

# **RSPO New Planting Procedure**

**Assessment Summaries and Management Plans Proposed  
New Planting by PT Multipersada Gatramegah (PT MPG) in Barito Utara,  
Central Kalimantan Province, Indonesia 2020**

**First Submission: December 2020**

## Contents

Contents .....	1
List of Tables .....	4
List of Figures.....	7
List of Abbreviations .....	10
1. OVERVIEW AND BACKGROUND.....	11
1.1. Overview.....	11
1.2. New Development Plan.....	4
2. ASSESSMENT PROCESS AND METHODS .....	2
2.1 Social and Environmental Impact Assessment (SEIA).....	2
2.1.1 Date of the assessments.....	2
2.1.2 Assessments team and their qualification.....	2
2.1.3 SEIA Method .....	3
2.2 Integrated High Conservation Value (HCV) – High Carbon Stock (HCS) Assessment Process and Methods .....	4
2.2.1 Integrated HCV-HCSA Assessor and their credentials .....	4
2.2.2 Date Integrated HCV-HCS Assessment .....	5
2.2.3 Pre-Assessment .....	6
2.2.4 Scoping study.....	7
2.2.5 List of Consultation.....	10
2.2.6 Boundaries of the AOI .....	11
2.2.7 Social Methods .....	14
2.2.8 Environmental Method .....	20
2.3 Soil and topography.....	25
2.3.1. Dates Soil Suitability Assessments were conducted .....	25
2.3.2. Soil Suitability Assessment expert and credentials .....	25
2.3.3. Soil Suitability Assessment Methods.....	25

2.4	GHG calculation .....	26
2.4.1	Dates Greenhouse Gas Analysis was conducted .....	26
2.4.2	Assessment team and their qualification .....	26
2.4.3	GHG Analysis Method.....	27
2.5	Land Use Change Analysis (LUCA) .....	28
2.5.1	Dates Land Use Change assessments were conducted.....	28
2.5.2	Land Use Change Assessors and their credentials.....	28
2.5.3	Land Use Change Assessment Methods.....	30
2.6	FPIC and Social Impact Assessment (SIA) .....	33
2.6.1	Assessment team and their qualification .....	34
2.6.2	Timeline .....	34
2.6.3	Methods.....	35
3.	SUMMARY OF FINDING .....	41
3.1	SEIA Summary of Finding.....	41
3.1.1	Positive and Negative Environmental Impact .....	41
3.1.2	Socio-economic impacts on the state, regional and local communities .....	41
3.1.3	Issues raised by stakeholders and assessor comments.....	42
3.2	Integrated HCV-HCS Assessment Summary of finding.....	43
3.2.1	Area of Interest.....	43
3.2.2	Image analysis and land cover classification .....	44
3.2.3	Physical and environmental characteristics .....	44
3.2.4	Biological and ecological characteristics .....	50
3.2.5	Social, cultural and economic characteristic .....	54
3.2.6	Social Result.....	60
3.2.7	Environmental Result .....	74
3.2.8	Threat Assessment .....	85
3.2.9	Overall Summary .....	85

3.3	Soil and Topography Survey .....	99
3.3.1	Land System.....	99
3.3.2	Soil Type.....	101
3.3.3	Topography and Elevation.....	101
3.4	GHG Assessment.....	105
3.5	LUCA Assessment .....	112
3.6	FPIC and Social Impact Assessment.....	123
3.6.1	Project-Included Change and Expected Impacts .....	125
3.6.2	Expected Social Impacts .....	126
4	SUMMARY OF MANAGEMENT PLANS.....	131
4.1	Team responsible for developing management plans .....	131
4.2	Elements to be included in management plans .....	133
4.2.1.	Social Management Plan .....	133
4.2.2.	ICLUP and Integrated HCV-HCS .....	133
4.2.3.	Soil Management Plan.....	146
4.2.4.	Carbon and GHG Management Plans.....	146
5.	REFERENCE .....	149
6.	INTERNAL RESPONSIBILITY .....	150
6.1	Formal signing off by assessors and grower.....	150
6.2	Statement of acceptance of responsibility for assessment and formal signing off of management plans .....	151
6.3	Organizational Information and Contact Persons .....	152
6.4	Personnel information involved in planning and implementation .....	152

## List of Tables

Table 1. Information of the organization and contact person .....	3
Table 2. Types of permits and recommendations PT Multipersada Gatramegah .....	3
Table 3. Total Proposed Development Area And Development Schedule.....	4
Table 4. Assessor of The SEIA and Their Credentials.....	2
Table 5. PT Hijau Daun Integrated HCV/HCS Team Composition.....	4
Table 6. Field Team of PT Multipersada Gatramegah staff.....	5
Table 7. Timeline of the Integrated HCV-HCS Assessment.....	5
Table 8. Timeline of the field component of the scoping study.....	7
Table 9. Description of teams' scoping activities .....	8
Table 10. How the preconditions were confirmed (using triangulation) once on site .....	9
Table 11. List of initial stakeholder consultations undertaken during the scoping study.....	10
Table 12. Nine villages that are considered the social AOI or "affected communities" .....	11
Table 13. Imagery and GPS datasets utilised during this integrated assessment .....	14
Table 14. Social secondary data sources. These are linked to FPIC (e.g. the assessor verified documentation relating to land acquisition).....	15
Table 15. Nine villages that were interviewed as part of the full assessment. These are ALL the affected communities .....	15
Table 16. Justification of choice of social method.....	18
Table 17. Justification of choice of sampling method .....	19
Table 18. Justification of choice of PM method .....	19
Table 19. Justification of choice of sampling method for PM .....	20
Table 20. Summary of statistical analysis of carbon stocks per vegetation class .....	22
Table 21. Final land cover classes found across the study areas .....	23
Table 22. Assessment Team Role and Their Credential .....	26
Table 23. Assessment Team Role and Their Experience and Qualification.....	28
Table 24. PT Hijau Daun Assessment Team.....	34

Table 25. PT MPG Staff Responsible for Implementation of Social Requirements .....	34
Table 26. Assessment Timeline Process .....	34
Table 27. Issued Raised by Stakeholders and Assessor Comments .....	42
Table 28. Landforms present in the assessment AOI, (RePPProT, 1986) .....	47
Table 29. Village Profile of the Villages which overlap with the assessment area (from profile desa) .....	58
Table 30. Interviews and numbers attending. The locations of the interviews were in the villages themselves. The interviews can be best described as Focus Group Discussions with Participatory Mapping.....	60
Table 31. Discussion of HCV 5 indicators.....	68
Table 32. Cultural sites that are present in the nine villages (affected communities). Note only the site locations that were considered non-confidential by the communities are mapped in Figure 17 .....	71
Table 33. Explanation of the areas delineated by the numbers on Figure 18 .....	77
Table 34. Patch classes relevant to this assessment as per the HCSA patch analysis decision tree .....	82
Table 35. Threats to biodiversity and social values .....	86
Table 36. Area Statement (ha). There is no HCV 3 area. This is calculated using GIS software. Considering the accuracy of the software, the actual hectareage on the ground might differ.....	90
Table 37. Feedback from the Final Consultation .....	94
Table 38. Landforms present in the assessment AOI, (RePPProT, 1986) .....	99
Table 39. Final Carbon Stock Values.....	105
Table 40. Projected Fertilizer and Fuel Use for Estate and Mill .....	107
Table 41. Vegetation carbon stock change for scenario 1 .....	108
Table 42. Vegetation carbon stock change for scenario 2 .....	108
Table 43. Potential GHG Emissions for Each Scenario.....	109
Table 44. Land cover of PT MPG 2020 .....	113
Table 45. Result of land cover analysis in 2005, 2007, 2009, 2010, 2014, 2018, and December 2020 ...	114
Table 46. Social Impacts both positive and negative .....	126
Table 47. Oil Palm revenue calculations.....	129
Table 48. Calculation of the HCS garden area based on the areas and populations provided by the villages. Every village has enough land based on its area. ....	129

Table 49. Social & Environment management mitigation plan.....	135
Table 50. Summary of Key findings for HCV – HCS Management and monitoring .....	140
Table 51. GHG Management and Monitoring .....	146

## List of Figures

Figure 1. Location of PT MPG in Regional administrative .....	1
Figure 2. Location Map of PT MPG (existing plantation and proposed NPP).The new area is located in the Kabupaten of Murung Raya and Barito Utara .....	1
Figure 3. The proposed area is within “Areal Penggunaan Lain” (APL) which is area zoned for agricultural land use based on the provincial land use plan (RTRWP) and consistent with The MoEF SK6025 for Central Kalimantan .....	2
Figure 4. Map of proposed new panting areas .....	1
Figure 5. Zoom-in to the AOI .....	13
Figure 6. Final land cover map for the PT MPG study area .....	24
Figure 7. Initial Land Cover Classification .....	45
Figure 8. Final landcover mapping for PT MPG .....	46
Figure 9. The assessment area overlaps with Lawanguwang, Maput and Teweh land system types. (HCV Toolkit, 2008).....	48
Figure 10. Rivers – there were no secondary river datasets that were sufficiently accurate. For this reason all rivers had to be mapped manually by PT MPG. It was aimed to map all rivers within the assessment areas and within a 1 km buffer. The major river in the area, Sungai Barito, flows to the east the AOI.....	49
Figure 11. Shows the formally Protected Areas (grey hatching), and IFLs in the area. The closest IFL is 60 km from PT MPG .....	52
Figure 12. Regional ecosystems with the Endemic Bird Area (EBA) and Key Biodiversity Areas (KBA) mapped also .....	53
Figure 13. Wich et al., 2008 data showing the distribution of orangutans. The large block of forest to the west of PT MPG is a large block of Orangutan habitat. Similarly, there is overlap with the MPG II block 55	
Figure 14. HCV4 areas that should be excluded from development based on slope. The exclusion area is based on an 11 m DEM. The assessor leaves this map as a draft because from his experience using DEMs to derive slope exclusions is very inaccurate and must be manually verified in the field. Note the jagged edge in the south “is” based on in-field verification. This is the only steep area in the AOI.....	66
Figure 15. HCV 4 consists of (1) 50 m buffers to the left and right of rivers that flow through the assessment area. This HCV4 is extended to within 1 km of the assessment area boundaries. On the coast there is a 100 m buffer around the coastal strip. (2) Steepareas which are only present in the western section of MPG II (blue boundary). .....	67



Figure 16. HCV5 is mapped over a 50 m buffer off rivers in recognition of the importance of the water filtering function as well as the need to have native trees on the side of rivers to support fish habitats. Better quality forest (LDF or better) is mapped as HCV5 in recognition of the requirement for timber, NTFPs and medicine. HCV 5 is mapped within the concession or within a 1 km buffer of the concession’s boundaries.....70

Figure 17. The location of the HCV6 areas mentioned in Table 32. Only 2 were inside the assessment area. Note that not all sites that were mentioned in the interviews are allowed to be mapped in publicly available documents. ....73

Figure 18. Map of HCV 1.....78

Figure 19. Map of HCV2 of PT MPG based on the core size of this forest block.....81

Figure 20. The Low Priority Patches are deemed to be Indicative Develop because they are in a medium forest cover landscape. The area is located in the Kalteng part of the Barito Watershed (4.37 M ha) of which 2.80 M ha are forested .....84

Figure 21. Total Conservation Area (hatched)HCV or HCS .....91

Figure 22.Land System of the proposed development area .....100

Figure 23. Soil data provided by the Pusat Penelitian Tanah dan Agroklimat (a government department). Which shows that the assessment area is 100% mineral soils.....102

Figure 24. Topography map of the proposed development areas.....103

Figure 25. Slope Level in the proposed development areas .....104

Figure 26. Land Cover Classification and carbon stock of PT MPG according to GHG Assessment Report .....106

Figure 27. Breakdown of emission from the two scenarios .....110

Figure 28. The Potential Oil Palm Expansion Area within The Assessment Area and its Current Land Cover.....111

Figure 29. Landcover PT MPG Proposed Development Area 2005 .....115

Figure 30. Landcover PT MPG Proposed Development Area 2007 .....116

Figure 31. Landcover PT MPG Proposed Development Area 2009 .....117

Figure 32. Landcover PT MPG Proposed Development Area 2010 .....118

Figure 33.Landcover PT MPG Proposed Development Area 2014.....119

Figure 34. Landcover PT MPG Proposed Development Area 2018 .....120

Figure 35. Landcover PT MPG Proposed Development Area February 2020.....121

Figure 36. Landcover PT MPG Proposed Development Area December 2020 .....122

Figure 37. Organisational Structure Of The Team Responsible For Implementation, Management And Monitoring In The Field .....131

## List of Abbreviations

AOI	Area of Interest
APL	Area Penggunaan Lain
BPS	<i>Badan Pusat Statistik</i>
CPO	Crude Palm Oil
CSR	Corporate Social Responsibility
DEM	Digital Elevation Model
FFB	Fresh Fruit Bunch
FGD	Focus Group Discussion
FPIC	Free Prior and Informed Consent
FSC	Forest Stewardship Council
GIS	Geographical Information Systems
HCV	High Conservation Value
HCVA	High Conservation Value Area
HCVMA	HCV Management Area
HP	<i>HutanProduksi</i> (Production forest)
HPP	High Priority Patch
ISPO	Indonesian Sustainable Palm Oil
IUCN	International Union for Conservation of Nature
KKPA	<i>Kredit Koperasi Primer Anggota</i>
KSDA	<i>Konservasi Sumber Daya Alam</i>
LPP	Low Priority Patch
MOU	Memorandum of Understanding
MT	Metric Tonnes
MoEF	Ministry of Environment and Forestry
MPG	PT Multipersada Gatramegah
MPP	Medium Priority Patch
NDPE	No Deforestation, Peat or Exploitation
NPP	New Planting Procedure
RSPO	Roundtable on Sustainable Palm Oil
RTRWP	<i>Rencana Tata Ruang Wilayah Provinsi</i>

## 1. OVERVIEW AND BACKGROUND

### 1.1. Overview

PT Multipersada Gatramegah (PT MPG) is a subsidiary of Musim Mas Holdings Pte. Ltd. (2-0907-18-000-00). PT MPG is an oil palm plantation with its concession located in three sub-districts namely Lahei Barat Sub-District, Teweh Tengah Sub-District of Barito Utara Regency and LaungTuhup Sub-District of Murung Raya Regency, Central Kalimantan, Indonesia (**Figure 1**).

Concession PT MPG is comprised of 13,126 Ha with two operating units which comprised of Estate I with an area of 9,278 Ha (had successfully undergone NPP in December 2012) and Estate II with an area of 3,848.32 Ha (comprising an area of 2,646.24 Ha by PT HAL had successfully undergone NPP in July 2015 and a new area of 1,202.08 Ha, both areas were acquired by PT MPG management in 2018). PT MPG also also plans to develop 1,103.14 ha of Scheme Smallholders (KKPA) and Village Development Programmes (Kas Desa) as the CSR programmes. The total area under the scope of the management unit which includes the inti (Estate I and II totaled 13,126 ha) KKPA and Kas Desa areas (1,103.14 ha) is 14,229.46 Ha. For the current submission of NPP, only the newly acquired area of 1,202.08 ha of Estate II and 1,103.14 ha of the smallholders' development (KKPA & Kas Desa) together totaling 2,305.22 ha are proposed for NPP Notification (**Figure 2**). Noting that the reprieve on NPP for smallholders is still in force.

The Social and Environmental Impact Assessment (SEIA or AMDAL) was conducted for this new area in February 2018 by PT. Bawana Rekatama. PT MPG has also conducted participatory mapping in February 2018 that includes Karamuan, Pendreh, Sei Rahayu I, Sei Rahayu II, Rimba Sari, Beringin Jaya, Datai Nirui, Makunjung and Nihan Hilir villages. The Integrated High Conservation Value-High Carbon Stock Assessment (HCV-HCS Assessment) was conducted in December 2018 by PT Hijau Daun and it has passed the quality panel evaluation and published in High Conservation Value Resource Network (HCVRN) website on November 2020 (<https://hcvnetwork.org/reports/integrated-high-conservation-value-high-carbon-stock-approach-assessment-report-pt-multipersada-gatramegah-kabupaten-barito-utara-central-kalimantan-indonesia/>). The HCV-HCS assessment by PT Hijau Daun covered 2,305.22 Ha which includes the acquired new area of 1,202.08 Ha in Estate II and 1,103.14 Ha of Smallholders' development (KKPA & Kas Desa). The HCV elements identified are HCV 1, HCV 2, HCV 4, HCV 5 and HCV 6 and no peatland was present. The existing areas of Estate I (9,278 Ha) and Estate II (2,646.24 Ha) had undergone HCV assessment and NPP was completed in 2012 and 2015 respectively. These areas have been included in the maps in this submission for completeness. Hence in the map in **Figure 2** is

comprising the entire area of 14,229.46 Ha. An additional Social Impact Assessment (SIA) was conducted by PT Hijau Daun in March 2019.

The new development area is within “Areal Penggunaan Lain” (APL) which is area zoned for agricultural land use based on the MoEF SK6025 for Central Kalimantan is consistent with the RTRWP (**Figure 3**) . The Wider landscape is very much shaped by shifting agriculture with landcover a mosaic of agriculture (padi), jungle rubber, open land and scrub with each patch in this mosaic being about five hectares. This reflects the traditional way that land has been utilized in this area. Overlaid on this is the arrival of the transmigrant villages (**Table 29**) which have blended their original farming methods with those of the local communities.

In the context of landscape surrounding PT MPG concession, there is a conservation area, the Pararawen I and II Nature Reserve which is about 7.5 km from PT MPG concession. The Nature Reserve area is comprised of a tropical rain forest ecosystem dominated by *Dipterocarpaceae* and as a habitat of important flora fauna. PT MPG is located in the Barito watershed areas. Based on the type of land, and based on the results of the soil survey conducted by PT MPG the proposed development area is with mineral soil and there is no peatland, no sandy land nor acid sulphate soil.

Traditional land The new development area is within “Areal Penggunaan Lain” (APL) which is area zoned for agricultural land use based on the MoEF SK6025 for Central Kalimantan is consistent with the RTRWP. The Wider landscape is very much shaped by shifting agriculture with landcover a mosaic of agriculture (padi), jungle rubber, open land and scrub with each patch in this mosaic being about five hectares. This reflects the traditional way that land has been utilized in this area. Overlaid on this is the arrival of the transmigrant villages which have blended their original farming methods with those of the local communities is generally claimed by clearing forests for farming. The forests, once cleared, are planted with rice and other food crops. The cleared land automatically belongs to the person or family who cleared the land. This land is used for fields for 1 to 2 years, after which garden crops are replaced with rubber trees, fruit trees or rattan. Rice cultivation requires constantly opening new land. If the land planted with rice is not planted with rubber, then this fallow land is, planted with rice again after 4-5 years. In the transmigration areas no land will be left unplanted. In these areas mixed rubber is common and the communities will come back to harvest the latex when the price is good, and also to harvest the fruit or rattans.

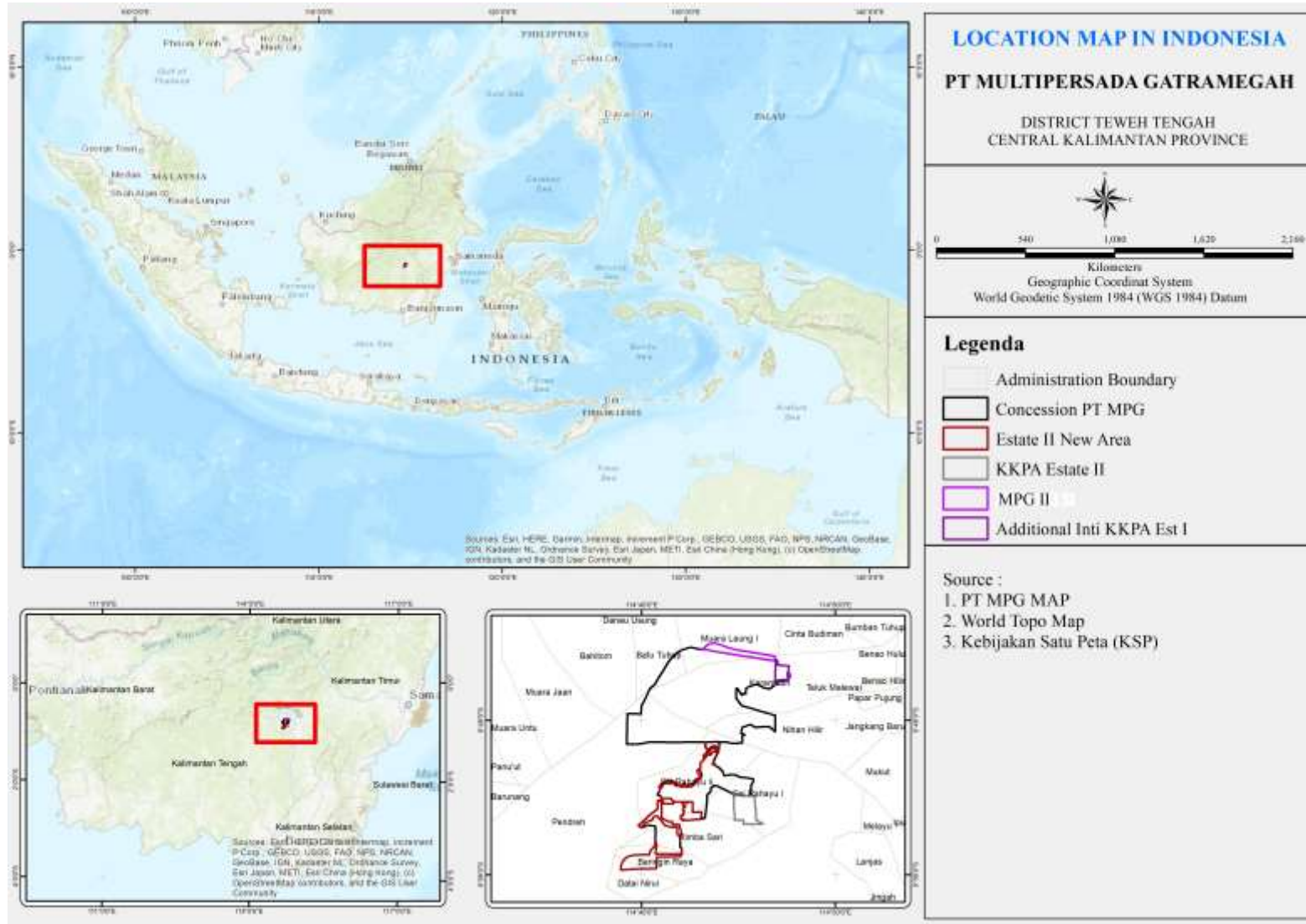


Figure 1. Location of PT MPG in Regional administrative

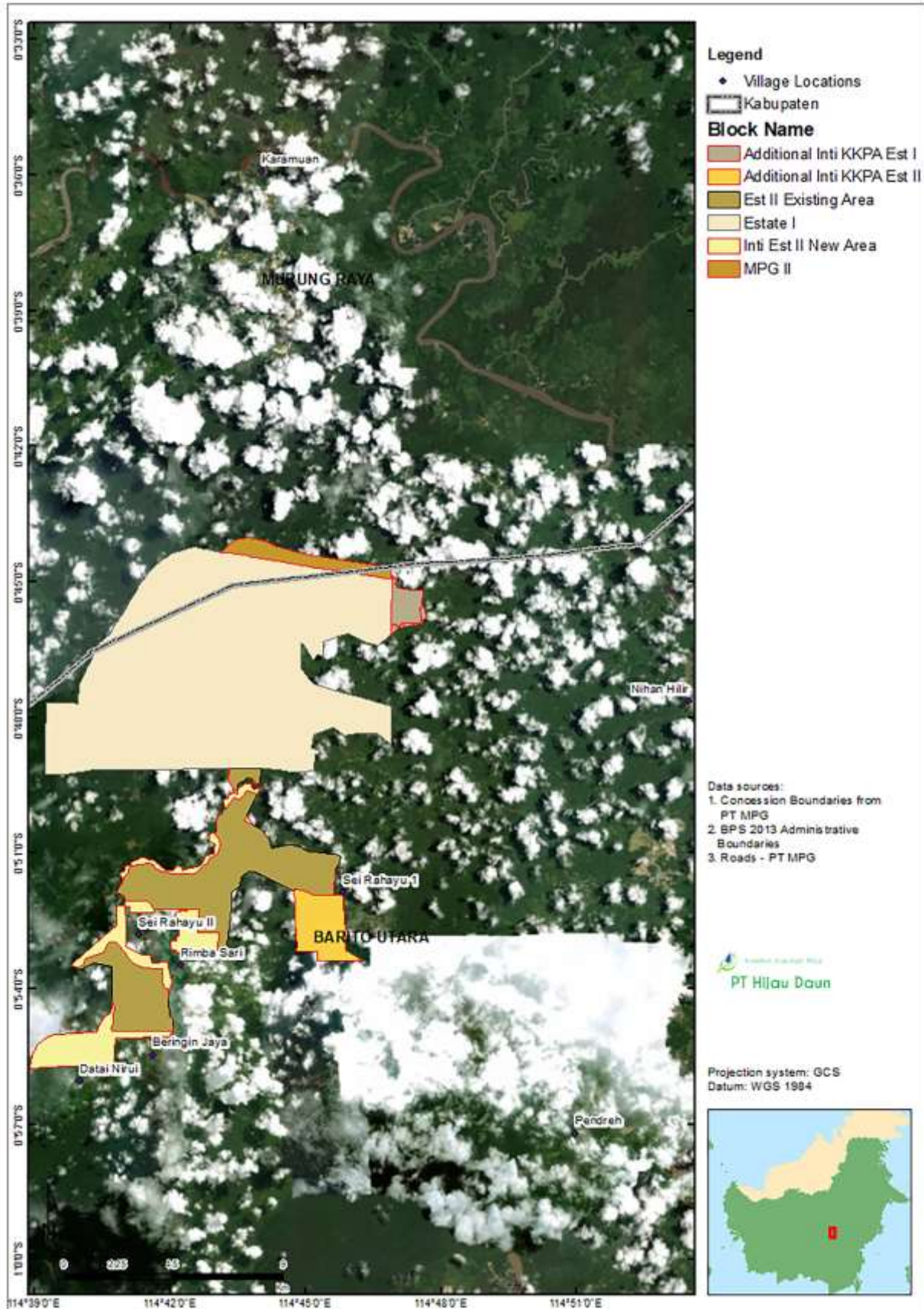


Figure 2. Location Map of PT MPG (existing plantation and proposed NPP).The new area is located in the Kabupaten of Murung Raya and Barito Utara

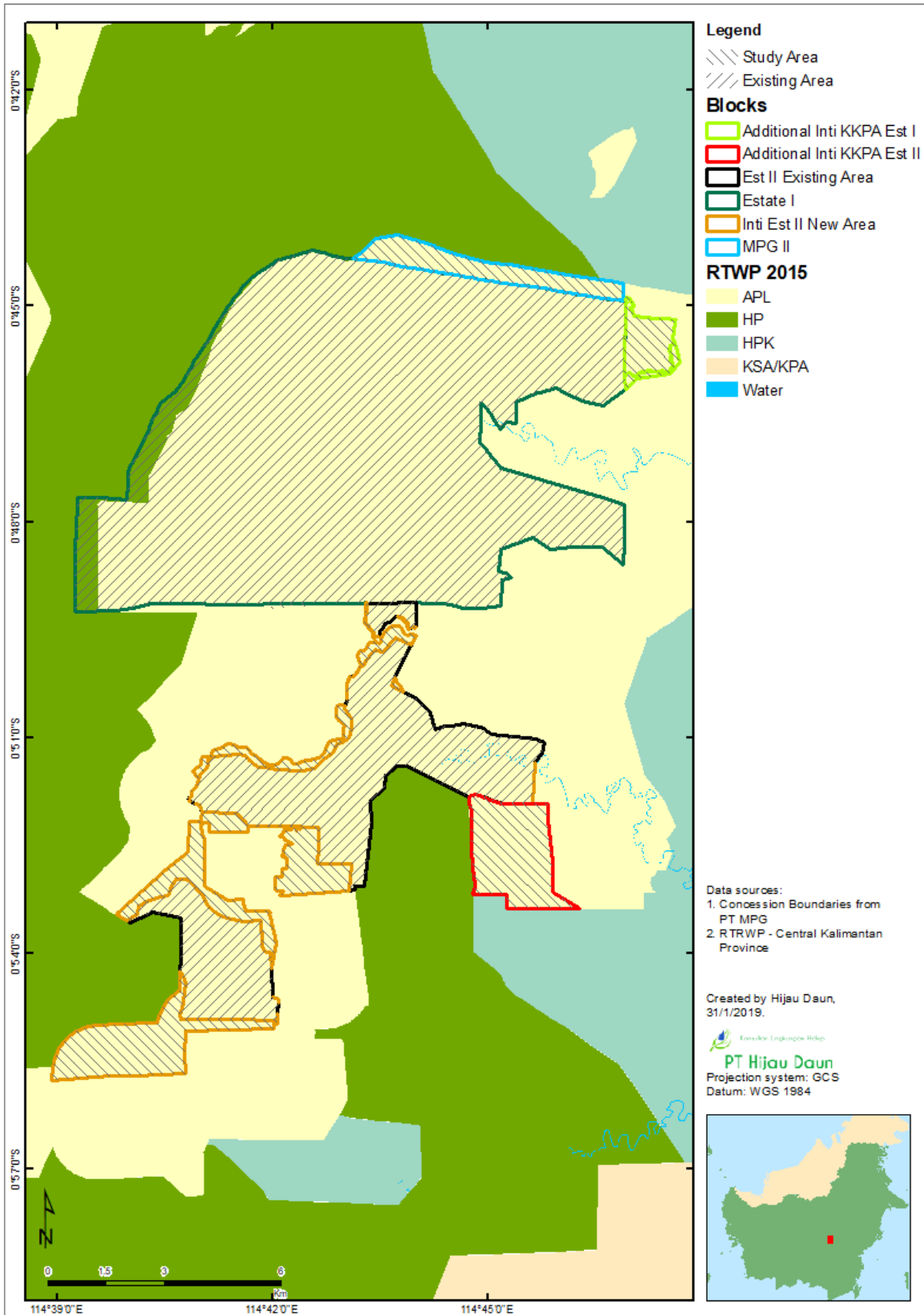


Figure 3. The proposed area is within “Areal Penggunaan Lain” (APL) which is area zoned for agricultural land use based on the provincial land use plan (RTRWP) and consistent with The MoEF SK6025 for Central Kalimantan



Table 1. Information of the organization and contact person

Name of RSPO member	Musim Mas Holdings Pte. Ltd.
RSPO membership number	2-0907-18-000-00
Date of Joining RSPO	2004-09-05
Name of subsidiary/management unit	PT Multipersada Gatramegah
Country of subsidiary/ management unit	Indonesia
Province and district of subsidiary/ management unit	Central Tengah Province, Barito Utara Regency
Contact person	Dr. Gan Lian Tiong Email : <a href="mailto:liantiong.gan@musimmas.com">liantiong.gan@musimmas.com</a> Phone : +62 61 661 5511

The permits that have been obtained by the company are inclusive of Social Environmental Impact Assessment (AMDAL), Environmental Permit (*Izin Kelayakan Lingkungan*) and the Permanent Plantation Permit (*Izin Tetap Usaha Budidaya Perkebunan*), Release of Forest Permit (*Izin Pelepasan Kawasan Hutan*), and Land Title (HGU). The followings are the list of the licenses and recommendations:

Table 2. Types of permits and recommendations PT Multipersada Gatramegah

No	Licenses and Recommendations	Issued by	Number and date	Note
1	Deed of Incorporation	Notaris Oerip Mochlasin Soemarto, SH	No. 7 Dated 24 September 1992,	
2	Deed of modification	Notaris Hasbullah Abdul Rasyid	No. 90 dated 6 December 2018	
3	Location Permit	Bupati Barito Utara	No.188.45/508/2017 dated on 15 December 2017	Total area of 3,848.32 Ha
4	Social Environmental Impact Assessment (AMDAL)/ Environmental Permit	Bupati Barito Utara	No. 188.45/54/2018 dated on 9 February 2018	<i>Persetujuan Kelayakan Lingkungan Hidup kegiatan Perkebunan Kelapa Sawit</i>
			No. 188.45/55/2018 dated on 9 February 2018	<i>Izin Lingkungan kegiatan perkebunan kelapa sawit</i>
5	Plantation Business Permit (IUP-B)	Bupati Barito Utara	No. 188.45/84/2018 13 February 2018	Total area of 3,848.32 Ha

## 1.2. New Development Plan

The proposed new development area is 2,305.22 ha. The new development is in area with a long history of occupancy and anthropogenic activities. Based on the LUCA study, there is no primary forest found in the new development areas. There are five types of land cover that are secondary forest (YRF, LDF, MDF, and HDF), Mixed Rubber, agricultural land (palm plantation, rubber plantation and rice fields/rice field), open land, bush and shrub. The overall area is dominated by mixed rubber.

**Table 3** and **Figure 4** show the breakdown of the proposed new development area comprising of the acquired new area of 1,202.08 ha (inti), Scheme Smallholders (KKPA) and Village Development Programme (Kas Desa) of 1,103.14 ha (207.10 ha KKPA & KAS Desa Est I, 537.87 ha KKPA Est II, and MPG II (KKPA Est I) of 358.17 ha). The development plans for KKPA and KAS Desa have been discussed with the community leaders of villages during stakeholders' engagement and consultation. The company and the community have entered into an agreement / letter of intent for the smallholder scheme development plans.

Table 3. Total Proposed Development Area And Development Schedule

Location*	Area (Ha)	Total New Planting (Ha)	HCV/HCS Area (Ha)	Area to be develop (Ha)***				
				2021	2022	2023	2024	2025
Nucleus (Inti) Est II New Area	1202.08	677.75	524.33	146.83	134.87	140.88	121.93	133.24
KKPA & Kas Desa Est I	207.10	175.42	31.68	0.00	175.42	0.00	0.00	0.00
KKPA Est II	537.87	430.23	107.64	0.00	0.00	99.22	165.50	165.51
MPG II (KKPA Est I)**	358.17	89.13	269.04	0.00	0.00	89.13	0.00	0.00
Total	2,305.22	1372.53	932.69	146.83	310.29	329.23	287.43	298.75

\*The location reference used is as per the HCV-HCS Report. The nucleus and KKPA/Kas Desa may be renamed accordingly after development have been completed.

\*\* This area in Estate (MPG II), is allocated to Scheme smallholder (KKPA Est I).

\*\*\*The Development Plan hinges on the FPIC process to be initiated after the NPP is approved.

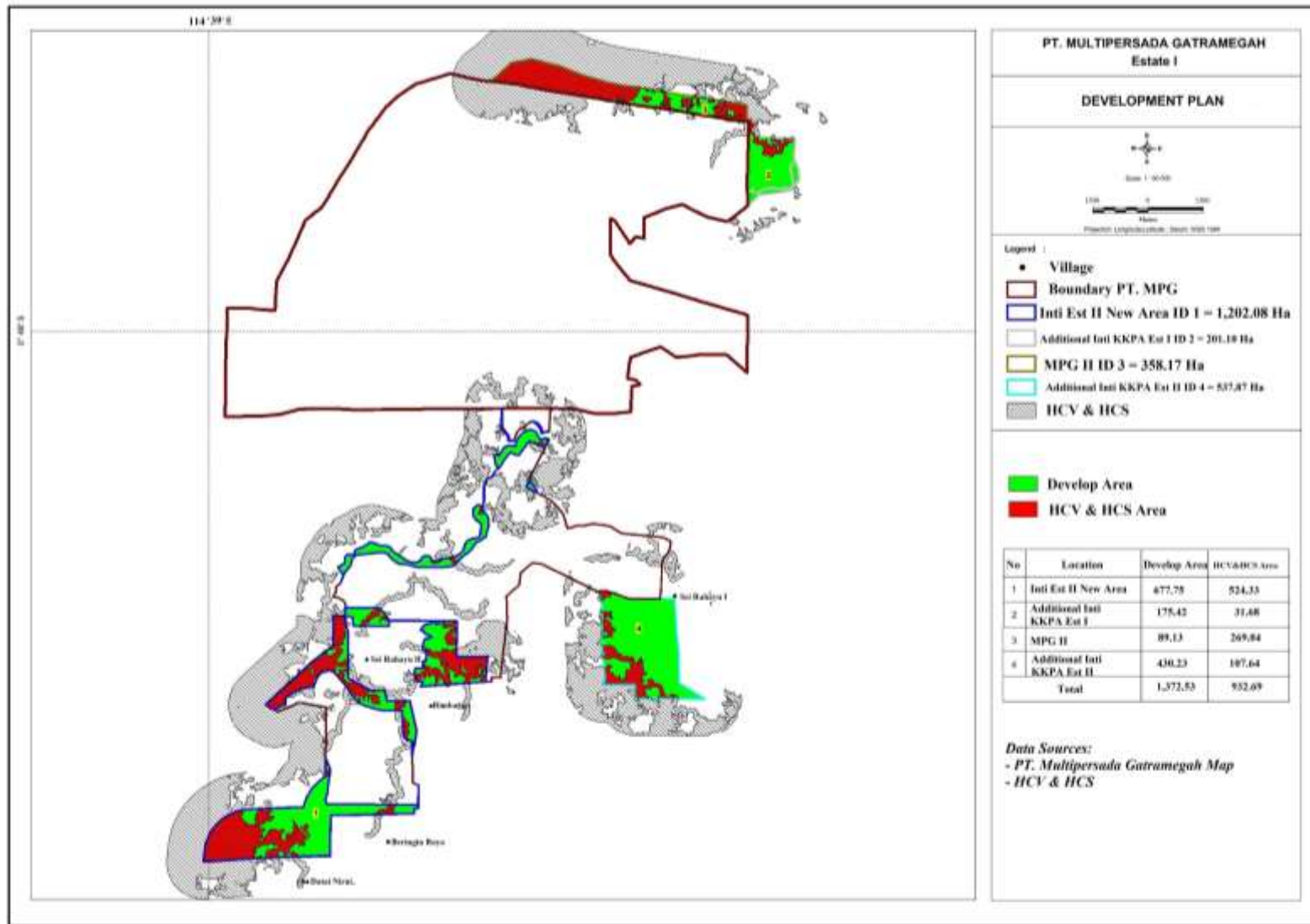


Figure 4. Map of proposed new panting areas

## 2. ASSESSMENT PROCESS AND METHODS

### 2.1 Social and Environmental Impact Assessment (SEIA)

The Social and Environmental Impacts Assessment (SEIA) or AMDAL (RKL-RPL) dated 9<sup>th</sup> February 2018 was carried out by independent agency (*Lembaga Penyedia Jasa Penyusun*) for new areas of PT MPG. The AMDAL which is a legal requirement based on the Indonesian regulatory system, namely Peraturan Pemerintah number 27 of 2012, The AMDAL document remains valid as long as the business activities remained no change and are still on-going. Also based on this regulation, the AMDAL is updated only when there is a change in the Environmental Permit.

The AMDAL examines the possible impacts, both positive and negative of the development of proposed development areas. The AMDAL lists a number of “areas of concern.” These are:

- The impact on water quality and disturbance of water biota. The areas with the potential to be impacted are the Barioi River.
- The impact of: damage to the earth, erosion and sedimentation, the loss of floral and faunal biodiversity and potential forest and land fires. The area that was likely to be impacted was stated as being the whole survey area.
- The impact on: enjoyment of the community and potential conflict, attitude and perception of the community, opportunity to work and health of the community. The communities that were likely affected were all the six villages in the survey.

#### 2.1.1 Date of the assessments

The SEIA (AMDAL) was issued in February 2018.

#### 2.1.2 Assessments team and their qualification

The assessment of the social and environmental impact assessment (AMDAL) was carried out by *Lembaga Penyedia Jasa Penyusun*(LPJP) AMDAL Document namely PT. BawanaRekatama Consultant which is registered with the Ministry of Environment and Forestry with Registration Number 00149/LPJ/AMDAL-UKRK/KLHK). The team is comprised of experts on biology, environmental engineering, physical and chemistry, socio-economic culture and architectural engineering.

Table 4. Assessor of The SEIA and Their Credentials

No	Assessor	Role in Team	Qualification
1	Drs. Najamuddin, Msi	Team Leader	Biology
2	L. AhmalianBahari, ST, MT	Team Member	Environmental Engineering
3	Andri Kamajaya, ST, MT	Team Member	Physical and Chemistry

No	Assessor	Role in Team	Qualification
4	Tony Wahyudi, SP, Msi	Team Member / Specialist	Physical and Chemistry
5	Sabirin, SE, ME	Team Member / Specialist	Socio-economic Culture
6	Bayu Saputra	Team Member / Specialist	Architectural Engineering

### 2.1.3 SEIA Method

The preparation of SEIA (AMDAL) for this area was guided by the Regulation of the Minister of Environment Number 08 of 2006 concerning Guidelines for Preparation of AMDAL and refers to other relevant laws and regulations. The scope of the AMDAL assessment is limited to four main factors / constraints, namely: project / activity boundaries, ecological boundaries, social boundaries and administrative boundaries. The activities studied are divided into four main stages, namely: the pre-construction stage, the construction phase, the operation stage and the post-operation stage. Important impacts that need to get attention are divided negative impacts and positive impacts. Some important impacts that need to get attention on each of the main factors / limitations.

The important impacts that need to be addressed in the AMDAL assessment in the pre-construction phase of oil palm plantation development activities are the change in attitudes and perceptions of the community and the potential for social conflict. Potential conflicts will always arise when there is a change in society, one of which is the entry of companies into their territory. At this stage the activities to be studied are socialization and boundary arrangement and land acquisition that have been carried out by PT MPG.

The Important impacts that need to be addressed in the AMDAL assessment in the construction phase of oil palm plantation development activities are the reduction of air quality, increasing noise, decreasing the quality of surface water, increasing the rate of erosion, sedimentation in the river, decreasing of the diversity of flora and fauna, employment opportunities, business opportunities, increasing community income, changes attitudes and perceptions of the community, potential for social conflict, changes in patterns of community behavior, changes in environmental sanitation and patterns of disease and a decrease in public health.

The important impacts that need to be addressed in the AMDAL assessment in the operational phase of oil palm plantation development activities are the reduction in air quality, increased noise, the presence of employment opportunities, business opportunities, increased income of the community and changes in attitudes and perceptions of the community.

The important impact that needs to be addressed in the AMDAL assessment in the post operation phase of oil palm plantation development activities are in the form of decreasing air quality and increasing noise, decreasing people's income, changing attitudes and perceptions of the community and improving the quality of surface water. Management recommendations to minimize negative impacts and maximize positive impacts need to be formulated.

## 2.2 Integrated High Conservation Value (HCV) – High Carbon Stock (HCS) Assessment Process and Methods

The HCV-HCS Integrated assessment was conducted in December 2018 – July 2019 by PT Hijau Daun. The assessment covers of the total area of 2,305.22 ha (the proposed development new included in these assessment). The HCV-HCS Integrated assessment is also expanded into wider landscape which is one-kilometer buffer from those areas.

### 2.2.1 Integrated HCV-HCSA Assessor and their credentials

This assessment was carried out by an independent party that has competence in HCV and HCS assessment, namely PT Hijau Daun. The Integrated HCV and HCS assessment are led by the Assessor Licensing Scheme (ALS) under the name of Jules Crawshaw with the registration number ALS14006JC and assisted by 5 other people who are experienced in GIS, vegetation expert, social expert, bird expert and mammal expert, the assessment also consisted of PT MultipersadaGatramegah (PT MPG) staff who acted as field assistants.

Table 5. PT Hijau Daun Integrated HCV/HCS Team Composition

Name	Institution	Assessment Role	Relevant Country Experience
Jules Crawshaw Full License (ALS14006JC)	PT Hijau Daun	Lead Reporter / HCV-HCS Integrated Team Leader (HCS registered practitioner)	Acting as a lead assessor on > 20 HCV and approximately 10 HCS assessments
Indrawan Suryadi	Indonesian Freelance Consultant	GIS (HCS registered practitioner)	GIS expert for > 30 HCV assessments
Kursani Sumantri	Indonesian Freelance Consultant	Vegetation Expert	Vegetation expert for > 30 HCV assessments
Daryatun Ridwan	Indonesian Freelance Consultant	Social Expert	Social Expert for > 20 HCV assessments
Muhammad Iqbal	Indonesian Freelance Consultant	Bird Expert	Bird Expert for > 20 HCV assessments
Mike Chong	Indonesian Freelance Consultant	Mammal Expert	Mammal and bird expert specializing in Borneo

Beside the integrated HCV-HCSA assessment team, additional support was provided by PT Multipersada Gatramegah managers.

Table 6. Field Team of PT Multipersada Gatramegah staff

Name	Institution	Assessment Role
Budi Tri Prasetya	Sustainability Department	Logistics, provide data and guiding the field team
Dita Galina	Sustainability Department	Logistics, provide data and MPG / PT Hijau Daun liaison
Rudi Sharta	Sustainability Department	Logistics and guiding the field team

### 2.2.2 Date Integrated HCV-HCS Assessment

The whole series of Integrated HCV - HCS assessment on PT MPG new area were undertaken from February 2018, see Table below.

Table 7. Timeline of the Integrated HCV-HCS Assessment

Step	Step Description	Date
1	Participatory Mapping – done by company staff.	February 2018
2	Compilation of secondary and available primary data, including preliminary stakeholder consultation during short, initial visit to the license areas (Scoping Study)	2nd – 9th December 2018
3	Developing a proposal and contracting	December 2018
5	Team formation and briefing on project scope	January – February 2019
6	Planning for fieldwork and agreement on field methods for primary data collection	January – March 2019
7	Fieldwork and primary data collection, including direct stakeholder consultation	17 <sup>th</sup> March – 30 <sup>th</sup> March 2019 29 <sup>th</sup> April 2019
8	Development of an SIA (which included a Social Baseline Study and Land Tenure Study)	March – July 2019
9	Data analysis and interpretation	April – July 2019
10	Preparation of a Draft Report, including HCVA maps and management and monitoring recommendations (phase 1)	April – August 2019
11	Public consultation to report interim HCV findings, inspect Hompong and undertake RBA assessment. Including preparation and consultation of draft ICLUP for the new area	2 – 6th September 2019
12	Company undertakes more ground truthing. Landcover updated	October – November 2019
13	Amend the draft report based on the Public Consultation	November 2019
14	Public Summary Report written based on the final HCV report	
15	Submission of the HCV Report to HCVRN	January 2020

### 2.2.3 Pre-Assessment

The assessor had already conducted a number of HCV and HCS assessments for MM, so was already well familiar with MM’s operations and the company’s commitment to sustainability. Nevertheless, a rapid due diligence was still undertaken to get a sense of:

- what commitments the MM has made to sustainability,
- what activities are happening on the ground,
- what right the Organization has to explore or develop the area, and
- how far the Organization has progressed with the FPIC process.

This was done through discussions with the Sustainability Department prior to scoping.

Precondition	Evidence
Commitment to environmental and social safeguards	<p>Environmental and social safeguards are undertaken by PT MPG. These are embodied in the company’s own commitments and also its membership of POIG.  <a href="http://poig.org/the-poig-charter/poig-verification-indicators/">http://poig.org/the-poig-charter/poig-verification-indicators/</a>  <a href="http://www.musimmas.com/sustainability/sustainability-policy">http://www.musimmas.com/sustainability/sustainability-policy</a></p> <p>Both of these commitments are relevant to the company owned parts of the assessment area. From POIG - “The link between oil palm expansion and deforestation will be broken through undertaking an HCV-HCSA assessment, and a process of obtaining Free, Prior and Informed Consent (FPIC) to use land.”            From the MM Sustainability Policy “Promote positive environmental impacts:            - No deforestation of High Conservation Value (HCV) area and High Carbon Stock (HCS) forest.            - No development of peatland regardless of depth.”</p> <p>The Kas Desa and KKPA are scheme smallholder programmes and the company’s environmental and social commitment subsumes these entities. The company informed the assessor that they are scheme smallholders and provided an MoU as evidence. This puts the onus to meet the preconditions for smallholders to the company not the assessor – based on HCSA Technical Note 1.</p>
Moratorium on any land clearing or land preparation until the ICLUP is completed	<p>MM is a member of HCSA. As stated in the Advice Note 1 “Companies which are HCSA members meet this requirement because they must have a commitment to implement the HCS Approach across operations.”  <a href="http://highcarbonstock.org/members/">http://highcarbonstock.org/members/</a></p>
Demonstrated legal right over or permission to explore the AOI	<p>The company stated during due diligence that they would be able to produce (1) license documents and (2) signed documents from the community allowing access to all areas. These were later produced during scoping. As a measure of “good faith” the survey team always had at least one member of the local community accompany them.</p>



Precondition	Evidence
	<p>A land tenure assessment was undertaken as part of the SIA. The Kas Desa and KKPA are scheme smallholder programmes and the company's legal right subsumes these entities.</p>
<p>FPIC gate FPIC process has been initiated with full disclosure of the proposed project with all potentially affected communities and stakeholders, and the process for negotiation and consent going forward has been agreed with representatives appointed through fair process</p>	<p>There were no outstanding issues from the above preconditions.</p> <p>The company defined all 9 affected communities as the eight villages which overlap with the assessment area as well as one village which was nearby. This was based on the company's participatory mapping. This participatory mapping was presented to the assessor during the DD phase. PT MPG was able to produce documents (e.g. minutes regarding many meetings with the community). Most of these entailed the process of setting up the KKPA and potentially Kas Desa for the communities.</p> <p>In terms of the KKPA a committee has been appointed. These people are elected to run the KKPA. Details of the process of setting up the KKPA are included in the SIA.</p> <p>For the concession areas the Kepala Desa's office deals with interaction between the community and the company. The KepalaDesa is a paid government officer and part of the Indonesian government bureaucracy. Similarly, these communities have the BPD (Badan Permusyawaratan Desa) which is part of the government bureaucracy. It is part of the job of the BPD and KepalaDesa to act as advisors to the community on matters such as interactions with the company.</p> <p>Additionally, FPIC related SOPs are in place. The FPIC SOP is the specification of the mechanism for subsequent interactions between communities and the company.</p>

#### 2.2.4 Scoping study

The objectives of the scoping study were to identify the project's area of influence, available information and initial stakeholder concerns; enabling the assessor to identify high priority issues and to inform the methodology for the field assessment and the team required.

Table 8. Timeline of the field component of the scoping study

Date	Activities - Social	Activities - Biodiversity
Monday, December 3, 2018	<ul style="list-style-type: none"> <li>- Opening meeting</li> <li>- Review of FPIC and land acquisition documents</li> <li>- Interview with community leaders Sei Rahayu 2 and Rimba sari</li> </ul>	<p>Opening meeting Ground Truthing Plots</p>
Tuesday, 4 December 2018	<ul style="list-style-type: none"> <li>- Interviews with community leaders in Sei Rahayu 1 and Beringin Raya Village,</li> </ul>	<p>Ground Truthing Plots</p>

Date	Activities - Social	Activities - Biodiversity
	DataiNirui Village and Pendreh Village	
Wednesday, December 5, 2018	<ul style="list-style-type: none"> <li>- Review of documents regarding CSR, recruitment and employment.</li> <li>- Interview with Karamuan village community leaders</li> <li>- Interview with the Manpower Office</li> <li>- Interview with the District Head of Central Teweh District</li> <li>- Interview with NGO FKPM Batara</li> </ul>	Ground Truthing Plots
Thursday, 7th December, 2018	<ul style="list-style-type: none"> <li>- Interview with harvest workers, sprayers and paramedics</li> <li>- Interview with the Environmental Service</li> <li>- Interview with the Environmental Service and Office of Cooperative and Transmigration</li> </ul>	Ground Truthing Plots
Friday, 8th December, 2018	Closing Meeting	Closing Meeting

Table 9. Description of teams' scoping activities

Activity	Discussion
Initial ground-truthing of land cover map	An initial ground truthing of the landcover map took place. The results were that the land cover map would require updating based on the ground-truthing, but in general it was reasonably accurate.
Seek Consent for the Assessment	<p>A letter was shown to the assessors where the purpose of the assessment is explained to the community and their consent is provided.</p> <p>At the social interviews and when the community joined the biodiversity assessment the assessors cross-checked the evidence provided by asking,</p> <ul style="list-style-type: none"> <li>- "Has the company socialised this assessment to the community and Has the community agreed?</li> <li>- Has the community agreed to doing scoping and the full assessment going ahead.</li> <li>- At the community meetings has the HCV / HCS concept been socialized."</li> </ul> <p>In all cases the assessors were confident in the veracity of the information provided by the company regarding FPIC that had been undertaken.</p>

Table 10. How the preconditions were confirmed (using triangulation) once on site

Precondition	Evidence
<b>Commitment to environmental and social safeguards</b>	<p>The fact that PT MPG was commissioning this study was considered evidence that it was fulfilling this precondition.</p> <p>The site manager was also interviewed on this matter and reinforced a commitment to follow the group policies.</p>
<b>Moratorium on any land clearing or land preparation until the ICLUP is completed</b>	<p>The Group Sustainability Manager and the Manager PT MPG both stated that all no land clearing and development in the new areas. It intended that the land clearing will be commence after until the ICLUP was finalized and NPP Notification is successfully concluded.</p> <p>No land clearing had started based on the assessor’s observations (a grid was laid over the area and the assessor walked to 349 evenly spaced locations and saw no sign of industrial land clearing). The assessor was satisfied that PT MPG was taking its commitments seriously.</p> <p>The communities are exercising their rights to manage it as they wish which the company is obliged to respect and not within the company’s control as the land ownership is still with the communities.</p>
<b>Demonstrated legal right over or permission to explore the AOI</b>	<p>The relevant documents were shown to the assessor at scoping- (1) license documents (2) signed documents from the community allowing access to all areas. Regarding the KKPA areas the communities confirmed that the boundaries were correct and joined the field survey</p>
<b>FPIC gate</b>  <b>FPIC process has been initiated with full disclosure of the proposed project with all potentially affected communities and stakeholders, and the process for negotiation and consent going forward has been agreed with representatives appointed through fair process</b>	<p>The assessor confirmed the company’s understanding of the affected communities matched with the HCSA’s definition of affected communities.</p> <p>The social assessor interviewed the community who described multiple discussions with the company. These related to dealing with a multitude of land related issues. Additionally, a large proportion of the workforce came from local villages. In this respect the assessor was satisfied that communities had been well informed of the company’s development plans.</p> <p>The communities had nominated their own representatives. This was based on the Indonesian Government bureaucracy which has elected positions to deal with administrative issues such as this. The communities stated to the assessor that they want to maintain the existing structure – this was agreed by members of the cooperatives as well as non-members. The community said they would get legal representation if they felt it was required which was not at this stage.</p> <p>There is specific reference to the customary owners being made aware that they can say no to the development or to conservation plans. This is in the company’s SOP. This was verified by the assessor that people had been told that they have the right to refuse at any point.</p> <p>Mechanism for communication with the whole community are based on</p>

Precondition	Evidence
	<p>the existing village structures. This was stated by the community leaders.</p> <p>The information provided by the community was cross-checked against the letter. The assessor was confident that this letter had not been forged or doctored by the company.</p> <p>Additionally, the Manager of MPG was asked whether there had been any issues arising from communities other than those listed. To which the manager stated that it was only these communities that they had had any interaction with. As such the assessor defined these as the “affected” communities.</p> <p>The FPIC that has been undertaken has been based upon PT MPG’s internal SOPs. FPIC will continue based on these SOPs.</p>

### 2.2.5 List of Consultation

A summary of stakeholders consulted during the scoping study, including key outcomes of those discussions, are summarised in **Table 11**.

Table 11. List of initial stakeholder consultations undertaken during the scoping study

Position	Date consulted	Key outcome/s
Community leaders Sei Rahayu 2 and Rimba Sari	Monday, December 3, 2018	Interview about the plans of the company and the understanding of the community regarding the company’s plans. Additionally, gathering demographic information and background of the community.
Community leaders in Sei Rahayu 1 and Beringin Raya Village, Datai Nirui Village and Pendreh Village	Tuesday, 4 December 2018	Discussing plans for the KKPA and the progress with KKPA development to date. Note that no key concerns were mentioned by any of the community members about PT MPG’s expansion plans. PT MPG has operated in the area for a number of years and has developed a good relationship with the communities. The only concern was the water source for Sei Rahayu 1, that originated in the plantations – the community wanted assurance that it wouldn’t be polluted. This required follow up in the full assessment.
Karamuan village community leaders Interview with the Manpower Office Interview with the District Head of Central Teweh District. Interview with NGO FKPM Batara	Wednesday, December 5, 2018	Similar interview with the community as above. Gathering information about the company from the perspective of the government departments. Also finding out general information about issues relating to oil palm development in the area Gathering information about the NGO’s activities.
Interview with the	Thursday	Similar interview with Government Departments as

Environmental Service. Interview with the Office of Cooperative and Transmigration	6th December, 2018	described above.
---	--------------------------	------------------

### 2.2.6 Boundaries of the AOI

Given the relatively confined geographical spread of the assessment areas (approx. 15 km east to west and 21 km north to south), 'Option B' was used to determine the **biodiversity AOI** for this assessment.

A one kilometre buffer was decided upon for the following reasons :

- A one km buffer is required by the HCS toolkit and having a different buffer between HCV and HCS would lead to a confusing outcome.
- Much of the buffer overlaps with an HCV assessment that has already been signed off by the HCVRN and or the RSPO (Aksenta, 2015 and Aksenta 2012). Having undue repetition of the same work was deemed unnecessary.
- Over the other areas that are within the buffer the landcover is either :
  - A matrix of shifting agriculture / rubber
  - Secondary forest

Additionally a **"Social AOI"** is considered, this is the boundary of all the villages that overlap with PT MPG. These villages are also considered to be the "affected communities." This is somewhat complicated because there are the official boundaries, as mapped by BPS; and the boundaries that the villages themselves recognise. The Social AOI is the largest extent of both the "official" and "recognised" village boundaries.

Table 12. Nine villages that are considered the social AOI or "affected communities"<sup>1</sup>

Village	Population	
	Families	Individuals
Sei Rahayu 1	320	1041
Sei Rahayu 2	315	1226
Rimba Sari	348	1238
Beringin Raya	100	351

<sup>1</sup> Affected communities and Social AOI appear to be used synonymously in HCVRN and HCS guidance. The assessor does the same in this report.

Village	Population	
	Families	Individuals
Datai Nirui	104	411
Pendreh	437	2218
Karamuan	292	1033
Nihan Hilir	440	1600
Makunjung	338	1241

### Brief Description of The Landscape Context

This is a more sparsely populated area of Indonesia and is relatively isolated. It consists of rolling to steep country on mineral soils. There area still pockets of forest in this landscape.

**Figure 5** show that Zoom-in to the AOI. This includes (1) the Biodiversity AOI (purple boundary) – 1 km buffer of the assessment area. (2) The watershed boundary (blue) which is the sub-watershed that PT MPG is within. The MoEF (2017) land cover is also displayed. This shows that the area is 63% forested. (3) The social boundary of the AOI (black and white dashes) has been added.

### Image Analysis and Land Cover Classification

The study areas for this assessment were a series of polygon boundaries supplied to the assessment team by PT MPG.

At the inception of this project, it was decided that the use of LIDAR was not to be used as other reasonable options were available. Option 3 (pp 5 in Rosoman et al., 2017b) was decided to be the most more feasible approach for the purpose of this study. It was decided that two sources of were to be used for the project;

- 1) Sentinel-2 (available from European Space Agency (ESA))
- 2) Landsat-8 (available from USGS NASA), to give additional information from the spectral side.
- 3) Field GPS measurement.

Recent Sentinel 2 was used to gain an understanding of the vegetation present across the broader landscape and was the primary imagery dataset used for land cover classification during the early stages of the project (i.e. preparing for the scoping study and fieldwork). Landsat-8 satellite imagery was used for refinement of the initial land cover classification by giving better spectral information on area of study.

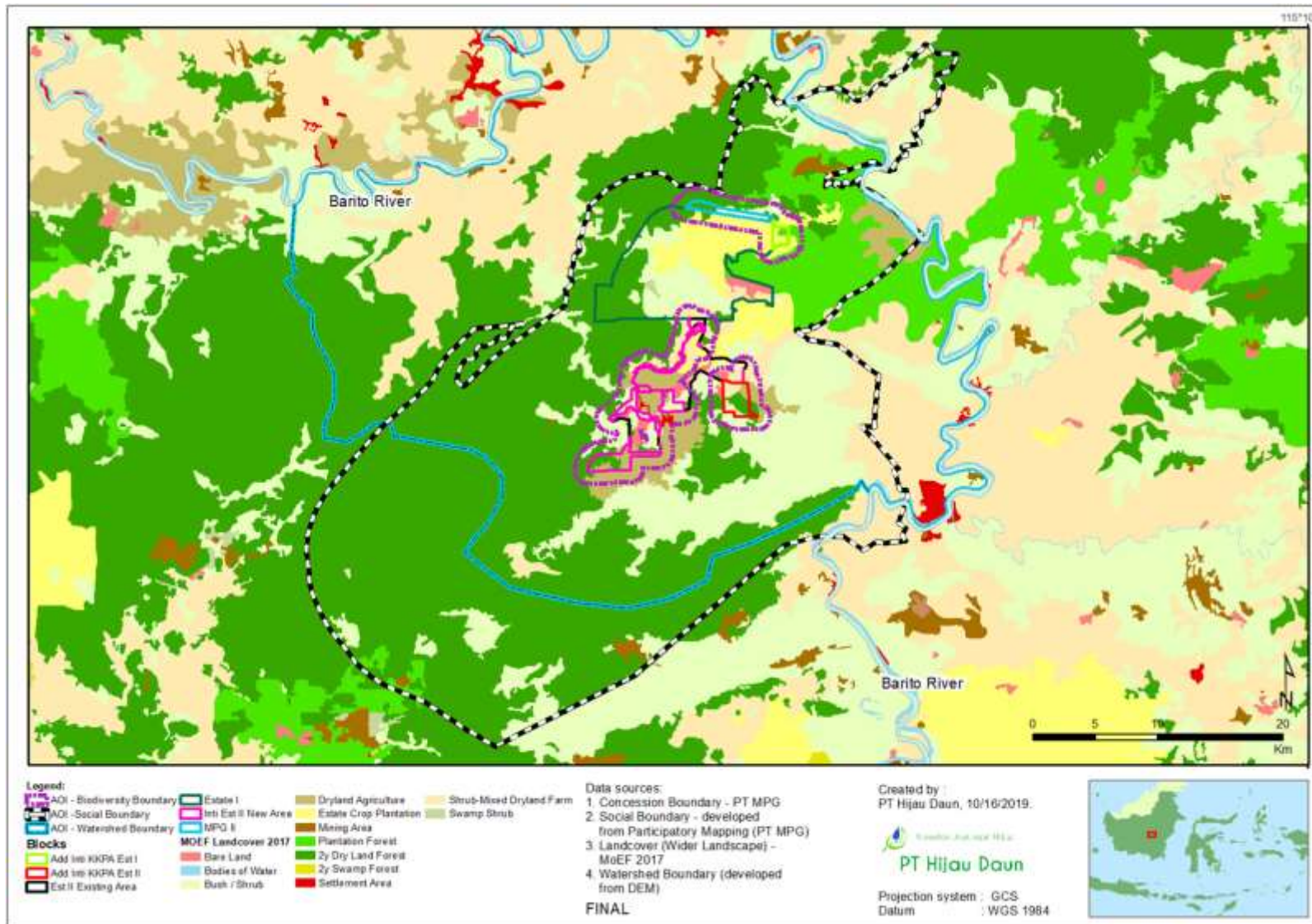


Figure 5. Zoom-in to the AOI

Field GPS measurement was crucial for defining the sample based on field observation and the current condition of the site shown in Sentinel 2. The available high-resolution image within Google is also be a key tool in deriving test points for the final accuracy assessment.

Imagery and GPS derived datasets used for this project are shown Table below.

Table 13. Imagery and GPS datasets utilised during this integrated assessment

Image identifier	Capture date	Resolution (m)	Cloud cover (%)
Sentinel-2	01/06/2018 – 31/12/2018	10	<5
Landsat-8	01/06/2018 – 31/12/2018	15	<5
Field GPS measurement	2/12/2018 – 9/12/2018 17/3/2019 – 30/3/2019	-	-

A subsequent ground truthing survey was undertaken based on UAV images that were obtained. Despite the fact that PT MPG had obtained UAV images over the whole estate; UAV could not be used as it is not approved by HCS<sup>2</sup>.

### 2.2.7 Social Methods

Secondary data for the assessment of HCV 5 and 6 were available from documents (e.g. SOPs) relating to Corporate Social Responsibility (CSR), FPIC and land acquisition programmes. Given that PT. MPG is largely a developed plantation, this was necessary to understand how the company had interacted with the surrounding community. By the time the Full Assessment was undertaken, PT Hijau Daun had completed the SIA. This included a considerable amount of baseline information as well as a land tenure study. The process of writing the SIA was very valuable background for the social assessment. As well as that PT Hijau Daun has undertaken a number of other assessments in Central Kalimantan which provide important background. All the references are provided in the reference section of this report. This was all the secondary data that was available based on information provided by the company as well as the assessors' experience. This data was chosen because this was all that was available. No sampling of the secondary data was undertaken.

There were no follow-ups required of the preconditions from previous phases and the assessor did not observe anything that might cause concern.

<sup>2</sup> PT Hijau Daun asked the HCS Secretariat on 25 September 2019 if UAV could be used for developing the land cover. By 9<sup>th</sup> December 2019 no formal response had been received from the Secretariat. So the UAV images were not used.



Table 14. Social secondary data sources. These are linked to FPIC (e.g. the assessor verified documentation relating to land acquisition)

Document Name	Explanation
SOP for undertaking FPIC in the plantation	Steps for making a land inventory and developing the plantation
SOP for paying “gantirugi” (acquiring land) (SOP/Plant.Div/1.0)	Steps involved in acquiring land
SOP CSR and Community Development (SOP/Plant.Div/8.1.1)	Steps for Corporate Social Responsibility Planning
SOP External Complaints (SOP/Plant.Div/5.1)	Steps for dealing with and finalising complaints from external parties

### Social Fieldwork

The primary technique for collecting social data was through face to face interviews. During the scoping study interviews were undertaken with the following stakeholders:

- Village leaders
- People that worked in particular occupations that used natural resources
- Government officials at the district level (*Kabupaten*)
- Company staff especially those from the *HumasDepartment* (Public Relations)

Combined with this, observations were made about the villages, rivers and other natural habitats. This was focused on areas where natural resources were being used (e.g. fishing or cutting timber). For the full assessment; using the CG as a reference, questions were prepared for meetings at the village level to evaluate the dependency of community members on natural ecosystems to fulfil basic needs (HCV 5) and identify any important cultural sites (HCV 6).

In all cases, meetings were attended by the kepaladesa (Head of the Village) and several other interested parties. A total of nine villages were interviewed for this survey, of which all had boundaries which overlapped with extension area. These villages are listed in Table 15.

Table 15. Nine villages that were interviewed as part of the full assessment. These are ALL the affected communities

Village	Date of Interview
Sei Rahayu 1	19/3/2019
Pendreh	19/3/2019
Sei Rahayu 2	20/3/2019
Rimba Sari	20/3/2019
Beringin Raya	21/1/2019
DataiNirui	21/1/2019

Village	Date of Interview
Karamuan	22/3/2019
Makunjung	23/3/2019
NihanHilir	29/4/2019

No communities refused (or declined) to participate in the assessment. Regarding the number of people attending; a member of the PT MPG Community Relations Department contacted each village beforehand and organised the community meeting. PT MPG encouraged as many people to join as possible, but ultimately couldn't *force* anyone to come. No percentage attendance was aimed for. However, there was a mix of people that turned up e.g. village leaders, women, nurses, younger people, farmers. In this context PT Hijau Daun was satisfied that the attendees represented a cross-section of the community.

In each interview a general introduction to the purpose and context of HCV / S was made. This was followed by a Focus Group Discussion (FGD) in order to collect data on social and cultural aspects. It was the impression of the social expert that people spoke freely and openly with no ramifications of speaking freely. It was explained that there would be no ramifications from the company regarding what they said.

The interviews all took place in Bahasa Indonesia and were undertaken by the social expert, a native speaker. The notes were written on paper where everyone could see them and then used for this report. The interactions with all the groups (e.g. elders, middle age, youths) had the same interaction using the same means because everyone spoke openly and it was not considered culturally appropriate to single out groups (e.g. to separate people of different religions). However, the social expert made a particular point during the interview to address questions to sub-groups e.g. to draw out farmers on particular points such as relating to land use issues. Other points were particularly addressed to other subgroups e.g. if a young person answered a question the assessor would ask if other sub-groups agreed with answer, this often prompted a discussion. Once a conclusion was agreed upon the assessor noted it down in her notebook.

The social data was used to delineate HCV4 – 6 areas. The assessor collected qualitative data about communities' reliance on natural resources as well as quantitative data. This was combined with secondary data and information from participatory mapping. For example, where communities relied on water and took the water from the river, the river and the protecting buffer areas was considered to be HCV 4 and 5. Similarly, if a community stated that they took timber from the forest for housing, then local forest areas were considered HCV 5. The assessor mapped this as being LDF

or better because the timber from YRF or scrub is not suitable for housing – it is too small and pioneer species rot quickly – this is based on the assessor’s personal knowledge and observation.

The HCVRN have also asked how the assessor determined how this data was used to verify community lands. This can be obtained from secondary data, technically anything that is classified as Areal Penggunaan Lain is owned by the community (there are exceptions to this but the community was not aware of any state land on APL).

PM was used to verify food security by discussing and mapping the areas that were used for growing crops. This was actually quite difficult as in all villages the community stated that they practiced shifting agriculture. The key point was that land was not seen to be limited for food production.

GPS points were taken where appropriate (e.g. graveyards) or, where a creek was used for taking water, this was marked on the survey map. For HCV6 sites, knowledgeable locals took the social team round and showed the two sites within the plantation. GPS points, notes and photos were taken. During the Final Consultation the assessor revisited these sites in order to confirm and discuss how best they could be managed.

The social data was analysed and verified by undertaking interviews and participatory mapping with all the affected communities. Also, the SIA (which included the social baseline and land tenure study) was undertaken by the assessor, so there was no need to re-verify the information for this as it had just been collected and was considered to be primary data. Note that in the SIA all affected communities were covered there were no missed communities between the SIA and integrated report.

The following is evidence of meeting preconditions (due diligence step, particularly the FPIC part, since the HCVRN considers the SOPs to have no bearing on FPIC) was verified at the main assessment stage. The commitment to environmental and social safeguards was verified by the fact that PT MPG was commissioning this study was considered evidence that it was fulfilling this precondition. No land clearing had started based on the assessor’s observations (a grid was laid over the area and the assessor walked to 349 evenly spaced locations and saw no sign of industrial land clearing). The assessor was satisfied that PT MPG was taking its commitments seriously. Demonstrated legal right over or permission to explore the AOI was verified by the Group Sustainability Manager and the Manager of PT MPG both stated that the company had a license over the area which was shown to the assessor. Regarding the KKPA areas the communities confirmed that the boundaries were correct and joined the field survey. The FPIC Gate was verified by the

social assessor interviewed the community who described multiple discussions with the company. These related to dealing with a multitude of land related issues. Additionally, a large proportion of the workforce came from local villages. In this respect the assessor was satisfied that communities had been well informed of the company’s development plans.

The communities had nominated their own representatives. This was based on the Indonesian Government bureaucracy which has elected positions to deal with administrative issues such as this. The communities stated to the assessor that they want to maintain the existing structure – this was agreed by members of the cooperatives as well as non-members. The community said they would get legal representation if they felt it was required which was not at this stage.

There is specific reference to the customary owners being made aware that they can say no to the development or to conservation plans. This is in the company’s SOP. This was verified by the assessor that people had been told that they have the right to refuse at any point. Mechanisms for communication with the whole community are based on the existing Village structures. This was stated by the community leaders. The information provided by the community was cross-checked against the letters presented by the company. The assessor was confident that this letter had not been forged or doctored by the company.

Additionally, the Manager of MPG was asked whether there had been any issues arising from communities other than those listed in **Table 27**. To which the manager stated that it was only these communities that they had had any interaction with. As such the assessor defined these as the “affected” communities.

The FPIC that has been undertaken has been based upon PT MPG’s internal SOPs. FPIC will continue based on these SOPs. The precautionary approach was used in the methods/approaches chosen, considering all the data available. Insofar as when there are reasonable indications that an HCV is present, the assessor assumed that it is present.

Note that there were cultural sites mentioned by the community. The community helped GPS all the locations. A limitation of the assessment is that the community may have misunderstood the location of the sites. However, the assessor has undertaken best endeavours to identify these sites.

Table 16. Justification of choice of social method

Method	Justification for Choice
Face to face interviews	This is a more efficient form of communication than other options e.g. talking over a hand phone.

Method	Justification for Choice
Using CG as a reference	This is the preferred reference by the HCVRN
Meetings at village level	From Hijau Daun’s experience village level discussions are more effective than one on one or small groups. Generally, the village people appear to speak openly and having a reasonable number of people facilitates discussion
FGD	The FGD approach is an effective way to collect information on social and cultural dimensions of village life in an informal setting that permits discussion and exchange of ideas between group members. However, there was also a general discussion about the important natural resources in the area and changes to resource availability over the last twenty years.
Language	Bahasa Indonesia. Though Dayak is the local language, Bahasa Indonesia is still understood by everyone.
Participatory Mapping	PM was done at every village by the assessor. Regarding resource use, garden area, sacred areas. Village boundaries were clarified by MM prior to the assessment – the reports are in the appendices. These were not verified as there were no overlapping areas identified and no mention of conflict by the communities.

Table 17. Justification of choice of sampling method

Method	Justification
Sampling all nine villages that either overlapped with the assessment area or were nearby.	It was thought that all nine villages had to be sampled, if villages were missed out, potentially crucial information would not be captured.

### Participatory mapping

At each village interview the communities were asked to mark up the pattern of their land use in the area. This was done at all 9 affected communities (no sampling was done). This was to ensure (1) that the oil palm development did not impact on their gardening area, (2) if it did overlap with their gardening area that this would not force them to go and open up areas of forest elsewhere and (3) if there were any resources that were likely to be affected by oil palm development (e.g. hunting areas).

Table 18. Justification of choice of PM method

Method	Justification for Choice
Face to face interviews	This is a more efficient form of communication than other options e.g. talking over a hand phone
Providing satellite images to draw on	The HCS Social requirements state “Developers and their technical advisors shall work in a participatory way with indigenous peoples, local communities and other users, including through a geo-referenced participatory mapping process.” Satellite images provide geo-referencing.

Method	Justification for Choice
Meetings at village level	From Hijau Daun's experience village level discussions are more effective than one on one or small groups. Generally, the village people appear to speak openly and having a reasonable number of people facilitates discussion
FGD	The FGD approach is an effective way to collect information on social and cultural dimensions of village life in an informal setting that permits discussion and exchange of ideas between group members. However, there was also a general discussion about the important natural resources in the area and changes to resource availability over the last twenty years.
Language	Bahasa Indonesia. Though Dayak is the local language, Bahasa Indonesia is still understood by everyone.
Patterns of land use	The HCS Social requirements state " <i>Mapping shall: ... identify both the boundaries of customary land and land uses</i> " – all the area is customary land and hence people were asked to discuss and identify patterns of land use

Table 19. Justification of choice of sampling method for PM

Method	Justification
All nine villages (which were considered the affected communities) that either overlapped with the assessment area or were nearby.	It was thought that all nine villages had to be interviewed, if villages were missed out, potentially crucial information would not be captured.

None of the PM mapping results were changed and the net result was socialized with the community at the final consultation.

## 2.2.8 Environmental Method

### 2.2.6.1 Methods

#### Vegetation survey

Much of this phase of the assessment sought to understand if any species likely to be found within the study areas are listed under various international agreements or are protected under any national legislation.

Species Lists from Previous Scientific Surveys: Unfortunately, no relevant species lists from previous surveys could be sourced. For some reason most of the work has been done in peat swamp forests and PT MPG is all on mineral soils.

Species Lists from IUCN Website : A search was made for threatened “Plant Species in Kalimantan” – this yielded a list of 69 RTE species. This was used to inform the vegetation team to target searches for these species. However, it was clear that there were a lot of RTE species present that were not in this IUCN list, presumably because many of the IUCN species have no geographic reference.

### **Bird Survey**

The bird surveyor has undertaken many bird surveys in Kalimantan so has a good understand of the birds that are likely to be present. Nevertheless a base checklist was used that was downloaded from Aviabase (“Kalimantan Tengah Province bird checklist - Avibase - Bird Checklists of the World,” n.d.).

### **Mammal Survey**

Secondary data sources for mammals mainly involved reviewing other HCV reports that had been undertaken in the area. This included the HCV report of the existing MPG which is located in Barito Utara. The species lists from these reports were used as a starting point for this survey.

Mammal species were mainly identified by speaking with the PTMPG employees and the local villagers. Both groups were invaluable in providing information of extant mammals in the areas of interest; mainly based on their past experience.

### **Slope Analysis**

Slope analysis was performed using the Synthetic Aperture Radar (SAR) derived ALOS PALSAR as an input , then using the ‘slope’ (spatial analyst) tool within ArcGIS to convert elevation values to slope values. While the ALOS PALSAR dataset is useful to understand relative elevation differences, its use in higher resolution, operational planning is limited.

All the references for secondary data sources are provided in the reference section of this report.

### **Aquatic Area Analysis**

All aquatic areas and their associated buffers (50 m) were designated as HCVA , this was based on the precautionary approach. The rivers in the areas were of declining quality designating all aquatic habitats as HCV 1 Area. No ponds or lakes were seen. This is linked to the observation of the declining quality of aquatic habitats and no aquatic survey was undertaken.

### 2.2.6.2 Environmental field work

The in-field vegetation survey was combined with the HCS plot data collection. The HCV vegetation survey focussed on forested areas. Scrub, rubber and oil palm were not considered a priority, given the history of disturbance in these vegetation types the assessor considered it to be incredibly unlikely to find any Rare, Threatened or Endangered (RTE) vegetation species.

HCS plot measurement involved assessing fixed area plots (described in more detail below) and searching for Rare, Threatened or Endangered (RTE) vegetation in the vicinity of and whilst walking between plots.

The field inventory performed for this project was primarily used to;

- Collect HCSA plot data
- Additional ground truthing of the output of the initial image classification and to quantify the above-ground woody biomass (i.e. that within trees) found within each of the strata, across the study areas
- Actively search for RTE species listed under national or international acts or conventions within the study areas and adjacent landscape.
- Verify the ecosystems that were described as present based on the secondary data review. Where possible, refine the boundaries and better describe these ecosystems.
- Develop a vegetation species list.
- Develop a description of the forest associations in the area, along with information on levels and type of disturbance and threats.

### 2.2.6.3 HCS forest classification and carbon assessment

Field inventory sought to develop distinct classes, with statistically different mean values, to a 90% confidence level, consistent with the requirements of HCSA (2017). Areas of each class that are relevant to the statistical analysis are provided in **Table 20**.

Table 20. Summary of statistical analysis of carbon stocks per vegetation class

Land cover class	Mean Carbon stock (tC/ha)
HDF	624.9
MDF & LDF	127.3
Jungle Rubber	68.3
YRF	39.7
Non-HCS	38.2
Scrub	7.8

**The final land cover classification (**



**Table 21)** are the output of integrating the initial classification, with observations from HCSA plot work and imagery. The final land cover mapping for PT MPG study area is shown on **Figure 6**.

Table 21. Final land cover classes found across the study areas

	Land Cover	Est II New Area	KKPA Estate II	MPG II	Additional Inti KKPA Est I	Grand Total	Percent of total area
HCS Classes	High Density Forest	5.99	-	-	-	5.99	0.29%
	Medium Density Forest	89.99	16.43	113.19	1.26	220.87	10.85%
	Low Density Forest	158.93	30.27	56.14	1.47	246.81	12.13%
	Young Regenerating Forest	187.51	60.78	61.95	19.04	329.28	16.18%
	<b>Total</b>	<b>442.42</b>	<b>107.48</b>	<b>231.28</b>	<b>21.77</b>	<b>802.95</b>	<b>39.45%</b>
Non-HCS Classes	Agriculture	53.53	8.38	-	-	61.91	3.04%
	Mixed Rubber	285.87	175.87	0.97	125.31	588.02	28.89%
	Monoculture Rubber	70.37	45.49	3.76	10.05	129.67	6.37%
	Oil palm	15.49	-	3.22	3.12	21.38	1.05%
	Open land	39.8	6.77	2.97	3.44	52.98	2.60%
	Scrub	222.68	184.58	90.89	39.99	538.14	26.44%
	Settlement	0.7	-	-	-	0.7	0.03%
	Infrastructure	71.22	9.3	25.08	3.42	109.02	5.36%
<b>Total</b>	<b>759.66</b>	<b>430.39</b>	<b>126.89</b>	<b>185.33</b>	<b>1,502.27</b>	<b>73.81%</b>	
<b>Grand Total</b>		<b>1,202.08</b>	<b>537.87</b>	<b>358.17</b>	<b>207.1</b>	<b>2,305.22</b>	<b>100.00%</b>

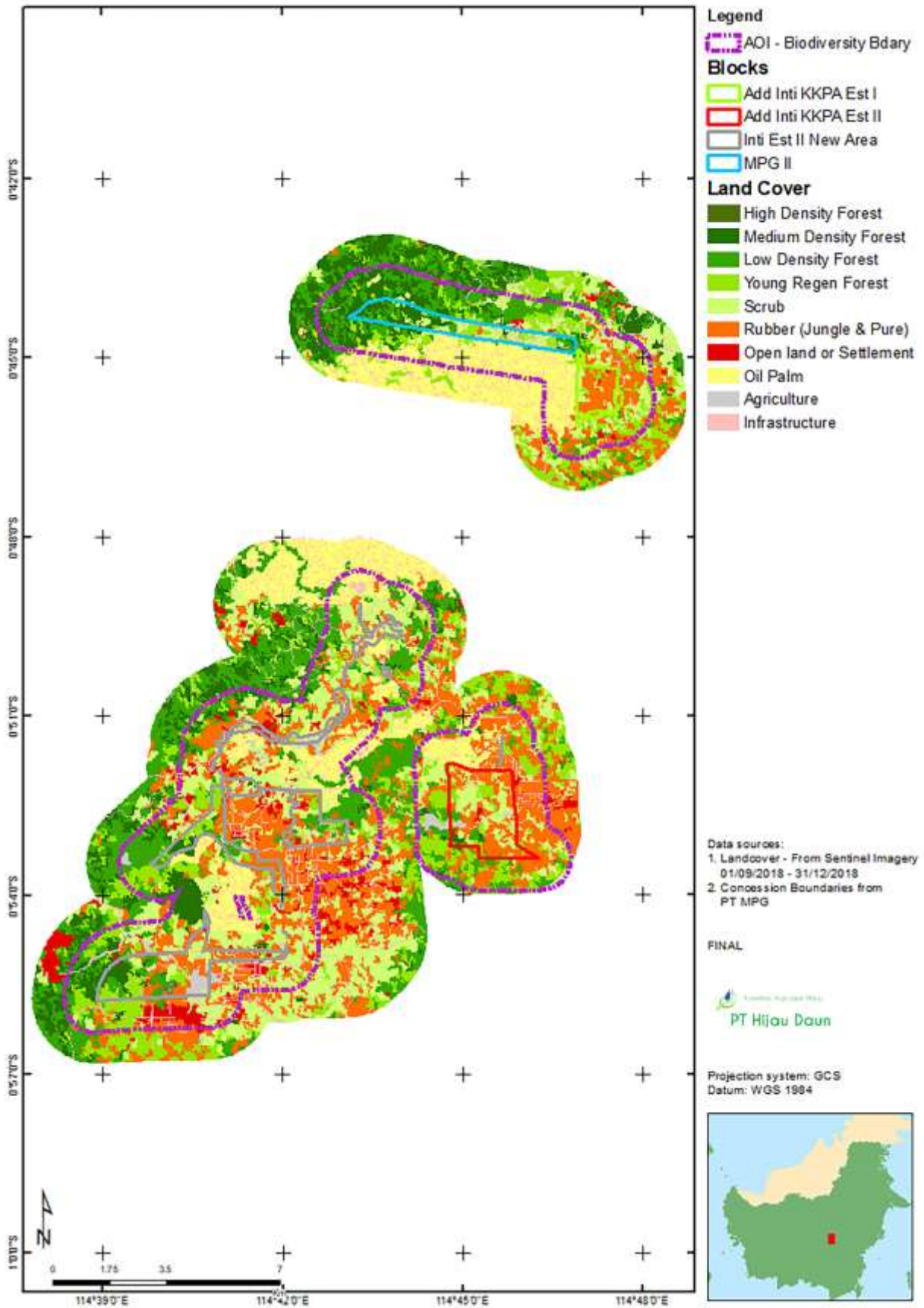


Figure 6. Final land cover map for the PT MPG study area

## 2.3 Soil and topography

### 2.3.1. Dates Soil Suitability Assessments were conducted

A soil suitability assessment was carried out on the land in two ways survey method by two different teams. The first method was done by taking soil samples in the field on April 2018. The second method with the Integrated HCV HCS assessment in 2018. Based on two ways survey method, a map of the distribution of land types in the proposed development areas concession was obtained.

### 2.3.2. Soil Suitability Assessment expert and credentials

The soil survey by taking soil samples in the field was carried out by PT MPG's internal assessment team that consist of research and development team (R & D), PT MPG's survey and public relations team. The R & D team plays a role in the collection and analysis of the soil types, the survey team plays a role in navigating to the sampling point, while the public relations team plays a role in communicating with the surrounding community, especially if the sampling points are located on community land. The soil survey using secondary data at the proposed development areas were carried out by the consultant team of PT Hijau Daun (see section 2.2.1).

### 2.3.3. Soil Suitability Assessment Methods

The method used for field soil survey is a grid method with a size of 200 x 300 m (1 : 6 Ha). The planned sampling points are placed on each sub-block to ensure representation of each sampling points meets the required sampling intensity.

Observation of soil types is carried out by drilling at each planned sampling point and the description of the physical properties of soil in the field is carried out, which includes several criteria, including: soil color, texture, consistency, drainage, slope, effective depth and other physical properties found in the field. Soil survey activities are carried out by referring to the soil type guidebook for Indonesia. References used in the assessment of soil types of the proposed development areas are Keys to Soil Taxonomy, USDA, Eleventh Edition, 2010 and Guidelines & Keys to Proposed Indonesian Soil Series - First Edition, 2010.

The method used for soil survey using secondary data is done by overlaying secondary data that has been collected with the vector of the proposed development areas concession boundary. Example of secondary data used is a map of the land system that is derived from the macro scale map of RePPPProt land system 1987 and the map of soil types and land units in 2011. In addition to land system data, soil type data was also collected. USDA Soil Taxonomy in 1984 is used to determine the soil type.

## 2.4 GHG calculation

The calculation of GHG emissions covered the potential of the planting area in PT MPG plantations around the concession of PT MPG. Several scenarios are made to find the optimal land use plan.

### 2.4.1 Dates Greenhouse Gas Analysis was conducted

The calculation of the proposed development areas was carried out in November 2020.

### 2.4.2 Assessment team and their qualification

The GHG calculations are carried out by Sustainability Departments that have experiences in GHG calculations since 2015. Each member involved has experience and knowledge in calculating GHG, analysis of land cover and calculation of carbon stocks. Their qualifications are as follows:

Table 22. Assessment Team Role and Their Credential

No	Name & Position	Role	Credentials
1.	Dr Gan Lian Tiong	Team Leader	PhD. Agricultural Sc, Gent University, Belgium 1985
			45+ years working in plantation since 1975
			Joined Musim Mas in 2007
			ProForest HCV Workshop, Kuala Lumpur 2003
			LCA Training Japan, 2005, 2006
			Conducted HCV and GHG assessments in MMG plantation
			Co-Chair ERWG and member of BoG, BHCV WG
2.	Budi Tri Prasetya	HCV and Land Use Planning	BSc in Forestry, Agricultural Institute of Bogor, Indonesia 2007
			Joined Musim Mas in 2008
			Involved in high conservation area identification, management and monitoring
			Involved in high carbon stock measurement, land cover assessments and satellite image interpretation
			ISCC GHG emission training in Kuala Lumpur 2014
			Attended HCV Management and Monitoring Workshop by ZSL in Bogor in 2013
			Attended Tiger Summit Conference in Bogor in 2014
3.	Lastri Yanti Simanjuntak	LUC & GIS	BSc in Meteorology, Agricultural Institute of Bogor, Indonesia 2011
			Joined Musim Mas is 2011
			Involved in land cover assessment and satellite image interpretation
			Well versed in satellite image interpretation using

No	Name & Position	Role	Credentials
			ArcGIS, Map_info, and Er Mapper
			Experienced in carbon stock calculation and High Conservation Value management and monitoring
			Attended RSPO Palm GHG Workshop and Potico WRI 2015
4.	Alexander Liang	GHG Emission	B.Eng in Chemical Engineering, North Sumatra University, Indonesia 2018
			Joined Musim Mas in 2018
			Involved in GHG emission calculation
			Involved in Life Cycle Analysis (LCA) assessment

### 2.4.3 GHG Analysis Method

#### Stratification of land cover

The land cover map obtained from the PT MPG LUCA assessment report. Analysis of land cover is carried out at the proposed development areas. Landsat 8 OLI\_TRS Satellite Images with acquisition dates of Juni 2018 (<http://www.usgs.glovis.gov>). Polygons of the assessment area are superimposed on Landsat and the land covers inside the polygons were classified. The extent of each change in land use is determined by the results of the classification.

References used in land cover stratification include: Appendix 2 of RSPO RaCP 2014 by Compensation Task Force, Carbon Measuring Tool issued by RSPO (Sukswan, S. 2012. Updated June 2014 <http://www.rspo.org/>) and "Guideline 3 Appendix on Remote Sensing Methodology on HCV Compensation Proxy Approach" by the 2013 CTF - RSPO Team. Those references are used to interpret land cover classifications from satellite data. Verification of the results of satellite image stratification is carried out using field surveys and other secondary information sources, for example AMDAL, HCV reports, etc. The Cohen Kappa is used to determine the accuracy of satellite image stratification.

#### Stratification of soil type

The soil stratification used in this assessment are taken from PT. MultipersadaGatramegah Integrated HCV/HCSareport (<https://hcvnetwork.org/reports/integrated-high-conservation-value-high-carbon-stock-approach-assessment-report-pt-multipersada-gatramegah-kabupaten-barito-utara-central-kalimantan-indonesia/>) that was conducted in 2018 by PT. Hijau Daun (MPG, 2018).

#### Carbon stock assessment

In order to comply with Criterion 7.10.2 of 2018 P&C, information on the carbon stock is required in order to 'forecast' the balance of emissions and sequestration associated with a proposed

development. Carbon stock value of the vegetation are taken from PT. Multipersada Gatramegah Integrated HCV/HCSA report that were conducted in 2018 (MPG, 2018).

### Development scenario

Land use scenarios are developed in the assessment area. Their potential emissions are estimated using the New GHG Development Calculator released in August 2016 (RSPO, 2016).

The new development GHG Calculator estimates emissions from palm oil production, and from changes in land use. The net GHG emissions exceed the full harvest cycle (default value is 25 years). The projection number of fertilizers used and the use of fuel are added to simulate operational emissions in the future.

### Team responsible for developing the mitigation plan

The team responsible for developing the mitigation plan was headed by Dr. Gan Lian Tiong, Director of the Sustainability Department Musim Mas Group. Other team members are from the Sustainability Department Musim Mas Group. Information and consultations with the Estate Department, Department of Processing and Industrial Relations (HUMAS) were also carried out to assist the team to conduct the analysis.

## 2.5 Land Use Change Analysis (LUCA)

### 2.5.1 Dates Land Use Change assessments were conducted

The Land Use Change Analysis (LUCA) was conducted on January 2020- June 2020 and updated to December 2020. The LUC analysis was covered proposed new development area of PT MPG. The analysis period used included: a) between November 2005 - November 2007, b) between November 2007 - December 2009, c) between January 2010 - May 2014 d) after May 2014 and and updated to December 2020.

### 2.5.2 Land Use Change Assessors and their credentials

This assessment was carried out Internal PT MPG Team competence in LUCA's assessment. The LUCA was led by LastrYantiSimanjuntak with the help of 2 other people who played a role in both GIS and field observations.

Table 23. Assessment Team Role and Their Experience and Qualification

Name	Assessment role	Experience and Qualification
<b>Lastr Yanti Simanjuntak</b>	Lead assessor GIS expert	She obtained a bachelor of Meteorology, Agricultural Institute of Bogor, Indonesia 2011. She

Name	Assessment role	Experience and Qualification
	Report writing	joined Musim Mas is 2011 and has involved in land cover assessment and satellite image interpretation. She have well versed in satellite image interpretation using ArcGIS, Map_info, and Er Mapper and also experienced in carbon stock calculation and High Conservation Value management and monitoring then attended RSPO Palm GHG Workshop and Potico WRI 2015. She also well trained in ESRI Training 2019 and HCV Lead Assessor Training 2020.
<b>Erickson Purba</b>	GIS expert	He obtained a Bachelor of Forestry from the Department of Forestry Management, Faculty of Forestry, University of North Sumatra in 2013. Since joining Musim Mas in 2014, Erickson has been involved in mapping, analyzing land cover, interpreting satellite images and GHG. Erickson is experienced in using software for mapping and GIS such as ArcGIS, Map Info, Er Mapper and Quantum GIS. He also experienced in carbon stock assessment and monitoring of HCV areas. He also well trained in ESRI Training 2019.
<b>Rudi Sharta</b>	Vegetation expert	He graduated from the Faculty of Forestry, Department of Forest Product and Technology, Bengkulu University, in 2011. During his study he has involved in various project related to forest inventory. He joined the HCV assessment training in 2015. He also involved in several HCV identification, management and monitoring activities in Kalimantan in 2016 and 2017.
<b>Budi Tri Prasetya</b>	Technical Review and feedback	He earned a Bachelor of Forestry from Agricultural Institute of Bogor, Indonesia 2007. Since joining Musim Mas in 2008, Budi has been involved in HCV-HCS management & monitoring implementation, Landuse and landuse change analysis, participatory mapping and landuse planning. Budi had participated in ISCC GHG emission training in Kuala Lumpur 2014. Since 2008 he had participated in

Name	Assessment role	Experience and Qualification
		several HCV, HCS, social impact assessments and GHG calculations on PT Musim Mas group plantations. He also well trained in ESRI Training 2019 and HCV Lead Assessor Training 2020.
<b>Gan Lian Tiong</b>	Technical Review and feedback	He earned a Doctorate in Agriculture Science from Gent University, Belgium in 1985. He has 45 years of experience working on plantations including sustainability in the last 15 years. Dr. Gan had participated in the ProForest HCV workshop in Kuala Lumpur in 2003, Life Cycle Analysis training in Japan in 2005 and 2006, had conducted HCV assessments and GHG calculations on PT Musim Mas group plantations. Dr. Gan also serves as the co-chairman of the ERWG and was a member of the BoG and a member of BHCVWG.

### 2.5.3 Land Use Change Assessment Methods

#### 2.5.3.1 Data and information used

Analysis of Land Use and Land Cover Change (LUCCA) was carried out using satellite images of several acquisition dates. Ideally, the satellite imagery used is the image covered in the intended cut-off month (August 2005, September 2007, December 2007, July 2009, February 2010, April 2014, August 2018, February 2020, December 2020).

There are some of satellites available in the right combination in terms of resolution and spectral bands. The minimum requirements of the image that can be used in analysis are images with a resolution of 30 m. However, the possibility of high to very high-resolution data is needed to be able to distinguish among types of land cover, especially types of forest cover. Satellites that can be used include the Landsat Satellite Image (30 m), SPOT Satellite Image (10 m) or RapidEye Image (5 m).

Taking into account the potential variability of available images for specific locations and times, in accordance with the requirements and guidelines of the RSPO, it is necessary to use multiple data sources (a combination of high and very high-resolution images) to facilitate interpretation of land cover, so the interpretation results will be more accurate. In addition, to further validate the image interpretation process, groundtruthing is necessary.



The use of satellite imagery for analysis of land cover, does not always correspond to the cut-off periods specified by RSPO. However, due to the availability of good quality satellite image data (covered by clouds or poor image quality) in the intended period is not available, so the alternative satellite imageries that is close to the period determined by RSPO are used for the analysis.

Satellite image data used in the LUCA the proposed development areas are as follows:

The Period of Land Satellite Imagery	Provider of Land Satellite Imagery	Source of Land Satellite Imagery
Satellite Imagery period before November 2005	<u>Sattelite imagery dated 7 August 2005:</u> Landsat 5 TM dated 7 August 2005	<a href="http://glovis.usgs.gov">http://glovis.usgs.gov</a>
Satellite Imagery period November 2005 – November 2007	<u>Sattelite imagery 5 Agustus 2007:</u> Landsat 5 TM dated 5 August 2007	<a href="http://glovis.usgs.gov">http://glovis.usgs.gov</a>
Satellite Imagery period November 2007 – December 2009	<u>Sattelite imagery dated 1 Juli 2009:</u> Landsat 5 TM dated 27 December 2007 and 1 July 2009	<a href="http://glovis.usgs.gov">http://glovis.usgs.gov</a>
Satellite Imagery period 1 January 2010 – 9 May 2014	<u>Sattelite imagery dated 26 April 2014:</u> Landsat 5 TM dated 10 February 2010 Landsat 8 OLI TIRS dated 26 April 2014	<a href="http://glovis.usgs.gov">http://glovis.usgs.gov</a>
Citra satellite periode 9 Mei 2014 – HCV Assessment was done and updated to December 2020	<u>Sattelite imagery dated 27 August 2018:</u> Sentinel 2 dated 4 March 2018 Landsat 8 OLI TIRS dated 27 August 2018 Sentinel 2 22 February 2020 Sentinel 2 6 December 2020	<a href="http://glovis.usgs.gov">http://glovis.usgs.gov</a>

#### 2.5.3.2 Stages and process of land use cover change analysis

The stages and process of Land Use Changes Analysis (LUCA) refer to the Remediation and Compensation Procedures issued by the RSPO, especially on page 27 of the document. Overall, the stages and processes of LUCA analysis are as follows:

- a. Stage 1: Procurement process, including downloading satellite image data with specification of a resolution of at least 30 meters.
- b. Stage 2: Pre-processing or initial processing, covering atmospheric effects, geometric correction and satellite image data processing operations from the period to be used.
- c. Stage 3: Interpretation, covering the interpretation of land cover from pre-processed satellite image data, by referring to the vegetation coefficient specified in the remediation and compensation procedures.

- d. Stage 4: Ground truthing (field verification), includes verification activities in the field by proving field conditions on the results of the initial interpretation of satellite images of land cover.
- e. Stage 5: Image validation and reinterpretation, including the process of validating the satellite images from previous interpretations by making corrections that refer to the results of field checks.
- f. Stage 6: Make a map of the results of a change analysis, covering the process of making a map of the land cover map that has been validated with the results of field checks to be displayed in the report.

#### *2.5.3.3 Preliminary analysis of satellite image data*

The initial analysis was carried out through processing satellite image data from several periods of coverage using ArcGis software and continued with interpretation of vegetation cover or land cover which refers to the RSPO land cover classification system based on the value of the vegetation coefficient. The results of this activity are the results of interpretation of satellite imagery for the entire study area with an initial analysis of land cover classification. In the analysis of changes in land cover used two types of satellite images, namely (i) Landsat 5 TM with a spatial resolution of 30 m, and (ii) Landsat 8 OLI with a spatial resolution of 30 m, for the latest land cover analysis when conducting LUCA studies.

#### *2.5.3.4 Ground truthing*

Ground truthing was carried out by determining the sampling plots on the field. Sampling points of these land cover is taken with representation of existing land cover types or types of land cover coefficients. Sampling points also consider the locations that difficult to differentiate from satellite image and need to be verified on the ground. The proportional random sampling method was used in the analysis. The number of the sampling plots taken is determined from each land cover category or land cover coefficient identified from the results of satellite analysis by taking into account the size of each land cover class. The observations in the sampling field also pay attention to the forest cover class. The sampling point in the forested area will have greater proportion compared to other land cover such as oil palm, shrubland or open land.

Verification of land cover in the field is carried out by using the check List sheet that was prepared before to record all conditions in the field. The data collected includes location of the sampling point, GPS coordinates, type of land cover, canopy conditions around it, observation time and date, etc. To find out the history of land management and utilization, the assessment team also conducted interviews with surrounding communities and PT MPG's employees who had worked long enough at PT MPG from the beginning of land clearing.

The results of field verification are used to calculate the accuracy of the land cover classification by comparing the land cover from the interpretation of satellite images with the land cover identified during field verification. Accuracy tests are then carried out to find out whether the results of the initial interpretation are acceptable or not. Corrections to the results of the initial land cover interpretation were also conducted to increase the accuracy of the results of the land cover interpretation. Verification activities and accuracy tests are only carried out for interpretation of land cover at the time the study was conducted.

#### *2.5.3.5 Data processing and analysis of land cover changes*

The data used for LUCCA activities are satellite image data with different times and years of coverage to see whether there is a change in land cover for each period, includes:

- a. Before November 2005 (RSPO Principles & Criteria were first applied).
- b. November 2007 (deadline for trial implementation of RSPO Principles & Criteria).
- c. Before 1<sup>st</sup> January 2010 (the introduction of the RSPO New Planting Procedure).
- d. After May 2014 (after the new planting procedure takes effect).
- e. 2018 and 2020 (HCS Assessment conducted and before NPP)

## 2.6 FPIC and Social Impact Assessment (SIA)

In the proposed development areas, the scope of the Social Impact study was carried out in the internal and external environment of the proposed development areas. The Social Impact Study activities were carried out in 8 villages covered by the decree, namely 1) Sei Rahayu 1 Village, 2) Sei Rahayu 2 Village, 3) Rimba Sari Village, 4) Beringin Raya Village, 5) DataiNirui Village, 6) Pendreh Village, 7) Karamuan Village and 8) Makunjung Village. The method or technique used in the Social Impact Assessment process consists of:

Includes direct, indirect and cumulative impacts;

- Acknowledges that social, economic, cultural and environmental impacts are interconnected and cannot be treated in isolation;
- Promotes an open, transparent and participatory process, giving due consideration to women and any vulnerable groups;
- Provides information unique to each potential expansion site to help ensure community aspirations and concerns, and site-specific impacts, are identified and incorporated in the assessment;
- Provides a focus on social impacts, both positive and negative, that are most significant in the eyes of impacted stakeholders; and

- Specifies management strategies to enhance positive impacts and minimise negative impacts, and incorporates these into PT MPG’s Social Impact Improvement Plan.

### 2.6.1 Assessment team and their qualification

This assessment is also carried out by teams that have competence in social impact assessments from PT Hijau Daun. The assessment team are as follow:

Table 24. PT Hijau Daun Assessment Team

Name	Organization	Role in assessment
Jules Crawshaw	PT Hijau Daun	Coordination, report writing
Atun Ridwan	Independent Consultant	Village meetings and reporting

The assessment team are independent and have no vested interests in PT MPG or any associated companies.

The following staff assisted with field work and it is expected that the staff listed in Table below will be responsible for implementing the recommendations made in this report.

Table 25. PT MPG Staff Responsible for Implementation of Social Requirements

Name	Organization	Role in assessment
Budi Tri Prasetya	PT MPG Sustainability Manager	Logistics and guiding the field team
Rudi Sharta	PT MPG Sustainability	Logistics and guiding the field team
Suwandi	Senior Estate Manager	Logistics and guiding the field team
DenokSahputra	Humas	Logistics and guiding the field team

### 2.6.2 Timeline

The SIA was conducted in 2018 and was issued in June 2019. The assessment process comprised of the following table:

Table 26. Assessment Timeline Process

No.	Phase	Date	Activities
1	Scoping	1 <sup>st</sup> November – 1 <sup>st</sup> December 2018	Desktop study
		2 <sup>nd</sup> – 9 <sup>th</sup> December 2018	Site visit
2	Preliminary Write up	December 2018 – March 2019	Background research, preliminary write up. Gap analysis.
2	Fieldwork / site	17 <sup>th</sup> – 24 <sup>th</sup> March	Follow up Site visit including consultation with the

No.	Phase	Date	Activities
	verification	2019	wider community.
3	Data analysis and discussion	April 2019	Analysis of ground survey data
			Compiling information and findings
			Interpretation and discussion of findings among assessment team
4	Reporting and review	April 2019	Report writing
			Data verification and draft review
			Finalise and distribution

### 2.6.3 Methods

In line with best practice principles, the SIA:

- Includes direct, indirect and cumulative impacts;
- Acknowledges that social, economic, cultural and environmental impacts are interconnected and cannot be treated in isolation;
- Promotes an open, transparent and participatory process, giving due consideration to women and any vulnerable groups;
- Provides information unique to each potential expansion site to help ensure community aspirations and concerns, and site-specific impacts, are identified and incorporated in the assessment;
- Provides a focus on social impacts, both positive and negative, that are most significant in the eyes of impacted stakeholders; and
- Specifies management strategies to enhance positive impacts and minimise negative impacts, and incorporates these into PT MPG's Social Impact Improvement Plan.

The approach in preparation of this SIA is to ensure compliance with the guidance of RSPO, POIG and ISCC (which are voluntary) and ISPO (which is mandatory for Indonesian oil palm growers).

The SIA has been undertaken in close consultation with PT MPG and aims to utilise and contribute to the fullest extent possible, to PT MPG's stakeholder engagement and social management processes.

Vanclay et al 2015 describes the key tasks that comprise a SIA and are equally relevant to an SEIA. This list is quite exhaustive and relevant to a very large project. Other points are:

- Many of the initial tasks of this project (e.g. Gain a good understanding of the communities) have been undertaken over years of community engagement by PT MPG. So much of the work has already been completed.

- The actual implementation steps (Task 16 onwards) are outside the scope of this SIA (because implementation will be PT MPG's role).

Nevertheless, these tasks guided the assessor in the development of the SEIA.

**The 26 tasks that comprise social impact assessment**

Task 1: Gain a good understanding of the proposed project, including all ancillary activities necessary to support the project's development and operation.

Task 2: Clarify the responsibilities and roles of all involved in or associated with the SIA, including relationships to the other specialist studies being undertaken, and establish what national laws and/or international guidelines and standards are to be observed.

Task 3: Identify the preliminary 'social area of influence' of the project, likely impacted and beneficiary communities (nearby and distant), and stakeholders.

Task 4: Gain a good understanding of the communities likely to be affected by the project by preparing a Community Profile which includes: (a) a thorough stakeholder analysis; (b) a discussion of the socio-political setting; (c) an assessment of the differing needs, interests, values and aspirations of the various subgroups of the affected communities including a gender analysis; (d) an assessment of their impact history, i.e. their experience of past projects and other historical events; (e) a discussion of trends happening in those communities; (f) a discussion of the assets, strengths and weaknesses of the communities; and (g) optionally the results of an opinion survey. This task is typically called profiling.

Task 5: Fully inform community members about: (a) the project; (b) similar projects elsewhere to give them a sense of how they are likely to be affected; (c) how they can be involved in the SIA; (d) their procedural rights in the regulatory and social performance framework for the project; and (e) their access to grievance and feedback mechanisms.

Task 6: Devise inclusive participatory processes and deliberative spaces to help community members: (a) understand how they will be impacted; (b) determine the acceptability of likely impacts and proposed benefits; (c) make informed decisions about the project; (d) facilitate community visioning about desired futures; (e) contribute to mitigation and monitoring plans; and (f) prepare for change.

Task 7: Identify the social and human rights issues that have potential to be of concern (i.e. scoping).

Task 8: Collate relevant baseline data for key social issues.

Task 9: Through analysis, determine the social changes and impacts that will likely result from the project and its various alternatives.

Task 10: Carefully consider the indirect (or second and higher order) impacts.

Task 11: Consider how the project will contribute to the cumulative impacts being experienced by the host communities.

Task 12: Determine how the various affected groups and communities will likely respond.

Task 13: Establish the significance of the predicted changes (i.e. prioritise them).

- Task 14: Actively contribute to the design and evaluation of project alternatives including no go and other options.
- Task 15: Identify ways of addressing potential negative impacts (by using the mitigation hierarchy).
- Task 16: Develop and implement ways of enhancing benefits and project-related opportunities.
- Task 17: Develop strategies to support communities in coping with change.
- Task 18: Develop and implement appropriate feedback and grievance mechanisms.
- Task 19: Facilitate an agreement-making process between the communities and the developer leading to the drafting of an Impacts & Benefits Agreement (IBA)
- Task 20: Assist the proponent in facilitating stakeholder input and drafting a Social Impact Management Plan (SIMP) which puts into operation the benefits, mitigation measures, monitoring arrangements and governance arrangements that were agreed to in the IBA, as well as plans for dealing with any ongoing unanticipated issues as they may arise.
- Task 21: Put processes in place to enable proponents, government authorities and civil society stakeholders to implement the arrangements implied in the SIMP and IBA, and develop and embed their own respective management action plans in their own organizations, establish respective roles and responsibilities throughout the implementation of those action plans, and maintain an ongoing role in monitoring.
- Task 22: Assist the proponent in developing and implementing ongoing social performance plans that address contractor obligations implied in the SIMP.
- Task 23: Develop indicators to monitor change over time.
- Task 24: Develop a participatory monitoring plan.
- Task 25: Consider how adaptive management will be implemented and consider implementing a social management system.

#### *2.6.3.1 Scoping Study*

The objectives of the scoping study were to identify the project's area of influence, available information and initial stakeholder concerns. This enabled the assessor to identify information gaps, high priority issues and to inform the methodology for the full assessment and the team required.

The scoping study took place in between 1st – 9th December 2018. This was done by Jules Crawshaw and Atun Ridwan. This involved the following activities:

- Travelling around the assessment area in order to understand current land cover and land use.
- Review of the secondary data that PT MPG had available.
- Interviewing PT MPG staff and community leaders about the social issues (especially land conflict) that are present (or have been resolved) in the area.
- Confirming the legal right to enter the area and undertake studies and potentially develop the area.
- Reviewing the contracts for the development of the Kas Desa and KKPA.
- Reviewing the FPIC activities that have already taken place;

- Understanding the results of mapping of land ownership and land use and how this data has been used to negotiate areas for development and conservation with the community.
- Reviewing procedures for communication and consultation with the communities. Reviewing how these procedures were developed. Reviewing documentation of communications that had already taken place.
- Interviewing workers about general working conditions.
- Interviewing relevant parties from the villages and Kabupaten that overlap with the assessment area in order to:
  - o Gather demographic information
  - o Understand the communities' awareness of plans to extend the estate
  - o Gauge the communities' perception of the impact of current oil palm development.
  - o Understand economic development and stability
  - o Understand the communities' access to government services (e.g. education, health, infrastructure)
  - o Gather information on the general background to the area including policies, programs, history / chronology of events, land claims, aspirations and solutions to problems that may have existed.
  - o Understand the dependence of community members on natural ecosystems to fulfil basic needs and identify any important cultural sites.

#### 2.6.3.2 Information Sources

Information to describe the lifestyle and living conditions of people in the Study Area has been derived from both primary and secondary data sources. Primary data includes:

- Employment, health, production and other statistics;
- Land use assessments for each site;
- Social interviews for communities living at each site and
- Key Stakeholder interviews.

The primary data has been complemented by the following secondary data:

- The 2015 nation-wide Census and annual updates to the Central Kalimantan Census;
- In-house data sets (e.g. Stand Operating Procedures, Grievances or Complaints Register, Land Inventory Documents, Land Sale Documents)

#### 2.6.3.3 Secondary data

Reviewing reports that had been prepared for the existing plantation. This included:

- SIA
- Participatory Mapping
- HCV and HCS
- AMDAL



These were particularly important as these gave an insight to how the company would develop new plantations based on its existing track record.

#### Standard Procedures

- FPIC and Land Acquisition (*Pelaksanaan Ganti Rugi Lahan*)
- CSR and Community Development.
- Internal and External Complaints
- Staff Recruitment
- Contracts pertaining to the Kas Desa and the KKPA programmes (these were not available for the current plantation but these were available for other plantations within the Musim Mas group)
- FPIC documentation (e.g. agreements, meeting notes and attendance registers)

Much of the information that was provided was cross-referenced against guidelines provided by :

- HCVRN (Brown et al., 2013)
- HCS (The HCS Approach Steering Group, 2017)
- RSPO (RSPO, 2017)

This was done in order to check for gaps in information or procedures.

#### 2.6.3.4 Primary Data

##### Social Data

The necessary information was collected through a series workshops held in each community, in which community members fill in details of their customary land and resource rights and use on a prepared base map, using their knowledge of their lands and resources, and explain the underlying system they use to control, own, manage and transfer lands and resources.

During the scoping study interviews were undertaken with the following stakeholders:

- Village leaders and ordinary villagers with a focus on members of the KKPA
- Company staff especially those from the Sustainability Department, estate managers, workers

Combined with this, the assessor walked through the estates to gain an understanding of the terrain and the natural landscape that will be converted. Observations were made about the villages, rivers and other natural habitats. This was focused on areas where natural resources were being used (e.g. fishing or cutting timber).

For the full SIA; questions were prepared for meetings at the village level to understand and evaluate:

- The current situation within the estates. Particularly with reference to:
  - o The communities' awareness of plans to extend the estate

- The communities' perception of the impact of current oil palm development.
  - Economic development and stability
  - Access to government services (e.g. education, health, infrastructure)
  - General background to the area including policies, programs, history / chronology of events, land claims, aspirations and solutions to problems that may have existed.
- the dependence of community members on natural ecosystems to fulfil basic needs and identify any important cultural sites.

It should be noted that an open invitation to the whole community was made, particularly encouraging a wide range of people to attend (e.g. both men and women, people with a variety of jobs and backgrounds). A total of 160 people attended

### **Participatory Mapping**

At each village interview the communities were asked to mark up the pattern of their land use in the area. This was to ensure (1) that the oil palm development did not impact on their gardening area, (2) if it did overlap with their gardening area that this would not force them to go and open up areas of forest elsewhere and (3) if there were any resources that were likely to be affected by oil palm development (e.g. hunting areas).

### 3. SUMMARY OF FINDING

#### 3.1 SEIA Summary of Finding

##### 3.1.1 Positive and Negative Environmental Impact

An AMDAL (Environmental Impact Assessment) dated 9th February 2018 is available for the area in this assessment for the “New Area” . The AMDAL lists a number of “areas of concern.” These are:

1. The impact on water quality and disturbance of water biota. The areas with the potential to be impacted are the Barioi River.
2. The impact of:
  - damage to the earth, erosion and sedimentation and
  - the loss of floral and faunal biodiversity
  - potential forest and land fires.

The area that was likely to be impacted was stated as being the whole survey area.

3. The impact on:
  - enjoyment of the community and potential conflict
  - attitude and perception of the community
  - opportunity to work
  - health of the community

The communities that were likely affected were all the six villages in the survey. No areas were recommended as being set aside from development and all the recommendations were extremely vague.

##### 3.1.2 Socio-economic impacts on the state, regional and local communities

Indonesia is one of the largest producers of palm oil in the world and its industry has become the most valuable agricultural export sector in the last decade. The palm oil industry is a significant contributor to production in Indonesia. The social impact caused by the presence of PT MPG and oil palm companies in general is to provide foreign exchange to the state, even higher than the contribution of oil and gas. In addition, palm oil production also supports the government's energy security program by replacing imported diesel with domestic-produced biodiesel.

The palm oil industry is a labor-intensive industry that can absorb a lot of labor. The absorption of this workforce contributes to increasing the income and welfare of the local community. Improvement in income and welfare of local community will improve purchasing power and stimulate spending that leads to improvement on the overall welfare of the region. The construction of infrastructure and the opening of access can stimulate regional and local economic growth. Corporate CSR programs, including the development of Village Cash can also improve the welfare of local communities.

### 3.1.3 Issues raised by stakeholders and assessor comments

All of the above issues were raised in consultation with the SEIA assessor and through his own expert analysis. The issues raised by stakeholders and assessor comment presented as follow.

Table 27. Issued Raised by Stakeholders and Assessor Comments

No	Name	Position/ Organization/ Social group	Main concern/recommendation	Response
1	Hj. Yuniarti, SE	Environmental Agency Barito Utara Regency	Communities' aspirations related to the proposed business plan or activity can be realized such as concerns about environmental changes that may occur	The company attempt to fulfill the communities' aspirations and hopes as company's ability and policy and also applicable regulations
2	Arif Rahman, A.Md	LLAJ Transportation Sector Barito utara Regency	Mobilization of vehicles, either heavy equipments or other transportations might be reported to the department of transportation	The suggestion is accepted and will be proceed by company
3	Bungai Lampang, SP, M. AP	Environmental Agency Barito Utara Regency	Land acquisition to be carried out selectively due to prone to conflict	The suggestion is accepted and will be proceed by company
4	Iskandar Zulkarnaian	Community	Our expectation by the operation of the company could be provided the job's vacancy for the new labor especially for local labors  Can maintain and preserve the cultural sites and cultural heritage and also tourist place around the plantation	The suggestion is accepted and will be proceed by company
5	Yanse Arfinando, S.Hut, M.Sc	Environmental Agency Barito Utara Regency	To provide the Land Arrangement Map	The Land Arrangement Map will be arranged after land clearing and oil palm planting
6	Simamoratur ahman, SE, MS	Economy and Environmental Social	In social component and its amount might be made component interference more detail	The suggestion is accepted, the detail list of impact on social, economy and cultural component are provided in AMDAL document

No	Name	Position/ Organization/ Social group	Main concern/recommendation	Response
7	Heny Wahdaniaty, ST, MT	Environmental Agency Barito Utara Regency	To add Land Fire Potential	The suggestion is accepted, the impact of Land Fire Potential has been added
8	Delmi, SP	Environmental Agency Barito Utara Regency	To add company's legality and land acquisition status of ex PT HarisaAgro Lestari	Has been added
9	Siti Hadijah, S.HUt	Environmental Agency Barito Utara Regency	We suggest and warn of the importance of adding plantation regulations that regulates the prohibition of land clearing with burning	The suggestion is accepted, UU No. 18 Tahun 2004 about Plantation has been provided in document
10	Alhamdani Umar, ST, MS	Regional Developent Planning and Spatial Planning	The survey and mapping to conduct cadastrally	The survey and mapping to conduct cadastrallyor a detailed situation mapping will be carried out after the land acquisition activities take place
11	Darmansyah, SKM, M.AP	Public Health	Need river boundaries management plan	The management of river boundaries carried out regarding applicable provisions
12	Rudy Chandra, S.Hut, MP	Forestry	Local permit to be more scrutinized: identical or not with IUP	The suggestion is accepted and will be proceed by company

### 3.2 Integrated HCV-HCS Assessment Summary of finding

#### 3.2.1 Area of Interest

Given the relatively confined geographical spread of the assessment areas (approx. 15 km east to west and 21 km north to south). A one kilometre buffer was decided upon for the biodiversity AOI for the following reasons:

- A one km buffer is required by the HCS toolkit and having a different buffer between HCV and HCS would lead to a confusing outcome.
- Much of the buffer overlaps with an HCV assessment that has already been signed off by the HCVRN and or the RSPO (Aksenta, 2015 and Aksenta 2012). Having undue repetition of the same work was deemed unnecessary.
- Over the other areas that are within the buffer the landcover is either :
  - A matrix of shifting agriculture / rubber
  - Secondary forest

Additionally, a “Social AOI” is considered, this is the boundary of all the villages that overlap with PT MPG. These villages are also considered to be the “affected communities.” This is somewhat complicated because there are the official boundaries, as mapped by BPS; and the boundaries that the villages themselves recognise. The Social AOI is the largest extent of both the “official” and “recognised” village boundaries. The Nine villages that are considered the social AOI or “affected communities” are Sei Rahayu 1, Sei Rahayu 2, Rimba Sari, Beringin Raya, DataiNirui, Pendreh, Karamuan, NihanHilir and Makunjung.

### Brief Description of the Landscape Context

This is a more sparsely populated area of Indonesia and is relatively isolated. It consists of rolling to steep country on mineral soils. There are still pockets of forest in this landscape.

#### 3.2.2 Image analysis and land cover classification

The results of the initial image classification can be seen Figure 7. The final land cover classifications ( **Table 21**) are the output of integrating the initial classification, as presented above, with observations from HCSA plot work and imagery. The final land cover mapping for the sites is shown on **Figure 8**.

#### 3.2.3 Physical and environmental characteristics

##### Climate

Mean annual rainfall in the AOI varies from 2800 – 4000 mm per year. There are typically 9 – 12 wet months (>200 mm / month) and no dry months (< 100 mm / month). Typical of tropical environments:

- Temperatures vary little throughout the year. Mean monthly maxima are between 31.7 - 32.2 degrees C and mean monthly minima are between 21.7 – 24.6 degrees C.
- Relative humidities are consistently high (71 – 85%).
- Wind speeds are light.
- Evapotranspiration is high at 1500 mm/year.

River gradients and valley topography combine to prevent serious seasonal flooding or inundation, despite very heavy wet season rainfalls. RePPProT (1986)

##### Landforms

A landform refers to a ‘recurring pattern of topography within the landscape’, with specific landforms often associated with specific vegetation associations and/or communities. The study area is in the “Interior Plains and Hills” biogeographic region. (RePPProT, 1986) describes the chief limitations to development in the study area as being steep slopes, low soil fertility and highly scattered land suitable for arable crops. Landform name and the description are provided in **Table 28**.

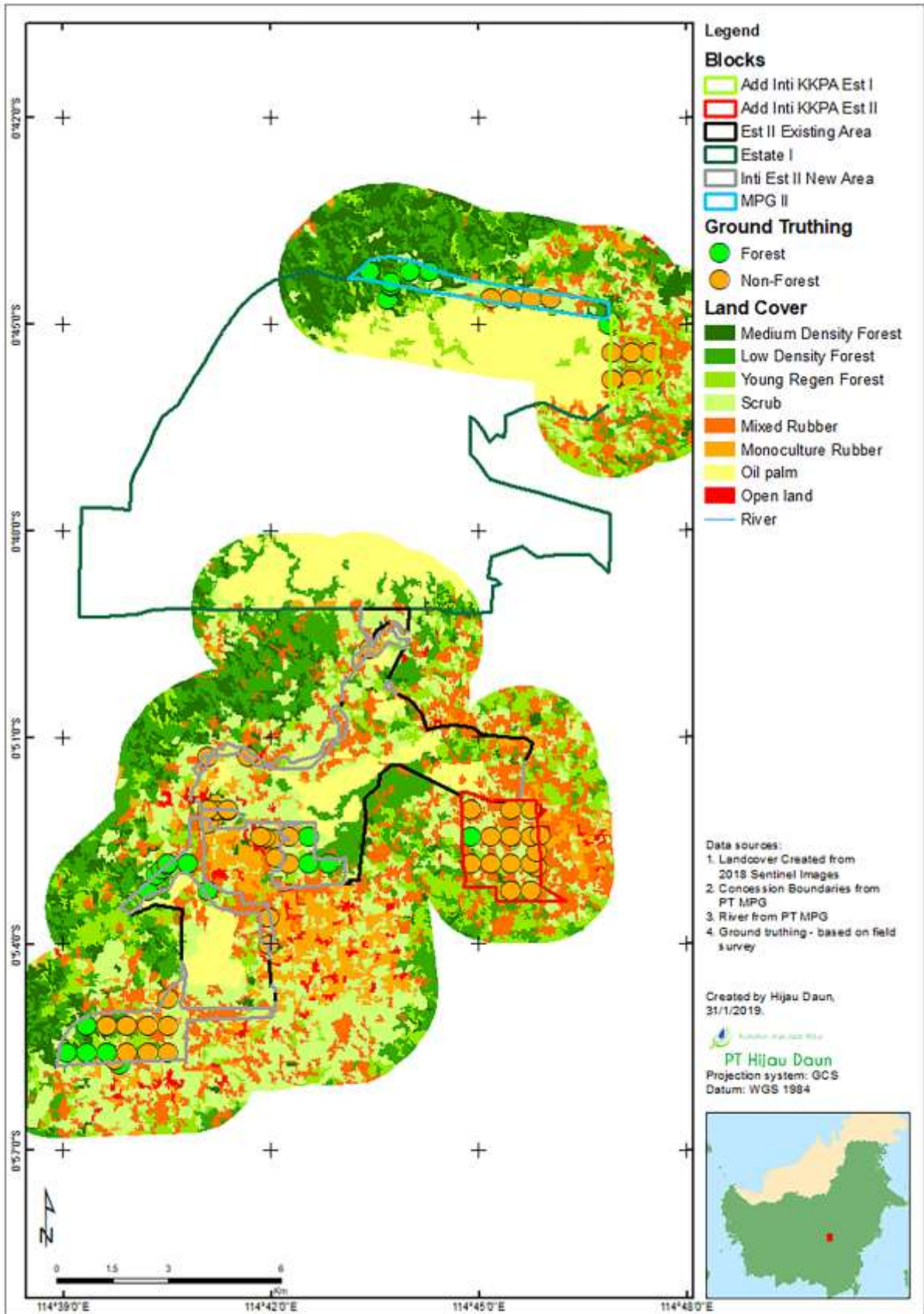


Figure 7. Initial Land Cover Classification

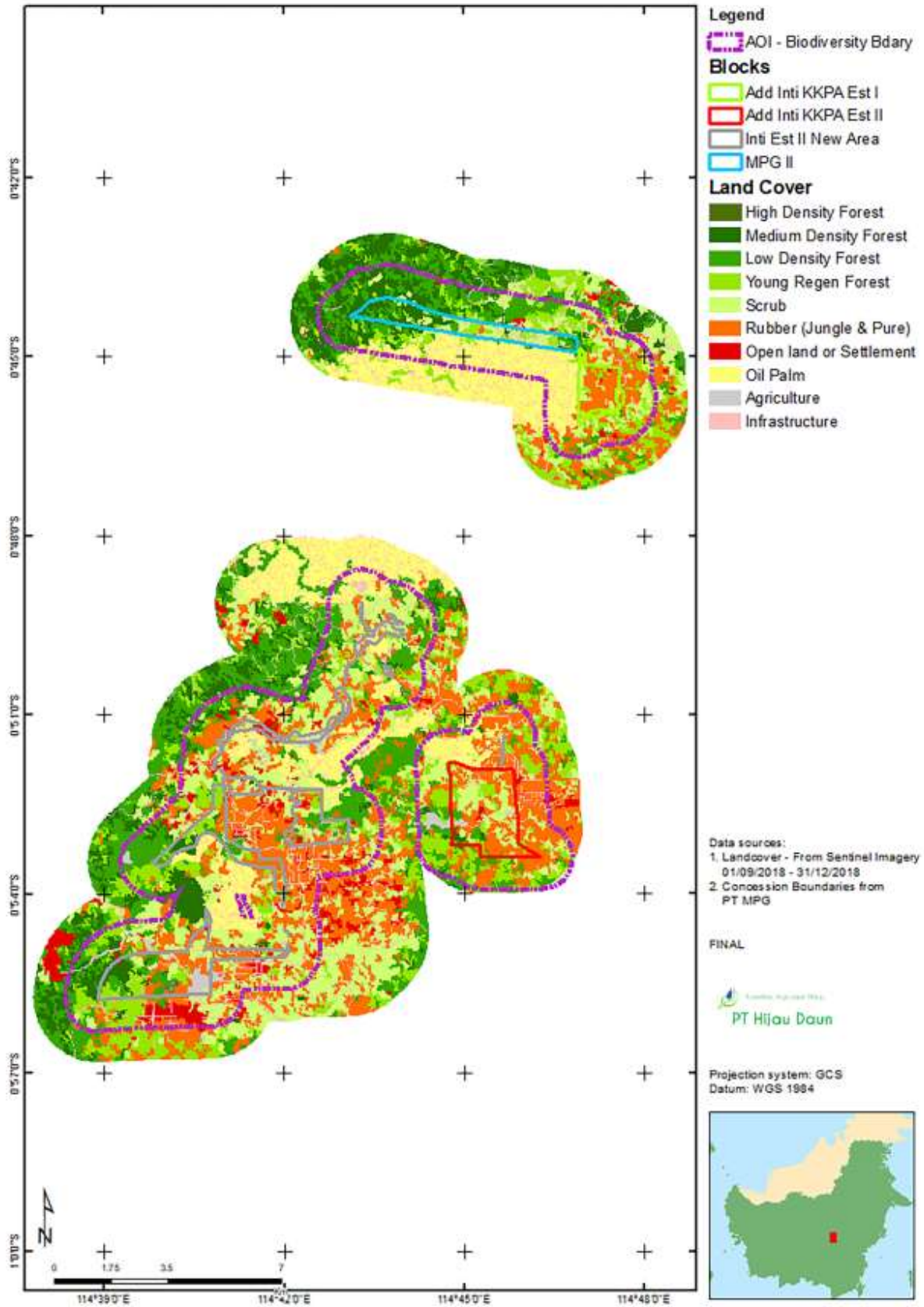


Figure 8. Final landcover mapping for PT MPG



Table 28. Landforms present in the assessment AOI, (RePPProT, 1986)

Landform name	Description
<b>Lawanguwang</b>	This is low undulating land; based on suitability studies, this land system was deemed to be suitable for wetland rice production as well as palawija crops (primarily because of the terrain). Though it has low availability of major nutrients in the subsoil and the topsoil is only marginally better. Farmers in this area obtained low rice yields of 0.7 -1.5 t/ha which in poorer years was deemed too low to support a family of 4 – 7 people.
<b>Lohai</b>	This is a land system of the hills, where folded shales, sandstones and conglomerates are the dominant rock types. Lohai has steep sided parallel ridges.
<b>Maput</b>	This is a land system of the hills, where folded shales, sandstones and conglomerates are the dominant rock types. Typically, it has steep slopes and alluvial deposition is minimal.
<b>Teweh</b>	This is a land system of hilly plains developed from indurated sandstone and conglomerate beds. Teweh has semi-symmetric, moderately steep slopes with moderately long but narrow crest lines. They are highly dissected, containing small valleys and has only small areas with gentle slopes

### Soils and geology

Geologically the area is part of the Barito Basin. In the assessment area there are two distinct soil types. Firstly in the hills in the north where soils are:

- Predominantly well drained.
- Surface organic horizons are thin.
- Leached of soluble bases and reserves of major nutrients are low.

Secondly in the south where limestone and calcareous sediments are most common; these are much more fertile soils with higher cation exchange capacities. Nevertheless, the soil profiles tend to be shallow.

### Hydrology

The Barito River, which is one of Kalimantan’s major rivers, flows to the east of the AOI. The whole of MPG lies within the Barito watershed.

These rivers typically carry high sediment loads and are typically slow flowing. Only several are navigable in boats or *klotok* as they are known locally. The flat terrain means that there are a multitude of rivers and swamps within the concession.

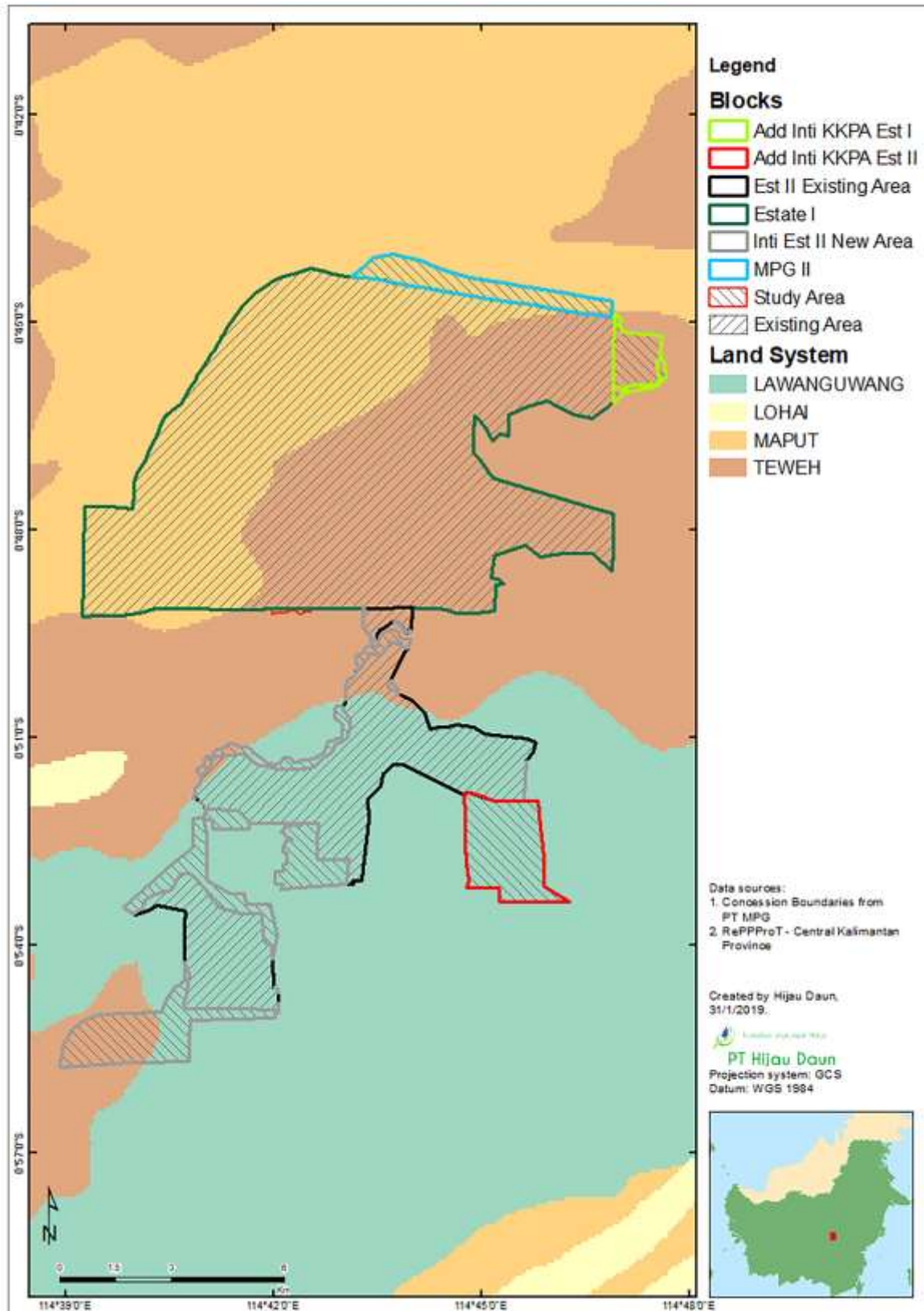


Figure 9. The assessment area overlaps with Lawanguwang, Maput and TeweH land system types. (HCV Toolkit, 2008)

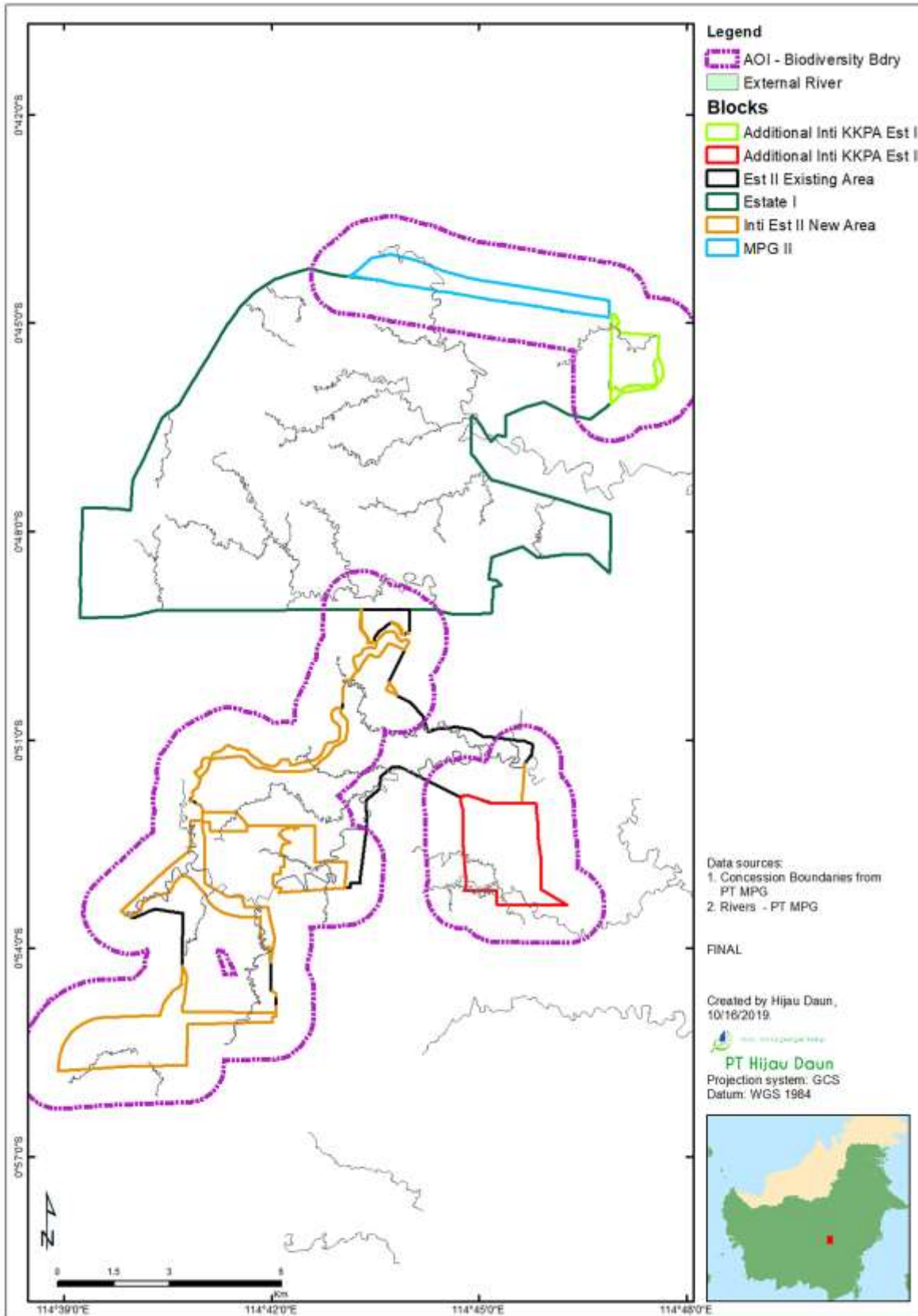


Figure 10. Rivers – there were no secondary river datasets that were sufficiently accurate. For this reason all rivers had to be mapped manually by PT MPG. It was aimed to map all rivers within the assessment areas and within a 1 km buffer. The major river in the area, Sungai Barito, flows to the east the AOI.

### 3.2.4 Biological and ecological characteristics

#### Biogeographic zones

Biogeographical regions/zones (or bioregions) is a concept that classifies a landscape into homogeneous units based on biological, physical and ecological phenomena (Mackey et al., 2008). They must have “clusters of ecoregions that share a similar biogeographic history and share many genera and families of plants and animals. (Ricketts et al., 1999)” One of the most important uses of bioregion data is for systematic conservation planning because it enables inference of the conservation status of a range of ecosystems and species. This information, therefore, can be used to determine relative conservation priorities (Mackey et al., 2008).

Kalimantan possesses a wide range of vegetation communities across numerous landscapes with high levels of both floristic and structural variability. Wikramanayake et al 2002 places this area in the “Sunda Shelf and Philippines Bioregion”. This bioregion is occupied by tropical and subtropical moist broadleaf forests

#### Regional ecosystems

The AOI falls within the “Borneo Lowland Rain Forests” ecoregion. These are described as some of the richest rain forests in the world. It is the centre of dipterocarp diversity with 267 different species present (of which 155 are endemic). The stable climatic conditions have enabled this incredible diversity to develop. Research plots commonly record as many as 240 different tree species living in a given hectare. So, it is characterised by many tree species living together. (Wikramanayake, Dinerstein and Loucks, 2002).

The formation of these forests is regarded as having three layers; (1) the top layer of individual grouped or giant emergent trees, (2) over a main stratum at about 24 – 36 m and (3) smaller shade dwelling trees below that. Ground vegetation is typically sparse. Water stress is absent in these areas. (Whitmore, T. 1998). Bornean rain forests are characterised by an enormous variety of forest animals. It has 44 endemic mammals. The medium carnivores dominate the forests (e.g. clouded leopard (*Neofelis nebulosi*), sun bear (*Helarctosmalayanus*) and Sunda otter-civet (*Cynogalebennetii*)).

There are 385 bird species attributed to the ecoregion. Within the AOI, probably the most spectacular bird present is the Hornbill (*Bucerosrhinoceros*). (Wikramanayake, Dinerstein and Loucks, 2002).

### Formally protected areas

Protected areas in Kalimantan now cover 11.1 million hectares. (21% of the total land area), in the form of conservation forest (nature reserves, wildlife sanctuaries, national parks) and protection forest. There is evidence, however, that some protected areas (for example, GunungPalung National Park and Kutai National Park) are not well managed, with illegal logging and mining, land encroachment and forest fires reducing the effective area of protection by more than half. Other nature reserves and wildlife reserves (such as Muara Kendawangan and Muara Kaman) are in even worse shape, with very little natural forest cover remaining. (Budiharta, Sugeng&Meijaard, 2017).

The only Protected Area near the study area is the CagarAlamPararawen which is a 60-ha conservation area. The assessor did not go to the CagarAlam, but on examination of satellite images it appears to be reasonably intact and part of a larger forest block. It is mentioned as a tourist area but also has a list of flagship species that are present in the area ([bksdakalteng.dephut.go.id](http://bksdakalteng.dephut.go.id), no date).

### Intact Forest Landscapes

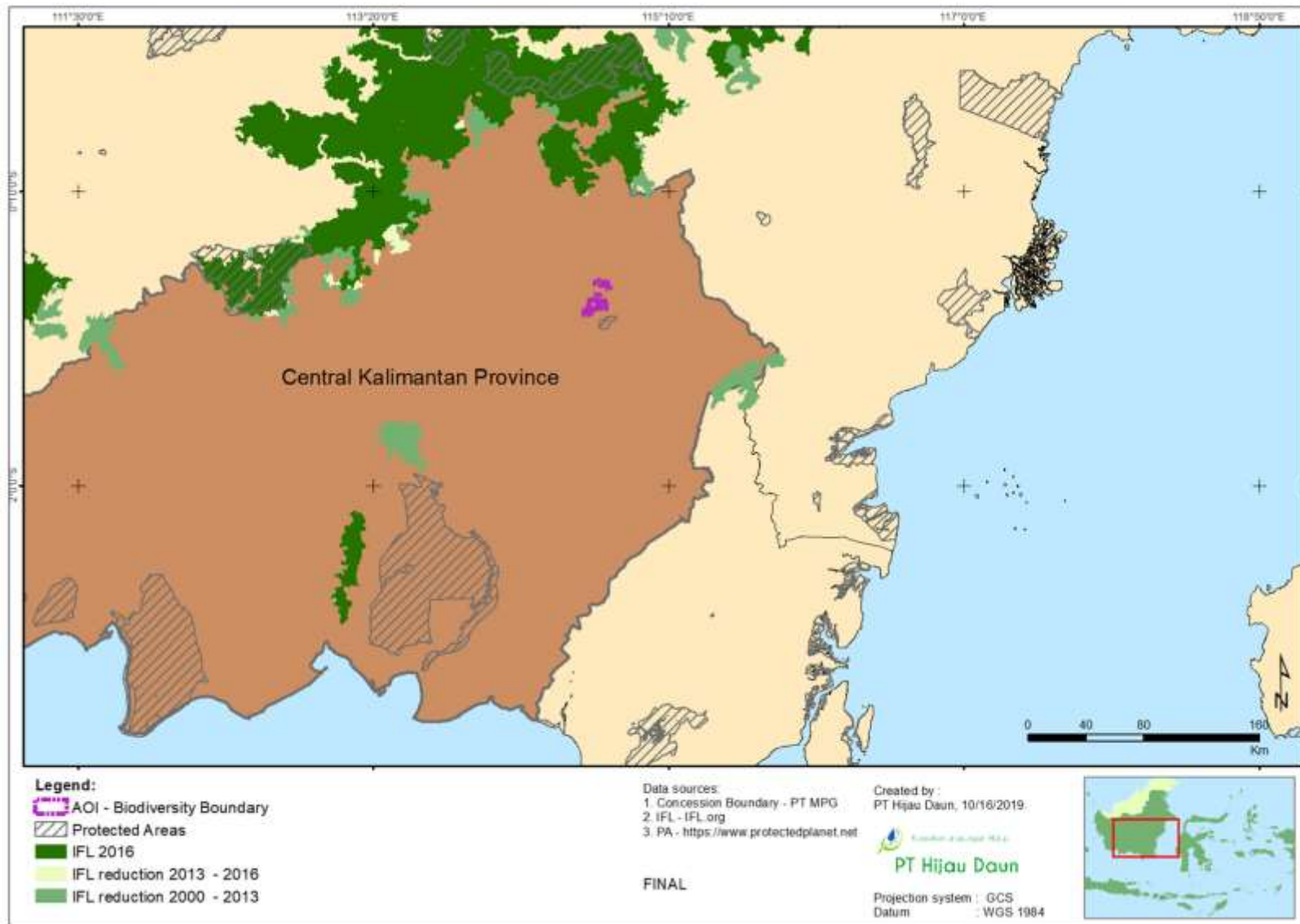
There are Intact Forest Landscapes to the north of the study areas (60 km from the northern boundary – which is the closest area to an IFL). These areas can be seen below on Figure 11 .

### Key Biodiversity Areas (KBA)

The nearest areas of *HutanLindung* (Protected Forest), as identified by SK529 and the Provincial RTRWP are 33 km from the assessment area. There is an area of *CagarAlam* 13.5 km from the south of the assessment area. These areas can be seen below on **Figure 12**.

### Endemic Bird Areas (EBA) and Important Bird Areas (IBA)

The nearest Important Bird Area (IBA), Ulu Barito is 120 km to the north east. Key Biodiversity Areas overlap with this IBA (*World Database of Key Biodiversity Areas*, no date). The nearest Endemic Bird Area (IBA), Bornean Mountains is 50 km to the north east. These areas can be seen below on **Figure 12**.



**Figure 11.** Shows the formally Protected Areas (grey hatching), and IFLs in the area. The closest IFL is 60 km from PT MPG

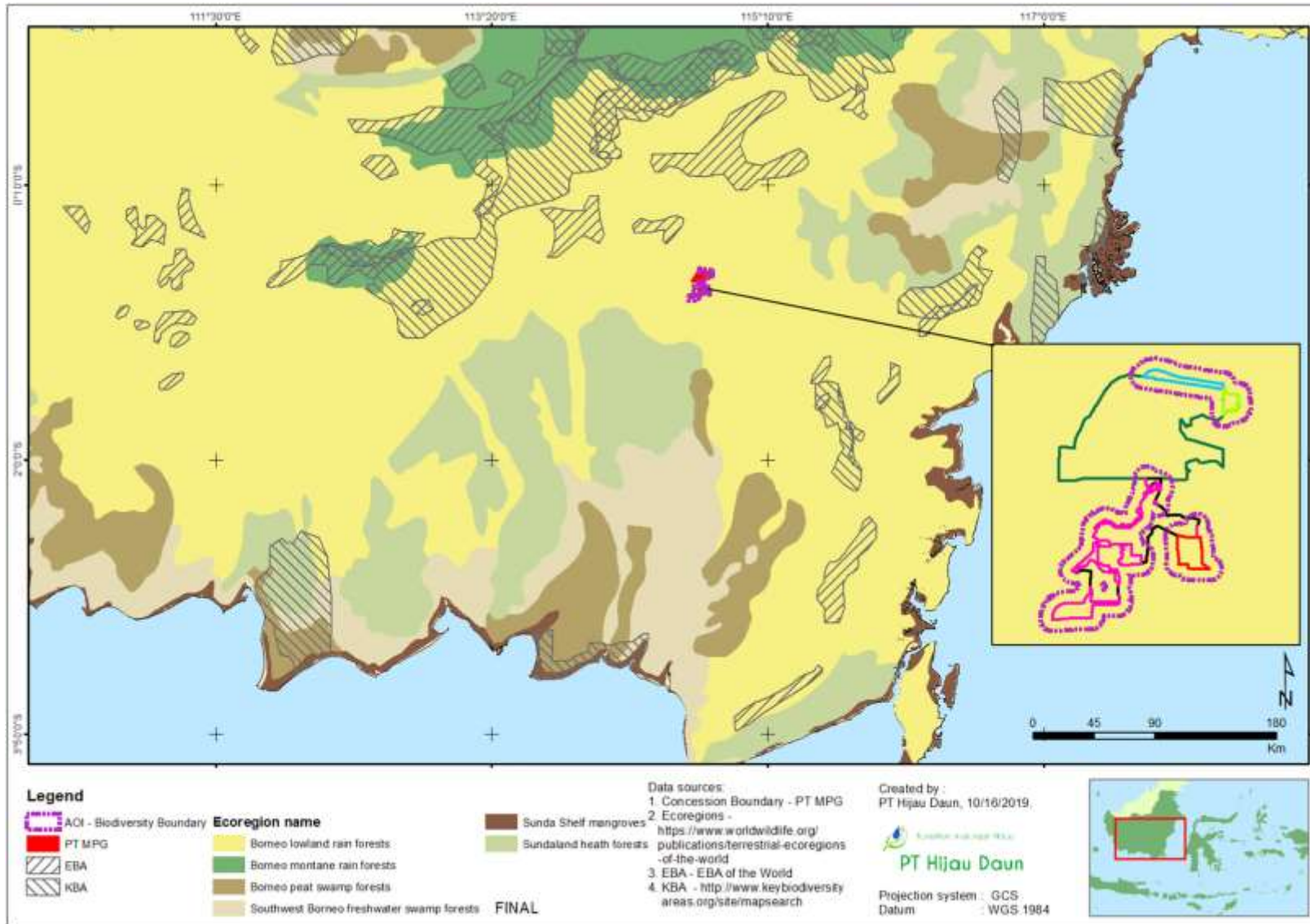


Figure 12. Regional ecosystems with the Endemic Bird Area (EBA) and Key Biodiversity Areas (KBA) mapped also

### Flagship species

Orangutans are the flagship species of the area. Wich et al., (2008) maps orangutan habitat to the west of PT MPG, this also overlaps with the western boundaries (**Figure 13**). PT MPG maintains that there are no orangutans in the area. From MPG's monitoring results, also using camera traps, interviews, transects, collecting information from communities there is no orangutan presence detected. The mammal expert saw movement of branches within the forest area, that he described as being typical of an orangutan. Furthermore, at the Final Consultation the assessor asked the BKSDA representative, who wasn't able to give a conclusive answer either. Unfortunately, he was not able to confirm the sighting. Clearly more evidence is required and this point is addressed in the recommendations section.

### 3.2.5 Social, cultural and economic characteristic

#### Ownership of Land

Traditional land ownership in villages in Kalimantan, including the North Barito region, is generally claimed by clearing forests for farming. Forests, according to local communities are resources created by God, to be exploited to fulfil the needs of humanity. The forests, once cleared, are planted with rice and other food crops. The cleared land automatically belongs to the person or family who cleared the land. This land is used for fields for 1 to 2 years, after which garden crops are replaced with rubber trees, fruit trees or rattan. The land planted with rubber and rattan becomes mixed with the regenerating area – known as jungle rubber. Rice cultivation requires constantly opening new land. If the land planted with rice is not planted with rubber, then this fallow land can be planted with rice again after 4-5 years. In the transmigration areas no land will be left unplanted. In these areas mixed rubber is common and the communities will come back to harvest the latex when the price is good., and also to harvest the fruit or rattans.

When forested land is still available, each family can open new land every couple of years. Customary ownership does not require proof of land legality, but traditional ownership is recognized by the community and the local government. Land or SKT certificates are usually made for the purpose of buying and selling land or taking out loans, using the land as collateral.



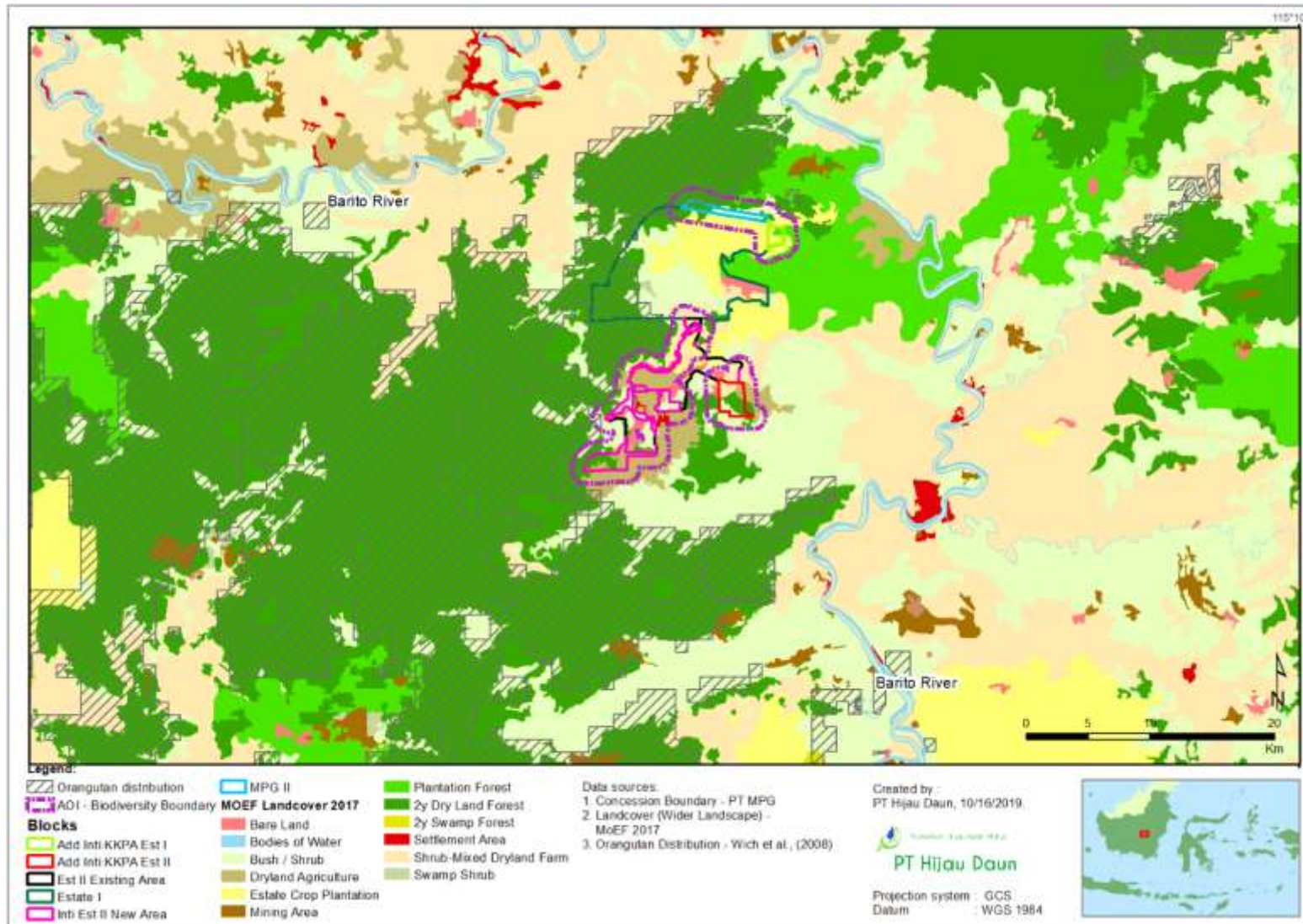


Figure 13. Wich et al., 2008 data showing the distribution of orangutans. The large block of forest to the west of PT MPG is a large block of Orangutan habitat. Similarly, there is overlap with the MPG II block

Land sales: Land sales usually entail a face-to-face negotiation between parties that wish to buy and sell land. This is subsequently overseen by the village government who verifies that the seller does, in fact, own the land that is being sold. Land sale usually requires a sale and purchase deed. Landowners can obtain a land certificate from the village office, and if they wish, they can ask for approval from the sub-district. If a land owner wants to get a land certificate, the buyer can apply to the Agrarian Office or BPN.

Community lands: Additionally, within communities there are lands owned by ulayat or adat. The community must agree that these lands are to be protected or are sacred. Community lands in Kalimantan are usually old villages or fruit orchards that have been abandoned, old graves or ancestral graves, sacred forests or protected forests, or areas and sites that are considered sacred because of their historical value.

In Kalimantan, land is owned at the individual or family level. This contrasts with other islands such as Maluku or Papua, where land boundaries are agreed between tribes or clans.

Inheritance: Land is generally inherited by men. Women who get married will work with their new families in the fields. In the case of Dayaks, men are considered very important for the continuity of food security. Primarily because they can clear forest. Women tend to oversee planting and caring for the crops. The land which is owned by a family will be passed on to children who are able to cultivate that land. Things are changing nowadays with the monetization of the economy because the value of land is high. Land can now be bought and sold.

This has in turn caused conflict; for example, children have begun to demand for fair distribution of land from their parents. In some of the cases; children demanded that land that had been sold by their parents or siblings. This resulted in conflict.

#### **Land Tenure related to Transmigration**

Transmigration is the movement of people from densely populated areas (e.g. Bali or Java) to sparsely populated areas (e.g. Kalimantan). This was a government program, where all land allocations and transfer matters are regulated and implemented by the Transmigration Department. Kalimantan is a transmigration destination because of the low population density. Within the study area, there are allocated transmigration areas.

The government has allocated transmigration villages within Pendreh Village. The involved Pendreh several villages being excised out of Pendreh. These transmigration villages were DataiNirui, Beringin Raya, Rimba Sari, Sei Rahayu I and II. The land area of each village varied according to the number of families placed. One transmigration family generally got an area of 2.5 ha, consisting of: yard area (0.5 ha) farm area 1 (1 ha) and farm area 2 (1 ha). So that the area of the village is: (Number of transmigration families x 2.5 ha + Reserve land or land for the public).

Transmigration village land generally has land certificates, because it has been allocated to individuals or families by the government. For this reason, the legality of transmigration land is much clearer.

#### **Demographic and socio-economic context**

Kalimantan primarily has an agriculture and mining based economy. The GDP per capita for Central Kalimantan is IDR 44,091,000 /capita/year in 2016. This is rough the same as the Indonesian average GDP/capita/year (IDR 48,600,000).

Table 29. Village Profile of the Villages which overlap with the assessment area (from profile desa)

		Sei Rahayu 1	Sei Rahayu 2	Rimba Sari	Beringin Raya	Datai Nirui	Pendreh	Karamuan	Nihan Hilir	Makunjung
Type of Village		Trans-migration	Trans-migration	Trans-migration	Trans-migration	Trans-migration	Original Village	Original Village	Original Village	Original Village
Population	Families	320	315	348	100	104	437	292	440	338
	Individuals	1041	1226	1238	351	411	2218	1033	1600	1241
Religion		80 % Islam (Javanese), 20 % Protestant, Catholic and Hindu Kaharingan	80% Islam (Javanese), 20% Christian and Catholic (Dayak Dusun Bayan)	60% Islam (Javanese), 20 % Catholic dan Prostestant, Hindu Kaharingan 20 % (Dayak)	Islam, Christian and Hindu Kaharingan	Hindu Kaharingan, Islam and Christian	Mostly Hindu Kaharingan, others are Christian Protestant and Christian Catholic	Hindu Kaharingan	80 % Hindu Kaharingan, 20 % Christian and Muslim	Islam, Hindu Kaharingan, Christian Protestant, Christian Catholic
Composition		80 % Javanese, 20 % local, (including people from other	80 % Javanese, 20 % Dayak (Dusun Bayan)	60 % West and East Java, 40 % local community - originally	Local (Dayak Bayan, Dayak Manyaan, Dayak Malang and	Mainly local community <sup>3</sup>	Dayak Bayan	95%Dayak Dusun Madang	Dayak / Javanese / Flores	

<sup>3</sup>This was stated during the village interview.

	Sei Rahayu 1	Sei Rahayu 2	Rimba Sari	Beringin Raya	Datai Nirui	Pendreh	Karamuan	Nihan Hilir	Makunjung
	islands in Indonesia such as NTT)		from Desa Pendreh. (Suku Dayak Manyan, Dayak Bakumpai, Dayak dusun Malang and Dayak Kapuas)	Bakumpai), Transmigrants (Javanese, Batak, and Bugis)					

In Central Kalimantan 5.6% of the population lives below the poverty line 14, this statistic as terrible as it, compares relatively well with the rest of Indonesia where 10.6% of the population lives below the poverty line. Importantly the number of people living below the poverty line is declining.

This villages in the area of MPG have an agricultural economy. Farming activities are focused on growing rice, vegetables and beans. From these agricultural products, some of the products are sold and some are for personal consumption. Traders or middlemen come through these villages purchasing produce from farmers. In each village there is also a market that is held on certain days.

In addition to farming food crops, people also plant rubber and / or oil palm. Almost all families have rubber plantations 15, approximately 50% of the population has oil palm plantations. The age of oil palm plantations is around 1-6 years. Palm oil began to be planted by the community after the company, that is now PT MPG, began operations in 2012. Prior to this there would be no market for the FFB.

### 3.2.6 Social Result

#### 3.2.6.1 Summary of interviews and discussions

The purpose of the meetings was to explain to the stakeholders MPG’s proposed new planting areas and the RSPO NPP as well as seek each stakeholder’s input on expansion of oil palm planting, the likely impacts and how these impacts can be prevented or managed. To help explain this, maps were shown of the current oil palm areas and the proposed planting areas. This was made up of cooperative members (22 people) and non-cooperative members (141 people). This was made up of men and women, people of all ages and religions.

Table 30. Interviews and numbers attending. The locations of the interviews were in the villages themselves. The interviews can be best described as Focus Group Discussions with Participatory Mapping

Interview	No. Attending	Date
Desa Pendreh	19	19.3.2019
Desa Sei Rahayu 1	23	19.3.2019
Desa Rimba Sari	13	20.3.2019
Desa Sei Rahayu 2	11	20.3.2019
Desa Beringin Raya	30	21.3.2019
Desa Datai Nirui	20	21.3.2019
Desa Karamuan	26	22.3.2019
Desa Makunjung	18	23.3.2019

Interview	No. Attending	Date
Desa Nihan Hilir	3	29.4.2019

### 3.2.6.2 Status of FPIC

FPIC was well advanced in all these communities with a relationship stretching over multiple years, a chronology of these FPIC activities is provided in HCV-HCS Assessment Full Report. The villages had been visited by PT MPG multiple times. Examples of the activities are:

1. FPIC related SOPs are in place.
2. Land purchases for the MPG.
3. Proposal for establishment of community cooperatives and Kas Desa.
4. Land Purchases for the extension areas
5. Obtaining permission to undertake the HCV/ S
6. The communities have already been through an HCV / HCS process with the main MPG estate.

The HCV report has been signed off by the HCVRN

According to the results of the consultation

1. All remaining forest areas are places where people hunt and collect wood
2. All land has been owned by the community individually
3. All rivers surrounding the garden are generally used by the community for clean water sources
4. Cultural sites have not been mapped because the scale is too small, coordinates must be taken in the field.
5. For activities such as hunting or looking for resin and rattan in the forest, the community is free to take even if not in their village
6. To cut timber, permission must be given to land owners, especially if they are in the garden, to be compensated
7. Development village boundaries have been proposed by each village, with the rationale that their village boundaries are with state forests, not Pendreh villages. (but in the rules, each village borders on another village)
8. If you look at the village map of Pendreh made by the village, then all areas including the ex-trans village, are mapped well based on local names that have been given since the time of the ancestors
9. Sites and cultural areas of Pendreh village are scattered throughout the area including extrans villages
10. Karamuan Village and Makunjung Village are bordered by rivers and hills, the village areas included in the PT MPG concession are all owned by the Karamuan people. There is no area owned by the Makunjung people.
11. KKPA gardens located in Unit 1, all belong to the Karamuan village community.

In each area it is shown that natural resources are relied upon by these communities. Some of the resources are extracted from the areas that are earmarked for conversion. However, all the communities have a lot of land external to the assessment areas, where these natural resources can be sourced.

It is clear that patterns of use are driven by the resources and environment around the community. Use patterns are not driven by religion or social class, as is the case in other societies.

### 3.2.6.3 HCV 4 – Ecosystem services in critical situations

HCV 4	Finding
Basic ecosystem services in critical situations, including protection of water catchments and control of erosion of vulnerable soils and slopes.	<b>PRESENT</b>

#### Interpretation

An ecosystem service is critical where a disruption of that service poses a threat of severe, catastrophic or cumulative negative impacts on the welfare, health or survival of local communities, on the functioning of important infrastructure or on other HCVs.

Ecosystem services, in critical situations, which are mentioned in the CG (which is used for this assessment) and directly related to the AOI are:

- Managing extreme flow events, including vegetated riparian buffer zones or intact floodplains
- Maintaining downstream flow regimes
- Maintaining water quality characteristics
- Protection of vulnerable soils, aquifers and fisheries
- Critical protection against destructive fire
- Provision of clean water,
- Protection against winds, and the regulation of humidity, rainfall and other climatic elements,
- Pollination services

An analysis of the distribution of hotspots during the el nino year of 2015 showed scattered fires as a result of agricultural land clearing. The relatively higher proportion of forest in the landscape would most likely have suppressed catastrophic fires. Of considerable concern is the spread of the invasive *Imperata cylindrica* which produces an exudate that inhibits the growth of other grass crops such as rice and maize. Furthermore, it burns easily and this fire helps it maintain its dominance over



competing vegetation (McKinnon, Hatta, Halim, & Mangalik, 1996). So, the continual extension of Imperata could be seen as a threat to food security.

### Protection of water catchments

Key Question	Outcome
<b>Does the assessment area or surrounding landscape contain areas that are critical to the protection of water catchments?</b>	<b>Present</b>

### Interpretation

Riparian zones along rivers and buffers around surface springs are designated as Local Protection Areas (Kawasan PerlindunganSetempat) under Indonesian law (Keputusan Presiden No 32/1990 and PP No 38/2011). This law requires the maintenance of buffer zones of at least 100m on both sides of 'large' rivers, and 50m on 'small' rivers, as well as a buffer of 200m radius around surface springs. No minimum size of a river or spring requiring a buffer is stipulated in the law.

The main goal of these buffers is to protect water quality and related environmental services, but it is evident that well protected intact riparian buffers also support important levels of biodiversity.

### Control of erosion of vulnerable soils and slopes

Key Question	Outcome
<b>Does the assessment area or surrounding landscape contain areas that are critical for preventing soil erosion?</b>	<b>Present</b>

HCV 4 occurs in areas where natural vegetation types (e.g. forest or native grasslands) in good condition are required to help prevent erosion, landslip and gullyng, especially where such events would have a critical impact on people or the environment.

### Justification

Areas in the north-west of MPG II are very steep. This was observed during the field survey and subsequently mapped using a 11 m DEM. The areas that are greater than 22 degrees (40%) are shown in red in **Figure 14**. From the assessor's experience, using DEMs for this purpose underestimates the exclusion area. Therefore, this map is kept as a draft and should be verified in the field.

### Other HCV 4 services

Key Question	Outcome
<b>Does the assessment area or surrounding landscape contain areas that are critical for Regulation of humidity, rainfall, clean water and other climatic elements or</b>	<b>Present</b>

## **pollination services?**

### **Provision of Clean Water**

The CG states regarding this value that “the area which provides the critical services (water provision and erosion control) may overlap partially or completely.” Hijau Daun, in this instance concurs with the CG that provision of clean water will be very largely contingent on intact river buffers and avoiding disturbance on steep slopes. So, the location of this value follows the location of the previous two elements of HCV4.

### **Regulation of humidity, rainfall and other climatic elements**

Central Kalimantan is an extremely humid and high rainfall area. Minor changes to the forest cover are not expected to affect any of these factors. There are extensive forests nearby, but outside the assessment area. The assessor was unable to find evidence that this will change the climate in the affected communities.

### **Pollination Services**

This discussion is referencing points on pp 39 in the HCV CG, in regards to pollination services in critical situations. The CG definition of critical is important in this context, where the ‘disruption of that service poses a threat of severe, catastrophic or cumulative negative impacts on the welfare, health or survival of local communities, on the functioning of important infrastructure (roads, dams, reservoirs, hydroelectric schemes, irrigation systems, buildings, etc.), or on other HCVs’ (Brown et al., 2013).

From a HCV 4 point of view, this section is asking the question does a critical and exclusive relationship exist between subsistence food gardens and the vectors (either, mammal, avian or insect) by which this food is pollinated, and if industrial development was to occur would the disruption of this service threaten either communities or other HCV’s?

### **Food Gardens**

From the data collected during this assessment, it is evident that the produce grown in food gardens is critical to the welfare, health and survival of the local communities potentially affected by the proposed development. The level of dependency table indicates a level of reliance on community food gardens, with some communities reporting in the order of 80% of all produce consumed (carbohydrates, vegetables and fruit) is grown in local gardens.

A brief review of literature relating to pollination in key carbohydrate crops that are commonly grown across the AOI; rice (*Oryza sativa*), peanuts (*Arachis hypogaea*), cassava (*Manihot esculenta*), banana (*Musa spp.*) and key palm resources, corn Corn (*Zea mays* and Coconut (*Cocos nucifera*), indicates that insects such as beetles (Coleoptera), wasps and bees (Hymenoptera), flies (Diptera) and moths (Lepidoptera) are the predominant pollinators in food gardens across the AOI (Essig, 1973; Ivancic, Lebot, Rounsard, Garcia, & Okpul, 2004; Jong, 2002; Kennedy, 2008; Lebot, 2010; R. Ashburner, G. Faure, A. James, K. Thompson, & M. Halloran, 2000). This is not to say that other vectors, such as wind and/or vertebrate fauna, do not contribute to successful pollination in food gardens but the literature reviewed indicates that they play a lesser role when compared to that of insects.

A qualitative and definitive discussion regarding insect pollinators in the context of Central Kalimantan would be an extensive and detailed entomological study, and is far beyond the scope of a rapid assessment such as this. However, this review did not identify the presence of any specific or exclusive pollination relationships that exist within food gardens that would be put at risk as a result of the proposed development.

Industrial oil palm has been a presence across the assessment AOI since the 2000, with community gardens currently and successfully being grown within and adjacent to plantation areas. Long running and extensive research relating to smallholder oil palm and the community livelihoods that it supports done in other oil palm growing areas, such as Koczberski et al., (2001); Koczberski and Curry, (2003); Koczberski et al., (2006) and Nelson et al., (2014) do not identify pollination (or the failure thereof) as a threatening process across the AOI at this point in time.

#### **Findings in the assessment area**

Given the discussion above, it seems highly unlikely that conversion of the small areas of degraded land to oil palm plantation, as proposed by this assessment, will pose a critical threat to the pollination relationships present across the AOI. The assessment team therefore considers that this particular value is absent. There are many aquatic environments in the assessment area. All these require buffers that are considered HCV 4. Therefore, HCV 4 was deemed present based on slope in MPG II. Regarding buffers on aquatic environments, all areas have HCV 4 present. It is considered that regulation of humidity, rainfall and other climatic elements or pollination services are not present

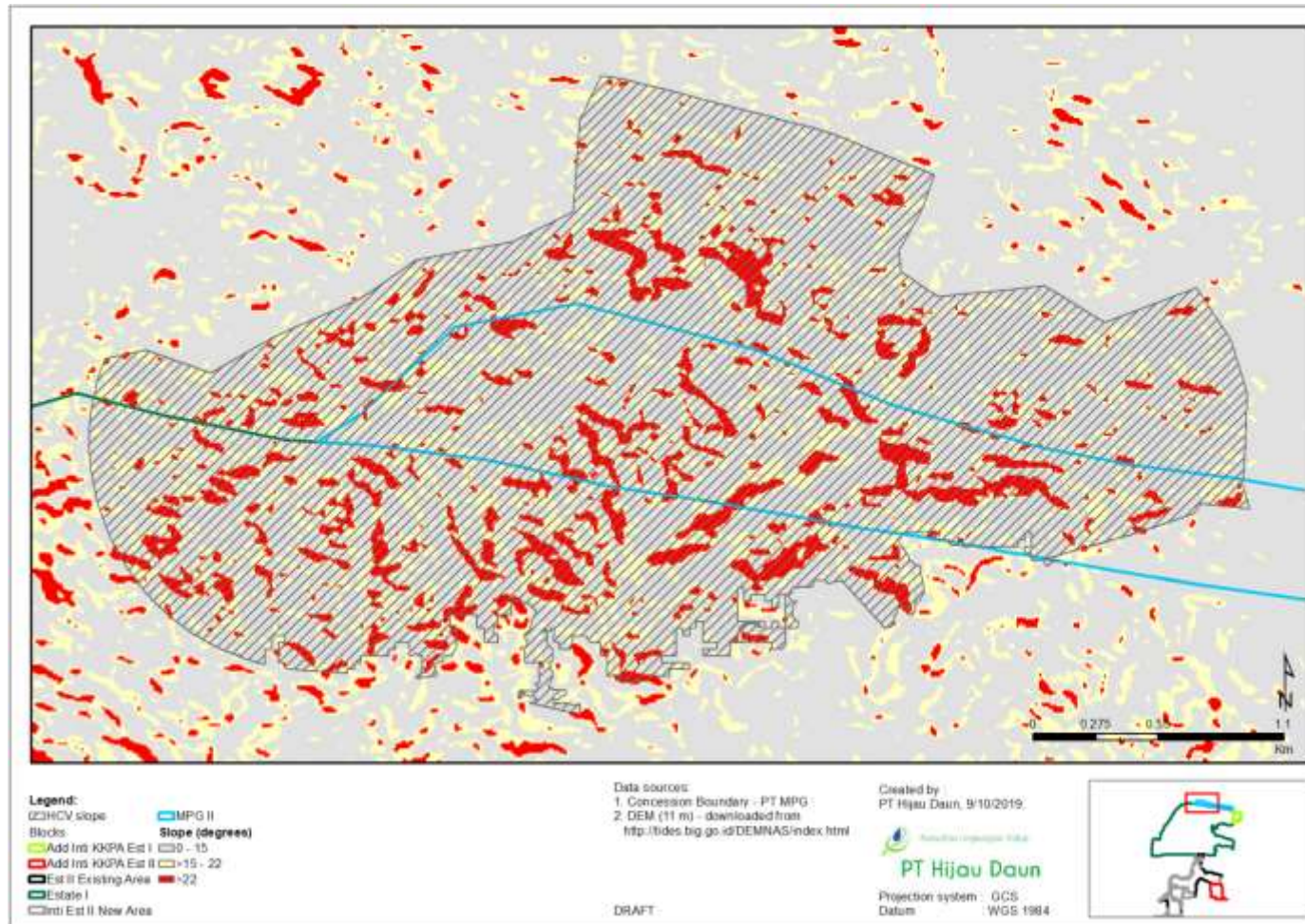


Figure 14. HCV4 areas that should be excluded from development based on slope. The exclusion area is based on an 11 m DEM. The assessor leaves this map as a draft because from his experience using DEMs to derive slope exclusions is very inaccurate and must be manually verified in the field. Note the jagged edge in the south “is” based on in-field verification. This is the only steep area in the AOI.

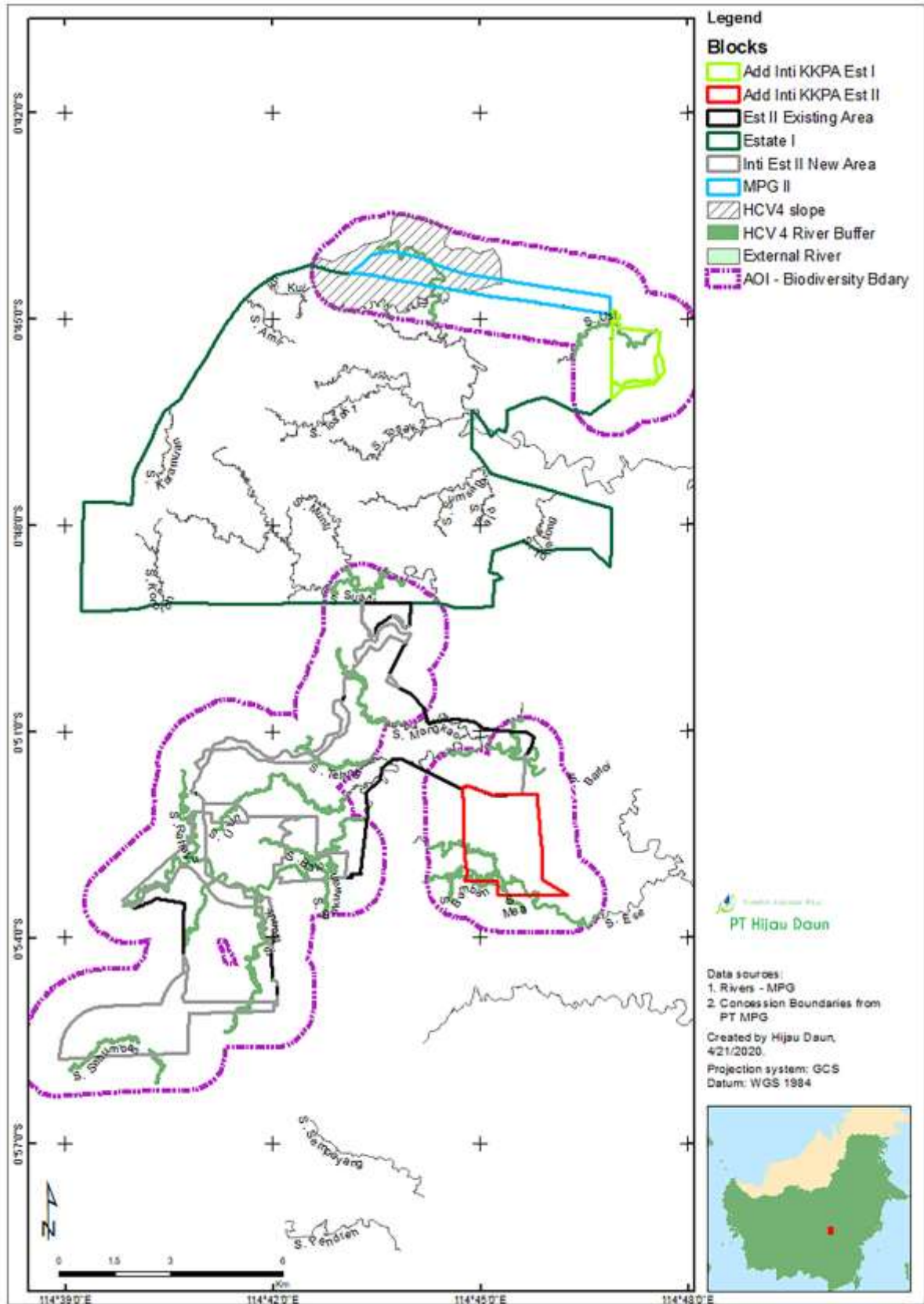


Figure 15. HCV 4 consists of (1) 50 m buffers to the left and right of rivers that flow through the assessment area. This HCV4 is extended to within 1 km of the assessment area boundaries. On the coast there is a 100 m buffer around the coastal strip. (2) Steep areas which are only present in the western section of MPG II (blue boundary).

3.2.6.4 HCV 5- Basic Needs

Key Question – HCV 5	Outcome
<b>Does the assessment area or surrounding landscape contain sites and resources fundamental to the basic needs of local communities or indigenous peoples?</b>	<b>PRESENT</b>

Table 31. Discussion of HCV 5 indicators

Indicator	Discussion
Access to health centres or hospitals is difficult	<p>Since the government connecting road between the villages and between sub-districts has been built. people's access to health services is not difficult. Each village has a village health service post or auxiliary health centre, and has at least one health worker, namely a nurse or midwife. The post provides medicines for diseases that are common within the community.</p> <p>If the illness cannot be dealt with at the health post, then it can be referred to the health centre in the sub-district or in the village of Sei Rahayu 2 or at the district hospital. The farthest village from the puskesmas is the village of DataiNirui, which can be reached by motorized vehicles in approximately 45 minutes.</p> <p>However, for Dayaks, traditional medicine is still an option for treatment. Traditional medicine is a tradition that is still carried out by the community and is believed to be effective for certain types of diseases.</p>
Most houses are built from, and household tools made from, locally available traditional/ natural materials	<p>Generally, houses are built of wood. Main Poles and floors of Ulin wood while the walls are of meranti wood or mixed wood species. Some houses have foundations of wood and some are made of stone. Roof of the house, generally of various materials including tiles, multi roof and zinc roof. In the past the community still used the ironwood shingle roof, but nowadays it is increasingly difficult to get an ironwood roof</p>
There is little or no water and electricity infrastructure	<p>1. Most villages use river water and wells as sources of clean water. People who live near the river will take water from the river, houses far from the river require wells, but if dry, the well water dries up, so almost all of the water needs are obtained from the river. There are villages that have a lake or embung, where people often take water if it is dry.</p> <p>2. Almost all villages already have electricity but not all are houses connected.</p>
People have a low capacity to accumulate wealth (living “day to day”)	<p>Generally people have varied livelihoods. As rubber tappers or farmers, growing food crops and raising livestock. Additionally, they collect forest products and can become workers in one of several companies. “Only people who are lazy, find it difficult to make a living, because the</p>

Indicator	Discussion
	<p>opportunity to work and earn money is available” (the land is still large, the forest is still there, and there are enough job opportunities). This is marked as orange because people live at a subsistence level and there is not a lot of accumulated wealth</p>
<p>Farming and livestock raising are done on a small or subsistence scale</p>	<p>Generally, transmigration communities, both from outside and locally, grow palawija and rice crops for sale and for their own consumption. The types of secondary crops planted include; corn, peanuts, green beans and vegetables. Types of livestock raised: chickens, goats and cattle. Generally, the area of palawija plantations is ¼ ha, while the field of rice fields is 1-2 ha</p>
<p>Hunting and/or fishing is an important source of protein and income</p>	<p>Hunting and fishing are very important for people in Pendreh, Makunjung and DataiNirui Villages. Hunting and fishing are activities that are part of the culture for indigenous people. In Pendreh village and Makunjung village, fishermen catch fish not only for their own consumption, but also for sale. There are people who specifically work to catch fish as livelihoods. DataiNirui Village is a local transmigration village that originated from native villages, so that fishing and hunting are still common activities. For transmigration communities that come from outside, hunting and fishing are done only as hobbies or for their own consumption.</p>
<p>A wild food resource constitutes a significant part of the diet, either throughout the year or only during critical seasons</p>	<p>Fruits, grains, mushrooms, vegetable tubers obtained by many people from the surrounding environment, are available food ingredients during the year or in season.</p>

Findings in the assessment area

There is still a heavy reliance on natural resources for daily needs by the community. The main resources are water, fish, bush meat and traditional medicine. Therefore HCV 5 is deemed Present.

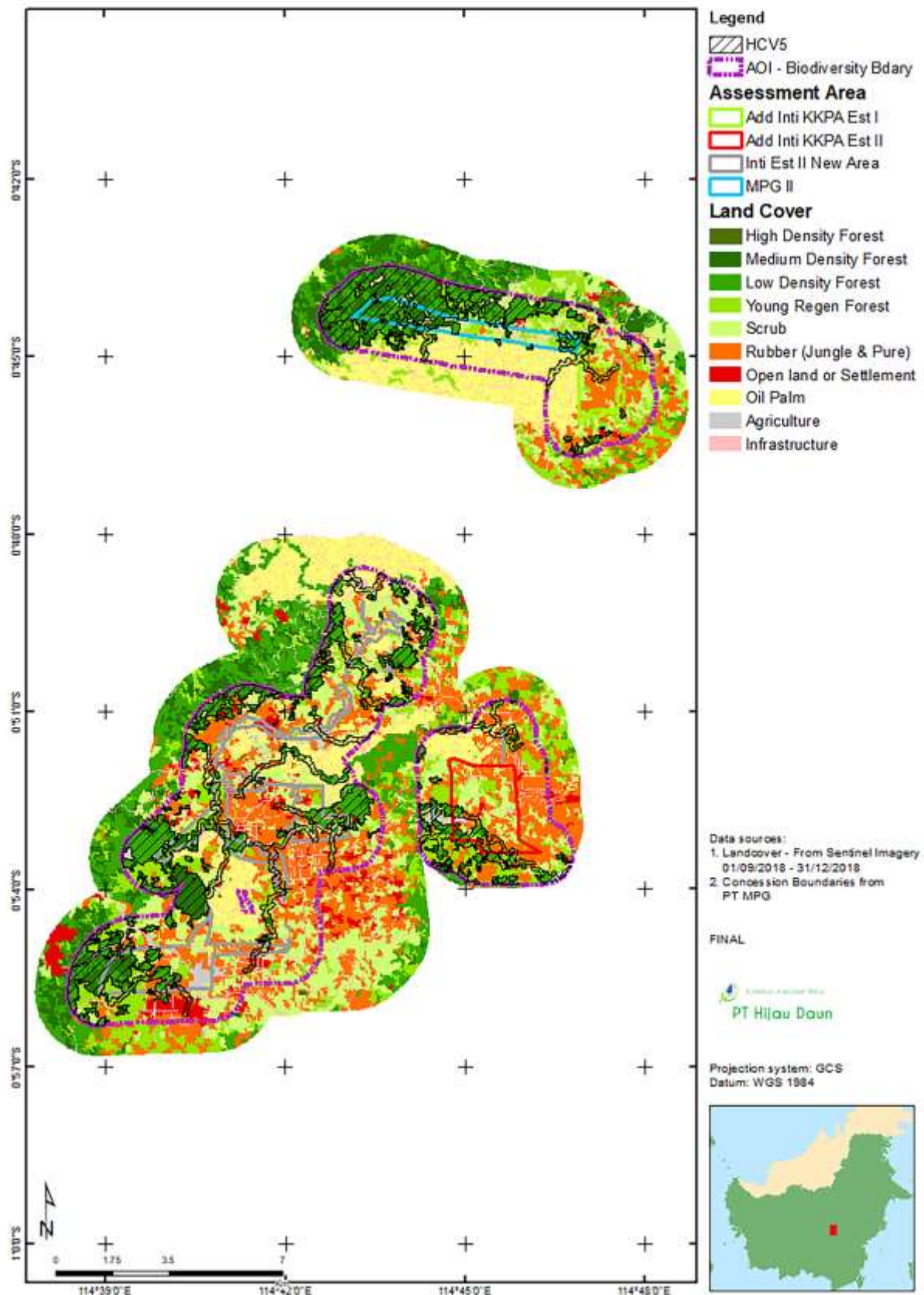


Figure 16. HCV5 is mapped over a 50 m buffer off rivers in recognition of the importance of the water filtering function as well as the need to have native trees on the side of rivers to support fish habitats. Better quality forest (LDF or better) is mapped as HCV5 in recognition of the requirement for timber, NTFPs and medicine. HCV 5 is mapped within the concession or within a 1 km buffer of the concession's boundaries.



### 3.2.6.5 HCV 6 – Cultural Values

Key Question	Outcome
<b>Does the assessment area or surrounding landscape contain areas that are tied to cultural values critical to the traditional cultural identity of local communities, including areas of cultural, ecological, economic, religious or archaeological significance?</b>	<b>PRESENT</b>

HCV 6 represents areas of cultural significance that have traditional importance to local or indigenous people. These may be religious or sacred sites, burial grounds or sites at which traditional ceremonies take place. National laws may require their identification and protection. The CG has identified the following values for consideration as HCV 6:

- Sites recognised as having high cultural value within national policy and legislation.
- Sites with official designation by national government and/or an international agency like UNESCO.
- Sites with recognized and important historical or cultural values, even if they remain unprotected by legislation.
- Religious or sacred sites, burial grounds or sites at which traditional ceremonies take place that have importance to local or indigenous people.
- Plant or animal resources with totemic values or used in traditional ceremonies.

Table 32. Cultural sites that are present in the nine villages (affected communities). Note only the site locations that were considered non-confidential by the communities are mapped in Figure 17

Village	Sites Name	Description
<b>Pendreh (this includes the transmigration villages)</b>	<ol style="list-style-type: none"> <li>1. Gunung Kajohi</li> <li>2. DataiSiom</li> <li>3. Japepas</li> <li>4. Malino</li> <li>5. Sama Honop</li> <li>6. PanapeUtek</li> <li>7. Liang Batu Tulang</li> <li>8. Patian Anyang</li> <li>9. SipungMangguru</li> <li>10. Sei Bakung</li> </ol>	<ol style="list-style-type: none"> <li>1. Old village in the headwaters of Sg Pendreh</li> <li>2. Old village with betangtua</li> <li>3. Sacred hill / protected hill which is cared for by a bunyigaib (magical sound)</li> <li>4. Old cemetery</li> <li>5. Old cemetery</li> <li>6. A cemetery of bones that is the results of a <i>mengayau</i>.</li> <li>7. Urns and bones</li> <li>8. Rocky cave where bones are stored</li> <li>9. Ancestral cemetery</li> <li>10. Old cemetery (7m)</li> </ol>
<b>Sei Rahayu 2</b>	Datai Urai Mambuti	Old Cemetery
<b>Datai Nirui</b>	Hompongs at Sungai Sebomban	Stone area and place of interest and tourism

Village	Sites Name	Description
<b>Karamuan</b>	1. Sungai Bakanai 2. Sansalaung 3. Muara Sunsang 4. Sungai Jangang 5. Ja'akKiham 6. Bungking, Benawa, Bahongkong, Butumbus 7. Rumah Betang	1. Sacred cemetery 2. Ancestral cemetery 3. Ancestral cemetery 4. Ancestral cemetery 5. Riam, the origin of DesaKaramuan 6. Sacred stone 7. Long house where the extended family live together
<b>Nihan Hilir</b>	1. Keriring Jajak 2. Keriring Kampung 3. Petugur 4. Luhung	1. Sacred place for praying in the form of ulin wood in the woods 2. Sacred place for pray in the form of ulin wood in the village 3. The place for hunting water buffalo in wara (statues of people form) 4. Cemetery

#### Findings in the assessment area

Whilst there are cultural sites in the villages, none of these are located in the assessment area. There are however, two hompongs which is mapped as HCV 6. Additionally, all the LDF forest or better is mapped as HCV 6 based on the presence of ulin. Therefore HCV 6 is deemed to be Present.

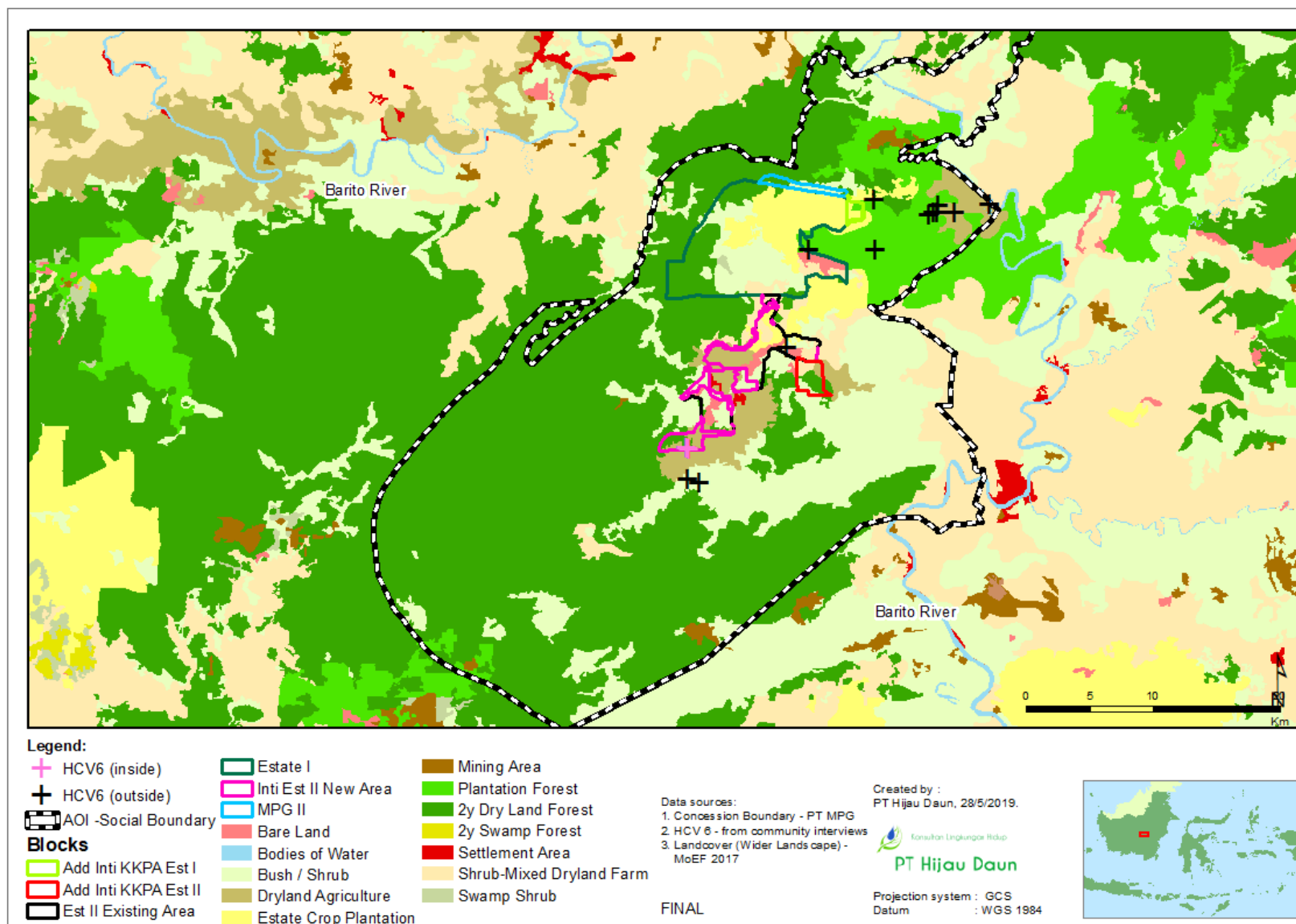


Figure 17. The location of the HCV6 areas mentioned in Table 32. Only 2 were inside the assessment area. Note that not all sites that were mentioned in the interviews are allowed to be mapped in publicly available documents.

### 3.2.7 Environmental Result

#### 3.2.7.1 HCV 1 – Concentrations of biodiversity

##### Protected areas

Key Question	Finding
<b>Does the assessment area or surrounding landscape contain either of the following categories of Protected Areas (PA)?</b> <ul style="list-style-type: none"><li>• <b>Legal Protected Areas,</b></li><li>• <b>Global conservation priority sites</b></li></ul>	<b>PRESENT</b>

Riparian zones along rivers and buffers around surface springs are designated as Local Protection Areas (Kawasan Perlindungan Setempat) under Indonesian law (Keputusan Presiden No 32/1990 and PP No 38/2011). This law requires the maintenance of buffer zones of at least 100m on both sides of 'large' rivers, and 50m on 'small' rivers, as well as a buffer of support important levels of biodiversity.

Only the Barito River, in this context would be considered a large river. This is some distance from the concession.

Additionally, there is the Cagar Alam (a legally protected area), which is 13.5 km to the south east of the AOI. The assessor believes this is not relevant to the assessment as the area between the Cagar Alam and the AOI is a matrix of agricultural lands or part of the shifting 200m radius around surface springs. No minimum size of a river or spring requiring a buffer is stipulated in the law.

The main goal of these buffers is to protect water quality and related environmental services, but it is evident that well protected intact riparian buffers also cultivation rotation. The assessor has examined satellite images and noted that there are no natural corridors between the Cagar Alam and the AOI.

##### Findings in the assessment area

There are Protected Areas in the assessment area. These include riparian areas around rivers, lakes and swamps as protected under PP 2011/38. Therefore, this element of HCV 1 is deemed to be Present.

### Concentrations of biological diversity

Key concept	Finding
<b>Concentrations of biological diversity including endemic species and rare, threatened or endangered species that are significant at global, regional or national levels.</b>	<b>PRESENT</b>

#### Flora

There were 185 tree species identified during this assessment. This included trees within the HCS plots and searches of the area around each HCS plot and on the traverse between each HCS plot. Twenty RTE species were positively identified.

#### Birds

There were 68 species of birds recorded during the survey, which consisted of 30 families. Of the 68 species of birds, there are 16 species of birds that fall into the category of HCV 1, or species that are rare, endangered, protected and endemic (RTE = Rare, Threatened and Endangered).

#### Mammals

Of the 25 mammals sighted or known to be present in the assessment area. There were:

- 8 endemic mammals.
- 14 mammals were IUCN vulnerable or above.
- 14 mammals that are protected by the Indonesian Government regulations.

A refined list of 24 mammals is found, this includes mammals that are protected, endemic or threatened. The fact that only one of the sighted mammals is not on this list reflects the high level of threat all mammals are facing in Borneo.

### Spatial and temporal concentrations of species

Key Question	Outcome
Is the assessment area or the adjoining landscape known or likely to contain critical temporal concentrations of species?	<b>Present</b>

This element is designed to ensure the maintenance of important concentrations of species that use the forest only at certain times or at certain phases of their life-history. It includes critical breeding sites, wintering sites, migration sites, migration routes or corridors (latitudinal as well as altitudinal). Those areas that are critical for temporal use by animals, where these concentrate seasonally as part of their life cycle, should be considered HCVs.

This survey was carried out in March, during March the phase of migratory birds had started returning from the south to the north. The peak of migration is usually in December-January. The condition of the assessment area, does not seem to have the potential to be a major migration pathway for birds of prey in the East Asian region (because it is quite fragmented). But a small amount of population from several species of birds of prey that migrate to Kalimantan are likely to fly over this region. Examples of these birds are *Accipiter soloensis*, *Circus spilonotus*, *Pandion haliaetus*, *Pernis ptilorhynchus*, *Milvus migran*, *Circus melanoleucos*, *Accipiter gularis*, *Butastur indicus*, *Falco tinnunculus* and *Falco severus*.

An aquatic survey was not undertaken. Based on the evidence provided by the villagers the health of the rivers is in a rapid state of decline. The assessor accepts that since there is no current data on the rivers within the concession the precautionary approach has to be applied here as there could be some temporal concentrations of aquatic species present. All the rivers in the AOI and their associated buffers are considered HCV1 in this category.

**Findings in the assessment area**

There are several rivers and small lakes / swamps within the assessment areas. The buffers to these are protected by Indonesian law. HCV 1 is mapped over these areas.

There are 20 RTE species and 17 endemic species. Some of the endemic species are pioneer species and quite common. But the forest blocks where RTE species are present are mapped as HCV.

There are 16 RTE or endemic birds sighted. The forest blocks where these were sighted is mapped as HCV. Furthermore, the forests in this area could be part of the area could be part of a migration pathway.

There are 24 mammal species that were sighted or mentioned as being present by locals. These species were either endemic, CITES listed, RTE (VU or above) or protected by the Government of Indonesia.

In the absence of aquatic survey information the precautionary approach is applied because there “could” be temporal concentrations of aquatic species present. Therefore all the rivers and their associated buffers are HCV1.

Therefore, HCV 1 was deemed present in the assessment area. Note that the whole AOI is considered HCVMA1 as a bird or animal could fly or roam over anywhere in the landscape.

**Figure 18** shows that HCV1 is mapped over a 50 m buffer off rivers. Birds and mammals that are RTE species are all forest dwelling species and require (at a minimum) secondary forest (LDF or better) to survive. Similarly, the vast proportion the RTE species of trees were found in the secondary forest

(LDF or better). For this reason, HCV 1 is also mapped over patches of LDF or better of reasonable size. HCV 1 is mapped within the concession or within a 1 km buffer of the concession's boundaries.

Table 33. Explanation of the areas delineated by the numbers on Figure 18

Number	Explanation
1	HCV 1 area connects with forest areas outside the AOI
2	HCV 1 area connects with forest areas outside the AOI
3	HCV 1 area connects with forest areas outside the AOI
4	HCV 1 area connects with forest areas outside the AOI
5	HCV 1 area connects with forest areas outside the AOI
6	YRF area on the other side of a road from the connected forest.
7	YRF area that does not have any connections to other forest. Only to road.

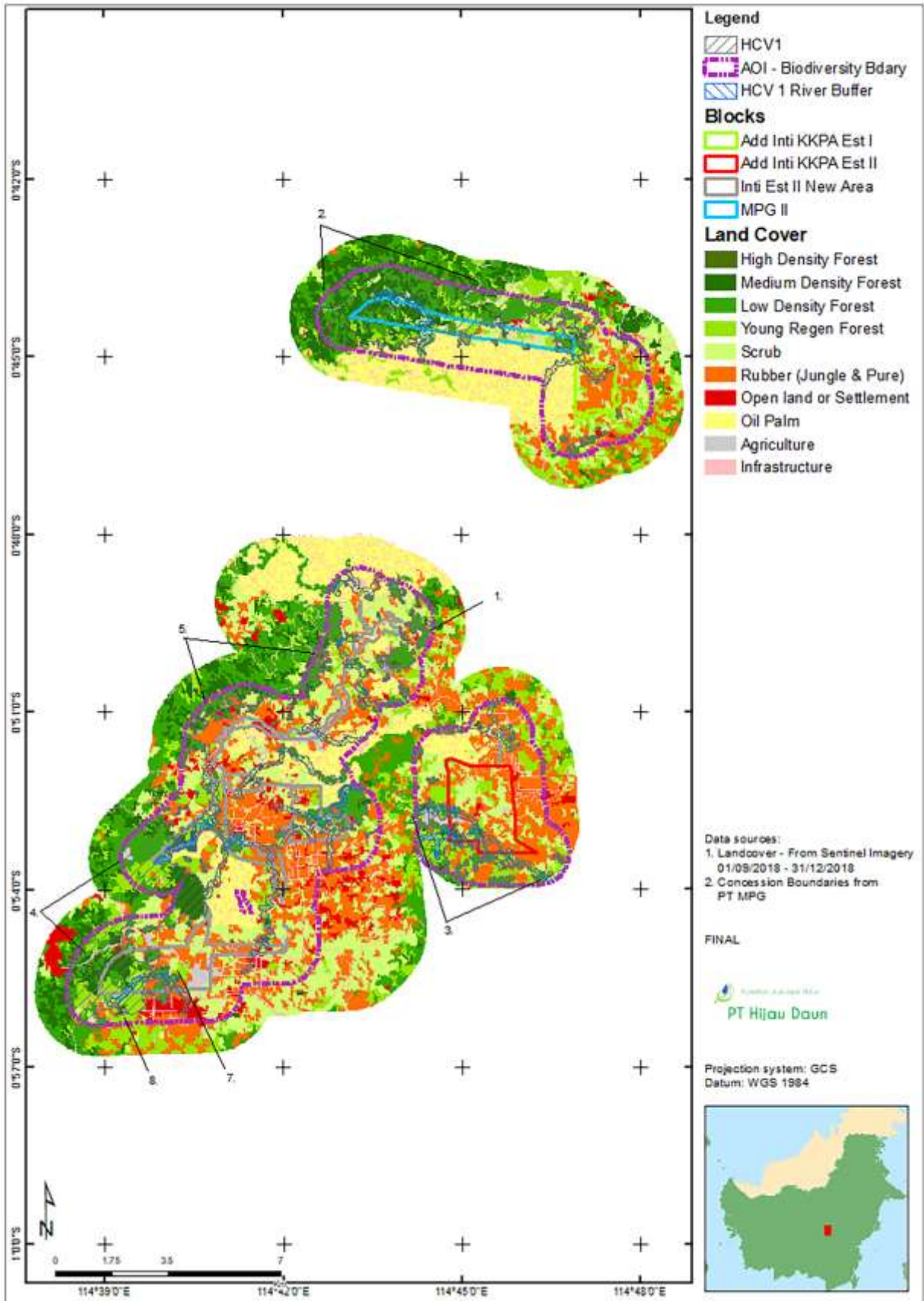


Figure 18. Map of HCV 1



### 3.2.7.2 HCV 2

HCV 2	Finding
Large landscape-level ecosystems, ecosystem mosaics and Intact Forest Landscapes that are significant at global, regional or national levels.	PRESENT

There are three elements to HCV 2 in the CG, these are:

1. Large, landscape level ecosystems and ecosystem mosaics
2. Viable populations of the great majority of species
3. Natural patterns of distribution and abundance

#### Large, landscape level ecosystems and ecosystem mosaics

In this instance Hijau Daun uses the methodology described in the Indonesian NI for determining the presence of this element of HCV2.

A 3 km internal buffer was drawn around the large forested areas with the remaining core tested to determine if a 20,000 ha or larger core was present (which is more conservative than the CG- which uses a 50,000 ha threshold).

The closest Intact Forest Landscape is 60 km from PT MPG. These do not contribute to the mapping of HCV2 over the concession in this instance.

#### Viable populations of the great majority of species

The CG suggests that *“large areas that are more natural and intact than most other such areas and which provide habitats of top predators or species with large range requirements”* qualify as HCV 2. The Leopard Cat (*Prionailurus bengalensis*), a top predator, is confirmed present. Wich *et al.*, 2008 maps the Bornean Orangutan (*Pongo pygmaeus*) as present in this area. Orangutans are not confirmed present in this area (based on interviews with BKSDA), but the CG states *“To qualify for HCV 2, it is not necessary that the area is totally undisturbed or pristine. Some species may be locally extirpated or missing, especially vulnerable or selectively hunted or harvested species. HCV 2 status can apply even when the few species lost happen to include large, keystone or iconic species, particularly if there is a reasonable chance of these being re-established in the future.”* Therefore, if orangutans have become locally extinct, if they were reintroduced and protected from hunting, they would likely establish themselves.

### Natural patterns of distribution and abundance

The fact that this is such a large area, there should be natural patterns of distribution and abundance e.g. fig trees that provide birds and mammals with a back up food supply even when other trees are not fruiting. Just as an example of the rich variety of forest in this area, the vegetation survey recorded 190 different tree species in 59 HCS plots. This statistic underscores how biodiverse the forest is in this area.

Hijau Daun bases the decision to map HCV2 over LDF or better (except for the occasional piece of YRF where corridors can be formed) on the following statement in the CG – *“HCV 2 was designed to give some explicit protection to large and adequately-intact forests.”* YRF was gardens 5 – 10 years ago and would not be considered “adequately intact forest”.

#### Findings in the assessment area

This very large forested area that intersects with PT MPG has a 48,000 ha core area. This meets the criteria for HCV2 in the Indonesian NI. Additionally, there are top predators (*Prionailurus bengalensis*) confirmed present in the forested area along with the mapped suitability for orangutan habitat. For this reason, HCV 2 is deemed Present.

**Figure 19** show that HCV2 is mapped over the large forest block to the west of PT MPG based on the core size of this forest block. The mapping of this follows the MOEF land cover mapping where it is more than 1 km from the boundaries of the assessment area. Mapping within the assessment area follows the Hijau Daun landcover map. HCV2 is mapped over forested areas (LDF or better) that intersect with the assessment area. Some areas of YRF are HCV2 also where corridors can be formed. The areas which are mapped as HCV2 are the only HCV2 areas.

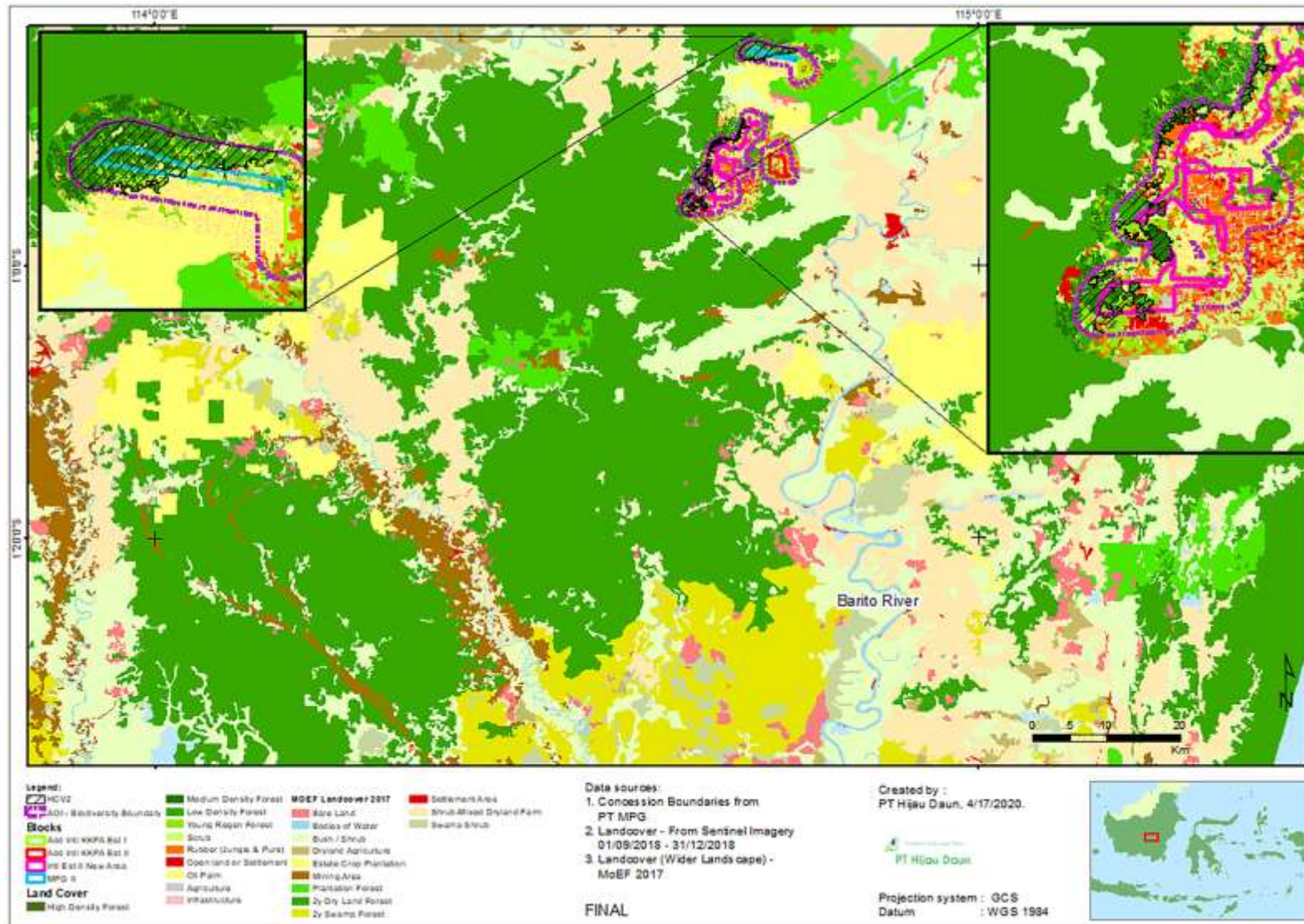


Figure 19. Map of HCV2 of PT MPG based on the core size of this forest block

### 3.2.7.3 HCV 3 – Rare Ecosystem

HCV 3	Finding
Rare, threatened, or endangered ecosystems, habitats or refugia.	NOT PRESENT

#### Findings in the assessment area

No endangered ecosystems overlap with the assessment area. Therefore, HCV3 is therefore deemed Not Present.

### 3.2.7.4 Peat Soil

No peat was encountered during field work during this assessment. Nor are there any areas of peat nearby based on RePPPProT mapping. There were 349 ground truthing points or HCS plots established in the assessment area (2,305.22 Ha), point was walked to by the assessor. This is one point per 6.5 ha. No peat was encountered, nor was there any soil that even vaguely looked like peat could occur nearby. Despite this, the reviewer has still required a secondary data source be used which is of lower accuracy than primary observation.

### 3.2.7.5 Patch analysis

Patch analysis is based on the concept of the *ecological viability* of a forest patch, and is largely a GIS based desktop exercise that utilises measurables such as patch ‘core area’ (i.e. how much of the patch area is exposed to edge effects) patch connectivity (i.e. how close the patch is to other patches) and patch risk (i.e. how close the patch is to human settlement or access routes) to prioritise areas for conservation and identify areas with development potential. Refer to Module 5 in HCSA (2017) for further detail regarding the conservation science theory supporting patch analysis.

Table 34. Patch classes relevant to this assessment as per the HCSA patch analysis decision tree

Patch class	Definition
Proposed conservation area	Areas that have been classed as HCV, as described above in other sections of the report, or have been classified as ‘high priority’ during the DT analysis. This accounts for most of the HCS forested areas occurring across the study areas.

Patch class	Definition
Proposed development area	Areas that have passed through the DT analysis and are not connected to 'high priority' areas, not covered by areas considered HCV nor are within areas classed as 'community use'. This final patch class accounts for two (2) areas, patch numbers 1 and 12
Community use area	Areas that have been reserved or 'enclaved' by the community, identified during community consultation and participatory mapping.

Any patches connected to larger forest patches outside the study areas were automatically designated HPP status, and many LPP patches that would normally be designated 'indicative give and take develop' are to be conserved due to being either a HCV management area or that defined as community use during participatory mapping.

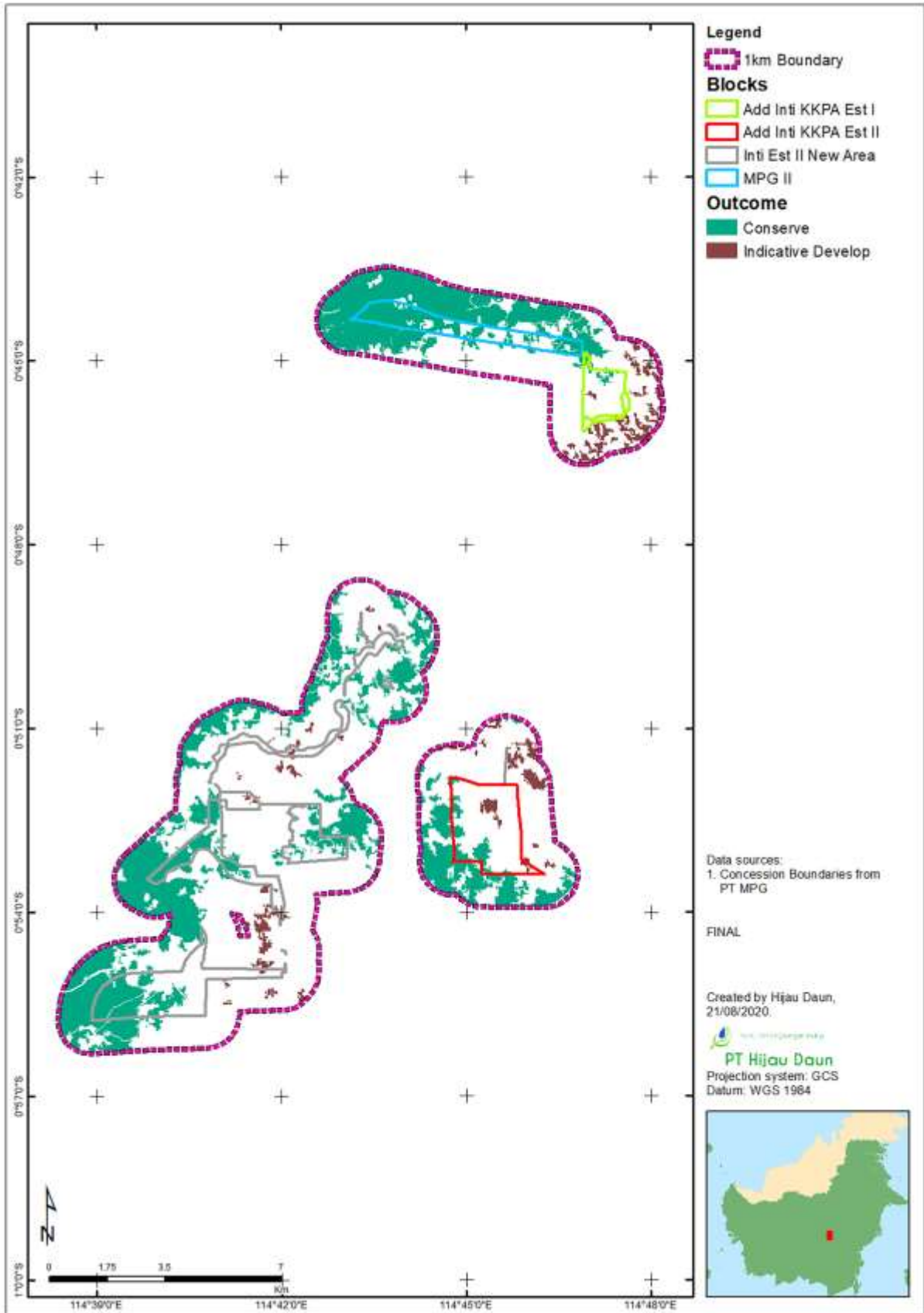


Figure 20. The Low Priority Patches are deemed to be Indicative Develop because they are in a medium forest cover landscape. The area is located in the Kalteng part of the Barito Watershed (4.37 M ha) of which 2.80 M ha are forested

### 3.2.8 Threat Assessment

Threats were assessed based on:

- the assessor's past experience with HCV assessments.
- Discussions with the local community
- Discussions with PT MPG staff.
- Discussions with local stakeholders.

### 3.2.9 Overall Summary

**Proposed conservation area:** Areas that have been classed as HCV, as described above in other sections of the report, or have been classified as 'high priority' during the DT analysis. This accounts for most of the HCS forested areas occurring across the study areas.

**Proposed development area:** Areas that have passed through the DT analysis and are not connected to 'high priority' areas, not covered by areas considered HCV nor are within areas classed as 'community use'.

**Community use area:** Areas that have been reserved or 'enclaved' by the community, identified during community consultation and participatory mapping.

Table 35. Threats to biodiversity and social values

Value identified	Threat	Source of Threat	Likelihood	Impact
<b>HCV 1</b>	<ul style="list-style-type: none"> <li>• Hunting</li> <li>• Fire</li> <li>• Invasive species</li> <li>• Logging</li> <li>• Agricultural clearance</li> </ul>	<ul style="list-style-type: none"> <li>• Hunters</li> <li>• Prolonged dry periods caused by El Nino (which occurs every 5 – 10 years).</li> <li>• <i>Imperata cylindrica</i> is an example of an invasive species.</li> <li>• Commercial or community logging.</li> <li>• Shifting cultivation.</li> </ul>	<ul style="list-style-type: none"> <li>• The very low presence of mammals in all the survey areas indicates that high level of hunting activities take place in the areas.</li> <li>• Fire occurs after a prolonged dry periods which has been attributed to the El Nino effect. The last El Nino was in 2015. Analysis of hotspots shows a spread typical of scattered shifting agriculture fires, not uncontrolled wildfires that occurred elsewhere in Kalimantan that year. Burning for agriculture is now illegal, however, burning still occurs and does not appear to be tightly policed.</li> <li>• There is already a vast area of <i>Imperata cylindrica</i> and reversing its spread will be a major challenge for communities.</li> <li>• If these areas are set aside as HCV then they will not be logged nor cleared for shifting cultivation. But will likely transfer the pressure to areas outside the concession.</li> </ul>	<ul style="list-style-type: none"> <li>• An efficient hunter can greatly reduce the number of species in the landscape.</li> <li>• There were no areas in the study area that have been ravaged by fires. However, if land clearing continues, the likelihood of catastrophic fires also increases.</li> <li>• <i>Imperata cylindrica</i> has the effect of helping fire spread as well as having an impact on food security as the roots also produce an exudate that inhibits the growth of other grass crops such as rice and maize (Donner 1987).</li> <li>• All the forests in this area have been logged both by the community and commercially in the past and they are in various stages of recovery since logging. It is likely that over the next five years in a “business as usual” scenario all the forests on the assessment area would be cleared for shifting agriculture. Indeed during the assessment, an area of LDF was being measured up by the community for land clearing.</li> </ul>
<b>HCV 2</b>	<ul style="list-style-type: none"> <li>• These follow HCV1 and are not repeated.</li> </ul>			



Value identified	Threat	Source of Threat	Likelihood	Impact
<b>HCV 4</b>	<ul style="list-style-type: none"> <li>• Government requirement to buffer any rivers by 50 m. This leads to smaller rivers not being considered rivers and therefore having no buffer.</li> <li>• Burning to assist agricultural development within the riparian buffer strip.</li> <li>• Excessive fluctuations in the river levels (and lower base flow).</li> <li>• Lack of awareness by company employees and contractors about HCV 4, particularly small river riparian buffers and mismanagement of high risk activities within buffer areas (e.g building roads through riparian areas, developing steep slopes).</li> <li>• People constructing huts and living (permanently or temporarily) and making gardens in riparian areas.</li> <li>• Fire – this will stop tree lined riparian strips being</li> </ul>	<ul style="list-style-type: none"> <li>• Lack of definition about what is considered to be a river.</li> <li>• Increased population with people looking at empty land as a place to garden and live in. They will use fire to clear buffer strips.</li> <li>• Land clearing and building roads which means that rains runs off quickly and enters the rivers immediately.</li> <li>• Lack of training and awareness of SOPs.</li> </ul>	<ul style="list-style-type: none"> <li>• Only the larger rivers are to be mapped.</li> <li>• If development goes ahead, increased fluctuations will go ahead.</li> <li>• None of these areas have a high population pressure, so this is unlikely.</li> <li>• Training and awareness of SOPs is quite thorough at PT MPG so clearing of buffers and steep areas is unlikely.</li> </ul>	<ul style="list-style-type: none"> <li>• All mapped rivers will receive a 50 m buffer.</li> <li>• Increased fluctuations in river levels (more severe floods and droughts).</li> <li>• Any clearing will destroy the buffer and these areas will have to be re-established.</li> <li>• Clearing of buffers and steep areas will result in erosion and stream pollution.</li> </ul>

Value identified	Threat	Source of Threat	Likelihood	Impact
	established.			
<b>5 (internal)</b>	<ul style="list-style-type: none"> <li>• Agricultural chemicals and siltation in the rivers.</li> <li>• Deforestation in the catchment causing siltation of the rivers. (Mining and forestry activities causing siltation and pollution.) Also change in the flow characteristics of the river (i.e. larger floods and lower baseflow). Change in water temperatures due to loss of the shade effect of riverside trees.</li> <li>• Inadequate land area set aside for agriculture, leading to loss of food security.</li> <li>• Claims and disputes on land.</li> <li>• Continued agricultural expansion putting increased pressure on natural areas. Most likely this will be caused by oil palm companies that are not RSPO members nor have a “no deforestation</li> </ul>	<ul style="list-style-type: none"> <li>• Applying too many (or inappropriate use of) agricultural chemicals.</li> <li>• Mining (Gold and Coal).</li> <li>• Deforestation (agricultural land clearing, forestry)</li> <li>• Community making spurious or double claims of land ownership. This can lead to loss of land from the rightful owners and as such is a threat to food security.</li> <li>• Shifting cultivation expanding beyond its current extent.</li> <li>• Fires from burning associated with agricultural expansion</li> <li>• Community for housing</li> </ul>	<ul style="list-style-type: none"> <li>• Unlikely because PT MPG has SOPs and training that ensure only the minimum required amount of chemicals are applied and that these chemicals are not applied near water bodies.</li> <li>• Gold and coal mining are already polluting the river water. Also there is a large increase in sediment in the river water.</li> <li>• Forestry and community land clearing are taking place</li> <li>• Medium, because the much of the land that PT MPG is paying gantirugi for does not have any clear ownership. Yet people are claiming land as theirs in order to onsell it.</li> <li>• Agricultural expansion is already taking place.</li> <li>• There is a high likelihood of fire. PT MPG and the community have to be prepared to extinguish fires before they get out of control.</li> <li>• High – the community have a culture of harvesting trees for housing</li> </ul>	<ul style="list-style-type: none"> <li>• Minimal provided these impacts are managed.</li> <li>• Reduction in the quantity of fish in the river has already taken place.</li> <li>• Reduction in the potability of water.</li> <li>• Continually update the land acquisition policy and procedure to ensure that the adequate checks and balances are in place to prevent land disputes.</li> <li>• River cannot be relied upon during droughts.</li> <li>• Increased deforestation as a result of agricultural expansion.</li> <li>• Fire has the potential to completely destroy the area’s forests and threaten the livelihood of communities. It has done this in other areas of Kalimantan.</li> <li>• High – basically most of the high value species have been harvested already.</li> </ul>

Value identified	Threat	Source of Threat	Likelihood	Impact
	commitment” <ul style="list-style-type: none"> <li>• Fires in el nino years.</li> <li>• Community harvesting of timber in HCV Areas</li> </ul>			
<b>6</b>	<ul style="list-style-type: none"> <li>• Inadvertent clearing of the area around the hompongs.</li> <li>• Community logging of Ulin trees</li> </ul>	<ul style="list-style-type: none"> <li>• Oil Palm development</li> <li>• Demand for valuable wood</li> </ul>	<ul style="list-style-type: none"> <li>• Low, Provided SOPs are followed</li> <li>• High</li> </ul>	<ul style="list-style-type: none"> <li>• The current nature of the hompongs will be lost.</li> <li>• There will be no ulin trees left in the forest anywhere in this area.</li> </ul>
<b>Peat</b>	<ul style="list-style-type: none"> <li>• Not present in the assessment area.</li> </ul>			
<b>HCS Forest</b>	<ul style="list-style-type: none"> <li>• These follow HCV 1 and are not repeated here</li> </ul>			

The summary HCV HCS show in the **Table 36** and **Figure 21** as follow:

Table 36. Area Statement (ha). There is no HCV 3 area. This is calculated using GIS software. Considering the accuracy of the software, the actual hectarage on the ground might differ

HCVType	HCS	HCV1	HCV2	HCV4	HCV5	HCV6	Total Conservation <sup>4</sup>	Developable	Total Area
<b>Additional Inti KKPA Est I</b>	17.18	24.06	-	21.36	24.06	2.70	31.68	175.42	207.10
<b>Additional Inti KKPA Est II</b>	81.08	76.70	-	59.49	76.64	41.41	107.64	430.23	537.87
<b>Inti Est II New Area</b>	427.58	452.79	215.82	179.84	375.60	255.79	524.33	677.75	1,202.08
<b>MPG II</b>	231.28	240.82	191.66	204.36	177.67	169.32	269.04	89.13	358.17
<b>Total</b>	757.12	794.37	407.48	465.05	653.97	469.22	932.69	1,372.53	2,305.22

---

<sup>4</sup> These areas are not additive because of overlaps

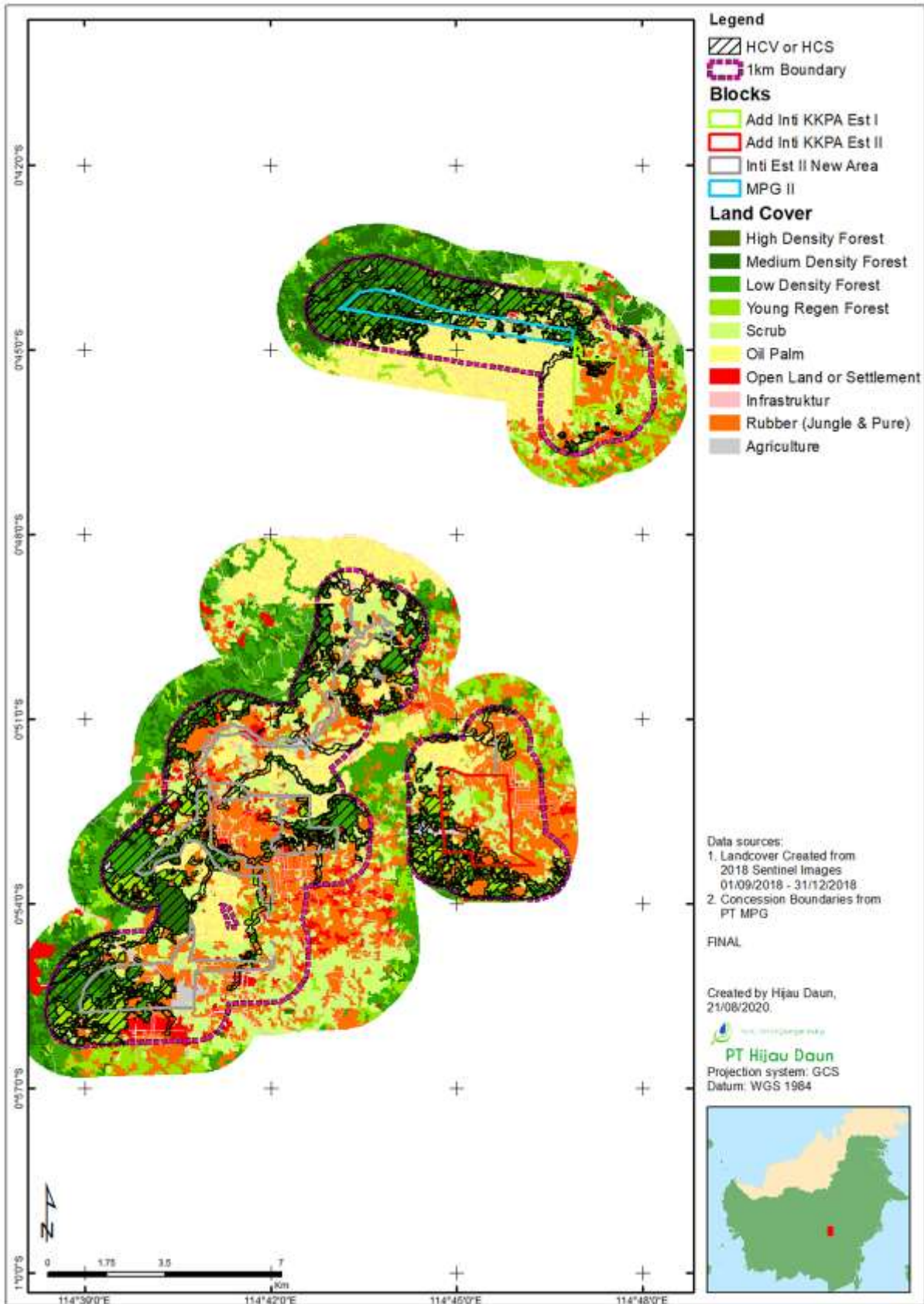


Figure 21. Total Conservation Area (hatched)HCV or HCS

### 3.2.9.1 Final Consultation

The purpose of the final consultation was to:

- Seek consensus on the values identified and on the locations of the conservation areas.
- Clarify a couple of points that were not clear from the field survey.

Forty people attended the final consultation (which was a group meeting) of which 10 were company staff members and 30 were government or members of the community. Representatives attended from six of the nine affected communities. The three communities (Sei Rahayu II, Pendreh and NihanHilir) that did not attend were sent a copy of the presentation and asked for comment. No comment was provided by any of them. An acknowledgement of the receipt of the invitation was given.

The nature of the presentation to stakeholders was as

- Overview of proposed development project
- Key steps of assessment process
- Main findings Description and justification of HCVs and HCS forest identified
- Maps of areas identified as community lands – where they were inside the estate
- Maps of conservation areas (e.g. HCV, HCS forest)
- Identified threats to social and environmental values
- Management and monitoring recommendations
- Concerns or issues (with assessment process, findings, operations, etc.)
- Any overlapping conservation areas (for social and/or environmental conservation objectives) and how to harmonize their management. For example, implications for community use or access if HCV 4, 5 or 6 areas are designated for HCV 1-3 conservation.

The Final Consultation took place 3<sup>rd</sup> September 2019. All the parties were invited that had taken part in the SIA or the integrated assessment (i.e. community from each of the nine villages, government and NGOs). They were informed by letter at least a week in advance with a follow up call from the Public Relations Department. The consultation took place in the MPG office<sup>5</sup>.

The Final Consultation involved explaining HCV and HCS – as well as a discussion of the theory, they key steps were mentioned. At each step a map of the identified value was shown and it was explained why this was deemed to be an HCV area. From there the particular threats to the HCV or HCS area and the associated management and monitoring recommendations. Most of the time was

---

<sup>5</sup> PT Hijau Daun accepts this is not really a neutral location but the second best option is to have it in a hotel in Muara Teweh which is a very long drive for the community and they probably wouldn't have attended.

spent discussing results of the assessment. The community and government were keen to see development but also accepted that wholesale land clearing was not an option either.

At the final consultation meeting all the attendees agreed to the HCV / HCS areas as proposed. There were no real points of discussion from the meeting itself that caused changes to the outcome. The attendees provided extra information or sought further clarification on various points. However, following the meeting, the assessor went and rewalked the area of KKPA Karamuan with the community. This caused some minor changes in the landcover mapping. Similarly, the assessor visited the two hompong areas, where the assessor took the opportunity to agree with the company and the community about how these special areas should be managed. This is incorporated in HCV 6.

### **Further Consultations with NGOs**

PT Hijau Daun tried to engage WWF, which has a base in Central Kalimantan to review the HCV assessment. A letter was sent to WWF. On three separate occasions WWF stated that they were not available for a meeting. In this case the assessors considered that they had undertaken their best endeavours to engage with WWF, however had been unsuccessful.

#### Limitations and consequences

Only a proportion of the community members joined the final consultation and there is a possibility that information was missed. Though the people that did join were the KepalaDesa and BPD who have an obligation to aggregate the opinions and views of their constituency and subsequently report back to their constituency. The company should be mindful of the consequence of this. Subsequent comments and suggestions from people should be taken into account by the company when formalising the ICLUP.

Table 37. Feedback from the Final Consultation

No	Name	Position/ Organisation / Social Group	Main Concerns / Recommendations	Response
1	Bapak Sishan Kamrata	Head of Karamuan Village	<p>1. Correcting the river names. These are Sungai Mungkut becomes Sungai Mangkaut, Sungai Dalat becomes Sungai Dalit, as well Sungai Pendreh and Barioi shouldn't be included in Desa Beringin Raya</p> <p>2. Correcting the names of the HCV6 sites JahakKihan should be Ja'akKiham and Bakongkong should be Bungking</p>	Will change these in the report.
2.	Ibu Nining	<i>Dinas Lingkungan Hidup</i>	<p>1. For HCV 4, the rivers that were mentioned; not all of these flow through the concession. Which ones flow through the concession and will be managed and monitored by PT MPG.</p> <p>2. How will the area that has erosion potential (approx. 300 ha) be managed by MPG?</p>	<p>1. Actually all the rivers that were mentioned do flow through PT MPG. It might only be a small section compared with the total length of the river. However, they all flow through PT MPG.</p> <p>2. The area that is at risk of erosion is currently forested. PT MPG will not open these areas.</p>
3.	Pak Prima	BKSDA SKW II (Central Kalimantan office for Conservation of Natural Resources)	If you look at the species list, orangutans are mentioned. Are there orangutans in this area.	1. The assessor explained that he actually wanted to ask BKSDA this question. The reason is that they may have seen an orangutan but they were not sure. There is a journal that maps OU as present in the area. However the assessors would like to know if BKSDA has indications of the presence of OU in this area.



No	Name	Position/ Organisation / Social Group	Main Concerns / Recommendations	Response
				<p>2. Pak Kades Sei Rahayu : last saw an OU in the 1986 in the area of DesaMakunjung. Pak KadesKaramuan last saw an OU in the 1970s</p> <p>3. Pak Prima : There have been no reports of orangutans in Barito Utara. Generally when orangutans are reported it is a result of human-wildlife conflict. There are such reports in Barito Selatan. Areas close to Barito Utara where orangutans have been sighted are LampeoKecamatanGunungPurei on the border with Kaltim, KabupatenKutai Barat. Animals which are still present in Barito Utara are gibbons, macaques, sun bears not really orangutans</p>
4	Ibu Heni	<i>Dinas Lingkungan Hidup</i>	We would like to know the final result of the study. What is the area that will be conserved and what is the area that will be developed.	The exact figures are not available yet. However the total area is approximately 2300 ha pf which about 1100 ha will be conserved and 1200 ha developed.
5.	Pak Suryadi	Pj Head of Sei Rahayu I Village	For the area which is shaded (he was referring to the map), this is the area that will be conserved. We agree if it is a river buffer (e.g. Sg Barioi), but if it is forest area, we don't think there is any forest there anymore. For hunting, it's just a hobby not as a key part of peoples' day to day requirements for food. Nor is there any forest that is suitable for harvesting	The area in Sei Rahayu which will become conservation area are the buffers of the Barioi River but there are also areas of forest that are considered to be HCS, however the final result has not been decided as they are available for the give and take process.

No	Name	Position/ Organisation / Social Group	Main Concerns / Recommendations	Response
			timber. All the area is owned by individuals. As a result we expect the whole area should be part of the KKPA and can be cleared.	
6.	Bpk Tiga Saputra	Head of Beringin Raya Village	We hope that there is no conservation area in Beringin Raya. There is no forest in our area. All the area is owned by the community and will be either managed or sold to the company.	DesaBeringin Raya is not a forested area in general. However DesaBeringin Raya is taking part in the KKPA and as previously explained there are forested areas in that. However the conservation area is not finalised, but prospective conservation areas are mapped for your perusal.
7.	Bapak Sophan Sopian	PJ Head of Rimba Sari Village	We very much support the establishment of the Program KKPA plasma and the oil palm plantation because it gives us the opportunity to sell land as well as improve the local economy.	As mentioned above regarding conservation areas in the KKPA.
8.	Bapak Sudiono	PJ Head of Datai Nirui Village	The area of forest that is in the KKPA area is an area that is owned by the community (i.e. individuals). This area of forest is called " <i>hutanjunjungan</i> " – this is area which is owned by the community that have gardens nearby. People who own the gardens claim the forest area as the border of their garden and is included in land which they are considered the rightful owner. Based on the history of management, these areas were considered as available for land clearing.	These areas which are forested based on HCV or HCS cannot be cleared by PT MPG. If the community want to open the areas themselves, it is their right as they are the owners. However, PT MPG will not be able to purchase the FFB off areas that were cleared. Similarly, with respect to the KKPA, the community must accept the company's plan for the <i>whole</i> area. The community cannot excise the conservation areas from the KKPA and later turn those areas into gardens.  As previously explained the team has still got

No	Name	Position/ Organisation / Social Group	Main Concerns / Recommendations	Response
				some verification to do so this map is near final, but not absolutely final.
9.	Pak Sishan Kamrata	Head of Karamuan Village	The KKPA in DesaKaramuan, is in a condition which the community don't consider to be forest. Rather it is ex-clearfell and is now mixed rubber.	This is an area that the team will be visiting tomorrow and they will confirm your statement.
10	Pak Suryadi	PJ Head of Sei Rahayu I Village	The area of the KKPA for Sei Rahayu and around it is APL <sup>6</sup> the remaining areas has the status of Production Forest.	Noted
11	Pak Sophan Sopian	PJ Head of Rimba Sari Village	In our area there are no animals such as birds which only come in certain seasons.	Noted and this fits with our observations also.

<sup>6</sup> Areal Penggunaan Lain – area that can be used for agriculture based on the spatial plan.

### 3.2.9.2 Next Steep

Undertake a layered mapping approach in subsequent years to map out the areas which the community uses for agriculture.

This integrated assessment report provides PT MPG with the data needed to compile an Integrated Conservation and Land Use Plan (ICLUP), a requirement of the High Carbon Stock Approach. Module 3 of HCSA (2017) provides clear guidance as to what is required,

The agreed ICLUP builds upon the approved integrated HCSA/HCV report (i.e. this document) and needs to include the following:

- Final maps of conservation management areas (CMA's). These areas have been identified as either HCVMA or HCSA Forest.
- Key operational features such as;
  - Location of planting blocks
  - Location of proposed plantation road network

The ICLUP is a mutually agreed, social contract between PT MPG and the affected communities, and will need to be agreed upon at the site level. The following is taken from HCSA (2017) and outlines what needs to be defined in the community agreement;

- Final maps with land intended for lease (map and hectares)
- Local communities access rights to the development and conservation areas
- Benefit sharing, financial and legal arrangements
- Benefits, incentives or compensation (if any) to be transferred to the community by the company – in cash or kind – and a defining mechanism for the delivery of these
- The management and monitoring of the development and conservation areas by PTMPG and/or the community
- Rules and guidelines pertaining to any use of conservation areas (particularly extractive uses) and implications if community use is detrimental to values being maintained, enhanced or restored in the conservation areas
- A clause that clearly outlines the consequences if any party (PT MPG or community) breaches the terms and conditions of the social contract.

Further information regarding the ICLUP can be found in Module 3 of HCSA (2017).

### 3.3 Soil and Topography Survey

#### 3.3.1 Land System

Based on Integrated HCV HCS Assessment PT MPG, a landform refers to a ‘recurring pattern of topography within the landscape’, with specific landforms often associated with specific vegetation associations and/or communities.

The study area is in the “Interior Plains and Hills” biogeographic region. (RePPProT, 1986) describes the chief limitations to development in the study area as being steep slopes, low soil fertility and highly scattered land suitable for arable crops.

Table 38. Landforms present in the assessment AOI, (RePPProT, 1986)

Landform name	Description
<b>Lawanguwang</b>	This is low undulating land; based on suitability studies, this land system was deemed to be suitable for wetland rice production as well as palawija crops (primarily because of the terrain). Though it has low availability of major nutrients in the subsoil and the topsoil is only marginally better. Farmers in this area obtained low rice yields of 0.7 -1.5 t/ha which in poorer years was deemed too low to support a family of 4 – 7 people.
<b>Lohai</b>	This is a land system of the hills, where folded shales, sandstones and conglomerates are the dominant rock types. Lohai has steep sided parallel ridges.
<b>Maput</b>	This is a land system of the hills, where folded shales, sandstones and conglomerates are the dominant rock types. Typically, it has steep slopes and alluvial deposition is minimal.
<b>Teweh</b>	This is a land system of hilly plains developed from indurated sandstone and conglomerate beds. Teweh has semi-symmetric, moderately steep slopes with moderately long but narrow crest lines. They are highly dissected, containing small valleys and has only small areas with gentle slopes

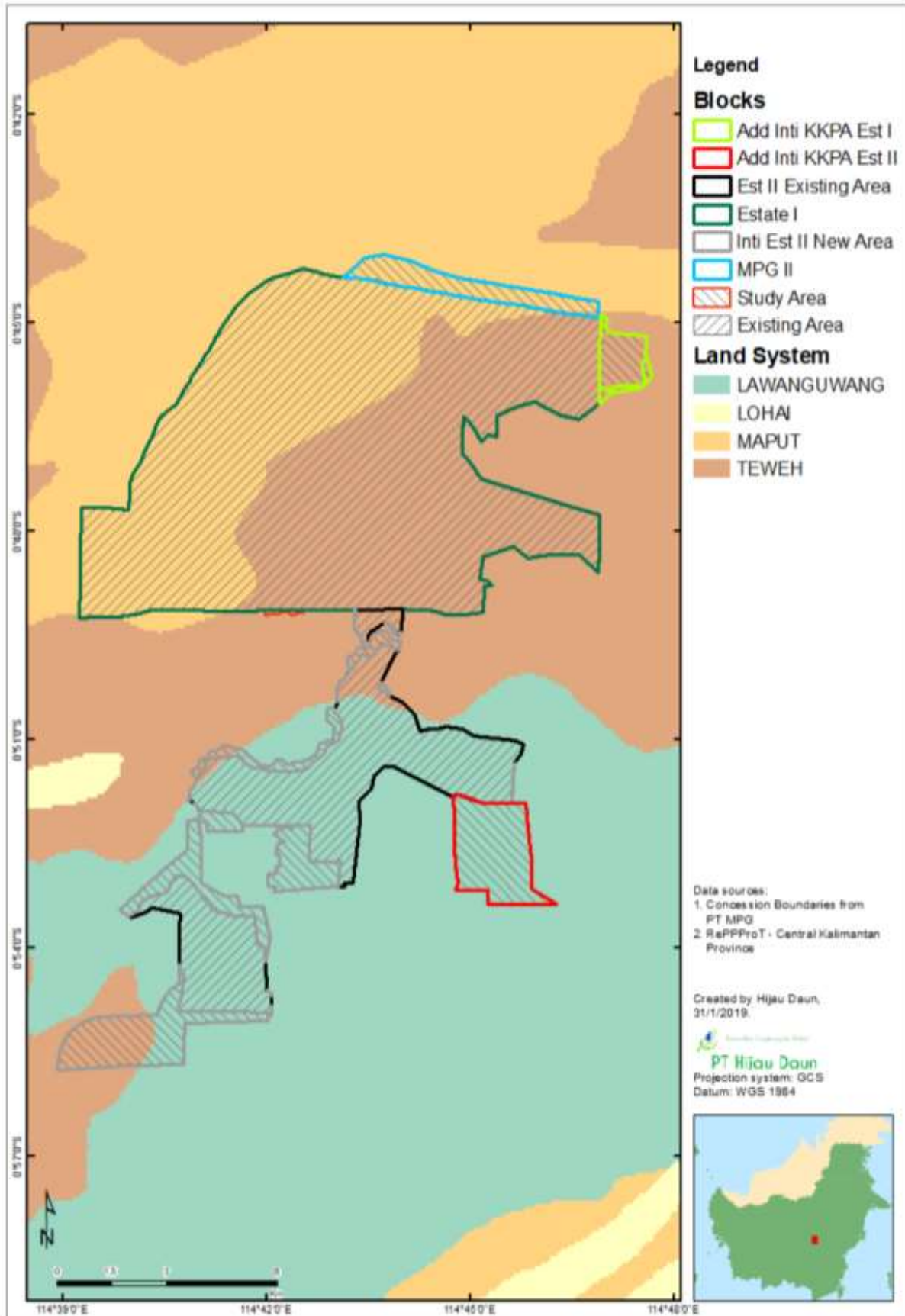


Figure 22. Land System of the proposed development area

Geologically the area is part of the Barito Basin. In the assessment area there are two distinct soil types. Firstly in the hills in the north where soils are :

- Predominantly well drained.
- Surface organic horizons are thin.
- Leached of soluble bases and reserves of major nutrients are low.

Secondly in the south where limestone and calcareous sediments are most common; these are much more fertile soils with higher cation exchange capacities. Nevertheless, the soil profiles tend to be shallow.

### 3.3.2 Soil Type

Based on semi detail survey by PT MPG's internal surveyor, Soil Series were found on PT. MultipersadaGatramegah comprised 7 soil series and calssified as mineral soil. It is in line with soil type provided by the Pusat Penelitian Tanah dan Agroklimat (a government department) which shows that the assessment area is 100% mineral soil. The soil map from the soil survey is used to determine the type of land in the concession.

Each series of the land as follows:

- Minerals deep effective < 50 cm  
Penreh (PRH) and Tambang Baru (TBB).
- Minerals deep effective 50-100 cm  
Makunjung (MKJ) and Tosak (TSK)
- Minerals deep effective > 100 cm  
Berlian Jaya (BJA), Karamuan (KMN) and Nihan (NHN).

From the results of the study it was known that there was no peatland, no sandy land and no acid sulphate soil at the proposed development areas (**Figure 23**).

### 3.3.3 Topography and Elevation

Refer to integrated HCV HCS Report, slope analysis was performed using the Synthetic Aperture Radar (SAR) derived ALOS PALSAR as an inputm then using the 'slope' (spatial analyst) tool within ArcGIS to convert elevation values to slope values. As refer to Semi Detail Soil Survey was done based on the SRTM Digital Elevation Model (DEM) Image with a spatial resolution of 90 meters, the topography of the proposed development areas are between 10 - 150 masl (**Figure 24**). While the slope class found in the proposed development areas are generally only a slope class flat until hilly. The map of the slope class in the proposed development areas are shown in **Figure 25**.

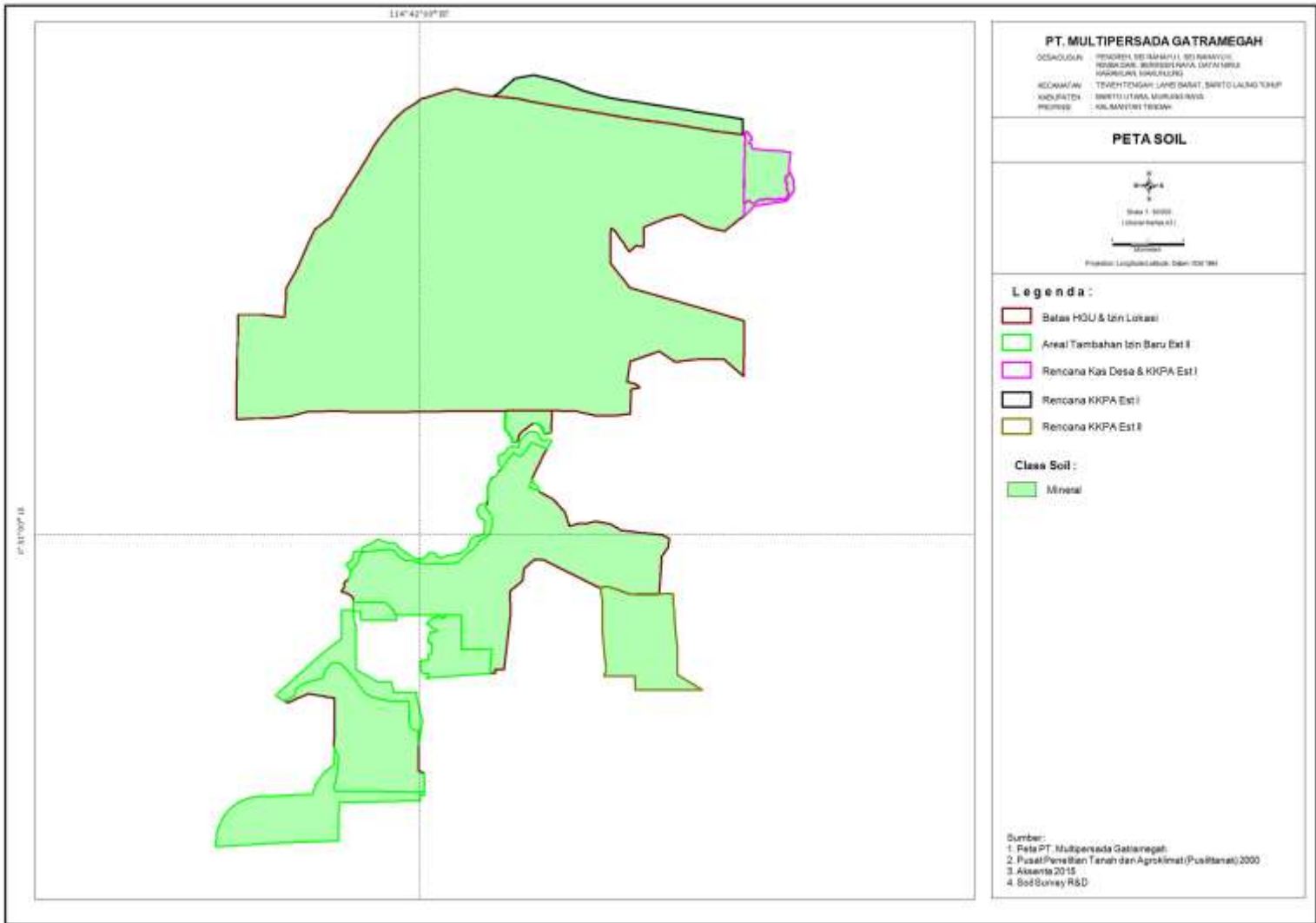


Figure 23. Soil data provided by the Pusat Penelitian Tanah dan Agroklimat (a government department). Which shows that the assessment area is 100% mineral soils.



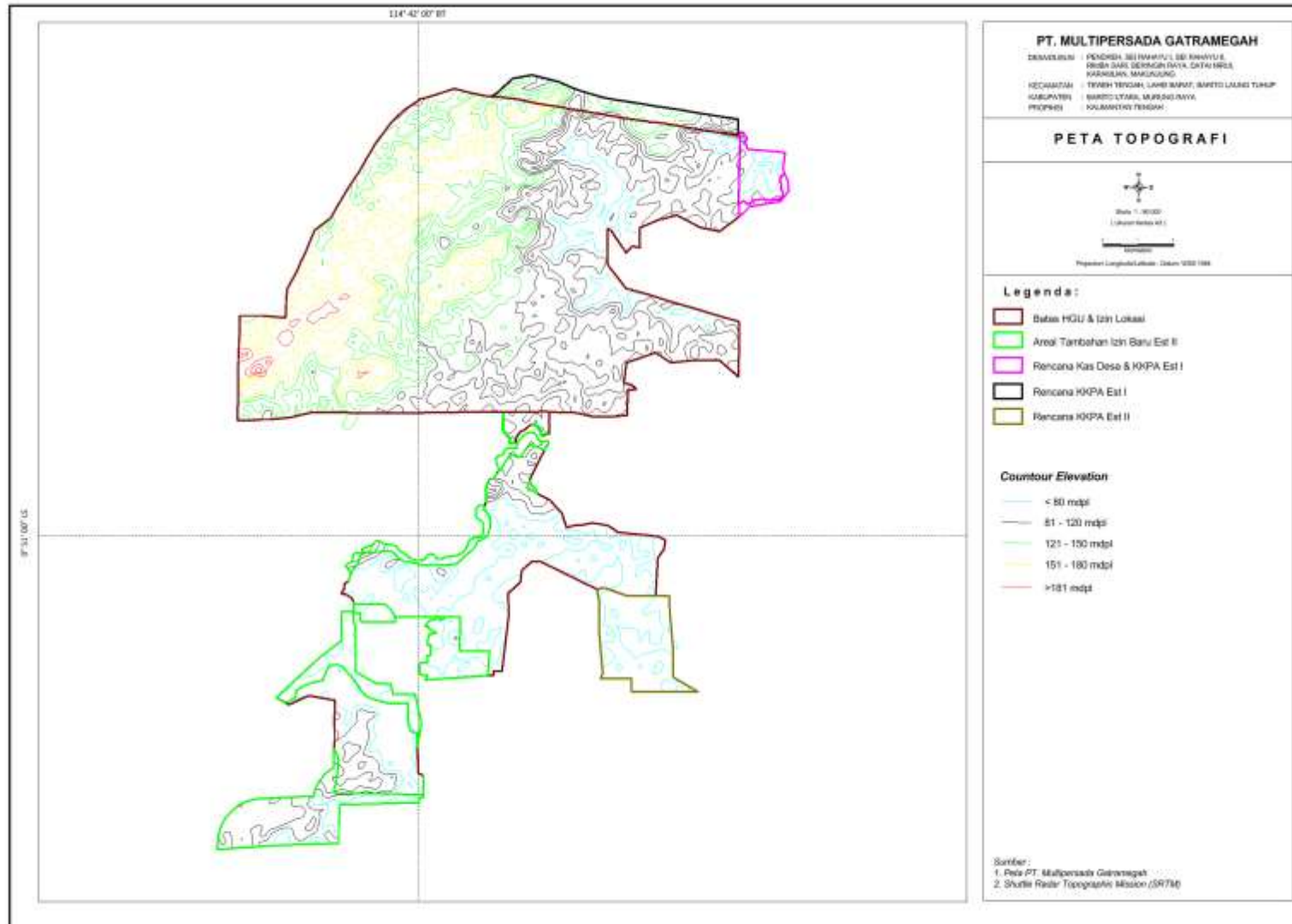


Figure 24. Topography map of the proposed development areas

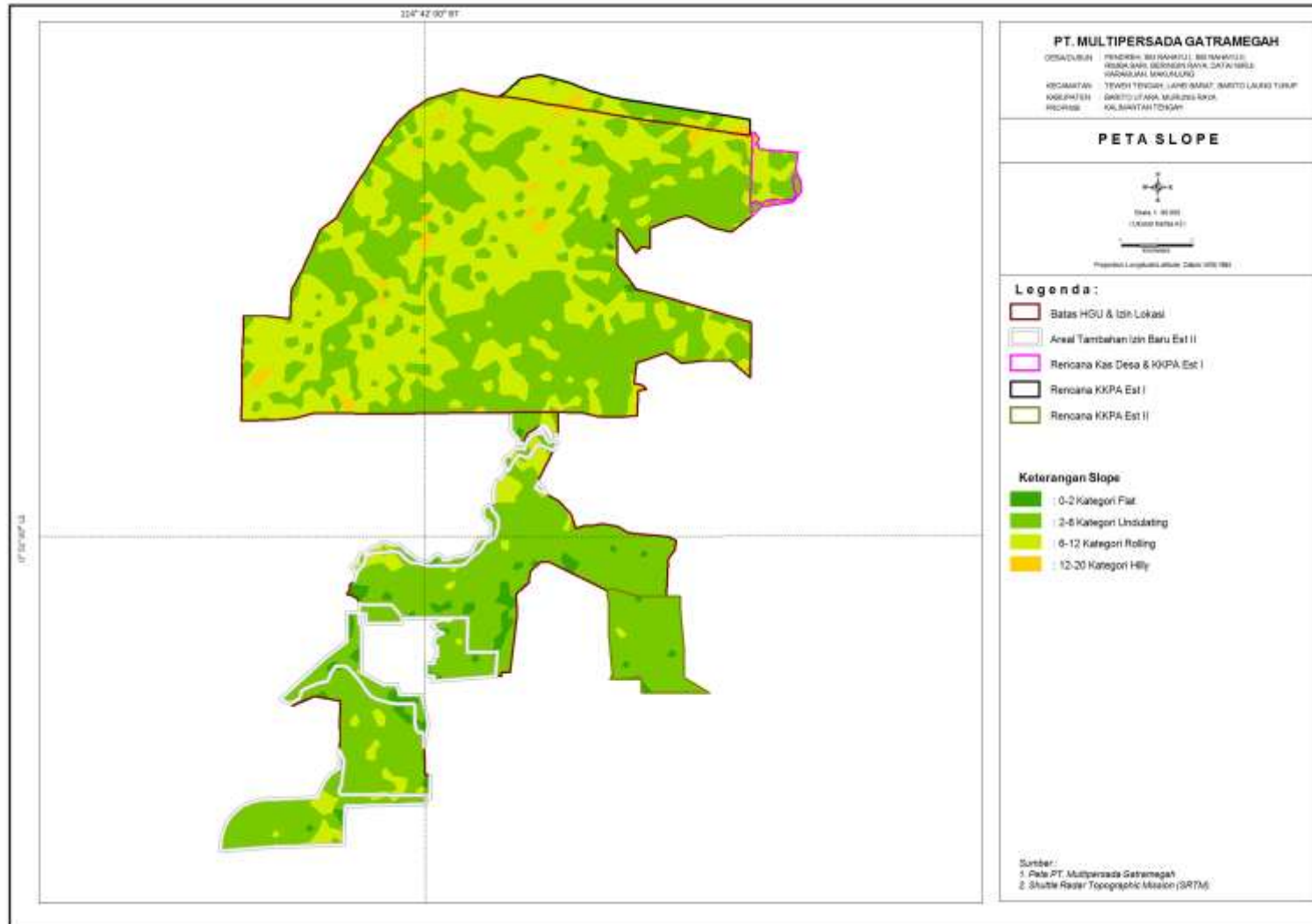


Figure 25. Slope Level in the proposed development areas

### 3.4 GHG Assessment

Carbon stock value of the vegetation are taken from PT. Multipersada Gatramegah Integrated HCV/HCSA report that were conducted in 2018, the carbon stock are identified 7 classes of land cover in the assessment area. **Table 39** and **Figure 26** below presents biomass carbon contents in each land cover class in PT MPG area.

Table 39. Final Carbon Stock Values

Vegetation strata	Above ground biomass (AGB) carbon stock (tC/ha)	BGB:AGB ratio	Below ground biomass (BGB) carbon stock (tC/ha)	Final Carbon Stock Value (tC/ha)
HDF	624.9	0.18	112.5	737.4
MDF & LDF	127.3		22.9	150.2
Jungle Rubber	68.3		12.3	80.6
YRF	39.7		7.1	46.8
Non-HCS*	38.2		6.9	45.1
Scrub	7.8		1.4	9.2
Oil Palm	NA		NA	63.83

*\*Non-HCS areas are collective of agriculture, monoculture rubber, oil palm, open land, infrastructure, settlement and infrastructure areas*

Two land use scenarios are developed. Their potential emissions are estimated using the New Development GHG Calculator released in August 2016. The two scenarios (permutations) considered are as follow:

Scenario 1: Conversion of all areas outside conservation areas (HCV and HCS areas)

Scenario 2: Conversion of all areas outside conservation areas (HCV and HCS areas) and non-HCS forested areas

Musim Mas group has committed to equip all of its mills with methane capture so in all of the scenarios, POME will be treated in a methane capture mill. The potential GHG emissions or sequestrations from the scenarios are calculated using New Development GHG Calculator simplified PalmGHG excel spreadsheet (August 2016).

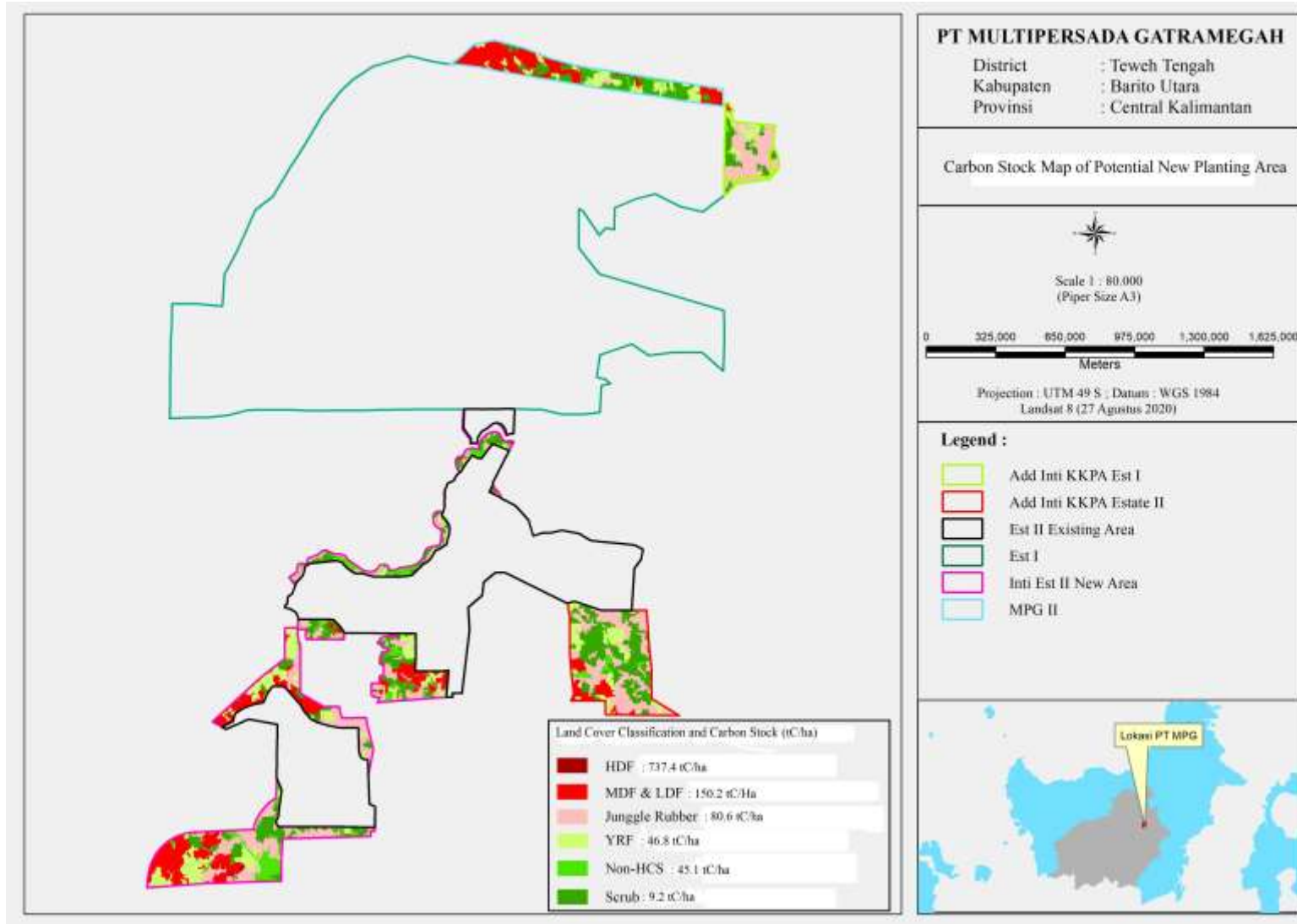


Figure 26. Land Cover Classification and carbon stock of PT MPG according to GHG Assessment Report

The New development GHG Calculator estimates emissions from the production of oil palm, and from the change of land use. The net GHG emissions are over the full crop cycle (the default value is 25 years). Projected fertilizer use and fuel use are added in to simulate future operational emission. The projected fertilizer and fuel use are given in **Table 40** below.

Table 40. Projected Fertilizer and Fuel Use for Estate and Mill

Category	Value	Unit
<b>General info</b>		
FFB Yield	25	tFFB/ha.yr
OER	25	%
KER	5	%
<b>Estate fuel</b>		
Diesel consumption	1.5	l/ha
PME consumption	20	l/ha
Gasoline consumption	8	l/ha
<b>Estate fertilizer</b>		
Urea consumption	400	kg/ha
MOP consumption	500	kg/ha
RP consumption	200	kg/ha
Kieserite consumption	160	kg/ha
Dolomite consumption	40	kg/ha
<b>Mill fuel</b>		
Diesel consumption	0.1	l/tFFB processed

The emissions are presented as t CO<sub>2</sub> equivalents (CO<sub>2</sub>e) per unit of product: i.e. per tonne of Crude Palm Oil (CPO) or per tonne of Crude Palm Kernel Oil (CPKO). The boundary of the analysis is from the estates up to the mill.

The average carbon stock value for each land cover strata is taken from the result of high carbon stock assessment conducted by PT HIJAU DAUN in 2018. The HCS assessment did not measure the average carbon stock for cultivated land and oil palm, so the default value from RSPO GHG Assessment Procedure for New Development was used.

The land cover analysis was conducted using the Sentinel-2 and Landsat-8 dated 1<sup>st</sup> June – 31<sup>st</sup> December 2018. The area of interest for the GHG calculation cover an area of 2,305.22 Ha.

Scenario 1: Conversion of all areas outside conservation areas (HCV and HCS areas)

In this scenario the land area is 1,372.53 Ha with the following land covers and carbon stock:

Table 41. Vegetation carbon stock change for scenario 1

Land Cover	Total Area (Ha)		Carbon Stock/ ha (tC/ Ha)	Total Carbon Stock	
	Before Conversion	After Conversion		Before Conversion	After Conversion
Jungle Rubber	518.28	0	80.6	41,773.37	0
YRF	38.25	0	46.8	1,790.10	0
Non-HCS	340.95	0	45.1	15,376.85	0
Scrub	475.05	0	9.2	4,370.46	0
Oil palm	0	1,372.53	63.83	0	87,608.59
<b>Total</b>				<b>63,310.77</b>	<b>87,608.59</b>
<b>C Stock/Ha (tC/ha)</b>				<b>46.13</b>	<b>63.83</b>

Scenario 2: Conversion of all areas outside conservation areas (HCV and HCS areas) and non-HCS forested areas

In this scenario the land area is about 1,334.28Ha with the following land covers and carbon stock:

Table 42. Vegetation carbon stock change for scenario 2

Land Cover	Total Area (Ha)		Carbon Stock/ ha (Ton C/ Ha)	Total Carbon Stock	
	Before Conversion	After Conversion		Before Conversion	After Conversion
Jungle Rubber	518.28	0	80.6	41,773.37	0
Non-HCS	340.95	0	45.1	15,376.85	0
Scrub	475.05	0	9.2	4,370.46	0
Oil palm	0	1,334.28	63.83	0	85,167.09
<b>Total</b>				<b>61,520.67</b>	<b>85,167.09</b>
<b>C Stock/Ha (tC/ha)</b>				<b>46.11</b>	<b>63.83</b>

Potential GHG emission calculations from each scenario are conducted with the simplified PalmGHG excel spreadsheet using operational assumptions from **Table 43**.

Table 43. Potential GHG Emissions for Each Scenario

No	Description	Scenario 1		Scenario 2	
		tCO <sub>2</sub> e	tCO <sub>2</sub> e/ tCPO	tCO <sub>2</sub> e	tCO <sub>2</sub> e/ tCPO
<b>Estate emission</b>					
1	Land conversion	9,285.58	0.95	9,023.03	0.95
2	Crop sequestration	-12,179.39	-1.25	-11,839.97	-1.25
3	Fertiliser (mineral) manufacture transport	1,629.21	0.17	1,583.81	0.17
4	N <sub>2</sub> O emission	1,549.57	0.16	1,506.39	0.16
5	Fuel consumption	34.71	0.00	33.74	0.00
6	Peat oxidation	0.00	0.00	0.00	0.00
7	Sequestration Conservation areas	0.00	0.00	0.00	0.00
<b>Mill emission</b>					
8	POME	663.04	0.07	644.56	0.07
9	Diesel fuel	10.15	0.00	9.86	0.00
10	Imported electricity	0.00	0.00	0.00	0.00
11	Mill electricity credit	0.00	0.00	0.00	0.00
12	POME electricity credit	0.00	0.00	0.00	0.00
13	Shell credit	0.00	0.00	0.00	0.00
14	EFB power credit	0.00	0.00	0.00	0.00
<b>TOTAL</b>		<b>673.18</b>	<b>0.10</b>	<b>654.42</b>	<b>0.10</b>

Potential GHG emissions from the two scenarios as presented in **Figure 27** are as follows:

- Scenario 1 resulted in potential GHG emission of 0.10 tCO<sub>2</sub>e/tCPO
- Scenario 2 resulted in potential GHG emission of 0.10 tCO<sub>2</sub>e/tCPO

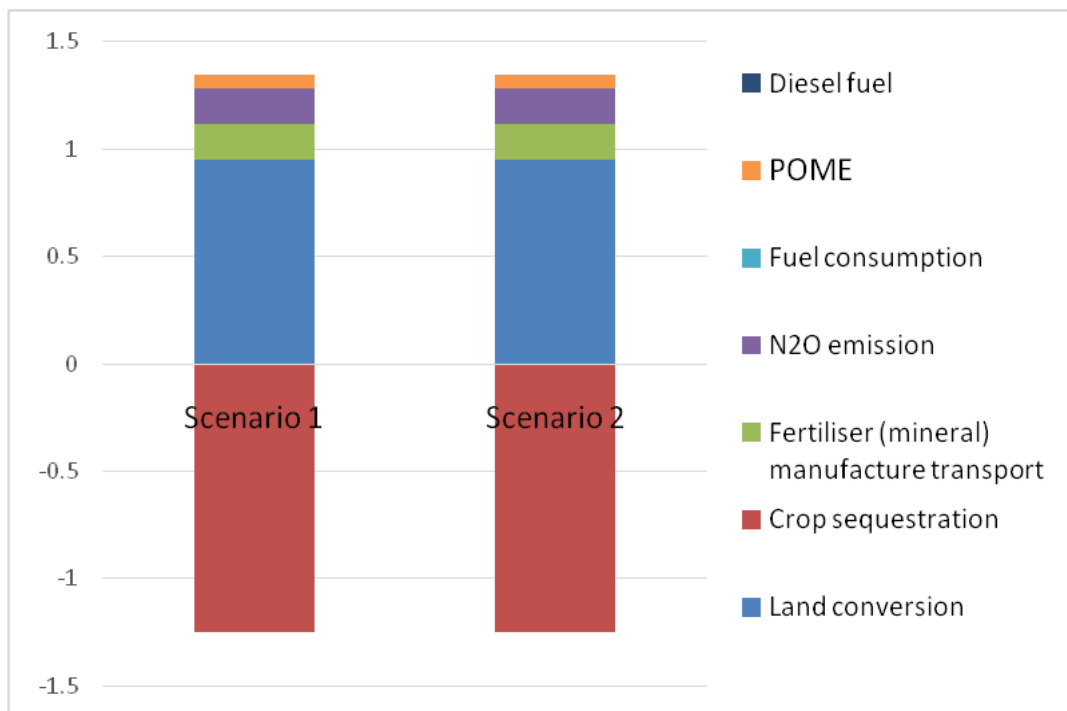


Figure 27. Breakdown of emission from the two scenarios

Potential GHG emissions from both scenarios are net positive and relatively similar. Forested areas that deemed not viable according to HCSA patch analysis is only a small part compared to the total develop area, thus the impact to GHG emission is negligible.

The scenario chosen for the development plan is scenario 1. Scenario 1 is selected because it provides the best balance between conservation and development. Scenario 1 confines development to areas outside conservation and forested areas. The conversion of these patches provide tangible economic benefit to the company with minimum environmental impact.

There are 932.69 ha of conservation area, which consists of HCS and HCV areas. All of them will be set aside and no planting will be done on them. Some non-HCS forested areas that is deemed not viable according to HCSA patch analysis are excluded from the conservation areas. The Potential Oil Palm Expansion Area and the areas to be avoided (conservation areas) for new planting within The Assessment Area and its Current Land Cover provided on Figure 28.



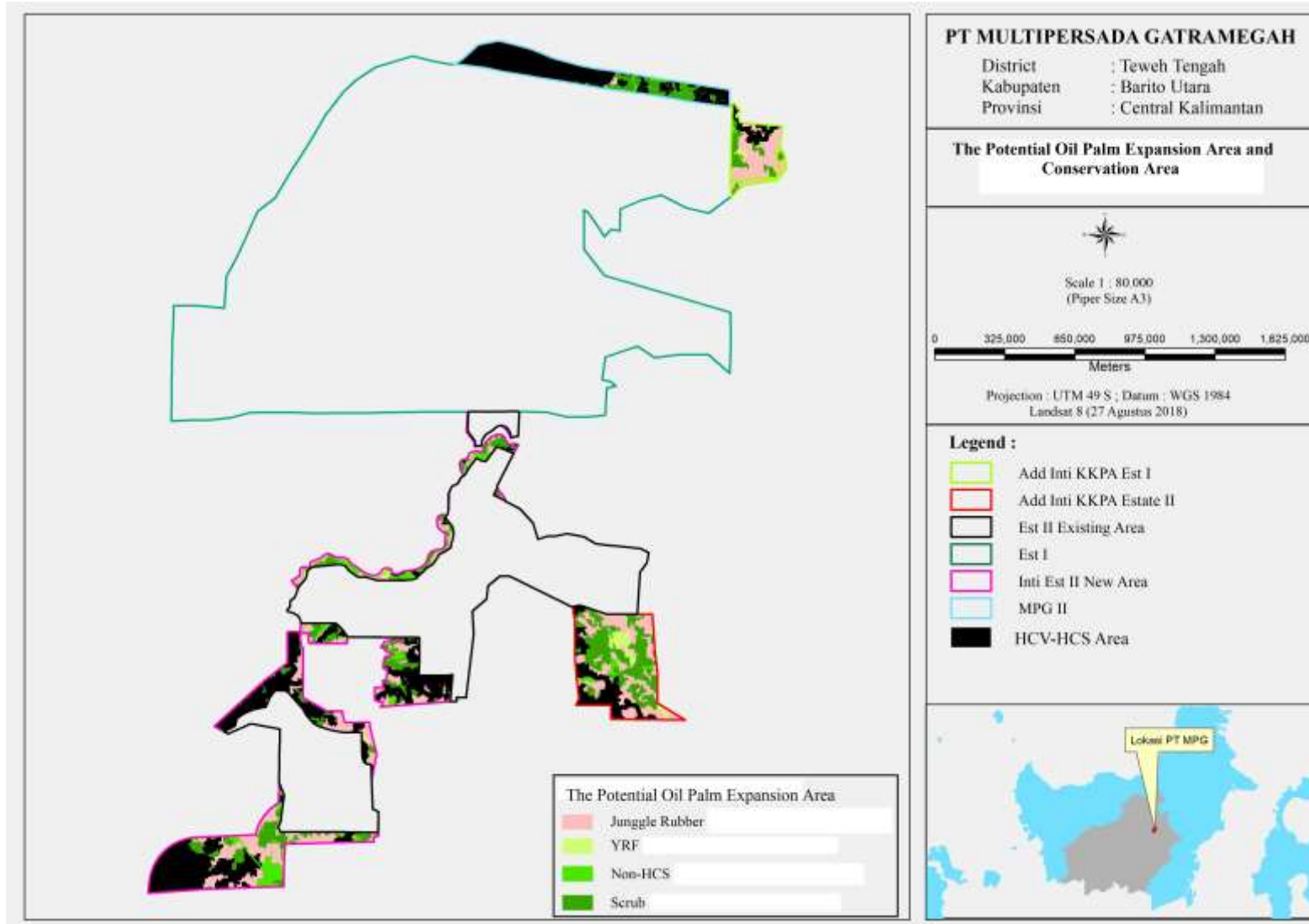


Figure 28. The Potential Oil Palm Expansion Area within The Assessment Area and its Current Land Cover

### 3.5 LUCA Assessment

Classification of land cover is an effort to group various types of land cover or land use into a similarity according to a particular system. Visual land cover classification is an activity of image identification through the ability of interpreters assisted with elements of image interpretation to recognize an object. The conclusion of the object or condition of an area depicted in the image is used more than one element, each of which leads to a conclusion of land cover.

Jaya (2010) explains that visual interpretation activities have basic diagnostic elements of interpretation that include tones or colors, textures, shapes, patterns, sizes, shadows, locations and associations. The hue is the first basic element that can be recognized from an image, after the same color or hue is grouped and a line has been draw to separate it from other different hues or colors, then the shape, texture, pattern, size and shadow can be recognized. In addition, image interpretation is also matched with field observation data.

Based on observation with 50 points obtained 5 land cover. The land cover comprised secondary forest (YRF, LDF, MDF, dan HDF), Mix Garden (Mix Rubber), Agriculture Land (Oil Palm, Rubber, paddy land), open land, scrub and shrub (**Table 44**). From the total area of PT MPG was dominated by Mixed Garden that cover an area of 576.04 ha (25.0%) from total area of 2,305.22 ha.

Multi-temporal analysis of land cover was used to look at the dynamics of land cover that occurred in the proposed development areas from 2005, 2007, 2009, 2014 and the current field conditions in 2018 and 2020, as an additional, the in-house GIS Team of PT MPG has updated the land use change analysis for December 2020 for completeness (**Figure 29 - Figure 36Figure 35**). The results of the December 2020 Landsat image land cover analysis showed that the area of assessment was dominated by a mixture of secondary forest, mixed garden, scrub, cultivated land and open land. The secondary forest covered an area of 768.25 (33%). The mixed garden was 583.90 ha, Scrub 523.69 ha, cultivated land 218.40 ha and open land 210.98 ha. Detail the land covers change from 2005 —December 2020 is presented in the **Table 45**.

Table 44. Land cover of PT MPG 2020

No	Land Cover		Luas (Ha)								Grand Total (Ha)	%
			Est II	%	KKPA Estate II	%	MPG II	%	Penambahan Inti KKPA Est I	%		
1	Secondary Forest	High Density Forest	5.99	0.5%	-	0.0%	-	0.0%	-	0.0%	5.99	0.3%
2		Medium Density Forest	89.94	7.5%	16.43	3.1%	113.19	31.6%	1.26	0.6%	220.82	9.6%
3		Low Density Forest	156.38	13.0%	29.64	5.5%	53.20	14.9%	1.47	0.7%	240.69	10.4%
4		Young Regenerating Forest	183.65	15.3%	60.78	11.3%	61.96	17.3%	19.04	9.2%	325.42	14.1%
5	Mixed Garden	Mixed Rubber	274.52	22.8%	175.23	32.6%	0.97	0.3%	125.32	60.5%	576.04	25.0%
6	Agriculture Land	Agriculture	39.52	3.3%	7.83	1.5%	-	0.0%	-	0.0%	47.35	2.1%
7		Monoculture Rubber	83.71	7.0%	48.07	8.9%	5.25	1.5%	12.08	5.8%	149.12	6.5%
8		Oil Palm	15.50	1.3%	-	0.0%	3.22	0.9%	3.12	1.5%	21.84	0.9%
9	Open Land	Open Land	60.23	5.0%	7.30	1.4%	1.17	0.3%	1.40	0.7%	70.11	3.0%
10		Settlement	0.70	0.1%	-	0.0%	-	0.0%	-	0.0%	0.70	0.0%
11		Infrastruktur	71.21	5.9%	9.30	1.7%	25.08	7.0%	3.42	1.6%	109.01	4.7%
12	Shrub	Scrub	220.72	18.4%	183.28	34.1%	94.14	26.3%	39.99	19.3%	538.14	23.3%
<b>Total</b>			<b>1,202.08</b>	<b>100%</b>	<b>537.87</b>	<b>100%</b>	<b>358.17</b>	<b>100%</b>	<b>207.10</b>	<b>100%</b>	<b>2,305.22</b>	<b>100%</b>

Source: Result Analysis of Satellite Imagery 2018 and Field Survey by PT. Hijau Daun 2019

Table 45. Result of land cover analysis in 2005, 2007, 2009, 2010, 2014, 2018, and December 2020

Land cover	2005	2007	2009	2010	2014	2018	Feb 2020	Dec 2020
	(Ha)	(Ha)	(Ha)	(Ha)	(Ha)	(Ha)	(Ha)	(Ha)
Scrub	491.73 (21%)	500.29 (22%)	513.03 (22%)	502.55 (22%)	517.49 (22%)	538.15 (23%)	538.14 (23%)	523.69 (23%)
Secondary forest	848.89 (37%)	828.34 (36%)	823.49 (36%)	811.26 (35%)	826.96 (36%)	802.95 (35%)	792.91 (34%)	768.25 (33%)
Mixed garden	649.99 (28%)	654.82 (28%)	650.47 (28%)	650.94 (28%)	647.55 (28%)	588.03 (26%)	576.04 (25%)	583.90 (25%)
Open land	21.75 (1%)	108.63 (5%)	104.66 (5%)	147.96 (6%)	115.40 (5%)	162.69 (7%)	179.81 (8%)	210.98 (9%)
Cultivated Land	292.86 (13%)	213.13 (9%)	213.56 (9%)	192.52 (8%)	197.83 (9%)	213.41 (9%)	218.32 (9%)	218.40 (9%)
<b>Total</b>	<b>2,305.22</b>	<b>2,305.22</b>	<b>2,305.22</b>	<b>2,305.22</b>	<b>2,305.22</b>	<b>2,305.22</b>	<b>2,305.22</b>	<b>2,305.22</b>
<b>(Ha):</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>

Changes in land cover that occurred since 2005 to 2020 were due to land use activities by the local community for agricultural land and mixed garden land for their livelihoods. Land cover change in the secondary forest category was from an area of 848.89 Ha in 2005 to become 768.25 Ha in December 2020. The remaining secondary forest in PT MPG assessment were classified as conservation area either as HCV or HCS areas from the analysis of Integrated HCV HCS Assessment by ALS from PT Hijau Daun Consultant. The changes in landcover Open Land and Cultivated Land that occurred in the proposed development areas tended to occur due to land use activities in the form of land clearing by the local community (non commercial) both for agriculture and mixed garden land for their livelihoods.

There is no compensation and remediation liability according to the RSPO Remediation and Compensation Prosedure (RaCP) in PT MPG Assessment. No operational plantation activity was carried out while PT MPG was undergoing Integrated HCV HCS Assessment and completion of the NPP.

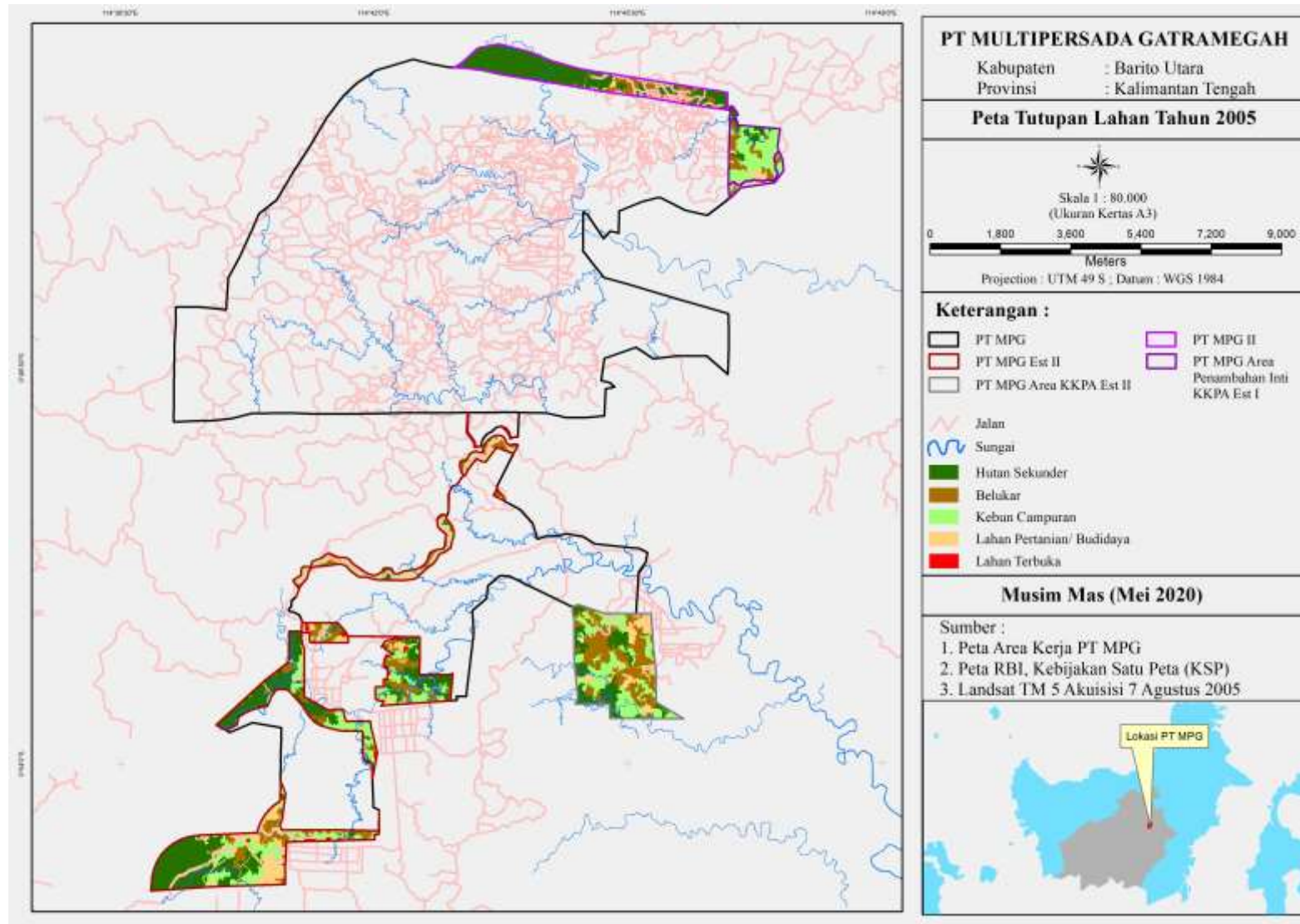


Figure 29. Landcover PT MPG Proposed Development Area 2005

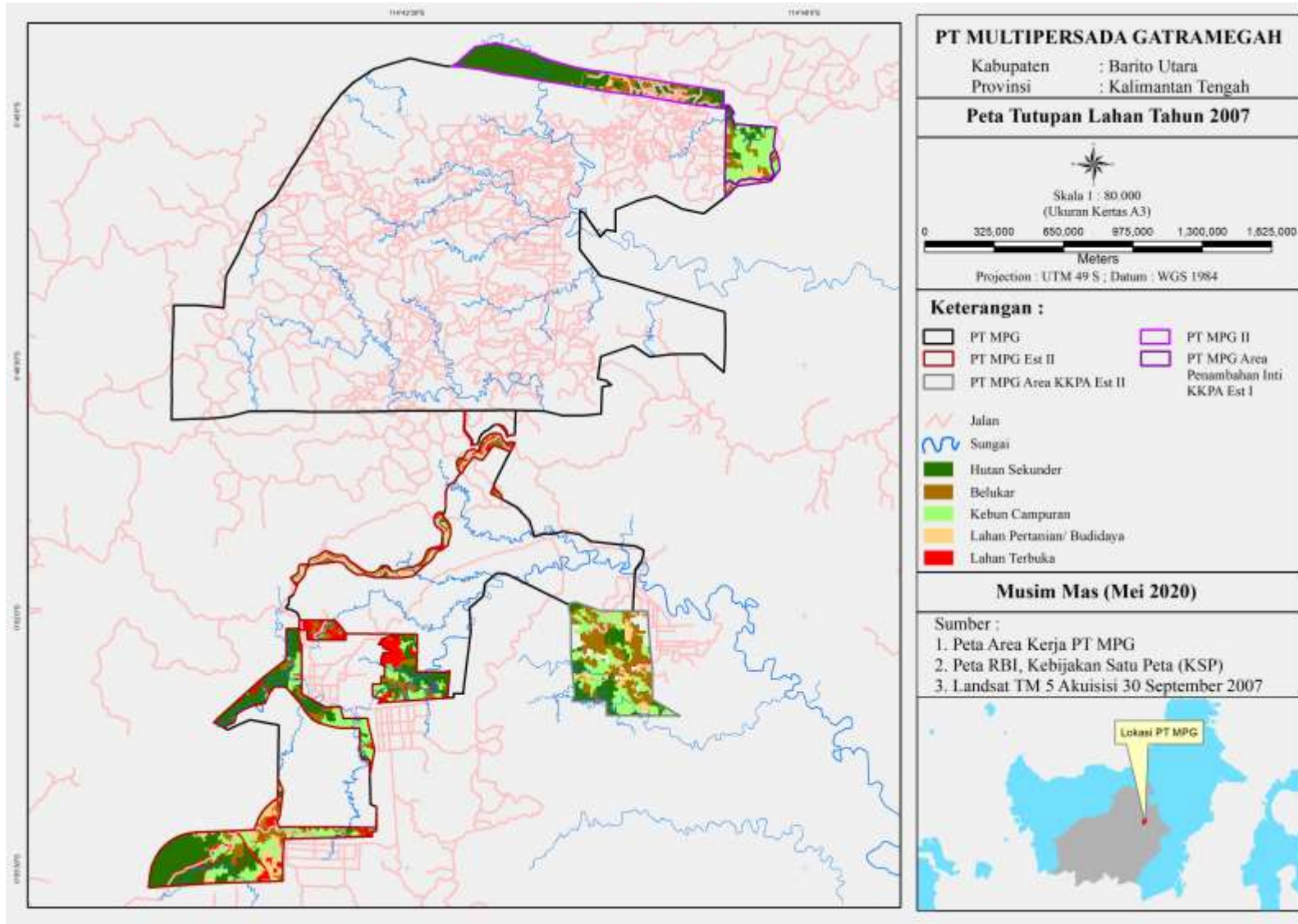


Figure 30. Landcover PT MPG Proposed Development Area 2007

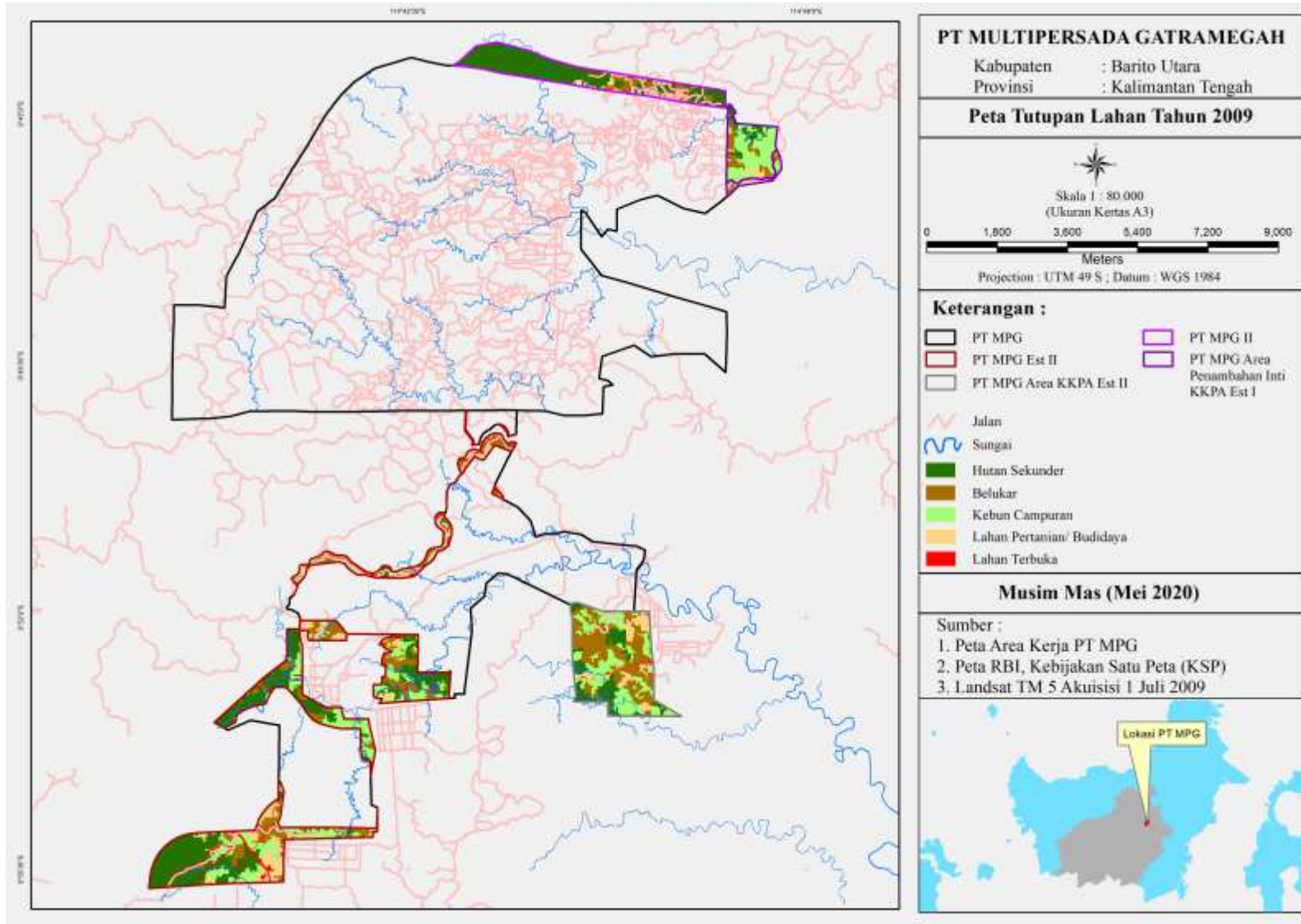


Figure 31. Landcover PT MPG Proposed Development Area 2009

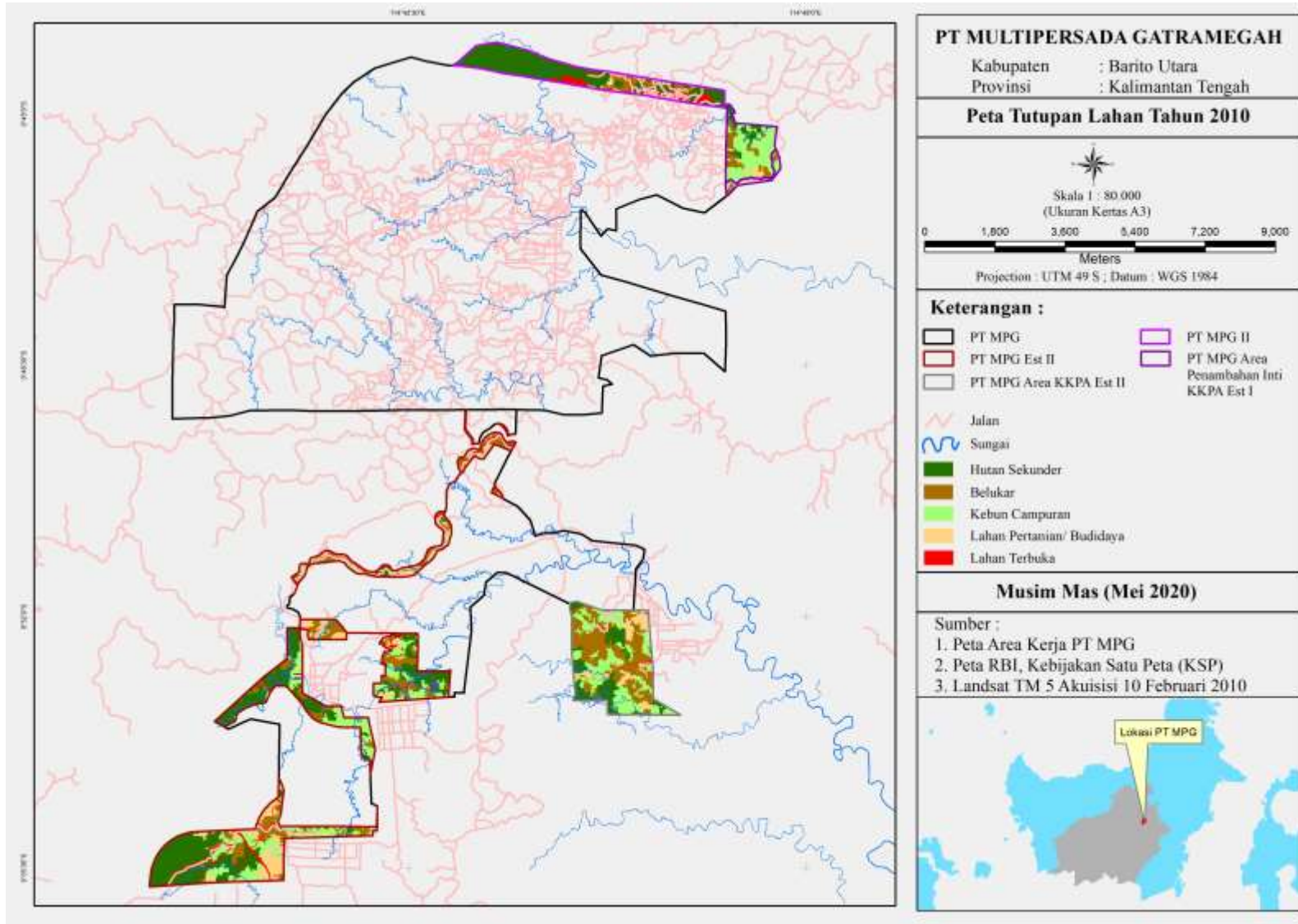


Figure 32. Landcover PT MPG Proposed Development Area 2010



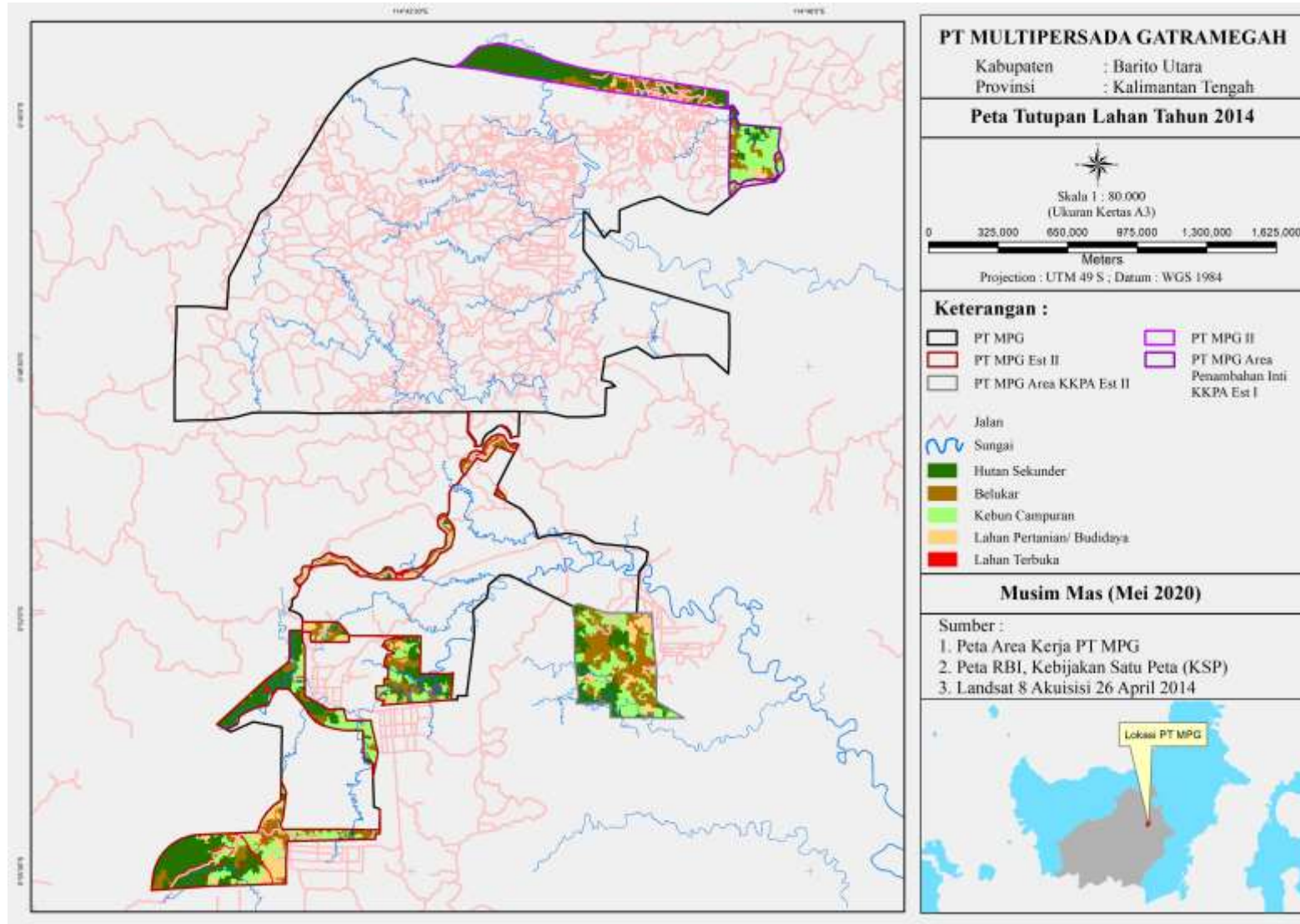


Figure 33.Landcover PT MPG Proposed Development Area 2014

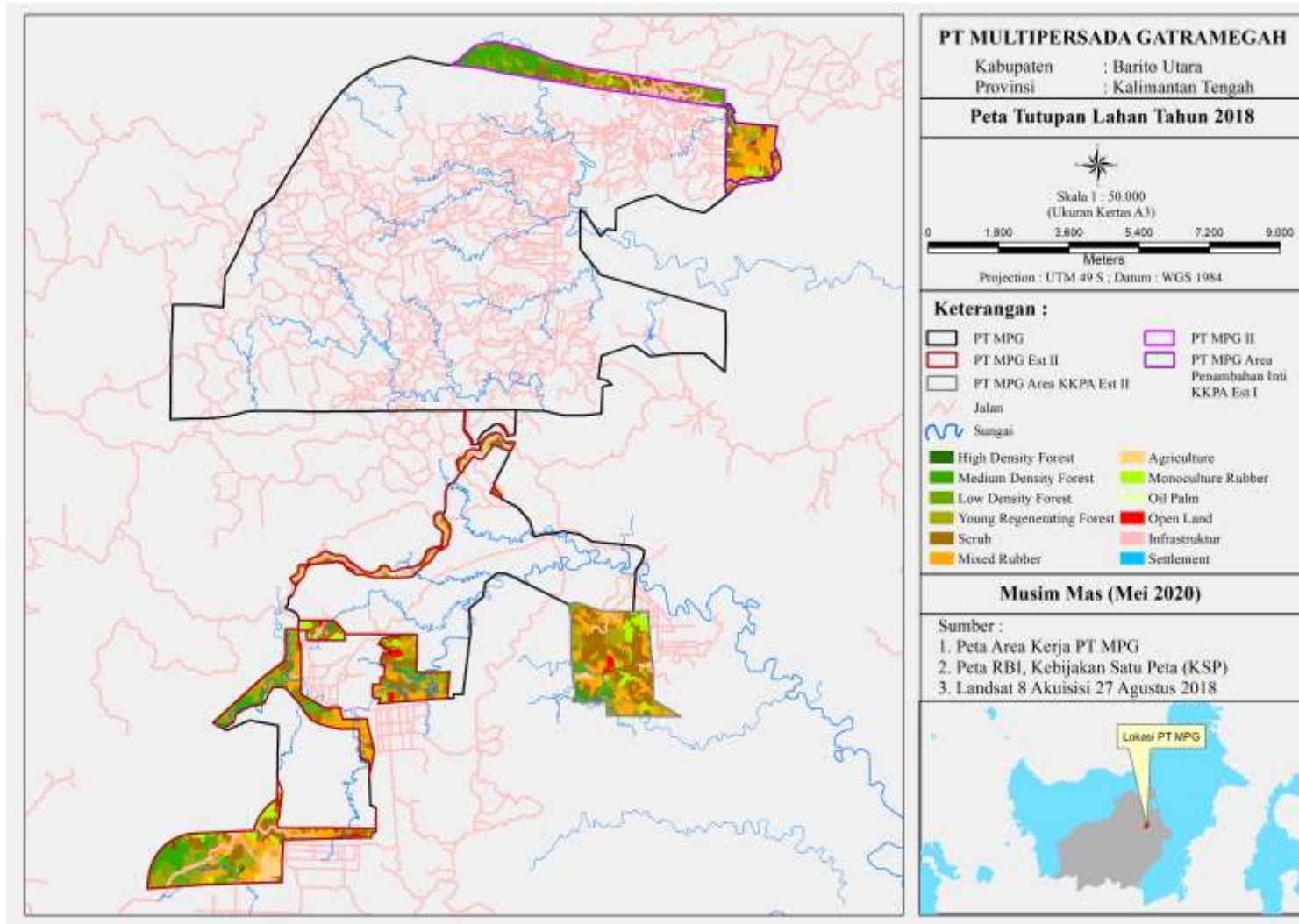


Figure 34. Landcover PT MPG Proposed Development Area 2018

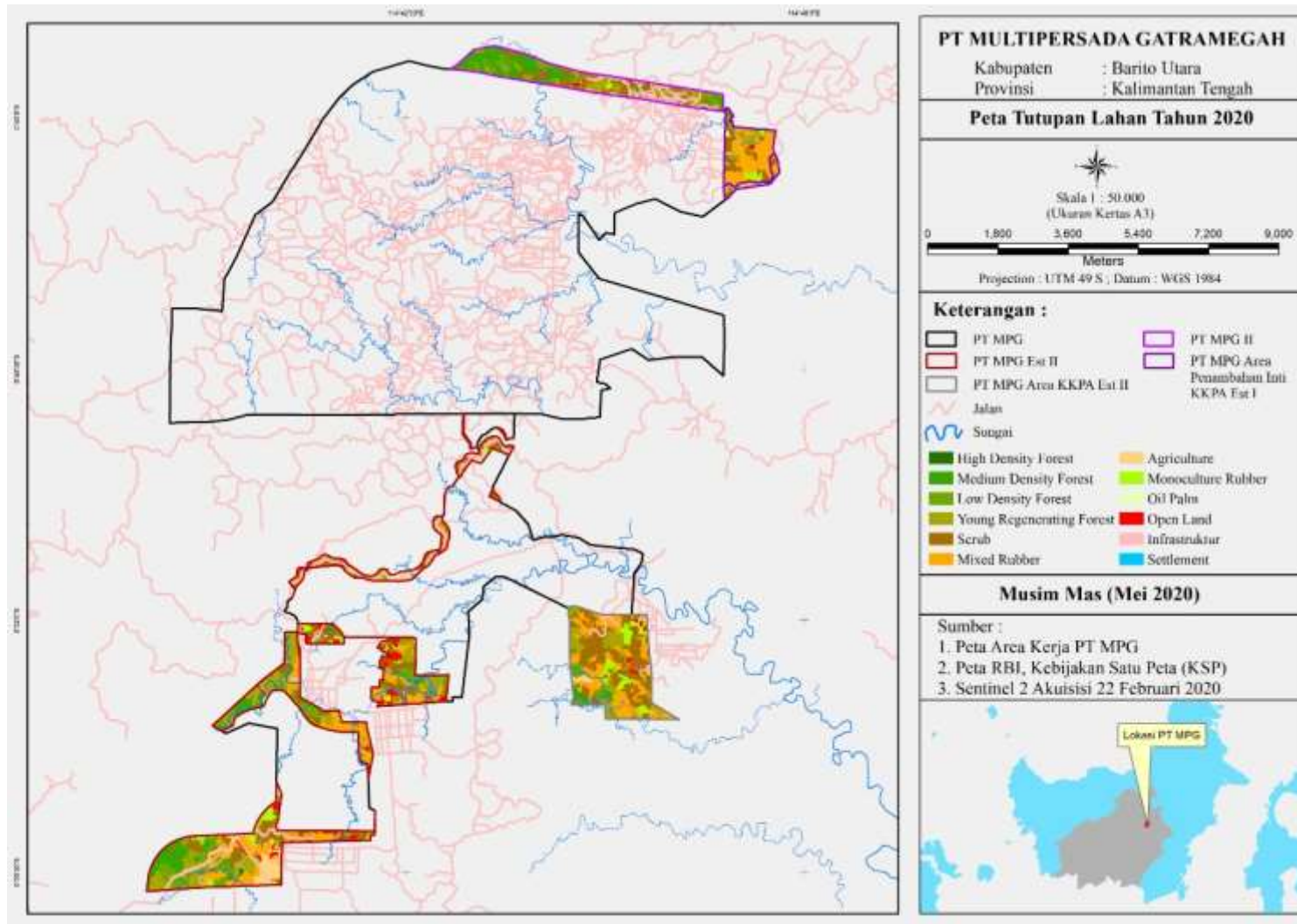


Figure 35. Landcover PT MPG Proposed Development Area February 2020

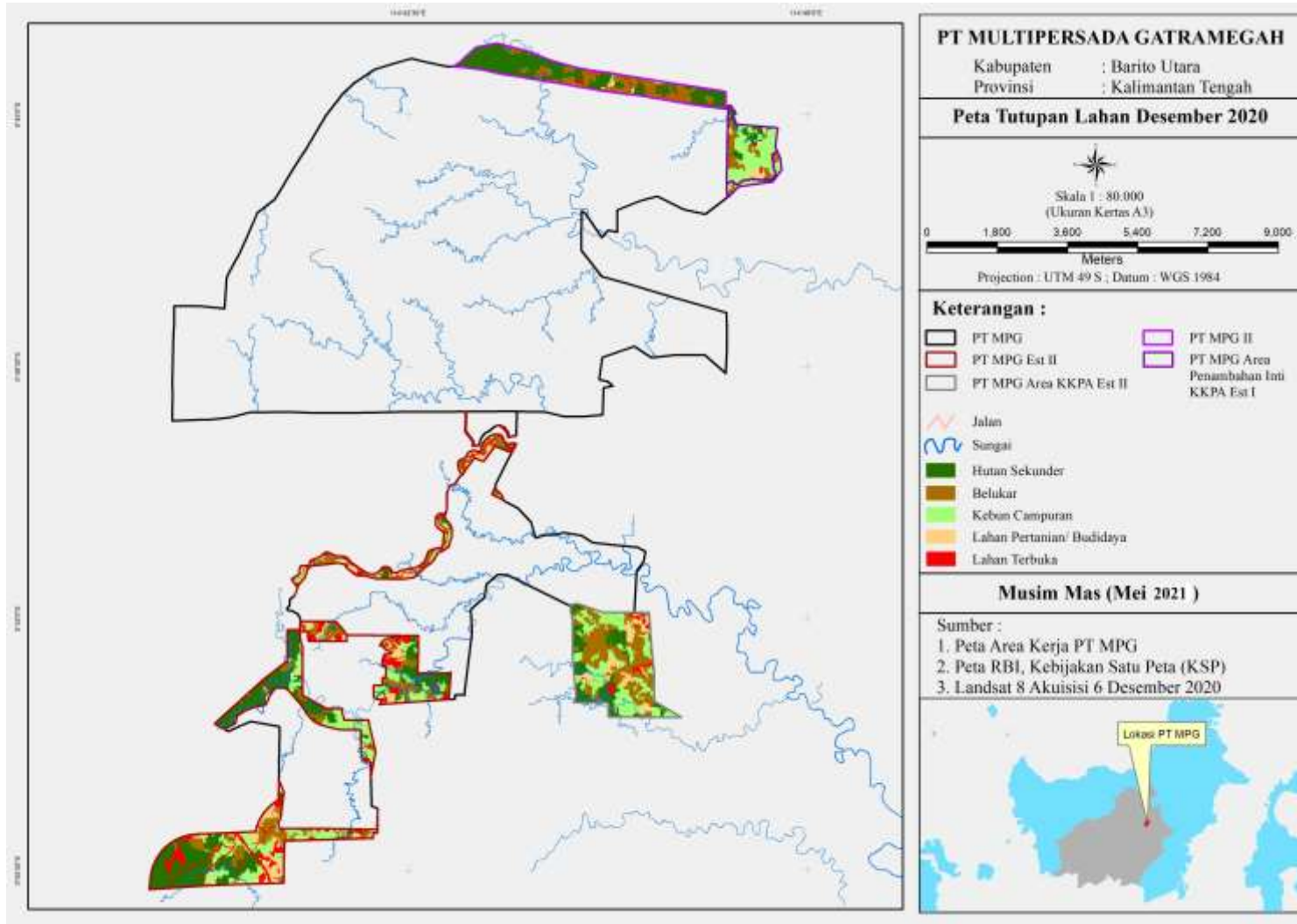


Figure 36. Landcover PT MPG Proposed Development Area December 2020

### 3.6 FPIC and Social Impact Assessment

From the results of discussions, interviews, observations and review of documents, the following conclusions can be made:

1. The social impacts that have been reported by the community regarding the existence of the company in general are positive impacts – this is based on consultations with each village.
2. PT MPG has demonstrated strong and consistent efforts to meet government and RSPO sustainable development requirements. Examples of how these have been fulfilled are: protecting rivers, managing waste properly, carrying out HCV and HCS assessments, not cutting down forests, not burning, paying attention to pollutant thresholds and reporting all activities and monitoring to the government. During scoping there were no negative reports about the environment.
3. PT MPG has fulfilled labour requirements in accordance with government regulations. The company must ensure that all outsourcing or contractors used must meet the required standards.
4. PT MPG has provided considerable opportunities for local people to work in the company, more than 65% of the workers are local residents.
5. PT MPG has committed to building a plasma plantation in accordance with government regulations.
6. Participatory Mapping
  - The participatory maps show the location of all the natural resources. Gardens and forest areas show up clearly in the image and the community have marked in areas where various natural resources are located. These annotations have been digitised so they can be referenced. The actual course of the rivers is sometimes hard to determine. A river mapping exercise is part of the recommendations of this SIA.
  - Legality – the spatial plans have been overlaid against the project area to ensure it meets legality requirements.
  - A priority of participatory mapping is to find out if there is public land or customary land<sup>7</sup> that is included in the area to be sold. If not, then the land transfer agreement should be done between the land owner and the company, with the assistance of the camat or village officer. There is no need for a village-wide agreement or deliberation regarding the release of personal land.
  - Another priority is if there are land boundary disputes, either between villages or between land owners. In the case of PT MPG, the reference documents should be the parent village map and the transmigration village map. These maps have been endorsed by government regulations and changes based on the wishes of the is a strong basis in administration.

#### 7. HCV

---

<sup>7</sup> E.g tanah desa, tanah ulayat, tanah adat

- According to the community they are quite familiar with the term HCV but they do not understand the benefits and objectives of HCV well.
  - It is necessary to conduct a more intense socialization of HCV, especially if the HCV area is in the community area.
  - If it is necessary, the HCV area should be compensated because the community cannot use these areas. In fact this is the PT MPG policy, that all land should be compensated both conservation areas and productive land.
8. HCS- The community does not understand HCS, it needs information and dissemination of information
  9. There are rivers that originate in PT MPG estates and / or pass through PT MPG estates. These need to be mapped and appropriate riparian buffers applied so that the rivers are not polluted. Buffers need to be compliant with RSPO requirements(Barclay et al., 2017) and Indonesian Government regulations(Peraturan Pemerintah Republik Indonesia 38/2011, 2011).
  10. There are villages around the company that is Hindu Kaharingan, so detailed consultation has been undertaken of important areas or sites that are protected by the community. However, these need to be mapped and the locations marked on all operational maps to ensure staff are aware of the sites' locations.
  11. A potential negative impact of the land development plan is land conflict. Villages of higher risk are Sei Rahayu 2 and Pendreh. This is because, in Sei Rahayu 2 and Pendreh, both villages have area which has no clear ownership. Some actors claim area belongs to them even though there is no titlenor can they prove it from their plantings of rubber.
  12. The potential negative social impact of forest clearing due to the development of plantation land, can be considered to be small because, the location of the forestsare far from villages and are difficult to reach. The exception would be if residents move villages or open new settlements. Generally, the land that will be developed is scrub (belukar) or former fields

There have been many studies of the social impacts of oil palm. The findings of these studies have influenced the P & C of ISPO, RSPO and POIG, which seek to address or minimise these impacts. The main negative impacts fall generally into the following categories:

1. Land acquisition by plantations and environmental damage  
Customary landholders have been squeezed out by the expansion of plantations. This has meant that land is no longer available for their own farms and access to forest products is no longer available. Pollution of rivers cannot be blamed solely on oil palm (mining is a significant factor also), but water now presents health risks. The cycle of drought and flood has been exacerbated and in general the land is more fire prone. These factors combine to impact on food security.

There is weak protection for customary land rights in Indonesia. This has made land conflicts between plantation corporations and local communities all too frequent and have been left simmering. These are likely to flare up as pressure on land availability increases.

2. Degradation of customary institutions:

Oil palm plantations caused the degradation of customary institutions where they employed customary leaders, who were compliant with the plantations wishes, to assist with land release. These customary leaders did not consult adequately with the landholders. Inevitably this resulted in a distrust in these customary institutions.

3. Deficiencies in smallholder schemes:

There have been many problems with tied smallholder schemes, mostly through a lack of transparency.

4. Employment:

Classic situations relating to employment with under-payment, lack of certainty of work are prevalent.

The literature also makes the point that disaggregation of outcomes is necessary. Whilst oil palm might raise the prosperity of society in general, there will be people that lose out. These people no longer have easy access to natural resources such as clean water and forest materials that previous generations could fall back on. Generationally, the current generation may receive the up-front payments for land, whereas the next generation will have to live with landlessness. Similarly, as commodity prices move through cycles smaller landowners may successively lose their land in poor times because they don't have the scale to maintain their plantations.

### 3.6.1 Project-Included Change and Expected Impacts

This area, not so long ago was a very isolated and traditional community. People in their 40s mention trips that now take 30 minutes to an hour in a car, when they were children required an overnight stay on the road.

The physical and social landscape in the area is changing rapidly. Change undoubtedly was occurring anyhow, but has been accelerated by the presence of MPG.

Some overarching themes that are occurring in this community are:

- Sales of land to the company reduce access to game and forest and thus limit alternative livelihoods and income opportunities.
- Introduction of a market for land. Now common properties, such as forest areas where everyone could hunt, can now be sold. This has an impact on customary laws and rights.
- Changes in disease ecology – large areas of monocrops raise the risk of agricultural diseases and bring influxes of pests such as rats.
- Clean water for drinking, bathing and fisheries; which once flowed from forested watersheds, will now flow from agricultural landscapes. The level of natural filtering is

nowhere near as efficient. Additionally, rivers will rise and fall a lot more quickly than they did in the past. Leading to floods and droughts occurring more regularly.

- Accelerated migration (inwards and outwards may change numbers and resilience of social institutions). This has already been seen with the transmigration programme, which brought many newcomers to the area with different cultures. However, the company employs many outsiders (35% of its workforce). Furthermore, this new development will bring more people. No problems have been reported with relations with migrant workers during the interviews, but there are always potential problems with inter-community tensions.
- Access to markets (improved road access) – will provide better access for people selling other products such as vegetables or rubber.
- Access to credit is improved. This is a double-edged sword, it facilitates development but causes increased monetization and raises the risk of increased indebtedness.
- Change to a cash economy with employment and smallholdings. Which in turn results in a transition from self-provisioning to shop bought food and goods; this impacts on local crafts and traditional knowledge.

### 3.6.2 Expected Social Impacts

**Table 46** lists a range of impacts, both positive and negative. Avoiding the negative impacts and enhancing the positive ones will require management, not only by PT MPG but also by the community. Therefore, close community / company collaboration is required.

### Cost Benefit Analysis

**Table 46** could be used for undertaking a social cost-benefit analysis. However, assigning financial costs to a lot of these impacts is highly inaccurate and will fluctuate considerably depending on how these issues are managed.

Table 46. Social Impacts both positive and negative

Description	Potential Positive Impacts	Potential Negative Impacts
<b>Development of plantations in general</b>	<ul style="list-style-type: none"> <li>• Employment</li> <li>• Increased economic activity in the community</li> <li>• Increased access (roads, electricity, information etc.)</li> <li>• Increased skills of human resources</li> <li>• Increased security</li> <li>• Increased skills and resources to put out fires</li> <li>• Increased new business opportunities</li> <li>• Cultural change</li> <li>• Community expectations for</li> </ul>	<ul style="list-style-type: none"> <li>• Change which causes unrest and conflict</li> <li>• Loss of natural resources and biodiversity</li> <li>• Changes in environmental quality</li> <li>• Social jealousy in the community</li> <li>• Community negative perceptions</li> <li>• Increased crime rates</li> <li>• Increased frequency of fires</li> <li>• Differences in opinion that have the potential for conflict</li> </ul>



Description	Potential Positive Impacts	Potential Negative Impacts
	<ul style="list-style-type: none"> <li>• prosperity</li> <li>• Positive perception of the company</li> </ul>	<ul style="list-style-type: none"> <li>• Unfulfilled expectations for prosperity</li> <li>• Negative perception of the company</li> <li>• Newcomers to the area provide a labour force and cause friction in the community.</li> </ul>
<b>The compensation process related to land acquisition</b>	<ul style="list-style-type: none"> <li>• Injection of cash into a community where the size of the economy is quite small</li> <li>• Business opportunities within the plantations or from the trickle-down effect.</li> </ul>	<ul style="list-style-type: none"> <li>• Land conflicts arising from less land being available, putting more pressure on the existing land bank.</li> <li>• People being dissatisfied with the prices paid for land</li> <li>• Loss of access to natural resources</li> <li>• Disputes being left unresolved or not resolved to the satisfaction of all parties.</li> <li>• Displacement / relocation of residents. Particularly people that sell their land and use the money to buy consumer goods.</li> </ul>
<b>Land Clearing</b>	<ul style="list-style-type: none"> <li>• Opportunity for local people to be employed</li> <li>• Opportunities for local businesses to partner with MPG through provision of services.</li> </ul>	<ul style="list-style-type: none"> <li>• River erosion and sedimentation</li> <li>• Decreased quality of water</li> <li>• Micro climate change</li> <li>• Floods and droughts (anecdotally the rivers fluctuate considerably more than they used to)</li> <li>• Decreasing biodiversity and wildlife habitat</li> <li>• Changes in water flow patterns (rivers / swamps)</li> <li>• Land conflicts</li> <li>• Interference with downstream agricultural activities.</li> </ul>
<b>Construction of infrastructure (roads, bridges, ditches, sluices, housing, factories, public facilities, dikes, etc.)</b>	<ul style="list-style-type: none"> <li>• Opportunity for local people to be employed</li> <li>• Open road access</li> <li>• New infrastructure is available</li> <li>• Open access to transportation and communication</li> <li>• Opportunities for local businesses to partner with MPG through provision of services.</li> </ul>	<ul style="list-style-type: none"> <li>• Difficulties in adaptation to changes in modes of transportation, economy and culture, natural regime changes (ups and downs, and drainage)</li> <li>• Drought / flood</li> <li>• Irrigation water is reduced</li> <li>• Water pollution, air (dust) and noise</li> </ul>

Description	Potential Positive Impacts	Potential Negative Impacts
<b>Nursery</b>	<ul style="list-style-type: none"> <li>• Opportunity for local people to be employed</li> <li>• Transfer of skills to the local communities</li> </ul>	<ul style="list-style-type: none"> <li>• Pollution of agricultural chemicals</li> <li>• Work accidents</li> <li>• Social jealousy</li> </ul>
<b>Planting</b>	<ul style="list-style-type: none"> <li>• Absorption of labor</li> <li>• Transfer of skills to local communities</li> </ul>	<ul style="list-style-type: none"> <li>• Pollution of agricultural chemicals</li> <li>• Work accidents</li> <li>• Social jealousy</li> </ul>
<b>Maintenance</b>	<ul style="list-style-type: none"> <li>• Opportunity for local people to be employed</li> <li>• Transfer of skills to local communities</li> </ul>	<ul style="list-style-type: none"> <li>• Pollution of agricultural chemicals</li> <li>• Work accidents</li> <li>• Social jealousy</li> </ul>
<b>Harvesting and transportation of fruit</b>	<ul style="list-style-type: none"> <li>• Opportunity for local people to be employed</li> <li>• Transfer of skills to local communities</li> <li>• Opportunities for local businesses to partner with MPG through provision of services.</li> </ul>	<ul style="list-style-type: none"> <li>• Increase in traffic volumes</li> <li>• Dust from the road</li> <li>• Work accidents</li> <li>• Social jealousy</li> </ul>
<b>CSR</b>	<ul style="list-style-type: none"> <li>• Increased development of villages / community groups</li> <li>• Better facilities (e.g. health clinics) and community activities</li> <li>• Positive perception of the company</li> </ul>	<ul style="list-style-type: none"> <li>• Mismatch of company's delivery of CSR and the communities' expectations.</li> <li>• Social jealousy</li> <li>• Negative perception on the company</li> </ul>
<b>Partnership and plasma cooperation</b>	<ul style="list-style-type: none"> <li>• Income for the community</li> <li>• Increased institutional capacity</li> <li>• Positive public perception of the company</li> </ul>	<ul style="list-style-type: none"> <li>• Unclear communication of how the schemes work, leading to :               <ul style="list-style-type: none"> <li>- Social jealousy</li> <li>- Conflict of interest</li> <li>- Open conflict</li> </ul> </li> </ul>

### 3.6.2.1 Income

Currently MPG employs 876 employees and has 5290 ha planted. This relates to 6 ha / employee. If this new development involves 1850 additional planted hectares. This will translate to 308 additional employees. However, there are also multiplier effects, which mean that other people, that are not on MPG's payroll receive income as a result of the company's activities. An example of this are the many local farmers that bring in produce for sale to the people living in the compounds during weekly markets. Additionally, contractors that operate trucking businesses would have to expand their fleet to cope with the larger plantations.

### 3.6.2.2 Regional Economy

Table 47. Oil Palm revenue calculations

	Recovery	Price (USD/t)	Price (USD/t.FFB)
<b>CPO</b>	22.5%	528.48	118.908
<b>PKS</b>	2.5%	177.12	4.428
<b>PKK</b>	3.2%	35	1.12
<b>Total</b>			124.456

Assuming a yield 26 t/ha and a plantable area from this project of 1900 ha, this would result in an annual revenue from this project of USD 6.14 million. Much of which would be spent in the local area.

Additionally, the costs of getting a hectare of oil palm to maturity are approximately \$3500 – 4000 / ha. As such this will require an investment of \$6.6 – 7.6 M. Most of this will be spent in the local area.

### 3.6.2.3 Local people’s lands and future livelihood security

The POIG Verification Indicator 2.2.2. specifies “in new plantations or expansion of existing plantations, a minimum of 0.5 ha of garden or farmland per person is identified via participatory mapping, and enclaved for meeting food security needs.”

**Table 48** shows the results of an analysis of garden area. Each individual village has more than 0.5 ha per person for gardening. If the total area of PT MPG (14,229 ha) is subtracted from the total area of all the villages (43,657 ha), the resulting area outside PT MPG is 29,428 ha. This is considerably more land than required by the total population of 8759. The assessor considers looking at the whole area from a food security point of view is more realistic (rather than on a village by village analysis). The reason for this is that people are free to buy land in other villages.

Intuitively the conclusion that there is not a scarcity of land makes sense when one examines the satellite images, there are only very small areas gardened around villages. Additionally, there are vast areas of jungle rubber, which is under-utilised land.

Table 48. Calculation of the HCS garden area based on the areas and populations provided by the villages. Every village has enough land based on its area.

No	Village	Area (ha)	Population	Land Requirement (0.5 ha / person)
<b>1</b>	Pendreh	9663	2218	1109
<b>2</b>	Rimba Sari	764	1238	619
<b>3</b>	Sei Rahayu I	752	1041	520.5

No	Village	Area (ha)	Population	Land Requirement (0.5 ha / person)
4	Sei Rahayu II	752	1226	613
5	Beringin Raya	650	351	175.5
6	Datai Nirui	650	411	205.5
7	Karamuan	12626	1033	516.5
8	Makunjung	17800	1241	620.5
	Total	43657	8759	4379.5
<b>Area of MPG (including expansion)</b>		14229		
<b>Area outside MPG</b>		29428		4379.5

#### 3.6.2.4 Safeguards Against Human Rights Violations

PT MPG has a number of safeguards against the potential for human rights violations. These are embodied in the Sustainability Policy (*Sustainability Policy*, n.d.). Of particular relevance are the following sections:

- Compliance with Local Laws and Regulations
- Workplace Human Rights
- Local Community Rights and Social Issues

## 4 SUMMARY OF MANAGEMENT PLANS

### 4.1 Team responsible for developing management plans

In order to enable effective implementation of the programs, it is required that human resources competencies, sufficient knowledge and skills to implement the planned activities are in place. It is also essential to provide appropriate tools and facilities so that implementation of the activities can be smoothly carried out. Implementation, management and monitoring in the field will be implemented by the management of PT MPG, onsite Sustainability team and Public relation team. The implementation is also supported by other team such as audit and certification team. Below is the organisational structure of the team responsible for implementation, management and monitoring in the field.

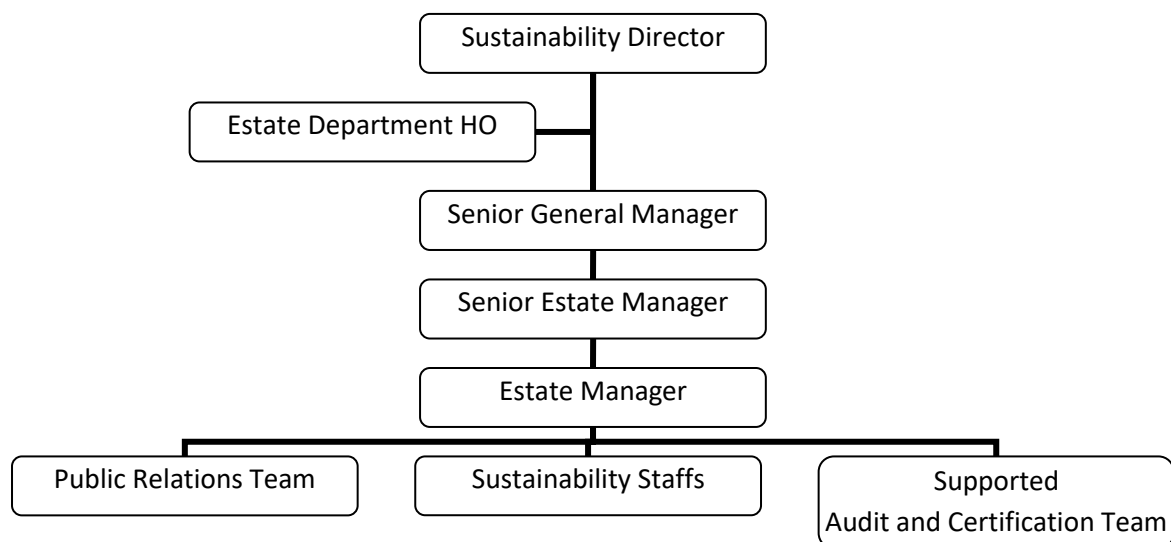


Figure 37. Organisational Structure Of The Team Responsible For Implementation, Management And Monitoring In The Field

The overall responsibilities and accountability are listed below:

- a. The overall conservation programme will be under the purview of the Estates Department with support from the Head Office (HO) in Medan and the Director of Sustainability will provide the overall guidance and technical support to enable effective implementation of the management and monitoring plan in the field.
- b. The Senior General Manager is accountable and responsible to ensure that the overall development plan including the management and monitoring plan is implemented according to the time plan and budget. The specific responsibilities are:
  - Hold meeting to review results of implementation and results of monitoring.
  - Review action plans when necessary.

- c. The Senior Estate Manager is responsible to fulfill the requirements of the management and monitoring plan. The specific responsibilities are:
- Cross check the implementation of management and monitoring plan in the estates under his charge.
  - Ensure timely and effective implementation of the management and monitoring plan.
  - Analyze monitoring results and review mitigation actions where needed.
- d. The Estate Manager is directly responsible for the implementation of the management and monitoring plans. The specific responsibilities are:
- Implementation of the management and monitoring plan and review periodically.
  - Organize and implement actions specified in the management and monitoring plan.
  - Organize and implement monitoring activities.
  - Organize socialization / training where required in the management and monitoring plan.
- e. The Public Relations Team has a role in communicating with the related stakeholders around the concession of PT MPG. Specifically, the roles and responsibility are as follows:
- Communicate with related stakeholder around the concession to implement the management and monitoring plan at the landscape level.
  - Communicate with related stakeholder to schedule meetings among with PT MPG.
- f. A Sustainability Staff is located in PT MPG to assist the management team in the implementation of the management and monitoring plans that has been approved by the management. The Sustainability Staff is responsible to:
- Work hand in hand with the estate management team in implementing the management and monitoring plan that has been approved.
  - Conduct training, work in collaboration with Estate and Public Relation personnel on stakeholders' engagement and consultation.
  - Review results and identify further actions that are necessary and communicate it to the management of PT MPG.
  - Prepare a progress report of the management and monitoring for the management of PT MPG and Sustainability Head Office.
- g. These programmes will be reviewed and evaluated by the local and top management regularly. These will include evaluation of the activities implemented as they are expected; whether the outputs of the process are as they were projected previously; and whether the resources investments (human, fund, time etc.) are as they were planned before. The objective is to measure the achievements, effectiveness, efficiencies, impacts, and sustainability of the programs.

## 4.2 Elements to be included in management plans

### 4.2.1. Social Management Plan

The development that this Social cover is supposed to benefit the community welfare, particularly:

- incomes of community members
- food security
- access to ecosystem services
- access to social and economic infrastructure.

The company's activities should benefit the communities' incomes and infrastructure. This will be through creation of employment and CSR contributions. Similarly, bringing agricultural industry to the area will require better roads, which in turn will benefit the community.

It is recommended there is periodic collection and analysis of information on key socio-economic indicators that together provide insight into the actual impacts of the company's operations on the welfare of local communities.

### 4.2.2. ICLUP and Integrated HCV-HCS

The recommendations for maintaining and enhancing the HCV-HCS encountered are based on the strategy and policy of Sustainability. The monitoring and management actions are aimed at mitigating negative and the environmental and socio-economic impacts and maximizing positive outcomes. Integrated HCV-HCS management & mitigation plan of the threats identified. The successful implementation of these actions requires the support and close oversight of PT MPG management.

PT MPG have arranged the ICLUP based on the HCV-HCS assessment, the participation mapping and SIA. This result has commenced and socialize with the local community. The planning of the development and monitoring HCV have been intergrated. This ICLUP implementation was such as follow:

- To maintain the existence of the conservation area which have been agreed by all the parties involved. This conservation areas include: HCV, HCS forests, area of buffering rivers and important community lands.
- To ensure land development that does not threaten the existence of conservation areas and people's rights to their land.
- To maintain or increase the value that exists in conservation areas.
- To develop an optimal land use plan for palm oil cultivation.

The management and monitoring activities of the conservation include:

1. Clearly marking the boundary of the conservation areas through the installation and maintenance of boundary markers.
2. Socialization of the conservation areas to the local communities around the conservation areas about the existence and the importance of protecting the conservation areas.
3. Socialization of the conservation areas to the employees.
4. Planning and execution of activities to achieve:
  - a. Preservation of habitat of rare and threatened animals.
  - b. Preservation of water sources.
  - c. Preservation of the functions of river buffer zone.
  - d. Minimization of erosion.
  - e. Preservation of cultural and /or religious sites.
  - f. Planting of trees in river buffer zone.
5. Identification of threats to the conservation areas (such as fires, encroachment, etc).
6. Development of strategies to monitor and overcome the threats to the conservation areas.
7. Periodical review of the efficacy of the management and monitoring efforts. Improvement opportunities to the existing system when available will be pursued vigorously.
8. Community engagement, negotiation and mediation with FPIC approach.
9. Participatory and collaborative with community for implementation of management and monitoring plan.

Agreements have been made with the community through the village where, the community in principle supports the efforts of conservation area management and monitoring plan while respecting the rights of the local community. These processes will continue to be carried out gradually and continuously in accordance with the agreements made.

At the final consultation meeting all the attendees agreed to the HCV / HCS areas are proposed. There were no real points of discussion from the meeting itself that caused changes to the outcome. The attendees provided extra information or sought further clarification on various points. However, following the meeting, the assessor went and rewalked the area of KKPA Karamuan with the community. This caused some minor changes in the landcover mapping. Similarly, the assessor visited the two hompong areas, where the assessor took the opportunity to agree with the company and the community about how these special areas should be managed. This is incorporated in HCV 6.



Table 49. Social & Environment management mitigation plan

No	Management Aspect	Recommendation of AMDAL	Recommendation of SIA	Activities	Management Institution
1	Development of plantations in general	<ul style="list-style-type: none"> <li>• Conduct Sustainability Socialization</li> <li>• Coordination with government stakeholder</li> <li>• Establish cooperatives to communities and native cultural</li> <li>• Provide oppurtunies for people be employed</li> <li>• Determination of salaries for workers adjusted to the UMR or UMK (minimum regional wage)</li> <li>• Prioritize for local people to be employed</li> </ul>	<ul style="list-style-type: none"> <li>• Socialization on the principles of FPIC engagement.</li> <li>• The land transfer SOP has to be explained more clearly, particularly MPG's policy of paying Land Compensation for conservation areas</li> <li>• Documentated the list stakeholder who represent the communities.</li> <li>• Socialization company policy, prohibition intimidation and code of conduct.</li> <li>• Provide the information and coordination to sub-district and village governments.</li> <li>• Clarify the legal permit acquisition process in detail with the communities</li> <li>• Conduct prosperity impact assessment</li> <li>• Clarify the villages' boundaries</li> </ul>	<ul style="list-style-type: none"> <li>• Conduct Stakeholder Consultation formally and informally regarding company's SOP</li> <li>• Provide list stakeholder</li> <li>• Post information on Job Vacancy in villages surrounding activity area</li> <li>• Deliver minimum wage adjusted to the relevant UMSK</li> <li>• Conduct survey living wage components or KHL (<i>komponenhiduplayak</i>)</li> <li>• Conduct participatory mapping of village boundary</li> </ul>	PT. Multipersada Gatramegah
2	The compensation process rlated to land acquisition	<ul style="list-style-type: none"> <li>• Conduct land acquisition in the manner of relevant regulation</li> <li>• Conduct land acquisition process transperently</li> <li>• Announce publicly on land that will be acquired (clear and clean)</li> <li>• Inventory land ownership</li> <li>• Priority negotiation for consesus</li> </ul>	<ul style="list-style-type: none"> <li>• Socialization on SOP Land Compensation (Include conservation area)</li> <li>• Socialization company policy, prohibition intimidation and code of conduct.</li> <li>• Provide the information and coordination to sub-district and village governments.</li> <li>• Clarify the legal permit acquisition process in detail with the communities</li> </ul>	<ul style="list-style-type: none"> <li>• Socialization on SOP Land Compensation to the communities around</li> <li>• Verification land ownership that will be compensated</li> <li>• Measurement of land that will be compensated</li> <li>• Conduct negotiation on price of land and crops with land ownership</li> <li>• Land Compensation payment</li> </ul>	PT. Multipersada Gatramegah

No	Management Aspect	Recommendation of AMDAL	Recommendation of SIA	Activities	Management Institution
				process <ul style="list-style-type: none"> <li>Documentated the land compensation that acknowledged by village and sub-district government</li> </ul>	
3	Land Clearing	<ul style="list-style-type: none"> <li>Land clearing step by step</li> <li>Make rainwater ponds</li> </ul>	<ul style="list-style-type: none"> <li>Develop a definition of water bodies (e.g. lakes, swamps, springs and rivers)</li> </ul>	<ul style="list-style-type: none"> <li>Make riparian zone beside small and big rivers area</li> <li>Land clearing mecanized</li> </ul>	PT. Multipersada Gatramegah
4	Construction of infrastructure (roads, bridges, ditches, sluices, housing, factories, public pacilities, dikes, etc.)	<ul style="list-style-type: none"> <li>Maintain and preserve a green belt area (green belt) along the existing river border</li> <li>Apply waste management system</li> <li>Management of LB3 in the manner of relevant regulation</li> <li>Establish TPS (<i>Tempat Penyimpanan Sementara</i>) LB3</li> </ul>		<ul style="list-style-type: none"> <li>Make buffer / riparian zone beside small and big rivers area</li> <li>Conduct RKL –RPL (LB3) in the manner of AMDAL</li> <li>Post information on Job Vacancy in villages surrounding activity area</li> <li>Provide oppurtunies for local people be employed</li> <li>Open new road</li> <li>Provide oppurtunies for local contractor be engaged</li> </ul>	PT. Multipersada Gatramegah
5	Nursery	<ul style="list-style-type: none"> <li>Apply waste management system</li> <li>Oblige the employee to use personal protective equipment or <i>Alat Pelindung Diri</i>(APD)</li> </ul>		<ul style="list-style-type: none"> <li>Conduct RKL –RPL in the manner of AMDAL</li> <li>Engage employee to BPJS <i>Tenaga Kerja</i> and BPJS <i>Kesehatan</i> program</li> <li>Provide training to the either</li> </ul>	PT. Multipersada Gatramegah

No	Management Aspect	Recommendation of AMDAL	Recommendation of SIA	Activities	Management Institution
		<ul style="list-style-type: none"> <li>• Conduct healthy inspection</li> </ul>		local or non-local on personal protective equipment or <i>Alat Pelindung Diri</i> (APD) <ul style="list-style-type: none"> <li>• Annual Medical Check Up</li> </ul>	
6	Planting	<ul style="list-style-type: none"> <li>• Apply waste management system</li> <li>• Oblige the employee to use personal protective equipment or <i>Alat Pelindung Diri</i>(APD)</li> <li>• Conduct healthy inspection</li> </ul>		<ul style="list-style-type: none"> <li>• No planting on riparian zone / erosion area</li> <li>• No fertilizer and pesticide application on riparian zone, drainage and any other water bodies.</li> <li>• Planting Mocuna plants surrounding Immature plant or <i>Tanaman Belum Menghasilkan</i> (TBM) and Mature Plan or <i>Tanaman Menghasilkan</i> (TM)</li> </ul>	PT. Multipersada Gatramegah
7	Maintenance	<ul style="list-style-type: none"> <li>• Conduct activities according to relevant regulation and company SOP</li> <li>• Integrated pest management or <i>pengendalian hama terpadu</i> (PHT)</li> <li>• Increase efficiency of fertilizer and pesticide using</li> <li>• Apply waste management system</li> <li>• Land clearing without burning (zero burning)</li> <li>• Make and provide conservation area and buffer zone</li> </ul>		<ul style="list-style-type: none"> <li>• Planting Mocuna plants surrounding Immature plant or <i>Tanaman Belum Menghasilkan</i> (TBM) and Mature Plan or <i>Tanaman Menghasilkan</i> (TM)</li> <li>• Conduct RKL –RPL in the manner of AMDAL</li> <li>• Make buffer / riparian zone beside small and big rivers area</li> <li>• Land clearing mechanized</li> <li>• Monitoring HCV</li> <li>• Planting trees surrounding office settlements and river.</li> </ul>	PT. Multipersada Gatramegah

No	Management Aspect	Recommendation of AMDAL	Recommendation of SIA	Activities	Management Institution
		<ul style="list-style-type: none"> <li>• Conduct HCV Assessment</li> <li>• Drainage arrangement</li> <li>• Prioritize organic fertilizer</li> <li>• Conduct maintenance and management emission</li> <li>• Planting trees surrounding mill operation area</li> </ul>			
8	Harvesting and transportation of fruit	<ul style="list-style-type: none"> <li>• Prioritize for local people from villages surrounding company to be employed</li> <li>• Provide oppurtunies for local people be labored in fresh fruit bunches or <i>Tandan Buah Segar</i> (TBS) transportation</li> </ul>		<ul style="list-style-type: none"> <li>• Post information on Job Vacancy in villages surrounding activity area</li> <li>• Provide oppurtunies for local people to beemployed</li> <li>• Provide training to either local labor or non-local labor</li> <li>• Provide oppurtunies for local contactor to beengaged</li> <li>• Conducting road compaction</li> <li>• Regulate traffic sign in plantation area especially accident-prone area</li> <li>• Planting trees in settlements and office area to decrease noise and dust</li> <li>• Provide regulate TBS traffic speed maximum 30 km/hour</li> </ul>	PT. Multipersada Gatramegah
9	CSR	<ul style="list-style-type: none"> <li>• CDProgramme must relevant with villagers (according to communities' needs) and in the manner of relevant</li> </ul>		<ul style="list-style-type: none"> <li>• Stakeholder consultation with surrounding villages on CSRprogramme</li> <li>• Provide CSR program with</li> </ul>	PT. Multipersada Gatramegah

No	Management Aspect	Recommendation of AMDAL	Recommendation of SIA	Activities	Management Institution
		regulations <ul style="list-style-type: none"> <li>Guidance and manage the local culture</li> <li>Conduct negotiation among company, communities and local governments</li> </ul>		economy category, religion category and cultural category <ul style="list-style-type: none"> <li>Provide CSR program with healthy category</li> <li>Coordination with village and sub-district stakeholder on CSR programme that will be realized</li> </ul>	
10	Partnership and plasma cooperation	<ul style="list-style-type: none"> <li>Provide facilities and access to communities on agricultural product trading to the company</li> <li>Prioritize communities' agricultural product</li> <li>Providing opportunities on business</li> <li>Providing the communities on management income training</li> <li>Developing Partnership and plasma cooperation pattern on communities</li> <li>Provide opportunities for local people be labored in fresh fruit bunches or <i>Tandan Buah Segar</i> (TBS) transportation</li> </ul>	<ul style="list-style-type: none"> <li>Considering survey on the 8 Village Partnerships (kas desa)</li> <li>Socialization financial benefit on Partnership and plasma cooperation</li> <li>Engage third party (NGO / legal representative)</li> <li>Explaine the communities on Partnership and plasma cooperation</li> <li>Conducting regular meeting or <i>Rapat Anggota Tahunan</i> (RAT) plasma cooperation</li> <li>Cooperative and communication between plasma cooperation and relevant governments</li> </ul>	<ul style="list-style-type: none"> <li>Socialization on development Partnership and plasma cooperation plan</li> <li>Socialization on formation of Partnership and plasma cooperation</li> </ul>	PT. Multipersada Gatramegah

Table 50. Summary of Key findings for HCV – HCS Management and monitoring

Value identified	Threat	Management	Monitoring	Time	Monitoring Frequency	PIC
<b>HCV 1</b>	<ul style="list-style-type: none"> <li>• Hunting</li> <li>• Fire</li> <li>• Invasive species</li> <li>• Logging</li> <li>• Agricultural clearance</li> </ul>	<ul style="list-style-type: none"> <li>• Agreements with the community about no hunting of birds / mammals in the HCV areas nor logging.</li> <li>• Patrols recording the sighting of birds and mammals.</li> <li>• Awareness raising in villages to discourage random fire lighting. The company has had success elsewhere with its “fire free village” program. This involves training to help fire fighting as well as offering CSR programmes if communities can get through fire season without fires.</li> <li>• Very little can be done about invasive species.</li> <li>• Agreements with the community about no clearance / logging within the HCV areas. Special protection has to be provided to high value</li> </ul>	<ul style="list-style-type: none"> <li>• Undertake bird / mammals surveys to measure changes in bird mammal abundance / presence. Regarding OU presence or absence this would be an opportunity to try DNA testing.</li> <li>• Map out areas of burns.</li> <li>• Recording the presence of invasive species.</li> <li>• Monitoring using a combination of monitoring from satellite images as well as on the ground patrols and being informed by staff working in the village about encroachment or logging.</li> <li>• Checking that high value trees such as ulin are not damaged.</li> </ul>	Start in 2021 and continuously	<ul style="list-style-type: none"> <li>- Every month (Jan-Des)</li> <li>- Every month (If any fire)</li> <li>- Every year</li> <li>- Every month (Jan-Des)</li> <li>- Every month (Jan-Des)</li> </ul>	<ul style="list-style-type: none"> <li>- Sustainability</li> <li>- Estate Operational</li> <li>- Humas</li> </ul>

Value identified	Threat	Management	Monitoring	Time	Monitoring Frequency	PIC
		species such as Ulin socialization and education to community on this, added warning sign about high value species).				
<b>HCV 2</b>	These follow HCV1 and are not repeated.					
<b>HCV 4</b>	<ul style="list-style-type: none"> <li>Burning to assist agricultural development within the riparian buffer strip.</li> <li>Lack of awareness by company employees and contractors about HCV 4, particularly small river riparian buffers and mismanagement of high risk activities within buffer areas (e.g building roads through riparian areas, clearing of</li> </ul>	<ul style="list-style-type: none"> <li>Ensure that the communities realise that the riparian buffers are not empty land available for agriculture. This should be specifically stated in agreements and socialized to the community.</li> <li>A slope survey and demarcating areas greater than 22 degrees to be reserved from development.</li> <li>Awareness raising about rubbish. This is particularly bad because most villages are built in riparian areas. People from kampungs usually throw all their rubbish in the river. Assistance with rubbish collection and sewage disposal (not directly into the river).</li> </ul>	<ul style="list-style-type: none"> <li>Monitoring using a combination of monitoring from satellite images as well as on the ground patrols and being informed by staff working in the village about encroachment or logging.</li> <li>Monitoring of land clearing to ensure buffers and steep areas are not cleared.</li> <li>Undertaking surveys of river fish and invertebrates. Additionally, photographs should be taken of the river beds at certain points to detect changes in the siltation of rivers. Any increases in the silt load of rivers</li> </ul>	Start in 2021 and continuously	<ul style="list-style-type: none"> <li>Every month (Jan- Des)</li> <li>Every month (If any land clering activities)</li> <li>Every month (Jan-Des)</li> </ul>	<ul style="list-style-type: none"> <li>Sustainability</li> <li>Estate Operational</li> <li>Humas</li> </ul>

Value identified	Threat	Management	Monitoring	Time	Monitoring Frequency	PIC
	<p>steep slopes).</p> <ul style="list-style-type: none"> <li>• Settlements in riparian areas</li> <li>• People constructing huts and living (permanently or temporarily) and making gardens in riparian areas.</li> <li>• River changing course and destroying riparian areas</li> <li>• Fire – this will stop tree lined riparian strips being established / maintained.</li> </ul>	<ul style="list-style-type: none"> <li>• For existing planting / nursery in the riparian buffer zone area can be maintained and managed for 1 cycle. Rehabilitation is recommended during replanting.</li> </ul>				
<b>HCV 5</b>	<ul style="list-style-type: none"> <li>• Agricultural chemicals and siltation in the rivers.</li> <li>• Deforestation in</li> </ul>	<ul style="list-style-type: none"> <li>• Ensuring all rivers have adequate buffers and there is no clearing of steep slopes.</li> <li>• Making official complaints to the</li> </ul>	<ul style="list-style-type: none"> <li>• Water monitoring should start right now (prior to development) to enable a baseline to be established. This should test for agricultural chemicals,</li> </ul>	Start in 2021 and continuously	- Every six months	<ul style="list-style-type: none"> <li>- Sustainability</li> <li>- Estate Operational</li> <li>- Humas</li> </ul>



Value identified	Threat	Management	Monitoring	Time	Monitoring Frequency	PIC
	<p>the catchment causing siltation of the rivers. (Mining and forestry activities causing siltation and pollution.)</p> <ul style="list-style-type: none"> <li>• Inadequate land area set aside for agriculture, leading to loss of food security.</li> <li>• Claims and disputes on land.</li> <li>• Continued agricultural expansion putting increased pressure on natural areas. Most likely this will be caused by oil palm companies that are not RSPO members</li> </ul>	<p>police about illegal forestry and mining activities in the catchments.</p> <ul style="list-style-type: none"> <li>• Ensuring adequate areas are available for the community to garden and collect natural materials (outside the assessment area).</li> <li>• Mapping of current agricultural lands and ensuring the area is sufficient to meet current and future food security needs. This is to ensure security of the land and right to use the land in the future.</li> <li>• On-going fire-fighting to put out fires before they get large and uncontrollable. This must involve collaboration with the community (e.g. the community not lighting fires, the community reporting fires and assisting to extinguish them).</li> <li>• An agreement made with the community not to harvest trees in the HCV Areas. In exchange as part</li> </ul>	<p>as well as silt load. It should take place both upstream and downstream of development.</p> <ul style="list-style-type: none"> <li>• Ensuring police take action against illegal forestry and mining activities.</li> <li>• Monitor against HCS metrics of 0.5 ha of garden land per person available.</li> <li>• Mapping of the number and size of fires.</li> <li>• Monitoring recommendations for HCV 1 &amp; 4 will overlap with HCV 5 and are not repeated.</li> <li>• Checking that high value trees such as ulin are not damaged.</li> </ul>		<ul style="list-style-type: none"> <li>- Every month (If any illegal activities)</li> <li>- Every year</li> <li>- Every month (If any fire)</li> <li>- Every month (Jan-Des)</li> <li>- Every month (Jan-Des)</li> </ul>	

Value identified	Threat	Management	Monitoring	Time	Monitoring Frequency	PIC
	<p>nor have a “no deforestation commitment”</p> <ul style="list-style-type: none"> <li>• Fires in el nino years.</li> <li>• Community harvesting of timber in HCV Areas. Especially high value trees such as ulin.</li> </ul>	<p>of the CSR programme the company will help with public amenities e.g. mosques, bridges, churches etc.</p> <ul style="list-style-type: none"> <li>• Special protection has to be provided to high value species such as Ulin (sosialisation and education to community on this, added warning sign about high value species).</li> </ul>				
<b>HCV 6</b>	<ul style="list-style-type: none"> <li>• Inadvertent clearing of the area around the hompongs.</li> <li>• Community logging of Ulin trees</li> </ul>	<ul style="list-style-type: none"> <li>• Prior to land clearing ensure the area is well demarcated so the possibility of errors is minimized.</li> <li>• There are many valuable trees in the area around one of the hompongs. This will require an agreement with the community about no logging in the area. The other hompong will also require that none of the poorer quality forest around it is disturbed.</li> <li>• Participatory agreements with</li> </ul>	<ul style="list-style-type: none"> <li>• Ensuring the forest in the hompong area is not cut down.</li> <li>• Community monitoring of sustainable harvest of ulin trees</li> </ul>	Start in 2021 and continuously	<ul style="list-style-type: none"> <li>- Every month (Jan-Des)</li> <li>- Every month (Jan-Des)</li> </ul>	<ul style="list-style-type: none"> <li>- Sustainability</li> <li>- Estate Operational</li> <li>- Humas</li> </ul>

Value identified	Threat	Management	Monitoring	Time	Monitoring Frequency	PIC
		communities to on harvest ulin trees on a sustainable basis. Maybe planting seedlings within the forest.				
<b>Peat</b>	<ul style="list-style-type: none"> <li>Not present in the assessment areas</li> </ul>					
<b>HCS forest</b>	These follow HCV1 and are not repeated here					

#### 4.2.3. Soil Management Plan

Based on the soil survey, there is no marginal soil in the proposed development areas. Considering the topography the proposed development areas, the areas that need attention and managed are the steep areas and riparian zone because both of those areas are prone to erosions. Management plan that need to be considered in preparing a complete document of the soil management plan in the proposed development areas are presented in the management and monitoring of HCV 4 (see Section 4.2.2 ;Table 50).

#### 4.2.4. Carbon and GHG Management Plans

PT MPG will implement several measures which would assist in minimizing GHG emissions from oil palm cultivation & processing:

Table 51. GHG Management and Monitoring

No	Threat	Management recommendation	Monitoring recommendation	Monitoring Frequency
Measures taken to maintain and enhance carbon stocks within the new development areas				
1	<ul style="list-style-type: none"> <li>Emission from land use change.</li> <li>Emission from fire incident.</li> </ul>	<ul style="list-style-type: none"> <li>Ensure that the identified and assigned HCV areas are conserved and in a well managed state so that their HCV functions are well preserved.</li> <li>Enhance the administration of the management and monitoring in the sense that the process is carried out more systematically according to RSPO and the legal procedures.</li> <li>Continue the management and monitoring system of the HCV area that had been put in place in PT MPG to the expansion areas.</li> </ul>	<ul style="list-style-type: none"> <li>Threats monitoring on the conservation areas.</li> <li>Fire monitoring.</li> <li>Land covers monitoring.</li> <li>Wildlife monitoring</li> <li>Water quality monitoring.</li> </ul>	<ul style="list-style-type: none"> <li>Every month (Jan-Des)</li> <li>Every month (if any fire)</li> <li>Every month (Jan – Des)</li> <li>Every Month (Jan – Des)</li> <li>Every six months</li> </ul>

No	Threat	Management recommendation	Monitoring recommendation	Monitoring Frequency
		<ul style="list-style-type: none"> <li>• Clearly marking the boundary of the conservation areas through the installation and maintenance of boundary markers.</li> <li>• Socialization of the conservation areas to the employess and local communities around the conservation areas about the existence and the importance of protecting the conservation areas.</li> <li>• Periodical review of the efficacy of the management and monitoring efforts. Improvement opportunities to the existing system when available will be pursued vigorously.</li> </ul>		
Measures that will be taken to mitigate net GHG emissions associated with oil palm cultivation and processing in the new development				
1	<ul style="list-style-type: none"> <li>• High emission from palm oil mill effluent (POME)</li> <li>• Emission</li> </ul>	<ul style="list-style-type: none"> <li>• Construction of methane captures system as soon as PT MPG has commission its palm oil mills. This methane captures system will generate electricity which greatly reduced the GHG</li> </ul>	<ul style="list-style-type: none"> <li>• GHG emission calculation</li> <li>• Fuel consumption monitoring</li> <li>• Fertilizer monitoring</li> <li>• Fire monitoring</li> </ul>	<ul style="list-style-type: none"> <li>• Every year</li> <li>• Every month (Jan – Des)</li> <li>• Every month (Jan – Des)</li> <li>• Every month (Jan – Des)</li> </ul>

No	Threat	Management recommendation	Monitoring recommendation	Monitoring Frequency
	<p>from fossil fuel used in operation.</p> <ul style="list-style-type: none"> <li>Emission from fertilizer used.</li> </ul>	<p>emission from palm oil mill effluent (POME) treatment. In addition, excess electricity generated by the methane capture system was sold to the national grid generating emission credits.</p> <ul style="list-style-type: none"> <li>Installation of an aerobic treatment system to augment the emission reduction from methane captures system.</li> <li>Switching fuels used in fruit transports and generator sets from fossil diesel to biodiesel. Biodiesel has zero GHG emission.</li> <li>Utilization of decanter solid in the plantation to compliment inorganic fertilizer.</li> <li>Improvement in harvesting logistics to optimize the use of PME.</li> <li>Implementation of zero burning policy.</li> <li>Maintain high carbon stock areas.</li> </ul>		






## 5. REFERENCE

- CRAWSHAW, J.J. *et al.* 2020. Integrated High Conservation Value / High Carbon Stock Approach Assessment PT MultipersadaGatramegah, Kabupaten Barito Utara Central Kalimantan – Indonesia. PT Hijau Daun Bogor.
- CRAWSHAW, J.J. *et al.* 2019. Social Impact Assessment PT MultipersadaGatramegah, Kabupaten Barito Utara Central Kalimantan – Indonesia. PT Hijau Daun Bogor.
- HIGH CONSERVATION VALUE RESOURCE NETWORK. 2019. Assessor Licensing Scheme-Assessors. HCVRN. Available at: <https://hcvnetwork.org/assessors/jules-crawshaw/>
- NAJAMUDDIN *et al.* 2018. Social and Environmental Impact Assessment of PT MPG. PT BawanaRekatama Consultant. Medan.
- PT MultipersadaGatraMegah. 2018. Participatory Mapping report in PT MPG.
- PT MultipersadaGatraMegah. 2020. Integrated Land Use Planning of PT MPG Report.
- PT MultipersadaGatraMegah. 2020. Land Use and Cover Change Analysis of PT MPG , Kabupaten Barito Utara Central Kalimantan – Indonesia.
- ROUNDTABLE ON SUSTAINABLE PALM OIL. 2013. Guideline 3 Appendix on Remote Sensing Methodology on HCV Compensation Proxy Approach" by the 2013 CTF - RSPO Team.
- ROUNDTABLE ON SUSTAINABLE PALM OIL New Planting Procedure.2015. Endorsed by The Governors on the 20<sup>th</sup> November 2015.
- ROUNDTABLE ON SUSTAINABLE PALM OIL. 2016. RSPO GHG Assessment Procedure for new plantings, October 2016.
- SUKSUWAN, S. 2014. Carbon Assessment Tool for New Oil Palm Plantings Version: June 2014 ([http://www.rspo.org/file/RSPO\\_CarbonAssessmentTool\\_Ver2\\_June2014.pdf](http://www.rspo.org/file/RSPO_CarbonAssessmentTool_Ver2_June2014.pdf)).
- USDA-NRCS. 1999. Soil Taxonomy: A Basic System of Soil Classification for Making and Interpreting Soil Surveys. Agricultural Handbook Number 436. Second Edition by Soil Survey Staff. Washington, DC.[www.nature.com/scientificreports/](http://www.nature.com/scientificreports/)
- USDA. 2010. Keys to Soil Taxonomy. Natural Research Conservation Service. Eleventh Edition by Soil Survey Staff. Washington, DC.

## 6. INTERNAL RESPONSIBILITY

### 6.1 Formal signing off by assessors and grower



The following assessors formally accept our interpretation of their findings and management recommendation as summarized in this report:

Assessment	Name of Lead Assessor	Signature
Integrated High Conservation Value (HCV) and High carbon Stock Assessment (HCSA) Assessment	Julian Jackson Crawshaw	
Social Environmental Impact Assessment (SEIA)	Najamuddin	
Land Use Change Analysis (LUCA)	Lastri Simanjuntak	
Greenhouse Gas Analysis	Dr. Gan Lian Tiong	
Social Impact Assessment	Julian Jackson Crawshaw	



## 6.2 Statement of acceptance of responsibility for assessment and formal signing off of management plans

This document is the public summary of the integrated SEIA, HCV & HCS management for new developments at PT MPG and has been approved by management.

Gunadi Senior General Manager	Date : 22 Desember 2020
	
Dr. Gan Lian Tiong Director of Sustainability	Date : 22 Desember2020
	

### 6.3 Organizational Information and Contact Persons

Company Name	: PT Multipersada Gatramegah
Deed of Incorporation	: Notaris Oerip Moclasin Soemarto, SH, No. 7 dated 24 <sup>th</sup> September 1992
Location Permit	: No.188.45/508/2017 dated on 15 <sup>th</sup> December 2017 (± 3,848.32 Ha)
Taxpayer Notification Number	: No. 01.534.738.8-112.000
Company Address	: Spring Tower Building 12-09, Jl. K. L. Yos Sudarso Tanjung Mulia Medan Deli Kota Medan Sumatera Utara 20241
Type of business	: Oil Palm Plantation & Processing
Contact person	: Dr. Gan Lian Tiong
Email	: liantiong.gan@musimmas.com
Phone	: +62 61 661 5511

### 6.4 Personnel information involved in planning and implementation

1. Gunadi (Senior General Manager)
2. Dr. Gan Lian Tiong (Director of Sustainability)
3. Suwandi (Senior Estate Manager)
4. Timothy N Batubara (Estate Manager)
5. Ibrahim (Public Relation Manager)
6. Budi Triprasetya (Manager of Sustainability)
7. Ganesha Samuel Jamual Silalahi and Alvis Argandhana (Staff of Sustainability)