

ALS Nomor

ALS150381Y

HCV ASSESSMENT

PUBLIC SUMMARY

PT. MULIA INTI PERKASA

Head Office : Komplek Harmoni Plaza Blok E 15-17
Jl. Suryopranoto No. 2, Kelurahan Petojo Utara
Gambir Sub-district, Jakarta Pusat (10130)

Segah District
Berau Regency
East Kalimantan Province



PT. FODEC KHATULISTIWA
2018

COVER PAGE

❖ Dates of Assessment	: December 31 st , 2018
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❖ Location of Assessment	: PT. Mulia Inti Perkasa Permit Area, Berau Regency, East Kalimantan Province, Indonesia
❖ HCV Assessment (month/year)	: October 2018 – December 2018
❖ Size of Assessment (ha)	: 5,760.53 ha
❖ Size of HCV Management Area (ha)	: 1,539.33 ha
❖ Current or Planned Land Use for Assessment Area	: Palm Oil Plantation
❖ Certification Scheme	: RSPO

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List of Acronyms and Abbreviations

APL	Area for Other Purposes
BAPPEDA	Regional Development Planning Agency
BLHD	Regional Environmental Agency
BPD	Village Consultative Body
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
DAS	Watershed
DPLH	Environmental Management Document
EBA	Endemic Bird Area Endemic Bird Area
FGD	Focus Group Discussion
HCV	High Conservation Value
HCV-RN	High Conservation Value-Resource Network
HL	Protected Forest
IBA	Important Bird Area
IFL	Intact Forest Lanscapes
IUCN	International Union for the Conservation of Nature and Natural Resources
KK	Conservation Area
NPP	New Planting Procedures
PIPPIB	Indicatif Map of New Permits Moratorium
PP	Government Regulations
RePPPProT	Regional Physical Planning Program for Transmigration
MIP	Mulia Inti Perkasa
RSPO	Roundtable on Sustainable Palm Oil
RTE	Rare Threatened Endangered
SOP	Standard Operating Procedure

1. Introduction and Background

Assesment of High Conservation Value (HCV) were carried out in PT. Mulia Inti Perkasa (PT. MIP). Administratively, the company is located in Segah District, Berau Regency of East Kalimantan Province. Management of PT. MIP is committed to sustainable oil palm plantations. In the RSPO certification system (Roundtable on Sustainable Palm Oil) there are 2 (two) principles related to HCV (High Conservation Value) or HCV (High Conservation Value) which are Principle 5 (Environmental responsibility and conservation of natural resources and biodiversity) and Principle 7 (Development of responsible new plantations).

Cost of High Conservation Value Assessment in PT. MIP area was fully borne by PT. MIP. Land clearing and planting of oil palm have been carried out by PT. MIP. Most of the land cover before clearing is shrubs and shrub bushes. The status of the oil palm plantation project of PT. MIP is currently an operational plantation or an existing plantation. The total area of PT. Mulia Inti Perkasa plantation covers approximately 5,760.53 ha.

The HCV assessment process of PT. MIP conducts on August 6, 2018 - September 2020. PT. Mulia Inti Perkasa was established in accordance with the Copy of Deed Number 123, dated 28 October 2008 (Notary Robert Purba, SH). PT. MIP has obtained AMDAL approval which consists of KA-ANDAL, RKL and RPL of PT. Mulia Inti Perkasa was ratified by the Regent of Berau based on the Decree of the Regent of Berau Number 63 of 2011 and passed by the Assessment Team for the AMDAL Commission of Berau Regency on July 8, 2011. PT. MIP obtained an IUP SK of \pm 5,805 ha from the Regent of Berau Number 725 of 2015 dated September 11, 2015 with a Decree of Permit for Land Opening and Planting 2016/2017 (Extension and Addition) for Plantations covering an area of \pm 2,220 ha from the Regent of Berau Number 347 of 2016 April 28, 2016. Finally, PT. MIP conducted Cadastral Measurements covering an area of \pm 5,760.53 ha located in Long Ayan Village and Long Ayap Village, Segah District, Berau Regency, East Kalimantan Province.

The company's operational activities in the permit area of PT. MIP is large scale, high intensity and high risk. Landscape boundaries in the HCV assessment in the PT. MIP is determined based on the surrounding landscape, where the buffer created is 5 km from the boundary of the PT. MIP. This landscape boundary has an area of 29,492.94 ha. The location of the PT. MIP in Berau Regency (East Kalimantan Province) can be reached by using an airplane from Jakarta to Kalimarau Airport in Tanjung Redeb City (the capital of Berau Regency) which takes about 2 hours and 30 minutes. Then from Tanjung Redeb City, continue by using land vehicles to Long Ayan Village (Segah District) which is about 111 Km.

HCV assessment was conducted in PT.MIP concession area was carried out to: (1) Identify High Conservation Value (HCV) in the PT. MIP of \pm 5,760.53 hectares in Berau Regency, East Kalimantan Province; (2) Provide management and monitoring recommendations to ensure production activities in the PT. MIP to avoid potential negative impact on HCV; and (3) Comply with the requirements of the RSPO certification scheme.

In conducting High Conservation Value (HCV) assessments of PT. MIP uses the Common Guidance for the identification of High Conservation Values (HCV Resource Network 2017) and Common Guidance for the management and monitoring of High Conservation Values (HCV Resource Network 2017) developed by the HCV Resource Network, supported by the Indonesian HCV Toolkit (2008).

1.1. Assessment Area Description

PT. MIP company profile following:

Company Name : PT. Mulia Inti Perkasa (PT. MIP)
Office Address : Head: Komplek Harmoni Plaza Blok E 15-17 Jl.
Suryopranoto No.2, Kelurahan Petojo Utara, Gambir
District, Jakarta Pusat;

Site: Long Ayan Village, Segah District, Berau Regency – East Kalimantan Province

Legal Entity Form : Limited Company

Business Type : Plantation (Oil Palm Fruit)

Location Permit : Cadastral legal field covering 5,760.53 ha located in Long Ayan Village and Long Ayap Village, Segah District, Berau Regency - East Kalimantan Province

Contact Person : Wahyudi Setiawan (*Sustainable Division*)
Email: wahyudi@widyacorp.id

Office Address : Komplek Harmoni Plaza Blok E 15-17, Jl. Suryopranoto No.2, Kel. Petojo Utara Gambir, Jakarta Pusat (10130)

Telp/Fax : (+6221) 6332058 / 6332088

Description of HCV assessment areas carried out in PT. MIP with a location permit (cadastral) covering 5,760.53 hectares are presented below:

Permit boundary PT. MIP : 116°52'39,79"–116°57'22,29" BT, 2°13'23,52"–2°19'16,35" LU

Landscape boundary PT. MIP : 116°49'55,62"–117°00'07,32" BT, 2°10'40,03"–2°22'02,30" LU

Elevation : 0 – 100 masl

Administration : Segah District, Berau Regency, East Kalimantan Province

Forest Region : Forestry and Plantation Region, Berau Regency

Villages : Segah District (Long Ayan Village and Long Ayap Village),

Concession area of PT. MIP location in Indonesia is presented in **Figure 1**; The location in East Kalimantan Province is presented in **Figure 2**; and its location with detailed scale in **Figure 3**.



Figure 1. Location Map of PT. MIP's Concession Area in Indonesia

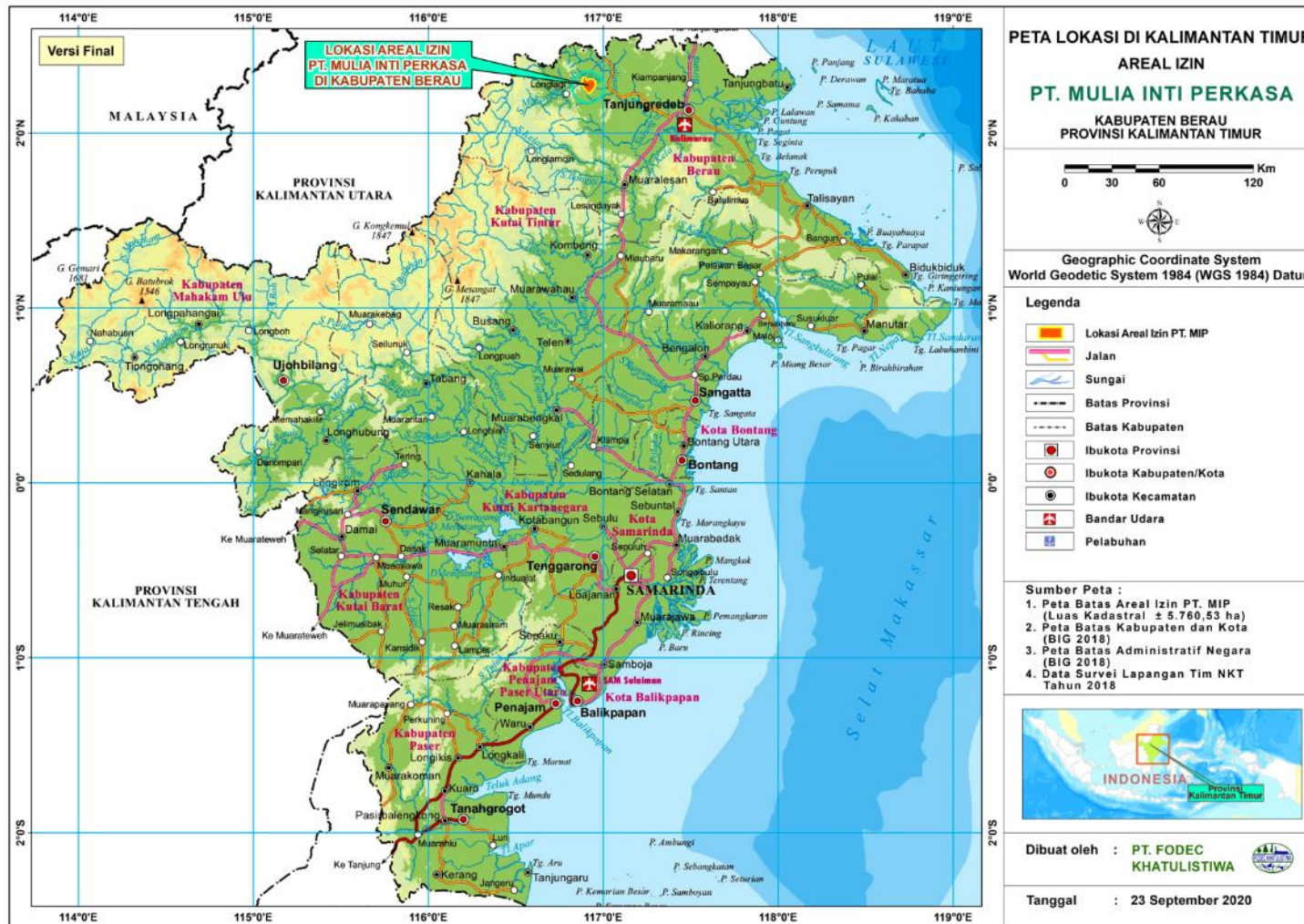


Figure 2. Location Map of PT. MIP's Concession Area in East Kalimantan Province

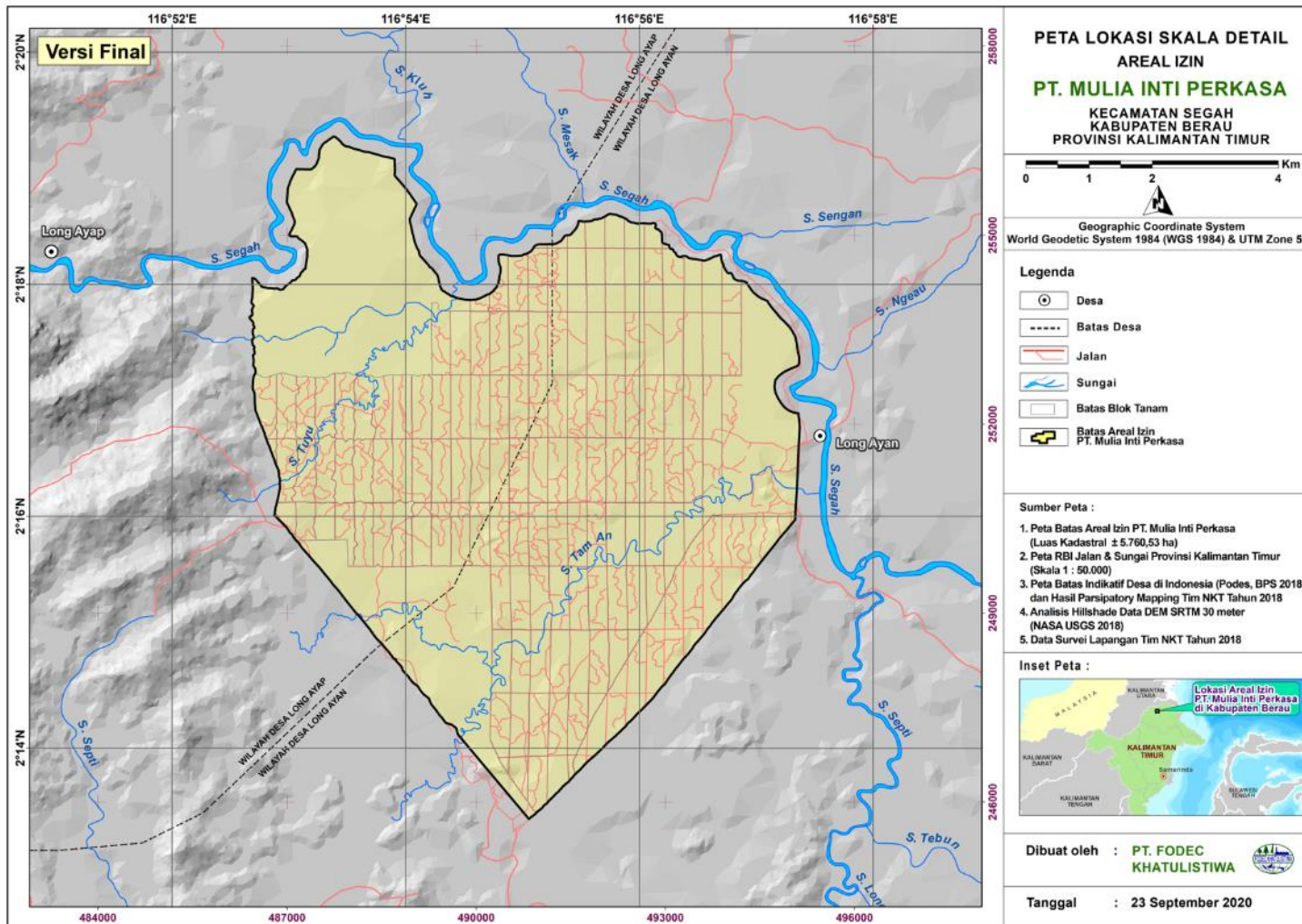


Figure 3. Location Map PT. MIP's Concession Area (Details Scale)

1.2. HCV Assessment Team

HCV assessment in PT. MIP was conducted by CV. FODEC KHATULISTIWA. The HCV Assessment Team consists of 5 people including: team leader, biodiversity expert, environmental services expert, socio-economic and cultural expert, and mapping and GIS expert. In addition, field observations for biodiversity where as flora expert also act as a fauna expert (see **Table 1**).

Table 1. List of HCV Assessment Teams in PT. MIP

No	Name	ALS License	Institution	Responsibility
1	Iksal Yanuarsyah, S.Hut., M.Sc	ALS15038IY	PT. Fodec Khatulistiwa	General HCV, GIS, Remote Sensing, Landscape, Environmental Services, Carbon Stocks, Social Culture
2	ling Nasihin, S.Hut., M.Si	-	PT. Fodec Khatulistiwa	Biodiversity, AMDAL, Ecology, Germplasm, Biomass, Carbon Stocks, Landscapes
3	Koko Erliyanto, S.Hut	-	PT. Fodec Khatulistiwa	GIS, Remote Sensing, Landscape, Carbon Stock, Germplasm
4	Syamsul Wahyuni, S.Tp	-	PT. Fodec Khatulistiwa	Social Culture
5	Yaya Cahyadi		PT. Fodec Khatulistiwa	Assistant of Biodiversity
6	Neny Indriana, S.Hut, M.T	ALS15036NI	PT. Fodec Khatulistiwa	Social Culture

2. Timeline and Methods

2.1. HCV Assessment Period

HCV Assessment Activities in the PT. Mulia Inti Perkasa (PT. MIP) was held from August 2018 - December 2018. The timing of the activity consisted of a pre-assessment phase which started on August 6, 2018 and an assessment phase which was carried out starting on September 4, 2018. Details information on HCV assessment are presented in **Table 2**.

Table 2. Timeline of HCV Assessment Activities in PT. MIP

No.	Activity	Time
1.	Pre-Assessment	
1.1	Information Exchange	6 – 11 August 2018
1.2	Information Collection	12 – 18 August 2018
1.3	Scooping Study	19 – 25 August 2018
1.4	Secondary Data Analysis and Initial Mapping	26 – 31 August 2018
1.5	Preparation and Planning	11 – 20 November 2018
2.	Assessment Phase	1 – 3 September 2018
2.1	Field Data Collection	
2.1.a.	Opening Meeting	4 September 2018
2.1.b.	Data collection :	
	• Floritic Data Collection	4 – 6 September 2018
	• Fauna Data Collection (Mammals, Birds and Herpetofauna)	4 – 6 September 2018
	• Data collection on environmental services	4 – 6 September 2018
	• Collection of Socio Economic and Cultural data, and Participatory Mapping	4 – 6 September 2018
	• Mapping and landscape validation	4 – 6 September 2018
2.1.c.	Data Processing and Analysis, and Mapping	4 – 6 September 2018
2.1.d.	Closing Meeting	7 September 2018

No.	Activity	Time
2.1.e.	Public Consultation	July 24, 2020 (Government Agencies) July 25, 2020 (Long Ayap Village) July 27,2020 (Long Ayan Village)
2.2	Reporting	September 2018 – August 2020
3	Final Report Review	September 2020
4	HCV-RN Quality Panel Review	September 2020

2.2. HCV Assessment Method

Some activities carried out in the pre-assessment phase: (1) information exchange, (2) ranking, (3) information gathering, (4) secondary data analysis and preliminary mapping, and (5) preparation and planning. Activities undertaken in the exchange of information include requests for information and communication with PT. MIP site manager and assistant. Data and information requested from PT. MIP include information about the company, location of the valuation location, current land cover / land use, development plan, reasons for conducting an HCV assessment, legality / licensing aspects, and operational activities of PT. MIP.

Secondary data and information collected during the HCV assessment at PT. MIP are presented in **Table 3**. Secondary data and information collection through literature studies obtained from the PT. MIP, and various web sites on the internet.

Table 3. Secondary Data and Information Collected during HCV Assessment in the Concession Area of PT. MIP

Main data and information sources	HCV					
	1	2	3	4	5	6
PT. MIP Concession Area Map	○	○	○	○	○	○
Forest Map of North Sumatra Province (SK.579/Menhut-II/2014)	○	○				
Spatial Planning Map of North Sumatra Province	○	○				
Indicative Map of Moratorium of New Permits for Forest Utilization, Use of Forest Areas and Changes in Allotment of Forest Areas and Other Use Areas Revision XIII	○					
ANDAL Document on Plant Cultivation and Oil Palm Plantation Processing Unit of PT Dinamika Inti Sentosa	○			○	○	○
IUCN Red List of Threatened Species (www.iucnredlist.org)	○					
Appendix I and II, October 2016 version (CITES, 2017)	○					
Regulation of the Minister of Environment and Forestry Number (Permen LHK) No. P.106/MENLHK/SETJEN/KUM.1/12/2018 on Protected Plants and Animals	○					
PT. MIP Landuse History : Landsat Satellite Image acquisition of 2002, 2006, 2009, 2011 dan 2016 and their respective interpretations	○	○	○	○		
Vegetation – Tantra, <i>et al.</i>	○					
Mammals : Payne, <i>et al.</i>	○					
Birds : MacKinnon <i>et al.</i>	○					
Herpetofauna : Sardi <i>et al.</i>	○					
Orangutan Distribution Map, Orangutan Forum Indonesia (http://forina.or.id)	○	○				
Orangutan Distribution Map,(Compiler : UNEP-WCMC and IUCN 2016) (Data didownload Maret 2017)	○	○				
Sumatran Tiger Distribution Map, (Compiler : Wibisono et al. 2009) (Data didownload Maret 2017)	○	○				
Map of Sumatran Tigers Distribution (IUCN: Maddox et al. 2007 and ZSL 2010)						
Tiger Conservation Landscapes (World Resources Intitute 2016)	○					
Sumatran Elephant Distribution Map, (Compiler : IUCN 2008) (Data didownload March 2017)	○	○				
IBA Map (Important Bird Area), Birdlife Internasional.	○	○				
EBA Map (Endemic Bird Area), Birdlife Internasional.	○	○				

Main data and information sources	HCV					
	1	2	3	4	5	6
Sistem Lahan dan Ekosistem : RePPPProT. (1987)		O	O	O		
Sumatra Island Ecoregion Map (Ministry of Environment, 2013)		O	O			
Intact Forest Lanscapes Map (IFLs) (www.intactforests.org).		O				
Map of Peat Hydrological Unity (KHG), MoEF (2018)		O				
Biophysiographic Map of Sumatra Island (1997)			O			
Rare Ecosystems Map (www.iucnrle.org.). (2013-2015)			O			
Spatial Planning Map of North Sumatra Province. (2017-2037)			O			
Watershed Map (DAS) of North Sumatra Province.	-			O		
River network Map : DEM SRTM 90 m USGS NASA (2014)				O		
Slope Map : DEM SRTM 90 m USGS NASA. (2014)						
Topography: Topographic Map of Indonesia, Geospatial Information Agency. (1998)						
Soil Type Map in South Sumatra Province compiled by the Research and Development Center of Soil and Agro-climate (Puslitanaklim) Ministry of Agriculture. (2010)				O		
Rainfall: Flood Control and Coastal Observation Project, Director General of Natural Resources, North Sumatra. (2005-2014)				O		
Temperature: Meteorological Station, Medan City. (2014-2016)				O		
Mandaliling Natal Regency in Figures 2016, BPS Madina					O	O
Muara Batang Gadis District in Figures 2016, BPS Madina					O	O
Natal District in Figures 2016, BPS Madina					O	O
Map of Ethnic Distribution of Sumatra Island (http://www.ethnologue.com/).					O	O

Note: O = being used in each HCV

Inspection study in the work area of PT. MIP includes main activities, namely mapping the scope of the study, gathering information, making preliminary land cover maps and plot analysis, field visits, identifying community samples, and identifying stakeholders. The inspection study was started by conducting a kick-off meeting and field review with PT. MIP conducted a preliminary working visit to the PT. MIP in Segah District, Berau Regency, East Kalimantan Province.

The analysis was carried out on secondary data and information that had been collected and plotted into a map which would be used as an activity planning map. Secondary data analysis is directed towards data on biodiversity (species), land cover, ecosystems, environmental services, and social and cultural data.

Species Data

Species data is required for HCV 1 and 2 assessments. Species data that could potentially be found in PT. MIP and its surroundings were extracted from various sources (Vegetation - Tantra, et al. (1990); Mammals - Payne, et al. (2000); Birds - MacKinnon et al. (1992, 2010); and Herpetofauna - Sardi et al. 2013) and made in tabular form. The species data is then checked for its conservation status based on Permen LHK Number P. 106/2018, IUCN Red List of Threatened Species (www.iucnredlist.org) and Appendices I and II (CITES, 2018). Species data that have been compiled in table form are then verified with the communities around PT. MIP and existence confirmation of field observations.

Land Cover

Land cover analysis is required for HCV 1 - 4. The main data used for land cover classification in PT. MIP is land cover history and land cover in 2018. The satellite imagery data used is the Landsat 8 Acquisition Image of September 5 2018, then analyzed and verified with satellite imagery in previous years, then land cover classification is carried out by doing digitize on the screen at a scale of 1: 50,000. Land cover classification in the early stages of image interpretation activities uses the classification from Gunarso et al. (2013); National Standardization Agency (2010).

Ecosystem

In conducting the HCV 3 assessment, mapping the ecosystem in a biophysiographic unit where the PT. MIP and its surroundings are using a proxy for

RePPPProT classification in Kalimantan. The ecosystem map in one bio-physiographic unit is then overlaid with the 2018 land cover map and then an analysis is carried out to determine whether the ecosystem is rare or threatened..

Environmental Services

In HCV 4 assessment, river network mapping was carried out by overlaying the maps of PT. MIP and its landscape boundaries with NASA's USGS 30 m SRTM Watershed Map (DAS) and Digital Elevation Model (DEM) (2014). The river network map that has been compiled is then used as verification material for the community around PT. MIP and field observations to confirm his whereabouts and names. Topography and slope determination in PT. MIP and its surroundings were carried out by overlaying the maps of PT. MIP and its landscape boundaries with the NASA 30 m USGS SRTM Digital Elevation Model (DEM) (2014). Determination of the type of land in PT. MIP and its surroundings are carried out by overlaying the map of PT. MIP with Soil Types in RePPPProT Data (1987) and the soil equivalent is determined based on the Bogor PPT (1982) / Dudal SuprptoHardjo (1957). Furthermore, the slope and soil class data are added with rainfall and soil data which are used as material for calculating and making Erosion Hazard Map (TBE).

Map of river networks and TBE in PT. MIP and its surroundings are then overlaid with a land cover map, which is then used as a reference for checking in the field, as well as to see if the area is found that can function as a natural barrier / burn or not.

Sociocultural Data

In HCV 5 and 6 assessments, determining the distribution of villages was done by overlaying the maps of PT. MIP with Topographic Maps of Indonesia (Geospatial Information Agency); meanwhile, the distribution of tribes is done by overlaying the map of the permit area of PT. MIP with data on the distribution of ethnics (tribes) on the island of Kalimantan. Other secondary data used in the HCV 5 and 6 assessment comes from Berau Regency in Figures (BPS Berau Regency, 2018), Segah District in Figures (BPS Berau Regency, 2018), and ANDAL Documents on Plant Cultivation Business and Oil Palm Plantation Product Management Unit. PT. MIP (2012).

Other activities carried out in preparation for secondary data analysis and initial mapping are (1) Identifying potential and indication of the presence of HCV attributes or elements; (2) Understanding the landscape context; and (3) Identifying conservation issues and potential threats to HCVs.

Preparation and planning activities carried out include: determining the number of teams going to the field, travel preparation, logistics, accommodation, transportation, and field assistants. In addition, at this stage, the determination of the location for field data collection and work methods as well as the sampling intensity will be used in data collection in the field. The final stage in the preparation of the study is determination and development of primary data collection methods in the field, such as data collection methods for flora and fauna, social research methods, and methods of verification of initial mapping results.

Opening Meeting

In opening meeting, the activities carried out included: presentations on the HCV assessment process and plans for field data collection to be carried out, as well as conducting verification and discussing plans for data collection activities and other activities that will be carried out. Based on the input from the opening meeting, then it was used as material to improve the planning that had been prepared by the previous HCV Assessment Team.

Flora and Fauna

Observation of flora / plants and fauna / wildlife (mammals, birds and herpetofauna) in the permit area of PT. MIP was carried out on 7 observation routes as far as 71.58 km with 31 observation sample points. Observation of fish species was carried out at each sample point, observing the river (and its boundaries) directly observing its presence (rapid observation technique), and combined with conducting interviews with the

community in the villages around PT. MIP (due to the limited time for carrying out the assessment process if it is carried out by direct method by catching to identify fish). The method of collecting flora and fauna data, as well as the parameters observed in the permit area of PT. MIP is presented in **Table 4**.

Table 4. Methods for Collecting Data of Flora-Fauna and Observed Parameters in PT. MIP

Aspect	Methods of Data Collection	Observed Parameters
Flora / Plants	recording all species found along the observation path with each observation point is 200-500 meters long.	<ul style="list-style-type: none"> • Existence. • Habitat quality.
Fauna / Wildlife	recording all species found along the observation path with each observation point is 200-500 meters long.	<ul style="list-style-type: none"> • Existing. • Habitat quality.
<ul style="list-style-type: none"> • Mammals 	<ul style="list-style-type: none"> • Rapid assessment techniques, including (1) Interviews with the community local hunters; (2) Checklist of species, (3) Direct/indirect (traces, sounds, scratches, and feces), and (4) Observation of habitat. • Observation time 07.30 - 17.00 and at night. 	<ul style="list-style-type: none"> • Existence. • Habitat quality.
<ul style="list-style-type: none"> • Birds 	<ul style="list-style-type: none"> • Rapid assessment techniques, including (1) Interviews with the community local hunters; (2) Checklist of species, (3) Direct/indirect (traces, sounds, scratches, and feces), and (4) Observation of habitat. • Observation time 07.30 - 17.00 and at night. 	<ul style="list-style-type: none"> • The presence of bird species in the sample unit. • Habitat quality.
<ul style="list-style-type: none"> • Herpetofauna 	<ul style="list-style-type: none"> • Herpetofauna species were examined using Rapid assessment techniques by combining 4 methods including (1) Interviews with the community particularly local hunters in 3 villages. We also interviewed company staff to obtain additional information; (2) Checklist of mammal species, (3) Direct and visual encounters (traces, sounds, scratches, and feces), and (4) Observation of habitat quality in collaboration with the flora team. • Observation time is between 07.30 - 17.00 and at night during return trip from site to the camp. 	<ul style="list-style-type: none"> • The presence of herpetofauna species in the sample unit. • Habitat quality.

Flora and fauna status were obtained from the IUCN Website (2018) and CITES (2018) as well as from the Indonesian government policy documents.

Environmental Services

Collecting data on environmental services in PT. MIP was also carried out on 7 observation routes as far as 71.58 km with 31 observation sample points. Data and information taken for the purposes of verification of physical aspects are the existence and condition of the river network, road network, boundaries, types and types of soil, topography of the area, and an overview of the area being assessed as a whole. With regard to environmental services, the data and information that were verified were the condition of land cover in swamp areas and water catchment areas; water quality conditions; discharge; utilization of water catchment / absorption areas; floods and puddles; landslide prone areas and areas that have a very heavy-very heavy potential erosion hazard level; check the area with a slope > 40%; and checking community habits in land preparation, whether by it's burning or not.

Social and Cultural for HCV 5 and 6

Sources of data in the HCV 5 and HCV 6 assessments were obtained from local community subjects, namely; village officials (Village Head, Village Secretary, Village Consultative Body / BDP), traditional leaders, community leaders, and representatives of local residents, as well as information from secondary data and other documents. In-depth information mining for the identification of HCV 5 and HCV 6 areas was also carried

out through structured and in-depth interviews and Focus Group Discussions (FGD) in villages around PT. MIP, as well as conducting field observations and verification together with community representatives to check the presence of HCV 6 and map it. FGDs and interviews were conducted in 2 villages around the PT. MIP is Segah District (Long Ayap Village and Long Ayan Village).

Data collection techniques on the identification of HCV 5 and HCV 6 areas were carried out in several ways, namely interviews, discussions with groups / Focus Group Discussions (FGD), as well as field observation and verification. If there is any doubt, the precautionary principle is used by assuming that the community does not have alternative sources of meeting needs. In certain cases, the assessment team consults an ecologist to determine these interactions.

The method of identifying HCV 6 areas is carried out as in the HCV 5 identification method. Sources of data in the HCV 6 assessment were obtained from local community subjects, namely: local community leaders and residents, as well as information from secondary data and other documents. In-depth information mining for the identification of HCV 6 areas was also carried out through structured and in-depth interviews as well as Focus Group Discussions (FGD) in the villages around the PT. MIP.

Indicators used to show the distribution of customary areas or distribution of forest resources related to collective and individual behavior of local communities to meet cultural needs, including zoning based on certain cultural rules, distribution of archaeological sites, distribution of ritual activities for local communities, distribution of resources. living nature to fulfill cultural needs.

Mapping and Landscape Validation

Determination of land cover sample points cannot be carried out with sampling intensity due to the limited time of the assessment, so the determination of land cover sample points uses the Stratified Random Sampling approach. The sample points of land cover are determined randomly in each classification stratum and are attempted to be evenly distributed throughout the assessment area. Mapping and landscape validation was carried out to assess the accuracy of the boundaries of PT. MIP, the location of the village / settlement, topographical conditions, land cover, river networks, water catchment areas, and ecosystems. Field checks were carried out in several area boundaries, defined land cover types, and riverbank areas. There are 31 ground check points scattered within the boundary of the assessment landscape. Map location for collecting groundcheck data on land cover and a table of information about its location within PT. MIP and its Surrounding Landscape are presented in **Figure 4**.

Data Processing and Analysis, and Mapping

In the analysis stage, a comprehensive and in-depth study and study is carried out on secondary information and primary data obtained from the field, which includes physical, spatial, flora, fauna, environmental services, as well as social and cultural aspects. The results of the analysis are then used to identify areas that have HCVs, which will then be mapped using software (GIS)..

Closing Meeting

Closing meeting activities carried out included: presentation of the preliminary results of the HCV assessment that had been carried out in the work area of PT. MIP, includes: HCV results / findings, threats, and recommendations for management and monitoring. The purpose of the closing meeting is to verify the data and information that has been obtained, as well as to obtain input or suggestions on the results of the HCV assessment that has been carried out in the work area of PT. MIP for the improvement or refinement of the next report.

Public Consultation

Matters conveyed to stakeholders during the public consultation include: the definition of HCV, the purpose and benefits of the HCV assessment, the HCV assessment process, the HCV assessment method, the results of field observations (biodiversity, environmental services and socio-culture), the findings / results of the assessment.

Provisional HCVs and their maps (draft version), threats to HCVs, and recommendations for management and monitoring of HCV areas.

Public Consultation also could not be attended directly by PT Fodec Khatulistiwa's Team due to several things, among others, 1) during the moratorium period on land clearing, the community continued to press for immediate clearing of plasma land for the two villages (Long Ayap Village and Long Ayan Village); 2) due to strong pressure from the community to immediately clear land, especially in early 2020, PT MIP could not find a good time to find a schedule that suited the assessors' spare time; and 3) at the time of the Public Consultation, East Kalimantan Province is the Black Zone for COVID-19 status, so that the strict health protocols set by the local government and companies cannot invite assessors in Public Consultation activities. PT Fodec Khatulistiwa had also prepared materials to be presented in public consultations, and PT MIP Team received intensive direction and coordination with assessors in order to deliver the best possible public consultation. Taking into account the current high pandemic conditions in East Kalimantan, the public consultation itself was carried out in three stages, namely:

1. The first Public Consultation was carried out by PT MIP on Friday 24 July 2020 to government agencies such as: Muspika Segah District (Sekcam, Polsek, Koramil), UP staff, Berau Regency Land Service, Berau District Plantation Service, Berau Regency KPHP, Agriculture and Livestock Service Office of Berau Regency, Environmental Service of Berau Regency and NGOs (SPSI) by visiting these agencies one by one. The total number of speakers in this activity was 16 people.
2. The second Public Consultation on Saturday, 25 July 2020 was conducted by PT MIP in Long Ayap Village by visiting several relevant stakeholders in Long Ayap Village.
3. The second public consultation on Monday, 27 July 2020 was conducted by PT MIP in Long Ayan Village by visiting several relevant stakeholders in Long Ayan Village.

In addition, public consultation was also carried out through FGD (Focus Group Discussion) in each village with the village head, village officials and community leaders.

3. Findings/Results

3.1. National context and/or Regional context

3.1.1. National Context

Key biodiversity areas are areas identified nationally to have a global significance. Several international organizations have identified key areas for biodiversity with their respective criteria. Some key biodiversity areas that are internationally recognized around the landscape boundaries of PT. MIP are presented in **Table 5**.

Table 5. The existence of internationally Recognized Key Area for Biodiversity around PT. MIP area

Key Biodiversity Area	Location and Distance
Protection Forest (HL)	The closest Protected Forest (HL) is the Sungai Segah HL which lies within the landscape boundary of PT. MIP, which is to the west of PT. MIP with a distance of about 64 meters.
Conservation Area (KK)	The closest Conservation Area (KK) is the Kayan Mentarang National Park (TN) which is located west of the landscape boundary of PT. MIP with a distance of about 113 km.
Ramsar Site	In Kalimantan there are 2 Ramsar sites, namely the Danau Sentarum National Park (TN) and the Tanjung Puting National Park (TN). Judging from the distance, the two Ramsar Sites are quite far, which is about 516 km (distance to Danau Sentarum National Park) and 768 km (distance to Tanjung Puting National Park).

Key Biodiversity Area	Location and Distance
IBA (Important Bird Area)	The closest IBA area is the Sangkulirang IBA area which is located to the southeast of the landscape boundary of PT. MIP distance of about 64 km.
EBA (Endemic Bird Area)	The closest EBA area is the EBA Bornean mountains which is located north of the landscape boundary of PT. MIP with a distance of about 10 km.

In this connection, the permit area for PT. MIP provides a supporting function for areas of biodiversity in the landscape, especially Protected Forests (HL), namely the HL of the Segah river. Whereas for Conservation Areas, KBA Areas, IBA Areas and EBA Areas, because of their location which is quite far or does not intersect with landscape boundaries, the existence of PT. MIP does not provide a support function. Therefore, the development of oil palm plantations in the permit area of PT. MIP will later have an impact on biodiversity areas, especially the Segah River.

3.1.2. Regional Context

Generally, the Southeast Asian landscape can be divided into 2 types, namely landscape and water landscape. Judging from the latitude and physical conditions, Southeast Asia has a tropical monsoon climate with always wet and warm characteristics. The climate in the Southeast Asian region consists of 2 seasons, namely the rainy season (October - April) and the dry (April - October).

Indonesian flora is part of the Indo-Malayan plant geography. The Indonesian flora is part of the geography of Indo-Malayan plants. Indo-Malayan flora includes plants that live in India, Vietnam, Thailand, Malaysia, Indonesia and the Philippines. Flora that grows in Malaysia, Indonesia, and the Philippines are often referred to as the Malesian flora group. The forests in the Malesian flora contain approximately 248,000 species of tall plants, dominated by trees from the Dipterocarpaceae family, which are trees that produce winged seeds. Dipterocarpaceae are the tallest plants and form a forest canopy. Plants belonging to the Dipterocarpaceae family include Keruing (*Dipterocarpus* sp), Meranti (*Shorea* sp), Rake wood (*Gonystylus bancanus*), and lime wood (*Drybalanops aromatica*). Forests in Indonesia are a tropical rain forest or wet forest biome, characterized by a dense canopy and lots of lianas (climbing plants), such as rattan. Typical Indonesian plants such as durian (*Durio zibetinus*), Mango (*Mangifera indica*), and Breadfruit (*Artocarpus* sp) in Indonesia are scattered among others in Kalimantan. In Kalimantan, there are several types of endemic plants, including: *Rafflesia boorneensis* and *R. cilliata*, Meranti (*Shorea* sp), and rattan (*Calamus caesius*).

PT. MIP, which is located on the island of Borneo, is part of the State of Indonesia. Judging from its zoogeography, the fauna in the Kalimantan region is of the oriental type (Western Indonesia), where the typical wildlife includes: Asian Elephant (*Elephas maximus*), Orangutan (*Pongo pygmaeus*), and Proboscis monkey (*Nasalis larvatus*). In connection with the foregoing, Kalimantan Island in a regional context is one of the most important locations for the preservation of flora and fauna endemic to the island of Borneo, Malesian flora, and fauna of the oriental type (Asian elephants, orangutans and proboscis monkey). The preservation of flora and fauna on the island of Kalimantan will affect the preservation of flora and fauna in Southeast Asia.

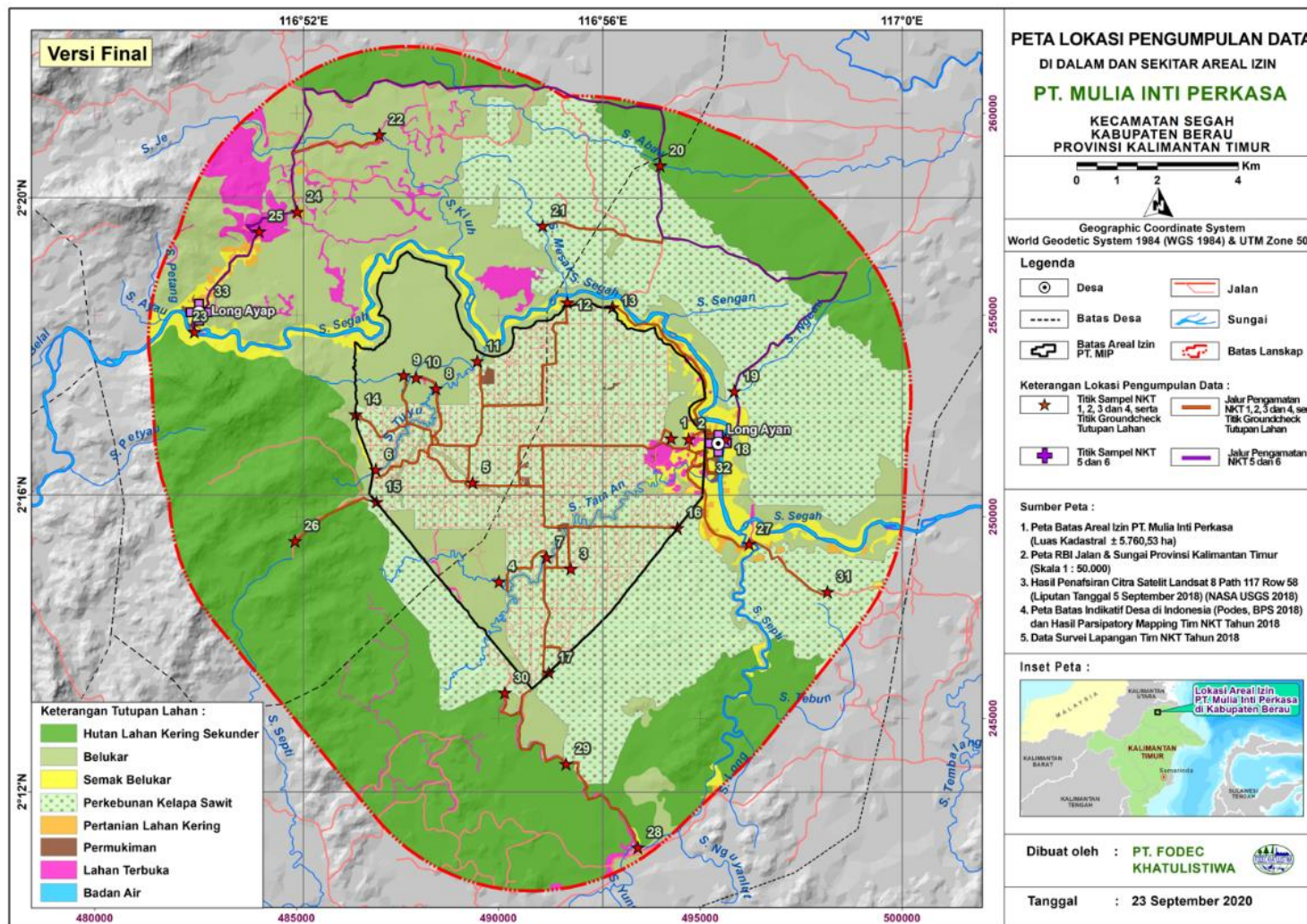


Figure 4. Data Collection Location Map of PT. MIP (Concession Area and Wider Lanscape)

3.2. Landscape Context

3.2.1. HCV Assessment Landscape Boundaries

Landscape boundaries in the HCV assessment in PT. MIP is determined based on the surrounding landscape, where the buffer created is 5 km from the boundary of PT. MIP. This landscape boundary has an area of 29,492.94 hectares. PT. MIP is directly adjacent to the plantation area of another company, namely PT. Berau Karetindo Lestari (PT. BKL) and PT. Natura Pasific Nusantara (PT. NPN). The land cover around the PT. Most of the MIP is already in the form of clearing areas which are the permit areas for the other oil palm plantation companies. In addition, there is also land cover for secondary forest areas which are the management areas of timber companies (forestry) with IUPHHK-HA areas, namely in the management of PT. INHUTANI I and PT. Sumalindo Lestari Jaya IV (SLJ IV). The existence of a conservation area in the vicinity is not found, but the existence of protected forest is found in the west of the PT. MIP. This protected forest is called Sungai Segah Protection Forest with a distance of 64 meters from the permit area of PT. MIP.

3.2.2. Land Use and History

Recent land use in PT. MIP is obtained from the interpretation of Middle Resolution Satellite Imagery (Middle Resolution), namely the results of the Landsat 8 Path 117 Row 58 Satellite Image coverage dated September 5, 2018. So that based on the interpretation of the obtained image data, there are 8 (eight) forms of land use around PT. MIP, namely secondary dryland forest, shrubs, shrubs, oil palm plantations, dry land agriculture, settlements, open land and water bodies. Meanwhile, in the permit area of PT. MIP (5,760.53 ha) consists of 5 (five) forms of land use, namely thickets of 1,566.28 ha, scrub of 121.60 ha, open land of 88.35 ha, settlements of 28.37 ha and oil palm plantations area of 3,955.93 ha.

Based on the history of land in Berau Regency (East Kalimantan Province), originally the permit area of PT. MIP and its surroundings are part of the territory of the Berau Sultanate (around the 14th century). Since long time ago, the people of these two villages have not been separated from the existence of forests. The houses of the inhabitants were still in the form of stilts made of wood and planks taken from the forest around the village at that time. Apart from that, the use of land for farming, such as shifting cultivation, is still frequently practiced today. Currently the land of the two villages is in areas designated for forestry cultivation (production forest) and non-forestry cultivation (otherwise known as areas for another uses / APL). The timber companies use the land belonging to the production forest area in the two villages (by pocketing a Business License for Utilization of Timber Forest Products - Natural Forest or abbreviated as IUPHHK-HA).

3.2.3. Demographic and Socio-Economic context

The work area of PT. MIP is located in two villages, namely Long Ayan Village and Long Ayap Village, Segah District, Berau Regency. Each village interacts intensively with the company because its territory is included in the area and the location of the settlement is close to PT. MIP.

The number of residents in the villages around PT. MIP based on the Segah in Figures of 2018 totaled 628 people, with a total female population of 277 and a male population of 351, with details; Long Ayan Village has 489 people (consisting of 273 male residents and 216 female residents) and Long Ayap Village totaling 139 people (consisting of 78 male residents and 61 female residents). The area of the villages around PT. MIP covering an area of 95,742.74 km² consisting of Long Ayan Village covering an area of 60,090.66 km² and Long Ayap Village covering an area of 35,652.08 km², the population density in Long Ayan Village is 0.008 people / km² and in Long Ayap Village is 0.004 people / km².

3.2.4. Protected Forest Area and Main Biodiversity Area in the Landscape

Within the PT. MIP and its surroundings (5 km landscape boundary) found the existence of Protected Forest (HL). Meanwhile, Conservation Areas (KK) and biodiversity areas such as Key Biodiversity Areas (KBA), Important Bird Areas (IBA), and Endemic Bird Areas (EBA) were not found. The locations of these KK, KBA, IBA and EBA are quite far from the landscape

boundary of the PT. MIP, namely: 1) The closest Protected Forest (HL) is the Sungai Segah HL which is located within the landscape boundary of PT. MIP, which is to the west of PT. MIP with a distance of about 64 meters; 2) Conservation Area (KK) around PT. The closest MIP is the Conservation Area National Park (TN). The closest is the Kayan Mentarang National Park (TN) which is located west of the landscape boundary of the PT. MIP with a distance of about 113 km; 3) The closest KBA area is the KBA Sangkulirang area which is located to the southeast of the landscape boundary of the PT. MIP with a distance of about 64 km; 4) The closest IBA area is the Sangkulirang IBA area which is located to the southeast of the landscape boundary of the PT. MIP with a distance of about 64 km; and 5) The closest EBA area is the EBA Bornean mountains which is located north of the landscape boundary of the PT. MIP with a distance of about 10 km. In this regard, the permit area of PT. MIP provides a supporting function for areas of biodiversity in the landscape, especially Protected Forests (HL), namely the HL of the Segah river. Whereas for Conservation Areas, KBA Areas, IBA Areas and EBA Areas, because of their location which is quite far or does not intersect with landscape boundaries, the existence of PT. MIP does not provide a support function. Therefore, the development of oil palm plantations in the permit area of PT. MIP will later have an impact on biodiversity areas, especially the Segah forest River.

3.2.5. Intact Forest Landscape

The location of the PT. MIP and its surroundings (in a 5 km landscape) are not adjacent to intact forest landscapes (Intact Forest Landscape / IFL 2016) or reduced intact forest landscapes (IFL 2000 - 2013). The intact forest landscape (IFL 2016) is located to the west of the landscape boundary of the PT. The MIP and the nearest one are located about 5 Km. Meanwhile, the reduced intact forest landscape (IFL 2000 - 2013) is located in the south with a distance of 6 km from the landscape boundary of the PT. MIP. Intact Forest Landscape Map around PT. MIP served on **Figure 6**.

3.2.6. Major Landform and Watershed

Forms of the main landform (landform) of the permit area of PT. MIP and its surroundings are sedimentary plains located between lowlands and hills, where the shape of the land surface is wavy to undulating. Hydrological potential is important to support the development of oil palm plantations, the interests of water management and irrigation, drinking water (sanitation), transportation, and others. Watershed patterns (DAS) are strongly influenced by morphological conditions, topography, the shape of the area, and the features of the watershed itself. PT. MIP is included in the Berau Watershed (100%).

3.2.7. Physical Features

According to the Climatology Station of PT. MIP 2010 - 2018, the climate in the PT. MIP is a Type A climate (very wet), with 12 months of wet months, and does not have humid months and dry months. Annual rainfall in the area for 9 years (2010-2018) ranges from 2,288 - 4,365 mm, with an average annual rainfall of around 3,128 mm and an average number of rainy of 153 days. The maximum annual temperature in the PT. The MIP for 9 years ranges from 32.5 - 34.6°C, the minimum annual temperature ranges from 22.4 - 24.9°C, and the average annual temperature ranges from 27.3 - 27.8°C; while the average maximum annual temperature is around 33.3°C, the minimum is around 23.9°C and the average is around 27.5°C.

Based on the Land System Map from RePPPProT (1987) in the area within and around the PT. MIP consists of 4 (four) types of land systems, namely LWW (Lawanguwang), MPT (Maput), PDH (Pendreh) and TWH (Teweh). Meanwhile, the land system inside the PT. MIP namely LWW and TWH.

Furthermore, based on an overlay with a map of the distribution area of important animals or species of global concern in particular, such as the Orangutan (*Pongo pygmaeus*) with the permit area of PT. MIP and its landscape show that the distribution areas of these species are quite far. According to the IUCN spatial data, the orangutan distribution area is located about 52 km to the southeast of the landscape boundary of PT. MIP. In the permit area of PT. MIP and its surroundings did not find any species of global concern.

Based on the Geological Map of Indonesia, the Longbia / Napaku Sheet (Sheet Number 1818) published in 1995, the geological formations in PT. MIP consists of the KTme Formation (Mentarang), the Tes Formation (Sembakung), the Tmg Formation (Sumbat / Retas) and the Tomj Formation (Gunung Api Jelai). Based on the Land System Map from RePPPProT Data (1987), only one equivalent of soil type was found in and around PT. MIP is the soil equivalent of Red-Yellow Podsollic (Tropudults; Dystropepts and Tropudults; Tropaquepts). The elevation in the PT. MIP ranges from 0 to 100 meters above sea level (masl). Meanwhile, the elevation within the landscape boundary of PT. MIP ranges from 0 masl to 500 masl. Based on the results of the elevation measurement, in general the permit area of PT. MIP and its surroundings are lowlands (lowland) with an altitude criterion of less than 500 masl.

3.2.8. Biodiversity Characteristics, Emerging Population of Species and Known Global Concern and Migration Corridors in Landscapes

From the results of the overlapping (overlay) map of the permit area of PT. MIP (and its landscape boundaries) with a biophysiological map of the island of Kalimantan (2008 Indonesian HCV Toolkit), PT. MIP and its surroundings are included in the Biophysiology of the Northern Lowlands and Nyapa-Mangkalihat Mountains and Plains Sub Region. In the past (before land conversion occurred, the ecosystems found in and around the PT. MIP permit area consisted of 3 (three) types, namely (1) lowland forest association ecosystem on alluvium soil and lowland forest on sandstone (with the system land LWW); (2) lowland forest ecosystems on sandstone (with MPT and TWH land systems) and (3) sub-mountainous or mountainous and high mountain forest ecosystems on other substrates (with PDH land system). PT. MIP permit (and its landscape boundary) with the Map of the Kalimantan Island Ecoregion (Ministry of Environment and Forestry, 2018), the permit area of PT. MIP and its surroundings is included in the Meratus Complex Structural Hill Ecoregion.

The location of PT. MIP on the island of Kalimantan cannot be separated from the richness of the ecosystem. As an illustration, the species richness of land mammals in Kalimantan is 225 species and 44 of them are endemic (Payne et al., 2000); There are 639 species of birds, of which 358 species are resident and 37 of them are endemic (MacKinnon et al., 2000), 166 species of snakes (Stuebing, 1991), 140-150 species of amphibians (Inger and Stuebing, 1997), and Freshwater fish as many as 394 species and 149 species of which are endemic (MacKinnon et al., 1996). Several unique animal species inhabit this island, namely the Bornean Orangutan (*Pongo pygmaeus*), Proboscis Monkey (*Nasalis larvatus*), Sun Bear (*Helarctos malayanus*), Clouded Tiger (*Neofelis diardi*), and Kalimantan Palm (*Lophura bulweri*). Judging from the distribution of the animals, the location of the study includes the distribution areas of animal species that are facing a high level of extinction threat, which is protected according to Permen LHK No. P.106 in 2018 are Kijang (*Muntiacus atherodes*), Striped Squirrel (*Lariscus hosei*), and Tiong Emas (*Gracula religiosa*); while those included in the threatened category (Endangered / EN) according to the IUCN are turtles (*Heosemys spinosa*).

3.2.9. Ecosystem Services

Basic Ecosystem Services in critical situations including management of water flow events, vegetated buffer zones, maintenance of water quality characteristics, prevention and protection from fire, protection of soil, control of erosion on vulnerable soils and slopes, vulnerable aquifers and fisheries, provision of clean water, protection against wind, and regulation of humidity, rainfall. Within PT. MIP has the existence of an important water catchment protected area and protection against soil erosion in the form of rivers and their borders (namely the Tuyu River and Tam An River) which can become a catchment area and a groundwater recharge zone. Apart from the two rivers, in the landscape there are also rivers and their borders include: Segah River, Septi River, Petyau River, Ayau River, Petang River, Je River, Kluh River, Mesak River, Abau River, Sengan River, Ngeau River, Tebun River and Long River. Apart from that related to ecosystem services such as hydrological functions in the permit area of PT. MIP and within its landscape boundaries are not found in the Peat Hydrological Unit (KHG), which is a peat ecosystem located between two rivers or between rivers and the sea, one of which can function as an ecosystem to control forest and land fires.

The closest KHG area is in the north, which is about 119 km from the landscape boundary of the PT. MIP.

3.3. HCV Findings and Justification

3.3.1. HCV 1. Species Diversity

In the Common Guide for HCV Identification (HCVRN, 2013), it is explained that HCV 1 is the presence of rare, threatened or endangered (RTE) species; presence of priority areas for biodiversity that are recognized both nationally and internationally; natural habitat in good condition; protected areas for the concentration of biodiversity; and spatial and temporal concentrations of species.

The richness of plants found in the garden area of PT. MIP is as many as 154 species, consisting of 8 groups of habitus and 61 families. In the efficacy group there were 8 types (5.19%); herb group 28 species (18.18%); group of 13 types of lianas (8.44%); 9 types of nails (5.84%); palm group 6 types (36.90%); pandan group 1 type (0.65%); 11 species of shrubs (7.14%) and 78 species of trees (50.65%). Based on the family, the families that dominate the vegetation types are Euphorbiaceae (14 species) and Fabaceae (11 species).

Based on the conservation status of the type of vegetation found in PT. MIP, there are no protected species based on Permen LHK P. 106/2018. There are 3 types listed in Appendix II of CITES, namely bongkol orchids (*Pholidota chinensis* Lindl.); Pigeon orchid (*Dendrobium crumenatum* Sw.); and the pandan orchid (*Cymbidium finlaysonianum* Lindley). Based on the IUCN red list, it is known that 11 species are included in it, namely 9 species with the Least Concern category (less attention); 2 types of vulnerable (vulnerable), namely Bengkirai (*Shorea laevis* Ridley); and Ulin (*Eusideroxylon zwageri* T. & B.); and 3 species in the Critically Endangered (critical) category, namely large leaf keruing (*Dipterocarpus cornutus* Dyer); Yellow meranti (*Shorea gibbossa*); and white Meranti (*Shorea lamellata* Foxw.).

Diversity of wildlife species in the plantation area of PT. MIP is classified into 3 major animal groups, namely the mammal group, bird group, and herpetofauna group. Based on the results of field observations found 75 species of wildlife, consisting of 10 types of mammals (13.33%); 58 species of birds (77.33%); and 7 types of herpetofauna (9.33%). The conservation status of wildlife based on the Ministry of Environment and Forestry Regulation P.106/2018 shows that 17 species are protected (6 mammals and 11 birds). Protected mammal species are the Kalawat gibbon (*Hylobates muelleri*); Pangolin Peusing (*Manis javanica*); Sun Bear (*Helarctos malayanus*); Small mouse deer (*Tragulus kanchil*); Pelanduk Napu (*Tragulus napu*); and Sambar Deer (*Deer unicolor*). The protected bird species are the Rat Eagle (*Elanus caeruleus*); Bondol Eagle (*Haliastur indus*); Elangular Bido (*Spilornis cheela*); Black Eagle (*Ictinaetus malayensis*); Black hornbill (*Anthracoceros malayanus*); Hornbill (*Buceros rhinoceros*); Takur Gedang (*Megalaima chrysopogon*); Takur the red-hat (*Megalaima henricii*); Kipasan Striped (*Rhipidura javanica*); Burungmadu Sepah-raja (*Aethopyga siparaja*); and Tiong Emas (*Gracula religiosa*).

There were 9 species in the bird group, namely the mouse eagle (*Elanus caeruleus*). Based on the CITES category, there were 16 species listed in the appendix (2 types of appendix I, and 14 types of appendix II). In the group of mammals, 2 species were registered as appendix I, namely the Kalawat gibbon (*Hylobates muelleri*); and Sun Bear (*Helarctos malayanus*); and 3 species listed in appendix II, namely the long-tailed monkey (*Macaca fascicularis*); The Beruk Monkey (*Macaca nemestrina*); and Pangolin Peusing (*Manis javanica*). 7 species are listed in appendix II to bird groups, namely the Rat Eagle (*Elanus caeruleus*); Bondol Eagle (*Haliastur indus*); Elangular Bido (*Spilornis cheela*); Black Eagle (*Ictinaetus malayensis*); Black hornbill (*Anthracoceros malayanus*); Hornbill (*Buceros rhinoceros*); and Tiong Emas (*Gracula religiosa*). As well as 4 types of herpetofauna listed in appendix II, namely rice snake (*Malayopython reticulatus*); King Cobra (*Ophiophagus hannah*); Cobra Snake (*Naja sputratix*); and Lizard (*Varanus salvator*).

It is recorded that 52 species of wildlife are included in the IUCN red list. There are 10 types of mammals in the group, namely 5 categories of Least Concern (Less Attention); 3 types of vulnerable (susceptible), namely Sun Bear (*Helarctos malayanus*); The Beruk Monkey

(*Macaca nemestrina*); and Sambar (*Deer unicolor*); 1 type of Endangered (critical), namely Owa Kalawat (*Hylobates muelleri*); and 1 type of Critically Endangered (critical) category, namely the Peusing Pangolin (*Manis javanica*). In this group of birds, 52 species are known, including Least Concern (Less Attention); and 6 species including Near Threatened (almost threatened), namely the black hornbill (*Anthracoceros malayanus*); Hornbill (*Buceros rhinoceros*); Takur the red-hat (*Megalaima henricii*); Sempurhujan Darat (*Eurylaimus ochromalus*); Pelanduk white chest (*Trichastoma rostratum*); and soot-hat Asi (*Malacopteron affine*). In the herpetofauna group there are 52 species including Least Concern (Less Attention); and 1 type of vulnerable (vulnerable), namely the King Cobra (*Ophiophagus hannah*).

Based on the field findings as well as the flora status table and fauna status, it was found that the fauna species indicated as endemic were the Kalawat gibbon (*Hylobates muelleri*). So that in the garden area of PT. MIP and its surroundings are found to be endemic species. Owa Kalawat (*Hylobates muelleri*) in the plantation area of PT. MIP is only found on the banks of the Tuyu River Blok C10, D7, F2; and the Tam'an River Border Blok H16, H17, and I13. Meanwhile, from the flora aspect, there are no endemic species. The endemic species of Kalawat gibbons (*Hylobates muelleri*) at the location mentioned above was only found in 1 small group, namely 1 adult male and 1 adult female with 2 young. Kalawat gibbons (*Hylobates muelleri*) make use of the tree canopy to support their movement. This species tends to prefer the top of the canopy and rarely descends to the forest floor. In the morning, Owa Kalawat (*Hylobates muelleri*) is often found doing activities around the border of the Tam'an River and by late afternoon it is often found around the border of the Tuyu River. Forested areas in the north and west of the PT. MIP is the habitat. Adhere to the principle of prudence. The activity of the Kalawat gibbon (*Hylobates muelleri*) is possible not only concentrated around the boundaries of Tam river and Tuyu river only. But it can also be active in shrubs areas within the permit area of PT. MIP. According to Payne, 2000 that one group of Owa Kalawat (*Hylobates muelleri*) has a home range of about 20-30 ha.

In the garden area of PT. MIP and the surrounding landscape found habitats where species concentrations were spatially and temporally. The area of concentration of species spatially can be seen from the distribution area (IUCN data) such as: key species (key species) on the island of Borneo including orangutans (*Pongo pygmaeus*).

Concentration of the presence of IUCN species, such as species with Endangered status, namely Owa Kalawat (*Hylobates muelleri*); and the Critically Endangered (critical) category, Pangolin Peusing (*Manis javanica*), encourages the discovery of spatial and temporal concentrations of species in the plantation area of PT. MIP and its surroundings. Indication of the presence of these species in the plantation area of PT. MIP is very possible. This is in line with the information on the existence of these species, especially the Peusing Pangolin (*Manis javanica*) which was conveyed by the community and employees of PT. MIP (attachment 8.B). Pangolin Peusing (*Manis javanica*) do not select specific habitats for foraging or nesting and tend to use all types of habitat. However, the most preferred ha-beets by pangolins are secondary forest and mixed forest. Based on field observations, the existence of Peusing Pangolin (*Manis javanica*) scattered in natural habitats in the form of forested areas within the boundaries of the PT. MIP and river areas and their borders inside and around the PT. MIP is the Tam'an River and the Tuyu River. Based on information from the Peusing Pangolin (*Manis javanica*) in and around the PT. MIP is very common, because it is often hunted.

Based on observations and field observations, in the garden landscape of PT. MIP was not found. Variants, subspecies, or very important genetic varieties. The existence of Conservation Areas (KK), Ramsar Sites, EBA and KHG areas are quite far outside the landscape boundary of PT. MIP so that the existence of PT. MIP has no effect on biodiversity in these areas. However, the plantation area of PT. MIP provides a supporting function for areas of biodiversity in the landscape, namely the Protected Forest areas, KBA Areas, and IBA Areas. So that these areas are included in the designation of HCV 1 areas within the boundaries of the plantation landscape of PT. MIP.

In the permit area of PT. MIP found several species with EN (Endangered) status, protected, and endemic such as Owa Kalawat (*Hylobates muelleri*) and so on. Spatially, the distribution of these RTE species is around river boundaries and scrub areas.

In the plantation area of PT. MIP and its surroundings (within the landscape boundary) contain protected areas for the concentration of biodiversity in the form of rivers and their boundaries. Referring to Presidential Decree Number 32 of 1990, river boundaries are local protection areas designed to protect their ecological functions, at least 100 meters from the left and right of large rivers for large rivers and 50 meters on either side of small rivers or tributaries that are located. outside the settlement. Referring to the Government Regulation of the Republic of Indonesia Number 38 of 2011 concerning rivers, rivers with a river body width of ≥ 30 m have a minimum border of 100 m, while rivers with a river body width of less than 30 m have a minimum border of 50 m. The rivers that flow in the garden landscape of PT. The MIP is categorized as a small river (river width less than 30 meters) without embankments outside the urban area. Referring to the Regulation of the Minister of Public Works and Public Housing No. 28 / PRT / M / 2015 concerning the Determination of River and Lake Borders, that small river boundaries without embankments outside the urban area are 50 meters on the left and right. Therefore, the river border within the boundary of the PT. MIP is designated as an HCV 1 area. Apart from river borders, scrub areas within the permit area of PT. MIP is also designated as an HCV 1 area. Furthermore, based on the Indonesian Government Regulation regarding other protected areas such as the Peat Hydrological Unit (KHG), it is quite far outside the boundaries of the plantation landscape of PT. MIP so that the existence of PT. MIP has no effect on biodiversity in the area.

In connection with the findings and analysis above, it can be concluded that in the work area of PT. MIP and its surroundings found HCV 1. Total HCV 1 area within the landscape boundary of the PT. The MIP covers an area of 11,645.66 ha, consisting of 278.02 ha within the PT. MIP and 11,367.64 ha outside the permit area of PT. MIP. The location of HCV 1 areas is presented in **Table 6**; while maps of HCV 1 areas in and around the (landscape) working area of PT. MIP served on **Figure 7**.

Table 6. HCV 1 Areas within and around PT. MIP

No.	Location Name	HCV 1 Area (ha)		Total HCV within Landscape (ha) HCV Area PT. MIP
		Inside PT. MIP	Outside PT. MIP	
1	Tuyu River and Buffer	108.54	26.97	135.51
2	Tam An River and Buffer	169.48	50.00	219.48
3	Concentration area of RTE Species on Scrub Cover	1,389.41	0.00	1,389.41
4	Segah River and Buffer	0.00	898.05	898.05
5	Septi River and Buffer	0.00	295.55	295.55
6	Petyau River and Buffer	0.00	13.81	13.81
7	Ayau River and Buffer	0.00	2.54	2.54
8	Petang River and Buffer	0.00	5.18	5.18
9	Je River and Buffer	0.00	74.15	74.15
10	Kluh River and Buffer	0.00	48.29	48.29
11	Mesak River and Buffer	0.00	35.49	35.49
12	Abau River and Buffer	0.00	112.54	112.54
13	Sengan River and Buffer	0.00	30.03	30.03
14	Ngeau River and Buffer	0.00	57.10	57.10
15	Tebun River and Buffer	0.00	27.90	27.90
16	Long River and Buffer	0.00	4.99	4.99
17	Segah protected forest River and Buffer	0.00	1,609.79	1,609.79
18	Forest of Long Ayap Village	0.00	4,382.24	4,382.24
19	Forest of Long Ayan Village	0.00	5,427.50	5,427.50
Total Bruto HCV 1		1,667.43	13,102.11	14,669.54
Total Overlap in each HCV Location		128.10 [*]	1,734.47	1,862.57
Total Netto HCV 1		1,539.33	11,367.64	12,806.97

Note : *) = Total Overlap of Tuyu river and its borders with Concentration area of RTE Species in Scrub Cover of 74.21 ha and Overlap of Tam An river and Its Borders with Concentration area of RTE Species on Scrub of 53.89 ha

3.3.2. HCV 2. Landscapes-level Ecosystems, Ecosystem Mosaic and IFL

Common Guide for HCV Identification (HCVRN, 2013) explained that HCV 2 is the presence of ecosystems at a wide landscape level, a mosaic of ecosystems and intact forest landscapes; viable populations of most natural species; and natural distribution and quantity patterns.

The location of PT. MIP and its surroundings (in a 5 km landscape) are not in an intact forest landscape (Intact Forest Landscape / IFL 2016) or an intact forest landscape that has been reduced (IFL 2000 - 2013). The intact forest landscape (IFL 2016) is located to the west of the landscape boundary of the PT. MIP and the nearest one are located about 5 Km. Meanwhile, the reduced intact forest landscape (IFL 2000 - 2013) is located in the south with a distance of 6 km from the landscape boundary of the PT. MIP. Intact Forest Landscape Map around the PT. MIP is presented in Figure 6. Based on the Overlay Map Intact Forest Landscape (IFL) and Land Cover Year 2018 in and around PT. MIP has good quality connectivity or corridors between forest areas in the AOI and nearby IFLs, causing the discovery of HCV 2 in the AOI area, which is a forested area with secondary dryland forest cover. The forested area is divided into two village areas, namely the forested area of Long Ayap Village covering an area of 4,382.24 ha and the forested area of Long Ayan Village covering an area of 5,427.50 ha. These two forested areas are designated as HCV 2 because they have connectivity or corridors with IFL areas that are nearby.

The following is a breakdown of the existence of areas that have been recognized as high value landscapes around PT. MIP:

- **Ramsar site;** There are 2 Ramsar sites in Kalimantan, namely the Danau Sentarum National Park (TN) and the Tanjung Puting National Park (TN). Judging from the distance, the two Ramsar Sites are quite far, which is about 516 km (distance to Danau Sentarum National Park) and 768 km (distance to Tanjung Puting National Park).
- **Protection Forest (HL);** The closest HL is the Sungai Segah HL which lies within the landscape boundary of PT. MIP, which is to the west of the PT. MIP with 64 meters distance.
- **Conservation Area (KK);** The closest KK is the Kayan Mentarang National Park (TN), which is located west of the landscape boundary of the PT. MIP with 113 Km distance.
- **Key Biodiversity Area (KBA);** The closest KBA area is the Sangkulirang KBA area which is located to the southeast of the landscape boundary of the PT. MIP with 64 Km distance.
- **Important Bird Area (IBA);** The closest IBA area is the Sangkulirang IBA area which is located to the southeast of the landscape boundary of the PT. MIP with 64 Km distance.
- **Endemic Bird Area (EBA);** The closest EBA area is the one located north of the landscape boundary of the PT. MIP with 10 Km distance.
- **Peat Hydrological Unit (KHG);** The closest peat hydrological unit is located north of the landscape boundary of the PT. MIP with 119 Km distance.

Conservation Priority Landscapes for Tigers are not found because the island of Borneo does not contain this species. So that based on certain areas have been recognized as high value landscapes around the permit area of PT. MIP above, is located near or is within the landscape boundary of the permit area of PT. MIP is the Sungai Segah Protected Forest (HL) which is to the west of the PT. MIP with a distance of about 64 meters. The area of Sungai Segah Protected Forest and its bufferzone which falls within the boundaries of the study landscape of PT. MIP is 1,609.79 ha. Therefore, related to the core area ecosystem at a broad landscape level within the landscape boundary of the PT. MIP contains an area designated as an HCV 2 area, namely the Segah River Protected Forest.

Within PT. MIP, no longer contains areas that are part of the proper population distribution area of most natural species. However, outside the PT. MIP still found forested areas which are part of the proper population distribution area of most of the natural species. Based on the history of land in Berau Regency (East Kalimantan Province), originally the permit area for PT. MIP and its surroundings are part of the territory of the Berau Sultanate (around the 14th century). The Berau Sultanate divided the area of Berau Regency at that time into 3 (three) parts, namely the Central Government Area, Coastal Areas and Inland Areas. Segah District is included in the Inland Area, along with Long Ayap and Long Ayan Villages. These two villages are also part of the small Gaai kingdom inhabited by the Gaai Tribe (also known as Dayak Segai) who control the forests along the Segah River. The Dayak Gaai

themselves are the Bahau ethnic group, commonly known as the Modang Tribe who came from Apo Kayan and migrated during the war. Since long time ago, the people of these two villages have not been separated from the existence of forests. The houses of the inhabitants were still in the form of stilts made of wood and planks taken from the forest around the village at that time. The forested areas in these two villages function very well as part of a viable population distribution area for most of the natural species. The forested area is outside the PT. MIP but still in the 5 Km landscape. Meanwhile, in the permit area of PT. MIP only consists of 5 (five) land covers, namely shrubs, shrubs, open land, settlements and oil palm plantations. So that in the permit area of PT. MIP is no longer an area that can function to maintain a proper population distribution of most natural species.

Related to important sub-populations of species that have a wide distribution, such as important species on the island of Borneo or species of global concern in particular, such as the Orangutan (*Pongo pygmaeus*) with the permit area of PT. MIP and its landscape show that the distribution areas of these species are quite far. According to the IUCN spatial data, the orangutan distribution area is located about 52 km to the southeast of the landscape boundary of PT. MIP. So that in the permit area of PT. MIP and its surroundings did not find any species of global concern. However, related to the analysis of HCV 2 as an ecosystem and a large forest landscape that supports a viable population for species, it is found around the permit area of PT. MIP is a forested area in Long Ayap Village and Long Ayan Village (within the boundary of the study landscape). Forested area outside the PT. MIP is divided into two village areas, namely the forested area of Long Ayap Village covering an area of 4,382.24 ha and the forested area of Long Ayan Village covering an area of 5,427.50 ha.

In the vicinity of the PT. MIP still has forested areas that could potentially sustain natural distribution patterns and quantities. Based on the interpretation of satellite image data in 2018, there are 8 (eight) forms of land cover in the study landscape of the PT. MIP, namely secondary dryland forest, shrubs, shrubs, oil palm plantations, dry land agriculture, settlements, open land and water bodies. It can be seen that there are still relatively intact ecosystems around the PT. MIPs that can support natural distribution patterns and numbers are still being found. The area is a forested area with secondary forest land cover of dry land located in Long Ayap Village and Long Ayan Village. So that in relation to this, HCV 2 areas were found related to areas that could support the distribution pattern of species with natural numbers located in the forested area of Long Ayap Village covering an area of 4,382.24 ha and forested area of Long Ayan Village covering an area of 5,427.50 ha.

In connection with the findings and analysis above, it can be concluded that in the permit area of PT. MIP and its surroundings found HCV 2. Total HCV 2 area within the landscape boundary of PT. MIP covers an area of 10,026.54 hectares, consisting of 0.00 ha within the PT. MIP and an amount of 10,026.54 ha outside the permit area of PT. MIP. The location of HCV 2 areas is presented in **Table 7**; while maps of HCV 2 areas in and around the (landscape) working area of PT. MIP served on **Figure 8**.

Table 8. HCV 2 Areas within and around PT. MIP

No.	Location Name	HCV 2 Area (ha)		Total HCV within Landscape (ha) HCV Area PT. MIP
		Inside PT. MIP	Outside PT. MIP	
1	Segah protected forest River and Buffer	0.00	1,609.79	1,609.79
2	Forest of Long Ayap Village	0.00	4,382.24	4,382.24
3	Forest of Long Ayan Village	0.00	5,427.50	5,427.50
Total Bruto HCV 2		0,00	11,419.53	11,419.53
Total Overlap in each HCV Location		0,00	1,392.99	1,392.99
Total Netto HCV 2		0,00	10,026.54	10,026.54

Note : *) = There is an overlapping location in HCV 2

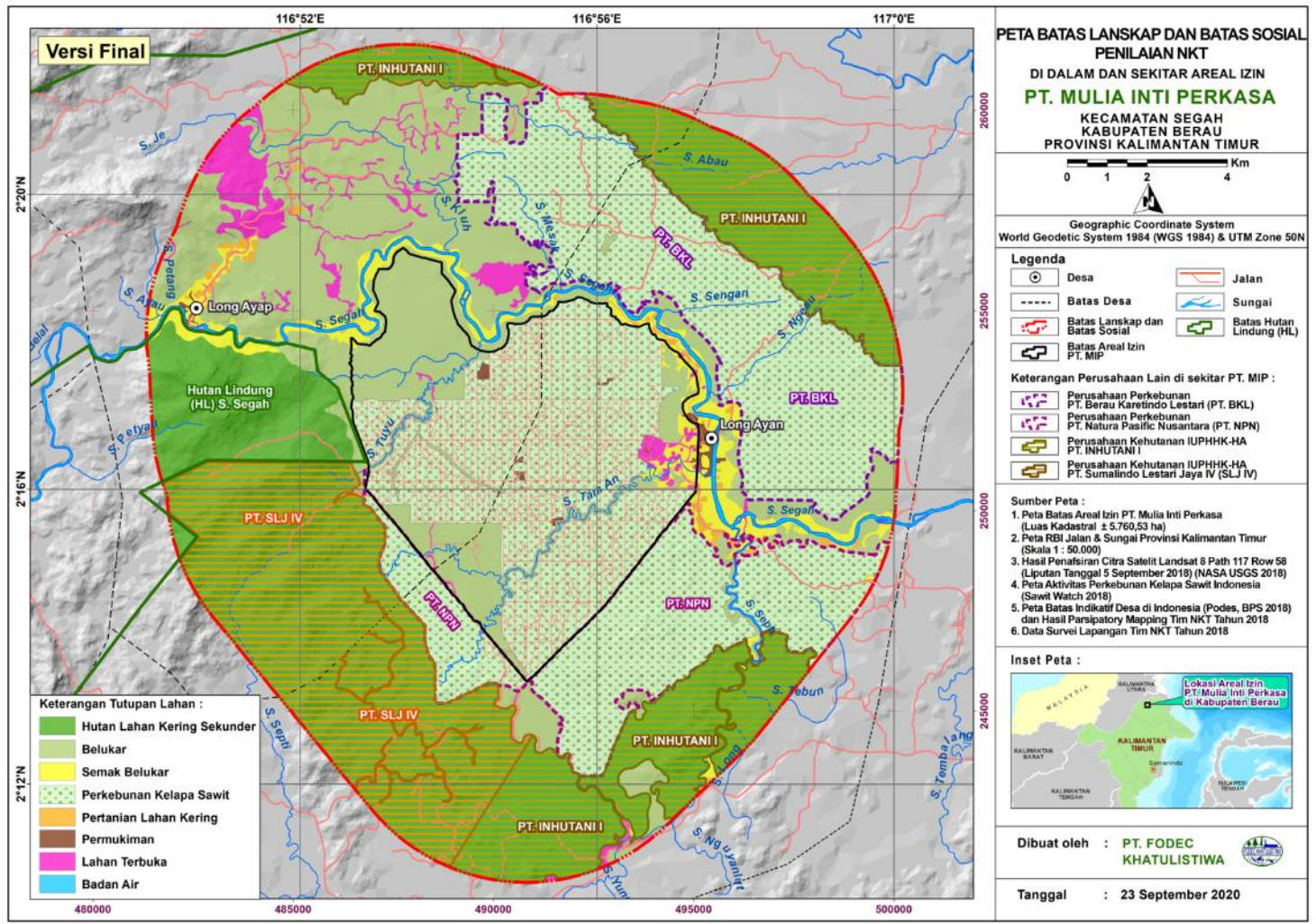


Figure 5. Landscape and Social Boundary Map of PT. MIP

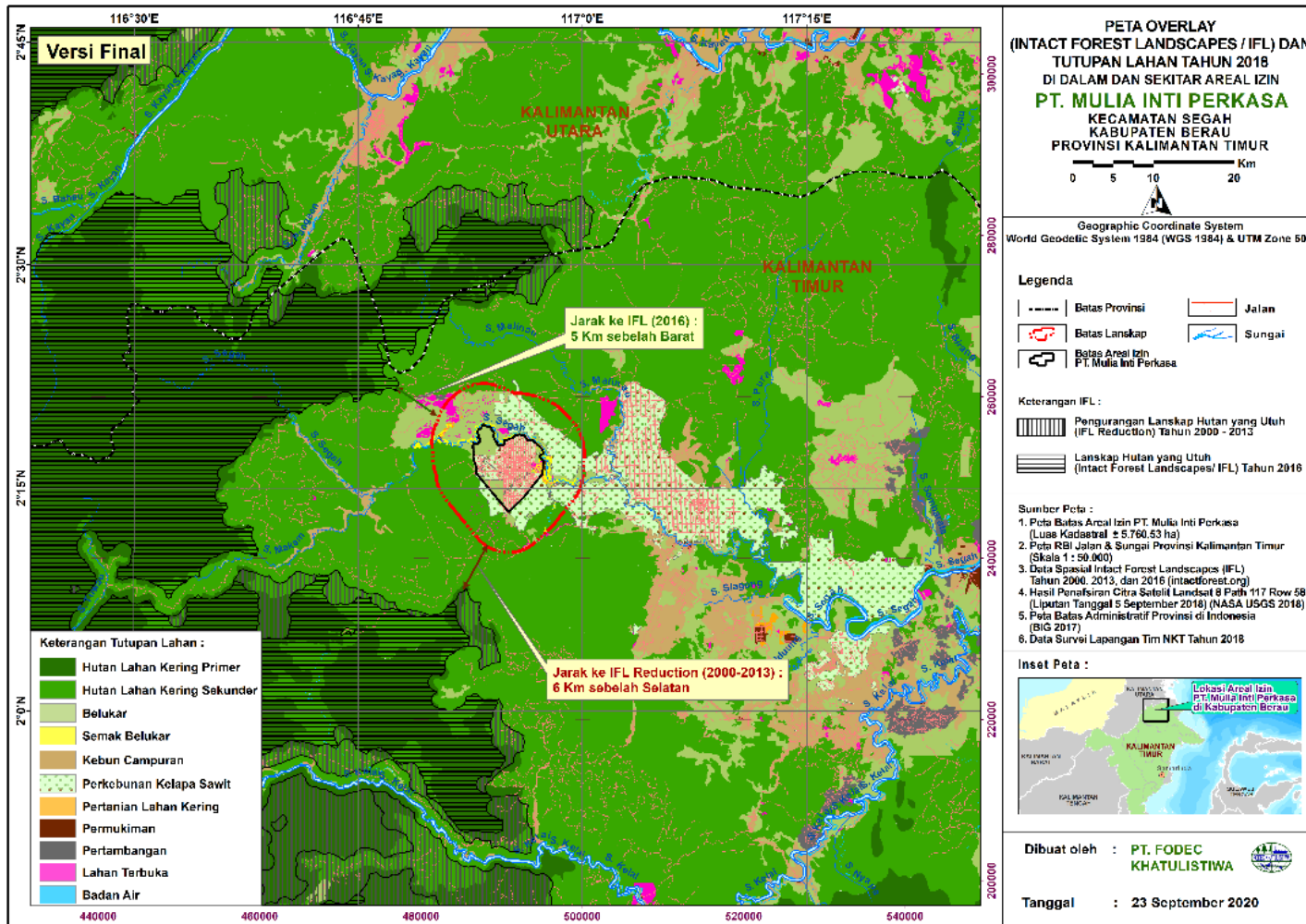


Figure 6. Overlay Intact forest landscape (IFL) and Landcover year 2018 Map of PT. MIP

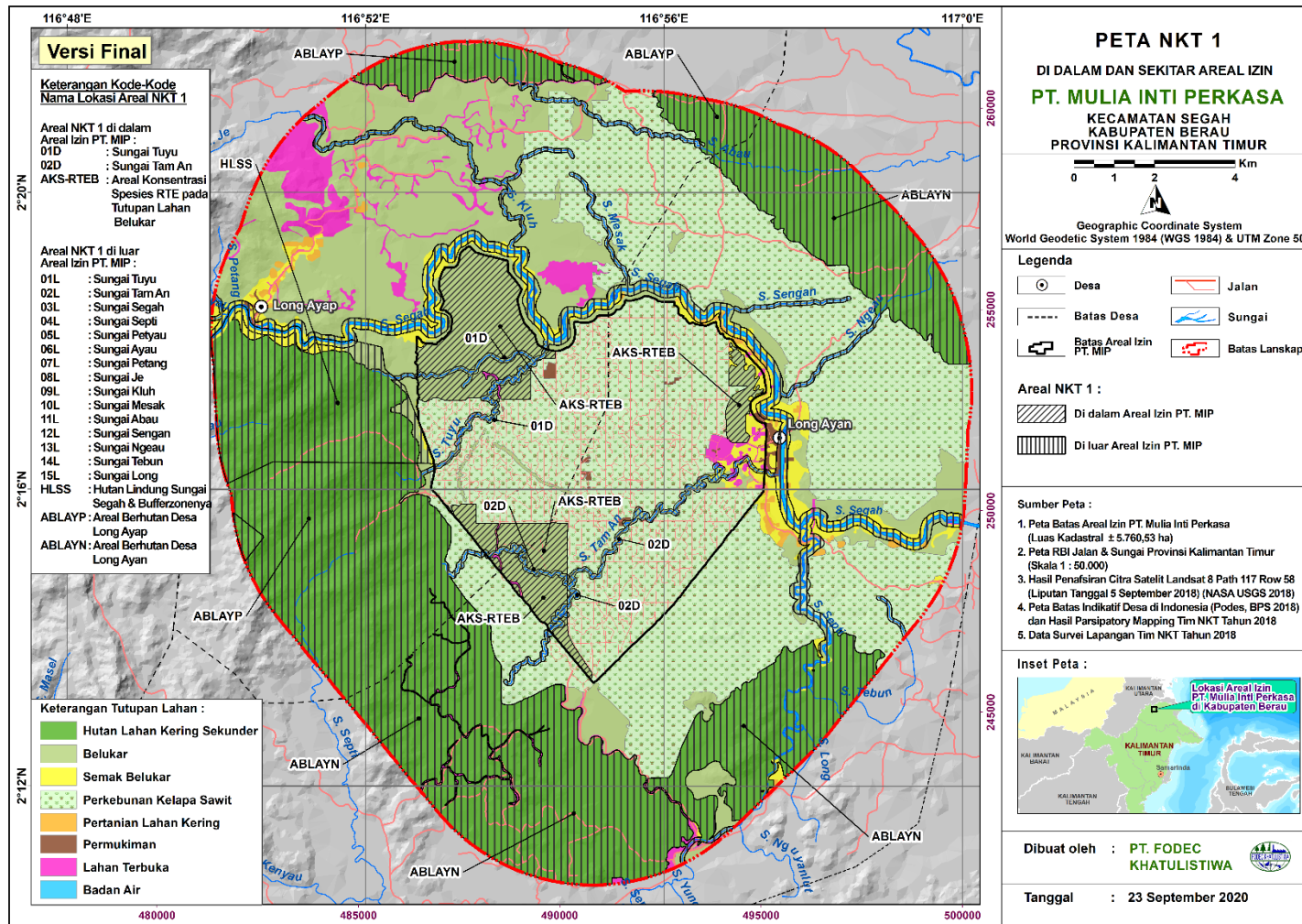


Figure 7. HCV 1 Area Map of PT. MIP (around Concession Area)

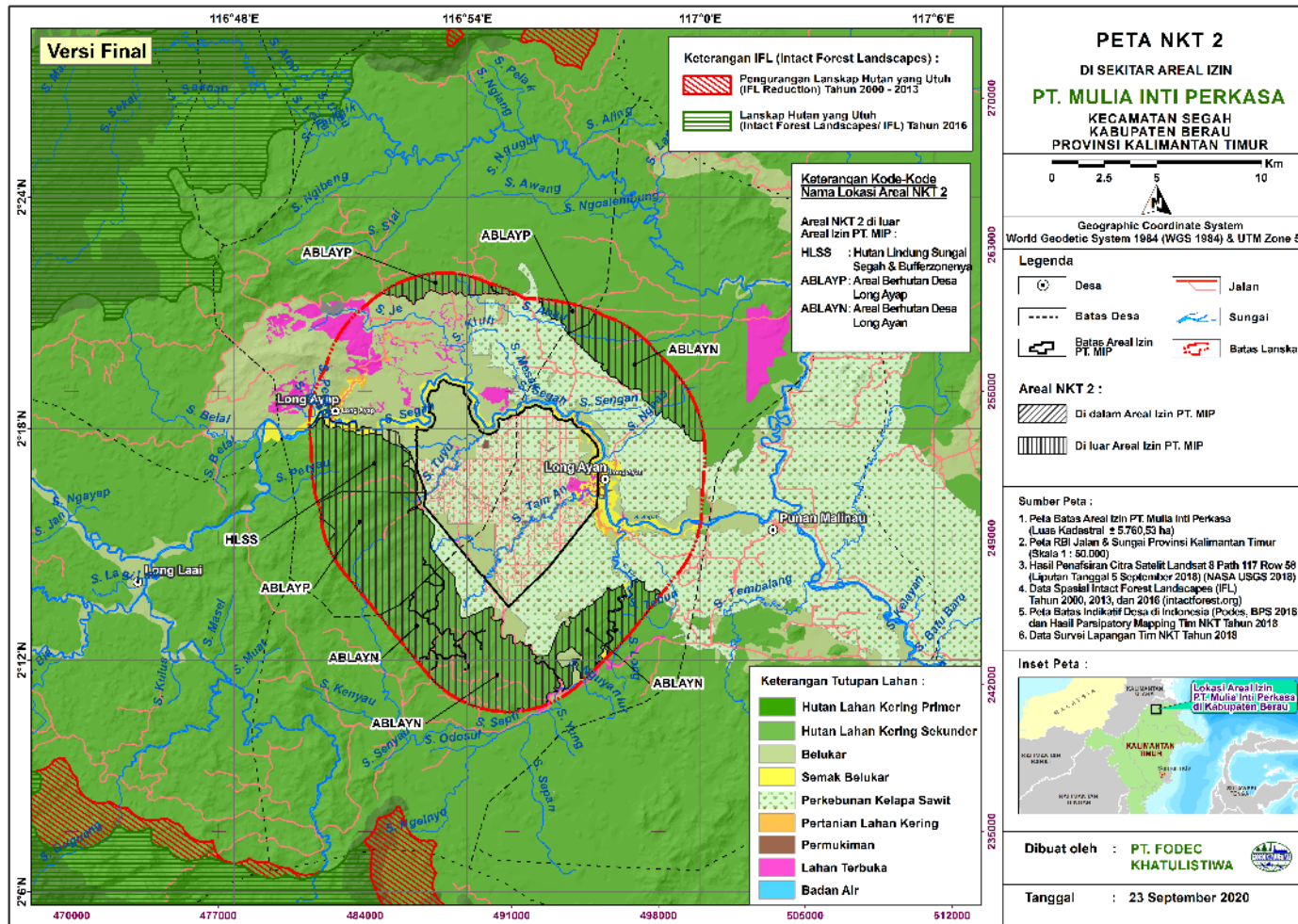


Figure 8. HCV 2 Area Map of PT. MIP (within and around Concession Area)

3.3.3. HCV 3. Rare, Threatened, or Endangered (RTE) Ecosystems, Habitats or Refugia

Based on the desktop study based on the land system (RePPPProT 1987) there is no land system which indicates the presence of karst in permit area of PT. MIP and its surroundings. As it is known, the ecosystems found in and around the PT. MIP consists of 3 (three) types, namely (1) association ecosystem of lowland forest on alluvium soil and lowland forest on sandstone (with LWW land system); (2) lowland forest ecosystem on sandstone (with MPT and TWH land systems) and (3) sub-mountainous or mountainous and high mountain forest ecosystems on other substrates (with PDH land system).

Inselberg or rock formations are rock formations that appear and rise above the earth's surface. Based on secondary data tracing and field observations, in the work area of PT. MIP and its landscape boundaries were not found with inselbergs or rocky mountains. Montane or mountain forests are one of the wet tropical forest formations that are formed in mountainous areas, with altitudes ranging from 1,000 - 1,500 masl. The height of the permit area for PT. MIP and its surroundings only ranges from 0 - 500 masl. Within the PT. MIP and its surroundings have no indication of a karst ecosystem (in which underground rivers are usually found). There is no river forest found in the barren zone in the study area. In the permit area of PT. MIP and its surroundings did not find any pasture on fertile soils which naturally experience seasonal flooding.

Based on the interpretation of Landsat imagery in 2016 and observations in the field, land cover. Based on the interpretation of Landsat satellite imagery in 2018 and field observations (ground check), the land cover of PT. MIP and its surroundings can be divided into 8 (eight) types of land cover, namely secondary dryland forest, shrubs, shrubs, oil palm plantations, dry land agriculture, settlements, open land and water bodies. In this regard, it shows that in the permit area of PT. MIP and its surroundings do not find any primary forest. Based on the results of the overlapping (overlay) map of the permit area of PT. MIP and its landscape boundaries with a biophysiographic map of the island of Sumatra, the permit area of PT. MIP belongs to the Northern Lowlands and Nyapa-Mangkalihat Mountains and Plains biophysiographic unit. The total area of the two biophysiographic units on the island of Kalimantan is ± 5,493,107.24 ha.

Based on the overlapping (overlay) map of the Northern Lowlands and Nyapa-Mangkalihat Mountains and Plains biophysiographic units with the RePPPProT (1987) land system map, the land system in the biophysiographic unit can be divided into 23 Land Systems, namely BKN (Bakunan), BLI (Beliti), BPD (Bukit Pandan), BRW (Beriwit), BTA (Batu Ajan), GBJ (Gunung Baju), GBT (Peat), HJA (Honja), JLH (Juloh), KHY (Kahayan), KJP (Kajapah), KLR (Klaru), KPR (Kapor), LHI (Lohai), LPN (Liangpran), LWW (Lawanguwang), MDW (Mendawai), MPT (Maput), MTL (Mentalat), OKI (Okki), PDH (Pendreh), PLN (Pakalunai), PST (Sebatik Island), PTG (Puting), RGK (Rangankau), TBA (Tamera), TDR (Tandur), TWB (Tewai Baru), and TWH (Teweh).

Furthermore, by using a proxy for RePPPProT classification on the island of Kalimantan, 14 ecosystem types were identified in that area. Of the 14 ecosystem types, namely: (1) association of lowland forest on alluvium soil and lowland forest on sandstone; (2) Mangroves and salt water swamps; (3) Lowland forest on sandstone; (4) Mixed Dipterocarpaceae forest or hills above old sea sediment; (5) Mixed Dipterocarp forest on Malihan rock; (6) Mixed Dipterocarp forest on volcanic rock; (7) Mixed Dipterocarp forest on alluvial soils; (8) Karst forest on limestone soil; (9) Shell forest; (10) coastal forest; (11) Freshwater swamp forest; (12) Peat swamp forest; (13) Riparian forest; and (14) Sub-mountainous or mountainous and high mountain forest on other substrates.

Of the 14 ecosystem types, the ecosystems found in and around the PT. MIP, namely: (1) association ecosystem of lowland forest on alluvium soil and lowland forest on sandstone (with LWW land system); (2) lowland forest ecosystem on sandstone (with MPT and TWH land systems) and (3) sub-mountainous or mountainous and high mountain forest ecosystems on other substrates (with PDH land system).

Based on the ecosystem map overlay with the Forest Area Map on Kalimantan Island and the 2016-2036 RTRWP East Kalimantan, the fourteen ecosystem types found in the Northern Lowlands and Nyapa-Mangkalihat Mountains and Plains biophysiographic units include National Parks (TN), Nature Reserves (CA), Natural Tourism Parks (TWA), Protected Forests (HL), Protection Forests, Limited Production Forests (HPT), Production Forests (HP), Water Bodies, Convertible Production Forests (HPK), Areas for Other Use (APL), and Areas for Cultivation .

The fourteen types of ecosystem that are thought to be sustainable (no conversion will be carried out) cover an area of 3,076,090.28 ha, namely ecosystems seen from the status of the area including national parks, nature reserves, nature tourism parks, protected forests, limited production forests, production forests, and water; Meanwhile, the type of ecosystem that is thought to be unsustainable (the area to be converted) is 75,614.98 ha, which is the ecosystem seen from the status of the area including Convertible Production Forest, Areas for Other Use, and Areas with Cultivation Designations. So that based on this table it is also known that the total area of land cover with natural vegetation at present is 3,151,705.26 ha.

Based on the calculation results, the estimated loss of natural vegetation in 14 ecosystem types in the Northern Lowlands and Nyapa-Mangkalihat Mountains and Plain biophysiographic units ranged from 12.88% - 79.58%. Of the 14 ecosystem types contained in the Northern Lowlands and Nyapa-Mangkalihat Mountains and Plain biophysiographic units, 7 (seven) of them are ecosystem types that meet the threatened criteria in the HCV 3 definition because the thirteen ecosystems are in the Northern Lowlands and Nyapa-Mangkalihat Mountains biophysiographic units. and Plain, have experienced a loss of $\geq 50\%$ of their initial area.

Ecosystem found within the landscape boundary of PT. MIP, namely: (1) association ecosystem of lowland forest on alluvium soil and lowland forest on sandstone (with LWW land system); (2) lowland forest ecosystem on sandstone (with MPT and TWH land systems) and (3) sub-mountainous or mountainous and high mountain forest ecosystems on other substrates (with PDH land system). One of the three ecosystems in and around PT. The MIP is considered a threatened criterion in the definition of HCV 3 because based on the presumed loss of ecosystems in the present time, it has experienced a loss of $\geq 50\%$, namely the association ecosystem of lowland forest on alluvium soil and lowland forest on sandstone. The existence of the three ecosystems found with forest land cover is a finding of HCV 3 related to ecosystem threats. The extent of each of these ecosystems with their forest land cover, namely: (1) forest area in the association ecosystem of lowland forest on alluvium soil and lowland forest on sandstone amounting to 2,249.71 ha; (2) forested area in lowland forest ecosystems on sandstone amounting to 5,074.12 ha; and (3) forested area in sub-mountainous or mountainous and high mountain forest ecosystems on other substrates is 2,485.91 ha. In the permit area of PT. MIP and its surroundings do not find any ecosystems that are classified as threatened in the international system, such as the IUCN Red List on Ecosystems.

In connection with the findings and analysis above, it can be concluded that in the permit area of PT. MIP and its surroundings found HCV 3. The total area of HCV 3 within the landscape boundary of PT. MIP covers an area of 9,809.74 hectares, consisting of 0.00 ha within the PT. MIP and amounting to 9,809.74 ha outside the permit area of PT. MIP. The location of HCV 3 areas is presented in **Table 8**; while the map of the HCV 3 area around the PT. MIP served on **Figure 10**.

Table 8. HCV 3 Areas within and around PT. MIP

No.	Location Name	HCV 3 Area (ha)		Total HCV within Landscape (ha) HCV Area PT. MIP
		Inside PT. MIP	Outside PT. MIP	
16	Forested Area in Ecosystem Associations of lowland forest on alluvium soil and lowland forest on sandstone	0.00	2,249.71	2,249.71
17	Forested area in lowland forest	0.00	5,074.12	5,074.12

No.	Location Name	HCV 3 Area (ha)		Total HCV within Landscape (ha) HCV Area PT. MIP
		Inside PT. MIP	Outside PT. MIP	
	ecosystem on sandstone			
18	Forested area in sub-mountainous or mountainous forest and high mountains on other substrates	0.00	2,485.91	2,485.91
Total Bruto HCV 3		0.00	0.00	9,809.74
Total Overlap in each HCV Location		0.00	0.00	0.00
Total Netto HCV 3		0.00	0.00	9,809.74

Note : *) = There is no overlapping location in HCV 3

3.3.4. HCV 4. Ecosystem Services

Around the plantation area of PT. MIP (the boundary of the study landscape) found forested areas that can function hydro-orologically (as a support for water management and land protection). Forests with tree density and extensive roots are able to better absorb water into the soil so as to prevent flooding. So that with the discovery of forested areas, areas that still have the ability to withstand extreme water flow rates and prevent flooding due to rain are found. The forested area is outside PT. MIP but still in the 5 Km landscape. Meanwhile, in the permit area of PT. MIP only consists of 5 (five) land covers, namely shrubs, shrubs, open land, settlements and oil palm plantations. Forested area outside the PT. MIP is divided into two village areas, namely the forested area of Long Ayap Village covering an area of 4,382.24 ha and the forested area of Long Ayan Village covering an area of 5,427.50 ha.

Based on the landscape scale hydrological map, the study area is included in the Berau watershed. Within the PT. MIP and its surroundings have 15 (fifteen) river flows, namely Tuyu River, Tam An River, Segah River, Septi River, Petyau River, Ayau River, Petang River, Je River, Kluh River, Mesak River, Abau River, Sengan River, Ngeau River, Tebun River and Long River. These rivers are located in the middle between the upstream and downstream areas. With the condition of land cover in the watershed within the landscape of PT. MIP still contains natural forests, so the area's hydrological function as the maintenance of the downstream river flow regime is of great importance. If it rains in the plantation area of PT. MIP and its surroundings, the rainwater can be absorbed by the soil properly and will have a smaller potential for runoff. This runoff can cause the water discharge to the downstream rivers to be bigger. Therefore, areas that are important for maintaining the downstream river flow regime are found, namely 15 rivers that are in and around the permit area of PT. MIP (Tuyu River, Tam An River, Segah River, Septi River, Petyau River, Ayau River, Evening River, Je River, Kluh River, Mesak River, Abau River, Sengan River, Ngeau River, Tebun River and Long River). These rivers all flow into the Segah River and then flow into the Berau River in the eastern part of Berau Regency.

In areas with good forests, water often comes out of gaps in the soil with fairly clear water quality. If the presence of forest vegetation is on the riverbank, it can maintain the quality of water that enters the river from both surface and underground flow (water filter), reduce nitrate compounds (denitrification) such as from the use of excessive fertilizers, and reduce the risk of soil erosion which can result in the water becomes cloudy. In the permit area of PT. MIP did not find any well-vegetated areas that could function as water filters to maintain water quality as described. However, around PT. MIP still found these forested areas. Forested area outside the PT. MIP is divided into two village areas, namely the forested area of Long Ayap Village covering an area of 4,382.24 ha and the forested area of Long Ayan Village covering an area of 5,427.50 ha. So that the existence of an area that is important as the maintenance of water quality is found.

Based on the desktop study and field observations, in the PT. MIP and its surroundings found rivers and their borders that can act as water providers and flood control. The rivers are Tuyu River, Tam An River, Segah River, Septi River, Petyau River, Ayau

River, Petang River, Je River, Klueh River, Mesak River, Abau River, Sengan River, Ngeau River, Tebun River and Long River. Based on the RSPO Guidance Document: RSPO Manual on Best Management Practices (BMPs) for the Management and Rehabilitation of Riparian Reserves (RSPO 2017) concerning River Basin Management and Rehabilitation regulates several criteria in determining river boundaries.

Based on the desktop study and field observations, in PT. MIP and its surroundings cannot be found for springs and their boundaries. Furthermore, based on the results of interviews with the surrounding community (Long Ayan Village and Long Ayan Village) there were no springs or border areas.

Based on the desktop study and field observations, in the garden area of PT. MIP does not find any areas with peatlands that play a role in controlling flooding during the rainy season and releasing water reserves during the long dry season. Based on the RSPO classification of organic matter and peat soils for the State of Indonesia peat soil is defined as soil with an organic layer of more than 50 cm above 100 cm of soil containing more than 65% organic matter. Land within and around PT. MIP is Podsollic Red Yellow. Based on the field findings, there were no peat soils in the permit area of PT. MIP and its surroundings. So that based on the RSPO classification in the plantation area of PT. MIP and its surroundings have no peat soil. Furthermore, based on the map of the Peat Hydrological Unit, the plantation area of PT. MIP and its surroundings (landscape boundary) are not in the peat hydrological area. The distance to the nearest KHG area, which is 119 Km to the north of the boundary of the landscape study area of PT. MIP.

In the plantation area of PT. MIP did not find any forested areas, but outside PT. MIP (within landscape boundaries) found forest land cover. Forested area outside PT. MIP is divided into two village areas, namely the forested area of Long Ayap Village covering an area of 4,382.24 ha and the forested area of Long Ayan Village covering an area of 5,427.50 ha. Thus, it is found the existence of areas that are important as protection against wind, humidity control, rainfall and other climatic elements.

In the garden area of PT. MIP does not find fauna species that can provide or assist pollination. Based on the findings of HCV 1, there is a type of honey bird with an insignificant population. Furthermore, based on flora findings, there is a type of Manggris tree (*Koompassia malaccensis* Maingay ex Benth.) Which is usually a nesting place for bees. Bees play a very important role in pollinating. Manggris trees are usually found in lowland forest areas. In the plantation area of PT. MIP did not find any areas with forest cover, but outside PT. MIP (within the landscape boundary) found forest land cover. Forested area outside PT. The MIP is divided into two village areas, namely the forested area of Long Ayap Village covering an area of 4,382.24 ha and the forested area of Long Ayan Village covering an area of 5,427.50 ha. The existence of areas that are important as pollination service providers are found.

In the permit area of PT. MIP and its landscape boundaries do not reveal any barren or dry areas that are prone to erosion and desertification. Part of PT. MIP has flat physiography and the rest with wavy and wavy variations with dominant flat to gentle slopes (0 - 15%). This slope condition tends to be a deposition zone so that it has a slight potential for erosion hazard. Erosion that occurs in this area is generally road erosion with erosion material accumulating on the sides of the road body and abrasion on the edges of the trenches. Thus, there are no areas that have the potential to be prone to major erosion or landslides. The value of the rate of erosion in the PT. MIP and its surroundings range from 0.00 - 175.61 tonnes / ha / year with TBE levels including the very mild to moderate category. There was no severe and very severe TBE.

In the plantation area of PT. MIP has so far not found any data and information on the history of forest and land fires in the MU area. However, in an effort to overcome the possibility of forest fires, the company implements the concept of zero burning. Within PT. MIP does not have any areas that have the potential to prevent fire from running in the event of forest and land fires that can act as natural firebreaks. In the permit area of PT. MIP did not find extensive or important wetland areas for fish breeding and spawning, nor was there any presence of sensitive coastal ecosystems such as mangroves. In the permit area of PT.

MIP does not find locations that naturally have low soil fertility such as sandy soil or susceptible to land clearing, soil draining, heavy equipment uses or other forms of intensive land use that can affect soil structure and fertility.

In connection with the findings and analysis above, it can be concluded that in the permit area of PT. MIP and its surroundings found HCV 4. Total HCV 4 area within the landscape boundary of the PT. MIP covers an area of 11,502.08 hectares, consisting of 278.02 hectares within the PT. MIP and an amount of 11,224.06 ha outside the permit area of PT. MIP. The locations of HCV 4 areas are presented in **Table 9**; while maps of HCV 4 areas in and around the work area of PT. MIP served on **Figure 11**.

Table 9. HCV 4 Areas within and around PT. MIP

No.	Location Name	HCV 4 Area (ha)		Total HCV within Landscape (ha) HCV Area PT. MIP
		Inside PT. MIP	Outside PT. MIP	
1	Tuyu River and Buffer	108.54	26.97	135.51
2	Tam An River and Buffer	169.48	50.00	219.48
3	Segah River and Buffer	0.00	898.05	898.05
4	Septi River and Buffer	0.00	295.55	295.55
5	Petyau River and Buffer	0.00	13.81	13.81
6	Ayau River and Buffer	0.00	2.54	2.54
7	Petang River and Buffer	0.00	5.18	5.18
8	Je River and Buffer	0.00	74.15	74.15
9	Kluh River and Buffer	0.00	48.29	48.29
10	Mesak River and Buffer	0.00	35.49	35.49
11	Abau River and Buffer	0.00	112.54	112.54
12	Sengan River and Buffer	0.00	30.03	30.03
13	Ngeau River and Buffer	0.00	57.10	57.10
14	Tebun River and Buffer	0.00	27.90	27.90
15	Long River and Buffer	0.00	4.99	4.99
16	Forest of Long Ayap Village	0.00	4,382.24	4,382.24
17	Forest of Long Ayan Village	0.00	5,427.50	5,427.50
Total Bruto HCV 4		278.02	11,492.32	11,770.34
Total Overlap in each HCV Location		0.00 ^{*)}	268.26	268.26
Total Netto HCV 4		278.02	11,224.06	11,502.08

Note : *) = There is an overlapping location in HCV 4

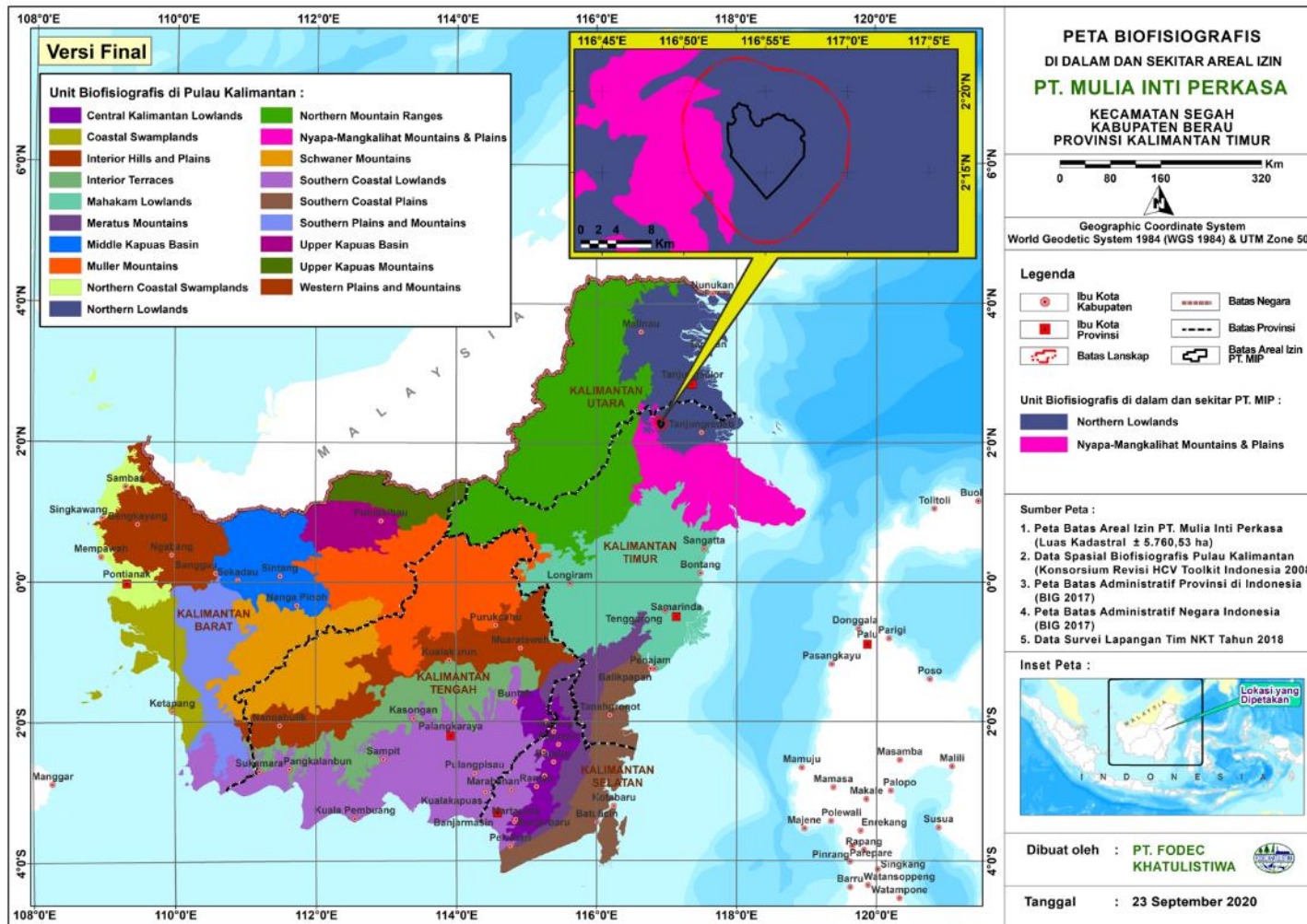


Figure 9. Ecosystem Map in Biofisiographic Units around PT. MIP (Concession Area)

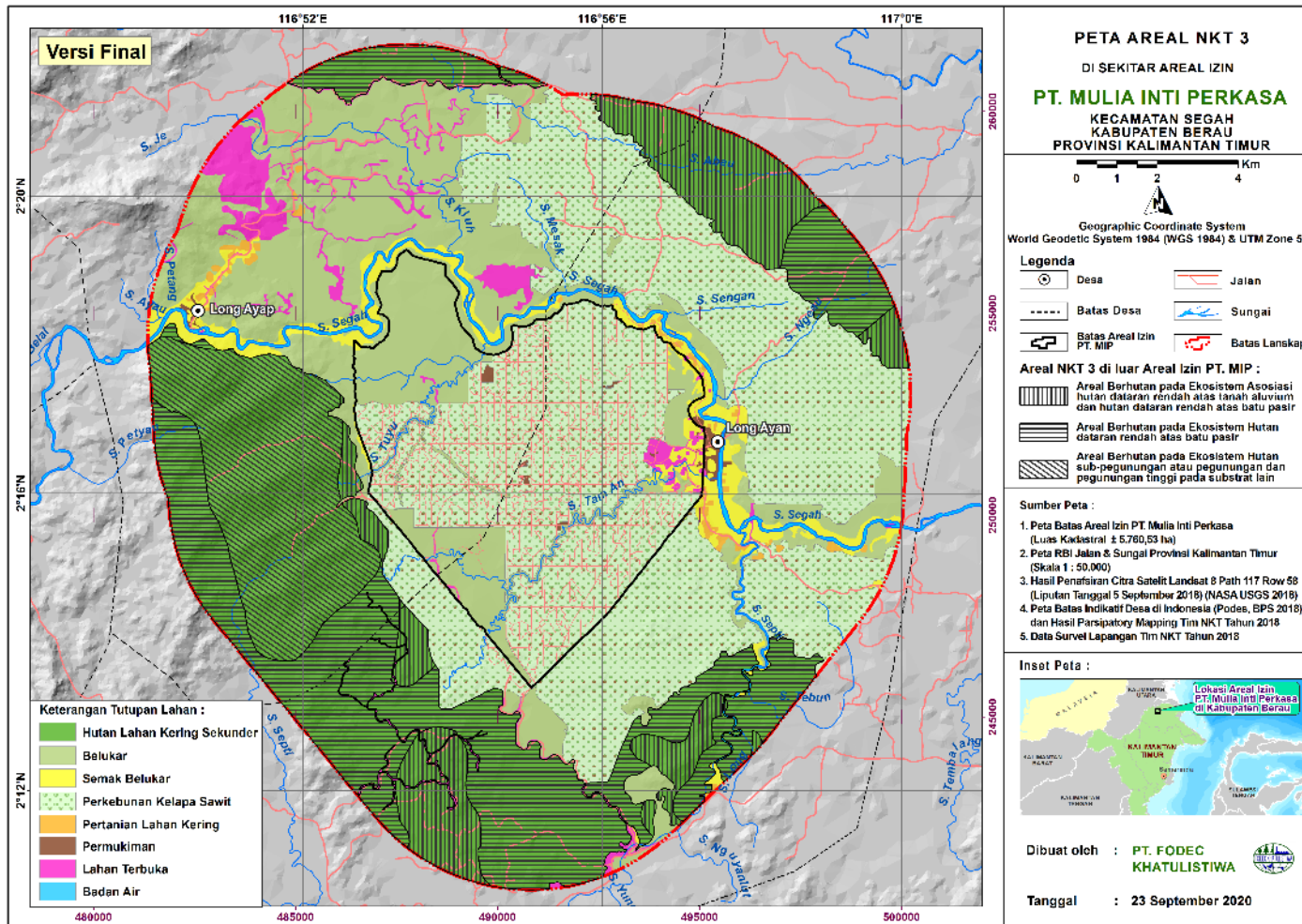


Figure 10. HCV 3 Area Map of PT. MIP (within and around Concession Area)

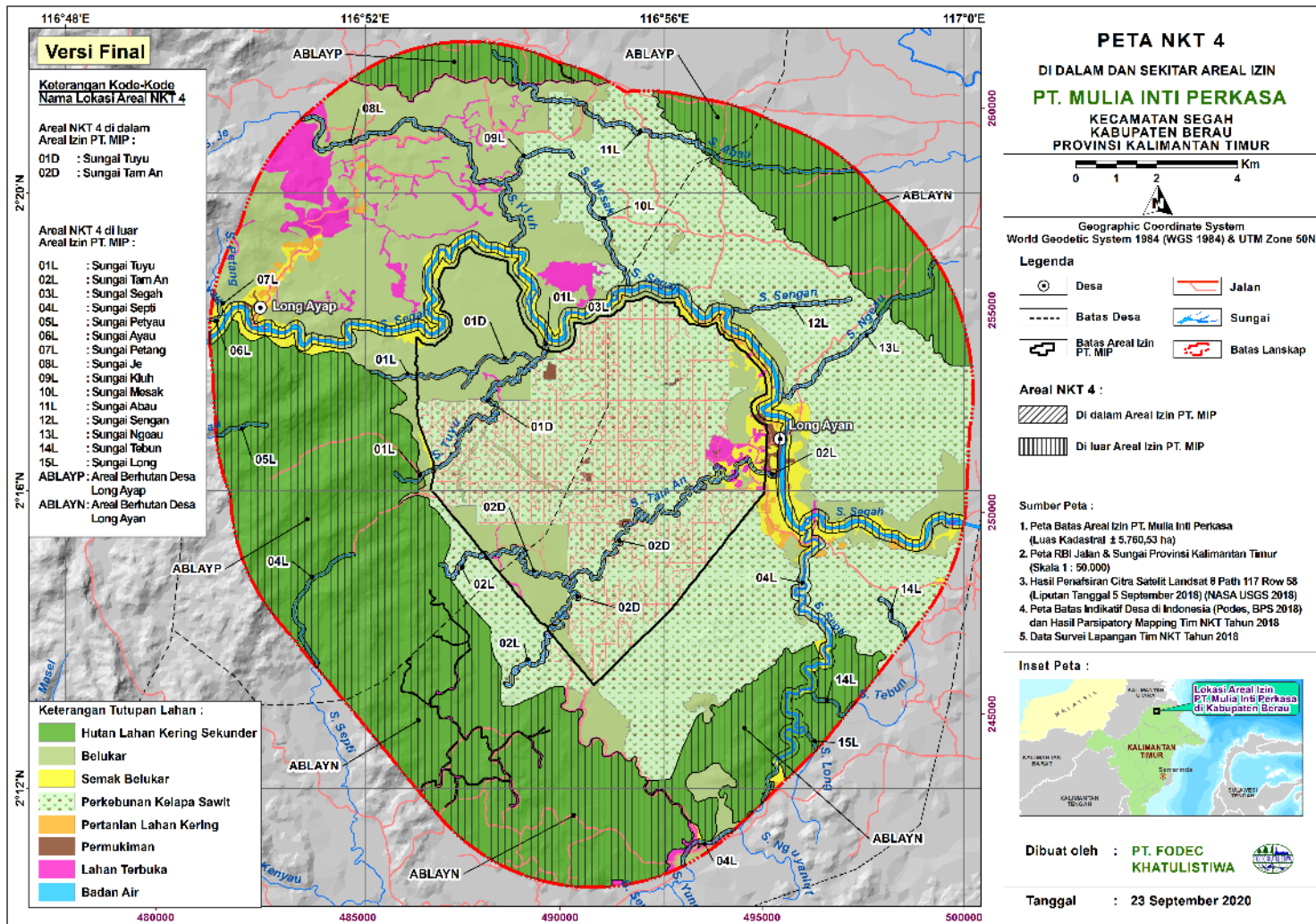


Figure 11. HCV 4 Area Map of PT. MIP (within and around Concession Area)

3.3.5. HCV 5. Community Needs

Although not explicitly listed on the HCV 5 indication list, the Common Guidance for the Identification of High Conservation Values (HCV Resource Network, 2017a) states that community agricultural land can be considered HCV 5, provided that the area is not a threat to value or the presence of other HCVs. Therefore, the assessment of cropland as HCV 5 is reviewed on a case-by-case basis.

The staple food of the villagers around the PT. MIP is rice. Most of the rice needs are obtained by buying it at a shop or market and planting it in the fields. A small proportion of the people of Long Ayap Village and Long Ayan Village still cultivate field rice, so that very few residents obtain rice by cultivating, obtaining more rice by buying. While other carbohydrate needs such as sweet potatoes, corn and several other types, there are some who plant them in their yards or fields. According to the accounts of several resident representatives, most of the needs for carbohydrates such as rice, corn, cassava, sweet potatoes and other types of carbohydrates are obtained by buying.

All the needs of the local community can be easily purchased from the market, either the permanent market, the weekly market or the circle as well as the traveling traders. The market that is around the area of PT. MIP is a market in the capital of Segah District, namely Pangkalan Buah. Apart from planting rice, vegetables are usually planted in the fields. The fields in Kampung Long Ayap and Kampung Long Ayan have not been able to meet the needs of rice for the village or for the surrounding villages, so much of the rice needs are obtained from the market. There are no rice fields in Long Ayap and Long Ayan villages.

Based on the results of the FGD and interviews with the community, it shows that. There are still hunting activities as a means of fulfilling protein sources for communities around the PT. MIP. However, this hunting activity is usually carried out at any time by residents to fill their spare time during work holidays. Hunting activity is not a special means of livelihood. The types of game obtained include wild boar, deer and several other types of animals. However, in the area there is no special land for hunting and trapping. Therefore, in the study area there is no hunting and trapping land that qualifies as HCV 5. However, for a wider landscape level, namely forested areas around the village, these forests still contain several types of game such as wild boar, deer and others. the people of the two villages still frequently hunt in this area. In the in-depth interviews and FGD activities, there were no people who were mainly hunters. On average, people who are met only occasionally carry out hunting activities, because hunting activities are outside of their main activities, such as farmers, planters, or others. hunting activities only to fill spare time. Meanwhile, the fulfillment of animal protein is obtained by buying.

the use of traditional medicines / herbal medicines is still an alternative for treatment. How to get these herbal medicines is obtained from the natural surroundings or deliberately cultivated in the yard or field; Meanwhile, people close to adequate health facilities usually prefer to use medicines from pharmacies, pustu, health centers or from small shops. People are familiar with the medicines they get at the food stalls, or if the disease starts to get worse, they usually seek treatment at the nearest mantri, midwife, puskesmas, or auxiliary puskesmas (PUSTU). The characteristics of fulfilling the need for medicine for the community in the village around the PT. MIP as previously explained that in the area of PT. MIP does not find any natural ecosystems that have important value in the fulfillment of medicines for the villagers around the PT. MIP, so that HCV 5 is not found in the area. The current trend is the shift from using traditional medicines made from herbal ingredients to pharmaceutical drugs. This is because there are more and more types of medicinal plants that are getting rare and people who have less knowledge of how to concoct these traditional medicines and the easier it is to get pharmaceutical drugs.

The community's main source of fuel for cooking in the villages around PT. MIP is LPG gas and only a small proportion of it still uses firewood and kerosene for cooking. The use of firewood is only when the community has a celebration or celebration. The way for people to get firewood is by taking it from around the rubber plantation they have or from neighboring rubber gardens or from the surrounding environment. So far, the community's need for

firewood has been well fulfilled and does not cost money to collect it; while LPG gas can be obtained easily from small shops or grocery stores around the village. Electricity for household needs has been provided by PLN and it can be said that all households have been reached by the electricity grid. This indicates that there is no area associated with the fuel source that meets the criteria as an HCV 5 area.

Fish is the main source of protein for the villagers around PT. MIP. Most of the fish consumed by the community is obtained by buying and others are obtained by fishing in rivers and swamps around the local village area. The fishing activities carried out are fishing, installing tajur, installing traps and nets. Although fishing activities are not the only way to fulfill fish protein sources, many people still do fishing activities. Specific locations that were used by the community around the study area were Segah River, Tuyu River and Tam An River, Septi River, Petyau River, Ayau River, Petang River, Je River, Klueh River, Mesak River, Abau River, Sengan River, Ngeau River, Tebun River, and Long River which are used by the community. Therefore, in and around PT. MIP contains areas that qualify as HCV 5.

The need for wood is a basic necessity for the community in terms of housing, both for building new houses and for repair purposes. Wood is used for building houses as well as for repairs. Some of the building wood was obtained by villagers around the PT. MIP, part of it is obtained by residents from the gardens around the village that they own. Currently, people tend to prefer to build houses from bricks, iron, aluminum, plastic and cement which are obtained from building materials stores in markets and in villages. This building material is considered easier to obtain, cheaper and more durable than using boards. However, in the area there are still forested areas in Long Ayan Village and Long Ayap Village. Harvesting forest wood in Long Ayan Village and Long Ayap Village is regulated by the village to preserve the village forest. Thus, in and around the area, a location was found that was used as a source of building materials that met the criteria for HCV.

To meet the needs of public toilets around the area of PT. MIP usually uses water that comes from the river in their neighborhood; Meanwhile, residents who are located quite far from the river usually use well water that is built in every yard of the residents' houses. So far, the water needs for toilets for residents around PT. MIP is sufficient. The rivers that are used to fulfill the MCK are Segah River, Tuyu River and Tam An River, Septi River, Petyau River, Ayau River, Petang River, Je River, Klueh River, Mesak River, Abau River, Sengan River, Ngeau River, Tebun River, and Long River.

The villages that fall within the boundaries of the assessment landscape still use rivers to fulfill their water needs for clean water (cooking and drinking) and toilets. There are 15 rivers within the boundary of the assessment landscape that are still used to meet the needs of clean water and / or MCK, so they are designated as HCV 5. Therefore, in and around PT. MIP contains areas that qualify as HCV 5.

Most of the people buy their daily necessities by selling oil palm fruit, rubber sap from other garden crops. Rice yields from fields in Long Ayan Village and Long Ayap Village, which are located in the vicinity of PT. MIP is only used for its own purposes because there is nothing left to sell or exchange. Others work on private plantations and use their wages to buy goods they need. In this regard, in and around the area of PT. MIP does not contain areas that qualify as HCV 5.

In connection with the findings and analysis above, it can be concluded that in the permit area of PT. MIP and its surroundings found HCV 5. The total area of HCV 5 within the landscape boundary of PT. MIP covers an area of 11,502.08 hectares, consisting of 278.02 hectares within the PT. MIP and 11,224.06 ha outside the permit area of PT. MIP. The location of HCV 5 areas is presented in **Table 10**; while maps of HCV 5 areas in and around the work area of PT. MIP served on **Figure 12**.

Table 10. HCV 5 Areas within and around PT. MIP

No.	Location Name	HCV 5 Area (ha)		Total HCV within Landscape (ha) HCV Area PT. MIP
		Inside PT. MIP	Outside PT. MIP	
1	Tuyu River and Buffer	108.54	26.97	135.51
2	Tam An River and Buffer	169.48	50.00	219.48
3	Segah River and Buffer	0.00	898.05	898.05
4	Septi River and Buffer	0.00	295.55	295.55
5	Petyau River and Buffer	0.00	13.81	13.81
6	Ayau River and Buffer	0.00	2.54	2.54
7	Petang River and Buffer	0.00	5.18	5.18
8	Je River and Buffer	0.00	74.15	74.15
9	Kluh River and Buffer	0.00	48.29	48.29
10	Mesak River and Buffer	0.00	35.49	35.49
11	Abau River and Buffer	0.00	112.54	112.54
12	Sengan River and Buffer	0.00	30.03	30.03
13	Ngeau River and Buffer	0.00	57.10	57.10
14	Tebun River and Buffer	0.00	27.90	27.90
15	Long River and Buffer	0.00	4.99	4.99
16	Forest of Long Ayap Village	0.00	4,382.24	4,382.24
17	Forest of Long Ayan Village	0.00	5,427.50	5,427.50
Total Bruto HCV 5		278.02	11,492.32	11,770.34
Total Overlap in each HCV Location		0.00 [*]	268.26	268.26
Total Netto HCV 5		278.02	11,224.06	11,502.08

Note : *) = There is an overlapping location in HCV 5

3.3.6. NKT 6. Cultural Values

The majority of the tribes that inhabit the villages around PT MIP study area are from the Dayak ethnic group, a small proportion who come from other tribes such as Javanese, Bugis, Toraja, Menado, Batak. Based on the results of the interview, it was found that the ethnic composition of the population in Long Ayan Village consisted of 90% of the Dayak Gaai Tribe and 10% of other tribes, while in Long Ayap Village consisted of 90% Dayak Punan Tribe and 10% other tribes. The majority of religions in Long Ayan village are Catholics (60%), others are Protestant Christians (25%) and Islam (15%) with many religious facilities for the Catholic Church 1, Protestant Christian Church 2 and Mosque 1, while the religion adhered to the majority of the people of Long Ayap are Catholics (70%), others are Protestant Christians (28%) and Islam (2%).

The Dayak Gaai tribe who live in the village of Long Ayan, which is on the edge of the Segah River, are better known as the Dayak Segah tribe. In the Dayak Gaai tribe, there is a Balai Adat or Traditional House, which is very important in the life of the Dayak Gaai people. The traditional hall has a function as a place to carry out religious rituals which they usually hold routinely in a few months such as holding a ceremony to start the planting season, a bapalas ceremony, a harvest ceremony, a marriage and death. In addition, the Balai Adat is also used as a venue for various performances of their distinctive arts. The Dayak Gaai are part of the Dayak Bahau tribe. In the past, the Dayak Gaai tribe was famous for their agricultural ability. The livelihood of the Gaai Dayak tribe is actually still on agricultural farming, but other activities are also carried out such as hunting, fishing by spearing, utilizing forest products and raising several livestock to increase income. In addition, at this time, not a few of them are successful and work in the government sector, private employees, teachers and become traders and entrepreneurs.

Long Ayap Village, which has a majority population of the Dayak Punan tribe, has Village Forest Management Rights covering an area of 4,382.24 hectares. The needs for clothing, shelter, food, culture or local culture are closely related to the existence of the forest, starting from traditional ceremonies, taking materials for traditional ceremonies, giving names related to the names of trees, animals and others. If the harvest fails, the community can still take advantage of the sago tree where the location is in the forest around Long Ayap village and it is very protected and its collection is regulated according to the customs in the village. There are still many Dayak Punan cultures that depend on the existence of the forest, such as the culture of inviting fruit and the Beijin harvest feast, whose materials and supplies are taken from the local forest; the need for traditional medicines; and the use of certain types of wood for boats and houses. It has become a tradition when one community gets the game, it will be distributed to other residents. Hunting locations in the forest are highly protected by the community.

In connection with the findings and analysis above, it can be concluded that in the permit area of PT. MIP and its surroundings found HCV 6. The total area of HCV 6 within the landscape boundary of PT. MIP covers an area of 4,382.24 hectares, consisting of 0.00 ha within the PT. MIP and a total of 4,382.24 ha outside the permit area of PT. MIP. The location of HCV 6 areas is presented in **Table 11**; while maps of HCV 6 areas in and around the work area of PT. MIP is presented in **Figure 13**.

Table 11. HCV 6 Areas within and around PT. MIP

No.	Location Name	HCV 5 Area (ha)		Total HCV within Landscape (ha) HCV Area PT. MIP
		Inside PT. MIP	Outside PT. MIP	
1	Forest of Long Ayap Village	0.00	4,382.24	4,382.24
Total Bruto HCV 5		278.02	11,492.32	11,770.34
Total Overlap in each HCV Location		0.00*)	268.26	268.26
Total Netto HCV 5		278.02	11,224.06	11,502.08

Note : *) = There is an overlapping location in HCV 5

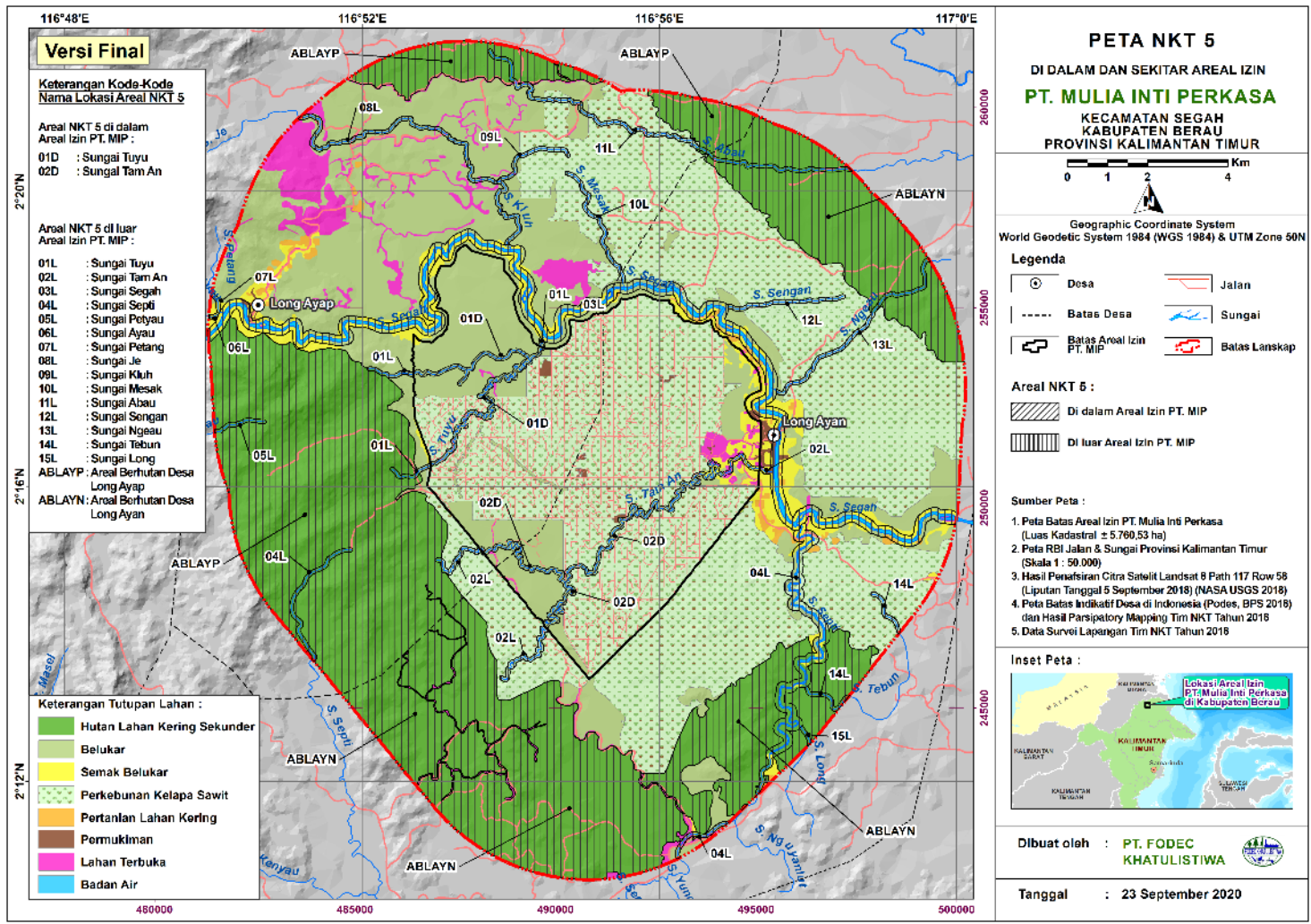


Figure 12. HCV 5 Area Map of PT. MIP (around Concession Area)

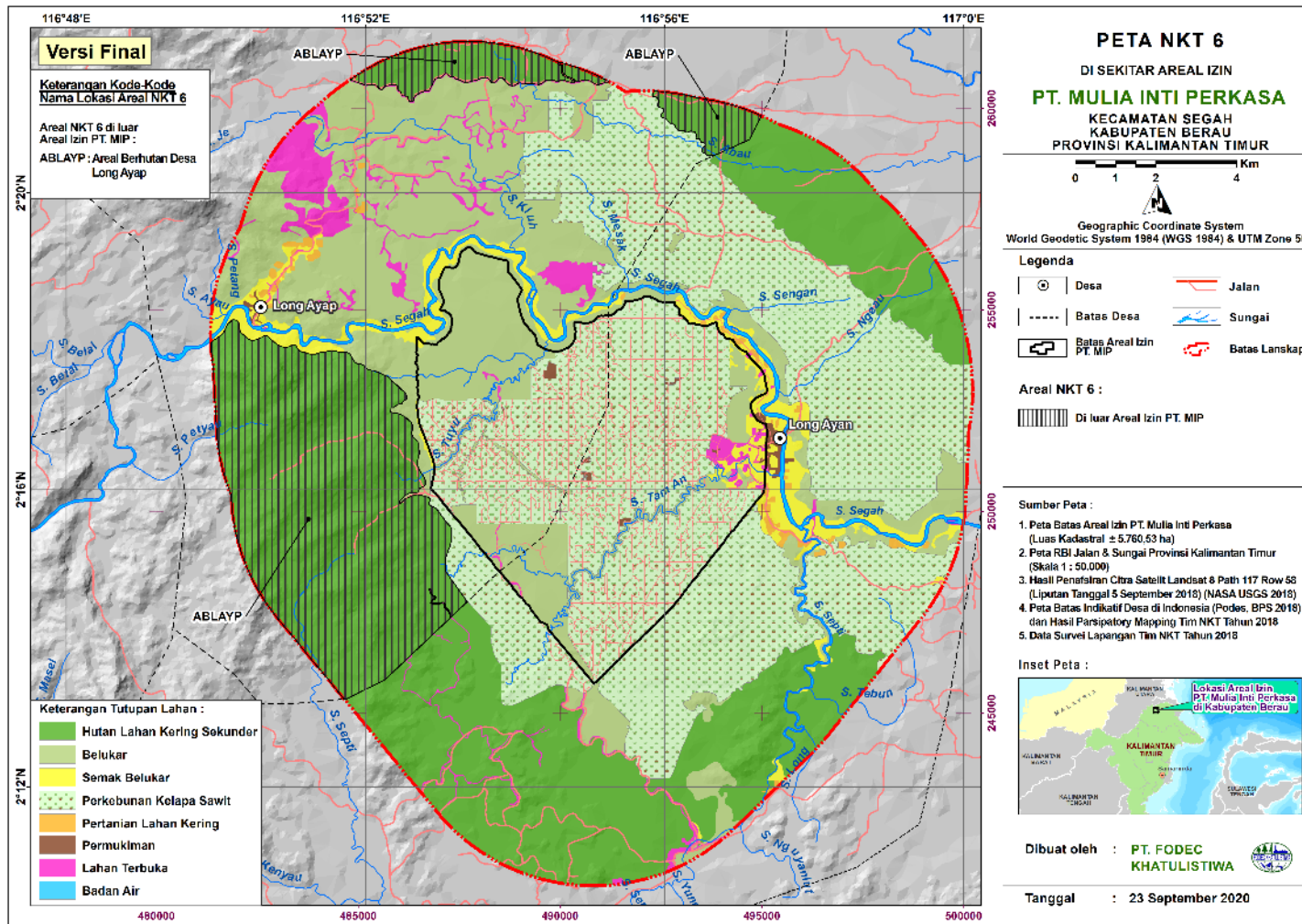


Figure 13. HCV 6 Area Map of PT. MIP (around Concession Area)

3.4. Stakeholders Consultation

Public consultation with stakeholders was carried out by taking into account the Health Protocol and regional regulations related to the COVID-19 Pandemic. One thing that must be done is related to the Health Protocol and regional regulations, namely that meetings that gather many people are not allowed at one time and place. Related to the above, PT. MIP conducts public consultations by following this protocol by visiting agencies or agencies, sub-districts and villages.

This Public Consultation also could not be attended directly by the PT. Fodec Khatulistiwa Team due to several things, among others, 1) during the moratorium period on land clearing, the community continued to press for immediate clearing of plasma land for the two villages (Long Ayap Village and Long Ayan Village); 2) due to strong pressure from the community to immediately clear land, especially in early 2020, it was difficult for PT MIP to find the right schedule with the assessors; and 3) at the time of the Public Consultation, East Kalimantan Province is the Black Zone for the spread of COVID-19, so that the strict health protocols set by the local government and companies cannot invite assessors in Public Consultation activities.

PT. Fodec Khatulistiwa prepares materials to be submitted in public consultations, and the PT. MIP Team gets intensive direction and coordination with assessors so that they can deliver the best possible public consultation, so that in submitting the results of the assessment to the public, the company team can convey it well and the public can receive the results well too.

The first public consultation was conducted by PT MIP Friday, July 24, 2020, the Public Consultation Team of PT. MIP conducts Public Consultations with government agencies such as: Muspika Segah District (Sekcam, Polsek, Koramil), UP staff, Berau Regency Land Service, Berau District Plantation Service, Berau Regency KPHP, Berau District Agriculture and Animal Husbandry Service, Berau Regency Environmental Service and NGO (SPSI). The method used is by visiting the agencies and agencies one by one. A total of 16 people from representatives of each service and agency who can be met by the Public Consultation team of PT. MIP.

Furthermore, on Saturday, July 25, 2020, the second public consultation was held at Long Ayap Village, Segah District. Regarding the applicable Health Protocol, this public consultation visited village stakeholders on a limited basis, with only 8 people deemed to represent the interests of the village community. on Monday, July 27, 2020, the public consultation was continued in Long Ayan Village, Segah District, and visited 7 village stakeholders.

Matters presented in the Public Consultation include: Definition of HCV and its categories / sub-categories, Objectives and Benefits of HCV Assessment, HCV Assessment Process, HCV Assessment Methods, Results of Field Observations (Biodiversity, Environmental Services and Socio-Culture), Findings / Results of preliminary HCV assessments and their maps (draft version), Threats to HCVs, and Recommendations for Management and Monitoring of HCV areas. Key issues / issues and recommendations from the results of the Public Consultation with stakeholders and responses from the HCV assessment in the work area of PT. MIP is presented in **Table 12**.

Based on the results of the implementation of the Public Consultation, stakeholders and the community supported the determination of the HCV area in the PT. MIP as the results that have been obtained from each High Conservation Values. Determination of river border areas (Tuyu River, Tam An River, Segah River, Septi River, Petyau River, Ayau River, Petang River, Je River, Kluh River, Mesak River, Abau River, Sengan River, Ngeau River, Tebun River and Long River), Segah River and Bufferzone Protected Forest, Long Ayap Village forested area and Long Ayan Village forested area in PT. MIP and its landscape boundaries have been agreed upon and understood by the community as a conservation area that must be guarded together. In general, the community is also very enthusiastic and committed to always encouraging the company to jointly protect the environment in the work area of PT. MIP and the existence and sustainability of the designated HCV areas.

Table 12. Public Consultation Summary of PT. MIP

Date	Name / Position / Occupation	Organization / Social Group	Key Issues or Issues & Recommendations	Responses
July 24, 2020	Suprianto / Head of Department	Berau District Land Service	<ol style="list-style-type: none"> 1. Give positive appreciation to HCV socialization activities 2. What has been designated as HCV areas is maintained and preserved 3. Please obtain HCV materials for official records 	<ol style="list-style-type: none"> 1. Giving thanks for the appreciation from the Berau District Land Service 2. PT MIP will carry out regular monitoring regarding the management of the HCV area 3. After the socialization, the HCV material will be distributed to the land agency
July 24, 2020	Purwo Hindarto / Head of Business Development	Berau District Plantation Office	<ol style="list-style-type: none"> 1. Giving appreciation for the prudence of HCV socialization carried out by PT MIP 2. So that in the management of HCV must pay attention to applicable regulatory principles 3. The managed area is always reported to the relevant Dinas as the responsibility of the company 	<ol style="list-style-type: none"> 1. Giving thanks for the appreciation from the district plantation office. Berau 2. Regarding the management of the HCV area, PT MIP performs in accordance with the prevailing laws and regulations 3. PT MIP will provide periodic reports to the relevant agencies
July 24, 2020	Edhuwin / ISPH Analyst	West Berau KPHP	<ol style="list-style-type: none"> 1. There needs to be recommendations for the implementation of river border conservation, by planting types of conservation plants 2. In managing protected areas in oil palm plantation areas, there is a need for warning boards, boundary signs, socialization and monitoring coordination with stakeholders including government agencies. 	<ol style="list-style-type: none"> 1. PT. MIP will create a work program related to the management of HCV areas, such as installing warning signs, reforestation in river border areas, monitoring standing plants and boards of protected flora and fauna.
July 24, 2020	Lita Handani / Service Secretary	District Agriculture and Livestock Service Office Berau	<ol style="list-style-type: none"> 1. Appreciate PT MIP for conducting HCV socialization 2. Improved management of the HCV area for the sustainability of PT MIP's plantation 	<ol style="list-style-type: none"> 1. Thank you for the appreciation from the Department of Agriculture and Animal Husbandry Kab. Berau. 2. PT MIP has developed a management and monitoring program for all HCV areas
July 24, 2020	Ishab Abdillah / Kasi	Environment and Sanitation Office of Berau Regency	<ol style="list-style-type: none"> 1. Giving appreciation for the HCV socialization 2. For the Mill development plan, it is necessary to plant vegetation that can absorb dust to overcome pollution 3. The waste pond created requires planting of conservation plants so that erosion does not occur and can look more beautiful 	<ol style="list-style-type: none"> 1. Thank you for the appreciation from the Environmental and Cleanliness Office of the District. Berau 2. PT. MIP has started to compile environmental management and environmental monitoring both around the factory and in the waste pond although it is still waiting for the factory construction to be completed
July 24, 2020	Acoy / Staff	Public Works and Spatial Planning	<ol style="list-style-type: none"> 1. In the preparation of all maps, either HCV or otherwise, must be in accordance with their 	<ol style="list-style-type: none"> 1. PT MIP map area is in accordance with the permit granted and is managed as well as

Date	Name / Position / Occupation	Organization / Social Group	Key Issues or Issues & Recommendations	Responses
		Office	<p>designation</p> <p>2. Maintain the plantation area and HCV so that land does not overlap</p>	<p>possible so that there is no overlapping land</p>
July 24, 2020	Tri Anggoro / District Secretary	Segah District	<p>1. Giving appreciation to PT MIP for conducting HCV socialization</p> <p>2. Increase the number of signs and leaflets for protected flora and fauna so that the local community understands and does not hunt anymore.</p>	<p>1. Say thank you for the appreciation given</p> <p>2. PT MIP has installed signs in the HCV area and in a location that is easily seen by everyone and periodically conducts HCV socialization to both employees and villages around the company.</p>
July 24, 2020	Rudi Cahyono / Danramil	Segah District Koramil	<p>1. Giving appreciation to PT MIP for conducting HCV socialization</p> <p>2. In order to conduct socialization more often so as to raise awareness of all people around the company.</p>	<p>1. Say thank you for the appreciation given</p> <p>2. The company periodically conducts outreach to employees and the community around the company.</p>
July 24, 2020	Kendek / Vice Chairman	FSPPP-SPSI	<p>1. Is the management and monitoring of PT MIP's HCV area reported to the relevant agencies.</p>	<p>1. PT MIP reports every 6 months regarding the results of monitoring of HCV management and monitoring to the relevant agencies.</p>
July 24, 2020	Faisal H / Head	Segah District Police Precinct	<p>1. Giving appreciation to PT MIP for conducting HCV socialization</p> <p>2. There is a need to increase awareness of forest fires.</p>	<p>1. Say thank you for the appreciation given</p> <p>2. The company routinely performs emergency response simulations for land and building fires.</p>
July 25, 2020	Katben / Village Head	Long Ayap Vaillage	<p>1. Welcoming PT MIP's environmental management activities</p> <p>2. Inviting all people in Long Ayap village to support activities related to environmental management</p>	<p>1. Say thank you for the appreciation given</p> <p>2. Welcoming the support from the village government</p>
July 25, 2020	Nyuh Mang / Chief of Customs	Long Ayap Vaillage	<p>1. Are village communities still free to carry out activities in areas that have been designated as HCV areas.</p>	<p>1. As long as it does not damage the area and use it in a sustainable manner, always coordinate with the company. Use of the area according to the agreed rules.</p>
July 27, 2020	Jiu Wung / Chief of Customs	Long Ayan Vaillage	<p>1. How can the community know which parts of the area are HCV areas</p> <p>2. Hopefully the HCV determination program by PT MIP will be useful for all</p>	<p>1. PT. MIP will create a work program related to the management of HCV areas, such as installing warning signs, reforestation in river border areas, monitoring standing plants and boards of protected flora and fauna.</p>
July 27, 2020	Sumardi / Public figure	Long Ayan Vaillage	<p>1. People still collect fish in the rivers around the company. Companies to protect the river from being polluted</p> <p>2. So that the community can imitate the environmental management practices carried out by the company</p>	<p>1. PT. MIP would like to thank you for the appreciation</p> <p>2. In line with the designation of river boundaries as HCV areas, hopefully the rivers can be protected from pollution</p>

Date	Name / Position / Occupation	Organization / Social Group	Key Issues or Issues & Recommendations	Responses
July 27, 2020	Teguh Pitoy / Village Head	Long Ayan Vaillage	1. PT. MIP needs to provide continuous awareness to the public in order to protect existing natural resources	1. PT. MIP will assist village governments in providing awareness of the importance of protecting and preserving the environment and protected areas

4. HCV Management and Monitoring

Management of HCV is inseparable from the sustainable management of oil palm plantations, especially in realizing the preservation of ecological / environmental functions and social sustainability. Therefore, the HCV areas found in the PT. MIP must be maintained and its existence increased. HCV monitoring is also an integral part of HCV management. HCV monitoring aims to determine the success and effectiveness of the HCV management activities that have been carried out. Based on data and information obtained from HCV monitoring activities, it is then used as material for improvement and refinement of the follow-up plans for HCV management to be carried out, so that the existence and preservation of functions of HCV areas can be maintained and enhanced in the long term. The total area of the HCV area within the PT. MIP is an area of 1,539.33 ha or 26.72% compared to the total area of PT. MIP (5,760.53 Ha). So that the determination of the extent of the HCV management and monitoring area (HCVMA) in the PT. MIP, along with its Go Area and No Go Area are presented on **Table 13**.

Table 13. Determination of HCV Management and Monitoring Area (HCVMA) in PT. MIP

HCV Area	HCVA in Landscape Boundaries (ha)	HCV Management and Monitoring Area (HCVMA) in PT. MIP (ha)	HCVA that may not be converted within PT. MIP (No Go Areas) (Ha)	HCVA that may be converted within PT. MIP (No Go Areas) (Ha)
HCV 1	12,806.97	1,539.33	1,539.33	0.00
HCV 2	10,026.54	0.00	0.00	0.00
HCV 3	9,809.74	0.00	0.00	0.00
HCV 4	11,502.08	278.02	278.02	0.00
HCV 5	11,502.08	278.02	278.02	0.00
HCV 6	4,382.24	-	-	-
Total¹⁾	12,806.97	1,539.33	1,539.33	0.00

Note :

¹⁾ = The total of HCV is not the same as the sum of all HCV areas due to an overlap between HCV 1, HCV 2, HCV 3, HCV 4, and HCV 5.

Further oil palm plantation management activities, the management and monitoring area (High Conservation Value Management Area / HCVMA) in the permit area of PT. MIP is 1,539.33 Ha. This HCVMA area covers all designated HCV areas within the PT. MIP, namely: (1) Tuyu River and its border covering an area of 108.54 ha; (2) Tam An River and its border covering an area of 169.48 Ha; and (3) Areas of Concentration of RTE Species in Scrub Cover, covering an area of 1,389.41 ha. There is a total overlap of 128.10 ha, namely the overlap of Tuyu river and its borders with concentration area of RTE species in scrubland cover of 74.21 ha and an overlap of Tam An river and its borders with concentration area of RTE species on scrubland cover of 53.89 Ha. So that the total area of the HCVMA area is same as the total of HCV area within the PT. MIP, which is 1,539.33 Ha.

Management and monitoring of HCV, HCVMA areas are divided into areas that cannot be converted (No Go Areas) and areas that can be converted (Go Areas). The areas of HCV that cannot be converted (No Go Areas) within the permit area of PT. MIP is an area where oil palm plantation development is still being maintained or not, covering an area of 278.02

Ha. Meanwhile, the area of HCV that can be converted (Go Areas) is in PT. MIP permit area of is an area of 0.00 Ha or nothing.

Understanding threats to HCVs is an important step in developing management and monitoring recommendations to maintain and / or enhance these values. In detail the recommendations for management and monitoring of HCV values found in PT. MIP is presented in **Table 14** as well as a map of the management and monitoring of HCV areas within the PT. MIP is presented in **Figure 14**.

Table 14. Threats against HCV Areas within and surrounding PT. MIP's Concession Area

HCV	Threats to HCV Areas inside PT. MIP					Threats to HCV areas around PT. MIP				
	A Brief Description of the Presence of Values in the Valuation Area	Main Threats				A Brief Description of the Presence of Values around the Valuation Area	Main Threats			
		Current / Potential	Internal/ External	Direct / indirect	Threat Level		Current / Potential	Internal/ External	Direct / indirect	Threat Level
1	Species Diversity: RTE Category based on Permen LHK No.P.106 Year 2018, CITES, IUCN, Endemic, and Migrant). including Keruing Leaf-large (<i>Dipterocarpus cornutus</i> Dyer) / CR, Meranti Kuning (<i>Shorea gibossa</i>) / CR, Meranti Putih (<i>Shorea lamellata</i> Foxw.) / CR, Lime (<i>Dryobalanops lanceolata</i> Burck) / EN, Ulin (<i>Eusideroxylon zwageri</i> T. & B.) / VU, Pangolin (<i>Manis javanica</i>)	Currently : <ul style="list-style-type: none"> Wildlife poaching by the community. 	External	Direct	Very High	Species Diversity: RTE Category based on Permen LHK No.P.106 Year 2018, CITES, IUCN, Endemic, and Migrant). including Keruing Leaf-large (<i>Dipterocarpus cornutus</i> Dyer) / CR, Meranti Kuning (<i>Shorea gibossa</i>) / CR, Meranti Putih (<i>Shorea lamellata</i> Foxw.) / CR, Lime (<i>Dryobalanops lanceolata</i> Burck) / EN, Ulin (<i>Eusideroxylon zwageri</i> T. & B.) / VU, Pangolin (<i>Manis javanica</i>) / CR, Owa Kalawat (<i>Hylobates muelleri</i>) / EN, Monkey (<i>Macaca nemestrina</i>) / VU, Sun Bear (<i>Helarctos</i>)	Currently : <ul style="list-style-type: none"> Wildlife poaching by the community 	External	Direct	Very High
		Potential : <ul style="list-style-type: none"> Habitat fragmentation due to illegal logging in areas that have land cover in the form of shrubs and mixed plantations in the river border area and other type area carried out by the community into 	External	Direct	High		<ul style="list-style-type: none"> River pollution due to the chemicals use (fertilizers and pesticides) from the oil palm plantations and community plantation / farms around PT. MIP area. 	External	Direct	Very High
		<ul style="list-style-type: none"> Habitat area reducing due to land conversion in the form of shrubs and bush shrubs into farming fields and agricultural land. 	External	Direct	Very High		External	Direct	Very High	

HCV	Threats to HCV Areas inside PT. MIP					Threats to HCV areas around PT. MIP				
	A Brief Description of the Presence of Values in the Valuation Area	Main Threats				A Brief Description of the Presence of Values around the Valuation Area	Main Threats			
		Current / Potential	Internal/ External	Direct / indirect	Threat Level		Current / Potential	Internal/ External	Direct / indirect	Threat Level
	/ CR, Owa Kalawat (<i>Hylobates muelleri</i>) / EN, Monkey (<i>Macaca nemestrina</i>) / VU, Sun Bear (<i>Helarctos malayanus</i>) / VU, Sambar (<i>Deer unicolor</i>). Found 2 rivers and their borders, forested areas, water reservoirs	farms / agricultural fields				<i>malayanus</i>) / VU, Sambar (<i>Deer unicolor</i>). Found 2 rivers and their borders, forested areas, water reservoirs.				
		<ul style="list-style-type: none"> River water quality decreasing due to land clearing, washing / runoff, fertilizers & pesticides or other pollution from oil palm plantations and other nearby companies that enter the rivers. 	Internal	Direct	Very High		<ul style="list-style-type: none"> Habitat fragmentation due to illegal logging in areas with land cover in the form of secondary dryland forest. 	External	Direct	High
		<ul style="list-style-type: none"> Household waste pollution. 	Internal	Indirect	Very High		<ul style="list-style-type: none"> River water quality decreasing due to land clearing, 	External	Direct	Very High

HCV	Threats to HCV Areas inside PT. MIP					Threats to HCV areas around PT. MIP					
	A Brief Description of the Presence of Values in the Valuation Area	Main Threats				A Brief Description of the Presence of Values around the Valuation Area	Main Threats				
		Current / Potential	Internal/ External	Direct / indirect	Threat Level		Current / Potential	Internal/ External	Direct / indirect	Threat Level	
							washing / runoff, fertilizers & pesticides or other pollution from oil palm plantations and other nearby companies that enter the rivers.				
							• Pollution from household waste	External	Indirect		High
2	Not found	Not found	Not found	Not found	Not found	Landscape-level Ecosystems, Ecosystem Mosaic and IFL The existence of the Sungai Segah Protection Forest and its bufferzone, the Forest Area of Long Ayap Village and the Forest Area of the Long Ayan Village.	Currently : • Illegal logging by community members in the HCV 2 area (Segah River Protection Forest and bufferzone, Long Ayap Village Forest Area and Long Ayan Village Forest Area)	External	Direct		High
							Potential : • The reduction in the area of HCV 2 (in Segah River Protection Forest and bufferzone, Long Ayap Village Forest Area and Long	External	Direct		Very High

HCV	Threats to HCV Areas inside PT. MIP					Threats to HCV areas around PT. MIP					
	A Brief Description of the Presence of Values in the Valuation Area	Main Threats				A Brief Description of the Presence of Values around the Valuation Area	Main Threats				
		Current / Potential	Internal/ External	Direct / indirect	Threat Level		Current / Potential	Internal/ External	Direct / indirect	Threat Level	
							Ayan Village Forest Area) due to land conversion carried out by the community into agricultural gardens / fields.				
3	Not found	Not found	Not found	Not found	Not found	Ecosystems and Habitat: The existence of threatened ecosystems in the vicinity of PT. MIP (in the form of Forested Areas in Associated Ecosystems of lowland forest on alluvium soil and lowland forest on sandstone, Forested Areas in Lowland Forest Ecosystems on sandstone and Forested Areas in Sub-mountainous or mountainous and high mountain forest ecosystems on other	Currently : <ul style="list-style-type: none"> • Illegal logging by community members. 	External	Direct	High	
						Potential : <ul style="list-style-type: none"> • Land fires 	External	Direct	Very High		

HCV	Threats to HCV Areas inside PT. MIP					Threats to HCV areas around PT. MIP				
	A Brief Description of the Presence of Values in the Valuation Area	Main Threats				A Brief Description of the Presence of Values around the Valuation Area	Main Threats			
		Current / Potential	Internal/ External	Direct / indirect	Threat Level		Current / Potential	Internal/ External	Direct / indirect	Threat Level
						substrates).				
							• Land conversion	External	Direct	High
							• Poor management	Internal	Indirect	Low
4	Ecosystem services: The presence of the area, river and border (S. Tuyu, S. Tam An), functions as a manager of extreme water events, maintenance of water quality, providing clean water and flood control and protection from fire.maintenance, water supply and flood control and fire protection.	Currently : • Encroachment and Illegal logging.	External	Direct	High	Ecosystem services: The presence of the area, river and border (S. Tuyu, S. Tam An), functions as a manager of extreme water events, maintenance of water quality, providing clean water and flood control and protection from fire.maintenance, water supply and flood control and fire protection.	Currently : • Loss of land cover in the form of shrubs in the river border area.	External	Direct	Very high
		• Soil and water pollution.	Internal	Indirect	Very high		• River water pollution due to chemicals use (fertilizers and pesticides) from the oil palm plantations and community plantation / farms around the area.	External	Direct	Very high
		• Illegal gold mining in river bodies or their borders	External	Direct	High		• Illegal gold mining in river bodies or their borders	External	Direct	High
		Potential : • Road construction in the HCV area	Internal	Direct	Very high		Potential : • Loss of land cover in the form of shrubs and	External	Indirect	High

HCV	Threats to HCV Areas inside PT. MIP					Threats to HCV areas around PT. MIP				
	A Brief Description of the Presence of Values in the Valuation Area	Main Threats				A Brief Description of the Presence of Values around the Valuation Area	Main Threats			
		Current / Potential	Internal/ External	Direct / indirect	Threat Level		Current / Potential	Internal/ External	Direct / indirect	Threat Level
		<ul style="list-style-type: none"> • Extreme weather 	External	Direct	High		shrubs in the river border area			
		<ul style="list-style-type: none"> • Operational activities will result in silting rivers, increasing river water discharge in the rainy season and decreasing river water discharge in the dry season, and increasing sedimentation. 	Internal	Indirect	Low		<ul style="list-style-type: none"> • Operational activities of surrounding companies and communities that will cause river siltation, increase river water discharge in the rainy season and decrease river water flow in the dry season, and increase erosion. 	External	Direct	Very high
							<ul style="list-style-type: none"> • Pollution of household waste. 	External	Direct	High
							<ul style="list-style-type: none"> • Loss of water supply needed by downstream communities. 	External	Indirect	Very high
5	Community Needs: The presence of areas, rivers and borders (S. Tuyu, S. Tam An),	Currently : <ul style="list-style-type: none"> • River water pollution due to chemicals use (fertilizers and pesticides) from the oil palm plantations and community plantation / farms around the area. 	External Internal	Direct	Very high	Community Needs: The presence of areas, rivers and borders (S. Tuyu, S. Tam An), serves as	Currently : <ul style="list-style-type: none"> • River water pollution due to chemicals use (fertilizers and pesticides) from the oil palm plantations and community 	External	Direct	Very high

HCV	Threats to HCV Areas inside PT. MIP					Threats to HCV areas around PT. MIP				
	A Brief Description of the Presence of Values in the Valuation Area	Main Threats				A Brief Description of the Presence of Values around the Valuation Area	Main Threats			
		Current / Potential	Internal/ External	Direct / indirect	Threat Level		Current / Potential	Internal/ External	Direct / indirect	Threat Level
	serves as a fulfillment of the basic needs and protein of the community					a fulfillment of the basic needs and protein of the community	plantation / farms around the area.			
		<ul style="list-style-type: none"> Illegal gold mining in river bodies or their borders 	External	Direct	High		<ul style="list-style-type: none"> Illegal gold mining in river bodies or their borders 	External	Direct	High
		<p>Potential :</p> <ul style="list-style-type: none"> Conversion of forested land along the riverbanks into plantations will further reduce people's access to hunting. Hunt this time on a temporary basis to fill spare time. While the types of prey are limited, with the diminishing forest in this area. 	External	Indirect	High		<p>Potential :</p> <ul style="list-style-type: none"> Conversion of forested land along the riverbanks into plantations will further reduce people's access to hunting. Hunt this time on a temporary basis to fill spare time. While the types of prey are limited, with the diminishing forest in this area. 	External	Indirect	High
		<ul style="list-style-type: none"> Pollution of household waste. 	External	Direct	High		<ul style="list-style-type: none"> Pollution of household waste. 	External	Direct	High

HCV	Threats to HCV Areas inside PT. MIP					Threats to HCV areas around PT. MIP				
	A Brief Description of the Presence of Values in the Valuation Area	Main Threats				A Brief Description of the Presence of Values around the Valuation Area	Main Threats			
		Current / Potential	Internal/ External	Direct / indirect	Threat Level		Current / Potential	Internal/ External	Direct / indirect	Threat Level
		<ul style="list-style-type: none"> Operational activities will result in silting rivers, increasing river water discharge in the rainy season and decreasing river water discharge in the dry season, and increasing sedimentation.. 	External	Indirect	Very high		<ul style="list-style-type: none"> Operational activities will result in silting rivers, increasing river water discharge in the rainy season and decreasing river water discharge in the dry season, and increasing sedimentation.. 	External	Indirect	Very high
6	Not found	Not found	Not found	Not found	Not found	Cultural Values: Village forest that is still maintained by the people of Long Ayap Village	Currently : Illegal logging, conversion of land carried out by the community into gardens / agricultural fields.	External	Direct	Very high

Table 15. HCV Management and Monitoring Recommendations within and surrounding PT. MIP's Concession Area

HCV	HCV Management and Monitoring Recommendations inside PT. MIP's Concession Area			HCV Management and Monitoring Recommendations around PT. MIP's Concession Area		
	Threat	Management Recommendations	Monitoring Recommendations	Threat	Management Recommendations	Monitoring Recommendations
HCV 1	<ul style="list-style-type: none"> Wildlife poaching by the community. Habitat fragmentation due to illegal logging in areas that have land cover in the form of shrubs and mixed plantations in the river border and other type area carried out by the community into agricultural fields / fields. Decreased river water quality due to land clearing, washing / runoff of fertilizers & pesticides or other pollution from oil palm plantations of other companies in the vicinity that enter the rivers. Pollution of household waste. 	<ul style="list-style-type: none"> Mark boundaries and maintain boundary markers within the working area of PT. MIP as HCV 1 area Internal and external HCV socialization. Conduct prevention, protection and control of disturbances to HCV management areas (wildlife hunting, illegal logging and area conversion) through activities: installation and maintenance of HCV markings in strategic access points, and routine patrols. Conduct biodiversity surveys especially on RTE species to ascertain populations of HCV 1 species. Carry out rehabilitation and restoration as an effort to foster the habitat of RTE species by planting native trees such as banyan (<i>Ficus benjamina</i> L.), forest mango (<i>Mangifera foetida</i> Lour.), Walnuts (<i>Canarium sp</i>) and others. Replanting dead plants based on monitoring results 	<ul style="list-style-type: none"> Conduct annual monitoring of HCV 1 population in HCV management areas. Develop periodic monitoring systems to ensure that hunting, illegal logging and land conversion activities are minimized. Conduct periodic monitoring of the effectiveness of prevention, protection and mitigation activities against disturbances in HCV management areas that have been carried out. Monitor rehabilitation and restoration plants. At least once a year. Collaborate with 3rd parties in monitoring RTE species. Perform regular river water quality tests, at least every 6 months. Monitoring locations are scattered in the upstream, middle and upstream areas within the garden area. 	<ul style="list-style-type: none"> Wildlife hunting by the community. Pollution of river water due to the use of chemicals (fertilizers and pesticides) from the company's oil palm plantations in the vicinity of PT. MIP and community gardens / farms. Reduced habitat area due to land conversion with cover in the form of shrubs and shrubs. Habitat fragmentation occurs due to illegal logging in areas covered by land in the form of scrub and scrub, both on river borders and in forested areas. Decreased river water quality due to land clearing, leaching / runoff of fertilizers and pesticides or other pollution from the company's oil palm plantations and others in the vicinity that enter the rivers. Contamination of household waste. 	<ul style="list-style-type: none"> Mark boundaries and maintain boundaries of forested areas and river borders in the field. Internal and external HCV socialization. Conduct prevention, protection and control of disturbances to HCV management areas (wildlife hunting, illegal logging and area conversion) through activities: installation and maintenance of HCV markings in strategic access points, and routine patrols. Conduct further surveys to ascertain the status of HCV 1 species populations. Carry out rehabilitation and restoration as an effort to maintain the habitat of RTE species carried out with the community, through planting native local species that have multiple benefits, both for animals and for the community. These types include forest mango (<i>Mangifera foetida</i> Lour.), Durian (<i>Durio sp</i>), Keranji (<i>Dialium sp</i>), and others. Doing embroidery of dead 	<ul style="list-style-type: none"> Conduct annual monitoring of HCV 1 population in HCV management areas. Develop periodic monitoring systems to ensure that hunting, illegal logging and land conversion activities are minimized. Conduct periodic monitoring of the effectiveness of prevention, protection and mitigation activities against disturbances in HCV management areas that have been carried out. Periodically monitor the intensity of disturbance to river borders, including illegal hunting, illegal logging and area conversion. Monitor rehabilitation and restoration plants with the community at least once a year. Cooperating with 3rd parties in monitoring RTE species. Conduct periodic monitoring of rehabilitation and restoration activities in the river border and forested areas closest

HCV	HCV Management and Monitoring Recommendations inside PT. MIP's Concession Area			HCV Management and Monitoring Recommendations around PT. MIP's Concession Area		
	Threat	Management Recommendations	Monitoring Recommendations	Threat	Management Recommendations	Monitoring Recommendations
		<ul style="list-style-type: none"> • Coordinate with relevant agencies in order to reduce poaching, illegal logging and conversion of the area around the permit area, as well as effective law enforcement. • Maintaining river border (riparian areas): (1) Rehabilitating and restoring river border areas that have land cover in the form of shrubs, mixed plantations and open land; (2) On land cover in the form of oil palm plantations and dry land agriculture, sustainable management practices are applied, namely clearing land only around plants with a radius of 1 meter and not using herbicides and fertilizing is carried out by means of burial; (3) Making rorak or ridudan, (4) Overcoming narrowing (due to rubbish and others) and river silting, (5) Improvement of watershed "filters" especially along river borders by planting grasses or other plants that can close tightly ground level; and (7) Securing river borders 			<ul style="list-style-type: none"> plants based on monitoring results. • Maintenance of river border (riparian areas): (1) Rehabilitating and restoring river border areas that have land cover in the form of shrubs, swamp shrubs and open land; (2) On land cover in the form of oil palm plantations and dry land agriculture, sustainable management practices are applied, namely clearing land only around plants with a radius of 1 meter and not using herbicides and fertilizing is carried out by means of burial; (3) Making rorak or guludan, (4) Tackling narrowing (due to rubbish and others) and river silting, (5) On land cover in the form of secondary dryland forest activities are carried out to prevent and spread the spread of exotic and invasive species; (6) Improvement of watershed "filters" especially along river borders by planting grasses or other plants that can close the ground surface; and (7) Securing river borders that are prone to landslides, for 	<ul style="list-style-type: none"> to the PT MIP permit area. • Perform regular river water quality tests, at least every 6 months. The monitoring location is spread out over the nearest river which borders PT. MIP.

HCV	HCV Management and Monitoring Recommendations inside PT. MIP's Concession Area			HCV Management and Monitoring Recommendations around PT. MIP's Concession Area		
	Threat	Management Recommendations	Monitoring Recommendations	Threat	Management Recommendations	Monitoring Recommendations
		<p>that are prone to landslides, for example by planting relatively light and deep-rooted plants such as bamboo (if sediment originates from river bank erosion).</p> <ul style="list-style-type: none"> • Installing a sign prohibiting the flow of household waste directly into the river. • Creating a pool for collecting household waste. So that the household waste before being discharged into the river has gone through a sedimentation process first in a holding pond. 			<p>example by planting relatively light and deep-rooted plants such as bamboo (if sediment originates from river bank erosion).</p> <ul style="list-style-type: none"> • Coordinate with relevant agencies in order to reduce poaching, illegal logging and conversion of the area around the permit area, as well as effective law enforcement. • Outreach to the community regarding the dangers of river water pollution. • Coordinating with related governments, as well as other companies bordering PT. MIP related to river pollution. 	
HCV 2	-	-	-	<ul style="list-style-type: none"> • Illegal logging by community members in the HCV 2 area (Segah river Protection Forest and its bufferzone, Long Ayap Village Forest Area and Long Ayan Village Forest Area) • The reduction in the area of HCV 2 (in Segah river Protection Forest and its bufferzone, Long Ayap Village Forest Area and Long Ayan Village Forest Area) due to land conversion carried out by the community into 	<ul style="list-style-type: none"> • Perform boundary marking and maintenance of boundary markings for HCV 2 areas (in Sungai Segah Protection Forest and its bufferzone, Forest Area of Long Ayap Village and Forest Area of Long Ayan Village) • Conduct internal and external HCV socialization. • Preventing, protecting, and overcoming disturbances to HCV 2 	<ul style="list-style-type: none"> • Develop a periodic monitoring system to ensure that illegal logging and land conversion are minimized. • Conduct periodic monitoring of the effectiveness of prevention, protection and control activities against disturbances in the HCV management area that have been carried out. • Monitor disturbance intensity periodically,

HCV	HCV Management and Monitoring Recommendations inside PT. MIP's Concession Area			HCV Management and Monitoring Recommendations around PT. MIP's Concession Area		
	Threat	Management Recommendations	Monitoring Recommendations	Threat	Management Recommendations	Monitoring Recommendations
				agricultural gardens / fields.	<p>management areas (illegal logging and area conversion) through activities: installing and maintaining HCV markings in strategic access points, as well as regular patrols.</p> <ul style="list-style-type: none"> • Conduct further surveys to confirm the population status of vegetation types and habitat quality for HCV 2 areas • Coordinating with related agencies in order to reduce illegal logging and conversion of areas around the permit area, as well as to enforce the law effectively. • Coordinating with related agencies in carrying out rehabilitation and restoration activities if needed in HCV 2 areas. 	<p>including illegal logging and land conversion.</p> <ul style="list-style-type: none"> • Conduct periodic monitoring of rehabilitation and restoration activities if they have been carried out.
HCV 3	<ul style="list-style-type: none"> • Not found 	<ul style="list-style-type: none"> • Not found 	<ul style="list-style-type: none"> • Not found 	<ul style="list-style-type: none"> • Illegal harvesting of wood by community members. • Water pollution due to chemicals use (fertilizers and pesticides) from the oil palm plantations and community plantation / farms around the area • Land fires • Land conversion • Poor management 	<ul style="list-style-type: none"> • Marking area boundaries and granting a Signboard (Notification Board or HCV Area Remarks Board), which is at a designated HCV 3 location. • Arrangement of SOP on Arrangement, Boundary Marking and Protection of HCV 3 areas. • Dissemination to local agencies, surrounding companies and surrounding 	<ul style="list-style-type: none"> • Routine monitoring and security patrols. • Joint patrols with nearby companies. • Monitoring of boundary signs and the presence of the Signboard • Monitoring of disturbance intensity (prevention of encroachment / illegal logging). • Inventory of flora and

HCV	HCV Management and Monitoring Recommendations inside PT. MIP's Concession Area			HCV Management and Monitoring Recommendations around PT. MIP's Concession Area		
	Threat	Management Recommendations	Monitoring Recommendations	Threat	Management Recommendations	Monitoring Recommendations
					<p>communities about the existence of HCV 3 areas with the main objective of prohibiting illegal timber harvesting.</p> <ul style="list-style-type: none"> • Inventory of flora and fauna types in HCV 3 areas. • Rehabilitation of the area by planting endemic / local species and fruit plants that are favored by animals or multifunctional plants such as Guava (<i>Eugenia</i> sp.), Banyan (<i>Ficus benjamina</i>), Figs (<i>Ficus spp</i>), Binjai / Kemang (<i>Mangifera caesia</i>) Forest Mangosteen (<i>Garcinia diocia</i>), Rambutan Forest (<i>Arytera littoralis</i>), and Terap (<i>Artocarpus elasticus</i>). • Waste management (fertilizers and herbicides) by means of using environmentally friendly materials appropriately and analyzing surface and ground water quality. • Installation of fire hazard signs in HCV 3 area • Dissemination of hazards and prevention of forest fires. • Preparation of company regulations / regulations 	<p>fauna in it periodically</p> <ul style="list-style-type: none"> • Make agencies and communities together as partners in maintaining the existence of HCV 3 areas. • Monitoring of fire hazards / hotspots through realtime updating of hotspots. • Cooperate in fire fighting (in the event of a fire) with nearby villages such as creating a firefighting team consisting of members of the surrounding village community. In addition, it can also work with District officials, Polsek and Koramil.

HCV	HCV Management and Monitoring Recommendations inside PT. MIP's Concession Area			HCV Management and Monitoring Recommendations around PT. MIP's Concession Area		
	Threat	Management Recommendations	Monitoring Recommendations	Threat	Management Recommendations	Monitoring Recommendations
					<p>regarding no land clearing activities in HCV 3 areas.</p> <ul style="list-style-type: none"> • Close access to public roads in HCV 3 areas. • Formulation of SOPs to prevent the reduction and restoration of specific forest cover. • Improve soil and water conservation techniques to reduce erosion and increase surface water absorption by implementing SOPs properly. • Increase the participation of surrounding communities by providing training in correct and sustainable ecosystem management. 	
HCV 4	<ul style="list-style-type: none"> • Encroachment and illegal logging. • Land and water pollution. • Illegal gold mining in river bodies or their borders • Construction of roads / bridges in HCV areas • Extreme weather • Operational activities will result in silting rivers, increasing river 	<ul style="list-style-type: none"> • Area boundary marking and provision of a Signboard (Notification Board or HCV Area Information Board), namely at the designated HCV 4 locations. • Preparation of SOP for Arrangement, Boundary Marking and Protection of Areas with High Conservation Value 4. • Outreach to local agencies, company workers and employees 	<ul style="list-style-type: none"> • Routine monitoring and security patrols. • Joint patrols with nearby companies. • Monitoring of boundary signs and the presence of the Signboard. • Monitoring of disturbance intensity (prevention of encroachment / illegal logging). • Cooperate with related parties / authorities in securing and 	<ul style="list-style-type: none"> • The loss of land cover in the form of shrubs and shrubs in the river border areas and forested areas in Long Ayap and Long Ayan villages. • River water pollution due to the use of chemicals (fertilizers and pesticides) from the oil palm plantations of the company and other companies in the vicinity and community gardens / agricultural fields / rice fields. • Illegal gold mining in river 	<ul style="list-style-type: none"> • Area boundary marking and provision of a Signboard (Notification Board or HCV Area Information Board), namely at the designated HCV 4 locations. • Preparation of SOP for Arrangement, Boundary Marking and Protection of Areas with High Conservation Value 4. • Outreach to local agencies, company workers and employees as well as the surrounding 	<ul style="list-style-type: none"> • Routine monitoring and security patrols. • Joint patrols with nearby companies. • Monitoring of boundary signs and the presence of the Signboard. • Monitoring of disturbance intensity (prevention of encroachment / illegal logging). • Cooperate with related parties / authorities in securing and

HCV	HCV Management and Monitoring Recommendations inside PT. MIP's Concession Area			HCV Management and Monitoring Recommendations around PT. MIP's Concession Area		
	Threat	Management Recommendations	Monitoring Recommendations	Threat	Management Recommendations	Monitoring Recommendations
	<p>water discharge in the rainy season and decreasing river water discharge in the dry season, and increasing sedimentation.</p>	<p>as well as local communities about the existence of HCV areas with the main objective of prohibiting illegal logging.</p> <ul style="list-style-type: none"> • Establishment of a prohibition board for illegal mining in HCV 4 areas as well as appeals and outreach to communities that have the potential to carry out illegal mining activities. • Inventory of flora and fauna in the HCV 4 area. • Rehabilitation of the area by planting endemic / local species and fruit trees favored by animals or multi-functional plants such as guava (<i>Eugenia sp.</i>), Fig wood (<i>Ficus spp</i>), Binjai / Kemang (<i>Mangifera caesia</i>). • Application of environmentally friendly cultivation methods minimizes the release of contaminants by prioritizing the use of organic fertilizers for crop blocks close to rivers. • Waste management (fertilizers and herbicides) by using environmentally friendly materials appropriately 	<p>overcoming areas from illegal mining and other destructive activities.</p> <ul style="list-style-type: none"> • Inventory of flora and fauna in it periodically. • Make agencies and communities together as partners in maintaining the existence of HCV 4 areas. • More intensive climate and rainfall monitoring, especially in HCV 4 areas. • Monitoring the frequency of drought and drought. 	<p>bodies or river borders</p> <ul style="list-style-type: none"> • The loss of land cover in the form of shrubs and shrubs in the river border area. • The operational activities of the company in the vicinity and the community will result in silting the river, increasing river water discharge in the rainy season and decreasing river water discharge in the dry season. • Contamination of household waste. • Loss of water supplies needed by the community in parts. 	<p>community</p> <ul style="list-style-type: none"> • Existence of HCV areas with the main objective of prohibiting illegal logging. • Establishment of a prohibition board for illegal mining in HCV 4 areas as well as appeals and outreach to communities that have the potential to carry out illegal mining activities. • Inventory of flora and fauna in HCV 4 areas. • Rehabilitation of the area by planting endemic / local species and fruit trees favored by animals or multi-functional plants such as guava (<i>Eugenia sp.</i>), Fig wood (<i>Ficus spp</i>), Binjai / Kemang (<i>Mangifera caesia</i>). • Application of environmentally friendly cultivation methods minimizes the release of contaminants by prioritizing the use of organic fertilizers for plant blocks close to rivers. • Waste management (fertilizers and herbicides) by using environmentally friendly materials appropriately and analyzing the quality of surface and ground water. • Managing domestic and agricultural / plantation 	<p>overcoming areas from illegal mining and other destructive activities.</p> <ul style="list-style-type: none"> • Inventory of flora and fauna in it periodically • Make agencies and communities together as partners in maintaining the existence of HCV 4 areas. • More intensive climate and rainfall monitoring, especially in HCV 4 areas. • Monitoring the frequency of drought and drought.

HCV	HCV Management and Monitoring Recommendations inside PT. MIP's Concession Area			HCV Management and Monitoring Recommendations around PT. MIP's Concession Area		
	Threat	Management Recommendations	Monitoring Recommendations	Threat	Management Recommendations	Monitoring Recommendations
		<p>and analyzing the quality of surface and ground water.</p> <ul style="list-style-type: none"> Managing domestic and agricultural / plantation waste by implementing an appropriate Wastewater Management System (SPAL) which is located not close to a river. For example, for household waste by making collection tanks and infiltration tanks. In the collection basin, a space is provided which is useful as a catcher for garbage, sand and oil. Meanwhile, in the infiltration tank, charcoal and coral are given to filter out pollutants. Meanwhile, agricultural / plantation waste can create an oxidation pool or with other technologies. Preparation of provisions / regulations from the company regarding no land clearing activities in HCV 4 areas. Close public road access in HCV 4 areas. Increase the participation of the surrounding community by providing training in proper and sustainable 			<p>waste by implementing an appropriate Wastewater Management System (SPAL) which is located not close to a river. For example, for household waste by making collection tanks and infiltration tanks. In the collection basin, a space is provided which is useful as a catcher for garbage, sand and oil. Meanwhile, in the infiltration tank, charcoal and coral are given to filter out pollutants. Meanwhile, agricultural / plantation waste can create an oxidation pool or with other technologies.</p> <ul style="list-style-type: none"> Preparation of provisions / regulations from the company regarding no land clearing activities in HCV 4 areas. Close public road access in HCV 4 areas. Increase the participation of the surrounding community by providing training in good forest ecosystem management. 	

HCV	HCV Management and Monitoring Recommendations inside PT. MIP's Concession Area			HCV Management and Monitoring Recommendations around PT. MIP's Concession Area		
	Threat	Management Recommendations	Monitoring Recommendations	Threat	Management Recommendations	Monitoring Recommendations
		ecosystem management.				
HCV 5	<ul style="list-style-type: none"> River water pollution due to the use of chemicals (fertilizers and pesticides) from the company's oil palm plantations and community gardens / agricultural fields / rice fields. Illegal gold mining in river bodies or their borders Conversion of forested land along river borders and rice fields into plantations will further reduce people's access to hunting. Hunt this time on a temporary basis to fill spare time. While the types of prey are limited, with the diminishing forest in this area. Contamination of household waste. Operational activities will result in silting rivers, increasing river water discharge in the rainy season and decreasing river water discharge in the dry season, and increasing sedimentation. 	<ul style="list-style-type: none"> Installing name tags for limited hunting (for example: not hunting protected and / or endangered species). Controlling hunting activities carried out by the community. Making a board for prohibiting illegal mining in the HCV 4 area for appeals and socialization to the community as well as those carrying out illegal mining activities. Management of domestic and agricultural / plantation waste by implementing an appropriate Wastewater Management System (SPAL) which is located not near a river. For example, for household waste by making collection tanks and infiltration tanks. In the collection basin, a space is provided which is useful as a catcher for garbage, sand and oil. Meanwhile, in the infiltration tank, charcoal and coral are given to filter out pollutants. Meanwhile, agricultural / plantation waste can 	<ul style="list-style-type: none"> Develop and implement a participatory monitoring system to periodically track the availability of basic needs of the community. Conduct periodic monitoring of community participation in reducing environmental impacts (for example: illegal logging land conversion and use of fertilizers and pesticides in gardens / fields). Cooperate with related parties / authorities in securing and overcoming areas from illegal mining and other destructive activities. Conduct periodic monitoring of community perceptions of the quantity and quality of river water 	<ul style="list-style-type: none"> River water pollution due to the use of chemicals (fertilizers and pesticides) from the company's oil palm plantations and community gardens / agricultural fields / rice fields. Illegal gold mining in river bodies or river borders Conversion of forested areas along river borders in Long Ayap and Long Ayan Villages into plantations will further reduce community access to hunting. Hunt this time on a temporary basis to fill spare time. While the types of prey are limited, with the diminishing forest in this area. Contamination of household waste. Operational activities will result in silting rivers increasing river water discharge in the rainy season and decreasing river water discharge in the dry season, and increasing sedimentation. 	<ul style="list-style-type: none"> Installing signboards for hunting on a limited basis (for example: not hunting protected and / or endangered animals). Controlling hunting activities carried out by the community. Protect HCV 5 through clear boundary marking activities in the field and regular patrols. Establishment of a prohibition board for illegal mining in HCV 4 areas as well as appeals and outreach to communities that have the potential to carry out illegal mining activities. Managing domestic and agricultural / plantation waste by implementing an appropriate Wastewater Management System (SPAL) which is located not close to a river. For example, for household waste by making collection tanks and infiltration tanks. In the collection basin, a space is provided which is useful as a catcher for garbage, sand and oil. Meanwhile, in the infiltration tank, charcoal and coral are 	<ul style="list-style-type: none"> Develop and implement a participatory monitoring system to periodically track the availability of basic needs of the community. Conduct periodic monitoring of community participation in reducing environmental impacts (for example: illegal logging, land conversion and use of fertilizers and pesticides in gardens / fields). Cooperate with related parties / authorities in securing and overcoming areas from illegal mining and other destructive activities. Conduct periodic monitoring of community perceptions of the quantity and quality of river water.

HCV	HCV Management and Monitoring Recommendations inside PT. MIP's Concession Area			HCV Management and Monitoring Recommendations around PT. MIP's Concession Area		
	Threat	Management Recommendations	Monitoring Recommendations	Threat	Management Recommendations	Monitoring Recommendations
		<p>create an oxidation pool or with other technologies.</p> <ul style="list-style-type: none"> • Protect HCV 5 through clear marking activities in the field and regular patrols. • Prevention, protection and control of disturbances in HCV management (hunting of wildlife, logging of liars, and land conversion) through activities: installing and maintaining HCV tags in strategic access points, patrols. 			<p>given to filter out pollutants. Meanwhile, agricultural / plantation waste can create an oxidation pool or with other technologies.</p> <ul style="list-style-type: none"> • Prevention, protection and control of disturbances to HCV management areas (wildlife hunting, illegal logging and land conversion) through activities: installing and maintaining HCV markings in strategic access points, as well as regular patrols. 	
HCV 6	<ul style="list-style-type: none"> • Not found 	<ul style="list-style-type: none"> • Not found 	<ul style="list-style-type: none"> • Not found 	<ul style="list-style-type: none"> • Illegal timber extraction by community members. • Forest fires in the vicinity of the PT. MIP. • Land conversion • Poor governance 	<ul style="list-style-type: none"> • Perform boundary marking and maintenance of boundary markings for HCV 6 area forested. Conduct internal and external HCV socialization. • Preventing, protecting, and overcoming disturbances to HCV 6 management areas (illegal logging and area conversion) through the following activities: installing and maintaining HCV markings in strategic access points, as well as regular patrols. • Conduct further surveys to confirm the population status of vegetation types and the quality of habitat for HCV 6 areas 	<ul style="list-style-type: none"> • Develop a periodic monitoring system to ensure that illegal logging and land conversion are minimized. • Conduct periodic monitoring of the effectiveness of prevention, protection and control activities against disturbances in the HCV management area that have been carried out. • Monitor disturbance intensity periodically, including illegal logging and land conversion. • Conduct periodic monitoring of rehabilitation and restoration activities if

HCV	HCV Management and Monitoring Recommendations inside PT. MIP's Concession Area			HCV Management and Monitoring Recommendations around PT. MIP's Concession Area		
	Threat	Management Recommendations	Monitoring Recommendations	Threat	Management Recommendations	Monitoring Recommendations
					<ul style="list-style-type: none"> • Coordinating with related agencies in order to reduce illegal logging and conversion of areas around the permit area, as well as to enforce the law effectively. • Coordinate with related agencies, village officials, and indigenous peoples in carrying out rehabilitation and restoration activities if needed in HCV 6 areas. 	they have been carried out.

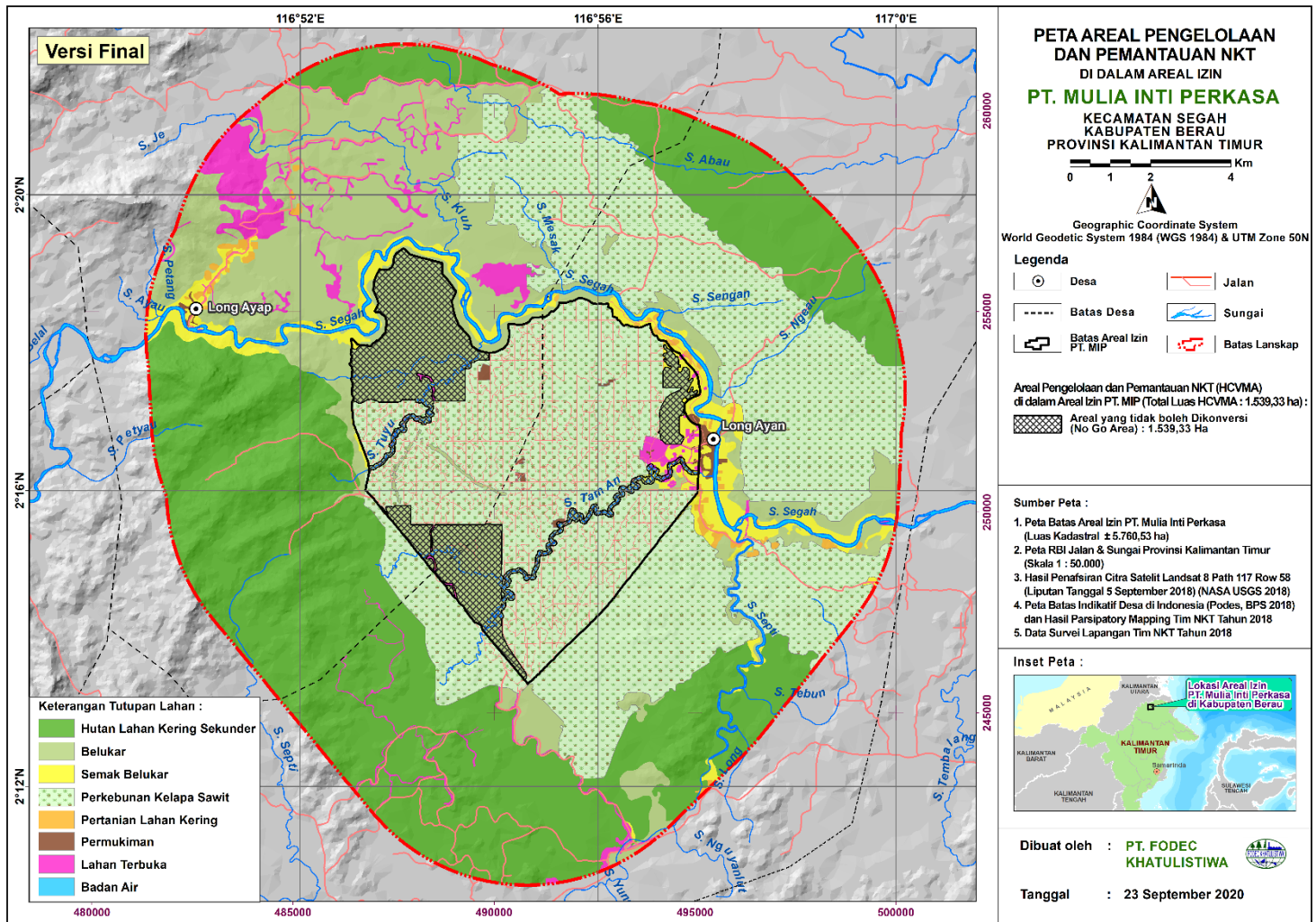


Figure 13. HCV Management and Monitoring Area (HCVMA) Map of PT. MIP (inside Concession Area)

5. Overall Summary

5.1. Summary Outcomes

Based on the results of PT. MIP's HCV assessment and its surroundings, 3 (three) HCV categories were found inside PT. MIP and 6 (five) HCV categories outside PT. MIP (in the landscape) as presented in **Table 16**.

Table 16. Summary of HCV Assessment Findings inside PT. MIP and surrounding

HCV	Definition	Inside PT. MIP	Outside PT. MIP
1	Concentrations of biological diversity including endemic species, and rare, threatened or endangered species, that are significant at global, regional or national levels.	Yes	Yes
2	Large landscape-level ecosystems, ecosystem mosaics and Intact Forest Landscapes (IFL) 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.	No	Yes
3	Rare, threatened, or endangered ecosystems, habitats or refugia.	No	Yes
4	Basic ecosystem services in critical situations, including protection of water catchments and control of erosion of vulnerable soils and slopes. 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.	Yes	Yes
5	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. 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.	Yes	Yes
6	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.	No	Yes

Total area of HCV (High Conservation Value Area / HCVA) in the boundary assessment of PT. MIP has a total area of 12,806.97 hectares with details: Total area of HCV area within PT. MIP of 1,539.33 hectares and the total area of HCV area outside PT. MIP of 11,367.64 hectares. Details of HCV area (HCVA) in PT. MIP and its surroundings are presented in **Table 17**. In future oil palm plantation management activities, management and monitoring areas (High Conservation Value Management Area / HCVMA) within the permit area of PT. MIP. The area of HCV area that cannot be converted (No Go Areas) within the PT. MIP is an area where the development of oil palm plantations is still maintained or not, which is an area of 1,539.33 hectares. Meanwhile, the area of HCV that can be converted (Go Areas) within the permit area of PT. MIP is an area of 0.00 hectares or none.

Table 17. The Overall of HCV areas within and around PT. MIP

HCV	HCV Area inside PT. MIP (ha)	HCV Area Outside PT. MIP (ha)	HCV Area in Landscape Boundary (ha)
HCV 1	1,539.33	11,367.64	12,806.97

HCV	HCV Area inside PT. MIP (ha)	HCV Area Outside PT. MIP (ha)	HCV Area in Landscape Boundary (ha)
HCV 2	0.00	10,026.54	10,026.54
HCV 3	0.0	9,809.74	9,809.74
HCV 4	278.2	11,224.06	11,502.08
HCV 5	278.02	11,224.06	11,502.08
HCV 6	0.00	4,382.24	-
Total Area¹⁾	1.539.33	11,367.64	12,806.97

Note :

¹⁾ = Total HCV area is not equivalence to sum of all HCV areas due to overlapping areas.

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7. Statement of Responsibility between PT. MIP and PT. FODEC KHATULISTIWA

PT. Mulia Inti Perkasa has accepted the HCV Assessment and will implement the guidelines (management and monitoring) provided in the report.

September 10th, 2020

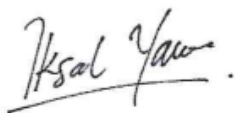


TJOKRO PUTRO WIBOWO TJOA
President Director
PT. Mulia Inti Perkasa



PT. FODEC KHATULISTIWA confirms that it has written the attached report and is responsible for the findings and recommendations.

September 10th, 2020



IKSAL YANUARSYAH
ALS Lead Assessor



PT. FODEC KHATULISTIWA

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