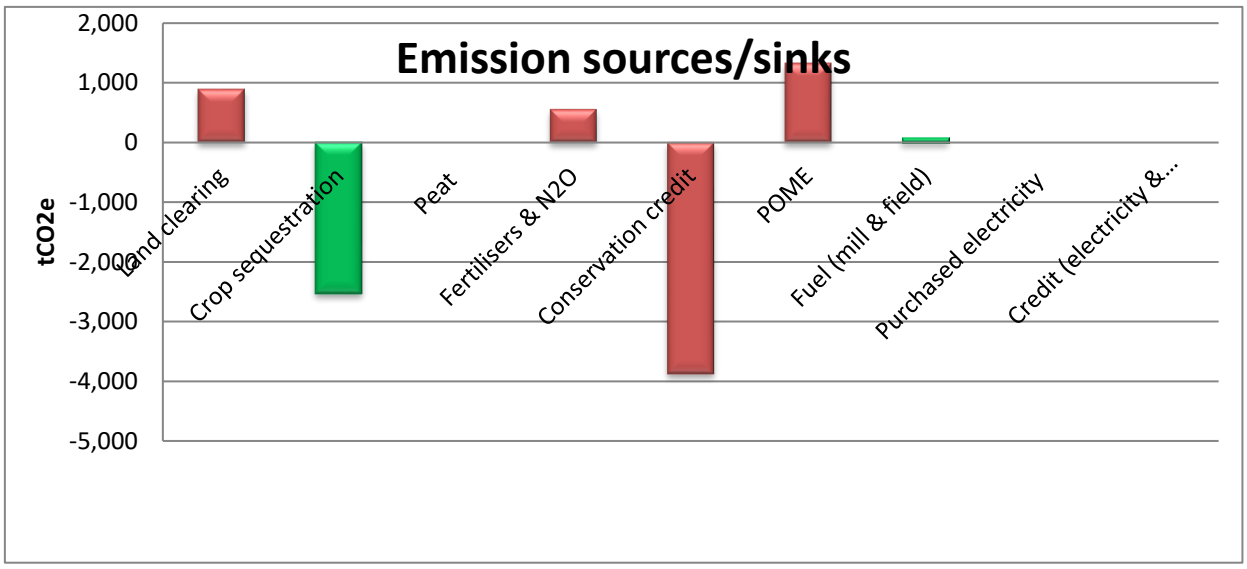


Figure 31 Summary of GHG emissions for new development plan of PT BPN (tCO2e)

A comprehensive and participatory independent Social Impact Assessment (SIA) conducted by BIOREF, and High Conservation Value (HCV) – HCS assessment which internal and external stakeholders were conducted by RSPO registered assessor from PT Gagas Dinamiga Aksenta. For Analisis Dampak Lingkungan (AMDAL/ EIA) conducted by PT. Agro Trimitra Konsultan. Based on decree of ministry of forestry, the location PT BPN is a part of land zoned for agriculture development (APL = Area Penggunaan Lain).

PT BPN to open new area for oil plantation by 2021. Based on HCV, SIA, and FPIC that potentially area for new planting PT BPN are 286 Ha. New planting area consists of nucleus and plasma as mentioned in Table 41.

Table 41 New planting plan of PT BPN

No	Plantation	New Planting Plan		Total
		2021	Sub Total	
1	Nucleus	-	-	-
2	Smallholder	286	286	286
	Total	286	286	286

3.5 LUC analysis

Land cover change in the assessment area is highly affected by community use of land resources such as swidden slash and burn shifting cultivation. This activity has long taken place and been managed through generations. Farming activity is carried out to meet the needs for food and made community main livelihood, which is why it is carried out intensively and massively.

in 2005 the PT obtained a location permit from the Kutai Timur District. Based on LUCA calculations, PT BPN has a compensation (liability) of 2,980.7 ha consisting of 2,698.2 ha of nucleus plantations and 282.5 ha of smallholder. Figure 32 to Figure 44 show plant cover maps from 2005, 2007, 2009, 2010, 2014, 2019 and 2020 according to interpretation satellite imagery. Table 42 to table 44 shows the total results in Hectare (ha) for land cover in plantation for each date. The results interpretation satellite imagery to show areal concession of PT BPN indicated are follow as secondary forest, agroforest, shrubs, bareland, secondary swamp forest.

Table 42 Land Cover PT BPN (Nucleus) at Nov 2005, Dec 2007, Jan 2010, Sept 2012, Feb 2020

Land cover	November 1, 2005	December 1, 2007	January 1, 2010	September 2012	February 2020
Scrub	9,125.9	7,078.2	1,996.2	369.6	369.6
Shrubs	1,803.6	930.9	816.9	476.5	100.9
Bush	240.6	315.4	61.7	61.3	135.9
Open field	383.4	225.4	27.2	97.1	32.2
Water body	97.5	32.8	81.9	50.4	8.2
Palm Oil PT BPN	-	3,068.2	8,665.0	10,594.0	10,784.4
Palm Oil Community	-	-	2.0	2.0	183.2
Palm Oil PT AEP	-	-	-	-	9.3
Jumlah	**11,650.9**				

Table 43 Land Cover PT BPN (KUD Tepian Prima Sawit) at Nov 2005, Dec 2007, Jan 2010, Sept 2012 & Feb 2020

Area of KUD Tepian Prima Sawit					
Land cover	**November 1, 2005**	**December 1, 2007**	**January 1, 2010**	**September 2012**	**February 2020**
Scrub	1,277.0	985.9	691.0	414.6	113.9
Shrubs	443.5	503.7	192.7	141.3	101.1
Bush	83.2	63.3	49.7	62.9	11.1
Open field	108.4	65.7	35.6	54.4	7.6
Palm Oil KUD TPS	-	293.6	943.2	1,239.0	1452.1
Palm Oil Community	-	-	-	-	153.6
Kelapa Swit PT KAN	-	-	-	-	72.4
Agroforests	-	-	-	-	0.3
Total	**1,912.1**				

Table 44 Land Cover PT BPN (Areal Tambahan KUD Tepian Prima Sawit) at Nov 2005, Dec 2007, Jan 2010, May 2014, Dec 2018 & Feb 2020

Additional area of KUD Tepian Prima Sawit						
Land cover	**November 1, 2005**	**December 1, 2007**	**January 1, 2010**	**May 10, 2014**	**December 2018**	**February 2020**
Scrub	392.3	359.8	440.3	325.9	87.6	88.8
Shrubs	74.4	119.7	49.2	137.0	300.4	256.0
Bush	26.6	18.4	1.7	22.2	40.0	83.3
Open field	29.6	25.1	21.4	26.3	12.2	12.1
Palm Oil KUD TPS	-	-	10.4	11.5	11.5	11.5
Palm Oil Community	-	-	-	-	71.3	71.3
Total	**522.9**					

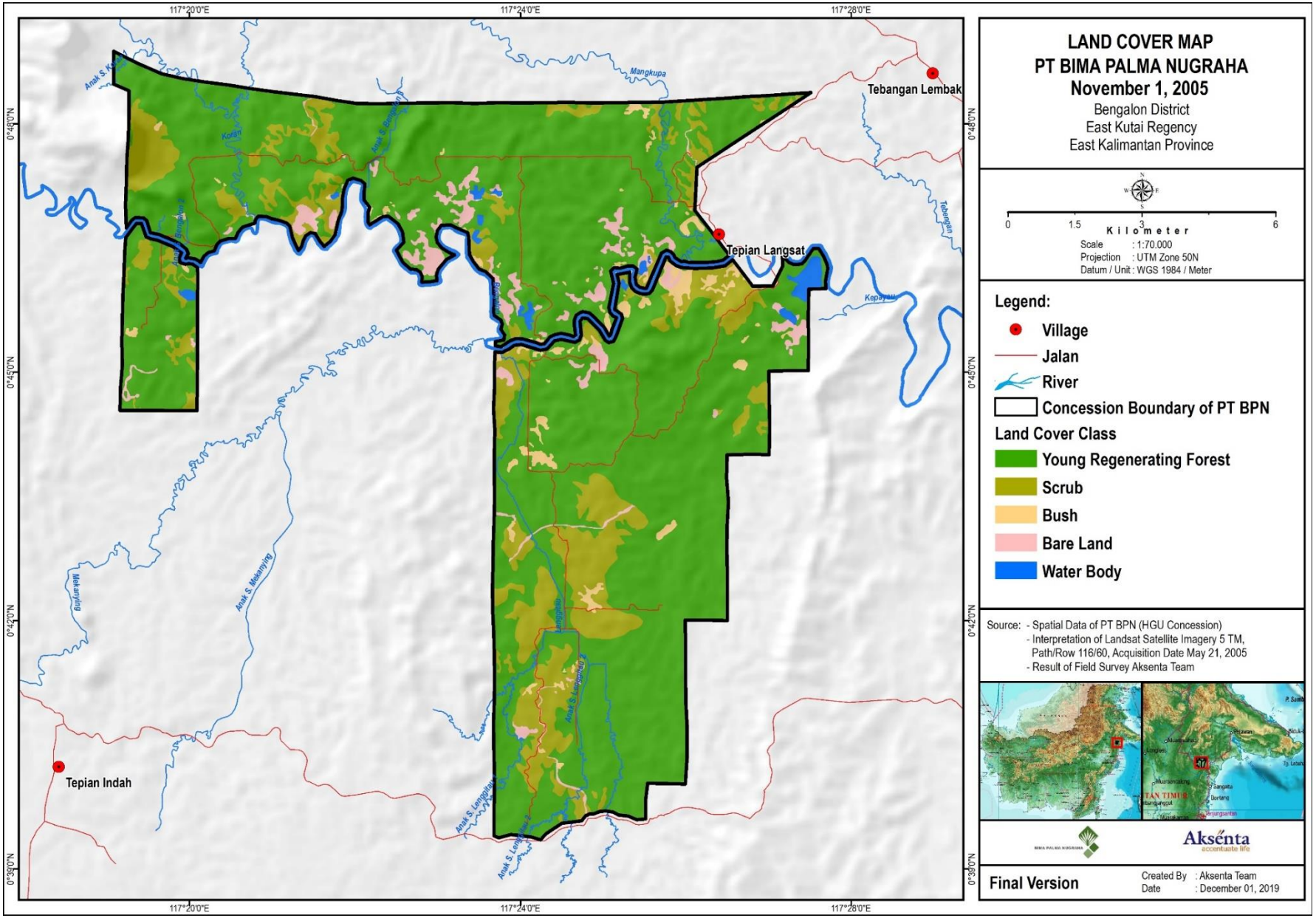


Figure 32 Interpretation Land Cover 2005 (Nucleus)

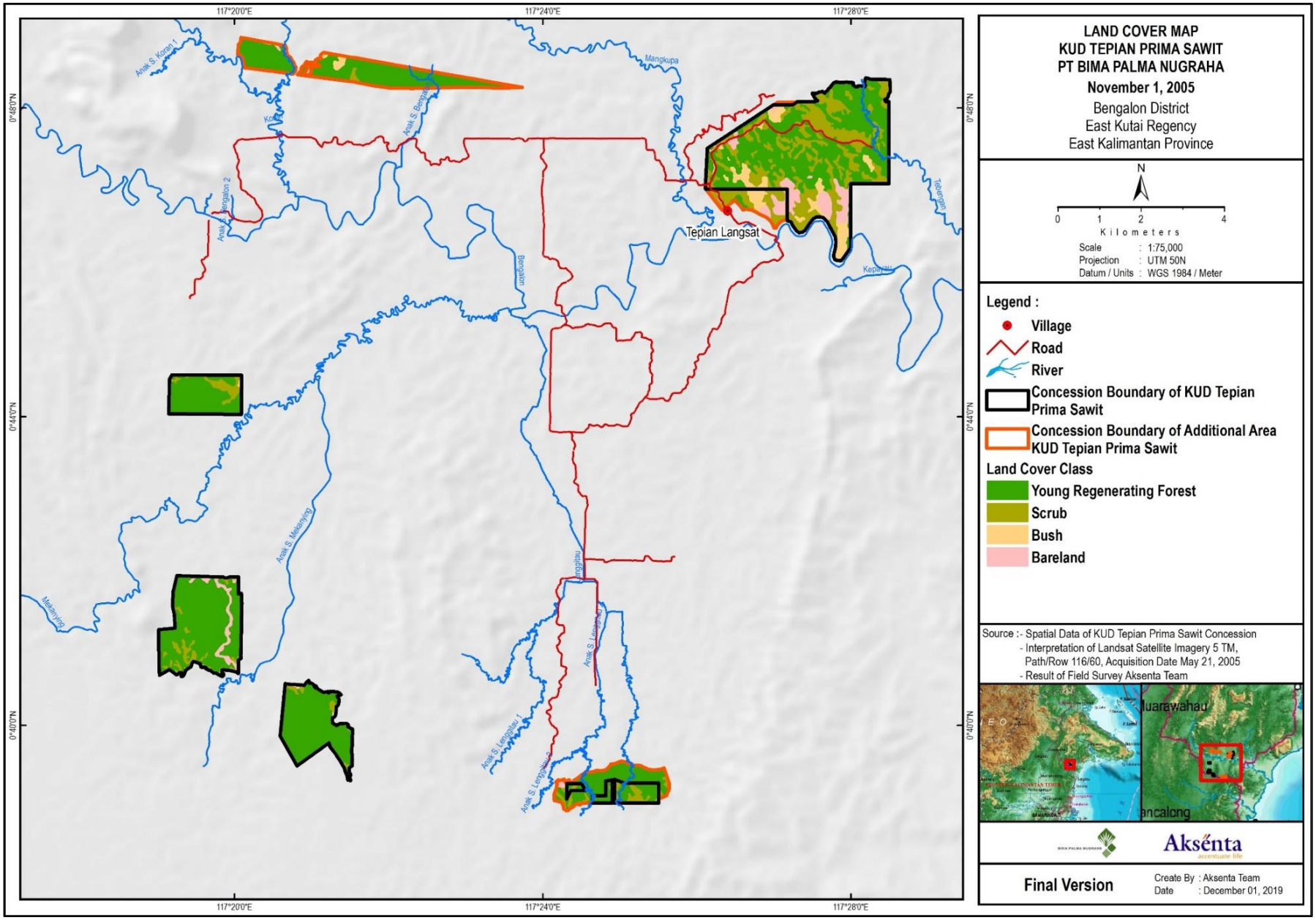


Figure 33 Interpretation Land Cover 2005 (smallholder)

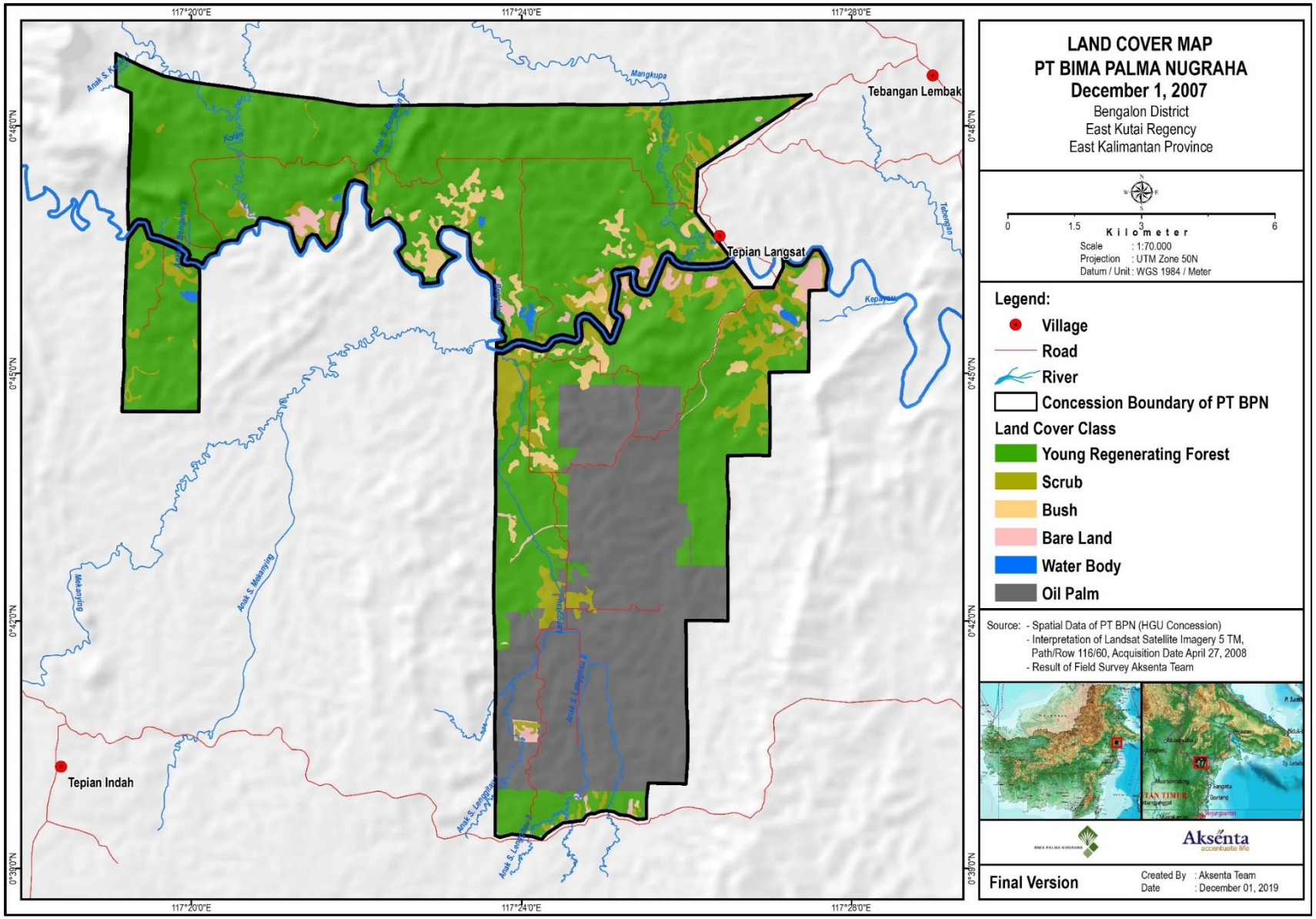


Figure 34 Interpretation Land Cover 2007 (Nucleus)

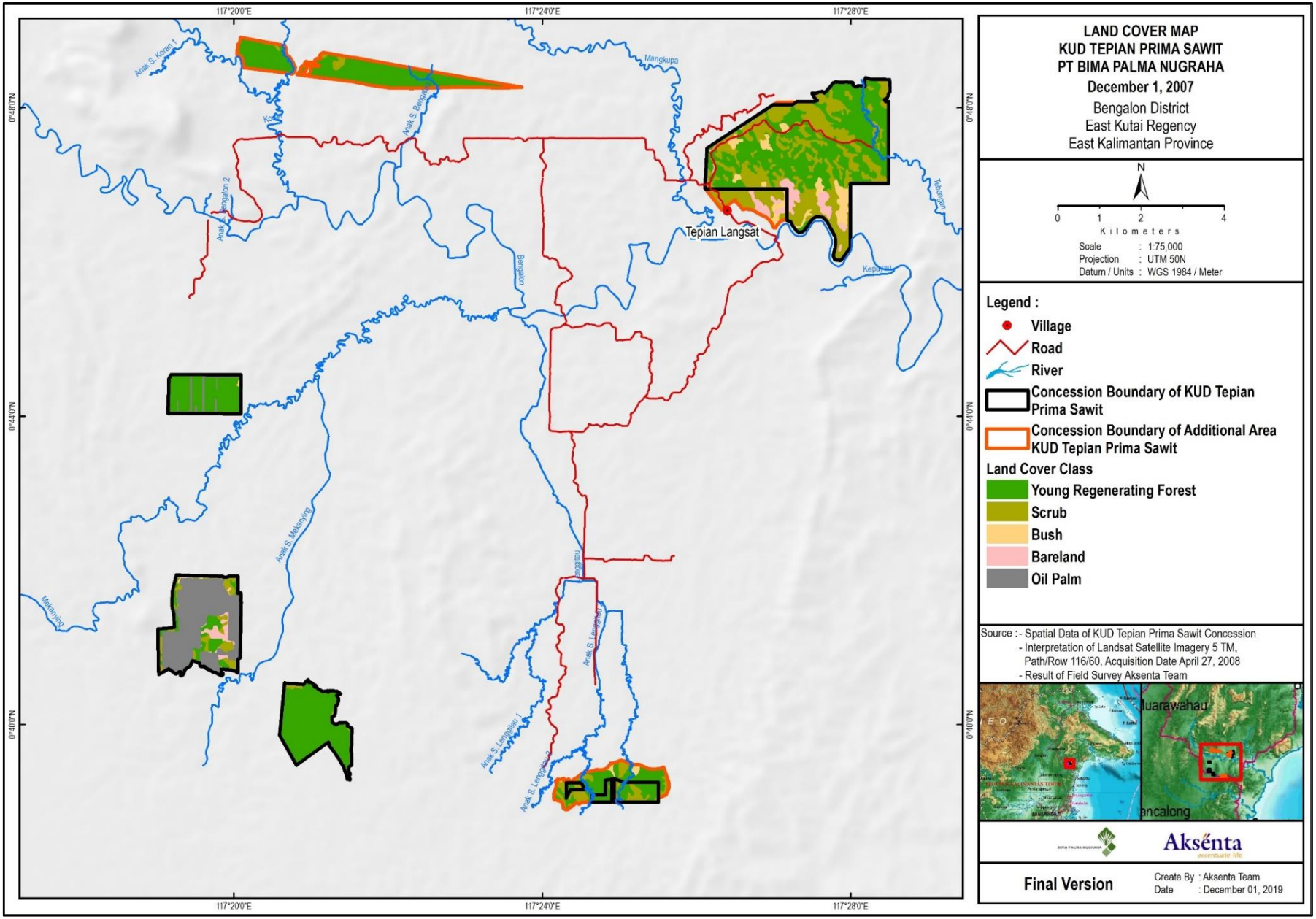


Figure 35 Interpretation Land Cover 2007 (smallholder)

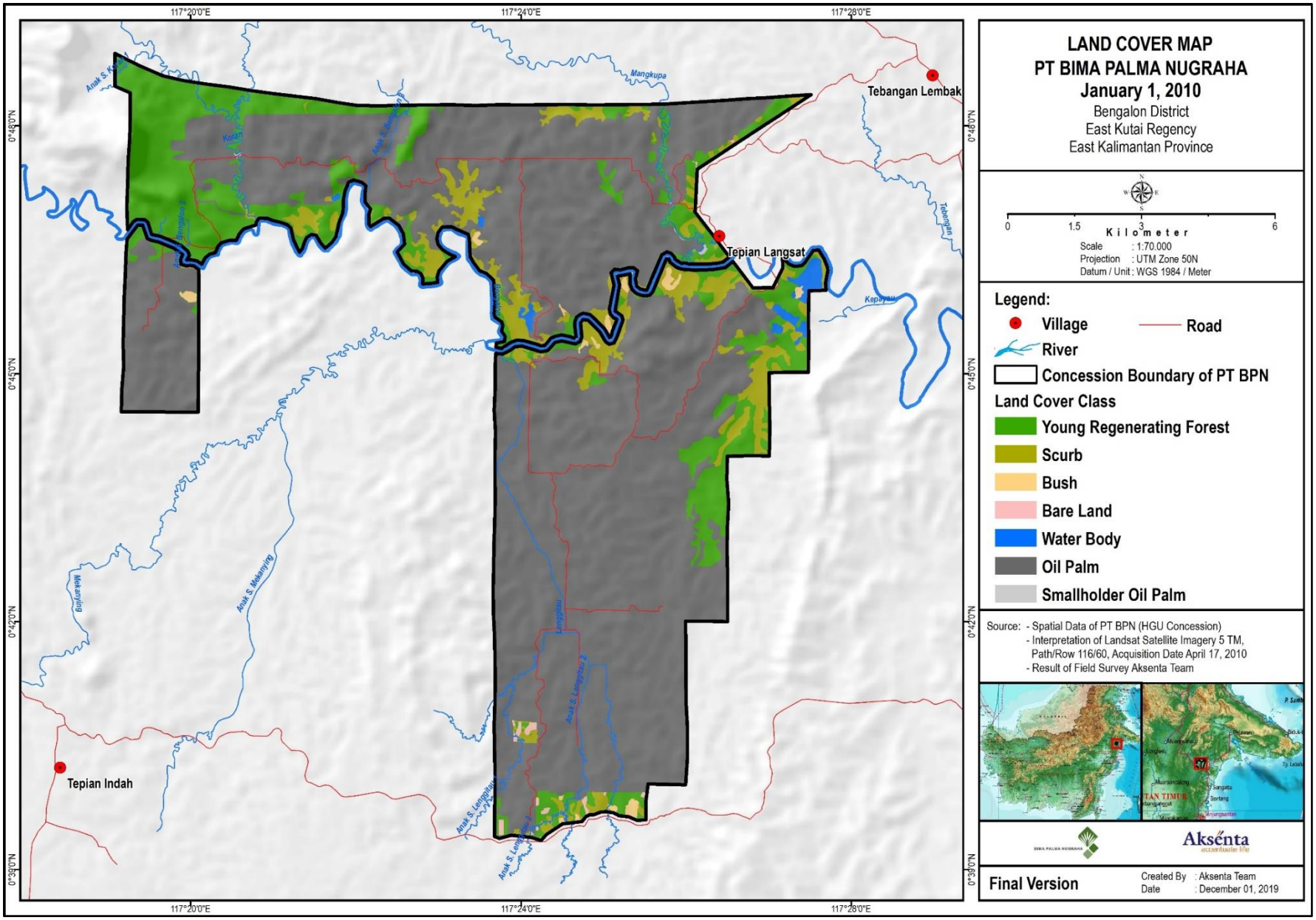


Figure 36 Interpretation Land Cover 2010 (Nucleus)

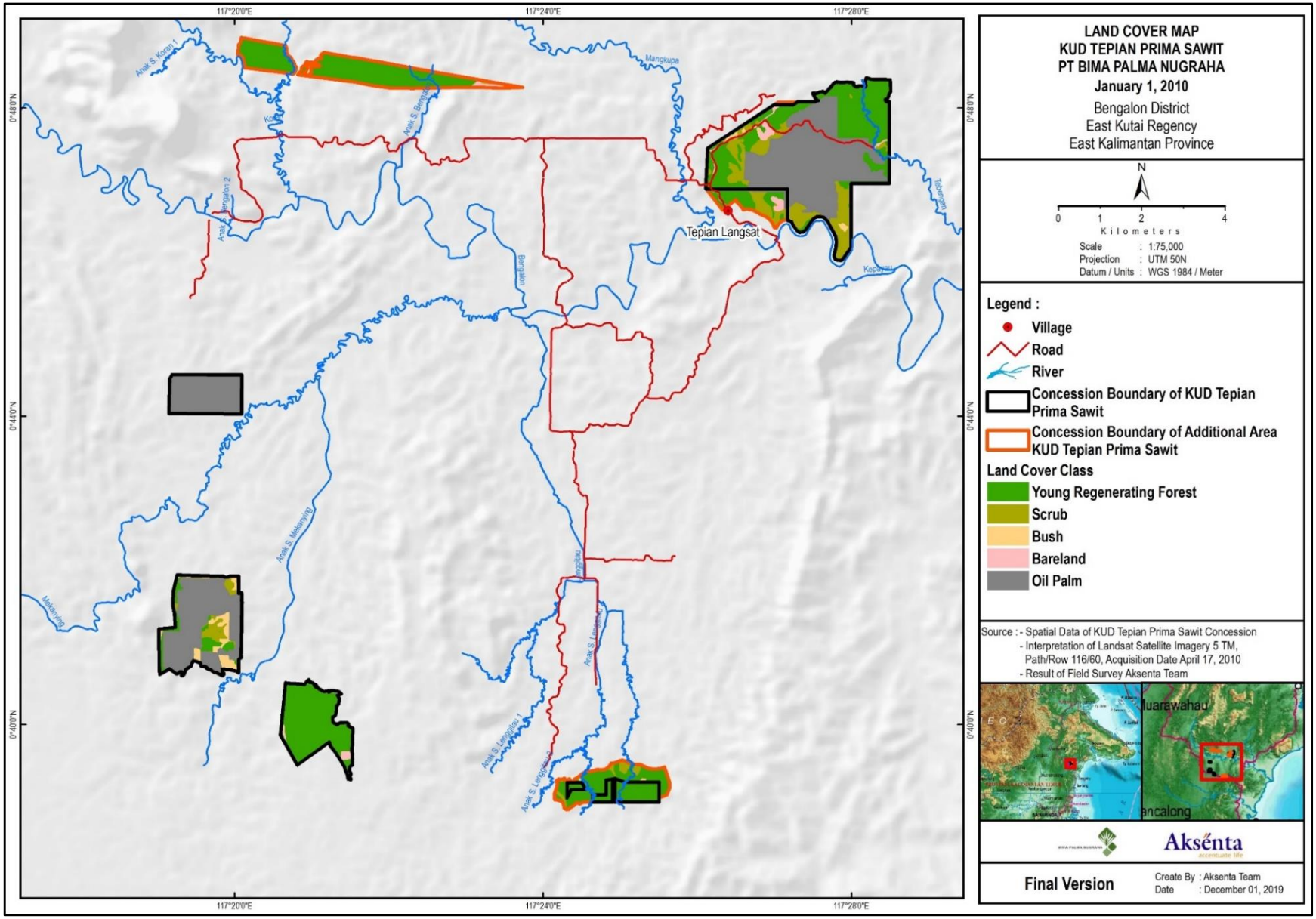


Figure 37 Interpretation Land Cover 2010 (smallholder)

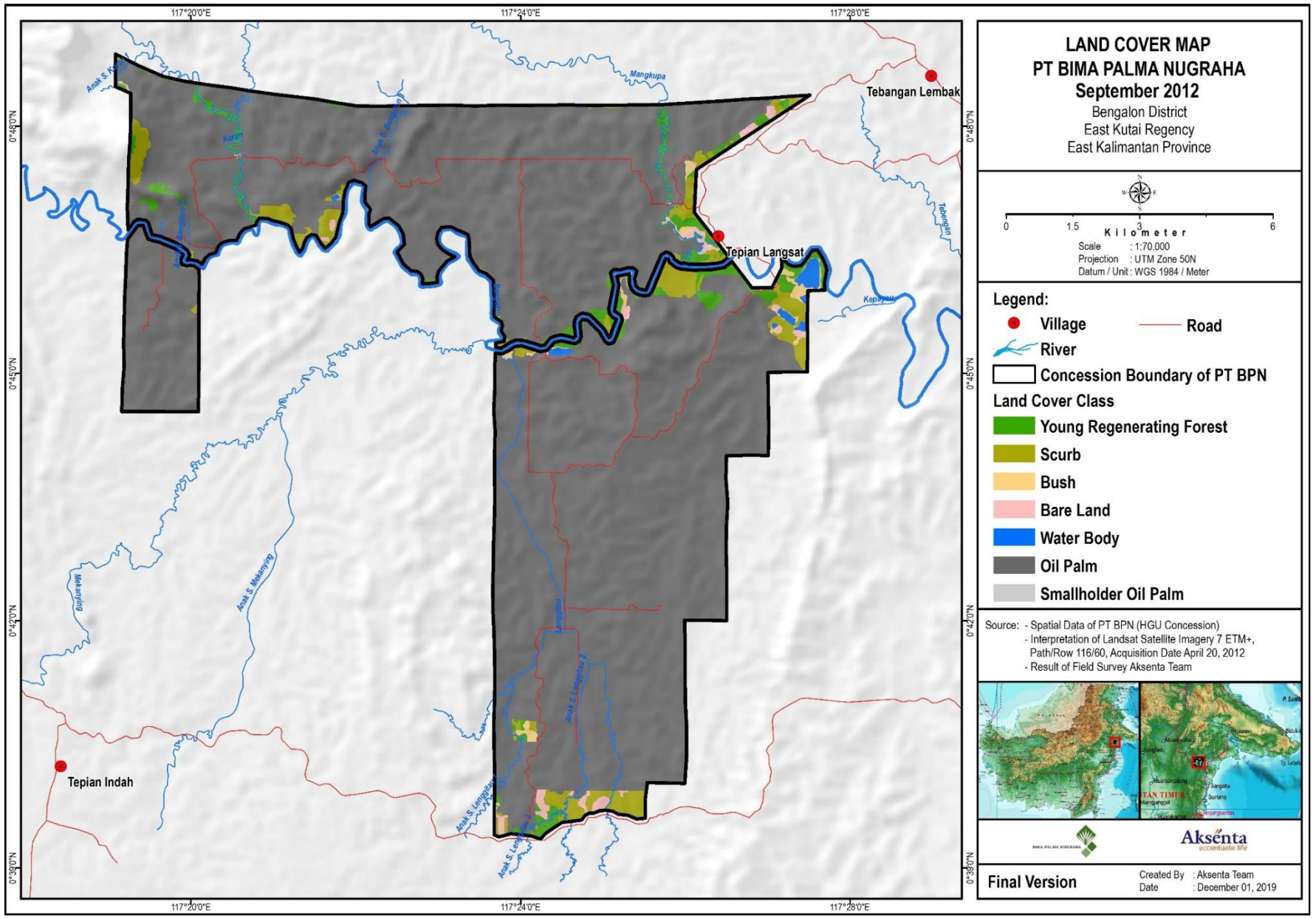


Figure 38 Interpretation Land Cover 2012 (Nucleus)

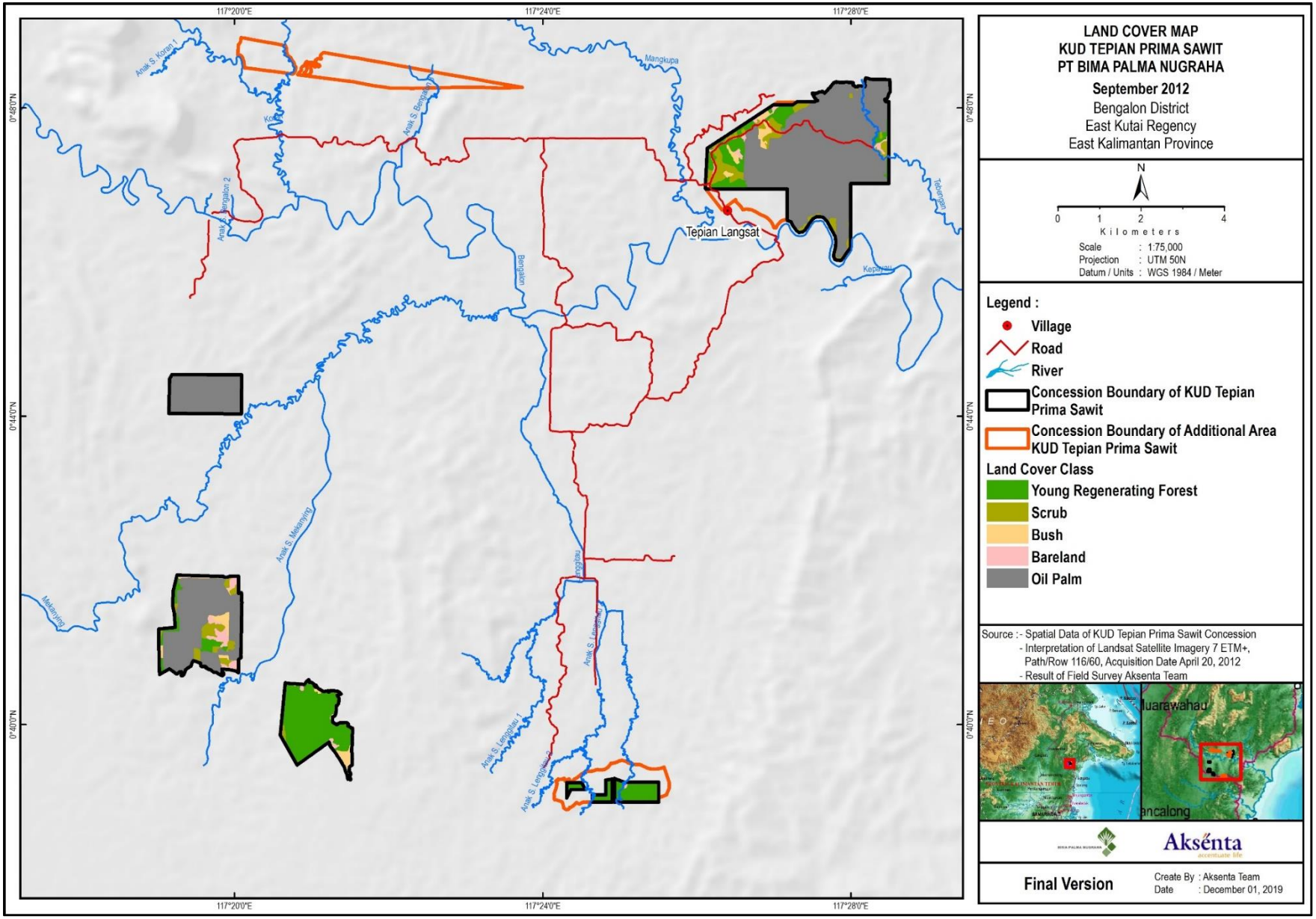


Figure 39 Interpretation Land Cover 2012 (smallholder)

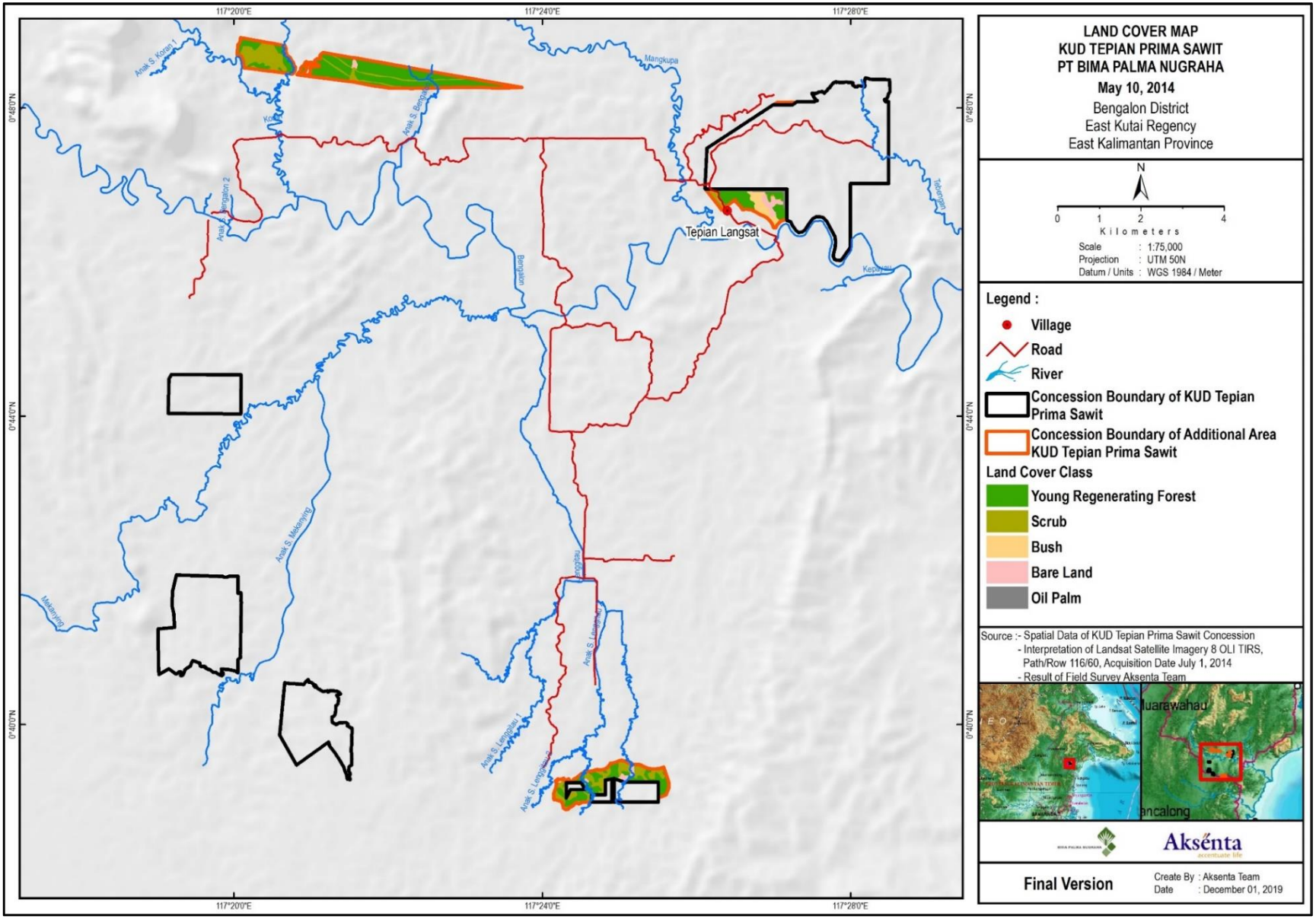


Figure 40 Interpretation Land Cover 2014 (smallholder)

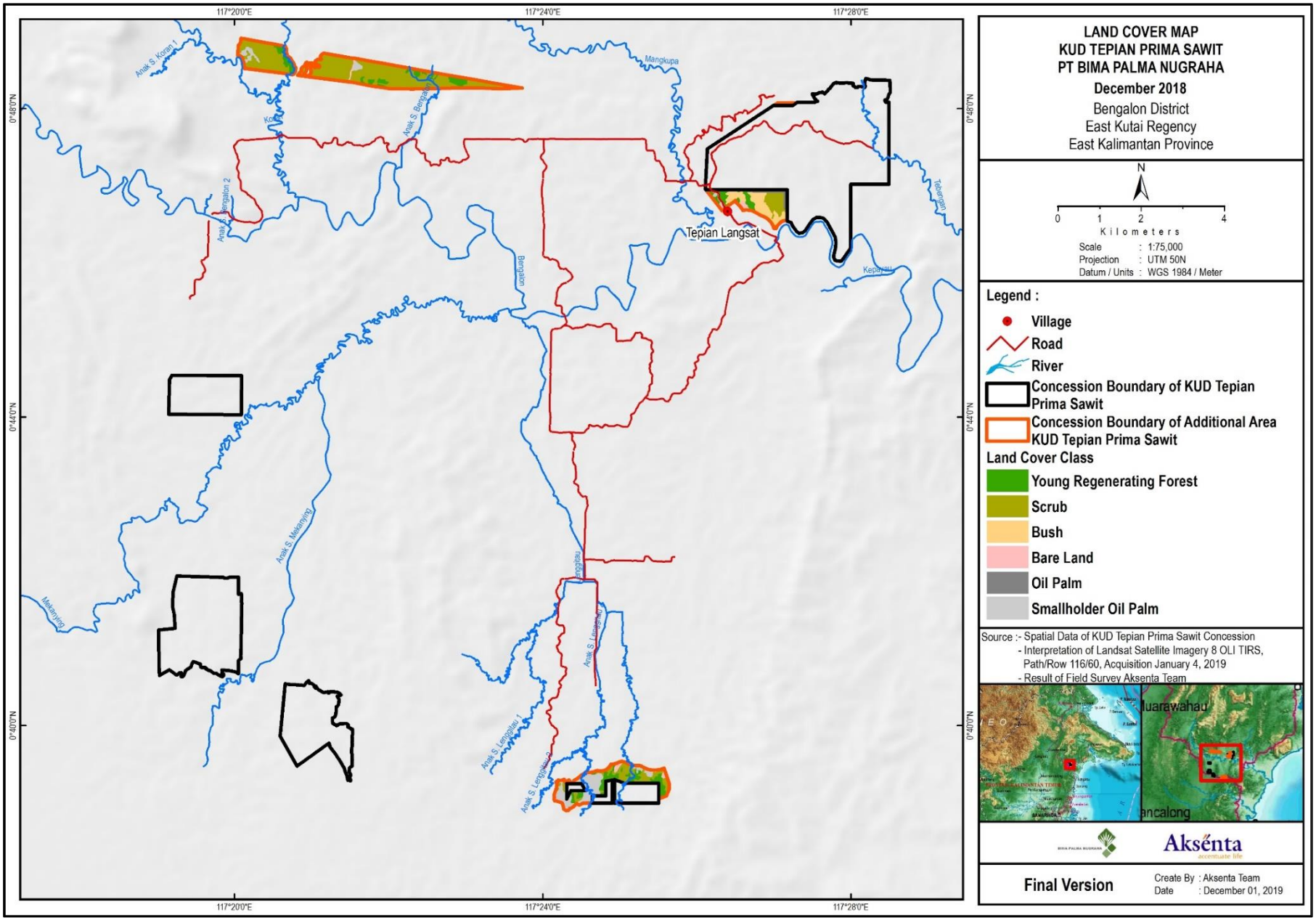


Figure 41 Interpretation Land Cover 2018 (smallholder)

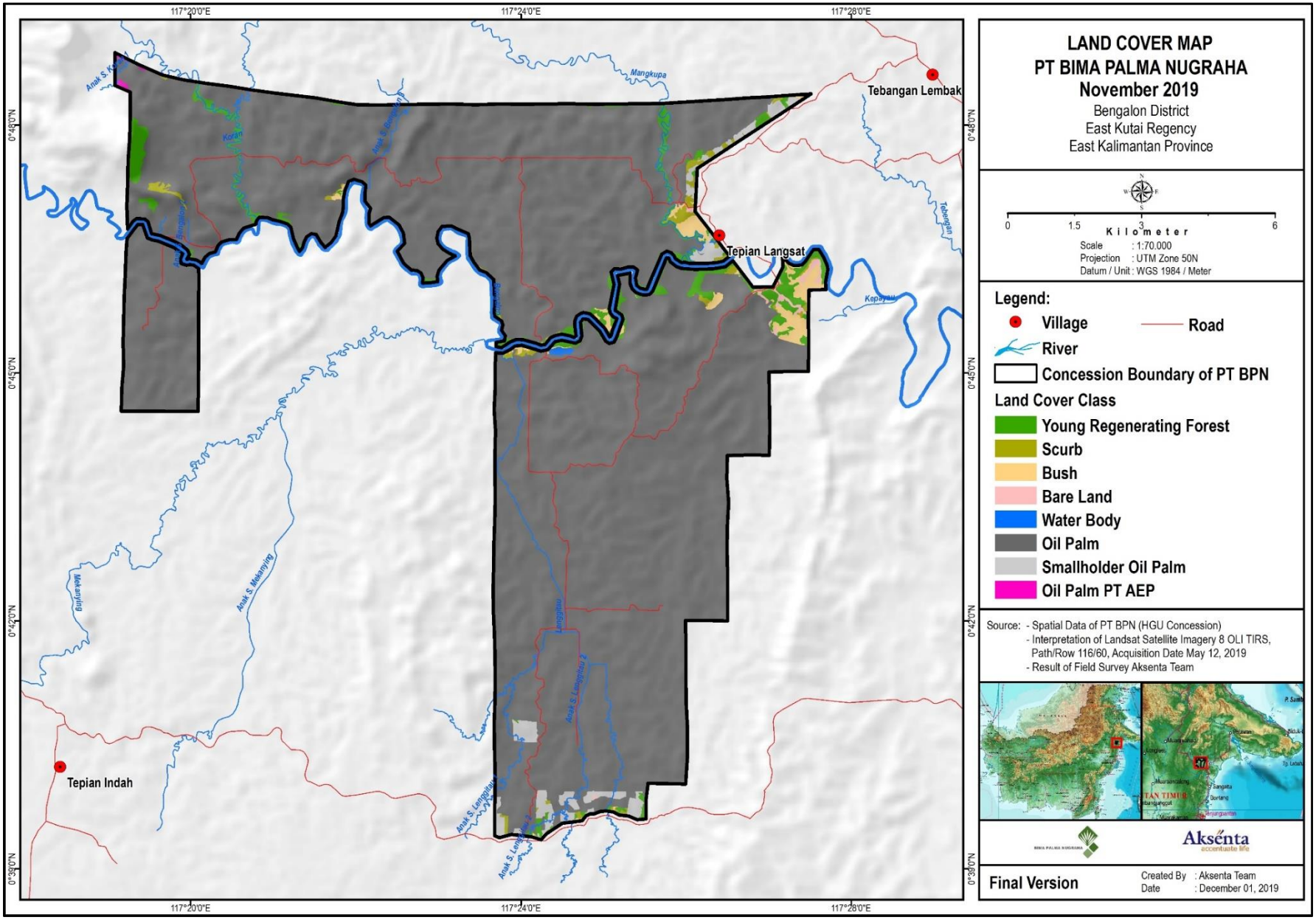


Figure 42 Interpretation Land Cover 2019 (Nucleus)

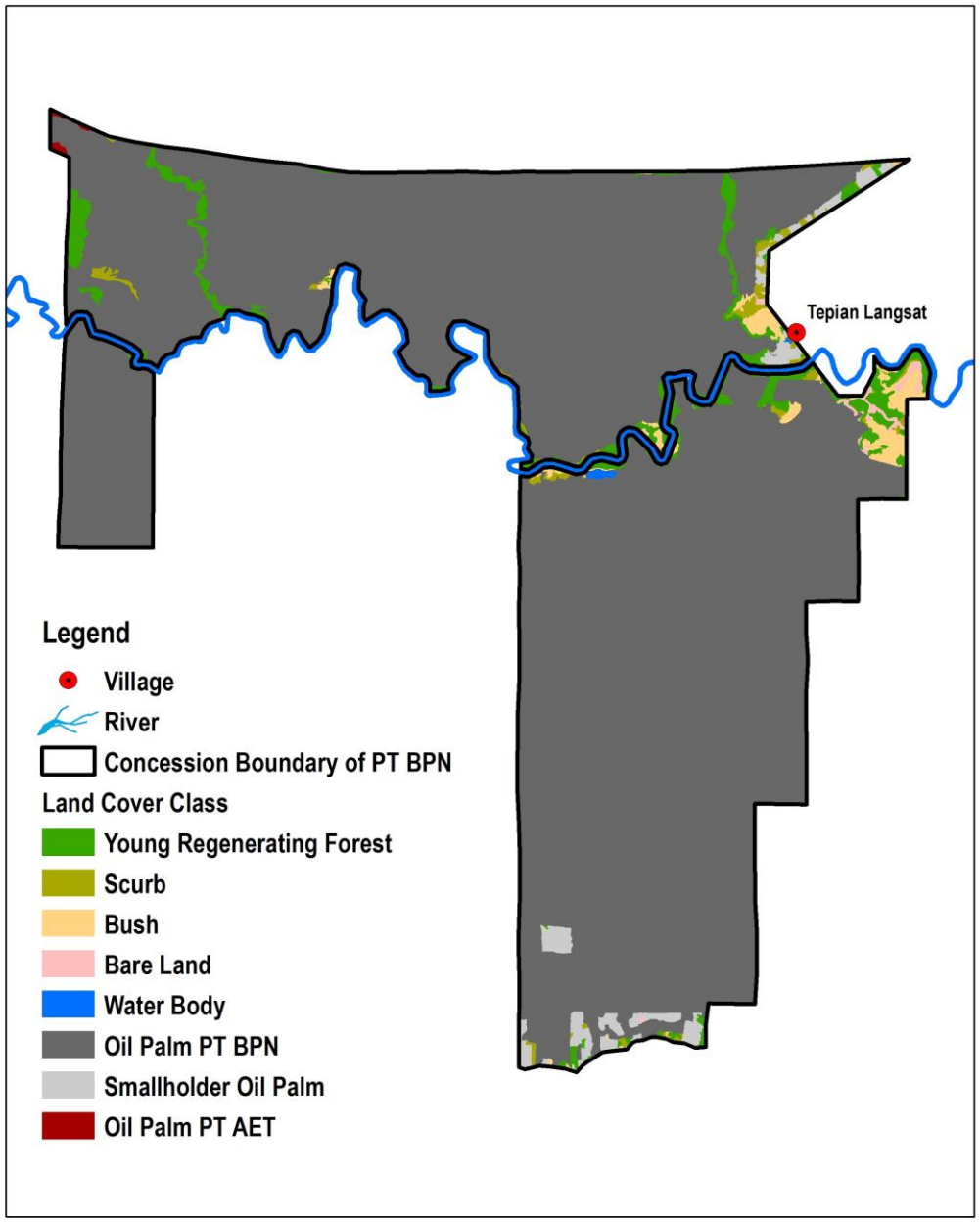


Figure 43 Interpretation Land Cover 2020 (Nucleus)

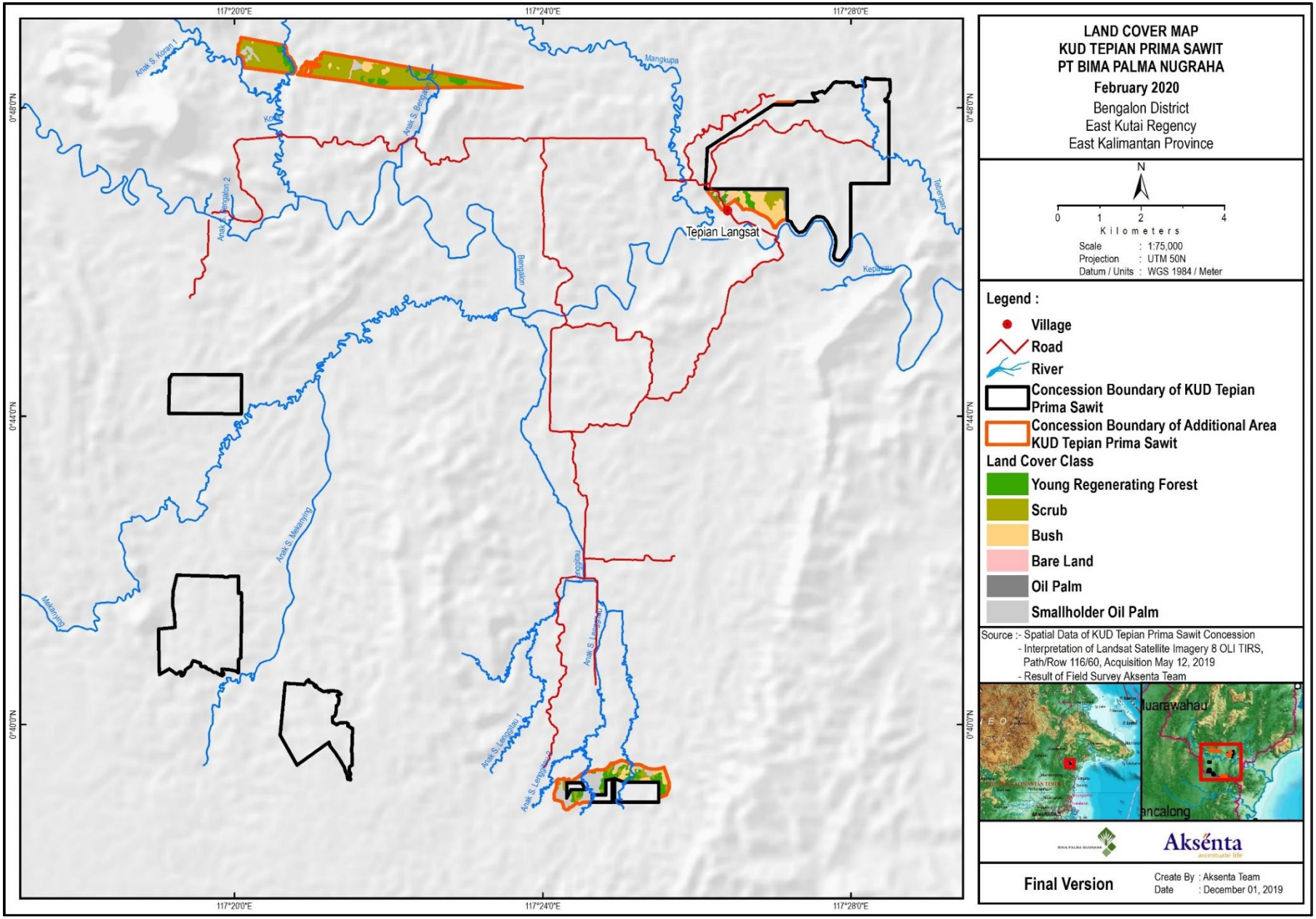


Figure 44 Interpretation Land Cover 2020 (smallholder)

3.6 FPIC process

Verification of the application of FPIC principles is carried out by i) reviewing documents and records owned by the Company, ii) requesting confirmation from village officials who saw or were involved in the land acquisition process of PT Bima Palma Nugraha, and iii) requesting information from the community who had relinquished control of their land for development oil palm plantations of companies and those that do not release their land. Lever scope The application of FPIC for this study is based on the process of land acquisition and land clearing to develop and assess the Company's policies, practices and efforts in identifying and reserving places and or objects of important value to local communities (HCV 4, HCV 5, and HCV. 6) before the construction of the garden. Before discussing the main points of applying each element of FPIC, a brief introduction is given to understanding the context.

The study area was a concession of timber companies from 1970 to 2000. Land tenure by the community was only found along the Bengalon River border, the community had shifting rice cultivation. Each family generally owns a field of 6-8 ha, with a farming location 3 km away from the river bank. During this period, namely 1982 and 1997 the study area experienced severe fires. As a result, the people of Tepian Langsat lost their source of livelihood and had left the village to earn a living in Bengalon.

In 2005, the people of Tepian Langsat agreed to invite investors to develop oil palm plantations instead of timber investors. PT Bima Palma Nugraha offers a Partnership with a pattern of oil palm plantation development for the Tepian Langsat community covering an area of 15% of the plantation area managed by Company. Acquiring land for development of their gardens does not go through land acquisition from the community. This was the agreement between PT Bima Palma Nugraha and the Village and was later re-stated in the MoU between the Company and the Tepian Prima Sawit Cooperative in 2006.

In December 2018, DSN Group acquired PT Bima Palma Nugraha, hereinafter referred to as New Management from the old owner, hereinafter referred to as Old Management. This transition caused a few obstacles in carrying out the verification of FPIC, which staff and Management as resource persons were involved in

The process of land acquisition and land clearing in the early days of plantation development was no longer working at PT Bima Palma Nugraha, all were replaced by new personnel assigned by the New Management. There were only two staff from Old Management who worked for the Company at this time 2008 - 2012 (included in the period of this study) but not the personnel in charge of land acquisition and land clearing processes. This makes data and information from the Company very limited so that more information is obtained from the public.

Following are the results of the verification of each element of the FPIC principles. The Prior element is not discussed separately because it is inherent and a prerequisite for every other element of FPIC. Basically, every company activity that intersects with the community and has the potential to impact people's lives always preceded by providing information, requesting input (consultation), and prior public approval.

Informed. From the company side, the socialization activities cannot be verified because there is no documentation that shows the implementation of this activity. Information only comes from the community side. According to H. Akim, a local traditional leader, in early 2005 PT Bima Palma Nugraha conducted socialization in Tepian Langsat Village, the company conveyed the intent and purpose of his visit to the Tepian Langsat Village area. The company has obtained a permit from the government. In terms of land acquisition, there were deliberations several times, initially the Village Head asked PT Bima Palma Nugraha to provide Compensation for Planting Growth (GRTT), but the Company offered a partnership to build

plantations with a plasma nucleus pattern without GRTT with a land portion of 15: 85, meaning if The available land area is 100 ha, then the community will develop a plasma plantation covering an area of 15 ha. In addition to formal socialization activities, the Company assigned Company Public Relations staff assisted by the Village Team, consisting of villagers, to follow up on socialization and explain the partnership pattern. PT Bima Palma Nugraha has attempted to apply the Informed element of FPIC principles but still has weaknesses in its documentation to support the proof of the information that has been conveyed to the public. It may be that the documentation (written policies, socialization materials, and reports of outreach activities in 2005 and later) was prepared by the Old Management but not submitted to the New Management.

Free. The principle of Free was originally applied in the plantation development process of PT Bima Palma Nugraha because the Tepian Langsat community wanted it and invited investors to the village. After socialization and providing information at the beginning, the company gave the community the flexibility to rethink it.

In developing cooperation, the Company provides sufficient space to observe partnership patterns and make decisions. According to Hadenan, a community leader at Tepian Langsat, the community held internal meetings and discussions to make decisions. On September 8, 2005 the people of Tepian Langsat agreed to build a nucleus plasma oil palm plantation in a partnership pattern without land acquisition from the community. There were a small number of villagers who disagreed. The internal forum did not question and asked that the land boundaries be clearly marked so that they were known and were not displaced during land clearing by the Company. Tepian Langsat agreed to build a plasma nucleus oil palm plantation in a partnership pattern without land acquisition from the community. There were a small number of villagers who disagreed, the internal forum did not make a problem and asked that the land boundaries be clearly marked so that they were known and were not displaced during land clearing by the Company.

On the other hand, the Company also respects the community's choice of not releasing land and giving them freedom of access, such as the immigrant group in the southern part of the HGU area. The area of the enclave in the HGU area is 665 ha.

Consent. After negotiating internally, the community agreed to the construction of PT Bima Palma Nugraha's plantation. The agreement was outlined in a Cooperation Agreement (MoU) between Tepian Langsat Village and PT Bima Palma Nugraha for the development of a partnership plantation. Memorandum of Understanding signed by all parties. After that an agreement was made between PT Bima Palma Nugraha and the Tepian Prima Sawit Cooperative.

PT BPN in accordance with the results of the deliberations will not conduct GRTT on land but on its way, in 2012 and 2013 there were land claims and requests for compensation. The company did not immediately reject the submission of these claims but provided room for negotiation. Finally, the company granted the request of several residents of Tepian Langsat Village to compensate for the 178.5 ha land with compensation value amounting to Rp. 992 million. Compensation is only made for land where it can be proven that there are growing crops. The land compensation process is carried out based on an agreement and the transaction process is completed with proof of payment documents and witnesses know about it. Thus, PT Bima Palma Nugraha has implemented the Consent element of the FPIC principle at the land acquisition process stage for the development of its plantation. When the gardens are ready, land claims are handled properly.

Chapter 4

4. Summary of Management Plans

4.1 Team responsible for developing management plans

Monitoring management of HCV and SEIA PT BPN in region base, controlled by Plantation Head PT BPN (PH) along with relevant functional departments. Estate planning process synergize with program planning and management of HCV and SIA. The department which involved in management plan and implementation. Area figured below.

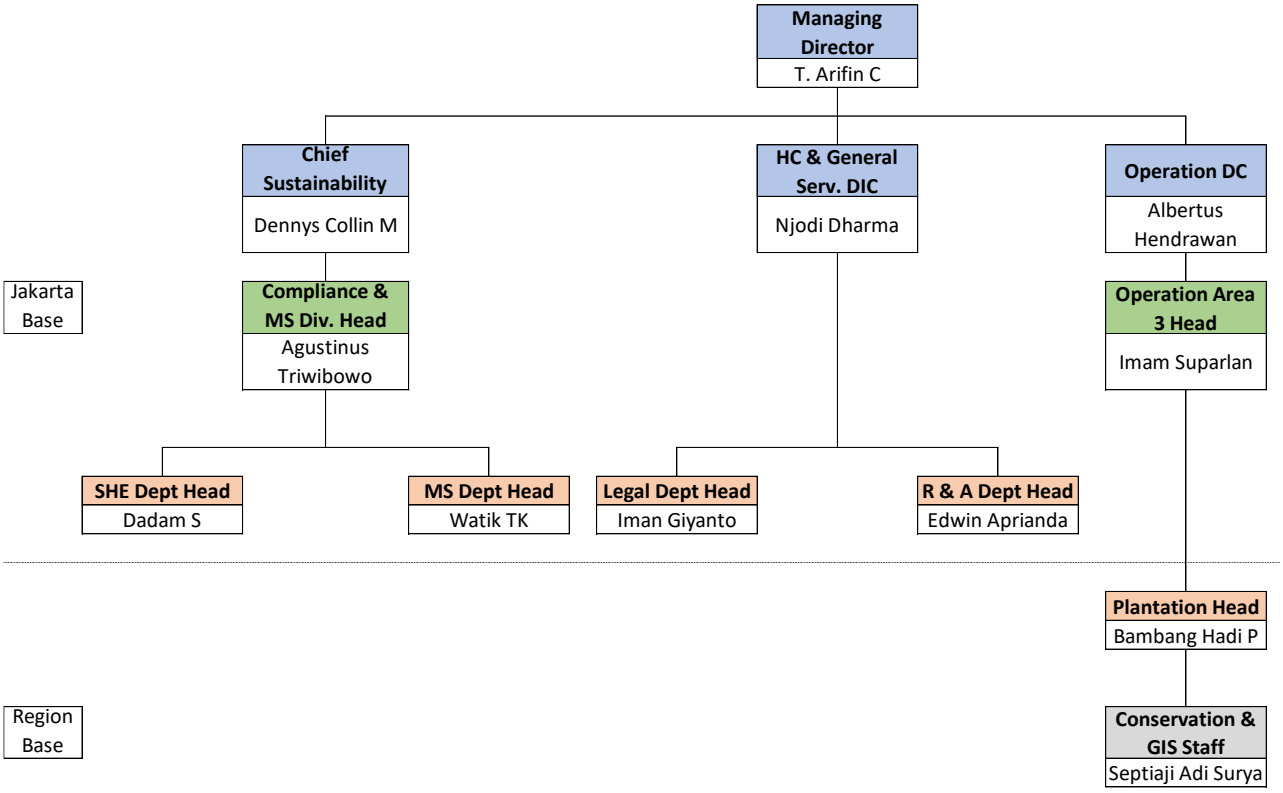


Figure 45 Team responsible for developing management plans

4.2 Elements to be included in management plans

a. Management Plans SEIA

Potential impact, risk and social issue based on SEIA report has been classified based on the resources from group process development activities oil palm plantation and has done PT BPN. The assessment of SEIA in the executive summary of AMDAL (include update Environmental Impact Assessment), SIA Report for identification of negative and positive impact on the environment and surrounding community (include update Social Impact Assessment) of PT BPN as Table 45.

Table 45 PT BPN Social & Environment Management and Monitoring Program

No	Social Impact/ Social Issues	Target	Strategy Target Achievement	Location	PIC	Timeframe for completion	Monitoring
	Social Aspects						
1	Socialization and land acquisition	The development of gardens is socialized to the community and land owners	Identify stakeholders and land owners	The village around PT BPN	CSR Dept	2021	Every Year (Jan)
			Conducting outreach to stakeholders and land owners regarding the plantation development plan	The village around PT BPN	CSR Dept	2021	Every 6 month (Jan & Juli)
2	Land clearing and development of oil palm plantations	Land clearing without burning	Make a work plan for the area to be LC and apply the BMP	PT BPN	Operational	2021	Every Year (Jan-Des)
			Monitor land clearing with LC and implement BMP implementation	PT BPN	Operational	2021	Every Year (Jan-Des)
		Land clearing is carried out in accordance with RSPO principles and regulations in force in Indonesia	Implementing the NPP procedure	PT BPN	MS Dept Operational CSR Dept	2021	Every Year (Jan-Des)
		Mapping of plantation development areas	Identify areas to be cleared according to NPP principles	PT BPN	MS Dept Operational CSR Dept	2021	Every Year (Jan)
3	Labor recruitment and management	Acceptance of local workers according to the required competencies	Socialization regarding the recruitment of local workers by involving village officials, traditional leaders and the manpower office	PT BPN	Operational HC Dept	2021	Every Year (Jan-Des)
		Workforce training is available	Identify training needs	PT BPN	Operational HC Dept	2021	Every Year (Jan)
			Plan and budget for training costs	PT BPN	Operational HC Dept	2021	Every Year (Jan)
			Monitor the implementation of workforce training	PT BPN	Operational HC Dept	2021	Every Year (Jan-Des)

No	Social Impact/ Social Issues	Target	Strategy Target Achievement	Location	PIC	Timeframe for completion	Monitoring
4	Plantation management (nursery, planting, care, harvesting)	Make a plantation management plan	Identify the needs for plantation management (seeds, labor, etc.)	PT BPN	Operational	2021	Every Year (Jan-Des)
			Carry out the recruitment of the workforce needed	PT BPN	Operational	2021	Every Year (Jan-Des)
			Caring for oil palms planted in accordance with the BMP	PT BPN	Operational	2021	Every Year (Jan-Des)
5	Transporting FFB to PKS	There is a special road access for transporting FFB to the factory	Creating a special route for FFB transportation to the factory	PT BPN	Operational	2021	Every Year (Jan)
			Creating a special lane for public transportation in the garden	PT BPN	Operational	2021	Every Year (Jan)
			Install traffic signs along the access road	PT BPN	Operational	2021	Every Year (Jan)
			Conducting outreach about access points and traffic signs to the public and employees	PT BPN	Operational	2021	Every Year (Feb)
6	Social relations and CSR	There are CSR programs that are right on target	Creating a participatory CSR program by involving stakeholders	PT BPN	CSR Dept	2021	Every Year (Jan-Des)
			Monitor the implementation of the CSR program	PT BPN	CSR Dept	2021	Every Year (Jan-Des)
			Conduct social visits to stakeholders	PT BPN	CSR Dept	2021	Every Year (Jan-Des)
7	Partnership plantation	The realization of the partnership plantation of at least 20% of the IUP was achieved	Identifying locations of potential new partnerships	PT BPN	CSR Dept Operational	2021	Every Year (Jan)
			Carry out the NPP process on the potential partnership area	PT BPN	MS Dept	2021	Every Year (Jan-Juni)
			Doing GRTT	PT BPN	CSR Dept	2021	Every Year (Jan-Des)

No	Social Impact/ Social Issues	Target	Strategy Target Achievement	Location	PIC	Timeframe for completion	Monitoring
8	Receding water in the lake padang	The water in the lake is awake	Create an inlet (watergate)	PT BPN	Operational	2021	Every Year (Jan-Des)
			Carrying out planting in the lake padang border area as part of the remediation program	PT BPN	Operational	2021	Every Year (Jan-Des)
9	The village boundary between Tepian Langsat and Tebangan Lembak has not been completed, especially regarding the area that is currently partially part of the Partnership Garden 1	Completion of village boundaries that are included in partnership 1 between Tepian Langsat Village and Tebangan Lembak	The company facilitated an FGD involving Tepian Langsat Village, Tebangan Lembak Village, community leaders, MUSPIKA	PT BPN	CSR Dept	2021	Every Year (Jan-Des)
			The company facilitated the mapping of village boundaries	PT BPN	CSR Dept	2021	Every Year (Jan-Des)
	Environmental Aspects						
1	The quality of the environment after the company is there is lower than in the initial environmental baseline conditions	Environmental quality is maintained in accordance with the required threshold	Conduct environmental monitoring and testing in accordance with AMDAL recommendations	PT BPN	SHE Dept	2021	Every Year (Jan-Des)
			Doing greening and planting LCC	PT BPN	Operational	2021	Every Year (Jan-Des)
			Making a terrace on a sloping area	PT BPN	Operational	2021	Every Year (Jan-Des)
			Stacking tree trunks and midribs in the gawd.	PT BPN	Operational	2021	Every Year (Jan-Des)
2	Decreased soil fertility	Maintained soil fertility	Provision of fertilizers according to environmentally friendly rules and principles	PT BPN	Operational	2021	Every Year (Jan-Des)
			Accumulation of tree trunks and midribs in the fields which in turn will increase the organic matter in the soil	PT BPN	Operational	2021	Every Year (Jan-Des)

No	Social Impact/ Social Issues	Target	Strategy Target Achievement	Location	PIC	Timeframe for completion	Monitoring
3	Decreasing flora and fauna biodiversity	Flora and fauna are preserved	Monitor flora and fauna	PT BPN	Conservation Staff	2021	Every Year (Jan-Des)
			Maintain HCV and HCS areas based on the results of the assessment	PT BPN	Conservation Staff	2021	Every Year (Jan-Des)
			Conducting patrols to protect biodiversity	PT BPN	Conservation Staff Security	2021	Every Year (Jan-Des)
4	Increase in pests, diseases and weeds	Control of pests, diseases and weeds	Agrochemical application according to recommendation	PT BPN	Operational	2021	Every Year (Jan-Des)
			Integrated pest, disease and weed eradication applications	PT BPN	Operational	2021	Every Year (Jan-Des)

Note: The monitoring plan referred to above is a monitoring plan during land clearing

b. Management Plans HCV HCS

Management Plan HCV was develop with the intention of providing guidance for the company in designing and implementation HCV HCS program. Monitoring HCV area during every six months. So that their resources can be focused a more integrated and effective in achieving the vision of the management plan PT BPN as Table 47.

1. Threat Recommendation

This Assessment identifies threats by applying IUCN Threat Classification Scheme (based on Salafsky et al., 2008). This approach is applied to help identify threats along with their sources. Once threats and their sources are identified, potential impacts and risks are assessed by location and HCV element and HCS forest. The next step is weighing to identify threats to prioritise, to which Management and Monitoring Plan development will refer.

Threats are identified based on the typology of conservation areas in the Assessment area (Table 46). Output of threat assessment indicates that, in overall, the intensity of threats' impacts on the conservation areas are considered medium. Threats with high intensity of impact include conversion of areas that currently are naturally vegetated, including riparian areas. As for others concerning fires and potential landuse change in HCV 6 area, these are considered low. Using this output, a management and monitoring plan will be developed with main objective to suppress threats that are likely to be removed and mitigate impacts out of threats that cannot be removed.

Table 46 Summary of the presence of important values and their major threats

Conservation Value	Summary of important values in the Assessment area	Major threat
HCV 1	Population of endemic or RTE fauna and flora species	▪ Reduced area and quality of wildlife habitat out of logging activity, land fire, and absence of connectivity to potential habitats outside the MU. ▪ Poaching (particularly against orangutan) ▪ Deteriorating quality of aquatic habitats out of the residuals of agrochemicals and clearing of vegetation cover in riparian areas.
HCV 3	Secondary forest cover on mixed dipterocarp lowland forest ecosystem on sedimentary rock, with 'threatened ecosystem' status	▪ Landuse conversion ▪ Logging activity ▪ Land fires
HCV 4	Basic environmental services concerning hydrological functions of water bodies (river, lake, swamp, spring) including their banks.	▪ Deteriorating water quality because of pollution from agrochemical residuals. ▪ Landuse conversion in riparian areas.
	Catchment and erosion control in steep hill area.	▪ Logging activity ▪ Land fires
	Potential pollination service in secondary forest area.	▪ Landuse conversion ▪ Logging activity ▪ Land fires
HCV 5	River as community source of water.	▪ Deteriorating water quality because of pollution from agrochemical residuals. ▪ Landuse conversion in riparian areas.
HCV 6	Presence of religious and cultural sites.	▪ Potential land conversion
HCS Forest	Fragments of natural vegetation in riparian areas and lowland secondary dipterocarp forest area.	▪ Landuse conversion ▪ Logging activity ▪ Land fires

2. Recommendation by value

In general, the major concerns in conservation area management include: (1) identifying stakeholders relevant to the area or able to contribute to conservation efforts; (2) developing a collaborative management and monitoring plan for conservation areas; and (3) taking important and urgent management actions such as prevention against poaching and logging activities, installation of signboards on conservation area information and disclosing them. Further, the plantation MU should develop a documented plan to protect, maintain and enhance conservation values and integrate them into the plantation development plan. Prior to developing a more comprehensive management and monitoring plan, see below the practical recommendations to deal with threats and maintain important values (Table 47 Management and monitoring recommendation for conservation areas in PT BPN MU).

HCVMA refers to all existing HCV areas plus other areas whose presence supports functions and values of the identified HCVs. These areas are divided into two: (1) HCVMA with strict protection (HCVMA 'No Go'), i.e., water body (river, lake) banks covered by oil palms and forest area buffer covered by bush, within the radius of 100 m, as a form of application of precautionary approach for orangutan habitat connectivity; and (2) HCVMA with management (HVCMA 'Go') taking form of oil palm plantation, bare soil and bush that may potentially become corridors for wildlife species, particularly orangutan. See Sub-Section 7.1 for map and area of both types of HCVMAs ('No Go' and 'Go').

Width of the main riparian areas in this Area is 50-100 m. Width of tributary riparian areas that contain only HCV 4 is 5 m, while that of others that also contain HCV 1 and/or 5 ranges from 50 m to 100 m, following RSPO Best Management Practice (BMP) (Barclay et al., 2017 and Lucey et al., 2018) and applicable laws and regulations. BMP for sustainable plantation management should be applied to HCVMAs. It includes restriction of agrochemical application in banks of water bodies, construction of sediment traps along the flow to reduce the sedimentary load in the major rivers.

HCV management activities concerning species management (especially for orangutan) include: development of SOP and its implementation including application of 'buddy system', which is an operational standard requesting a worker to avoid having activities alone in plantation area, particularly planting areas that border HCV areas; training on wildlife conflict mitigation; mechanism for reporting and coordination with relevant authorities; information dissemination to community and plantation workers concerning orangutan presence and poaching prohibition; and designing joint patrol activities with village community and government. In addition, information signboards are also necessary in areas indicated to be frequently used by orangutan, e.g., HCVMAs located around Tepian Langsat settlement, around village main roads and in HCV area-bordering plantation areas.

In the wider landscape, important area for biodiversity conservation can be managed with various coordination measures, such as through: establishment of conservation area management forum in the area; making of joint conservation area map; RTE wildlife species monitoring activity simultaneously carried out with all stakeholders; and coordination with BKSDA when dealing with human-wildlife conflicts. The same also applies to management of rivers and their banks in the AoI, that requires collaboration with landscape-level stakeholders such as land concession managing entities at Bengalon watershed level, local communities and village governments. Also, management cooperation also needs to coordinate with government bodies such as environmental office (DLH), plantation office and Mahakam Berau Watershed and Protection Forest Management Agency (BPDASHL).

Table 47 Management and monitoring recommendation for conservation areas in PT BPN MU

No.	Conservation Value	Map ID	Threat	Management Recommendation	Monitoring Recommendation
General Recommendation					
1	All HCV areas and HCS forests	*All*	*See Table of Threats*	a. Designate and delineate HCV areas and HCS forests (conservation areas) by considering the presence of HCVMA Go/No Go; and establish conservation area managing team. b. Establish conservation area managing group whose main task includes managing conservation areas to prevent against logging activities, encroachment, forest burning and poaching. c. Disseminate information to landowners and community groups and build a mutual understanding to conserve the location to prevent against conversion into other landuses. Make Memorandum of Understanding (MoU) ruling community commitment to avoiding converting conservation areas into other uses and make formula or agreement concerning community lands in the Assessment area that become conservation areas. d. In areas that become wildlife corridor, rehabilitate bush and shrub areas into forests. Rehabilitation can be preceded by assessing/ identifying HCVMA Go areas that still possible for natural succession and potentially become conservation areas in the future. e. Install conservation area information board and conservation area markers. Inform local community on protection of conservation areas. f. Prohibit forest burning and warn people to avoid any actions that may lead to fire. g. Ensure there are no poaching of RTE, endemic and protected species by any plantation staff, workers and community members. h. Cooperate with other oil palm plantation companies, HTI companies, Forest and Land Fire Control Unit under the Ministry of Environment and Forestry, and Fire Brigade to deal with forest and land fires. i. Establish wildlife patrol team capable of mitigating wildlife conflict, including animal rescue, in cooperation with relevant authorities and organisations such as BKSDA and NGOs, as well as local community. j. Control land clearing directions in the development area (non-conservation areas) to allow wildlife species to move towards conservation areas (HCV and HCS areas). k. Develop SOP for plantation management in HCVMA Go areas, both related to the species management (HCVMA 1) or agrochemicals application in the riparian zone (HCVMA 4), taking into account SOPs for conservation area management	(1) Develop Monitoring Plan (2) On a regular basis (every 6 months), document management process. (3) On a regular basis (every 6 months), monitor conservation areas by, among others, documenting RTE wildlife species presence and population. (4) Identify threats that area found to conservation areas and their elements. (5) Monitor natural resources use-related activities such as hunting, fishery and farming around conservation areas. (6) Patrol for forest fires, particularly during dry seasons.
HCV 1					
2	Orangutan (*Pongo pygmaeus*)	3-9, 13, 25-26, 32-34	Loss of habitat, poaching and conflict with human	(1) Important habitats to orangutan in the Assessment area should be prioritised for protection. (2) Map location of encounter and nest distribution. (3) In areas that become orangutan corridor, rehabilitate bush and shrub areas into forests. (4) Develop SOP for dealing with human-orangutan conflict.	(1) Count orangutan population in the MU. (2) Set population sample for permanent monitoring. (3) Document any appearance of orangutan in the oil palm plantation area.

No.	Conservation Value	Map ID	Threat	Management Recommendation	Monitoring Recommendation
				(5) Establish special team to manage orangutan. (6) Deliver training to workers on quick response so as to avoid conflict with orangutan. (7) Install warning board in orangutan corridors. (8) Cooperate with relevant and competent stakeholders (e.g., BKSDA, NGO and university) in case of conflict or conditions that cannot be dealt with internally.	
3	East Bornean grey gibbon (*Hylobates funereus*) and silvery lutung *(Trachypithecus cristatus)*	13	Loss of habitat and poaching	(1) Map distribution of east Bornean grey gibbon and silvery lutung to ensure the wildlife species habitat distribution. Once the habitat locations are confirmed, make them priority area for management. (2) Cooperate with relevant authorities for law enforcement, particularly in case of violation, especially poaching.	*See general recommendation for monitoring*
4	Proboscis monkey (*Nasalis larvatus*)	18-19, 22-25	Loss of habitat	(1) Designation of natural vegetation cover in Bengalon riparian areas (within the HGU concession) as conservation area. (2) Ensure no logging activities and encroachment take place in riparian areas.	*See general recommendation for monitoring*
5	Southern pig-tailed macaque (*Macaca nemestrina*) and crab-eating macaque (*M. fascicularis*)	9, 26	Seen as pests in agriculture	Develop techniques to drive away southern pig-tailed macaque and crab-eating macaque from community oil palm plantations and farms to move their home range to areas with natural vegetation cover.	Map locations where both species disturb local farms and plantations.
6	Sun bear (*Helarctos malayanus*), sambar deer (*Rusa unicolor*), Indian muntjac (*Muntiacus muntjak*), tragulus (*Tragulus* spp.), and Bornean bearded pig (*Sus barbatus*)	3-7, 32-34	Poaching and loss of habitat	(1) Disseminate information to community on the species protection and prohibition of poaching them. (2) Build cooperation with East Kalimantan BKSDA, Law Enforcement under the Ministry of Environment and Forestry and police to prevent against and deal with poaching of sub bears and other protected species and catch distribution.	*See general recommendation for monitoring*
7	Birds of prey such as black-winged kite *(Elanus caeruleus)*, grey-headed fish eagle *(Ichthyophaga ichtyaetus)*, changeable hawk-eagle *(Nisaetus cirrhatus)*, and Wallace's hawk-eagle *(N. nanus)*, etc.	3-7, 13, 25-26, 32-34	Loss of habitat and nesting ground, and poaching	(1) Ensure than natural vegetation fragments nesting ground and habitat are protected (in accordance with general recommendation for management). (2) Disseminate information on poaching protected bird species, especially in the MU, in the plantation and conservation areas. (3) Cooperate with relevant authorities for law enforcement, particularly in case of violations.	*See general recommendation for monitoring*
8	Other bird species such as Oriental pied hornbill *(Anthracoceros albirostris)*, blue-crowned hanging parrot *(Loriculus galgulus)*, red-crowned barbet *(Megalaima rafflesii)*, and Javan myna *(Acridotheres*	3-7, 13, 25-26, 32-34	Loss of habitat and poaching	Disseminate information on prohibition of poaching these bird species in the MU to all plantation staff and workers, as well as public. Security officers who guard the plantation entrance should be provided with capacity to disseminate information on policies on important wildlife species protection and poaching prohibition, and should be tasked to prevent against poaching activities.	*See general recommendation for monitoring*

No.	Conservation Value	Map ID	Threat	Management Recommendation	Monitoring Recommendation
	javanicus).				
9	Saltwater crocodile *(Crocodylus porosus)*, Asiatic softshell turtle *(Amyda cartilaginea)*, Amboina box turtle *(Cuora amboinensis)*, and Asian small-clawed otter *(Aonyx cinereus)*.	2, 3, 8, 18-20, 22-24	Damaged aquatic habitat, poaching for source of food (Asiatic softshell turtle and Amboina box turtle) and pet (all species)	(1) Prevent against river pollution, particularly pollution from oil palm plantation agrochemical application. (2) Install information boards by River Bengalon, Koran and Mengkupa for boats that pass, concerning the presence of important species. (3) Prohibition of use of poison for fishing. *See recommendation for HCV 4 for specific management concerning waters and flow.*	On a regular basis, monitor water quality in the lakes and rivers. This can be carried out simultaneously with environmental monitoring activities (RKL/RPL).
10	RTE or endemic plant species such as *keruing (Dipterocarpus cornutus)*, *kapur (Dryobalanops lanceolata)*, and ironwood *(Eusirodexylon zwageri)*	3-7, 25-26, 32-34	Logging activities	(1) On case of violation, cooperate with relevant authorities to check timbers extracted from the Assessment area to enforce the law. (2) Install labels or information board on RTE or endemic plant species See below the example of label/information board: 	*See general recommendation for monitoring*
HCV 3					
11	Fragment of dipterocarp secondary forest on sedimentary rock	3-7, 9, 13, 25-26, 31-34	Logging activity, landuse conversion, and land fires	(1) For management concerning HCV 3 presence, it is important to confirm the status of the natural vegetation fragments that contain HCV 3. In cooperation with landowners, the Company should find the way to maintain the presence of the natural vegetation without creating negative impacts on the landowners. Alternative example, the Company can: buy lands that contain HCV 3; place it under shared management; allow the landowners to use NTFP and give them incentives for their decisions not to convert the landuse, etc. (2) The Company should explore potential benefits from HCV 3 areas for the landowners.	(1) Together with partner community members, the Company should develop a management plan by engaging the land owners. (2) On a regular basis, monitor the condition of natural vegetation fragment every six years, particularly by documenting any changes. (3) In case of logging or land clearing, the HCV area managing entity is recommended to immediately apply persuasive approach to the landowner to reach a mutual agreement that does not threaten the HCV area presence.
HCV 4					
12	Basic environmental services concerning hydrological functions of water bodies (river, lake,	1-3, 5, 8, 10, 12, 16-30,	Soil erosion and agrochemical residuals	(1) Install signboards and disseminate information to workers on prohibition of use of agrochemicals in riparian areas. (2) Apply manual weeding to riparian areas already planted with oil palms.	(1) Document information dissemination events. (2) Prepare minutes of signboard installation (3) Monitor the functions of and maintain sediment traps (dam/overflow/gully plug).

No.	Conservation Value	Map ID	Threat	Management Recommendation	Monitoring Recommendation
	swamp and spring), along with their banks	33		(3) Delineate buffer zones according to the width of riparian area of each river. (4) Construct sediment trap (overflow or gully plug) in tributaries, particularly in undulating/rolling areas. Sand sacks, rocks, timbers or bamboos can be used. (5) Reinforce streambanks that are prone to landslide by applying technical/civil engineering or vegetation enrichment (use of native trees are recommended, or others with deep and strong rooting and lush canopy). (6) Construct silt pits in the area of planting blocks or both sides of the road, particularly in undulating-rolling areas.	(4) Monitor vegetation growth (growth %) in areas where enrichment is being carried out. (5) On a regular basis (at least every 6 months), check water quality in water monitoring spots, i.e., the inlets and outlets of the rivers flowing down the Assessment area. Checking should be carried out visually or through lab test.
			Logging activities	(1) Identify community members who have logging activities. (2) On a collaborative and participatory basis, implement community development programme, especially for community those who have logging activities. (3) Mark buffer zone boundaries according to the width of each riparian areas.	(1) Document meetings with stakeholders. (2) On a regular basis (at least every 6 months), monitor the boundaries of riparian areas that contain HCVs.
			Landuse conversion in riparian areas	(1) Mark the boundaries of buffer zones according to each riparian area width. (2) Avoid replanting in riparian areas already planted with oil palm, following the width of each river's buffer zone. (3) Disseminate information to land clearing contractors concerning the boundaries each riparian area to avoid overclearing. (4) Collaborate with community, governments (from district to village levels), other companies and NGO concerning conservation programmes and riparian areas.	(1) On a regular basis (at least every 6 months), monitor boundaries of riparian areas that contain HCV. (2) Assist land clearing contractors and prepare minutes of land clearing. (3) Document meetings with stakeholders.
13	Function of catchment and erosion control in steep hill areas.	13-15	Logging activities	*See HCV 1, 3 and 4 (river) management concerning logging activity.*	*See HCV 1, 3 and 4 (river) monitoring concerning logging activity.*
			Land fire	(1) Establish SOP for fire handling, including mechanism for quick response and reporting to relevant authorities. (2) Establish taskforce to mitigate and deal with land fires, supported with trainings, facilities and infrastructures. (3) Disseminate information concerning the danger of land fires and install signboards on land fires. (4) Collaborate with community, village governments and relevant stakeholders to control the use of fire in land clearing for farms. (5) Maintain areas that may potentially function as manmade firebreak, e.g., plantation roads or main canal, by (i) reducing the availability of fuel around these area (e.g., stacked midrib, twigs or woods; (ii) road construction is designed slightly convex to allow waterways to form on the roadside.	(1) Document SOPP for information dissemination event and reporting documentation. (2) Document the frequency of fire events, along with the documentation and minutes. (3) Coordinate with the neighbouring companies and local governments to mitigate forest and land fires. (4) On a regular basis, conduct patrol activities during dry seasons (i.e., in July to September). (5) Monitor firebreak areas, especially from July to September. (6) Monitor water discharge in locations of sources of water to deal with fire. (7) Document reports concerning FDRS.

No.	Conservation Value	Map ID	Threat	Management Recommendation	Monitoring Recommendation
				(6) Maintain plantation roads to allow the accessibility of fire quick response or patrol teams. (7) Map locations of sources of water for controlling land fires. (8) Apply fire information system, including drought index-based or fire watchtower monitoring-based early warning system, and potential events of fire or Fire Danger Rating System (FDRS).	
14	Potential pollination service in secondary forest areas	4-6	Landuse conversion, logging activity and land fire	*See HCV 1 and 3 management concerning presence of forests.*	*See HCV 1 and 3 monitoring concerning presence of forests.*
HCV 5					
15	River as community source of water	Di AOI	Deteriorating water quality out of agrochemical residuals; land clearing in riparian areas	*See HCV 4 management concerning river.*	*See HCV 4 monitoring concerning river.*
HCV 6					
16	Presence of religious, historical or cultural sites.	M1-M5	Potential landuse conversion	(1) Identify stakeholders relevant to each HCV 6 area (old villages, burial grounds, etc.). (2) Establish communication with relevant stakeholders (traditional leaders, beneficiaries, community leaders). (3) On a participatory basis, encourage the development of management plan to conserve each HCV area.	(1) Biannual meeting to document the progress of HCV element management and document each meeting.
HCS					
17	Natural vegetation fragments in riparian areas and dipterocarp forest areas	*Overlap* with HCV area	Landuse conversion, logging activity and land fire	*See HCV 1, 3 and 4 management concerning forest presence.*	*See HCV 1, 3 and 4 monitoring concerning forest presence.*

3. Cross-Value Recommendation

General management that applies to each HCV and HCS area (Table 48) includes (i) HCV and HCS area gazettement; (ii) information dissemination event and stakeholder engagement; and (iii) capacity building for the HCV and HCS area managing entities. In carrying out management and monitoring, plantation management should be cooperating with governments, community and other companies located around the MU. See Table 48 for the general recommendation for all conservation areas.

Table 48 General management that applies to each conservation area

HCV-HCS Area Gazettement	Information and Engagement of HCV-HCS Area Management	Capacity Building
• Delineate HCV and HCS area maps, verify them and make them definitive maps of conservation areas. • Make boundary markers for HCV and HCS areas. • Establish boundary markers for HCV and HCS areas.	• The Company internal. • Local community (village government, traditional institution and public). • Government bodies. • Neighbouring companies.	• Training on HCV and HCS area monitoring (basic identification, water quality measurement and maters that relate to sustainability. • Consistent application of SOP and HCV-HCS area monitoring policies.

Table 49 Matrix Management and Mitigation Plan HCV & HCS

HCV	Threat of HCV	Management & Mitigation Plan	Monitoring Plan	Location	PIC	Timeframe for completion	Monitoring
	General Recommendation						
1	All HCV areas and HCS forests	Designate and delineate HCV areas and HCS forests (conservation areas) and establish conservation area managing team.	Develop Monitoring Plan	PT BPN	Conservation Staff GIS Staff	2021	Every Year (Jan)
		Establish conservation area managing group whose main task includes managing conservation areas to prevent against logging activities, encroachment, forest burning and poaching.	On a regular basis (every 6 months), document management process.	PT BPN	Conservation Staff GIS Staff	2021	Every 6 month (Jan & Juli)
		Disseminate information to landowners and community groups and build a mutual understanding to conserve the location to prevent against conversion into other landuses. Make Memorandum of Understanding (MoU) ruling community commitment to avoiding converting conservation areas into other uses and make formula or agreement concerning community lands in the Assessment area that become conservation areas.	On a regular basis (every 6 months), monitor conservation areas by, among others, documenting RTE wildlife species presence and population.	PT BPN	Conservation Staff CSR Dept	2021	Every Year (Jan-Des)

HCV	Threat of HCV	Management & Mitigation Plan	Monitoring Plan	Location	PIC	Timeframe for completion	Monitoring
1	All HCV areas and HCS forests	In areas that become wildlife corridor, rehabilitate bush and shrub areas into forests.	Identify threats that area found to conservation areas and their elements.	PT BPN	Conservation Staff GIS Staff	2021	Every Year (Jan)
		Install conservation area information board and conservation area markers. Inform local community on protection of conservation areas.	Monitor natural resources use-related activities such as hunting, fishery and farming around conservation areas.	PT BPN	Conservation Staff Operational	2021	Every Year (Jan)
		Prohibit forest burning and warn people to avoid any actions that may lead to fire.	Patrol for forest fires, particularly during dry seasons.	PT BPN	Conservation Staff SHE Dept Operational	2021	Every Year (Jan-Des)
		Ensure there are no poaching of RTE, endemic and protected species by any plantation staff, workers and community members		PT BPN	Conservation Staff SHE Dept Operational CSR Dept	2021	Every Year (Jan-Des)
		Cooperate with other oil palm plantation companies, HTI companies, Forest and Land Fire Control Unit under the Ministry of Environment and Forestry, and Fire Brigade to deal with forest and land fires		PT BPN	Conservation Staff SHE Dept Operational CSR Dept	2021	Every Year (Jan-Des)
		Establish wildlife patrol team capable of mitigating wildlife conflict, including animal rescue, in cooperation with relevant authorities and organisations such as BKSDA and NGOs, as well as local community.		PT BPN	Conservation Staff SHE Dept Operational CSR Dept	2021	Every Year (Jan-Des)

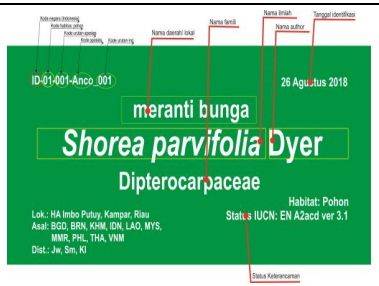
HCV	Threat of HCV	Management & Mitigation Plan	Monitoring Plan	Location	PIC	Timeframe for completion	Monitoring
1	All HCV areas and HCS forests	Control land clearing directions in the development area (non-conservation areas) to allow wildlife species to move towards conservation areas (HCV and HCS areas).		PT BPN	MS Dept Operational CSR Dept	2021	Every Year (Jan)
	HCV 1						
2	Loss of habitat, poaching and conflict with human (*Pongo pygmaeus*)	Important habitats to orangutan in the Assessment area should be prioritised for protection.	Count orangutan population in the MU.	PT BPN	Conservation Staff	2021	Every Year (Jan)
		Map location of encounter and nest distribution.	Set population sample for permanent monitoring.	PT BPN	Conservation Staff	2021	Every Year (Jan)
		In areas that become orangutan corridor, rehabilitate bush and shrub areas into forests.	Document any appearance of orangutan in the oil palm plantation area.	PT BPN	Conservation Staff	2021	Every 6 month (Jan & Juli)
		Develop SOP for dealing with human-orangutan conflict.		PT BPN	MS Dept Operational CSR Dept SHE Dept	2021	Every Year (Jan)
		Establish special team to manage orangutan.		PT BPN	SHE Dept Conservation Staff	2021	Every Year (Jan)
		Deliver training to workers on quick response so as to avoid conflict with orangutan.		PT BPN	SHE Dept Conservation Staff Learning Centre	2021	Every Year (Jan)
		Install warning board in orangutan corridors.		PT BPN	SHE Dept Conservation Staff	2021	Every Year (Jan)
		Cooperate with relevant and competent stakeholders (e.g., BKSDA, NGO and university) in case of conflict or conditions that cannot be dealt with internally.		PT BPN	MS Dept Operational CSR Dept SHE Dept	2021	Every Year (Jan)

HCV	Threat of HCV	Management & Mitigation Plan	Monitoring Plan	Location	PIC	Timeframe for completion	Monitoring
	HCV 1						
3	Loss of habitat and poaching East Bornean grey gibbon (Hylobates funereus) and silvery lutung (Trachypithecus cristatus)	Map distribution of east Bornean grey gibbon and silvery lutung to ensure the wildlife species habitat distribution. Once the habitat locations are confirmed, make them priority area for management.	See general recommendation for monitoring	PT BPN	Conservation Staff	2021	Every Year (Jan)
		Cooperate with relevant authorities for law enforcement, particularly in case of violation, especially poaching.	See general recommendation for monitoring	PT BPN	Legal Dept CSR Dept	2021	Every Year (Jan)
4	Loss of habitat Proboscis monkey (Nasalis larvatus)	Designation of natural vegetation cover in Bengalon riparian areas (within the HGU concession) as conservation area.	*See general monitoring recommendations*	PT BPN	Conservation Staff	2021	Every 6 month (Jan & Juli)
		Ensure no logging activities and encroachment take place in riparian areas.	*See general monitoring recommendations*	PT BPN	Conservation Staff CSR Dept	2021	Every 6 month (Jan & Juli)
5	Seen as pests in agriculture Southern pig-tailed macaque (Macaca nemestrina) and crab-eating macaque (M. fascicularis)	Develop techniques to drive away southern pig-tailed macaque and crab-eating macaque from community oil palm plantations and farms to move their home range to areas with natural vegetation cover.	Map locations where both species disturb local farms and plantations.	PT BPN	Conservation Staff CSR Dept	2021	Every Year (Jan)

HCV	Threat of HCV	Management & Mitigation Plan	Monitoring Plan	Location	PIC	Timeframe for completion	Monitoring
	HCV 1						
6	Poaching and loss of habitat Sun bear (Helarctos malayanus), sambar deer (Rusa unicolor), Indian muntjac (Muntiacus muntjak), tragulus (Tragulus spp.), and Bornean bearded pig (Sus barbatus)	Disseminate information to community on the species protection and prohibition of poaching them.	*See general monitoring recommendations*	PT BPN	Conservation Staff	2021	Every 6 month (Jan & Juli)
		Build cooperation with East Kalimantan BKSDA, Law Enforcement under the Ministry of Environment and Forestry and police to prevent against and deal with poaching of sub bears and other protected species and catch distribution.	*See general monitoring recommendations*	PT BPN	SHE Dept	2021	Every Year (Jul)
7	Loss of habitat and nesting ground, and poaching Birds of prey such as black-winged kite (Elanus caeruleus), grey-headed fish eagle (Ichthyophaga ichtyaetus), changeable hawk-eagle (Nisaetus cirrhatus), and Wallace's hawk-eagle (N. nanus), etc.	Ensure than natural vegetation fragments nesting ground and habitat are protected (in accordance with general recommendation for management).	See general recommendation for monitoring	PT BPN	Conservation Staff Operational	2021	Every Year (Jul)
		Disseminate information on poaching protected bird species, especially in the MU, in the plantation and conservation areas.	*See general monitoring recommendations*	PT BPN	Conservation Staff	2021	Every Year (Jul)

HCV	Threat of HCV	Management & Mitigation Plan	Monitoring Plan	Location	PIC	Timeframe for completion	Monitoring
	HCV 1						
7	Loss of habitat and nesting ground, and poaching Birds of prey such as black-winged kite (Elanus caeruleus), grey-headed fish eagle (Ichthyophaga ichtyaetus), changeable hawk-eagle (Nisaetus cirrhatus), and Wallace's hawk-eagle (N. nanus), etc.	Cooperate with relevant authorities for law enforcement, particularly in case of violations.	*See general monitoring recommendations*	PT BPN	CSR Dept Legal Dept	2021	Every Year (Jul)
8	Loss of habitat and poaching Other bird species such as Oriental pied hornbill (Anthracoceros albirostris), blue-crowned hanging parrot (Loriculus galgulus), red-crowned barbet (Megalaima rafflesii), and Javan myna (Acridotheres javanicus).	Disseminate information on prohibition of poaching these bird species in the MU to all plantation staff and workers, as well as public. Security officers who guard the plantation entrance should be provided with capacity to disseminate information on policies on important wildlife species protection and poaching prohibition, and should be tasked to prevent against poaching activities.	*See general monitoring recommendations*	PT BPN	Conservation Staff	2021	Every Year (Jul)
9	Damaged aquatic habitat, poaching for source of food (Asiatic softshell turtle and Amboina box turtle) and pet (all species) Saltwater crocodile (Crocodylus porosus), Asiatic softshell turtle (Amyda cartilaginea), Amboina box turtle (Cuora amboinensis), and Asian small-clawed otter (Aonyx cinereus).	Prevent against river pollution, particularly pollution from oil palm plantation agrochemical application.	On a regular basis, monitor water quality in the lakes and rivers. This can be carried out simultaneously with environmental monitoring activities (RKL/RPL).	PT BPN	K3L Staff SHE Dept	2021	Every 6 month (Jan & Jul)

HCV	Threat of HCV	Management & Mitigation Plan	Monitoring Plan	Location	PIC	Timeframe for completion	Monitoring
	HCV 1						
9	Damaged aquatic habitat, poaching for source of food (Asiatic softshell turtle and Amboina box turtle) and pet (all species) Saltwater crocodile (Crocodylus porosus), Asiatic softshell turtle (Amyda cartilaginea), Amboina box turtle (Cuora amboinensis), and Asian small-clawed otter (Aonyx cinereus).	Install information boards by River Bengalon, Koran and Mengkupa for boats that pass, concerning the presence of important species.	*See general monitoring recommendations*	PT BPN	Conservation Staff	2021	Every 6 month (Jan & Juli)
		Prohibition of use of poison for fishing. See recommendation for HCV 4 for specific management concerning waters and flow.	*See general monitoring recommendations*	PT BPN	Conservation Staff	2021	Every Year (Jan)
10	Logging activities RTE or endemic plant species such as keruing (Dipterocarpus cornutus), kapur (Dryobalanops lanceolata), and ironwood (Eusirodexylon zwageri)	On case of violation, cooperate with relevant authorities to check timbers extracted from the Assessment area to enforce the law.	See general recommendation for monitoring	PT BPN	Legal Dept CSR Dept	2021	Every Year (Jan)
		Install labels or information board on RTE or endemic plant species	See general recommendation for monitoring	PT BPN	Conservation Staff	2021	Every Year (Jan)

HCV	Threat of HCV	Management & Mitigation Plan	Monitoring Plan	Location	PIC	Timeframe for completion	Monitoring
	HCV 1						
10	Logging activities RTE or endemic plant species such as keruing (Dipterocarpus cornutus), kapur (Dryobalanops lanceolata), and ironwood (Eusirodexylon zwageri)	See the example of label/information board:					
	HCV 3						
11	Logging activity, landuse conversion, and land fires Fragment of dipterocarp secondary forest on sedimentary rock (Fragment of dipterocarp secondary forest on sedimentary rock)	For management concerning HCV 3 presence, it is important to confirm the status of the natural vegetation fragments that contain HCV 3. In cooperation with landowners, the Company should find the way to maintain the presence of the natural vegetation without creating negative impacts on the landowners. Alternative example, the Company can: buy lands that contain HCV 3; place it under shared management; allow the landowners to use NTFP and give them incentives for their decisions not to convert the landuse, etc.	Together with partner community members, the Company should develop a management plan by engaging the land owners.	PT BPN	Conservation Staff CSR Dept	2021	Every Year (Jan)
		The Company should explore potential benefits from HCV 3 areas for the	On a regular basis, monitor the condition of natural vegetation fragment every six years, particularly	PT BPN	Conservation Staff	2021	Every Year (Jan)

HCV	Threat of HCV	Management & Mitigation Plan	Monitoring Plan	Location	PIC	Timeframe for completion	Monitoring
	HCV 3						
11	Logging activity, landuse conversion, and land fires Fragment of dipterocarp secondary forest on sedimentary rock (Fragment of dipterocarp secondary forest on sedimentary rock)		In case of logging or land clearing, the HCV area managing entity is recommended to immediately apply persuasive approach to the landowner to reach a mutual agreement that does not threaten the HCV area presence.	PT BPN	SHE Dept CSR Dept Operational	2021	Every Year (Jan)
12	Soil erosion and agrochemical residuals (Basic environmental services concerning hydrological functions of water bodies (river, lake, swamp and spring), along with their banks)	Install signboards and disseminate information to workers on prohibition of use of agrochemicals in riparian areas.	Documenting outreach activities	PT BPN	Operational K3L Staff SHE Dept	2021	Every Year (Jan)
		Apply manual weeding to riparian areas already planted with oil palms.	Prepare minutes of signboard installation	PT BPN	Operational K3L Staff SHE Dept	2021	Every Year (Jan)
		Delineate buffer zones according to the width of riparian area of each river.	Monitor the functions of and maintain sediment traps (dam/overflow/gully plug).	PT BPN	Operational K3L Staff SHE Dept	2021	Every Month (Jan-Dec)
		Construct sediment trap (overflow or gully plug) in tributaries, particularly in undulating/rolling areas. Sand sacks, rocks, timbers or bamboos can be used.	Monitor vegetation growth (growth %) in areas where enrichment is being carried out.	PT BPN	Conservation Staff	2021	Every Year (Jan)

HCV	Threat of HCV	Management & Mitigation Plan	Monitoring Plan	Location	PIC	Timeframe for completion	Monitoring
	HCV 4						
12	**Basic environmental services concerning hydrological functions of water bodies (river, lake, swamp and spring), along with their banks**						
	Soil erosion and agrochemical residuals	Reinforce streambanks that are prone to landslide by applying technical/civil engineering or vegetation enrichment (use of native trees are recommended, or others with deep and strong rooting and lush canopy).	On a regular basis (at least every 6 months), check water quality in water monitoring spots, i.e., the inlets and outlets of the rivers flowing down the Assessment area. Checking should be carried out visually or through lab test.	PT BPN	K3L Staff SHE Dept	2021	Every 6 month (Jan & Jul)
		Construct silt pits in the area of planting blocks or both sides of the road, particularly in undulating-rolling areas.		PT BPN	Operational	2021	Every Year (Jan)
	Logging activities	Identify community members who have logging activities.	Document meetings with stakeholders.	PT BPN	CSR Dept	2021	Every Year (Jan)
		On a collaborative and participatory basis, implement community development programme, especially for community those who have logging activities.	On a regular basis (at least every 6 months), monitor the boundaries of riparian areas that contain HCVs.	PT BPN	Conservation Staff GIS Staff Operational	2021	Every 6 month (Jan & Jul)
		Mark buffer zone boundaries according to the width of each riparian areas.		PT BPN	Conservation Staff GIS Staff Operational	2021	Every Year (Jan)
	Landuse conversion in riparian areas	Mark the boundaries of buffer zones according to each riparian area width.	On a regular basis (at least every 6 months), monitor boundaries of riparian areas that contain HCV.	PT BPN	Conservation Staff GIS Staff Operational	2021	Every 6 month (Jan & Jul)

HCV	Threat of HCV	Management & Mitigation Plan	Monitoring Plan	Location	PIC	Timeframe for completion	Monitoring
	HCV 4						
12	**Basic environmental services concerning hydrological functions of water bodies (river, lake, swamp and spring), along with their banks**						
	Landuse conversion in riparian areas	Avoid replanting in riparian areas already planted with oil palm, following the width of each river's buffer zone.	Assist land clearing contractors and prepare minutes of land clearing.	PT BPN	Conservation Staff GIS Staff Operational	2021	Every 6 month (Jan & Jul)
		Disseminate information to land clearing contractors concerning the boundaries each riparian area to avoid overclearing.	Document meetings with stakeholders.	PT BPN	CSR Dept Operational	2021	Every Year (Jan)
		Collaborate with community, governments (from district to village levels), other companies and NGO concerning conservation programmes and riparian areas.		PT BPN	CSR Dept Operational SHE Dept	2021	Every Year (Jan)
13	**Function of catchment and erosion control in steep hill areas.**						
	Logging activities	*See HCV 1, 3 and 4 (river) management concerning logging activity.*	*See HCV 1, 3 and 4 (river) monitoring concerning logging activity.*	PT BPN	Conservation Staff CSR Dept Operational	2021	Every Year (Jan)
	Land fire	Establish SOP for fire handling, including mechanism for quick response and reporting to relevant authorities.	Document SOP for information dissemination event and reporting documentation.	PT BPN	MS Dept SHE Dept	2021	Every Year (Jan)
		Establish taskforce to mitigate and deal with land fires, supported with trainings, facilities and infrastructures.	Document the frequency of fire events, along with the documentation and minutes.	PT BPN	K3L Staff SHE Dept Operational	2021	Every Year (Jan)
		Disseminate information concerning the danger of land fires and install signboards on land fires.	Coordinate with the neighbouring companies and local governments to mitigate forest and land fires.	PT BPN	K3L Staff SHE Dept Operational	2021	Every Year (Jan)

HCV	Threat of HCV	Management & Mitigation Plan	Monitoring Plan	Location	PIC	Timeframe for completion	Monitoring
	HCV 4						
13	**Function of catchment and erosion control in steep hill areas.**						
	Land fire	Collaborate with community, village governments and relevant stakeholders to control the use of fire in land clearing for farms.	On a regular basis, conduct patrol activities during dry seasons (i.e., in July to September).	PT BPN	K3L Staff Operational	2021	Every Year (Jan)
		Maintain areas that may potentially function as manmade firebreak, e.g., plantation roads or main canal, by (i) reducing the availability of fuel around these area (e.g., stacked midrib, twigs or woods; (ii) road construction is designed slightly convex to allow waterways to form on the roadside.	Monitor firebreak areas, especially from July to September.	PT BPN	K3L Staff Operational	2021	Every month (July-Sept)
		Maintain plantation roads to allow the accessibility of fire quick response or patrol teams.	Monitor water discharge in locations of sources of water to deal with fire.	PT BPN	K3L Staff Operational	2021	Every Year (Jan)
		Map locations of sources of water for controlling land fires.	Document reports concerning FDRS.	PT BPN	K3L Staff Operational	2021	Every Year (Jan)
		Apply fire information system, including drought index-based or fire watchtower monitoring-based early warning system, and potential events of fire or Fire Danger Rating System (FDRS).		PT BPN	K3L Staff Operational	2021	Every Year (Jan)

HCV	Threat of HCV	Management & Mitigation Plan	Monitoring Plan	Location	PIC	Timeframe for completion	Monitoring
	HCV 4						
14	Landuse conversion, logging activity and land fire (Potential pollination service in secondary forest areas)	*See HCV 1 and 3 management concerning presence of forests.*	*See HCV 1 and 3 monitoring concerning presence of forests.*	PT BPN	Conservation Staff CSR Dept Operational SHE Dept	2021	Every Year (Jan)
	HCV 5						
15	Deteriorating water quality out of agrochemical residuals; land clearing in riparian areas (River as community source of water)	See HCV 4 management concerning river.	See HCV 4 management concerning river.	PT BPN	Operational SHE Dept K3L	2021	Every month (Jan-Dec)
	HCV 6						
16	Potential landuse conversion (Presence of religious, historical or cultural sites)	Identify stakeholders relevant to each HCV 6 area (old villages, burial grounds, etc.).	Biannual meeting to document the progress of HCV element management and document each meeting.	PT BPN	Conservation Staff CSR Dept Operational SHE Dept	2021	Every Year (Jan)
		Establish communication with relevant stakeholders (traditional leaders, beneficiaries, community leaders).		PT BPN	Conservation Staff CSR Dept Operational SHE Dept	2021	Every Year (Jan)
		On a participatory basis, encourage the development of management plan to conserve each HCV area.		PT BPN	Conservation Staff CSR Dept Operational SHE Dept	2021	Every Year (Jan)
	HCS						
17	Landuse conversion, logging activity and land fire (Natural vegetation fragments in riparian areas and dipterocarp forest areas)	*See HCV 1, 3 and 4 management concerning forest presence.*	*See HCV 1, 3 and 4 monitoring concerning forest presence.*	PT BPN	Conservation Staff CSR Dept Operational SHE Dept	2021	Every month (Jan-Dec)

Note: The monitoring plan referred to above is a monitoring plan during land clearing

c. Management Plans Soil Analysis

Based on landsystem Soil Taksonomi System USDA, 1982 and based on Clasification System Soil Research System in Bogor (RePPProT), 1990, Types of soil in the entire AoI are mineral soils. No locations in the area belong to histosol soil order (peat). Soil types in the AoI is dominated by associations of tropudults and dystropepts soils. The soils association also covers almost all management unit.

d. Management Plans Carbon Stock & GHG Emissions

1. The Measurement taken to maintain and enhance carbon stocks within the new development areas.

Several stages to high carbon stock assessment and GHG assessment can be used to prepare a management plan carbon stock on conservation area and HCV are integrated with management oil plan plantation, as follow:

i. Conducting carbon stock assessment on all consesion area of PT BPN.
ii. Integrating the carbon stock assesement result with HCV-HCS area
Based on HCV and High Carbon Stock Assessment Report of PT BPN are resulted a 745 ha conserved area. Integrating with Carbon stock assessment, the proper management and natural succession into areas with higher vegetation cover would increase reserves carbon in the HCV area.

GHG Emissions Mitigation Plan of PT BPN

The mitigation plan are associated with oil palm cultivation & processing in the new development of plantation and mill operation.

Land clearing for plantations will be prioritized in areas with low carbon stocks. The efforts to minimize GHG emissions, the efficient use of fuel through the engine maintenance and selection of technology which more efficient fuel usage, an accurate fertilizer recommendations, maximize the use of biological agents for pest control, etc.

Efforts to maintain and increase the amount of carbon stocks is equal to the effort to increase the total amount of biomass C. Some practical ways are as follows:

- Increase the density of vegetation in areas that are not open palm planting area. For example in residential areas in the garden, greening along the open road.
- Increase the density of vegetation in areas that have been designated as HCV area
- Implement best practice so that the plantation cultivation of oil palm growth and development can take place with the maximum and high biomass yield per plant organs.
- Applying fertilizer application that can increase soil organic C content. For example with the application of organic manure and compost.
- Implementing rorak applications in the area of mineral soil or bumpy areas that can be filled with litter or organic waste from oil palm plantations, thus increasing soil organic C.
- Preventing any form of fires in all types of strata / land cover.
- Perform mitigation of illegal logging in the area of secondary forest, especially in the area defined as high carbon stocks.

2. The Plan for monitoring the implementation of selected scenario for new development including measures for enhancing carbon stock and minimising GHG emissions

Monitoring and Evaluation of the conservation of carbon stocks (Monev) In order to determine the successful management of carbon stocks and GHG mitigation, it is necessary to the efforts of monitoring and periodic evaluation . Related to the results of this study, the efforts of monitoring and evaluation can be carried out as follows :

- Establishment of plots vegetation analysis in the conservation area and in the areas planted with oil palm. Number of permanent plots is proportional to the level and extent of land cover
- Perform analysis of vegetation in each of the plots to determine the value of biomass.
- Creating a recapitulation of the biomass is harvested when the plant oil palm has produced
- Perform estimation and calculation of carbon stock every year based on the results of the above measurements .
- Creating a carbon balance every year, so that can know the value of net GHG emissions
- Evaluate any form of management based on the value of benchmarks and targets set

4.3 Follow Up

Activities that need to be carried out to follow up this Assessment are as follow.

1. ICLUP finalisation applying FPIC principles, in which local community, village governments, traditional leaders and stakeholders in the AoI including other companies and local government agencies, are involved. ICLUP finalisation starts from conservation area gazettement involving local community as part of the oil palm plantation development.
2. Conservation area gazettement with the following phases: field delineation of the draft HCV-HCS map, verify the delineation output, and determine the final output as conservation area map (final version). The Company need to document this process into minutes of HCV-HCS area delineation
3. Demarcation by installing markers for conservation area (HCV and HCS areas) boundaries, followed by signboard installation. In riparian areas, signboards are also installed in the management areas.
4. Dissemination of information to and collaboration with the following stakeholders regarding conservation area management.
    a. The Company internal (field worker, staff and members of partnership cooperative).
    b. Local community (land user, village government, traditional institution).
    c. The neighbouring companies (programme collaboration).
    d. Relevant stakeholder (consultation).
5. Development of HCV-HCS Management & Monitoring Plan, taking into account the following.
    a. Species protection aspects, including management of potential conflict between human and wildlife (e.g., orangutan) and improving the functions of corridor between fragmented habitats, and habitat enrichment.
    b. Strengthening communication with the neighbouring companies to develop management and action plans to protect HCV-HCS.
    c. Engage local communities because the interests in and benefits from the presence of HCV-HCS (particularly HCV 5 and 6) belong to all stakeholders. Community engagement process should apply FPIC principles.
6. Development institutional aspects for HCV-HCS management.
    a. Establish an MU to ensure that the management goals are achieved.
    b. Deliver training for staff or recruit those who are qualified in managing HCV-HCS.
7. Building the capacity in identification, management, monitoring and evaluation through the following.
    a. Monitoring training (e.g., basics of wildlife species identification, water quality measurement and stakeholder engagement).
    b. Application of procedures and policies in place in the Company.
8. Development of and information dissemination on Company policies that state or indicate that the Company applies FPIC in developing oil palm plantation development so that all staff/workers can understand and apply them.
9. Provide cooperative with FPIC principles and require them to meet these, in line with FPIC flow chart in *Free, Prior and Informed Consent Guide for RSPO Members.*
10. Information dissemination to village communities concerning HCV-HCS knowledge and understanding.
11. Provide the information dissemination/PR team with complete knowledge and materials, including FPIC phases, negative impacts and risks, impact mitigation and risk management, and locations and area of potential oil palm plantation development.

Chapter 5
References

- Bhumi Pasa Hijau. 2021. *Environmental Impact Assessment (EIA) Pembangunan Kebun Sawit Plasma Koperasi Tepian Prima Sawit PT Bima Palma Nugraha. Bengalon Sub District, East Kutai District, East Kalimantan.* Final Report
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- CITES. 2014. Protected Species. <www.cites.org>. didownload pada 26 Juli 2014
- IUCN. 2014. IUCN Red List Categories. Prepared by the IUCN Species Survival Commission. IUCN, Gland, Switzerland.
- Roundtable on Sustainable Palm Oil Remediation and Compensation Procedures Related to Land Clearance without Prior HCV Assessment. Endorsed by RSPO Board of Governers for staged implementation on December 1, 2015.
- Gunarso, P., Hartoyo, M., Agus, F., and T. Killeen. 2013. Oil Palm and Land Use Change in Indonesia, Malaysia and Papua New Guinea. Reports from the Technical Panels of the 2nd Greenhouse Gas Working Group of the Roundtable on Sustainable Palm Oil (RSPO). Published November 2013 at www.rspo.org

Chapter 6

6.1. Internal Responsibility

The oil palm grower signs to confirm that the necessary assessment have been done and completed in accordance to the relevant RSPO procedure, and will be applied as guidelines for management & mitigation plan on PT Bima Palma Nugraha.

Signed for and on behalf of PT Bima Palma Nugraha

Agung Pramudji
President Director
Date : March 2021

Signed for and on behalf of PT Gagas Dinamiga Aksenta

Idung Risdiyanto
Team Leader of HCV & HCS
Date : March 2021

6.2. Organizational information and contact persons.

Contact details of the company are as follow :

Company Name	:	PT Bima Palma Nugraha (PT BPN)
Address	:	Gedung Sapta Mulia, Jl. Rawa Gelam V, Kav. OR 3B, Kelurahan Pulogadung, Jakarta
Location for proposed NPP	:	Bengalon Sub District, Kutai Timur District, East Kalimantan
Telp/ Fax	:	021 – 4618135/ 021 – 4606942
Contact Person	:	Agustinus Triwibowo
Position	:	Management Representative
Email	:	agustinus.triwibowo@dsngroup.co.id

6.3. List of Legal Document for process New Planting Procedure (NPP)

Table 50 List of Legal Document for process New Planting Procedure (NPP)

Tahun	Tanggal dan Nomer Dokumen	Perihal
2005	24 Oktober 2005 Nomor 353/02.188.45/HK/X/2005	Izin lokasi untuk keperluan perkebunan kelapa sawit kepada PT Bima Palma Nugraha seluas 15.000 ha yang terletak di Desa Tepian Langsat Kecamatan Bengalon Kabupaten Kutai Timur
2007	18 September 2007 Nomor 39-HGU-BPN RI-2007	Pemberian Hak Guna Usaha atas nama PT Bima Palma Nugraha atas Tanah di Kabupaten Kutai Timur, Provinsi Kalimantan Timur
2013	24 December 2013 Nomor 525.26/K.1105/HK/XII/2013	Izin Lokasi Untuk Keperluan Penetapan Ruang Plasma Kepada PT Bima Palma Nugraha Bermitra Dengan Koperasi Tepian Prima Sawit Seluas 337,6 ha yang Terletak Di Kecamatan Bengalon Kabupaten Kutai Timur
2015	28 Februari 2015 Nomor 188.4.45/032/EKO.1-II/2015	Revisi Izin Usaha Perkebunan (IUP) PT Bima Palma Nugraha
2018	28 June 2018 Nomor 525.26/ K.367/HK/VI/2O18	Penetapan Ruang Plasma Untuk Keperluan Perkebunan Kelapa Sawit Kepada Koperasi Tepian Prima Sawit Bermitra Dengan PT Bima Palma Nugraha Seluas 1.609,06 Ha yang Terletak Di Kecamatan Bengalon Kabupaten Kutai Timur
2020	25 September 2020 Nomor 525.26/ K.527/HK/IX/2O20	Penetapan Ruang Plasma Untuk Keperluan Perkebunan Kelapa Sawit Kepada Koperasi Tepian Prima Sawit Bermitra Dengan PT Bima Palma Nugraha Seluas 347,31 Ha yang Terletak Di Kecamatan Bengalon Kabupaten Kutai Timur