

New Planting Procedure - Summary of Assessments



Roundtable on Sustainable Palm Oil




NPP Reference Number: SGS-NPP22-0001

Country of the NPP submission: Indonesia

RSPO Membership Number: 1-0045-07-000-00

Section 1: General Information

Company Name : PT Prasetia Utama (PT PU)
 Office Address : Umaq Dian Village, Muara Pedohon Village, Buluqsen Village, Muara Ritan, Village,
 : Ritan Baru Village, Tabang Sub District, Kutai Kartanegara Regency, East Kalimantan
 : Province
 Investment Status : Foreign Investment (PMA)
 Parent Company : R.E.A Holdings, Plc
 RSPO Member ID : 1-0045-07-000-00
 Date of Joining RSPO : 10 November 2007
 Contact Person : Winetou Budi Satria (email: winetou.satria@rea.co.id)

PT PU is a legal entity based on the Decree of the Minister of Justice dated March 5, 1998. Number C2-1.427.HT.01.04.TH.98 registered at Company Registration Office of South Jakarta Municipal dated 13th March 1998 In accordance with Decree Number. 2298/BH.0903/III/1998. The concession area of PT PU was previously a forest area that has been released by the State based on the Decree of the Minister of Forestry dated 31st August 1992, Number. 852/1.PTS-II/92 for an area of \pm 10.300 Hectare and has obtained location permit based on Decree of Head of Land Office, Kutai Kartanegara Regency dated 29th December 1997, Number. 55/PKT/BPN-16.3/UM-43/XII-1997 in conjunction with Decree of Minister of Agriculture Cq. Director General of Plantations Number HK.350/E5.162/02.98 dated 27th February 1998 has granted an extension of II approval in principle for the cultivation of oil palm plantations for an area of 9.000 hectares over a 10.000 hectares' land reserve.

PT PU is the holder of Cultivation Rights Title (HGU) for the cultivation of oil palm plantations with its processing unit for an area of \pm 9.097,35 Hectares based on Cultivation Rights Title Decree of PT PU Number. 33/HGU/BPN/1999 dated 6th April 1999 and Plantation Business Permit (IUP) based on Statement Letter of Kutai Kartanegara Regent Number. 525.26/008/IUP.BID.I/X/2015/BP2T dated 13th October 2015 on Plantation Business Permit of PT PU for an area of \pm 8.588,44 hectares. Due to the wide difference between the Cultivation Right Title (HGU) and the Plantation Business Permit (IUP), the Company made a commitment that it will only develop plantations only for areas that are within the HGU and IUP. The company's commitment can be seen in the statement letter by the president director through the stipulation of the notarial deed of Anne Djoenardi regarding Prasetia Utama's statement number 16 dated 2nd February 2022. In the statement, Prasetia Utama is committed to only managing (planting and upkeep) an oil palm plantation of an area of \pm 8,422.18 hectares.

Based on the Decree of Minister of Law and Human Rights of Republic of Indonesia Number. AHU-0019189.AH.01.02. year 2017 dated 18th September 2017 concerning Approval of Amendment of Company's Articles of Association of PT PU explains the acquisition of PT PU by PT. Sasana Yudha Bhakti, a subsidiary of REA Holdings, Plc which is a member of RSPO since 10th November 2007 with membership number 1-0045-07-000-00.

The Company made a commitment that it will only develop plantations only for areas that are within the Cultivation Right Title (HGU) and the Plantation Business Permit (IUP). The company's commitment can be seen in the statement letter by the President Director through the stipulation of the notarial deed of Anne Djoenardi regarding Prasetia Utama's statement number 16 dated 2nd February 2022. In the statement, Prasetia Utama is committed to only managing (planting and upkeep) an oil palm plantation of an area of \pm 8,422.18 hectares (**Figure 5**). Prasetia Utama planned to commence its operations in 2022, planting only on areas outside of areas that have been identified as HCVs and High Carbon Stocks area on the **Final of Integrated Conservation Land Use Plan Development and Implementation (ICLUP)**. The proposed new development area can refer to the following table.

Table 1. New development plan of PT PU

Location	Area	Conservation Area* (ICLUP)	New Planting Area	Area to be Develop (ha)			TOTAL
				2022	2023	2024	
Cultivation Right Title (HGU)	9,097.35	3,493.07	5,604.28	1,000	2,000	2,604.28	5,604.28
Plantation Business Permit (IUP)	8,588.44	3,291.34	5,159.83	813.15	1,998.11	2,348.58	5,159.83
Overlay HGU v IUP	8,422.18	3,262.34	5,159.83	813.15	1,998.11	2,348.58	5,159.83
Final areas to be proposed for NPP	8,422.18	3,493.07*	5,159.83	813.15	1,998.11	2,348.58	5,159.83

Note:

*The company is committed to only clearance in the areas those overlap between HGU and IUP but for conservation areas, the company is also committed to full manage of all conservation areas, whether within the HGU, IUP or both.

Section 2: Maps

The spatial plans of Kutai Kartanegara Regency for year of 2013 to 2033 (Regional Government of Kutai Kartanegara Regency No.9/2013) shows that the area of HGU's PT PU is located in the cultivation area with in which designated as plantation area. This is also reflected in the map of forest area designation (SK.718 /Menhut-II/2014) which shows that the concession area PT PU is included in other usage areas (**Area Penggunaan Lain/APL**).

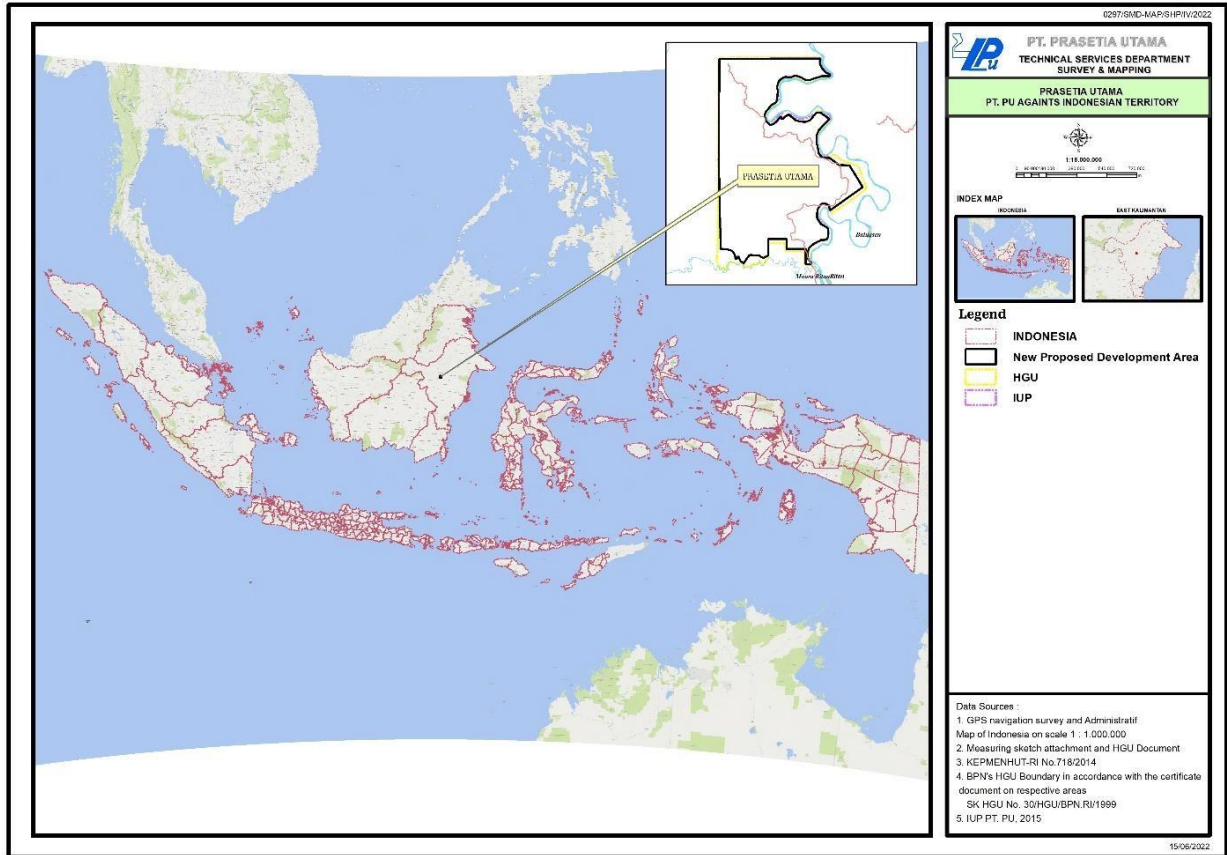


Figure 1. PT PU against Indonesian territory

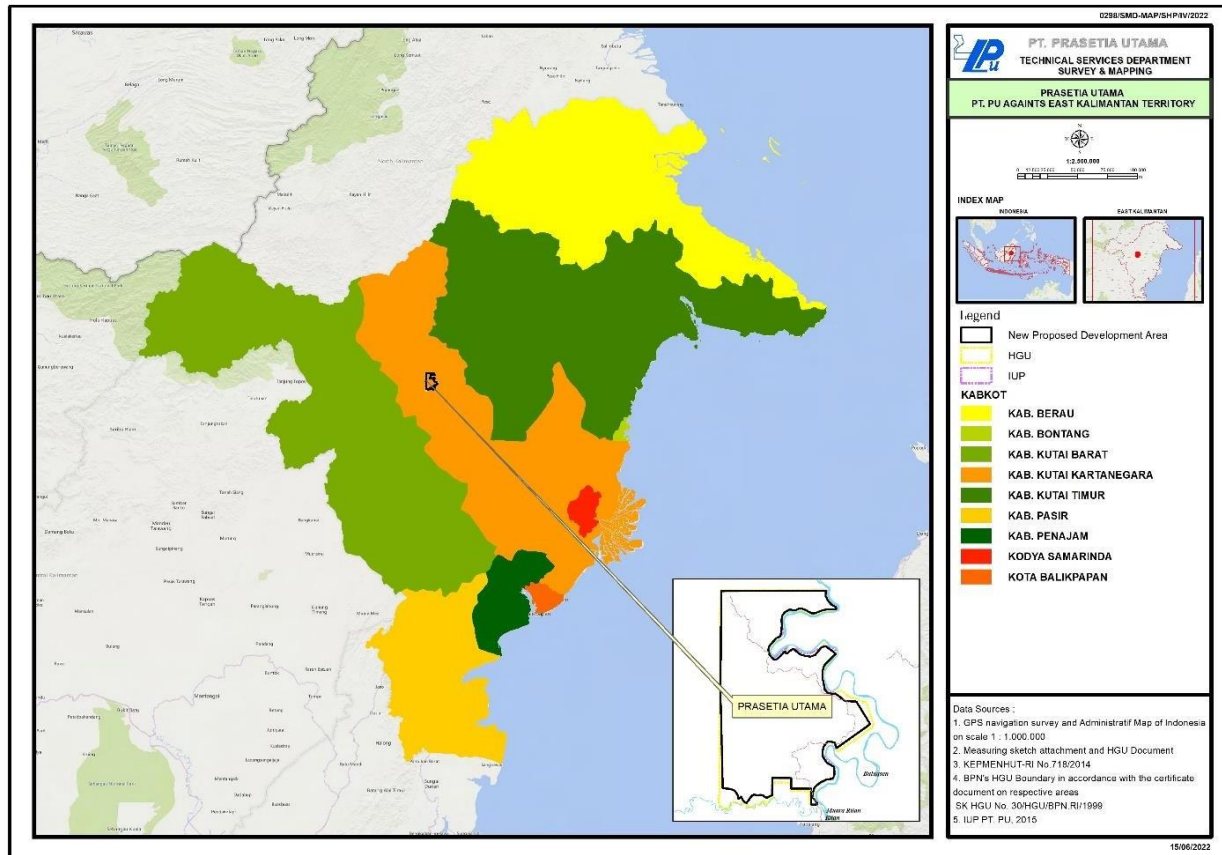


Figure 2. PT PU against East Kalimantan Province territory

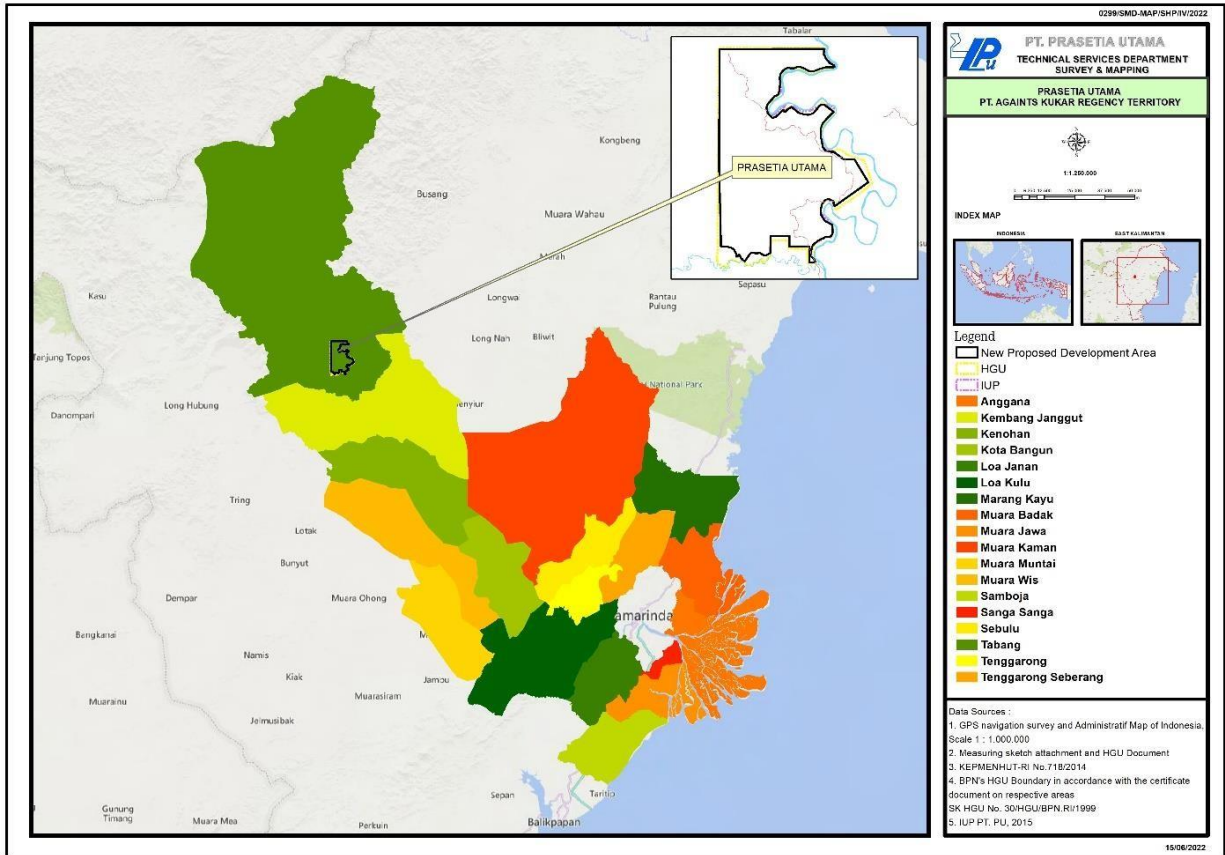


Figure 3. PT PU against Kutai Kartanegara Regency territory

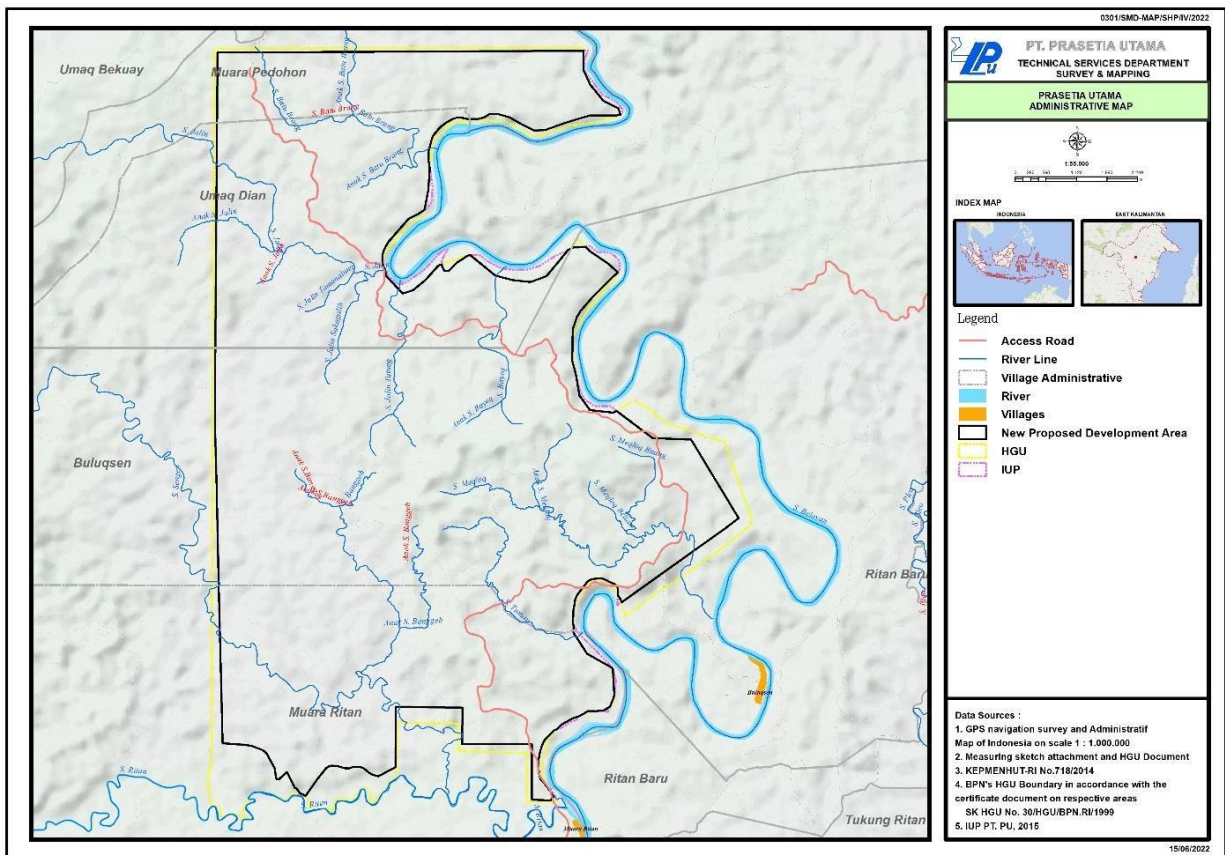


Figure 4. Boundary of PT PU administrative area

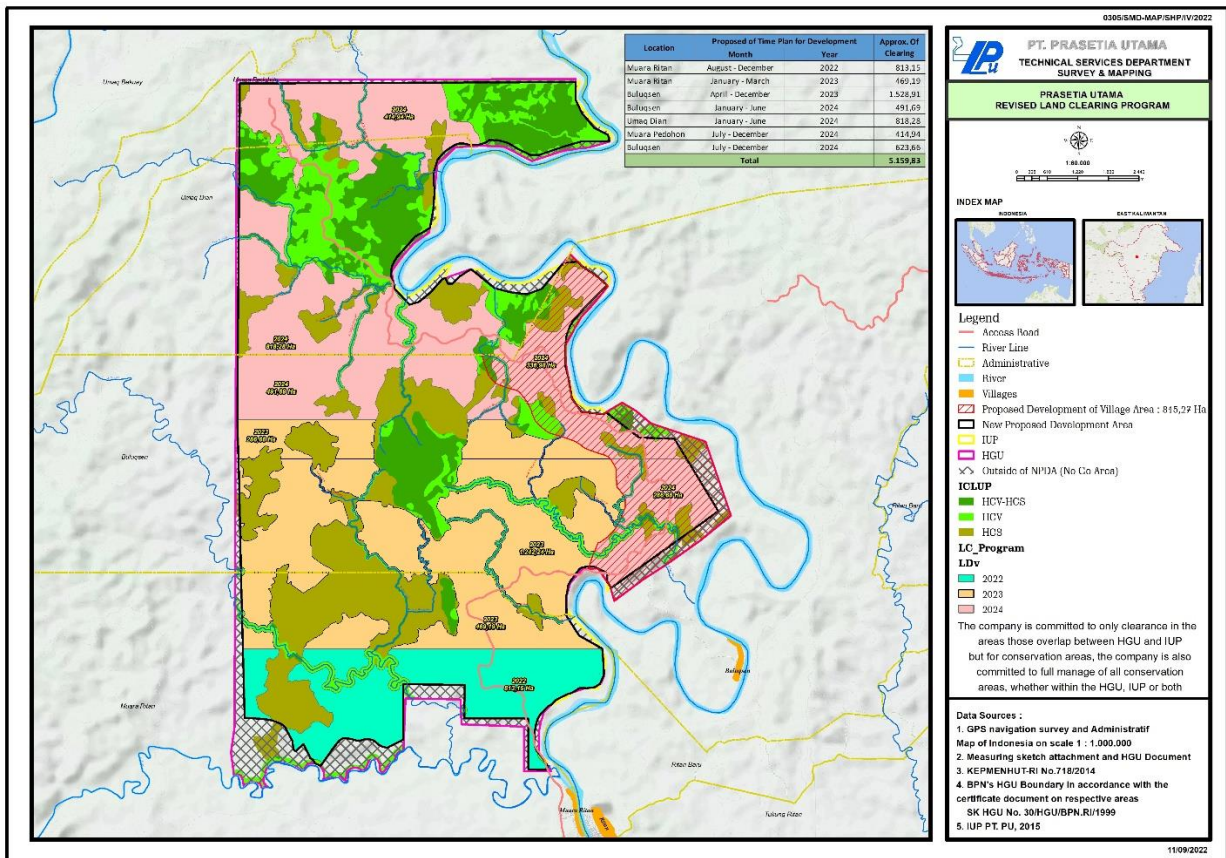


Figure 5. Land clearing program of PT Prasetia Utama

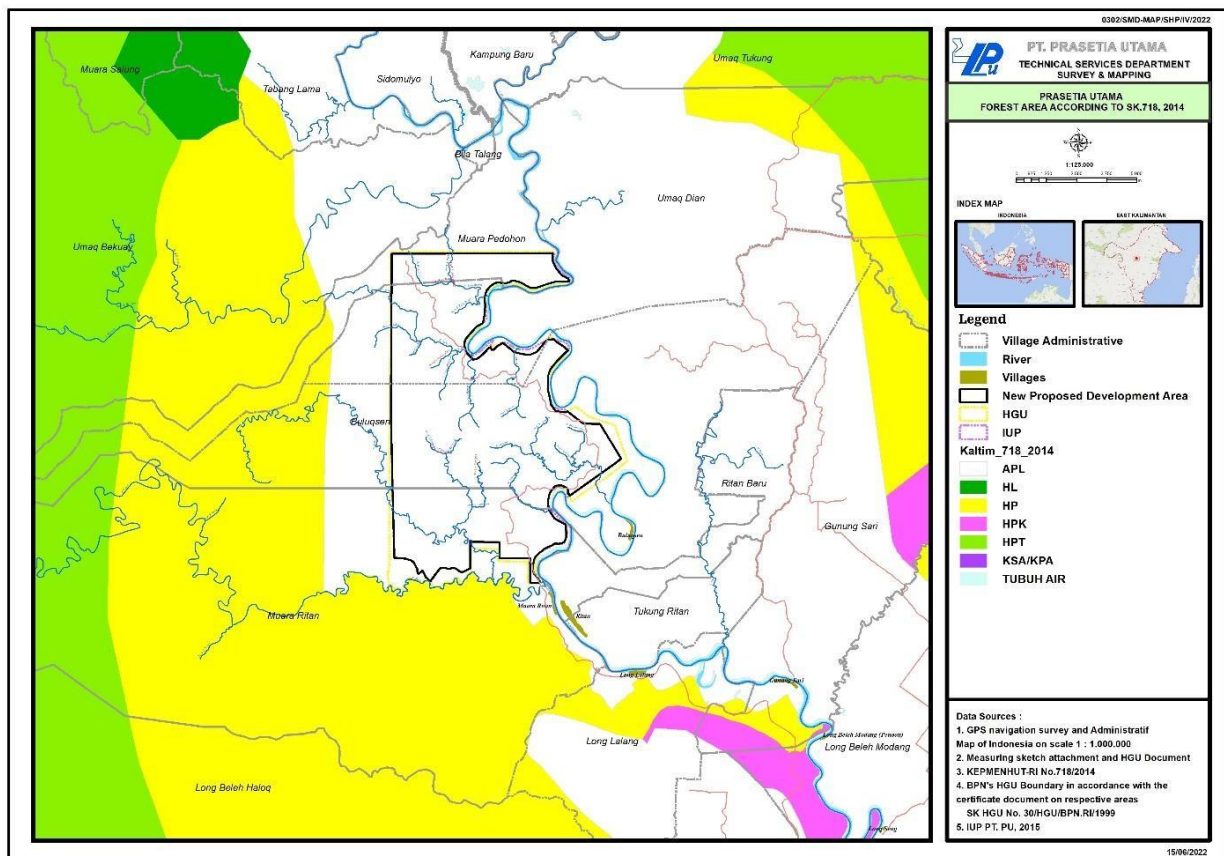


Figure 6. Overlay between concession between forest area (718-2014)

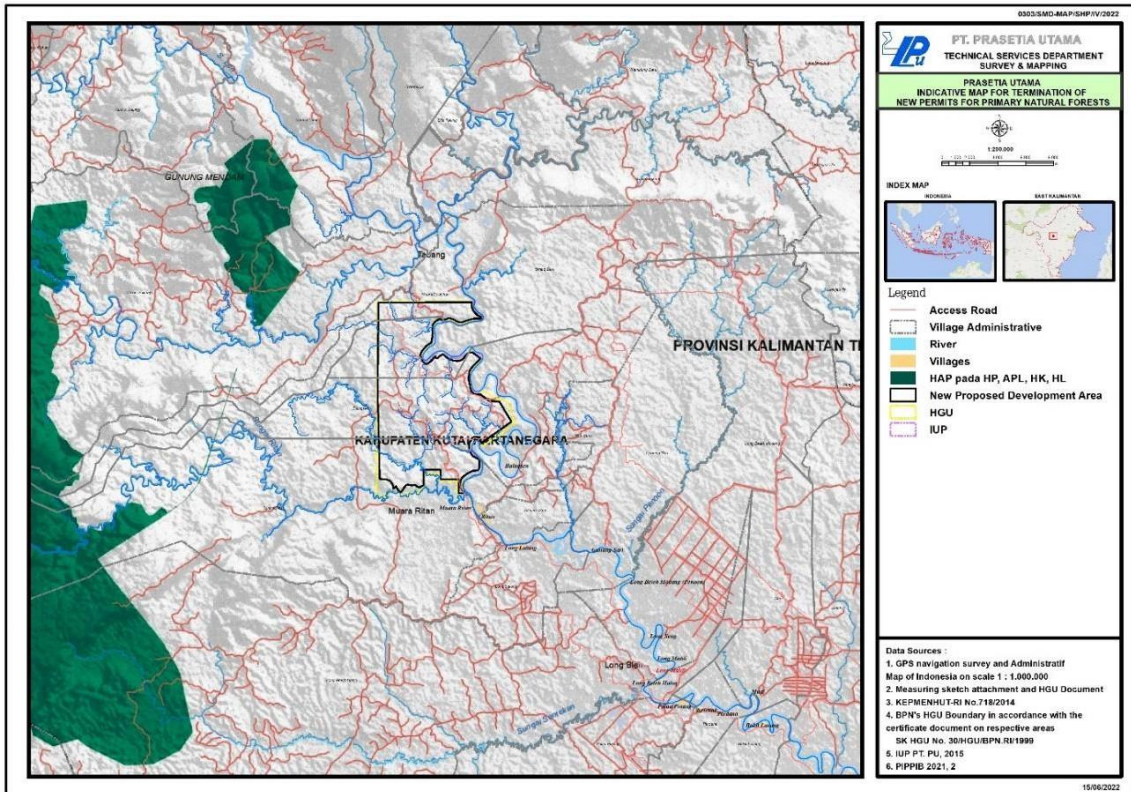


Figure 7. Overlay map stipulation of indicative map for termination of new permits for primary natural forests and peatlands (PIPIB 2021 – 2)* with concession granted to PT PU

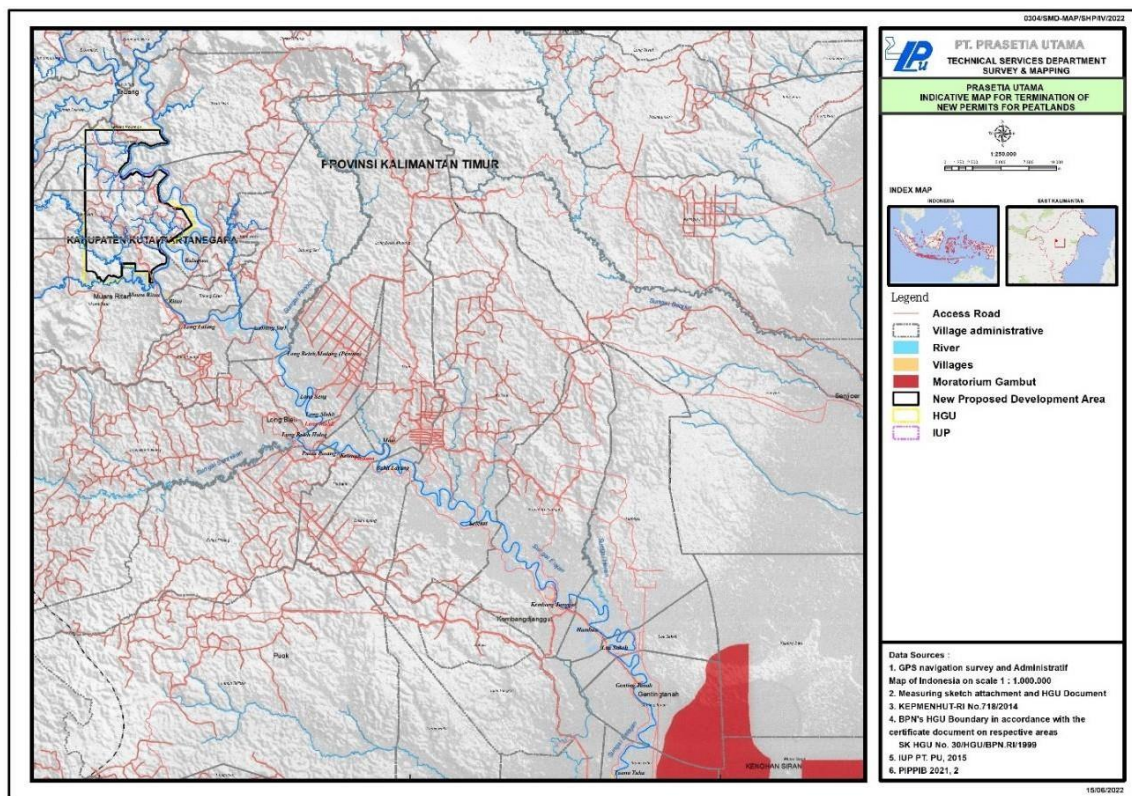


Figure 8. Overlay map stipulation of indicative map for termination of new permits for peatlands (PIPIB 2021 – 2)* with concession granted to PT PU

Note:
PIPIB: Peta Indicative Penghentian Pemberian Ijin Berusaha

Section 3: Environmental Impact Assessment (EIA)

Date of activities

PT PU's plan to develop palm oil plantations and mills is based on a comprehensive analysis of social and environmental impacts. This is to ensure that all negative and positive impacts of the planned activities and/or businesses have been identified and the development of management and monitoring programs to mitigate negative impacts and increase positive impacts. EIA activities consists of 5 major phases, namely document review, field assessment, report preparation and public consultation with all stakeholders including the government to obtain approval. Activities started in August 2013 and the EIA document was approved by the Government on 18th August 2015.

Assessor and their credentials

Team conducting assessment and compiling Environmental Impact Analysis documents for Oil Palm Plantations Cultivation Activities and Its Processing Unit of PT PU for an area of 9.097,395 Hectares consists of a team with expertise from various disciplines according to the competencies required and the scope of research used.

Table 2. Assessor team for Environmental Impact Analysis Study (EIA)

No.	Name	Role	Institutions	Experience and Qualifications
1	Ir. Hamsyin, MP	Team Leader	PT. Agronusa Sartika	Geo-Physic/000292/SKPA/LSK-INTAKINDO/XI/2010
2	Surya Darma, SP	Member Team	PT. Agronusa Sartika	Agriculture and Geophysics-Chemistry/001142/SKPA/LSK-INTAKINDO/IV/2014
3	Ikhsan Hartani, SP	Member Team	PT. Agronusa Sartika	Fishery and Biology/001185/SKPA/LSK-INTAKINDO/V/2004
4	Rina Wijayanti	Member Team	PT. Agronusa Sartika	Agriculture and Biology
5	Wahid Syahbani, S.Sos	Member Team	PT. Agronusa Sartika	Social Economic Culture
6	Achmad Effendy, SKM	Member Team	PT. Agronusa Sartika	Public Health

Assessment methods

Method used for drafting the Environmental Impact Assessment (EIA) include scoping activities and limited assessment on significant impact, while the magnitude of the impact is measured by analyzing number of people affected, the intensity of the impact, and number of components affected. Thus the scope of the study is villages around the company's operations that receive an important influence on the existence and operations of the company, study carried out by collecting field data. Data collection techniques include:

1. Document collection and secondary data; This method is used to obtain records of condition of the mill's management and implementation by the company; to obtain demographic data as social life's background of local communities.
2. Dialogue; This method is used for the purpose of identifying the parties, exploring issues which could result, digging hopes, ideas and aspirations for solutions to issues that occur, conducted through meetings both formal and non-formal and with special topics (Focus Group Discussion).
3. Field observations; This method is used to directly understand the facts that indicate the occurrence of field issues and social impacts that occur.
4. In-depth Interview; to explore and gain a deeper understanding of the issues that arise, in-depth interviews conducted by interviewing selected key figures, speaker selection is based on knowledge or direct

implementer or who is affected by the impact.

5. Triangulation; a combination of the above methods is integrated to mutually verify the issues, opinions, and ideas arise.
6. The next stage is the analysis of data. From the field findings obtained is then analyzed to fully understand the context of their mutual relations and then conduct synthesis and drawing conclusions.

The assessment results are used as basis for developing environmental monitoring and environmental management plan to ensure the potential environmental impacts in the development. Environmental impact parameters that potentially arise due to company business plan/ activities covers:

A. Components of Geo Physical Chemistry

This data is information about the geological, physical and chemical condition of the study area. These data were taken before massive operations carried out in PT PU. Data taken include Regional Climate, Micro Climate, Air Quality and Noise, Physiography, Land and Hydrology. Data collection method used is primary.

B. Biological Components

Biological components contained in the concession area of PT PU are an important impact in the scope of operations that will be affected by land use change. The data collected are, Land Biota (Flora, Fauna, Pests and Plant Diseases) and Water Biota (Plankton, Benthos, Nekton). Data collection method is primary.

C. Social Components

Social component needs to be identified to determine impacts to the surrounding community. The data taken are as follows; Demographics, Economics and Culture. Data collection method is primary and secondary.

D. Components of Public Health and Safety

Data taken are in the form of Vector Diseases, Environmental Sanitation, Health Resources, Diseases Pattern, and Public Health Behavior as well as the potential of traffic accident due to the mobilization of company's vehicle for transporting material and goods.

Important impacts are estimated through the following phases:

1. Impact magnitude estimation. Impact magnitude accounts for the gap between environmental characteristic/quality with and without activity in place.
Estimated magnitude of impact = $KLp - KLRLA$
Where:
KLp: Scale of environment quality activity/project in place
KLRLA: Scale of environment quality at the initial condition/baseline (without project)
2. Impact important characteristic determination. Impact's important characteristic are defined following Government Regulation No. 27/2012 on Environmental Permit. Particularly for social economic and cultural components. These refer to the definition by Prof. Susetyawan (based on Koentjaraningrat's Theory of Institution, 2000).

Summary of findings

Purpose and objectives of environmental management in general include:

1. Mitigate, minimize or control negative impacts arising from the PT PU business or oil palm plantation cultivation activities with its processing unit.
2. Improve or maximize positive impacts so that impacts can provide greater benefits or added value to local communities and local governments in general.
3. Refer to legislation on managing the environment and implementing environmental management and environmentally friendly development policies.

The EIA document consists of EIA documents Terms of Reference (EIA), Environmental Impact Assessment (EIA), Environmental Management & Monitoring Plan. In accordance with significant impacts evaluation resulted from assessment results as well as impacts that need to be managed in which contained in the EIA document. EIA document also states aspect impact from activities and/ or business that will affect the environment in terms of environment, social and socioeconomic and cultural areas and/ or communities around the location area of PT PU. The influence (impact) can be positive and negative impacts with different magnitudes and characteristics that occur at each stage of company's operations (pre-construction, construction, operational and post-operation).

Positive and negative impacts of business activities and/ or plan of PT PU in general:

Significant positive impacts that are estimated to emerge include:

1. Perceptions and positive attitude of the community relating to the development plan of PT PU oil palm plantation and its processing mill. This is because opening and increasing opportunities to work in the company; opening up opportunities that will ultimately increase the level of income and livelihoods.
2. Increased infrastructure and public facilities.
3. Improved skills for local communities around the company.

Significant negative impact that are estimated to emerge are:

1. Physical geophysical-chemical components: air quality degradation, increased noise, reduced surface water quality, increased erosion, increased sedimentation, increased fire and liquid waste potential.
2. Biological components include disturbance of flora and fauna, disturbance of aquatic biota.
3. Vulnerable to land and forest fire hazards.
4. Level of risk to safety at work sites and on the location of the population due to the operation of the company vehicles.
5. In social component is the potential for the emergence of social conflict, negative perceptions of the community and the shift of local cultural values/norms.
6. Community health component: public health disorder.

However, some of significant negative impacts expected to emerge can essentially be managed through several proposed environmental management approaches. The hope is that negative impacts can be minimized, mitigated and even prevented. For positive impacts as much as possible developed, so that the ultimate goal of development activities for the welfare of the entire community can be sustainable without disregarding the quality of the environment. Based on these conditions, the action plan for PT PU oil palm plantation development can be declared environmentally viable by creating environmental management efforts and environmental monitoring efforts.

Regional scope

Development and operation of PT PU oil palm plantations raise the potential for direct and indirect consequences both positively and negatively at the regional and/ or internal levels of communities affected by the planned business and/or activities. Community at the regional level at sub-districts, districts and provinces and/ or local communities around the company site will have an impact on changes in the initial conditions (social, economic, cultural and public health), which will have implications for changes and shifts in the social order society along with conditions of changes relevant to current conditions. The variable used as a parameter in the evaluation of significant impact as a reference in mitigating any social conflict that occurred in society.

Internal scope

In addition to cause positive and negative impacts on the structure and governance of the environment and local communities, the plan to develop oil palm plantations and its processing unit will also affect the company's internal conditions where there is interaction between the company and workers. The magnitude of the impacts

projected will not be as large as the impact on the regional scope, but it is necessary to identify and managed in an integrated manner on a regional scale.

Stakeholder consultation

PT PU has carried out the FPIC process which began with socialization of the planned activities/businesses for cultivating oil palm plantations with processing units, which was carried out on 24th August 2013 in the context of preparing the EIA. The socialization was attended by Muspika Tabang (Camat, Polsek, Koramil), related agencies (BLHD, Plantation, Land), village officials (village head, village secretary, head of LPM, head of BPD, customary head) as well as community leaders from villages potentially affected (Buluq Sen and Muara Ritan villages). Basically, the communities from the two villages welcomed the presence of PT PU and did not reject the company that would invest and develop an oil palm plantation in their area, however, in the discussion session there were several notes from the community asking the company to show its seriousness by making a written agreement as a form of company commitment, because the community previously felt disappointed with the company's promise that it had been 15 years since PT PU obtained the HGU there had been no significant activity.

Section 4: Social Impact Assessment (SIA)

Date of activities

A social impact assessment was carried out in 2014 including a social liability assessment to identify of social impact against the company's operational activities and to ensure that the dynamics and social, economic and cultural conditions that develop around the PT PU area and the resulting social impacts are still relevant, the company is committed to re-assessing (**update and review**) the social impact on 15th – 26th November 2021.

Table 3. Schedule of update and review of Social Impact Assessment (SIA)

Monday, 15 Nov 2021	Travelling Jakarta - location
Tuesday, 16 Nov 2022	Opening meeting & data collection and document review
Wednesday, 17 Nov 2021	Interviews and observations at Umaq Dian Village
Thursday, 18 Nov 2021	Interviews and observations at Muara Pedohon and Bila Talang Villages
Friday, 19 Nov 2021	Interviews and observations at Tabang District and Muara Pedohon Village
Saturday, 20 Nov 2021	Interviews and observations at Muara Ritan Village
Sunday, 21 Nov 2021	Data recapitulation
Monday, 22 Nov 2021	Interviews and observations at Buluq Sen Village
Tuesday, 23 Nov 2022	Interviews and observations at Ritan Baru Village
Wednesday, 24 Nov 2021	Interviews with specific source person/interviewees
Thursday, 25 Nov 2021	Reporting draft social impact assessment
Friday, 26 Nov 2021	Closing meeting

Assessor and their credentials

The update and review SIA in 2021 for PT PU was compiled by a team of experts in their field which consists of various disciplines in accordance with the required competence and scope of the study used. The editorial team of SIA document are as follows:

Table 4. Social Impact Assessment assessors

No.	Name	Role	Institutions	Experience and Qualifications
1	Miranty Magetsari	Team Leader	Aksenta	Social-economic aspects, social impact management, social culture aspects and participatory mapping.
2	Noor Rakhmat Danumiharja	Team Member (Social economic and cultural expert)	Aksenta	Social-economic aspects, social impact management, social culture aspects, participatory mapping and institutional facilitation.

Assessment methods

Implementation of Social Impact Assessment was conducted by following rules or principles as follows:

1. Participatory; identification of issues and extraction of information are carried out in a participatory manner. This participative approach places the participants as subjects to map out the social issues they are experiencing, express their opinions and aspirations, and involve in designing the management and change.
2. Multi-stakeholders; identification of issues and information extraction are conducted in a multi-stakeholder manner by involving parties that are directly or indirectly give and or receive impacts.
3. Rapid and Ex-ante; the identification of issues and information extraction are done quickly and more on the basis of forecast on changing trends that occur rather than based on accurate factual data - as a solution to the limited Social Impact Assessment approach as well as from the limited time available.
4. Appreciative; identification of issues and information extraction are guided positively, not only to find out the gaps but also to explore the expectations, potentials, and ideas to find solutions to social issues that occur.
5. Social-Learning Cycle; social impact assessment is not a one-off linear process but a cyclical process, which functions as social learning processes to respond to the environmental changes that occur.

Scoping methods/techniques and results analysis

Methods or techniques used for Social Impact Assessment process consist of:

1. Literature Review; this method is used for the purpose of gaining an understanding on the social and environmental context of the study area, carried out in the early stages prior to the field and at the result analysis stage.
2. Dialogue; this method is used for the purpose of identifying the parties, exploring the issues of impact, exploring expectations, ideas and aspirations to find solutions to the issues that occur, through meetings of both formal and informal nature and on specific topics (Focus Group Discussion).
3. Field Observation; this method is used to understand directly the facts on the field which indicates the occurrence of issues and social impacts that occur.
4. In-depth Interview; to explore and gain a deeper understanding of the issues raised, in-depth interviews conducted by involving selected key figures who become resource persons, the choice of resource is based on the knowledge possessed or the doer or person directly feels the impact
5. Triangulation; the combination of the above methods is done in an integrated way to verify each issues, opinions, and emerging ideas.
6. Social-Learning Cycle; social impact assessment is not a one-off linear process but a cyclical process, which functions as social learning processes to respond to the environmental changes that occur.

Table 5. Summary of methods used in Social Impact Assessment

Method	Target Group	Data	Data Type
In-depth interviews (structured and semi-structured)	Key informants such as village heads, village secretaries, indigenous leaders, village elders, fishermen, farmers, etc.	Village history, social impacts, social issues of land use, basic needs, availability of alternatives	Descriptive / qualitative and quantitative
Field Observation	local informants, eg shaman, village elders, farmers	Description: - Village's dependency on resources, - Attitudes and perceptions of local communities on their land and natural resources daya alam mereka	Qualitative

Participatory mapping	Key informants such as village heads, village secretaries, indigenous leaders, village elders, fishermen, farmers and women.	Land use and distribution of natural resources used by the general public and other stakeholders	Qualitative
Focused group discussions	village elders, village committees, indigenous leaders, women	Validation of data collected in this study.	Qualitative and quantitative
Document review	Company Staff, Local Government (Village), Village Representative Body (BPD)	practices of company management in relation to community involvement, community development and smallholder schemes. Government regulations and policies related to oil palm, village history, demography, culture and social - economic.	Qualitative and quantitative

Summary of findings

Social impact in the future

At the time of the update and review of SIA, the company had not carried out land acquisition and land clearing activities even though the Land Use Rights Certificate had been issued in 1999. In 2001, the old owner stopped the activities of managing oil palm plantations and nurseries without clarity. From that year until 2013, there were no activities carried out by the company in the HGU area or with the local community. From 2014 to 2019 there were several studies including HCV, SIA, and LUCA conducted by the company. The community deeply regrets the unclear development of PT PU's plantation, the Land Office (Badan Pertanahan Nasional) has also questioned the use of the HGU area in order to identify abandoned land.

At the end of 2018, the new management under REA Kaltim Plantations has been started to communicate with the communities at Muara Ritan, Buluq Sen, Muara Pedohon and Umaq Dian Villages. The management introduced themselves, conducted socialization regarding the plantation development plan, and carried out an inventory of the land. PT PU under of REA Kaltim Plantations company that manages PT Sasana Yudha Bhakti's oil palm plantations in the Gunung Sari Village, Ritan Baru and Tukung Ritan Villages, Buluq Sen Village, and Umaq Dian Village. The community in Buluq Sen Village have interacted intensively with REA Kaltim during the land acquisition for PT Sasana Yudha Bhakti's plantation development and had poor experience in the process of developing partnerships for plasma development.

Local communities have been affected by the existence and operations of other companies. Until now PT PU has not yet a social impact on the surrounding community. Determination of future impacts is influenced by the following: (i). The area that can be developed into plantations, namely the area of HGU minus the area reserved as conservation areas (HCV, HCS, and land use risk areas), (ii). Policies related to land acquisition and land compensation values, (iii). Communication, attitude, and social relations of the Company (new management) in dealing with the community, and (iv). Community response to the Company's activities, policies, and communications. The impact is stated to be significant on the asset pentagon of the study villages if it has one of the following criteria: (i). The size of the population affected, (ii). The extent of the impact, (iii). The intensity and duration of the impact, (iv). The number of elements of the pentagon asset affected, (v). The cumulative nature of the impact, and (vi). The irreversibility of the impact.

Table 6. Social impact in the future due to oil palm company activities towards community Pentagonal Assets in Kutai Kartanegara Regency, East Kalimantan Province

Company Activity	Pentagonal Asset				
	Human capital	Social capital	Financial capital	Natural capital	Physical capital
Land acquisition	0	-	+	-	0
Land clearing	0	-	+	-/+	+
Oil palm plantation management	-/+	0	+	-	0
FFB's transportation	0	0	+	0	0
FFB's processing	-/+	0	+	-	0
CPO, CPKO transportation	0	0	+	-	0
New plasma development	+	-	+	+	0
CSR program	+	+	+	+	+

Social risk

Social risk is a social condition that has the potential to cause material or immaterial losses/damage for the company so that the company is forced to stop operating or has to bear high social cost due to social issues. The source of the risk in question comes from the surrounding community as an outside party. Based on the social conditions in the study area and the conditions of the people who have interaction with the company, it was found that there are social risks faced by the company. There are three risks identified by reviewing the condition of the community:

- Prohibition of any activities until the request of the Buluq Sen Village community is approved, which stems from the failure to reach an initial agreement with the Buluq Sen Village community. The problem is that there are some requests or expectations that are quite demanding from certain individuals or groups.
- Low land acquisition rates and high social costs due to land disputes and conflicts. The low level of land acquisition is classified as operational risk, but because the source comes from the community who controls the land in the HGU area, it can be categorized as social risk.
- Disturbance from the community which has high social costs originating from the development of plasma plantations which if not carried out in conjunction with the nucleus plantations.

The level of risk is highly dependent on the company's attitude, leadership policies/decisions, and ways of communicating. The level of risk is categorized as high if the land acquisition is far below the target and the company's plantation development planning is hampered. In addition to the risks mentioned above, there are other risks with a medium or low level, the sources of which are the internal environment itself or the control measures tend to be less complex which do not depend on external parties or factors:

- Did not get full support from all community groups. There are community groups in Buluq Sen Village who feel that the company is only communicating with a certain person or community group. This group feels less involved in matters related to PT PU.
- Reputational risk. The long process of developing the plantations and the lack of communication and openness have made the community view that the new management of PT PU is the same as other companies that are not serious about investing in the village area.

Social issues

The social issues in question are issues that arise between the local community and PT PU. The key issues referred to are factual, repeated events, there has not been an effective countermeasure or effort, and has the potential to cause high social costs. There are four types of social issues identified, namely:

Negative experience with palm oil company

- In the past, local communities did not have good experiences with PT PU, PT Sawit Khatulistiwa Plantation, PT Enggang Alam Sawita, and PT Sasana Yudha Bhakti. These background influences the attitude of the community towards the PT PU plantation development plan. However, the community remains open to REA because they realize that village progress cannot be achieved without the presence of companies operating

in the village area. The problem with PT Enggang Alam Sawita and PT Sasana Yudha Bhakti regarding plasma development and the issue with PT Sawit Khatulistiwa Plantation is the cessation of plantation operations without clarity which causes losses to the village and community who have handed over the land to the company.

Communication

- The community does not understand why the process of land acquisition and development of PT PU's plantation by the REA has stopped in 2020 until now. Sources found in Muara Ritan Village and Buluq Sen Village stated that there was no communication established by the company during the cessation of these activities. Doubts about the seriousness of REA began to emerge.
- The Buluq Sen Village feels that the company only communicates with one party and that the village government is not involved. In Muara Ritan Village, a similar thing happened, the community felt they were not represented in dealing with the company.
- Muara Pedohon and Umaq Dian villages do not know the boundaries of PT PU's HGU area and the area of villages that are included in the HGU. The village head of Muara Pedohon stated that it was his village with a large area under the HGU, not Umaq Dian Village.

Land acquisition and determination of plasma farmers

- The communities of Muara Ritan, Buluq Sen, and Umaq Dian Villages are aware that many Ritan residents (residents from Ritan Baru Village and Tukung Ritan Village) have land in their village areas, so they are worried that the land acquisition process will not proceed fairly.
- Umaq Dian Village does not want the incident of land acquisition by mining companies in the area of Umaq Dian Village to repeat itself where all the compensation recipients are Ritan residents.
- Muara Ritan, Buluq Sen, Muara Pedohon, and Umaq Dian Villages wanted the plasma plantations built by PT PU to be solely for their residents (not including Ritan residents who gave up land as plasma farmers as was done by PT Enggang Alam Sawita).
- On the other hand, the residents of Buluq Sen Village and Muara Ritan Village also contributed to complicating the situation by claiming very large lands reaching hundreds of hectares and overlapping with what other residents claimed.
- Village boundaries are an issue in the study area, old villages are reluctant to share their area with new villages. The boundaries between the villages of Muara Ritan, Buluq Sen, and Umaq Dian were judged to be clear based on the old decree, not based on the official confirmation in 2019. The old villages felt that there was no problem with village boundaries if they used the old administrative boundaries.
- Land compensation
 - Compensation for Growing Planting (Ganti Rugi Tanam Tumbuh) offered by the company is considered very low compared to the compensation value from mining companies. Actually the compensation value has not been determined and discussed in depth with the community because it has not yet reached that stage.
 - It is possible that the residents of Ritan Baru Village and Tukung Ritan Village who are active in the PT PU area are reluctant to release their land because they do not have land elsewhere. The Ritan community is known to venture far from their village area, even the Head of Ritan Baru Village received warning letters from other villages as far as Bengalon and Long Bleh areas. The Ritan community is a Dayak community who still practice shifting cultivation. Based on population data, the population of Ritan Baru Village and Tukung Ritan Village is classified as very dense (compared to other villages in the study area) with a total of 1,049 families and occupies an area of 101 km² which is shared with PT Enggang Alam Sawita and PT Sasana Yudha Bhakti.

Stakeholder consultation

The stakeholders referred to in the context of this study are parties who are suspected of having significantly given and/or received influence over the existence and planned operation of PT Prasetya Utama. Some of these stakeholders become resource persons in obtaining information and social issues. Activities for obtaining

information from resource persons are shown **Figure 9**. Identification of key stakeholders is carried out through stakeholder mapping, interviews, and field observations, both from the community environment around the company and from the company's internal environment. This is a process of clarification and triangulation on the emergence and development of social issues surrounding the existence of the Company in the life of the surrounding community.



Figure 9. Stakeholder consultation at Buluq Sen, Muara Ritan, Umaq Dian and Muara Pedohon Villages

**Section 5: HCV-HCSA Assessment; OR
ALS HCV and Standalone HCSA assessment**

5.1 HCV assessment

Date of activities

PT PU has carried out HCV assessment on May 2018 – July 2019, involving three major phases, i.e. pre-assessment, scoping study and full assessment. The HCV assessment final report was obtained satisfactory by HCV Resource Network (HCVRN) Assessor License Scheme (ALS) on 16 February 2021 <https://www.hcvnetwork.org/reports/laporan-penilaian-high-conservation-value-pt-prasetia-utama-kabupaten-kutai-kartanegara-provinsi-kalimantan-timur-indonesia>

In accordance with RSO P&C 2018 indicator 7.12.2, PT PU's development plan is included in scenario 3 set out in the Interpretation Document Indicator 7.12.2 and Annex 5 where HCV submissions to the HCVRN are carried out before 15th November 2018 so that only HCV assessment required to comply with the indicator 7.12.2 and annex 5.

Table 7. Time frame of HCV assessment PT PU

Phase	Purpose	Activities	Time
Preassessment			
Basic information collection based on desktop study	<ul style="list-style-type: none"> Understanding the location of the PT PU HGU area Knowing the reason for conducting the HCV assessment Understanding the initial land cover condition 	<ul style="list-style-type: none"> Collecting data and information from PT PU management in the form of spatial data, environmental documents, legality and social documents. Collecting secondary data in the form of satellite imagery, basemap. Collect secondary data from various literatures (books, journals, reports, statistical data, and websites) Data and information analysis 	10-15 May 2018
Information gathering based on field visits (scoping study)	<ul style="list-style-type: none"> Identification of stakeholders Understanding the main issues, social and environmental characteristics at the assessment site Land cover verification Setting boundaries for the assessment landscape 	<ul style="list-style-type: none"> Consultation with stakeholders Field observations Analysis of data and information Planning and preparation of complete field surveys, including determining survey methods and designs, arranging team composition, making complete field survey schedules and arranging meetings with local communities for complete field survey activities 	21-23 May 2018
Full assessment			
Field survey and consultation with local stakeholders	<ul style="list-style-type: none"> Identification of HCV presence based on Common Guidance for Identification of HCV (Brown et.al, 2017) Identification of potential threats to areas that have HCV values 	<ul style="list-style-type: none"> Survey of the presence of wildlife (fauna) Survey of flora, structure and composition of vegetation and ecosystem quality Eco-system type, function and description survey Participatory mapping, and Focus group discussions (FGD) with local communities Interviews with local people 	28 May – 5 June 2018
Data and information analysis	<ul style="list-style-type: none"> Delineate the HCV area Assess the level of threat risk to HCV 	<ul style="list-style-type: none"> Spatial analysis Data and information analysis 	15-23 June 2018

Consultation with stakeholders	<ul style="list-style-type: none"> Communicate field findings Ask for advice on HCV management and monitoring 	<ul style="list-style-type: none"> Consultation via email by presenting a summary of the assessment results Direct consultation (visiting several stakeholders) by presenting the results of the assessment Workshop by presenting field findings and presenting HCV maps 	2 May – 13 July 2019
Data analysis and reporting	<ul style="list-style-type: none"> Reporting 	<ul style="list-style-type: none"> Prepare HCV reports in accordance with the HCV assessment report template (HCVRN 2018) 	4-25 July 2019

Assessor and their credentials

PT PU High Conservation Value assessment are carried out by PT Gagas Dinamiga Aksenta whose address is Jalan Gandaria VIII/10, Kebayoran Baru, Jakarta 12130. The assessment team consists of 9 members and led by ALS licensed assessor.

Table 8. Assessor team for High Conservation Value Assessment of PT PU

Idung Risdiyanto idung@aksenta.com	Lead Assessor (ALS15029IR), field of environmental services (HCV 4)	Aksenta	Environmental services sector, Hydrologist, has been conducting HCV studies since 2009
Iwan Setiawan iwan@aksenta.com	Team Member, field of biodiversity studies (HCV 1-3)	Aksenta	Wildlife research and survey, wildlife management, ornithologist, facilitator of community biodiversity assessment, participatory mapping, conducting HCV studies since 2012
Tedi Setiadi tedi@aksenta.com	Team Member, field of biodiversity studies (HCV 1-3)	Aksenta	Biodiversity assessment research and survey, conducting HCV studies since 2012
Fachmi Azhar Aji fachmi@gmail.com	Team member, field of botanical studies	Aksenta	Plant taxonomy study, conducted a study of plant vegetation in the context of HCV since 2017
Yanto Andriyanto yanto@aksenta.com	Team Member, field of ecosystem services studies (HCV4)	Aksenta	Hydrologist, soil conservation, spatial analysis and remote sensing, water management system, conducted HCV assessment since 2012
Andri Novi Hendarto andri@aksenta.com	Team Member, field of socio-cultural studies (HCV5 and HCV6)	Aksenta	Social and cultural sciences conducted HCV assessment since 2009
Teuku Ade Fachlevi adhe@aksenta.com	Team Member, socio-cultural assessment area (HCV5 and HCV6)	Aksenta	Researcher in the field of socio-economic and environmental.
Reza Abdillah reza@aksenta.com	Team Member, GIS Specialist	Aksenta	Practitioner in remote sensing and mapping for biology, conservation and land use issues, Land Use Change Analysis, Carbon Stock Assessment
Nur Indah Ristiana indah@aksenta.com	Team Member, GIS Specialist	Aksenta	Spatial analysis and remote sensing, Land cover change analysis

Assessment methods

The HCV assessment for PT PU employs several guides as follow: (i). Common Guidance for Identification of High Conservation Value (Brown et al., 2017) for identifying HCV1, HCV2, HCV3, HCV4, HCV5 and HCV6; (ii). Panduan Identifikasi Kawasan Bernilai Konservasi Tinggi di Indonesia (Consortium for Revision of the HCV Toolkit for

Indonesia, 2008) for identifying HCV; (iii). Common Guidance for the Management and Monitoring of High Conservation Values (Brown et al., 2018).

Summary of findings

HCV 1 area

The results of this assessment indicate that the HCV 1 criteria in the assessment landscape are met by the presence of RTE species, particularly the gibbon gibbon (*Hylobates muelleri*) and several Dipterocarp species. Kelawait was recorded to still occupy the remaining patches of secondary forest within MU and AOI. Likewise, several species of Dipterocarpaceae were recorded to still compose the species composition of the secondary forest fragments in the assessment landscape. Another important area is the rivers in the assessment landscape that are natural habitats for various RTE aquatic fauna, including the thorn turtle and sinyulong crocodile. There is an area with thicket cover in the middle of the MU area but it has been damaged and no RTE species were found.

Thus, the HCV 1 area in the assessment landscape includes a secondary forest area which is a natural habitat where biodiversity is concentrated, especially endemic and RTE species. The other HCV 1 area is river basin natural habitat for aquatic fauna. The area of HCV 1 in the MU area is 1,395.8 ha, the location of the location is presented on **Figure 10**.

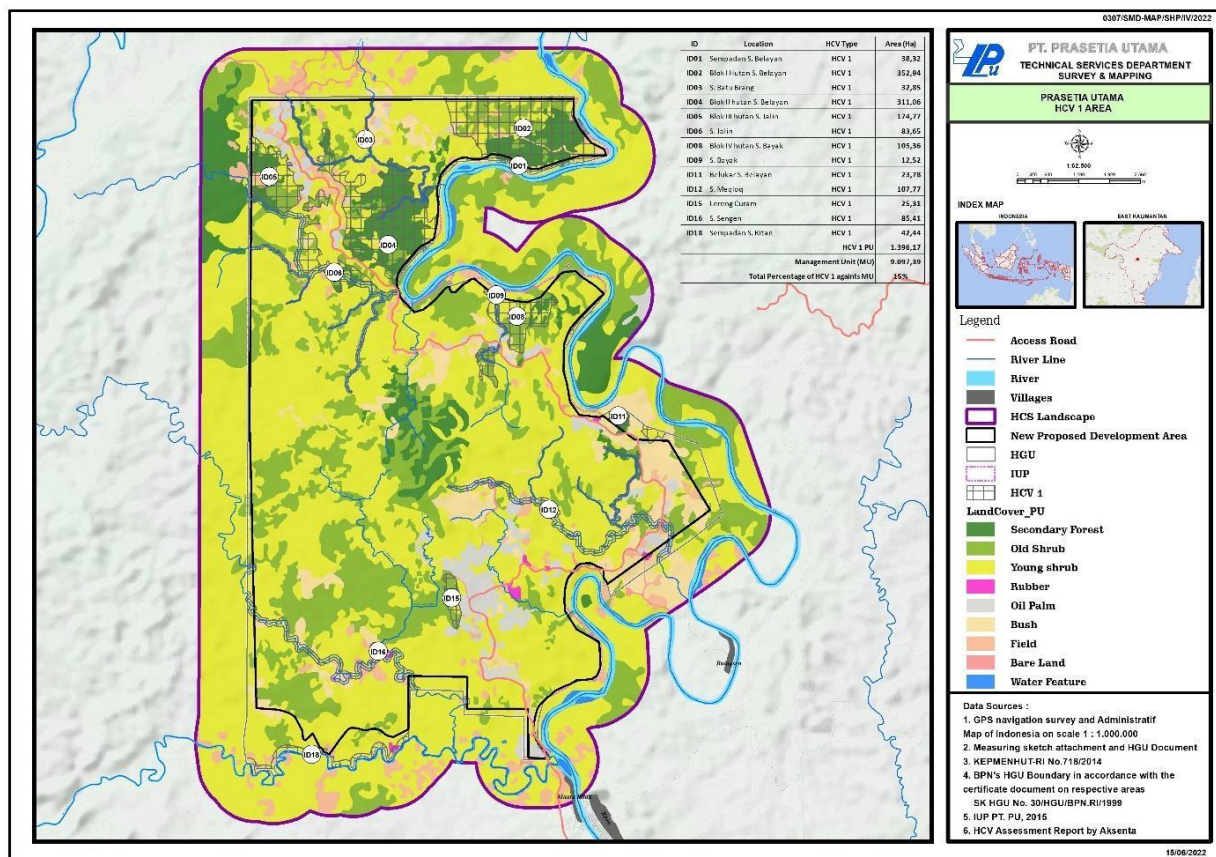


Figure 10. Location Map of PT. Prasetia Utama HCV 1 Area

HCV 2: Ecosystem, mosaic at intact forest landscape level

HCV 2 is an intact forest landscape and large-level landscape ecosystem and ecosystem mosaic that is significant at a global, regional or national level, and that contains viable populations of most natural species in natural patterns of distribution and abundance (Brown et al., 2017). The results of this assessment indicate that there are no situations that qualify as HCV 2 (**Table 9**).

Table 9. Situations that would qualify as HCV 2

A large area (for example: more than 50,000 ha, but this size is not a standard) which is located relatively far from human settlements, roads or other access. Especially if the area is one of the largest in size in a particular country or region.	x
Smaller areas that provide key landscape functions such as connectivity and buffering (e.g. protected area buffer zones or corridors connecting protected areas or high quality habitat). This smaller area will be considered HCV 2 only if it has a role in maintaining the larger area within the wider landscape.	x
A large area that is more natural and intact than other similar areas and provides habitat for major predators or species with diverse needs.	x

HCV 3: Ecosystems and habitat

HCV 3 is an ecosystem, habitat or refugia that is rare, threatened, or threatened with extinction. The identification of HCV 3 in this study used criteria based on the Common Guidance for the Identification of HCV (Brown et al., 2017). Identification of HCV 3 in the field will lead to efforts to ensure whether there is a natural ecosystem that is not disturbed or slightly disturbed. If a natural ecosystem is found, then it is referred to whether the ecosystem is included in a rare or threatened ecosystem at the national or international level. There are four ecosystem criteria that meet HCV 3 criteria, namely naturally rare; anthropogenic rare, threatened or endangered, and classified as threatened in national or international systems (Brown et al., 2017). The results of the field study show that the criteria for natural ecosystems are the conditions for the existence of HCV 3 (**Table 10**).

Table 10. Situations that would qualify as HCV 3

Naturally rare due to their dependence on soil type, location, hydrology or other highly localized climatic or physical features, such as some types of limestone karst forest, inselberg, montana forest, or river forest in arid zones	x
Anthropogenically rare, because the area of this ecosystem has been drastically reduced due to human activities compared to its historical extent, such as fragments of primary forests in areas where almost all of the primary forest has been eliminated.	√
Threatened or threatened with extinction (eg drastically reduced) due to ongoing or proposed operations.	√
Classified as threatened in the national or international system	√

As an implementation of the precautionary principle, in determining the status of the remaining lowland forest in the assessment area, an analysis was carried out using a precautionary approach referring to the HCV Toolkit for Indonesia (2008). The analysis steps can be seen in **Table 11**. Based on this analysis, it can be concluded that the presence of lowland forest meets the criteria for HCV 3.

Table 11. Identification of HCV 3 in the assessment area through the precautionary approach

Question	Answer	Instruction	Criteria
3.1 Are one or more of the ecosystems categorized as threatened or rare in Table 8.3.1 or 8.3.2 located (i) within the MU area, or (ii) outside the MU area but likely to be affected by the MU's planned use?	Yes	There may be HCV 3 in the MU or nearby; continue to 3.2	There is potential for Lowland Forest in Sandstone (TWH, LWW, PDR land systems)
	No	-	-
3.2 Is the ecosystem vegetation on peat land?	Yes	-	-
	No	Go to 3.4	Lowland forest ecosystems are found in sandstone
3.3 Has the peatland undergone drastic changes that hinder the natural hydrological process so that it is impossible	Yes		3.3 Has the peatland undergone drastic changes that hinder the natural hydrological process so that it is impossible to restore

to restore the natural hydrological function?			the natural hydrological function?
	No	Go to 3.4	Peatlands where some elements of natural vegetation remain and a drainage network system has not yet been established.
3.4 Has the ecosystem experienced drastic land cover changes so that it meets the criteria for “unproductive land” based on the Minister of Forestry Decree no. 21/Kpts-II/2001	Yes	Chances are no HCV 3, keep going to 3.5	Chances are there is no HCV 3, continue to 3.5 Total woody vegetation biomass less than 5 m3 per ha; for example, clear-cut forests or burnt areas
	No	There is HCV 3 in MU and AOI	in MU and AOI Total woody vegetation biomass is more than 5 m3 per ha. The potential area is secondary forest and lowland scrub on sandstone scattered in several locations in the assessment area

The results of the HCV 3 identification study concluded that there are ecosystems that are threatened and meet the criteria of HCV 3, namely in the form of lowland forest in sandstone. HCV 3 areas are located in 8 locations. The area of HCV 3 is 1,069.5 ha, each with an indicative limit of the outermost forest cover (**Figure 11**).

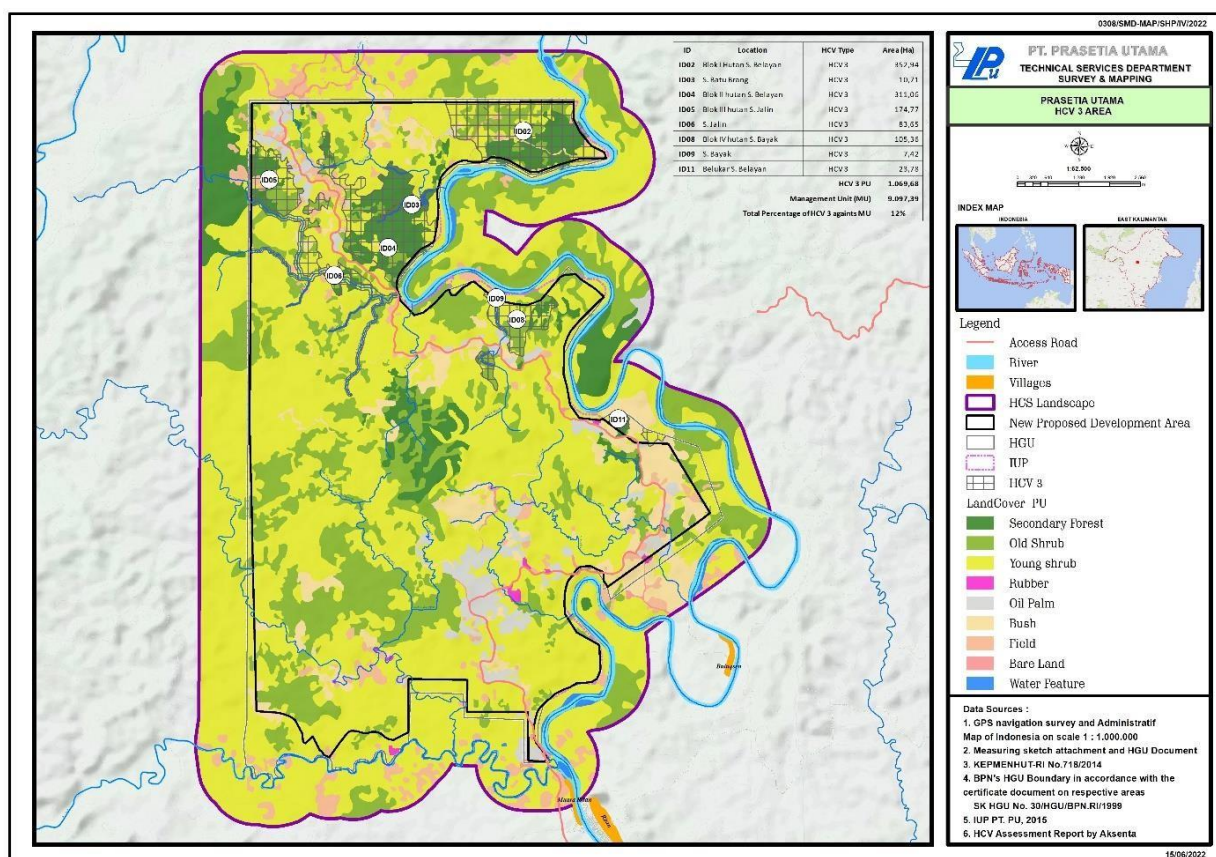


Figure 11. Location Map of PT. Prasetia Utama HCV 3 Area

HCV 4: Ecosystems services

Based on Brown et. al., 2017, there are several situations that qualify as HCV 4 (**Table 12**). The assessment of the situation is on the presence of natural indicators found in the field, for example the presence of rivers and their

riparian zones, wetlands (swamps, lakes), the presence of forests/caves as habitats for pollinating agents, the presence of land with steep slopes and still well vegetated (Forest). The results of the field survey show that indicators within the AOI area are rivers and riparian zones, as well as land with steep slopes that are still well vegetated (forest). The existence of these indicators has 6 situations out of 10 that meet the prerequisites as HCV4 (**Table 12**).

Table 12. Situations that would qualify as HCV 4

Conditions for the existence of HCV 4	Finding
Management of extreme water flow events, including vegetated zone buffer zones or intact floodplains	√
Maintenance of downstream river flow regime	√
Maintenance of water quality characteristics	√
Protection of soil, aquifer	√
Provision of clean water, for example where local communities depend on rivers and natural springs for drinking water, or where natural ecosystems play an important role in stabilizing steep slopes. The two values often coincide and the areas that provide these critical services (water supply and erosion control) may be partially or completely intersected.	√
Protection against wind, and regulation of humidity, precipitation and other climatic elements	√
Natural Ecosystems Play an Important Role in Stabilizing Steep Slopes	√
Pollination services, for example exclusive pollination of subsistence food crops provided by native bees to small-scale farmers in the Kenyan highlands, or to commercial Durian plantations by bats in Southeast Asia. In both cases, pollinators depend on the presence of suitable forest habitats and cannot survive in landscapes that are purely agricultural activities.	X
Forests, wetlands and other ecosystems that provide a barrier zone that protects against destructive fires that could threaten communities, infrastructure or other HCVs.	X
Groundwater recharge zone.	X
Grassland areas that provide a barrier zone from flooding or desertification	X

Management of extreme water flow events, including vegetation buffer zones or intact flood lands

Field indicators in the MU area that show the existence of situations related to the management of extreme water flow events and intact flood buffers are the presence of rivers and hilly areas that are still naturally vegetated. The existence of the river is very important as the main drainage channel, especially during extreme rain events. The river drains water from the upstream catchment area to its estuary so that there is no flooding in the land, including flood buffer areas around the river flow. The existence of sloping land (hills/valleys) that are still naturally vegetated plays a role in reducing the speed of surface runoff so that the concentration of rainwater on the land increases. It can control the flow of water in extreme conditions in the river. The existence of rivers and hilly areas that are still naturally vegetated in the MU area are as follows:

Rivers & riparian zone

The major rivers closest to the MU area are the Belayan River and the Ritan River (**Table 13**). These tributaries flow across the MU area (there are 8 rivers). Most of the water catchment areas of the Sengen River and Jalin River are outside the MU area, so the flow conditions depend on land use and land cover conditions outside the MU area. Other river catchment areas are within the MU area. Its upstream is Mount Mendem and Mount Naga.

In general, the condition of the riparian zone of the tributaries of the Belayan and Ritan rivers is still good, but there are several river segments where the community is farming (paddy fields, rubber, oil palm). The condition of the water in rivers that flow from Mount Mendem and Mount Naga is quite clear (very low dissolved matter), such as the Banggeh River, Tantau River, Meqloq River). The condition of the existing vegetation still plays an important role as a natural filter resulting from erosion carried by surface runoff.

Table 13. Recapitulation of the presence of rivers in the MU area

River's Name	Length ¹ (km)	Wide ² (m)	Depth ² (m)	Buffer (m)	Keterangan
Batu berang	8.52	2-3	0.5-2	20	It empties into the Belayan River, cloudy water
Jalin	11.53	3-7	0.5-3	15-50	It empties into the Belayan River, cloudy water
Jalin Tukung	5.05	2-3	1.0-2	25-50	It empties into the Belayan River, the water is quite clear
Bayeq	4.71	1-3	0.5-1.5	15-25	It empties into the Belayan River, the water is quite clear
Meqloq	15.90	1-3	0.5-1.5	10-50	It empties into the Belayan River, the water is quite clear
Tumau	5.23	1-3	0.5-1.5	25	It empties into the Belayan River, the water is quite clear
Sengen	8.50	3-7	0.5-2.5	50	It empties into the Belayan River, the water is quite clear
Bangge	10.85	1-5	0.5-1.5	10-25	Sengen River branch, the water is quite clear
Ritan	-	-	-	100	Being outside the study area, the water is cloudy
Belayan	-	-	-	100	Being outside the study area, the water is cloudy

Notes: 1) GIS Tool calculation results from the corrected river Shape files that are in the MU area

2) Measurement/estimate from field survey

Steep slope hilly area

Areas with steep slopes in the MU area are in Mount Mendem, Gunung Naga, and the valley east of the Bangge River. Land cover in the area is still in good condition (some spots have been opened by the community for fields and rubber/oil palm plantations). Areas with steep slopes (valleys/hills) have a high surface runoff rate, so the presence of pristine vegetation can reduce the rate of runoff and increase the time of water concentration in the land. Rainwater that is held in the soil will be absorbed through the root area so that it can replenish underground water. This condition plays a very important role in managing extreme water flow events and maintaining the river flow regime.

Protection of soils and aquifers

The type of soil in the MU area is mineral soil, there is no peat or marginal soil that requires special protection in its natural condition. The soil texture is classified as medium (sandy loam to sandy clay loam), based on (soil hydrological groups) including group C which has a slow infiltration rate. In this condition, its role as a groundwater recharging area that protects the aquifer layer is relatively low.

Maintenance of the lower stream regime

There are 2 things related to the maintenance of the downstream flow regime, namely maintaining the flow of water in the river even during the dry season (contributing to base flow) and reducing the maximum river flow, especially during the rainy season by reducing surface runoff. Most of the catchment areas of 8 rivers are in the MU area (see Table 13). These rivers never dry up even during a fairly long dry season. Whether or not these rivers are flooded follows the conditions in the Belayan River. If the Belayan River floods, the flow of water from the upper reaches of these rivers is blocked so that the water level of the river increases. The upper reaches of these rivers are located around Mount Mendam and Mount Naga. The condition of land cover is still good, especially on land with steep slopes (slope more than 25%). The natural condition of the land cover plays a role in maintaining the river flow regime, namely by increasing the infiltration of water in the soil so that it contributes to the base flow of these rivers and reduces surface runoff which contributes to the decrease of the peak flow of these rivers.

Maintenance of water quality characteristics

Riparian zones that are still well vegetated can maintain river water quality characteristics. The quality of river water is related to the content of pollutants that come from land erosion. For land that has undergone plantation/agricultural business development, there is potential for river pollution from agrochemical applications (fertilizers, pesticides, herbicides) on the land. Riparian zone that is still well vegetated acts as a natural filter that filters out these pollutants so that do not enter the river. The effectiveness in filtering these pollutants depends on the type, density and height of vegetation in the riparian zone.

In general, the condition of the riparian zone of the rivers in the MU area is still relatively good, there has been no massive land clearing for oil palm plantations or other uses. However, there are also some river segments

that have turned into community fields or oil palm plantations. So that the function of the riparian zone as a natural filter is lost. This area needs further management (riparian zone rehabilitation/remediation) so that the results of land erosion do not pollute the river. The approach to determining the width of the river buffer as a guardian of river water quality from pollutants is based on the function of the riparian zone (Gumber et. al., 2009). The width of the river buffer for the pollutant filter ranges from 6-50 m from the edge of the river bank. The width of the river buffer for flood buffer coincides with the width of the river buffer for pollutant filter. The buffer width of each river in the MU area ranges from 15-50 m from the river bank for small rivers and large rivers (Ritan River and Belayan River) about 100 m (see Table 13).

Provision of clean water

Regarding the provision of clean water, there are 3 things that must be fulfilled, namely good water quality, availability of available water, and local communities who use the water. The rivers in the PT PU area that meet these 3 things are the Sengen, Tantau, Jalin, Jalin Tutung, and Meqloq rivers. These rivers are located upstream around Mount Mendam (land cover in the catchment area is still good) so that the water is abundant (never dry even during the long dry season) and the water quality is good (the water is quite clear and odorless). Local people working in the fields build huts around the river and use them for bathing, washing and drinking water.

Protection against wind, and regulation of humidity, rainfall, and other climatic elements

Most of the morphology of the MU area is a sloping to wavy area, the wind speed is in the normal range. So far, there has never been such a strong wind blowing. This is why in the field there are no areas that act as wind breaks or wind shelters, such as pine trees on the beach. For vegetation that is in the riparian zone (coverage of scrubland to forested land) it is very important in maintaining the microclimate in the riparian ecosystem. Scrub the forest has a dense canopy so that it can significantly reduce the energy of solar radiation that reaches the ground surface. In addition, the presence of such vegetation can increase the resistance to wind movement on the surface (aerodynamic resistance). This will cause the potential for evapotranspiration (evaporation) from the riparian ecosystem to be low so that it can keep the soil surface condition moist until the layer below it (supports the life of aquatic biota).

Natural ecosystems play an important role in stabilizing steep slope

The condition of land cover in the form of thickets to forests that are still good plays a role in stabilizing steep slopes, namely protecting them from erosion and landslides. In general, the sloped land in the MU area has good land cover, there has been no massive land clearing. Land with steep to very steep slopes (hilly, slope more than 25%) in the MU area is around 4.47% located in Mount Mendem, Gunung Naga, and the valleys located east of the Bangge River. MU area is dominated by sloping to wavy land (slope 8-25%) around 60.20%.

Pollination services

There are 2 indicators of the presence of pollination services in the MU area, namely the presence of community orchards as a place for pollinating agents (bees, bats, birds) to work and the presence of the pollinator agent's habitat which can be in the form of good forest around the orchard location. If one of the 2 indicators does not exist, then there is no pollination service in the assessment area. Based on discussions with villagers and field surveys, there are no community-owned orchards in the MU area. This is because the location of the garden is quite far from the location of the village settlement.

Forests, wetlands, and other ecosystems that provide a boundary zone that protects from destructive fires
There is no river body wide enough to act as a natural firebreak to prevent fires from occurring or protect against fires elsewhere, in the MU area. The rivers located around the AOI area that meet these requirements are the Belayan River and the Ritan River, but are outside the MU area. The width of the rivers in the MU area is less than 8 m (Table 13), not wide enough as a firebreak because the canopy/canopy conditions around the river are tight, which allows connecting between parts of the river border.

The HCV 4 area found is in the form of land with steep slopes, as well as rivers and their riparian zone. There are 13 locations of HCV4 areas in the MU area. The total area of HCV 4 is 838.3 ha; the distribution of HCV 4 area is shown on **Figure 12**. The most extensive area of HCV4 is the Gunung Mendam area (ID13) and the riparian zone of the Meqloq River and its tributaries (ID12).

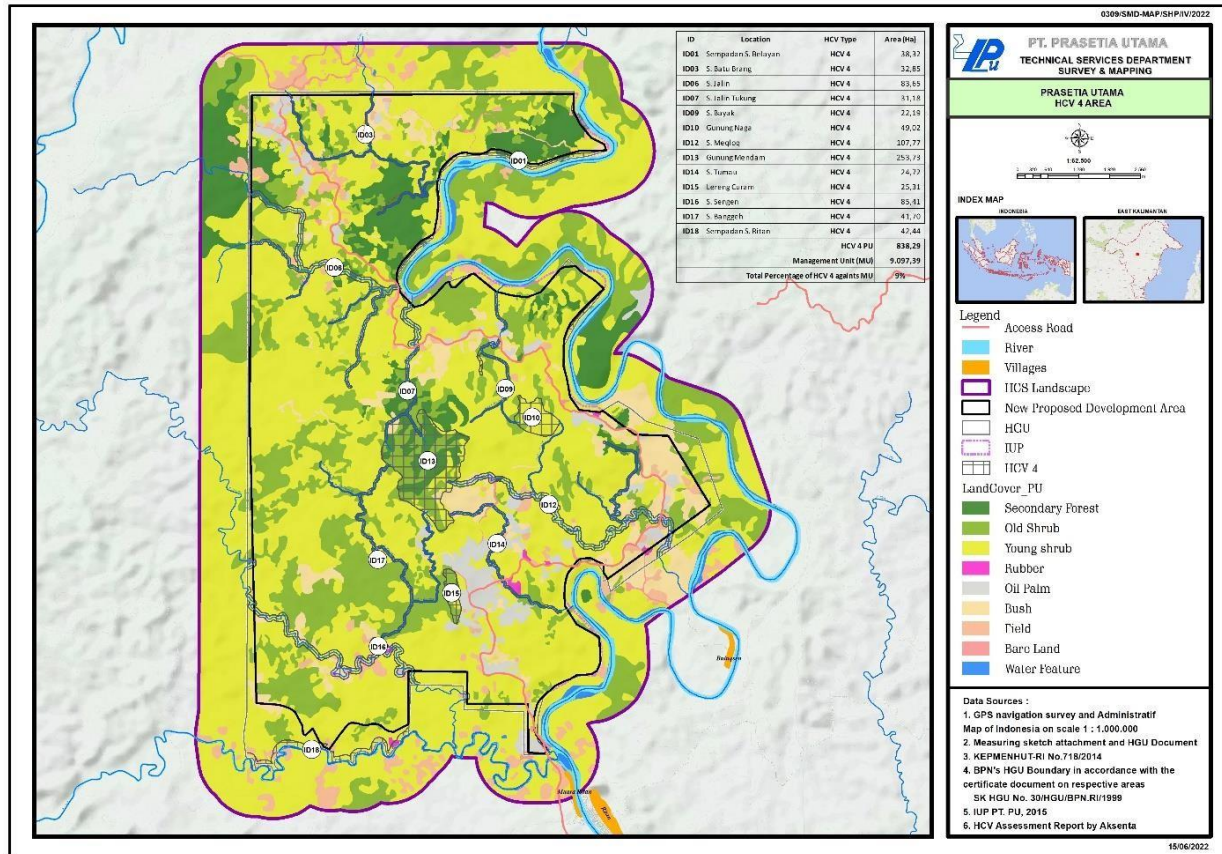


Figure 12. Location Map of PT. Prasetia Utama HCV 4 Area

HCV 5: Community needs

Based on the literature Brown et. al., 2017, there are two situations that qualify as HCV 5 (**Table 14**). Based on the results of consultations with communities in the assessment area (consultation results see Appendix 2), it was found that a situation that meets the requirements as HCV 5 is the use of rivers as fishing grounds and water sources for sanitation and drinking. There are 3 rivers in the MU area that are used by local communities, namely the Jalin River, Meqloq, and Sengen. In addition, local people take advantage of the Belayan River, which is located outside the MU area. Socio-economic conditions of local communities in the assessment area are relatively the same. The majority of local people make a living as employees of oil palm plantations, commercial loggers, farmers, swallow nest cultivation, mining company employees, and fishing. The majority of local communities in the three villages in AOI currently do not depend on forest resources to meet their daily needs. Most of the necessities of life are obtained from purchases, they usually buy necessities of life from traveling merchants and are available all year round.

Table 14. Situations that would qualify as HCV 5

Conditions for the existence of HCV 5	Finding
Hunting and trapping grounds (for game meat, hides and fur)	X
PHBK (non-timber forest products) such as nuts, berries, mushrooms, medicinal plants, rattan	X
Fuel for household activities such as cooking, lighting and heating	X
Fish (as the main protein source) and other freshwater species used by local communities	√
Building materials (poles, straw, wood)	X

Forage and seasonal grazing	X
An important source of water for drinking water and sanitation	√
Goods that are exchanged for other essentials, or sold for cash which are then used to buy essentials such as medicine or clothing, or to pay for school fees	X

The results of the study on the identification of HCV 5 concluded that there were situations that met the requirements for the existence of HCV 5, namely rivers that were used as fishing grounds and sources of clean water for local communities. The total area of HCV 5 in the MU area is 308.0 ha, details of location and area can be seen on **Figure 13**.

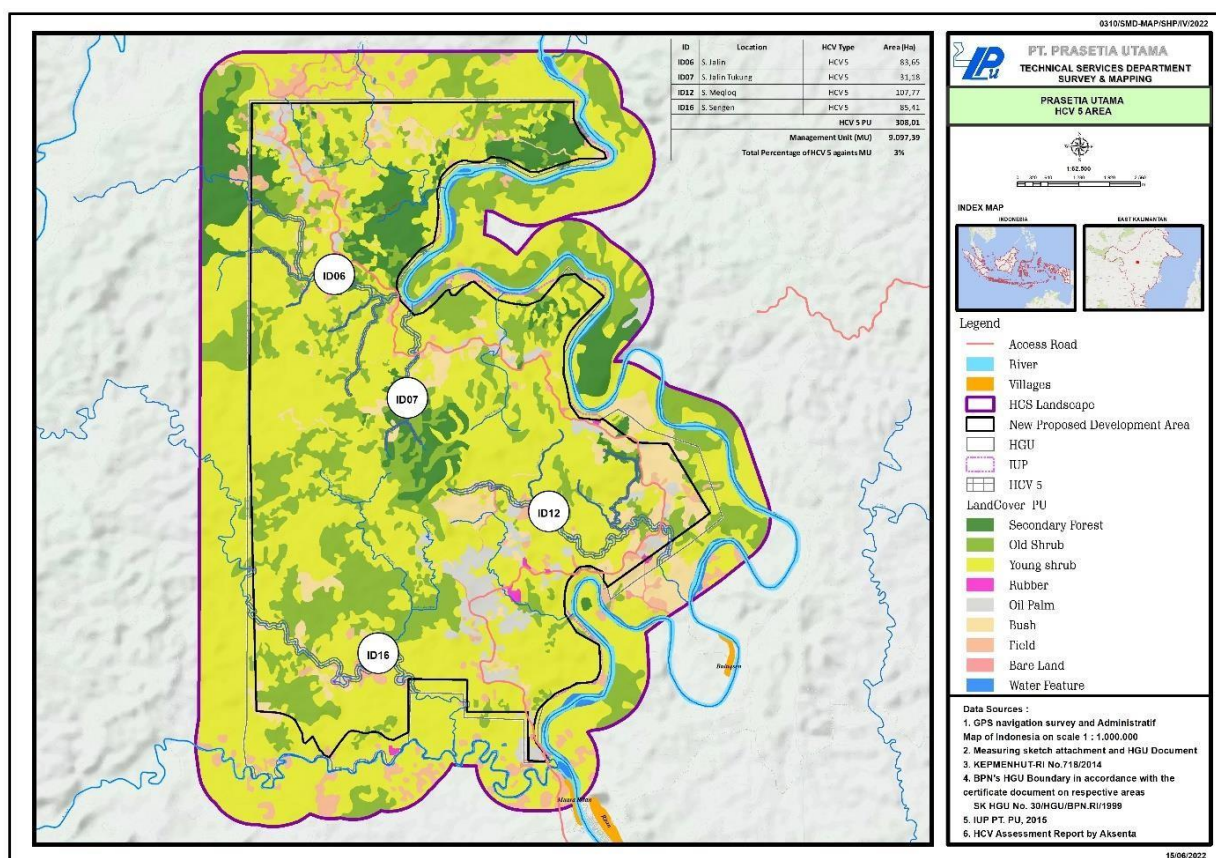


Figure 13. Location Map of PT. Prasetia Utama HCV 5 Area

HCV 6: Cultural value

Based on the literature Brown et. al., 2017, there are several situations that qualify as HCV 6 (**Table 15**). From the results of consultations with local communities (consultation results see Appendix 2), it was found that there were no situations that met the requirements of HCV 6 in AOI. However, a mosque that has historical value was found in the community settlement of Muara Ritan Village and a sacred site in the community settlement of Tukang Ritan Village. The site qualifies as HCV 6, but both sites are outside the AOI. The indigenous people who inhabit the villages in the assessment area are the Dayak Kenyah Tribe and the Kutai Tribe. The Dayak Kenyah people are entirely Christian, while the Kutai people are Muslim.

Table 15. Situations that would qualify as HCV 6

Conditions for the existence of HCV 6	Finding
Sites that are recognized by national policies and legislation have high cultural value	X
Sites that have official designations from national governments and/or international institutions such as UNESCO	X
Sites with recognized important historical and cultural values, even if not protected by legislation	X

Religious or sacred sites, burial grounds or sites used as locations for holding traditional ceremonies that have an important role for local or customary communities.	x
Plant or animal resources that have totem value or are used in traditional ceremonies	x

The results of the HCV 6 identification study concluded that there were no situations that met the requirements for the presence of HCV 6 in AOI, but found 2 sites that had historical value in the form of a mosque in the residential area of Muara Ritan Village, and a sacred site in the residential area of Tukung Ritan Village. All of these sites are outside AOI.

Synthesis

The results of the assessment found 4 types of HCV in MU, namely HCV 1, HCV 3, HCV 4 and HCV 5. Meanwhile, HCV 6 was only found outside the AOI, namely in the community settlements of Muara Ritan and Tukung Ritan villages. The total area that has HCV and HCVMA values in MU is 2,006,2 ha. In addition, an area was found that supports the existence of an area with values of HCV 1, HCV 3, HCV 4 and HCV 5 in MU, which is known as the HCVMA No Go Area with an area of 66.3 ha. The area still has the potential to be restored by means of natural or artificial succession (**Table 16, Table 17 and Figure 14**).

Meanwhile, the HCVMA Go Area was identified which is part of the HCV 1, HCV 3, HCV 4, and HCV 5 areas located 150 m from either side of the state road. The area is agricultural land/plantation managed by local communities. The total area is 133.7 ha. In conducting the HCV assessment, the assessment team conducted consultations and communication with all stakeholders, especially local communities. The consultations carried out in this HCV assessment involved all minority groups such as the involvement of women, migrant communities of different ethnicity and religion from the majority group, as well as underprivileged communities. Illegal logging by local communities in forest-covered areas within MU is a high-impact threat that occurs very quickly. This massive logging activity is carried out in all areas with secondary forest cover, so it needs to be anticipated with participatory management and monitoring from all stakeholders.

Table 16. Summary of HCV findings in PT PU

HCV	Definition	Summary of Description and Justification		
		Present	Potential	Absent
1	Concentrations of biodiversity including endemic species, and rare, threatened or endangered (RTE) species, that are significant at the global, regional or national level	The existence of a population of endemic species or RTE. Animals: kelawait, white forehead langur, bear, rhinoceros' hornbill, thorn turtle, sinyulong crocodile. Plants: nyerakat, meranti, red meranti, lime, etc.	-	-
2	Mosaic of large landscape-level ecosystems and ecosystems that are significant at the global, regional or national level, and contain the majority of the population of naturally occurring, surviving species of dispersal patterns	-	-	There is no extensive natural landscape; there are discontinuous forest fragments (eg with IFL). Forests are experiencing timber extraction. There is a fairly large cultivation area and there is road access. Far from Conservation Area.

3	Rare, threatened or endangered ecosystems, habitats or refugia	There is lowland mixed dipterocarp forest on threatened sandstone.	-	-
4	Basic ecosystem services in critical condition, including catchment protection and erosion control on vulnerable soils and slopes	There are rivers and riparian areas, steep slopes, and hills as catchment areas	-	-
5	Places and resources that are fundamental to meeting the basic needs of local residents or indigenous peoples (e.g. for livelihoods, health, nutrition, water), identified through engagement with relevant indigenous peoples or communities	There is use of the river by local communities as a place to find fish and a source of clean water.	-	-
6	Places, resources, habitats and landscapes of global or national cultural, archaeological or historical importance, or of cultural, economic or religious/sacred value of great importance to local populations or indigenous peoples, identified through the involvement of indigenous peoples or communities this.	-	-	Found historical and sacred sites/areas for local people outside the AOI area

Table 17. Detail of area and description of HCV area in PT PU

Index	Type HCV	Location	Base line description/condition	Indicative Limit	Area (Ha)	
					HCV	HCVMA
ID01	1, 4	Riparian Belayan River	<ul style="list-style-type: none"> The slope of the land is rather steep, the condition of the land cover is still good in the form of shrubs that have not been disturbed 	Buffer width 100 m from river bank	38.3	0.0
ID02	1, 3	Forest Block Belayan River	<ul style="list-style-type: none"> In general, the condition of land cover is still good (secondary forest scrub, only a small amount of shrubs), in some places there is land clearing by PT Lembang Ganesa and PT Karya Rimba Raya (still active) Important area as habitat for endangered species Ambon tortoise (<i>Coura amboinensis</i>), <i>Orlitia borneensis</i>, <i>Amyda cartilaginea</i>, <i>Cuora amboinensis</i>, <i>Heosemys spinose</i> 	Good forested / grove area	352.9	0.0
ID03	1, 3, 4	Batu Brang River and the riparian zone	<ul style="list-style-type: none"> The river water is cloudy during the rainy season from the upstream (community agricultural land development area) Most of the vegetation on the riverbank is still good (shrub-secondary forest) Lowland scrub and secondary forest ecosystem that supports the habitat of the endangered species Ambon tortoise (<i>Coura amboinensis</i>), <i>Orlitia borneensis</i>, <i>Amyda cartilaginea</i>, <i>Cuora amboinensis</i>, <i>Heosemys spinosa</i>, <i>Tomistoma schlegelii</i> 	Main river buffer width 50 m, tributaries upstream 25 m from river bank	32.9	0.6
ID04	1, 3	Block hutan Batu Brang River Forest	<ul style="list-style-type: none"> In general, the condition of land cover is still good (scrub-secondary forest), there are logging areas of PT Lembang Ganesa and PT Karya Rimba Raya, the slopes of the land are gentle to bumpy Lowland scrub and secondary forest ecosystems that support habitat for endangered species (<i>Hylobates muelleri</i> and <i>Buceros rhinoceros</i>); endemic species and limited distribution (<i>Hylobates muelleri</i>), refugium, stepping stone for protected species (Family <i>Bucerotidae</i>) 	Good forested / grove area	311.1	70.0
ID05	1, 3	Block Jalin River Forest	<ul style="list-style-type: none"> In general, the condition of land cover is still good (scrub-secondary forest), in some places there is land clearing by the community for farming, the slopes of the land are sloping to undulating. 	Good forested / grove area	174.8	112.9

			<ul style="list-style-type: none"> Lowland scrub and secondary forest ecosystems that support habitat for endangered species (<i>Hylobates muelleri</i> and <i>Buceros rhinoceros</i>); endemic species and limited distribution (<i>Hylobates muelleri</i>), refugium, stepping stone for protected species (Family Bucerotidae) 			
ID06	1, 3, 4, 5	Jalin River and the riparian zone	<ul style="list-style-type: none"> The river water is cloudy during the rainy season from the upstream (community agricultural land development area) In the dry season it is used by the community as a source of water for bathing and washing The Jalin River during the flood is used by people who are logging in the upstream to extract wood Lowland shrub and secondary forest ecosystem that supports the habitat of the endangered species Ambon tortoise (<i>Coura amboinensis</i>), <i>Orlitia borneensis</i>, <i>Amyda cartilaginea</i>, <i>Cuora amboinensis</i>, <i>Heosemys spinose Tomistoma schlegelii</i> 	Main river buffer width 50 m, upstream tributaries 15 m from river bank	83.6	0.2
ID07	4,5	Jalin Tukung River and the riparian zone	<ul style="list-style-type: none"> The upper reaches of the Jalin Tutung River are located at Mount Mendam. The condition of the upstream cover is in the form of old thickets. The downstream part flows in hill valleys which have slopes between 15-25%. 	Main river buffer width 50 m, tributaries upstream 25 m from river bank	31.2	0.2
ID08	1, 3	Block Bayeq River Forest	<ul style="list-style-type: none"> Shrub and lowland secondary forest ecosystems that support the habitat of endangered species (<i>Hylobates muelleri</i> and <i>Buceros rhinoceros</i>); endemic species and limited distribution (<i>Hylobates muelleri</i>), refugium, stepping stone for protected species (Family Bucerotidae) 	Good forested / grove area	105.4	6.8
ID09	1, 3, 4	Bayeq River and the riparian zone	<ul style="list-style-type: none"> The upper reaches of the Bayeq River are located on Mount Naga, the water conditions are relatively clear (not too cloudy), flowing throughout the year Lowland scrub and secondary forest ecosystems that support habitat for endangered species (<i>Hylobates muelleri</i> and <i>Buceros rhinoceros</i>); endemic species and limited distribution (<i>Hylobates muelleri</i>), refugium, stepping stone for protected species (Family Bucerotidae) As a corridor connecting Gunung Naga and forest blocks in the lower reaches of the Bayeq River (around the Belayan River) 	Main river buffer width 25 m, upstream tributaries 15 m from river bank	22.2	1.0
ID10	4	Gunung Naga / Mount Dragon	<ul style="list-style-type: none"> Located east of Mount Mendam, extending to the banks of the Belayan River. Has a micro slope of up to 40%? Covered with thickets and shrubs. as a catchment area for the Baya River. 	Good forested/shrub areas on steep slopes	49.0	0.0
ID11	1, 3	Grove Belayan River	<ul style="list-style-type: none"> Important areas as habitat for endangered species (<i>Hylobates muelleri</i> and <i>Buceros rhinoceros</i>); endemic species and limited distribution (<i>Hylobates muelleri</i>), refugium, stepping stone for protected species (Family Bucerotidae) 	Good forested / grove area	23.8	6.2
ID12	1, 3, 4, 5	Meqloq River and its tributaries and riparian zone	<ul style="list-style-type: none"> The upstream is in Mendam hills and Gunung Naga, there are 2 waterfall locations with fairly clear water conditions, vegetation conditions around the riparian zone in the form of shrubs and shrubs are still good Lowland scrub ecosystem that supports the habitat of the endangered species Ambon tortoise (<i>Coura amboinensis</i>), <i>Orlitia borneensis</i>, <i>Amyda cartilaginea</i>, <i>Cuora amboinensis</i>, <i>Heosemys spinose Tomistoma schlegelii</i> 	Main river buffer width 50 m, tributaries upstream 10 m from river bank	107.8	0.5
ID13	4	Mount Mendam	<ul style="list-style-type: none"> Located in the middle of the MU area. Covered with old scrub forest, has a micro slope of up to 40%. This mountain is a water catchment area for the Bangge River, Tumau River, Meqloq River, Baya River, and Jalin Tutung River. 	Good forested/shrub areas on steep slopes	253.7	0.0
ID14	4	Tumau River and the riparian zone	<ul style="list-style-type: none"> The upstream part is in Mount Mendam, most of the vegetation conditions around the riparian zone are still good (no disturbance) in the form of shrubs, there are few community oil palm 	The width of the main river buffer is 25 m from the river bank	24.7	0.6

			plantations, downstream there is the Ung Tumau waterfall			
ID15	1, 4	Valley area with steep slopes east of the Banggeh River	<ul style="list-style-type: none"> Vegetation condition in the form of undisturbed old scrub has a slope of more than 40%. This vegetation cover serves to control sheet erosion and stabilize steep slopes Important areas as habitat for endangered species (<i>Hylobates muelleri</i> and <i>Buceros rhinoceros</i>), endemic species and limited distribution (<i>Hylobates muelleri</i>), refugium, stepping stone for protected species (Family Bucerotidae) and unique and rare ecosystems in the form of lowland forest ecosystems 	Good forested/shrub areas on steep slopes	25.3	0.0
ID16	1, 4, 5	Sengen River and the riparian zone	<ul style="list-style-type: none"> The upstream part of the Sengen River is a forested area outside the MU area, very fluctuating flow conditions (floods in the rainy season and relatively shallow in the dry season), vegetation conditions around the riparian zone in the form of community farming land and shrubs. Important area as habitat for endangered species Ambon tortoise (<i>Cuora amboinensis</i>), <i>Orlitia borneensis</i>, <i>Amyda cartilaginea</i>, <i>Cuora amboinensis</i>, <i>Heosemys spinose</i> <i>Tomistoma schlegelii</i> 	The width of the main river buffer is 50 m from the river bank	85.4	0.0
ID17	4	Banggeh River and the riparian zone-nya	<ul style="list-style-type: none"> The upstream part is in Mount Mendam and its surroundings. The condition of the vegetation around the riparian zone is still good in the form of shrubs. 	Main river buffer width 25 m, upstream tributaries 10 m from river bank	41.7	0.2
ID18	1, 4	Riparian Ritan River	<ul style="list-style-type: none"> Located in the lower reaches of the Ritan River, 	Buffer width 100 m from the Belayan River bank	42.4	1.0
Sub Total Area of HCV and HCVMA in MU PT PU					1,806.2	200.0
Total area of HCV and HCVMA in MU PT PU					2,006.2	
MU PT PU area					9,093,8	
Percentage of Total HCV to MU PT PU					22.1%	

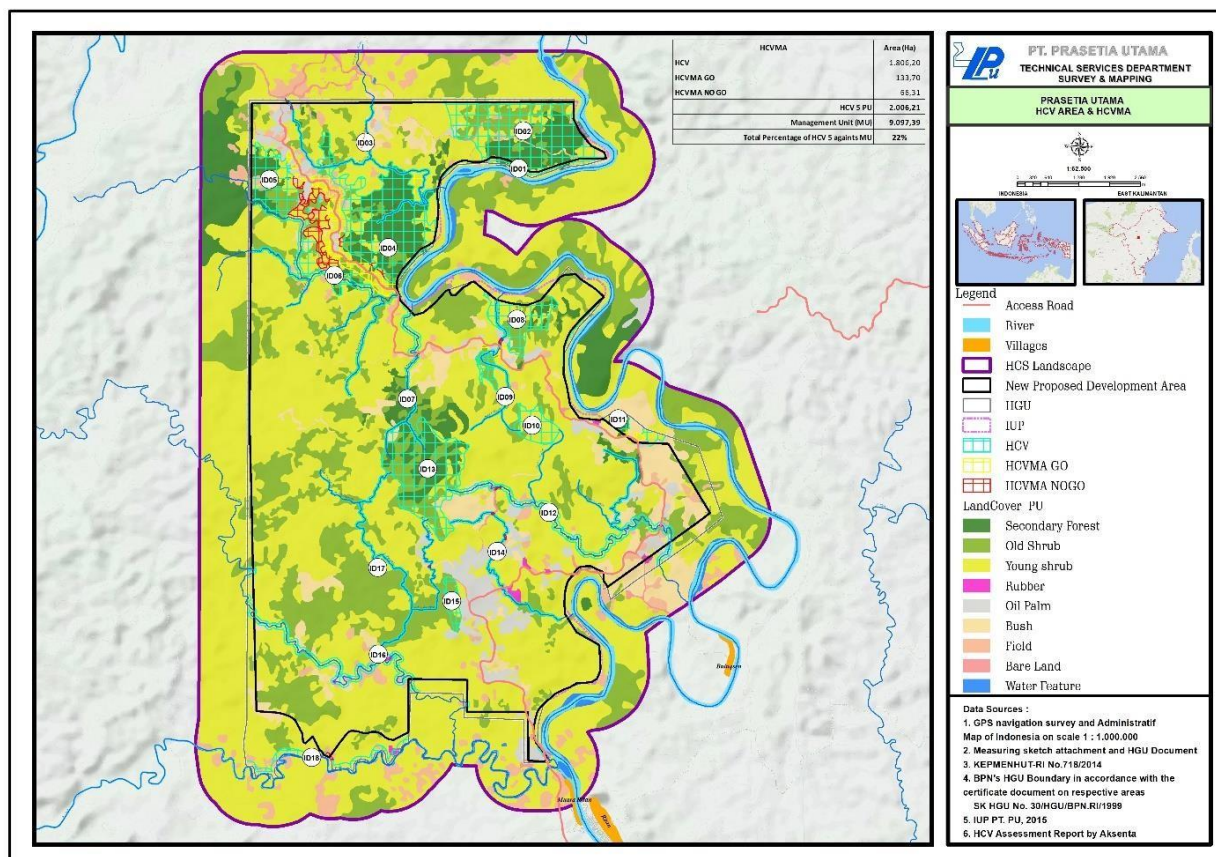


Figure 14. Location of HCV presence in PT PU

Stakeholders consultation

Stakeholder consultation is an activity to present the results of the assessment to stakeholders with an interest in AOI. The consultation method consisted of a face-to-face meeting (workshop), and meeting each stakeholder at their place. Summary of stakeholder consultation results see **Table 18**. Stakeholder consultation is carried out at the scoping study stage and the delivery of the final results. The scoping study stage involved representatives of local communities and traditional leaders of Tabang District. The total number of stakeholders involved in the scoping study consultation stage is 3 people. Meanwhile, the final consultation involved representatives of local community representatives from Muara Pedohon Village, Buluq Sen, Muara Ritan, Tabang District Government, Kutai Kartanegara Regency Cooperative Service, Kutai Kartanegara Regency Environmental Service, BKSDAE East Kalimantan Province, and Ecositrop (Non-Governmental Organization-NGO). The total number of stakeholders involved in the final consultation stage was 8 people. The map displayed in the final consultation activity is in the form of a temporary map.

Table 18. Summary of HCV consultation public

Name	Position	Organization/ Social Group	Main Concern and Recommendation
Scoping study (21-23 May 2018)			
Jamal	Traditional Figures	Muara Ritan Village	<ul style="list-style-type: none"> Orangutans (<i>Pongo pygmaeus</i>) have never been found again in the PT PU area and its surroundings. Most likely the Orangutans have migrated to a relatively better forest area to the north of the PT PU area (next to the Bengen River). Lutok (<i>Presbytis frontata</i>) and Kelasi (<i>Presbytis rubicunda</i>) are still found in the PT PU area, especially areas with forest cover/shrub. Team response:

			<ul style="list-style-type: none"> • During the survey in the PT PU area and its surroundings, the team never saw any sign of Orangutans, such as nests. • The results of the survey by the HCV assessment team found some signs of the presence of Lutok and Kelasi, the forest area/shrub is designated as an HCV area, so it needs to be managed in order to remain sustainable.
Lenggan Jalung	Traditional Leader	Buluq Sen Village	<ul style="list-style-type: none"> • Communities at Buluq Sen Village use the water of the Belayan River to meet their daily water needs, apart from being a source of water for the Belayan River as well as a place to catch fish by some of the community • • Land tenure by the community is currently individual control, no area or forest is controlled collectively. customary or communal. <p>Team response:</p> <ul style="list-style-type: none"> • Regarding land tenure, local communities have the right to surrender or not to hand over their land to PT PU for oil palm plantations or conservation areas, this must be communicated in advance. Usually the company will record land tenure in the HGU area and negotiate with the community who owns the land, this is known as FPIC.
Apai Sagita	Traditional Figures	Tabang Sub Distric	<ul style="list-style-type: none"> • Four types of plants that are important to the people of Tabang District, namely tengkawang, bengeris, and fruiting plant species. However, regarding the protection of these plant species, it depends on the landowners, if according to them the four types of plants are widely available then they should not be maintained. <p>Team response:</p> <ul style="list-style-type: none"> • Consultation with local communities found no forest areas protected by adat and villages. All land ownership is controlled by individuals. As for some of the plants mentioned above, they are not declared as HCV because according to local people, these plant species are found in the forest north of the AOI.
Final consultation 02 May – 13 July 2019			
Ning	Head of BPD	Muara Ritan Village	<ul style="list-style-type: none"> • The Belayan River is a habitat for Cow Crocodile (<i>Tomistoma schlegelii</i>) and Estuary Crocodile (<i>Crocodylus porosus</i>), protection of the Belayan River is important for the preservation of crocodile habitat and the Belayan River is also used as a water source by the people of Muara Ritan Village. • PT PU's HGU area is a former concession area of the timber company, namely PT Rimba Karya Raya, which operated until 2007. • The sub-district road was built in 2006 by the local government, so that currently access for local communities is relatively easier. • Sites/areas of historical value found in the residential area of Muara Ritan Village in the form of a mosque, while in the PT PU area there are no sacred or historic sites belonging to the Muara Ritan community. <p>Team response:</p> <ul style="list-style-type: none"> • Sungai Belayan is outside PT PU's HGU area, however, in conducting the HCV assessment, the assessment team considered a larger area (landscape) so that the Belayan River and its buffer zone were designated as HCV areas outside PT PU's HGU. • PT PU's HGU area which still has natural cover consists of secondary forest, scrubland, scrub and shrubland, but no primary forest remains. This is influenced by factors of logging activities in the past. • The mosque site located in Muara Ritan Village has been recorded as HCV 6 in this assessment.
Wilson Ding	Secretary of the Customary Council	Buluq Sen Village	<ul style="list-style-type: none"> • Major floods have occurred in villages around the Belayan River in 1993 and 2013, so it is very important to protect the forest in the upper reaches of the Belayan River. • A major fire occurred in 1997, most of the PT PU area was also burned. At this time people in several villages are trying to extinguish the fire to prevent a wider fire.

			<p>Team response:</p> <ul style="list-style-type: none"> All rivers used by local communities were designated as HCV areas in this assessment such as the Belayan, Jalin, Jalin Tutung, Meqloq, and Sengen rivers.
Alang	Village secretary	Muara Pedohon Village	<ul style="list-style-type: none"> We strongly support plantation activities and development. An important view that needs to be clarified regarding rights and obligations as a form of transparency or openness. Presented the improvement of river names, namely Jalin Tukung River to Jalin Tutung, Meklok River to Mekloq, Bayak River to Bayeq. Regarding the width of the 20 m river buffer zone, is it not too small? <p>Team response:</p> <ul style="list-style-type: none"> The width of the river buffer for the riparian zone depends on the condition of the river and its function in the field. Functions in the field as a natural filter for water before it enters the river, protection against morphoerosion of riverbanks, flood buffers, and ecological functions (as animal paths). The more upstream the rivers get smaller and shallower (1-2 m wide). There are relatively no flood buffer functions and river bank morphoerosion protection. The width of the 15m river buffer zone is for the upstream tributaries. In general, the function of the riparian zone is only a natural filter of water before it enters the river and an ecological function. For other rivers that are in the middle to downstream, the width of the river varies from 20 to 200 m. For large rivers, such as the Belayan River it is 200 m, for the Ritan River it is about 100 m.
Paisyal	District Secretary	Tabang Sub Distric	<ul style="list-style-type: none"> When will PT PU carry out land clearing, this is important because several communities around the PT PU area have asked this question. They hope that PT PU can immediately develop oil palm plantations so that local communities can get benefits such as partnership/plasma, employment opportunities, and contracts of work. In the development of oil palm plantations, please pay attention to the condition of river borders, because most local people use rivers as a place to find fish and sources of clean water, especially the Belayan River. Before carrying out any oil palm plantation development activities, PT PU hopes to communicate with local communities regarding land tenure and land acquisition. <p>Team response:</p> <ul style="list-style-type: none"> The purpose of this HCV assessment is to protect areas that have biological, hydrological and social functions, so that all riverbanks are recommended as HCV areas. Regarding land acquisition, we will recommend PT PU not to clear land before conducting communications and negotiations regarding land.
Sanijan	Head of Community Empowerment	Cooperative Department of Kutai Kartanegara	<ul style="list-style-type: none"> The Kutai Kartanegara Regency Cooperatives welcomed the results of the exposure to the HCV assessment at PT PU. This activity is very important to increase our knowledge about HCV assessment and sustainable oil palm plantation development. The question: Is HCV applied in all oil palm development in Indonesia? Why do companies need to certify? <p>Team response:</p> <ul style="list-style-type: none"> Thank you for the good response and acceptance from the Department of Cooperatives and SMEs. This consultation activity is a stage of the implementation of the HCV assessment activity with the aim of obtaining other important information in enriching the report. HCV or High Conservation Value Area assessment is part of meeting the RSPO Principles and Criteria. This assessment is one

			<p>of the assessments in the certification of sustainable oil palm plantation development. Therefore, this activity is a must in its application to oil palm plantation development activities in Indonesia.</p> <ul style="list-style-type: none"> • Companies must carry out certification to obtain recognition from certification bodies, both RSPO and ISPO, as meeting the requirements for developing sustainable oil palm plantations. This certification is a guarantee for the entire process of oil palm development from upstream to downstream which puts forward the values of sustainable oil palm plantation development so that it can be accepted by consumers in the global market.
Yunita	Head of Environmental Evaluation Section	Environment and Forestry Office of Kutai Kartanegara Regency	<p>The Department of Environment and Forestry is very grateful for the delivery of the results of the various HCV assessments at PT PU. This activity is very supportive in the development of sustainable oil palm plantations. The Department of Environment and Forestry has duties and responsibilities in fostering, controlling and monitoring environmental and forestry conditions at the Kutai Kartanegara Regency level. All companies that will carry out business activities to develop oil palm plantations must obtain an Environmental Permit through the application of an Environmental Impact Analysis (EIA) accompanied by RKL-RPL and UKL-UPL. Every semester (6 months) every company that develops oil palm plantations is required to submit UKL and UPL reports. The agency hopes that the report will also include a report on the management and monitoring of HCVs. This HCV management and monitoring activity is also an added value in the environmental PROPER assessment (M. Jafar, Department of Environment and Forestry, Kutai Kartanegara Regency).</p> <p>Team response:</p> <ul style="list-style-type: none"> • We will inform the company to include the HCV assessment report including HCV management and monitoring activities in the RKL-RPL and UKL-UPL. • Our suggestion is that every EIA study on oil palm plantations also includes sources and mitigation of impacts from replanting activities. • The company will submit the results of the exposure and a summary of the assessment results via email.
Sunandar T	Head of BKSDA	East Kalimantan BKSDA	<ul style="list-style-type: none"> • Tabang and Kembang Jangut sub-districts are areas where there are many oil palm plantation and mining companies, but until now the East Kalimantan BKSDA has never dealt with wildlife and human conflicts in the area. • Recommendations for collaborative management of HCV areas in species management, HCV areas with surrounding companies, local communities, and the government. • Companies must have a commitment to managing HCV areas, we know that REA Kaltim has a relatively large and well-managed conservation area, we hope to cooperate with REA Kaltim. <p>Team response:</p> <ul style="list-style-type: none"> • Regarding management recommendations, we will recommend collaborative management so that all parties are involved and participate in the identified HCV areas.
Miftah Ayatussurur	Ecology practitioner	Ecology and Conservation Center for Tropical Studies (Ecositrop)	<ul style="list-style-type: none"> • Ecositrop has never conducted a survey or research in Tabang District, however, according to the information we received in Tabang District there are many oil palm plantation and coal mining companies. • Gibbons are commonly found in the remaining forest fragments, even gibbons can live in agroforest areas that are connected to forest areas. So it is important to consider forest areas that are still connected to other forest areas. <p>Team response:</p> <ul style="list-style-type: none"> • In carrying out the HCV assessment, we considered the wider landscape in accordance with the HCVRN identification guide

			published by the HCVRN. In addition, forest or shrub areas that have HCV values outside the PT PU area are also designated as HCV areas which are then recommended for collaborative management with various parties.
Nopem Sung	Farmers and fishers	Buluq Sen Village	<ul style="list-style-type: none"> Fishing is not the main activity, the main thing is farming. The Jalin Tutung River is important as a source of water for drinking, bathing, washing and latrines while in the cottage fields. The fish caught are used for their own consumption <p>Team response: The information submitted will be used as material for preparing the report.</p>
Folke	Farmers and fishers	Buluq Sen Village	<ul style="list-style-type: none"> The people of Buluq Sen Village use the Belayan River as a source of water, especially for bathing, washing and sanitation. Water sources in small rivers such as Mekloq, Sengen and Jalin can be used as drinking water for purposes in the fields. It is also used for sanitation purposes. Fish are usually caught by fishing. The most often found lais or cork fish. Itinerant traders who sell vegetables, meat and sea fish usually only go around the village settlements. Cultivation is carried out by slashing and burning. <p>Team response: Input on river use and farming activities will be used as material for the preparation of the report.</p>
Iban	Petani dan Pencari ikan	Buluq Sen Village	<ul style="list-style-type: none"> Many residents in Buluq Sen Village still use rainwater as a source of clean water. The village does not yet have a clean water installation. The fish obtained are used for their own needs and are sought to fill spare time while doing farming activities. The rice produced from the fields is sufficient to meet the family's needs. Cultivation is carried out by slash and burn. Currently, there is less use of rivers as transportation routes because it is easier to reach fields by motorbike by road. Team response: Preparation of the report will take the input into account.
Jibar	Farmers and fishers	Muara Ritan Village	<ul style="list-style-type: none"> The majority of the population of Muara Ritan are Malays and their livelihoods are farming, trading and fishing. The most important river for the residents of Muara Ritan Village is the Belayan River because it is still used as a transportation route, a water source, a place for washing baths and toilets and a place for fishing. For drinking water, residents use other sources such as bottled water and some families also have wells. Most of the fish are used for their own purposes and fishing is carried out using nets or nets and fishing rods. Fishing activities are carried out in the afternoon when it is free time. • Residents take river water by pumping water from the river and pouring it into their homes. Most families have their own water pump. <p>Team response: The information submitted will be used as material for preparing the report.</p>
Sukur	Farmers and fishers	Muara Ritan Village	<ul style="list-style-type: none"> Source of income from fishing, especially by fishing. The source of large fish is in the Belayan River. Large fish yields are traded. The types of fish that are commonly caught are baung, cork, lais, tapah and white. The price of fish in the local market is between Rp. 25,000.00 to Rp. 40,000.00 per kilogram depending on the type of fish. • Development of oil palm plantations should not pollute rivers. <p>Team response: Feedback is important to use as advice for the Company.</p>

5.2 HCSA standalone

Date of activities

PT PU High Carbon Stock Assessment was carried out November 2021 – January 2022 by independent consultant namely PT Gagas Dinamiga Aksenta whose address is Jalan Gandaria VIII/10, Kebayoran Baru, Jakarta 12130. The HCSA assessment final report was obtained final and completed for the peer review by HCSA Steering Committee on 10 June 2022 <https://highcarbonstock.org/registered-hcsa-and-hcv-hcsa-assessments/>. The time frame for HCSA Assessment as describes the table bellows:

Table 19. HCSA assessment stages and schedule

Assessment	Schedule	Organisation
Social Environment Impact Assessment (SEIA)	August – November 2015	PT Agronusa Santika (SEIA independent consultant)
Social Environment Management & Monitorin Plan	August – November 2015	PT Agronusa Santika (SEIA independent consultant)
Social Impact Assessment (SIA)	February – April 2014, update and review in November – December 2021	PT Gagas Dinamiga Aksenta (independent consultant)
Land Use Change Analysis (LUCA)	May – July 2018, update and review in November – December 2021	PT Gagas Dinamiga Aksenta (independent consultant)
High Conservatio Value (HCV)	May 2018 – January 2021	PT Gagas Dinamiga Aksenta (independent consultant)
High Carbon Stock Approach (HCSA)	November 2021 – January 2021	PT Gagas Dinamiga Aksenta (independent consultant)

Table 20. Timeline for HCSA assessment

Stage	Activity	Location	Time
Pre-assessment and desktop study	<ul style="list-style-type: none"> Initial data and information collection regarding project status 	Aksenta's Office	10-16 November 2021
	<ul style="list-style-type: none"> Initial data collection from secondary sources such as reports, journals, books, statistical data, and base maps. 		
	<ul style="list-style-type: none"> Collecting secondary data from companies such as the results of the HCV assessment, LUCA, tenure assessment and participatory mapping, ANDAL, RKL, and RPL. 		
	<ul style="list-style-type: none"> Data analysis and spatial analysis, as well as rapid checks of pre-conditions compliance (due diligence) 		
Full assessment	<ul style="list-style-type: none"> Preparation of a complete assessment design and schedule 	HGU areas of PT PU	17-25 November 2021
	<ul style="list-style-type: none"> Verification of compliance with pre-conditions (due diligence) Initial land cover check Vegetation Inventory Plot Participatory interviews and mapping with communities and conveying potential HCS areas in the study area Field data compilation and team internal coordination 		
	<ul style="list-style-type: none"> Presentation and discussion with Management of PT PU Submission the <i>Interim report</i> 		
Data analysis and reporting	<ul style="list-style-type: none"> Analysis of field data and spatial data Writing (draft) reports and internal QC by Aksenta 	Aksenta's Office	November 2021- January 2022
	<ul style="list-style-type: none"> Submission of draft report and finalization 		January 2022

Assessor and their credentials

High Carbon Stock Approach Assessment Study in HGU area of PT PU is implemented by PT Gagas Dinamiga Aksenta by a team consisting of 7 members. Below are brief descriptions of names, qualifications, skills, and roles within the team.

Table 21. HCSA assessor team

Name	Role	Experience and Qualifications
Fersely Getsemani Feliggi	Team Leader, <i>HCSA practitioner</i>	HCSA Assessment, hydrology, soil and water conservation, Land Use Changes Analysis, Remote Sensing, GIS, Carbon Stock Assessment
Ryan Karida Pratama	Team Member, Anggota tim; GIS analyst and Mapping; HCSA practitioner	Remote Sensing, Land Use Changes Analysis, Carbon Stock Assessment, HCS Patch Analysis
Heidei Putra Hutama	Team Member, GIS analyst and Mapping	Spatial analysis, Land Use Changes Analysis, Remote sensing, GIS Carbon Stock Assessment
Rahmat Darmawan	Team Member, Vegetation inventory and flora identification	Identification of flora, forest ecology, Carbon Stock Assessment
E. Guntara Permana	Team Member, Vegetation inventory and flora identification	Identification of flora, forest ecology, Carbon Stock Assessment
Rama Maulana	Team Member, Vegetation inventory and flora identification	Identification of flora, forest ecology, Carbon Stock Assessment
Noor Rakhmat Danumiharja	Social expert (FPIC and participatory mapping)	Socio-economic, social impact, FPIC verification, socio-culture, tenure studies, participatory mapping

Assessment methods

The HCSA assessment for PT PU employs “The HCS Approach Toolkit Version 2.0: Putting No Deforestation into Practice on 3 May 2017”.

Summary findings

Assessment of the High Carbon Stock Approach in the PT PU area is an activity of assessing and assessing the feasibility of the new plantation development plan. This assessment is comprehensive which includes several feasibility studies, including: (i). Social and environmental impact assessment (**details in section 3 & 4**); (ii), Involvement of communities and other stakeholders in new plantation development plans and HCV, HCSA assessments; (iii). HCV assessment which is an integral part in the preparation of an integrated management and monitoring plan for the development of new plantations (**details in section 5.1**); (iv). Development of an integrated management and monitoring plan for the HCS area by considering social, economic and environmental aspects so that the new plantation development plan can have a positive impact on improving environmental and socio-economic quality.

Community involve

The implementation of FPIC verification refers to the Free, Prior and Informed Consent: Guide for RSPO members (2015), which shows the stages of implementing activities with a flowchart in the process of engaging the community to obtain approval in line with the requirements of the RSPO standard. Verification activities regarding community involvement in PT PU's oil palm plantation development and HCSA assessment were carried out in several stages, namely (i) collecting data and initial information regarding the study area and the status of the development plan area; (ii) gathering information and reviewing company policies related to company commitments and licensing for the implementation of HCSA assessments; (iii) a review of the

company's FPIC process; and (iv) verification to the community of the company's commitment, licensing for the implementation of the HCSA assessment, and the FPIC process that has been carried out by the company.

FPIC by the company

Due-diligence activity is carried out to identify the fulfilment of pre-conditions prior to the implementation of the assessment. This includes four main components, namely (i) the company's commitment to environmental and social conservation, (ii) the company's commitment to make High Carbon Stock (HCS) studies a guide in the management and monitoring of conservation areas, (iii) the legality of the area and operational management of the company's management area, and (iv) the approval process (FPIC) that has been carried out by the company related to the company's operational plan and implementation of the assessment.

Table 22. The due diligence information related FPIC process

<p>1. Company commitment to environmental and social protection</p>
<p>PT Prasetia Utama (PT PU) is a company that develops oil palm plantations and their processing in East Kalimantan Province. Previously, PT PU was under the Bakrie Plantation group. Since September 2017, PT PU has acquired by of R.E.A Holdings Plc. REA has been a member of the RSPO since 10 November 2007 with membership number 1 -0045-07-000-00. PT PU has committed to developing plantations in a sustainable manner as stated in the Responsible Development Policy. https://www.rea.co.uk/websites/reaholdingsplc/English/3100/what-policies-has-rea-implemented.html. In this policy, the company makes a commitment to protect the workforce, the environment, social and economy as an important value in the company's operational strategy. The company believes that with this commitment the company is able to continue to grow and provide added value for stakeholders.</p>
<p>2. The company's commitment to use High Carbon Stock (HCS) assessment a guide in the management and monitoring activities of conservation areas</p>
<p>PT PU is committed to managing high carbon value areas based on the results of the High Carbon Stock Approach (HCSA) assessment. Thus, all land clearing activities will be stopped until the assessments and reports are completed. This commitment is stated in the Decree of the Directors of PT REA Kaltim (PT PU as part of the PT REA Kaltim group) No. 003/BOD_REA/ P/II/2015 dated 9 September 2021 on Environmental Policy and Biodiversity Conservation, at point 4 (https://www.rea.co.uk/websites/reaholdingsplc/English/3100/what-policies-has-rea-implemented.html).</p>
<p>3. Legal and operational area of the company's management area</p>
<p>PT PU was present in the Tabang area starting in 1995 as a logging company and ending in 1997, then turning into an oil palm plantation company. PT PU's location permit for oil palm plantations was obtained based on the Decree of the Head of the Land Office of Kutai Kartanegara Regency dated 29th December 1997 covering an area of 10,300 hectares located in Muara Ritan Village, Buluq Sen, Umaq Dian and Muara Pedohon Village, Tabang District. Hak Guna Usaha (HGU) was obtained based on the Decree of the Head of the National Land Agency (BPN) No. 33/HGU/BPN/99 dated 6th April 1999 covering an area of 9,097.395 hectares. Environmental Feasibility Permits and Environmental Permits were obtained based on the Decree of the Regent of Kutai Kartanegara Number 151 of 2015 dated 12th December 2015. The Plantation Business Permit (IUP) was issued based on the Decree of the Regent of Kutai Kartanegara Number 525.26/IUP. BID.I/X/2015/BP2T dated 13th October 2015.</p>
<p>4. The approval process (FPIC) that has been carried out by the company related to the company's operational plan and the implementation of the assessment</p>
<p>PT PU has carried out the FPIC process which began with socialization of the planned activities/businesses for cultivating oil palm plantations with processing units, which was carried out on 24th August 2013 in the context of preparing the SEIA (AMDAL). The socialization was attended by Muspika Tabang (Camat, Polsek, Koramil), related agencies (BLHD, Plantation, Land), village officials (village head, village secretary, head of LPM, head of BPD, customary head) as well as community leaders from villages potentially affected (Buluq Sen and Muara Ritan villages).</p> <p>Basically, the people from the two villages welcomed the presence of PT PU and did not reject the company that would build an oil palm plantation in their area, however, in the discussion session there were several notes from the community asking the company to show its seriousness by making a written agreement as a form of company commitment, because the community previously felt disappointed with the company's promise that it had been 15 years since PT PU obtained the HGU there had been no significant activity.</p>

PT PU as a member of the RSPO has carried out the required assessments prior to land clearing. In 2014 an HCV assessment, a social impact study (SIA), and an AMDAL study, as well as a carbon stock assessment (CSA) were conducted in 2015. These assessments were initiated by socialization and communicate to stakeholders both at the village and sub-district levels including the community members and local community leaders. However, public acceptance of PT PU has not been very good, the public still does not see the seriousness of PT PU in fulfilling its promise.

In 2017 PT REA Kaltim became the majority shareholder in PT PU. Improvements in management and communication with the community were carried out by the new management of PT PU. On 26th February 2018 and 7th March 2018 a coordination meeting was held between PT PU management and related parties, namely Muspika Tabang, village officials and community leaders from four villages (Muara Ritan, Buluq Sen, Umaq Dian, Muara Pedohon). In the meeting, it was agreed to carry out participatory mapping of community arable land in the PT PU HGU area, each village formed a Village Team which will accompany the Survey Team from the Company.

Subsequent socialization activities were carried out in Muara Ritan Village on 25th October 2018 and in Buluq Sen Village on 7th November 2018. The management of PT PU conveyed the plan for the development of oil palm plantations with socialization materials covering the following matters:

- a. Mechanism of land acquisition and handling of land conflicts.
- b. Partnership program in plasma plantation development plans.
- c. Community empowerment program (Community Development).
- d. General plantation cultivation techniques.
- e. Environmental management and conservation programs.
- f. Employee recruitment program.
- g. An important aspect of a sustainable program in the new plantation development plan.

In early 2019, the people of Muara Ritan Village attended a meeting to discuss the determination of the value of land compensation. Communities in Buluq Sen Village and Muara Ritan Village formed a team and carried out land inventory and measurement activities. This activity resulted in the total area of land being measured was 3,162.64 hectares. In the context of the HCSA assessment, the Company first submits a permit application to the Village Head so that an HCSA assessment can be carried out, as stated in the PU.CA-1413/XI/2021 Permit Application Letter on 11 November 2021. Based on the letter, the Village Head permitted and supported PT PU to be able to conduct an HCSA assessment in his village area.

Land tenure identification.

Identification of land tenure (land rights) or land tenure study aims to record land owners and land use in the study area. This is needed to determine to whom the FPIC process should be carried out so that an agreement is reached. In addition, land tenure studies are also used as initial data in the HCSA assessment which aims to determine land use in the study area.

Table 23. Area and initial land cover classification in the study area

Low-medium density secondary lowland forest	656,4	7,2
Scrub	1.836,3	20,2
Shrubs	5.348,6	58,8
Rubber plantation	9,2	0,1
Oil palm plantation	379,7	4,2
Bush	801,2	8,8
Open Land	65,9	0,7

Note: * SNI 7645-1:2014 Classification of land cover - Part 1: Small and medium scale; ** TM3 projection system

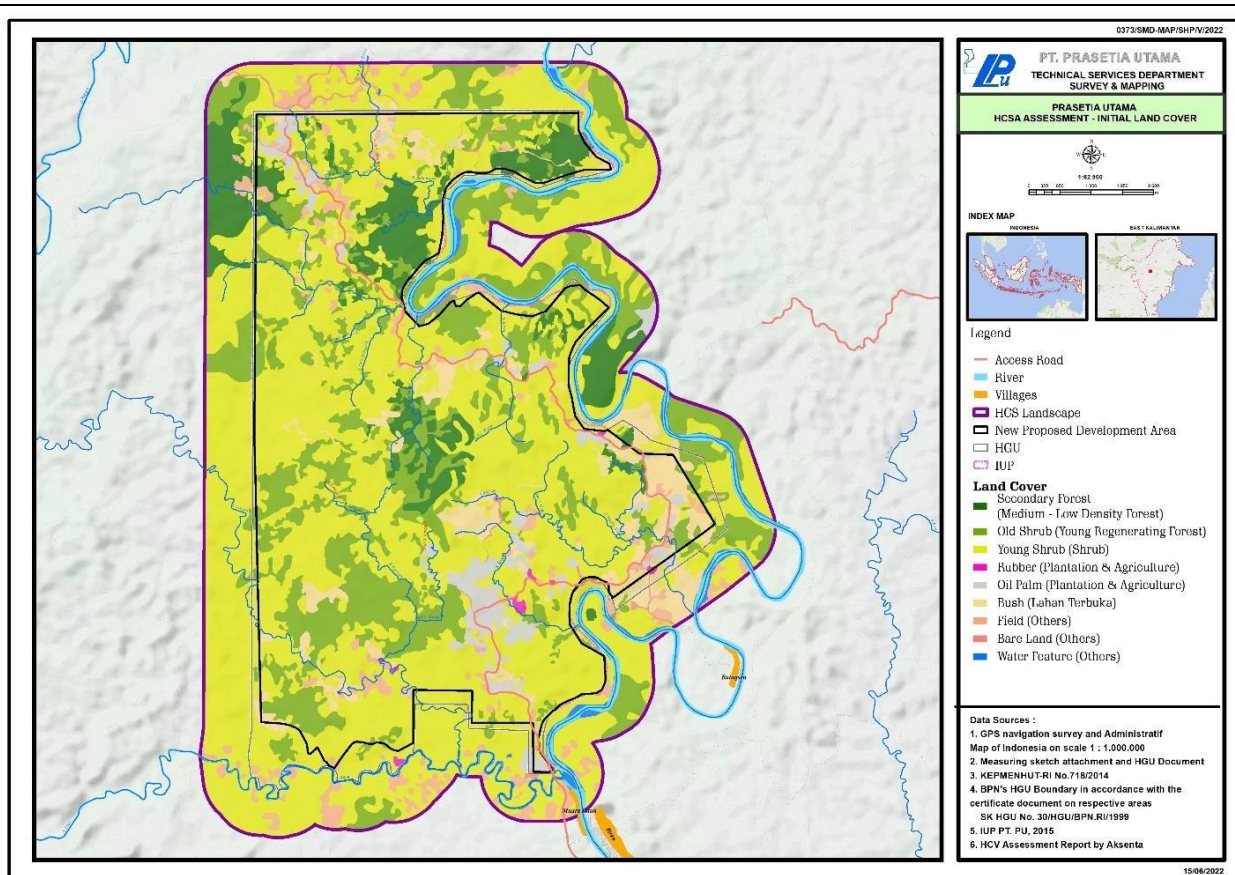


Figure 15. Map of initial land cover in the study area and its surroundings

Final of Integrated Conservation Land Use Plan Development and Implementation (ICLUP)

The HCS Approach patch analysis process is based on the scientific evidence that is used as the basis in HCS Forest Patch Analysis Decision Tree where it helps identify and prioritize viable and valuable forest patches inside production landscape. Land Use Plan and Integrated Conservation and Land Use Plan) or the resulting ICLUP, requires support and approval of local communities and legal protection. The patch analysis stages described consist of 13 stages that result in the final ICLUP. Patch analysis through decision tree (PADT) was carried out on 87 patches within the PT PU area, 14 patches in the study landscape or in the AOI as far as 1 km, and 17 patches within the HGU that are connected to the AOI. All PADT stages are carried out to determine potential conservation areas.

From the PADT results, it is known that in the PT PU area there are 60 patches of HCS conservation area with a total area of 2,497.7 ha, including 333.1 ha of the “give” (infill) area and 1,010.8 ha of HCS area that overlaps with HCV. The HCV area that does not overlap with the HCS area covers 995.4 ha. Thus, the total area proposed to be a conservation area is 3,493.1 ha. Community lands and peatlands do not exist in the study area so that the final ICLUP draft after the “give and take” process resulted in a potential development area of 5,604.3 ha (Table 24).

Tabel 24. Potential of conservation areas in PT PU

No	Description	Hectares *
1	Study area	9,097.4
2	HCV Area **	995,4
3	HCS Conservation Area ***	2,497.7
4	Peatlands	-
Sub Total Area of Conservation Proposed		3,493.1****
5	Community land	-
6	Areas of potential development in HGU	5,604.3
7	Areas of potential development to be proposed for NPP*****	5,159.83

Notes:

* Using the TM3 proyeksi projection system

** Excluding areas that are oval with HCS patches covering an area of 1,010,8 ha (total area of HCV/HCMVA 2,006,2 ha)

*** Includes HCS patch overlapping with HCV/HCVMA area of 1,010,8 ha

**** The company is also committed to full manage of all conservation areas, whether within the HGU, IUP or both

***** The company is committed to only clearance in the areas those overlap between HGU and IUP

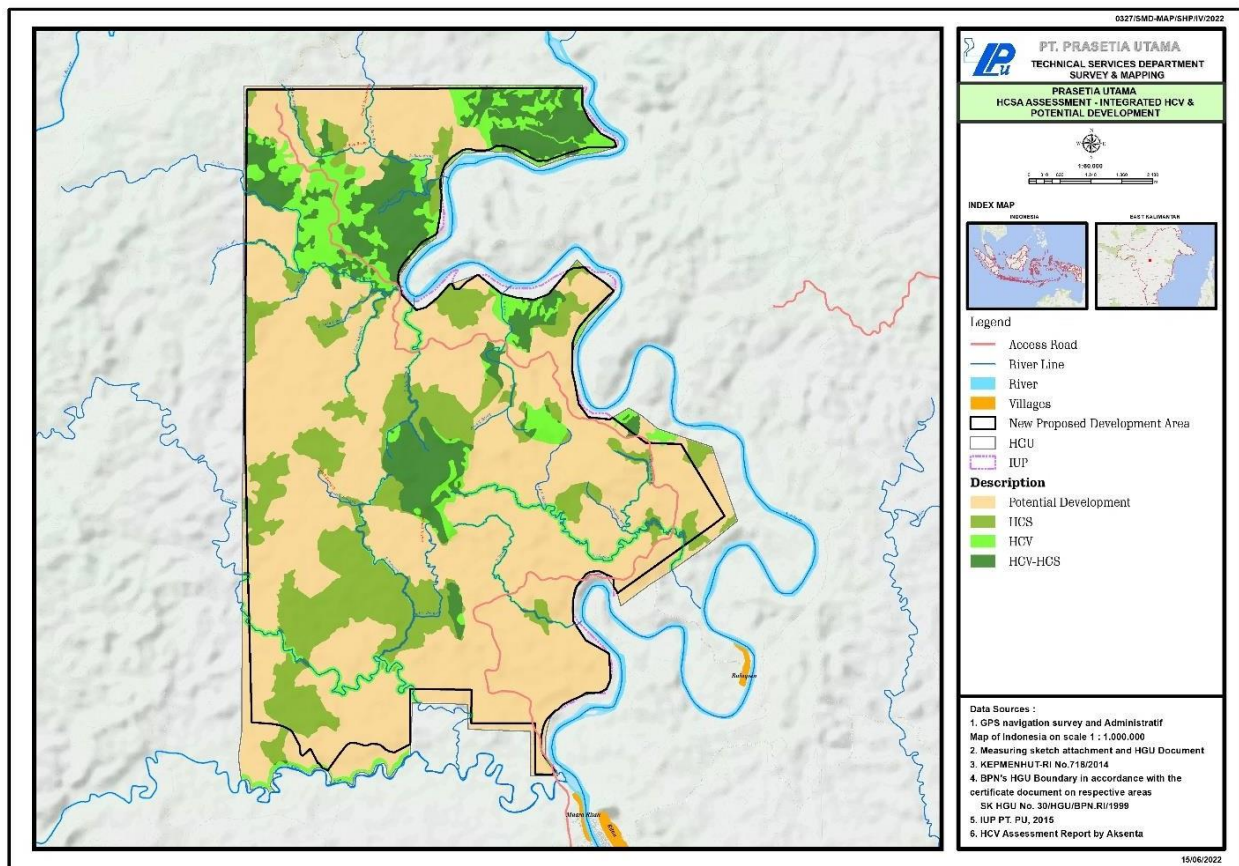


Figure 16. Final of Integrated Conservation Land Use Plan Development and Implementation (ICLUP)

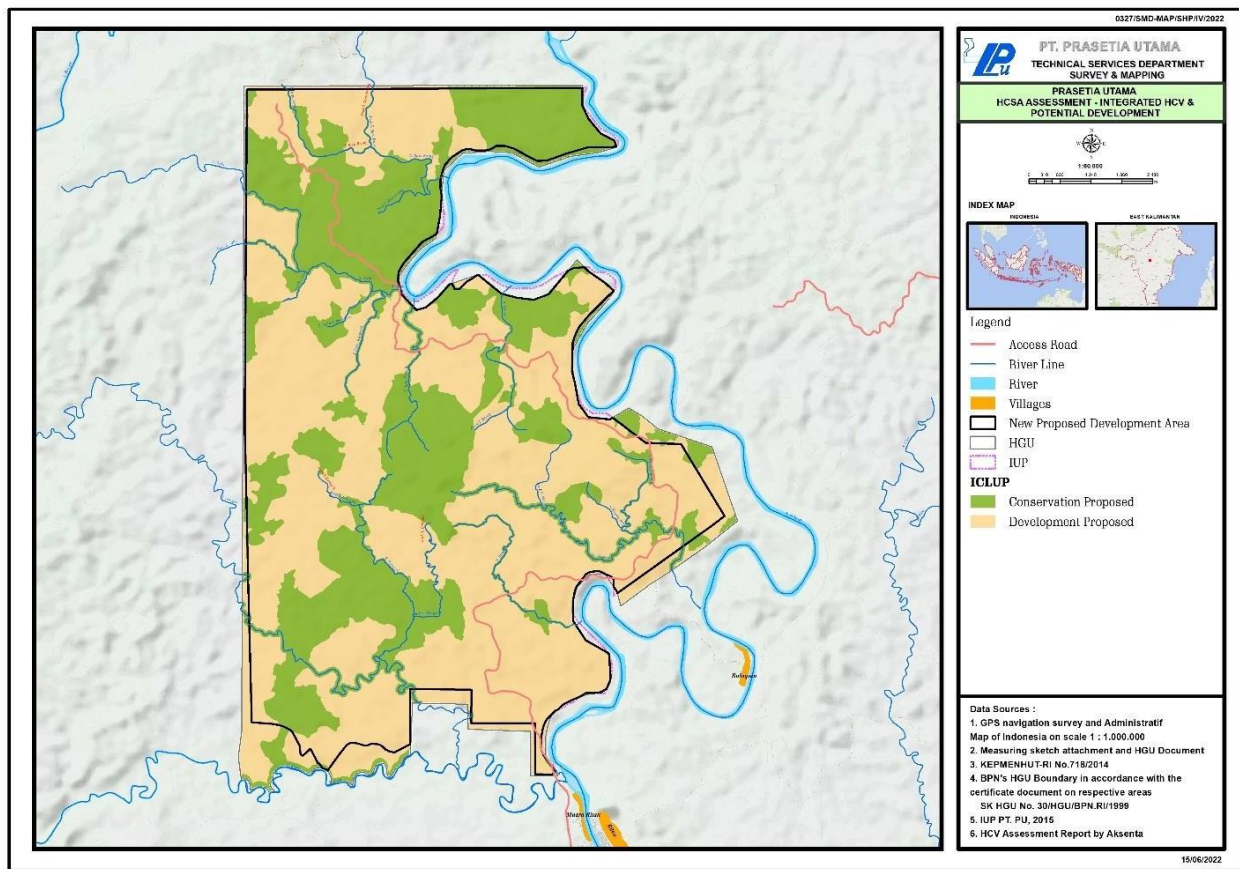


Figure 17. Summary of Integrated Conservation Land Use Plan Development and Implementation (ICLUP)

Stakeholder consultation

Community involvement in the HCSA assessment is divided into two parts, namely community involvement in the field survey (assisting the assessment team in identifying the local name of each species, assisting in making vegetation inventory plots and directions to the survey location that has been determined by the assessment team), and community involvement as respondents in interviews and participatory mapping to verify FPIC and socialization that has been carried out by the company.

When the assessment is carried out, the institutions appointed as community representatives are government institutions (village heads) and customary institutions (customary leaders). The village head and customary leader gave recommendations for several communities who would participate in the field survey. Interviews and participatory mapping involved 50 respondents/parties from seven communities/stakeholders (**Table 25**). Interviews and participatory mapping were carried out at certain times that did not interfere with the respondent's work and rest hours. Even the assessment team asked again about the willingness and readiness of respondents before the interview and discussion process began. Thus, during this assessment, no obstacles were found that hindered the interview and discussion process. Summary of interviews can be seen in Table 26.

Table 25. Summary of communities/stakeholders involved in the HCSA assessment

Stakeholders	Total	Methods
Village Apparatus	14	Interview, Participatory Mapping
Customary Institution	5	Interview, Participatory Mapping
Customary Institution (BPD)	1	Interview, Participatory Mapping
Religious Figure	5	Interview, Participatory Mapping
Independent smallholder	12	Interview, Participatory Mapping

Community leaders/Village Team	6	Interview, Participatory Mapping
Company Management	6	Interview, Participatory Mapping

Table 26. Summary of interviews and participatory mapping with respondents

Stakeholders	Name/Position /Role	Interaction Type	Cautions and/or Recommendations relating to HCSA assessment
Village Apparatus	Udau/Head of Umaq Dian Village	Interview and Consultation	<ul style="list-style-type: none"> ▪ Village demographics and village boundaries. Village area 16,500 ha), population 166 families (800 people) ▪ The area of the village is quite large but most of it is forest area (50%), mining company PT Indonesia Pratama (IP) concession area of 5,000 ha and oil palm company SKP covering 3,000 ha (partly overlapping with IP mining concession). The community oil palm covers an area of 1,000 ha. ▪ PAD is obtained from the PT IP fee of IDR 600 million per 3 months. ▪ The women's organization (PKK) received a contract from PT IP to sell vegetables. ▪ Residents of Umaq Dian Village, all high school graduates who apply for work at PT IP are guaranteed to be accepted. ▪ Keeping swallows is an alternative as a mainstay source of business for the community.
	Petrus Sung/Head of Buluq Sen Village	Interview and Consultation	<ul style="list-style-type: none"> ▪ Request that a official/written agreement be made between the company and the communities of Buluq Sen Village as evidence of the good faith of the company. ▪ The existence of PT PU's HGU, which was later not immediately cultivated, was detrimental to the village community because the arable area could not be made up of rights and hampered government assistance. ▪ As Acting Village Head, he does not know the boundary between HGU and land belonging to the Buluq Sen village community. ▪ In case that who the community claims to have arable land with an area of hundreds of hectares, this is logically impossible because it is not in accordance with the habits of the Dayak Buluq Sen community.
	Sung/Head of Muara Pedohon Village	Interview and Consultation	<ul style="list-style-type: none"> ▪ The number of residents of Muara Pedohon Village is 97 families (300 people) ▪ In principle, they agree to the arrival of PT PU in their area and the community welcomes them happily because they can sell FFB to the PT PU mills which incidentally is part of PT REA Kaltim. ▪ The boundaries of Muara Pedohon Village with Umaq Dian Village are in the PT PU area according to the confirmation from the Village Boundary Team from the Kukar Regency Government. ▪ In 2017 several villages within the Tabang sub-district (including Muara Pedohon Village) allocated funds to purchase certified oil palm seeds for distribution to the community.
Traditional Institutions	Anyeq Selalau/Traditional Head of Umaq Dian Village	Interview and Consultation	<ul style="list-style-type: none"> ▪ Village communities still preserve Dayak customs and culture in their daily life, especially those related to farming activities such as jenei (procession before planting), undat (procession after harvest). ▪ The role of customary institutions in land ownership has diminished, but is still important when there are land disputes, both between residents and residents or between residents and companies)

BPD Institutions	Ruben/member of BPD at Umaq Dian	Interview and Consultation	<ul style="list-style-type: none"> More than 50 peoples in Umaq Dian Village have oil palm plantations on HGU's PT PU, the average areas is 2 ha but some also have 8 ha. Inside HGU's PT PU in the area of Umaq Dian Village is also being worked on by the residents of Buluq Sen and Ritan Baru villages.
Religious Figure	Ligit/GKII at Umaq Dian Village	Interview and Consultation	<ul style="list-style-type: none"> The Indonesian Gospel Camp Church (GKII) in Umaq Dian Village received CSR from PT IP.
	H. Musthopa/Chair man of Ketua DKM Masjid Al Ikhlas at Muara Ritan Village	Interview and Consultation	<ul style="list-style-type: none"> The Kutai ethnic, who are actually Muslims, originally came from Hambau, Muara Pelak, Tuanan, Kembang Janggut, spread upstream to work wood, especially during the flood, then settled in several areas, one of which was in the village of Muara Ritan. The negative impact felt by residents who generally live along the Belayan River is the decline in water quality which is thought to be due to pollution from plantation activities and palm oil mills.
Petani Kelapa sawit	Syakroni/ISH at Muara Ritan Village	Interview and Consultation	<ul style="list-style-type: none"> Owens 2 ha of land in the HGU's PT PU with the land cover type is shrubs. The plan is to build an oil palm plantation, but if there is an agreement on the price of compensation with PT PU, it can be released. The company promised to carry out further socialization after the socialization on 25 October 2018, but it was not carried out and suddenly there was an activity of measuring community land.
	Yotam/ISH at Buluq Sen Village	Interview and Consultation	<ul style="list-style-type: none"> Since 1996, he has lived inside the HGU's PT PU, and has built a permanent house on the side of the main road. Has 20 ha of arable land, in the form of rubber plantations, oil palm plantations, and durian plantations. Part of the arable land will be released if the price is agreed upon and part of it will be retained for self-management.
	Yon Un/ ISH at Umaq Dian Village	Interview and Consultation	<ul style="list-style-type: none"> As a resident of Umaq Dian Village, he has never participated in the socialization conducted by PT PU Claiming to own 18 ha of land in the HGU area, 6 ha of which have been planted with oil palm, the rest are still shrubs and plans to plant oil palm, will not be released to the company because the results have been proven to be able to send their children to college. Owens 2 units of swallow houses inside of HGU's PT PU.
	Batang Tuban/Public figure at Umaq Dian Village	Interview and Consultation	<ul style="list-style-type: none"> PT PU (old management) was a timber company and promised to build an oil palm plantation, but in fact the company did logging, after the wood ran out. After PT PU was taken over by REA Kaltim, the company has never conducted direct socialization to the Umaq Dian Village community about the plan to build an oil palm plantation.
Public figure	<p>Wahyudiansyah/ Public figure at Muara Ritan Village</p> <p>Pathamsanur/ Public Figure at Muara Ritan Village</p>	FGD and interview at Muara Ritan Village	<ul style="list-style-type: none"> The boundaries of the Muara Ritan Village area are bordered to the west by West Kutai Regency, to the east by the Belayan River, to the north by the Tumau River Waterfall, to the south by the Lalan River. The area is approximately 31,000 hectares, most of which are production forest areas. Measurement activities are carried out in the context of an inventory of land cultivated by the community in the HGU's PT PU. (location, area, name of cultivator) Implemented by the PT PU's Survey Team accompanied by a Village Team formed by the Village Head and adjacent

	<p>Syakroni/ISH at Muara Ritan Village</p> <p>Muzakir/ISH at Muara Ritan Village</p> <p>Marzuki/ISH at Muara Ritan Village</p> <p>Juliansyah/ ISH at Muara Ritan Village</p> <p>Heriansyah/ ISH at Muara Ritan Village</p> <p>Adwar Acok/ ISH at Muara Ritan Village</p>		<p>cultivators. Activities carried out in 2019, were stopped due to pandemic constraints. The area measured is approximately 70% of the area in the Muara Ritan village area. The measurement data is still being processed by the survey team.</p> <ul style="list-style-type: none"> ▪ The villagers of Ritan Baru (Pak Jaing et al.) claim to own 30 ha of arable land. Another resident from Buluq Sen Village (Samuel Kajan) admitted to owning a field within the HGU's PT PU of 40 ha. ▪ Measurements were carried out on residents who from the beginning had stated they were ready to release land to PT PU, but regarding the compensation value, they are still asking for negotiations with the Company. Some residents are still not willing to have their land measured because they are still thinking about it. There are no residents who have explicitly stated that they will not relinquish their cultivated land to the Company. ▪ Land that has not been planted (scrub) generally wants to be released, but land with existing oil palm plantations will be maintained, unless the compensation value is suitable. ▪ There is no communal land which is owned by custom, there is group ownership, either on behalf of the farmer group or family group.
	<p>Tek Wan/Tim Ukur Desa Buluq Sen</p> <p>Yotam/Public Figure at Buluq Sen Village</p> <p>Yosep Udau/ISH at Buluq Sen Village</p> <p>Pendeta Eddy/Religious Figure at Buluq Sen Village</p>	<p>FGD and interview at Buluq Sen Village</p>	<ul style="list-style-type: none"> ▪ The management of PT PU once conducted socialization in Buluq Sen Village on November 7 2018, the things that were conveyed about the plan to develop an oil palm plantation, including the plan to develop a plasma plantation. ▪ The community wants the development of plasma plantations to be carried out first, because there is a background of previous disappointment related to the development of plasma plantations at PT SYB. ▪ The community asked PT PU to immediately clear the land, do not delay, the longer it is delayed will be detrimental to the people of Buluq Sen Village because from day to day residents from neighboring villages keep coming to clear land in the Buluq Sen Village area. ▪ Currently the PT PU area is the result of a take over from the old management by PT REA Kaltim. Previously, the community had never received socialization from the old management, the community did not even know the managers. ▪ The company was asked to allocate customary land in the PT PU area of 50 ha ▪ We ask that in the future the Company can help repair or build roads in community cultivation so that the harvest can be easily transported.
<p>Representative of PT PU</p>	<p>Boy Toreh</p>	<p>Interview at Central Office</p>	<ul style="list-style-type: none"> ▪ PT PU (new management) has conducted socialization in Muara Ritan Village and Buluq Sen Village in October and November 2018. ▪ Participatory mapping (inventory of arable land and its owner) Conducted by the Company Survey Team accompanied by the Village Team, as a guide to identify arable land owners. Measurement activities stopped during the pandemic, every village was locked down. Starting in November, inventory activities will continue.

			<ul style="list-style-type: none"> ▪ Buluq Sen village has submitted an application to the Company to allocate 150 ha of land for plasma adar, but the location has not been determined. ▪ The total area of each village included in the PT PU is estimated to be: <ul style="list-style-type: none"> - Buluq Sen village about 4,400 ha - Muara Ritan village about 2,200 ha - Umaq Dian village about 2,000 ha - Muara Pedohon village about 1,000 ha - Crop Compensation (GRT) is applied to land including growing crops on it, except for oil palm plantations.
--	--	--	---

Section 6: FPIC

Guidance Note: This section is where the information on stakeholder mapping is put and all required information that the building blocks for FPIC have been conducted. References and pictorial evidence are recommended. What are the methodology(ies), people involved in the process, date of assessment and findings?

Date of activities

The company's FPIC process is verified by PT Gagas Dinamiga Aksenta simultaneously was on 15 – 26 November 2021 with the HCSA standalone assessment. The FPIC applications also carried out during the HCV assessment on 21-23 May 2018 and on 02 May – 13 July 2019 (see Table 18. HCV consultation public).

Assessor and their credential

Table 27. FPIC Process verification team

FPIC Process verification team		
Myranti Magetssari	Social expert (FPIC and participatory mapping)	Social-economic aspects, social impact management, social culture aspects and participatory mapping.
Noor Rakhmat Danumiharja	Social expert (FPIC and participatory mapping)	Socio-economic, social impact, FPIC verification, socio-culture, tenure studies, participatory mapping

Assessment methods

The process of FPIC refer to the Free, Prior, Informed and Consent Guide for RSPO Members. RSPO Human Rights Working Group 2015. Endorsed by the RSPO Board of Governors meeting on 20 November 2015. FPIC is verified through the following methods: (i). Document review; (ii). FGD; (iii). In-depth interview and (iv). Field observation. Respondent are selected using purposive and snowball sampling methods while for the FPIC process carried out by the company's internal team related to land acquisition, it refers to the NDPE and Human Rights policies and SOPs for Land Acquisition which have previously been communicated to the community. In addition to the implementation of FPIC in the HCV, HCSA assessment process HCSA has also implemented FPIC in the stages and process of land acquisition. The company has established a policy regarding FPIC and it is regulated in a mechanism with the title Land Acquisition Procedure.

Summary findings

The company's FPIC process is verified by PT Gagas Dinamiga Aksenta simultaneously was on 15 – 26 November 2021 with the HCSA standalone assessment. The FPIC applications also carried out during the HCV assessment on 21-23 May 2018 and on 02 May – 13 July 2019 (see Table 18. HCV consultation public).

PT PU has carried out the FPIC process which began with socialization of the planned activities/businesses for cultivating oil palm plantations with processing units, which was carried out on 24th August 2013 in the context of preparing the EIA. The socialization was attended by Muspika Tabang (Camat, Polsek, Koramil), related agencies (BLHD, Plantation, Land), village officials (village head, village secretary, head of LPM, head of BPD, customary head) as well as community leaders from villages potentially affected (Buluq Sen and Muara Ritan

villages). Basically, the communities from the two villages welcomed the presence of PT PU and did not reject the company that would invest and develop an oil palm plantation in their area, however, in the discussion session there were several notes from the community asking the company to show its seriousness by making a written agreement as a form of company commitment, because the community previously felt disappointed with the company's promise that it had been 15 years since PT PU obtained the HGU there had been no significant activity.

In 2017 PT REA Kaltim became the majority shareholder in PT PU. Improvements in management and communication with the community were carried out by the new management of PT PU. On 26th February 2018 and 7th March 2018 a coordination meeting was held between PT PU management and related parties, namely Muspika Tabang, village officials and community leaders from four villages (Muara Ritan, Buluq Sen, Umaq Dian, Muara Pedohon). In the meeting, it was agreed to carry out participatory mapping of community arable land in the PT PU area, each village formed a Village Team which will accompany the Survey Team from the Company. The company can show the coordination meeting activity documents in the form of minutes and attendance lists.

Subsequent socialization activities were carried out in Muara Ritan Village on 25th October 2018 and in Buluq Sen Village on 7th November 2018. The management of PT PU conveyed the plan for the development of oil palm plantations with socialization materials covering the following issues:

- a. Mechanism of land acquisition and land conflicts handling.
- b. Partnership program in plasma plantation development plans.
- c. Community development program (Community Development).
- d. General agriculture cultivation techniques.
- e. Environmental management and conservation programs.
- f. Employee recruitment program.
- g. An important aspect of a sustainable program in the new plantation development plan.

In early 2019, the communities of Muara Ritan Village attended a meeting to discuss the determination of the value of land compensation. Communities in Buluk Sen Village and Muara Ritan Village formed a team and carried out land inventory and measurement activities. This activity resulted in the total area of land being measured was 3,162.64 Ha.



DAFTAR HADIR

HARI / TANGGAL : Senin, 26 Februari 2018
 JAM : 09.00/ sampai selesai
 TEMPAT : Ruangan Meeting Training School
 AGENDA : Sosialisasi Inventarisasi Lahan PT. Prasetya Utama

NO	NAMA	JABATAN	TANDA TANGAN
1	PAISUAL, SE. M.Sc	Sebelum Tbg.	
2	MAHISUR	Wakil Pokok Tbg	
3	SUWANTO	BATUVA PADUK Tbg	
4	BOY TOREN	Mgr LCC	
5	Rolan MT stms	IAD	
6	JAMAL 08135083370	STAF ADAT	
7	H. HASNI	KADES MURAH DUM	
8	SONG AJAN 08158077205	KADES PEDAHAN	
9	Lewis 081350872184	LPM	
10	Ajeng L. 08125565805	Ketua adat	
11	Yusuf 08525202078	Ketua BPP	
12	KODIE 08335784567	Ketua KEMUNIDEM	
13	PATTAMIANUR 082316	Ketua KEMUNIDEM	
14	L.S. Partman 0812663066	Ketua BPP MUKTI	
15	Samson Sit	Ketua UMUM K.C. Tbg	
16	Walter Almar	Mgr. Merma	
17	Wawan Henry	Mgr. Merma	
18	ROBED. 08139746192	Staf Dept.	
19	James Panaribu	Konvensi	
20	Syaiful Ramay	REKORIS SPDR	
21	Cepi Heryadi	LCC officer	
22	Acep Setiawan	Survei Mapping	
23	Imam Swahman	Survei	
24	EDI SUSANTO	BABINSA BULOGJEN	
25	Stewart Taji Rhando	Security	
26	Angga Adi S.	Mogamkat	

NAMA	JABATAN	TANDA TANGAN
27	A. R...	27
28	Nineth D...	28
29	PAISUAL, SE. M.Sc.	29
30	Yusuf...	30
31	M. SUHERNY	31
32		32
33		33
34		34
35		35
36		36
37		37
38		38
39		39
40		40
41		41
42		42
43		43
44		44
45		45
46		46
47		47
48		48
49		49
50		50
51		51
52		52
53		53
54		54
55		55
56		56
57		57
58		58

Figure 18. Documentation of socialization of new plantation development plans at PT PU to the community & other relevant stakeholders, February 2018



PT. REA KALTIM PLANTATIONS & GROUP

DAFTAR HADIR

Hari/Tgl : Rabu, 07 Mei 2018
 Jam : 10.00 - selesai
 Tempat : POKJALIKSI RENCANA PEMBANGUNAN BUNTAH PERKEBUNGAN BARU PT. PU DI DESA BULUQ SEN KEC. TINGKANG KAB. KUPANG KALTIM

Peserta

NO	NIK	NAMA	JABATAN	ESTATE	TANDA TANGAN
1		Jatung	Kadiv		
2		SIMBA	CEO KEBUNYANG		
3		BOY TOREN	LCC	Central	
4		Y. Daniel	Sr. Estate Mgr	EM PU	
5		Natali Torigan	HCP	Central	
6		Tommy Dolang	Mgr. Agronomi	Central	
7		M. Wahyuni	Aksep LCC	Central	
8		Cepi Heryadi	Aksep LCC	Central	
9		W. H. D. I. S.	PA	Central	
10		A. Kusur Silihar	Asi. Sekt	Central	
11		Ikhwan Heryadi	Aksep Pujura	Central	
12		Yosiana. N.	Adm LCC	Central	
13		Tjauja Uti	Asisten Dik	Manajemen	
14		L. E. W. I. S. H.	Manajemen	"	
15		Abraham H-1	Wakil Ist. BPD	"	
16		William Aluno	Ketua M. D.	"	
17		Prasensia Betia	Manajemen		
18		Damanes Lany	Manajemen		
19		Ura Uli	Manajemen		
20		Toni Barga	Manajemen		
21		Alberta Mering	Manajemen		
22		Kawani	Manajemen		
23		Elizabeth Amyal	Manajemen		
24		Pdt. Eddy Kueng	Pendeta		
25		J. K. L. U.	Manajemen		
26		Lia Manis	Manajemen		
27		Vita Dmy	Manajemen		
28		Dhea	Manajemen		
29		Dewi Teawan	Manajemen		
30		Hendri	Manajemen		



REA-OP-F003.41.0101032013

Notulen Meeting Sosialisasi Rencana Pembangunan Perkebunan Baru PT. Prasetya Utama

Tanggal : 07 Mei 2018
 Lokasi : Desa Buluq Sen Kec. Tingkang Kab. Kupang

No.	Issue/Komentar/Pernyataan dari Stakeholder	Tanggapan dari PT. Prasetya Utama
1	<p>Nama : Uday Latang</p> <p>Deskripsi : - Merasa trauma diberi janji terkait plasma dan pembagian/pembayaran ganti rugi lahan - penyelesaian masalah lahan diharapkan jangan dengan jalur hukum (musyawarah) - Apakah plasma harus dibelikan atau dilejar HGU</p>	<p>Matal : - penempatan lahan plasma akan difasilitasi di wilayah desa masing-masing sesuai wilayah tanam. hal ini juga bertujuan agar masyarakat juga bisa memantapkan perkembangan plasma nya - andriana : penyelesaian masalah akan dilakukan dengan musyawarah sesuai tanggapan jawab masing-masing Departemen</p> <p>Boy Toreh : - pelaksanaan pembukaan lahan tetap berdasarkan komunikasi dengan masyarakat sehingga tidak ada masalah kedepannya</p>
2	<p>Nama : Pdt. Limangjuna</p> <p>Deskripsi : - history PT. PU pernah membukakan lahan pada tahun 2003 untuk pembibitan namun realisasinya adalah pengambilan kayu hutan, serta tidak ada penanaman dari bibit yang sudah dibuat tersebut - program plasma mohon di deklarkan sebelum ini</p>	<p>Matal : plasma dan ini akan dibangun bertamcan dan perentuan plasma berdasarkan penentian total lahan desa yang dapat ditanami Boy Toreh : sosialisasi sudah pernah dilakukan namun masih dalam 3 kecamatan kecamatan desa-gama</p> <p>Boy Toreh : a. Tidak mengetahui istilah pembukaan lahan pada tahun 2003 tersebut karena waktu itu PT. PU masih di bawah bawahi plantations b. PT. PU akan menganti belahan lahan termasuk kategori konsistensi dan pembayaran ganti rugi berdasarkan data yg diinput serta berdasarkan persetujuan desa penyempurnaan hst. after land clearance Pdt. Limangjuna : - akan lakukan sosialisasi ke desa-desa terdampak</p>
	<p>Nama : - belum melakukan sosialisasi</p> <p>Deskripsi : atau sudah mendapat persetujuan namun realisasinya sudah dilakukan perijinan dilapangan - kriteria lahan apa yang akan dibebaskan oleh perusahaan untuk dijadikan plasma</p>	<p>agar dilakukan sosialisasi ke desa-desa terdampak</p> <p>Boy Toreh : a. Tidak mengetahui istilah pembukaan lahan pada tahun 2003 tersebut karena waktu itu PT. PU masih di bawah bawahi plantations b. PT. PU akan menganti belahan lahan termasuk kategori konsistensi dan pembayaran ganti rugi berdasarkan data yg diinput serta berdasarkan persetujuan desa penyempurnaan hst. after land clearance Pdt. Limangjuna : - akan lakukan sosialisasi ke desa-desa terdampak</p>

Figure 20. Socialization documentation of PT PU plantation development plan in Buluq Sen Village

ID	Photo	ID	Photo
1.	 <p>2018-5-31 11:18</p> <p>Participatory mapping and consultation with farmers from Tukung Ritan Village</p>	2.	 <p>Participatory mapping and consultation at Umaq Dian Village</p>

3.



Participatory mapping and consultation at Pedohon Village

4.



Participatory mapping and consultation at Ritan Baru Village

5.



Participatory mapping and consultation at Muara Ritan Village

6.



Participatory mapping and consultation with PT PU's employee involved in land clearing

7.



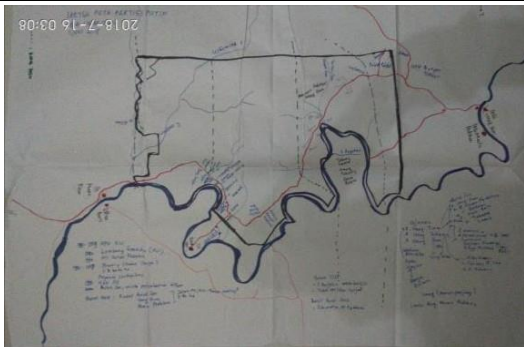
Consultation with new management of PT PU

8.

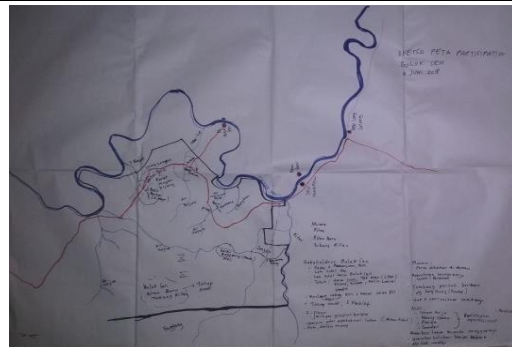


Results of consultation and participatory mapping at Muara Pedohon village

9.



10.



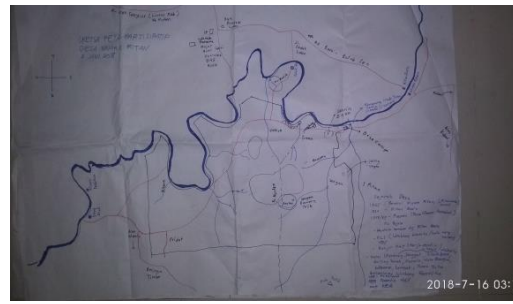
Results of consultation and participatory mapping at Umaq Dian Village

Results of consultation and participatory mapping at Buluq Sen village

11



12



Results of consultation and participatory mapping at Ritan Baru village

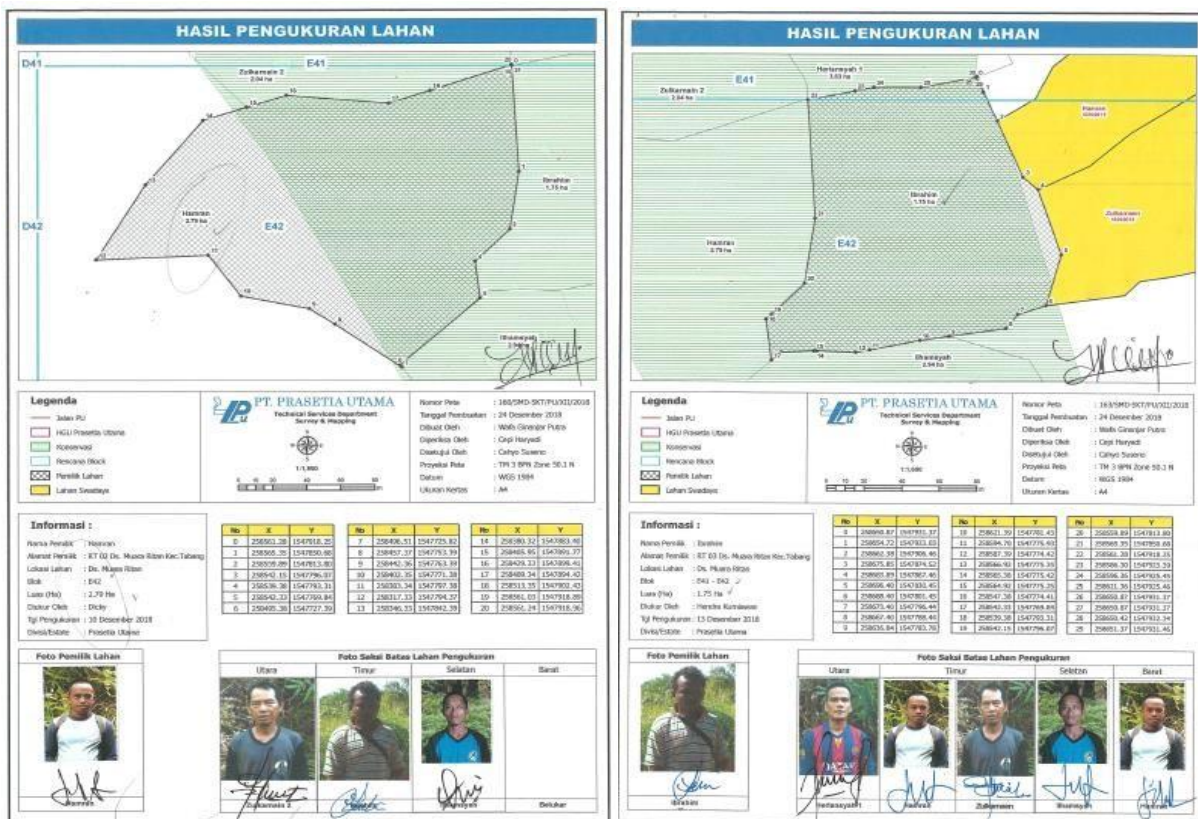
Results of consultation and participatory mapping at Muara Ritan village

Figure 21. Documentation of interviews and participatory mapping of HCV and HCS

Land acquisition process based on FPIC approach

As a further stage of the process of socializing the new plantation development plan and a series of HCV, HCS, SIA assessment activities involving the affected communities in a participatory manner, the company is committed to starting to identify legal rights, customary (or traditional) land tenure and/or ownership and/or access/use of the community. The objective of this stage is to establish a compensation plan that is fair to all land-owning communities with land rights. All these stages and processes refer to company policies, including Human Rights and Responsible Development Policies as well as the New Land Compensation Procedure which refers to the principles of Free Prior Informed Consent.

The following is a recording of evidence of the implementation of land ownership identification which was carried out in a participatory manner with the land owner communities and their representation.



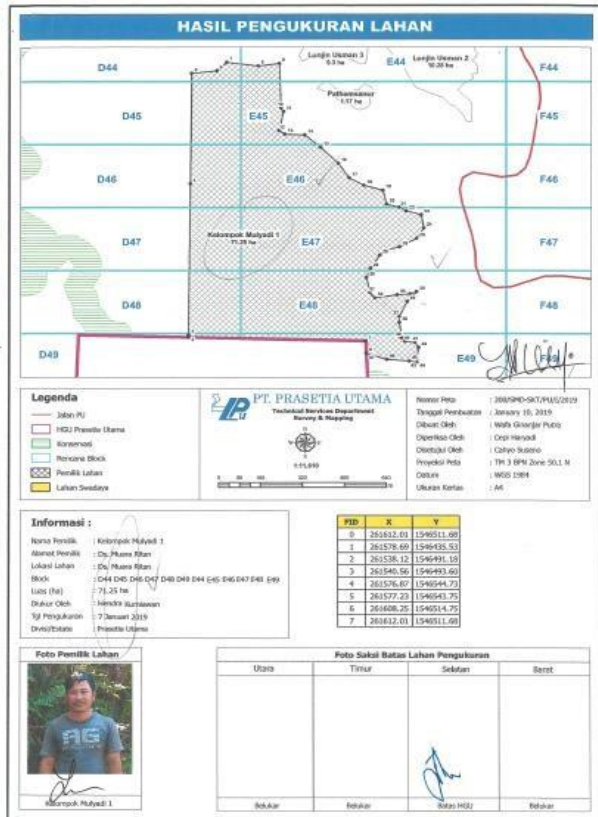
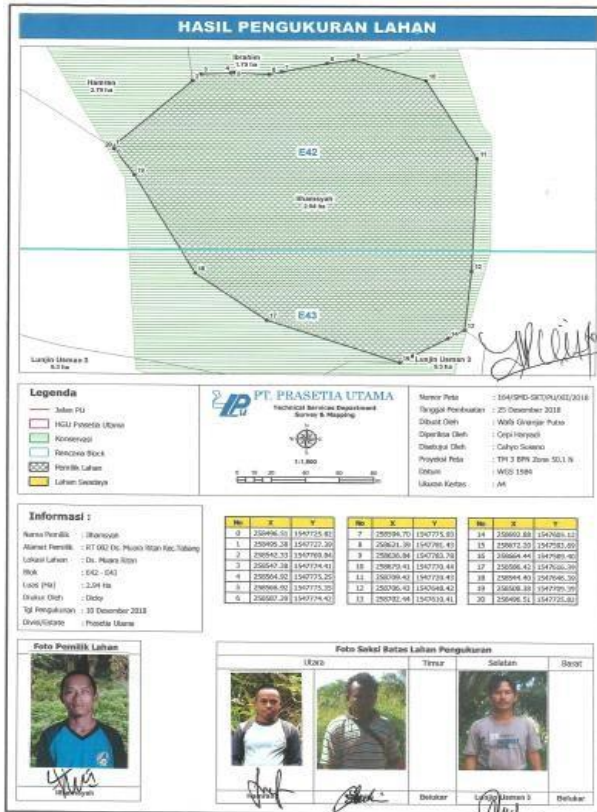


Figure 22. Records of participatory community land ownership identification

BERITA ACARA PEMBARAN PELEPASAN HAK GARAP LAHAN PT. Prasetia Utama

Pada hari ini Rabu, Tanggal 16 Bulan Maret, Tahun 2022, bertempat di Cenoro Kecamatan Tabang, Kabupaten Kutai Kartanegara telah dilakukan Pembayaran Pelepasan Hak Garap Lahan oleh PT. Prasetia Utama kepada Pemilik lahan berdasarkan data dibawah ini :

Nama : Hamran
 Alamat / Kampung : RT 002 Muara Ritan Kec. Tabang Kab. Kutai Kartanegara
 Luas Lahan : 2,79 Hektar
 Lokasi (Block) : PT Prasetia Utama (Block E42)
 Nilai Lahan : Rp. 20.925.000,-
 Tanam Tumbuh : -
 Jumlah Dibayar : Rp. 20.925.000,-
 Terbilang : (Dua Puluh Juta Sembilan Ratus Dua Puluh Lima Ribu Rupiah)

Demikian berita acara ini dibuat dengan sebenarnya dan berlaku sejak ditandatangani oleh masing-masing pihak dan dibuat rangkap dua dengan materai cukup yang memiliki kekuatan hukum yang sama.

Pihak yang membayar,
 PT. Prasetia Utama
Boy Nurmanjash Toreh
 Sr. Manager LC&C

Pihak yang menerima,
 Hamran
 Pemilik lahan

Saksi-Saksi :

1	Nama : <u>HELUNA</u> /jabatan : Kepala Desa Muara Ritan
2	Nama : <u>Jasni</u> /jabatan : Ketua Adat Muara Ritan
3	Nama : <u>Dian Yudi</u> /jabatan : Ketua RT 02
4	Nama : <u>R.H. MURNI</u> /jabatan : Ketua BPD Muara Ritan
5	Nama : <u>Gezal Rahman</u> /jabatan : Ketua LPM Muara Ritan
6	Nama : <u>PAISYAL MSI</u> /jabatan : Camat Tabang
7	Nama : <u>Solomonus</u> /jabatan : Kapolsek Tabang
8	Nama : <u>EKO DARO</u> /jabatan : Danramil
9	Nama : <u>JAN TRIMAN</u> / Dept. Internal Audit
10	Nama : <u>RIZAL A</u> / Dept. LC&C
11	Nama : <u>BOY NURMANJASH TOREH</u> / Dept. Finance
12	Nama : <u>Y. Daniel Dury</u> Tim Operasional/Kebun/Estate

TANDA TERIMA PEMBAYARAN PELEPASAN HAK GARAP LAHAN DAN TANAM TUMBUH

Dengan ini Saya yang bertandatangan dibawah ini :

Nama : Hamran
 No. KTP : 6402121212720001
 Alamat : RT 002 Muara Ritan Kec. Tabang Kab. Kutai Kartanegara
 Kartu Keluarga : 6402123411070336

Menyatakan bahwa Saya sudah menerima uang dari PT. Prasetia Utama Uang Tunai Sebesar Rp. 20.925.000,- Terbilang (Dua Puluh Juta Sembilan Ratus Dua Puluh Lima Ribu Rupiah) Sebagai pembayaran Kompensasi Pelepasan Hak Garap lahan sehubungan dengan pembangunan perkebunan Kelapa sawit yang berada di dalam wilayah Ijin Lokasi /HGU PT. Prasetia Utama yang terletak di Desa Muara Ritan, Kecamatan Tabang, Kabupaten Kutai Kartanegara.

Tanda Terima Pembayaran Kompensasi lahan ini merupakan satu kesatuan dengan Surat Pernyataan yang dibuat dan ditandatangani pada tanggal yang sama dan karenanya segala resiko yang timbul atas penerimaan pembayaran Kompensasi lahan ini tunduk pada Surat Pernyataan yang telah ditandatangani.

Pihak yang Menerima,
 Hamran
 Pemilik Lahan

Pihak yang menyerahkan,
 PT. Prasetia Utama
Boy Nurmanjash Toreh
 Sr. Manager LC&C

Yang Mewakili : Hubungan Keluarga

Mengetahui Saksi-saksi :

Ketua RT 002
Heluna

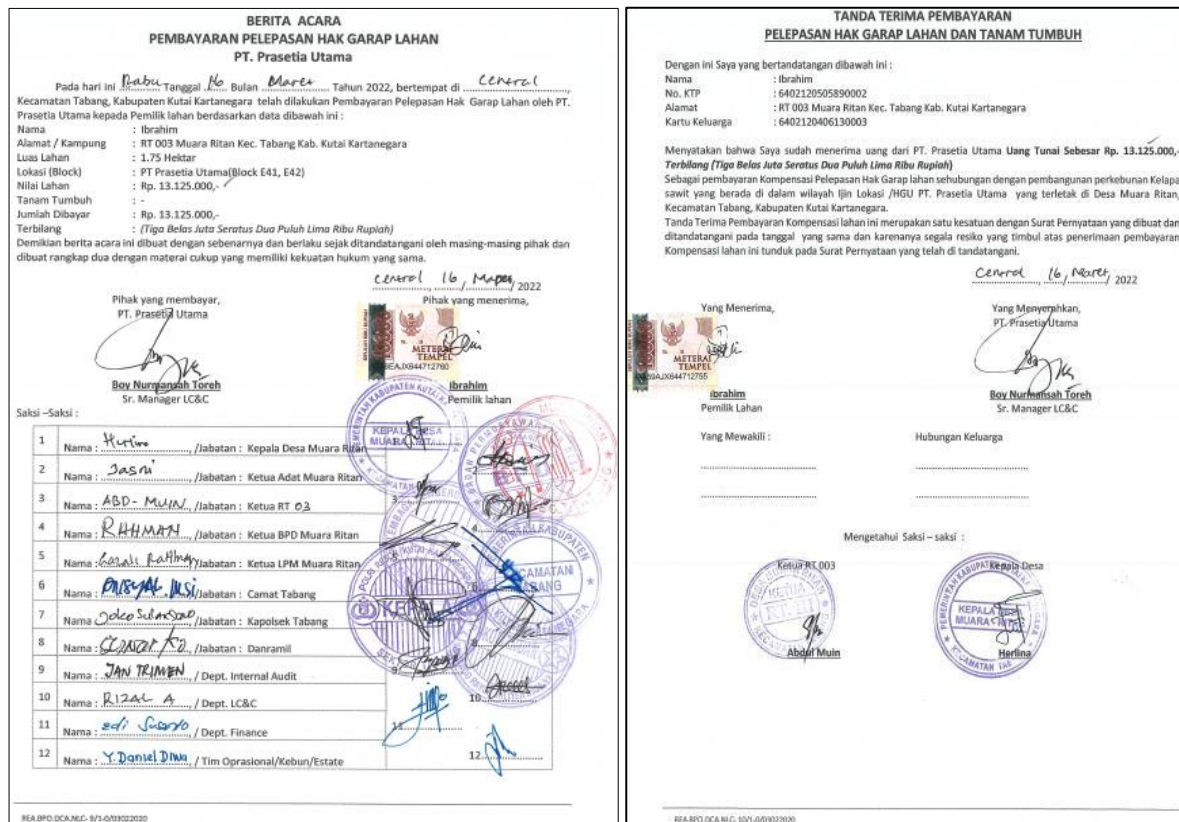


Figure 23. Proof of land acquisition to the community who owns the land rights

Section 7: Soil and topography

Date of activities

Semi detail soil survey at PT PU was carried out start from March until June 2008.

Assessor and their credentials

Soil survey and topography assessment of PT PU in which located in Muara Ritan village, Buluqsen village, Muara Pedohon village and Umaq Dian village, Tabang Sub-district, Kutai Kartanegara regency, East Kalimantan Province. The land survey through a semi-detailed review system was conducted by Param Survey Land Agriculture (M) Sdn.Bhd.

Assessment methods

Survey method are described as follows:

- a. The initial approach to a desk study is to review the information available to the region. Topography, drainage, geology and climate at the region. Regional surveillance ground maps are available (Tabang Sheet 1816) (Soil and Agro-climate Research Centre, Bogor, 2000). This map is on a scale of 1: 250,000. As stated in the terms of reference for research, free traverse systems are employed for surveys. If required, a crossed line is used for the survey. As required in the Terms of Reference, the intensity of a single checkpoint for every twenty acres is maintained.
- b. At each point of examination, the soil is examined using Jerret aerobic soil and the soil are examined to a depth of 105 cm (40 inches) or to penetrated layers. At each observation point, the depth, colour, spots, texture, consistency, presence of rock fragments and roots are illustrated using the FAO terminology guidelines for soil (FAO, 1977) and Malaysian standard terminology (Paramanathan, 1997). Other characteristics such as slopes, drainage classes, deep peat (if any), and groundwater are also described. Based on the described properties (ParamanantHan, 1987) determined.

- c. Data collected during field survey was plotted on 1: 25,000 plantation map scale and final land map is produced. In compiling land maps, geology, topography and other features are used in the extrapolation of boundaries between checkpoints.
- d. Distribution of lands are shown on the land map. Since no land name series exist in Indonesia, Malaysia's land name has been used for land on plantations. Which slopes, drainage and colour variants required are also used in producing land maps.

Summary findings

Topography and drainage

Regional topographic maps are available. Based on these maps the study area consisted of undulating to hilly areas (0-38% or 0-20° slopes) based on slope classes used in Malaysia (see Table 28). Elevations in the study area range from around 30 meters (90 feet) to 200 meters (600 feet). Drainage in this area is generally good with Belayan River which forms the northern and eastern boundaries of the study area. Imperfect dirt is confined on the riverbanks.

Table 28. Slope class in PT PU area

Slope Class		Description	Map Symbol
Percentage	Degree		
0-4	0-2	Level	1
4-12	2-6	Undulating	2
12-24	6-12	Rolling	3
24-38	12-20	Hilly	4
38-50	20-25	Somewhat Steep	5
50-60	25-30	Steep	6

Geology and Geomorphology

Geology of Borneo Island has been mapped by staff of the Center for Geological Research and Development, Bandung, Indonesia. On Geological Map of Ancalong Estuary Quadrant Sheet 1816 (scale 1: 250,000) (Atmawinata, Ratman and Baharuddin, 1995) the study area has been mapped as belonging to two geological units. This is described below:

Teh: Ayau Stone Formation. Sandstone with small small stones

Tou: Ujoh Bilang Formation. Mud stones with small sandstones. Late Eocene to Early Oligocene.

Vegetation and land use

Most of the study area consists of logged-over forests with several small areas of indigenous plantations spread along Belayan River. Little commercial timber seems to be present in the area.

Climate

Climatology and hydrology studies aim to determine the intensity and distribution of rainfall and other related phenomena in relation to time and place. The information obtained, coupled with information about soil, field conditions in which needed to determine what plants can be planted in the area. The closest climatology station to the study area is Sentekan Estate (REA KALTIM) to the east of PT PU. From the rainfall data of Sentekan Estate, this location does not have dry months (<100 mm), but sometimes dry months can occur. The climate is suitable for oil palm cultivation. Heavy rains occur in November and floods and soil erosion can be a problem in some parts of the area. Estate has more than 160 rainy days per year.

Soil suitability

The revised plant suitability map produced after field visit has seven (7) units of land maps. These units (soil series) are described in the legend of land suitability map. The main limitations of each of seven land map units

are also given the legend of land suitability map. Based on this assessment, the main limitations in the study area are the associated hilly and soil erosion areas, and moderate soil depth. Most land has low fertility status.

Based on this evaluation the study area suitability as a whole can be done. In the study area totalling 9,900 ha around 8,929 Ha or 90.2% from this area is suitable while the remaining 971 ha or 9.8% is slightly suitable for oil palm cultivation. Thus, with corrective actions the entire study area can be planted with oil palm. The potential yield for the area is estimated at 24-28 mt/ ha/ year. The harvest will depend on the type of soil and will fluctuate with rainfall. Soil conservation measures such as terracing, cover crop formation are very important.

Table 29. Soil type in PT PU area

Map Symbol	Landform	Parent Material	Slope Range (%)	Dominant Great Soil Group	Closet Malaysian Group	Main Limitations
6	River Valley	Alluvium	24-38	Endoaquepts	Kampong Pusu Gong Chenak	Poor drainage Flooding
31	Dissected Hills	Sedimentary Rocks	24-38	Hapludult Dystrudept	Nami Kedah	Erodability Shallow soils Low fertility
33	Small Hills	Sedimentary Rocks	24-38	Hapludults Kandiudults	Nami Serdang	Erodability Low fertility
34	Small Hills	Sedimentary Rocks	24-38	Hapludults Dystrudepts Udorthents	Kuala Brang Tika Kedah	Shallow soils Erodability Low fertility
35	Small Hills	Conglomerate & Sandstone	24-38	Hapludult Dystrudepts	Nami Serdang	Erodability Low fertility

The revised plant suitability map produced after field visit has seven (7) units of land maps. These units (soil series) are described in the legend of land suitability map. The main limitations of each of seven land map units are also given the legend of land suitability map. Based on this assessment, the main limitations in the study area are the associated hilly and soil erosion areas, and moderate soil depth. Most land has low fertility status.

Based on this evaluation the study area suitability as a whole can be done. In the study area totaling 9,900 ha around 8,929 Ha or 90.2% from this area is suitable while the remaining 971 ha or 9.8% is slightly suitable for oil palm cultivation. Thus, with corrective actions the entire study area can be planted with oil palm. The potential yield for the area is estimated at 24-28 mt/ ha/ year. The harvest will depend on the type of soil and will fluctuate with rainfall. Soil conservation measures such as terracing, cover crop formation are very important.

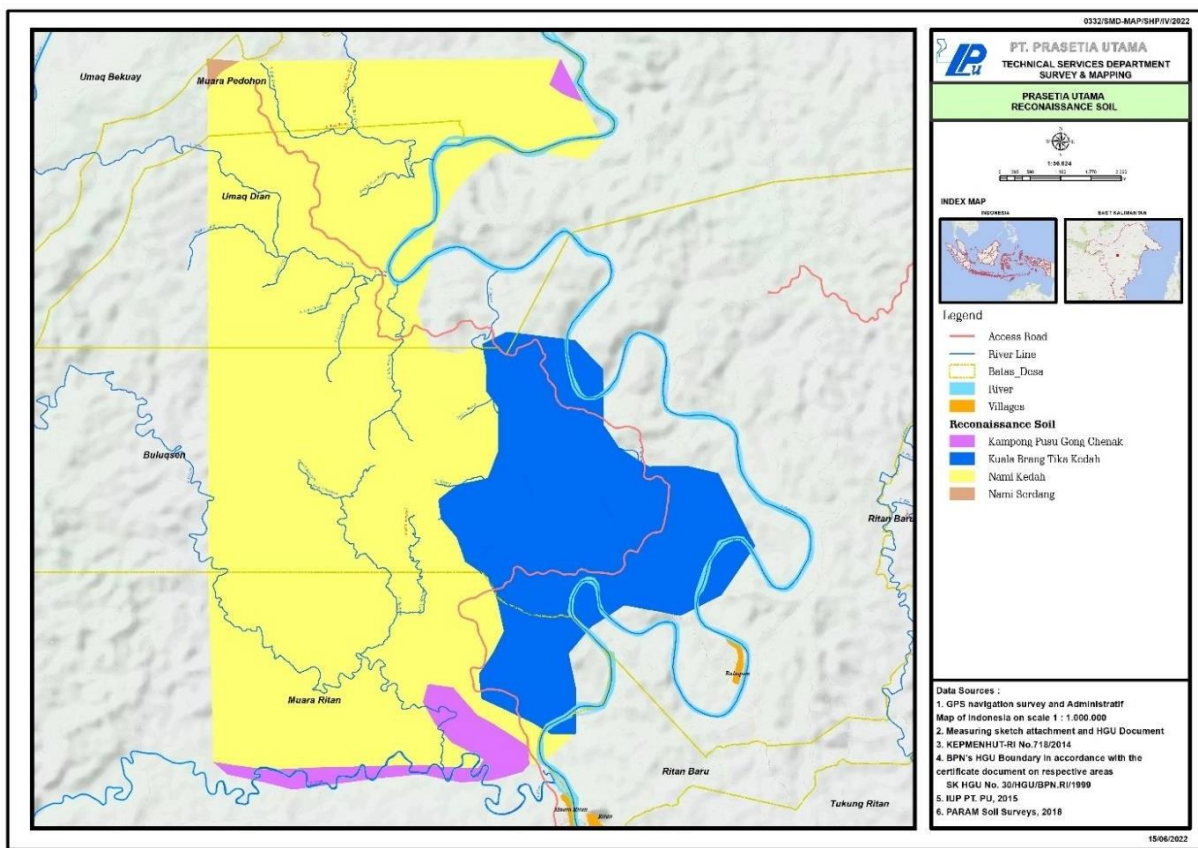


Figure 24. Reconnaissance soil of PT PU

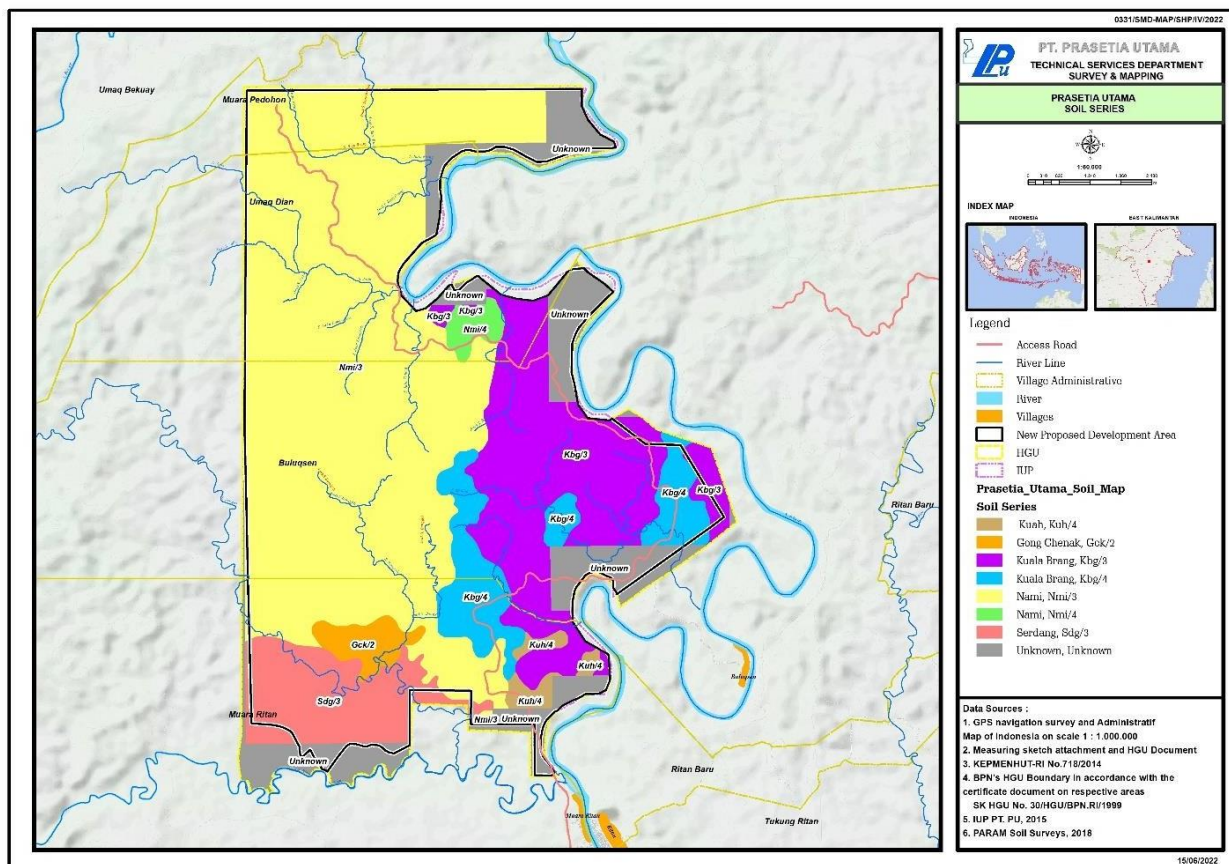


Figure 25. Soil-crop suitability of PT PU

Table 30. Soil suitability & fertility in the study area of PT PU

Map Symbol	Soil Series	Slope (%)	Brief Description	Sustainability for Oil Palm (Main Limitations)	Total Extend	
					Ha	%
Sdg/3	Serdang	Rolling (12-24)	Deep (>100 cm) brownish yellow to strong brown fine sandy clay loams. Weak medium subangular blocky; friable. Patchy clayskins. Well drained. Soils developed over sandstones.	Suitable (Low fertility)	832	8,4
Kbg/3	Kuala Brang	Rolling (12-24)	Moderately deep (50-100 cm) brownish yellow to strong brown fine sandy clays. Moderate medium subangular blocky; friable to firm. Patchy clayskins. Moderately well drained. Soils developed over shales with minor sandstones.	Suitable (Low fertility, moderate depths)	2.039	20,6
Kbg/4		Hilly (24-38)		Marginal (Soil erosion, low fertility, moderate depth)	733	7,4
Nmi/3	Nami	Rolling (12-24)	Moderately deep (50-100 cm) brownish yellow fine sandy clay loam. Weak medium to fine subangular blocky; friable. Patchy clayskins. Weathered rocks around 70 cm depths. Well drained. Soils developed over sandstones with minor shales.	Suitable (Low fertility, soil erosion, moderate depths)	5.880	59,4
Nmi/4		Hilly (24-38)		Marginal (Soil erosion, low fertility, moderate soil depth)	119	1,2
Kuh/4	Kuah	Hilly (24-38)	Shallow (<50 cm) brownish yellow to strong brown fine sandy clays. Moderate medium subangular blocky; friable to firm. No clayskins. Weathered rocks around 40 cm depth. Moderately well drained. Soils developed over shales with minor sandstones.	Marginal (Shallow, soil depth, soil erosion, low fertility)	119	1,2
Gck/2	Gong Chenak	Undulating (4-12)	Deep (>100 cm) brownish yellow to light gray fine sandy clay. Moderate medium subangular blocky; friable to sticky with depth. Patchy clayskins. Imperfectly drained, occasional flooding. Soils on Sub-Recent Alluvium.	Suitable (Low fertility, minor flooding)		1,8
					9.900	100

Section 8: Greenhouse Gas (GHG) Assessment

Date of activities

Greenhouse Gas (GHG) assessment was in November 2021. Both assessment field surveys were conducted simultaneously with the HCSA assessment vegetation inventory activity.

Assessor and their credentials

The GHG assessment was conducted by an independent consultant PT Gagas Dinamiga Aksenta. Below are brief descriptions of names, qualifications, skill, and roles within the team of carbon stock and GHG assessment.

Table 31. GHG Assessment assessor team

Name	Role	Qualifications and Experience
Yanto Ardiyanto	Team Leader	Greenhouse Gas Estimation, Greenhouse Gas Emission Mitigation Plan, GIS, Remote Sensing
Ryan Karida Pratama	Team Member	Greenhouse Gas Estimation, Greenhouse Gas Emission Mitigation Plan, GIS, Remote Sensing

Assessment methods

GHG assessment is conducted following RSPO’s GHG Assessment Procedure for New Panting, version 4 (4 July 2021). Estimation of greenhouse gas emissions/sinks using the RSPO New Development Green House Gas Calculator version 4. This tool takes into account the carbon footprint in the oil palm plantation sector which comes from land operations/agriculture and mill processing. Annual net GHG emissions are the output of this estimate. The formula for calculating net emissions is as follows:

A. Agriculture stage

$$EN_{Field} = (ELUC + EFF + E_{Peat} + E_{Fert}) - (Scrop + SCA)$$

Where:

- ELUC: Emissions from land clearing (Land Use Change Emission)
- EFF: Emissions from fuel use
- E_{Peat}: Peat Emission
- E_{Fert}: Emissions from fertilizer application (Fertilizer and N₂O)
- Carbon sequestration in conservation area (Conservation Area Sequestration): SCA
- Carbon sequestration by oil palm plants (Crop Sequestration): SC_{rop}

If EN_{Field} > 0: carbon emission status

If EN_{Field} = 0: state is in equilibrium (emission = sink)

If EN_{Field} < 0: carbon sink status

B. Mill stage

$$EN_{Mill} = (EPOME + EMF + E_{Electricity}) - (CEE + SPKS)$$

Where:

- EPOME: Emissions from POME
- EMF: Emissions from mill fuel use
- E_{Electricity}: Emissions from grid electricity
- CEE: carbon credit from electricity export from methane capture
- CPKS: carbon credit from shell of PKS

If EN_{Mill} > 0: carbon emission status

If EN_{Mill} = 0: state is in equilibrium (emission = sink)

If EN_{Mill} < 0: carbon sink status

C. Total Net Emissions = EN_{Field} + EN_{Mill}

If Total Net Emissions > 0: carbon emission status

If Total Net Emissions = 0: status is in equilibrium (emissions = sink)

If Total Net Emissions < 0: carbon sink status

The GHG assessment uses existing data and information to generate estimates of GHG emissions from new plantings development plan. In the process, calculations are carried out use two types of data, namely empirical data and assumption data. Empirical data are data and information extracted from records of the company's existing operational activities and come from the results of field survey while the assumption data are data and information obtained from references. Assumptions are used to obtain data and information that are not

available from records of the company's operational activities. The type of data used and the collection technique based on each calculation variable used in the assessment are presented in **Table 32**.

Table 32. Data, types and techniques of data collection based on each calculation variable in the study

Variable	Data	Type	Technique data collection	Source
Emissions due to land clearing	Carbon stock in each land cover class	Empiric	Extraction of data and information from related assessment reports that have been completed previously	<ul style="list-style-type: none"> Carbon stock assessment report (Aksenta, 2019) HCSA assessment report (Aksenta, 2021).
Palm oil productivity	Level production rate per unit area per year	Empiric	Records of the last year of existing plantations	Company documentation
Emissions from field fuel use	Amount of fuel used per unit area per year	Empiric	Records of the last year of existing plantations.	Company documentation
Emissions from fertilizer application	Amount and types of fertilizers used per unit area per year	Empiric	Records of the last year of existing plantations.	Company documentation
Carbon sequestration from conservation areas	HCV areas in hectare	Empiric	Extraction of data and information from related assessment reports that have been completed previously	HCSA assessment report (Aksenta, 2021).
	Carbon fixation value (tCha/year)	Assumption	Literature review	(Bernal at al, 2018).
Crop sequestration	New plantings planned (ha)	Empiric	Extraction of data and information from related assessment reports that have been completed previously	HCSA assessment report (Aksenta, 2021).
	Carbon fixation value (tCha/year)	Assumption	Literature review	Henson I.E. (2005a)
Operational activities at the Mill	<ul style="list-style-type: none"> - OER percentage - Percentage of KER - Fuel consumption per year - POME Management - Electricity usage - Export electricity (if any) - Export shells for fuel (if any) - Empty bunch application in the field (if any) - Compost utilization and percentage of N in compost (if any) 	Empiric	Extraction of data and information from the operational activities of Perdana POM (REA's Mill)	Company documentation

Summary findings

In the plan to develop a new plantation in the PT PU area, there is no construction of a palm oil mill. All the fresh fruit bunches (FFB) will be brought to the Perdana POM (REA's Mill), which is about 5.7 km from the PT PU plantation site. The productivity of the developed oil palm plantations is expected to reach 22.1 tons/ha. PT PU will supply the Perdana mill about 40% of the capacity of the Perdana palm oil processing plant. By observing this plan, the source of GHG emissions comes from oil palm plantation activities on PT PU land and FFB processing activities at the Perdana POM.

There are two types of dynamic sources of net GHG emissions that are taken into account, namely emission sources, GHG fixation sources, and carbon credits. The sources of emission from the development of new oil palm plantations consist of (i) land clearing, (ii) transportation of used fertilizers and land application (fertilizers), (iii) emissions of nitrogen oxides (N₂O) from the use of urea fertilizer, and (iv) use of fuel in plantation operations (field fuel). Sources of carbon fixation from plantation operations consist of carbon sequestration from the growth of oil palm biomass (crop sequestration) and maintenance & protection of conservation areas (conservation sequestration).

Sources of emission from FFB processing activities at the factory consist of (i) emissions from the use of fuel (mill fuel consumption), (ii) methane gas emissions from factory waste (POME), (iii) the use of paid electricity (purchased electricity), (iv) carbon credit can be an alternative energy source from biomass production (empty shells and leaves, methane gas capture). GHG emissions projected from new planting management activities are estimated referring to the ongoing management pattern in the company's plantation areas as the empirical data (Table 33 – 35).

Table 33. Productivity data from REA Kaltim Group oil palm plantations around the PT PU

Estate Names	Areas (hectare)			FFB's Production		FFB Supplied to Perdana POM	
	Concession (Ha)	Planted Areas (Ha)		(Ton)	(Ton/Ha)	(%)	(Ton)
		Before 2008	After 2008				
Perdana	4,376.90	3,803.68	-	86,966.00	22.9	97.0%	84,363.42
Sentekan	4,728.60	4,024.00	-	81,208.61	20.2	96.4%	78,245.35
Berkat	7,471.70	4,490.00	-	116,373.23	25.9	0.5%	557.57
Cakra	5,491.00	4,676.50	-	107,431.38	23.0	1.5%	1,622.34
Damai	3,517.00	2,005.86	122.50	46,959.04	22.1	0.0%	5.69
Tepian	4,382.52	2,989.87	-	60,547.58	20.3	97.0%	58,727.08
KMS	7,321.15	-	3,906.94	83,584.37	21.4	0.0%	14.87
Total					22.1		223,536.32

Table 34. Data on fuel use from the REA Kaltim Group palm oil plantations around the PT PU

Estate Names	Planted Areas (Ha)	Volume per year			
		Diesel		Premium	
		Litre	L/Ha	L	L/Ha
Perdana Estate	3,803.68	30,9515.9	81.37	10,319.68	2.71
Sentekan Estate	4,024.00	317,538.1	78.91	6,361.24	1.58
Berkat	4,490.00	446,165.4	99.37	11,786.92	2.63
Cakra	4,676.50	287,650.3	61.51	8,033.95	1.72
Damai	2,128.36	216,689.8	101.81	3,997.29	1.88
Tepian	2,989.87	36,1454.0	120.89	6,018.20	2.01
KMS	3,906.94	895,494.1	229.21	4,552.33	1.17
Med Value			99.37		1.88

Table 35. Data on fertilizer use from the REA Kaltim Group oil palm plantations around the PT PU

Estate Name	Application Volume per Year							
	Urea		RP		MOP		Kieserite	
	(Kg)	(Ton/ha)	(Kg)	(Ton/ha)	(Kg)	(Ton/ha)	(Kg)	(Ton/ha)
Perdana	815,500	0.214	623,660	0.164	463,400	0.122	433,700	0.114
Sentekan	1,261,600	0.314	1,004,930	0.250	1,104,450	0.274	599,500	0.149
Berkat	1,456,447	0.324	1,331,000	0.296	1,910,850	0.426	764,550	0.170
Cakra	1,403,900	0.300	949,050	0.203	1,602,350	0.343	756,900	0.162
Damai	1,053,050	0.495	526,500	0.247	1,250,250	0.587	508,150	0.239
Tepian	1,493,900	0.500	590,300	0.197	522,425	0.175	193,510	0.065
KMS	947,150	0.242	558,750	0.143	1,254,100	0.321	506,650	0.130
Med Value		0.314		0.203		0.321		0.149

Table 36. Available data from Perdana POM

Mill Profile	
1.1.	Mill names : Perdana Palm Oil Mill (PT. REA Kaltim Plantations)
1.2.	Address : Pulau Pinang Village, Kembang Janggut District, Kutai Kartanegara Regency, East Kalimantan
1.3.	Coordinate : 00°15'27.5"; 116°09'00.1"
1.4.	CPO's production (Ton) : 66,016.47(OER 21.7%)*
1.5.	PK's production (Ton) : 14,88.22 (KER 4.89%)**
1.6.	Export of electricity to grid (KWh) : 5,645,361
1.7.	Export of palm kernel shell (Ton) : 21,298.2
1.8.	Export of EFB (Ton) : 69,981 (EFB/FFB 23%***)
Mill Operations Data	
2.1.	FFB's processed (Ton) : 304,264.61
2.2.	Fuel usage for FFB's transportation from estate to mill
2.2.1.	Diesel (liter) : 847,027.77
2.2.2.	Premium (liter) : 2,708
2.2.3.	Other fuel : N.A
2.3.	Distance estate – mill (km) : +/- 57 km
2.4.	Grid electricity (KWh) : 1,553,050
2.5.	Mill diesel usage (liter) : 62,207
2.6.	Water usage (M3) : 477,766
2.7.	Lubricant usage (Liter) : 2,326
2.8.	Cycle-Hexane suage (kg) : 385
2.9.	Soda Ash usage (kg) : 26,150
2.10.	Cooustic Soda Liuid usage (L) : 51.450
2.11.	Natrium Hidroksida usage (kg) : N.A
2.12.	Asam Klorida usage(kg) : 25,850
2.13.	Calcium Karbonat usage (kg) : N.A
2.14.	NaCl usage (kg) : N.A

2.15.	Fosfat usage (kg)	:	N.A
2.16.	Sulphite usage (kg)	:	N.A
2.17.	Alum usage (kg)	:	34,835
POME			
3.1.	POME production (m ³)	:	192,232 (POME/FFB 63.1%)
3.2.	POME distributed to Methane Capture (m ³)	:	192,232
3.3.	POME distributed to Composting (m ³)	:	0
3.4.	COD yang dikurangi oleh Kolam Terbuka (ton/m ³)	:	0

New oil palm plantation plan scenario

For the development of new oil palm plantations in the PT PU area, there are 4 scenarios used to see the potential for GHG emissions (**Table 37**). The differences between these scenarios are emphasized in the application of best management practice (BMP) and land use management (LM). The BMP application used is an empty length application (EFB). Land use management used is to create a 5 m buffer as part of the protection of areas that have conservation value. The total area of this 5 m buffer is about 101.7 Ha (**Table 37 & Table 38**). The implementation of this land use management will reduce the potential area for developing new plantation areas, from 5,604.3 Ha to 5,502.6 Ha. The results of the evaluation of the scenario will be a reference in the development of the next oil palm plantation. The combination of these options is expected to reduce the net amount of GHG emissions either from the land or from activities in the mill.

Table 37. Scenarios of new plantation development in PT PU area

Scenario	Remark		
	New development area proposed	Best Management Practice (BMP)	Land use Management
S1	All areas of potential development within ICLUP	EFB application	-
S2	All areas of potential development in ICLUP are cleared minus the conservation area buffer area	EFB application	Buffer 5 m from area conservation areas
S3	All areas of potential development within ICLUP	-	-
S4	All areas of potential development in ICLUP are cleared minus the conservation area buffer area	-	Buffer 5 m from area conservation areas

Table 38. Total area maintained and cleared for each scenario in PT PU area

Description		Area (Ha)			
		S1	S2	S3	S4
No clearance areas	Conservation areas (HCV, HCS, HCV+HCS)	3,493.1	3,493.1	3,493.1	3,493.1
	Buffer areas (5 m)	-	101.7	-	101.7
	Peat	-	-	-	-
	Total	3,493.1	3,594.8	3,493.1	3,594.8
	Secondary forest	12.3	12.0	12.3	12.0

Potential area for new oil palm plantation development	Scrub	348.3	344.3	348.3	344.3
	Shrubs	4,125.7	4,050.8	4,125.7	4,050.8
	Community rubber	15.0	14.7	15.0	14.7
	Oil palm	357.8	353.5	357.8	353.5
	Bush	538.2	526.4	538.2	526.4
	Agriculture (Ladang)	156.2	152.8	156.2	152.8
	Bare land	50.9	48.0	50.9	48.0
	Total	5,604.3	5,502.6	5,604.3	5,502.6
	Potential net planting*	5,312.15	5,215.76	5,312.15	5,215.76
EFB application	Field application	√	√	-	-

Note: *) The need for the provision of supporting facilities 5.5% of the planting area

Comparison of GHG calculation results between scenarios is shown in **Figure 26 and Table 39**. Overall, GHG emissions from PT PU's new palm oil development plan is negative, meaning that in aggregate (net) the amount of carbon emitted is lower than that which is absorbed (fixation). The larger the negative value, the greater the amount of carbon it absorbs. The difference in the emission results of each component of the carbon emission source between scenarios is relatively not significantly different.

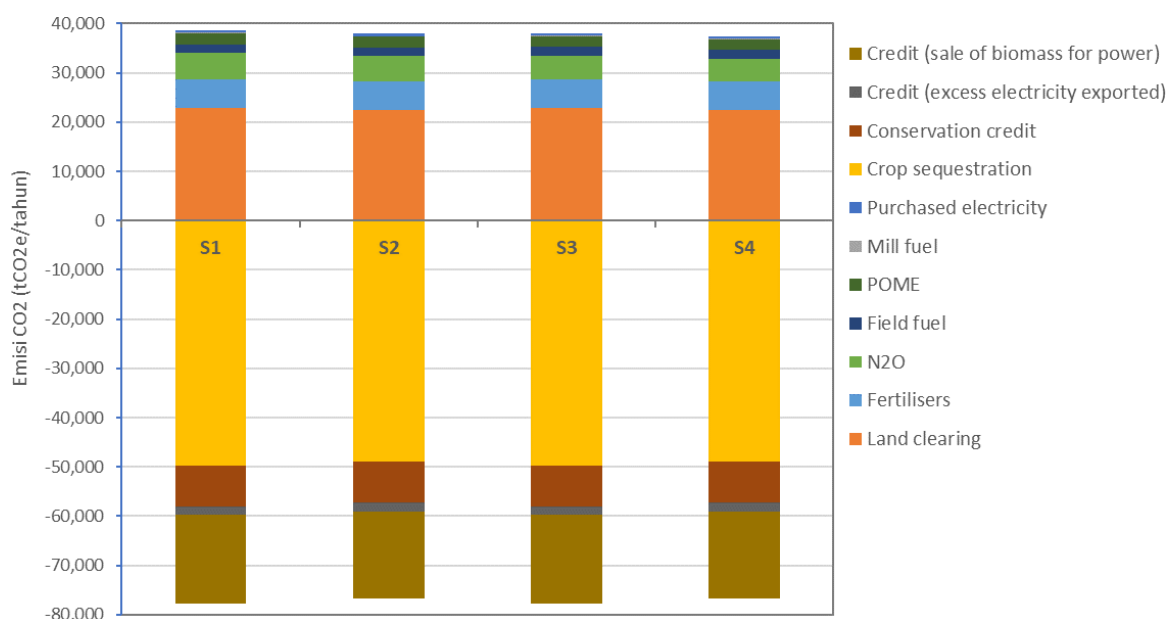


Figure 26. Comparison of CO₂ emissions (tonCO₂e/year) between new plantation development scenarios

The application of empty bunches (EFB) to oil palm fields and the creation of a 5 m buffer have an effect on GHG emissions (**although the magnitude is not very significant**). The potential for the planting area in the S1/S3 scenario is relatively larger than the S2/S4 scenario, so that the FFB production potential in the S1/S3 scenario is greater than the S2/S4 scenario. The contribution of emissions from palm oil processing mill activities is highly dependent on the supply of FFB. Processing more FFB will produce more POME which is processed into electricity and shells, which are alternative fuels, provide a greater carbon credit. This shows that the contribution of carbon emissions in the S1/S3 scenario is smaller than the S2/S4 scenario (carbon fixation in the S1/S3 scenario is larger than the S2/S4 scenario).

Net emissions per year from plantation activities on land show a negative value, the largest is in **scenario 3/S3 (-22,765.51 tonsCO₂e)** and the lowest is **scenario 2/S2 (-22,103.92 tonsCO₂e)**. This means more in terms of carbon fixation than carbon emissions. The largest contribution to carbon emissions comes from land clearing activities at the beginning of plantation development. In this calculation, the application of empty leaves to the land does not contribute to the increase in soil carbon, only taking into account the potential for carbon emissions from transportation activities (from POM to land) and N₂O leaching. Factors that reduce carbon emissions are sequestration of oil palm plantations during their life cycle and carbon credits from conservation areas. The addition of a 5 m ii buffer will affect the carbon credit of the conservation area.

In aggregate between the emission sources from land and mills, the largest net emission amount is **scenario 3/S3 (-39,801.31 tonsCO₂e)** and the lowest is **scenario 2/S2 (-38,830.57 tonsCO₂e)**.

Table 39. Estimated total emission (tCO₂e/year) for each new plantation development scenarios

Emissions Source	Scenario			
	S1	S2	S3	S4
Field emissions & sinks				
Land clearing	22,862.31	22,474.88	22,862.31	22,474.88
Crop sequestration	-49,730.95	-48,828.51	-49,730.95	-48,828.51
Fertilisers	5,870.57	5,764.04	5,870.57	5,764.04
N ₂ O	5,332.59	5,235.82	4,756.52	4,670.21
Field fuel	1,719.47	1,688.26	1,711.04	1,679.99
Peat	0.00	0.00	0.00	0.00
Conservation credit*	-8,243.65	-8,438.41	-8,235.01	-8,438.41
Total	-22,189.67	-22,103.92	-22,765.51	-22,677.80
Mill emissions & credit				
POME	2,246.29	2,205.53	2,246.29	2,205.53
Mill fuel	74.72	73.37	74.72	73.37
Purchased electricity	484.89	476.10	484.89	476.10
Credit (excess electricity exported)	-1,762.60	-1,730.61	-1,762.60	-1,730.61
Credit (sale of biomass for power)	-18,079.10	-17,751.03	-18,079.10	-17,751.03
Total	-17,035.80	-16,726.66	-17,035.80	-16,726.66
Grand Total	-39,225.46	-38,830.57	-39,801.31	-39,404.46

Note: *) The amount of potential sequestration from this conservation area depends on the condition of the land cover. The conservation area is in the form of HCS, the Conservation sequestration value is around 2.5 tons C/ha, for HCV areas that don't overlap with HCS, the Conservation sequestration value is lower (±2 tons C/ha). The aggregate value of Conservation sequestration is the weighted average of land cover conditions in the conservation area (average ±2.3-ton C/ha)

If the amount of GHG emissions is compared to the amount of CPO produced, it will provide information related to the efficiency of an efficient pattern of oil palm plantation activity in reducing GHG emissions (emission intensity). If the emission intensity value is more than 1 (one), it means that the amount of carbon emitted or absorbed is greater than the amount of CPO produced. And vice versa if the value is less than one. The calculation results show that the emission intensity (ton CO₂e/ton CPO) is not significantly different between scenarios, the variation is only 0.01 – 0.02.

Optimal Scenario Selection for New Oil Palm Plantation

The selection of scenarios for the optimal development of new oil palm plantations is based on five considerations, namely:

1. Not an area that is a high carbon stock (HCS area).

2. Not an area that is a high conservation value area (HCV area).
3. Areas with high carbon sequestration potential.
4. Patterns that can reduce GHG emissions both on land and in mill.
5. Supporting technical convenience in the field

Based on the calculation of Net Emissions from the 4 scenarios made for the development of new oil palm plantations, the most effective for GHG mitigation in the PT PU area is **scenario 3 (S3)**. The sources of GHG emissions from scenario 3 (S3) are presented in **Figure 40**. This scenario is a Business as Usual (BaU) scenario, that is, without applying EFB and without creating a buffer area for the protection of conservation areas. The explanation of this scenario is as follows:

1. Application of EFB to the land from the mill as far as 5.7 km only increases carbon emissions from vehicle transportation. In relation to efforts to suppress GHG this decision is not appropriate, unless the location of the mill is in the vicinity of the land.
2. Build a 5 m buffer around the perimeter of the conservation area (approximately 87.7 ha). Based on the existing land cover condition, this buffer area is classified as a low carbon stock. The construction of a buffer area will reduce the potential for oil palm planting areas, where oil palm has a much greater potential for carbon sequestration than shrubs in the buffer area. If the planted area is reduced sufficiently, it is necessary to increase the productivity of oil palm plantations in order to reach the target number of palm oil production to the mill. One of them is an increase in inputs for fertilizers, this will have the potential to increase emissions from fertilizer applications. This condition most significantly affects the carbon balance in the land. In addition, the addition of areas that have low sequestration potential in conservation areas will reduce the average aggregate carbon sequestration potential of existing conservation areas.

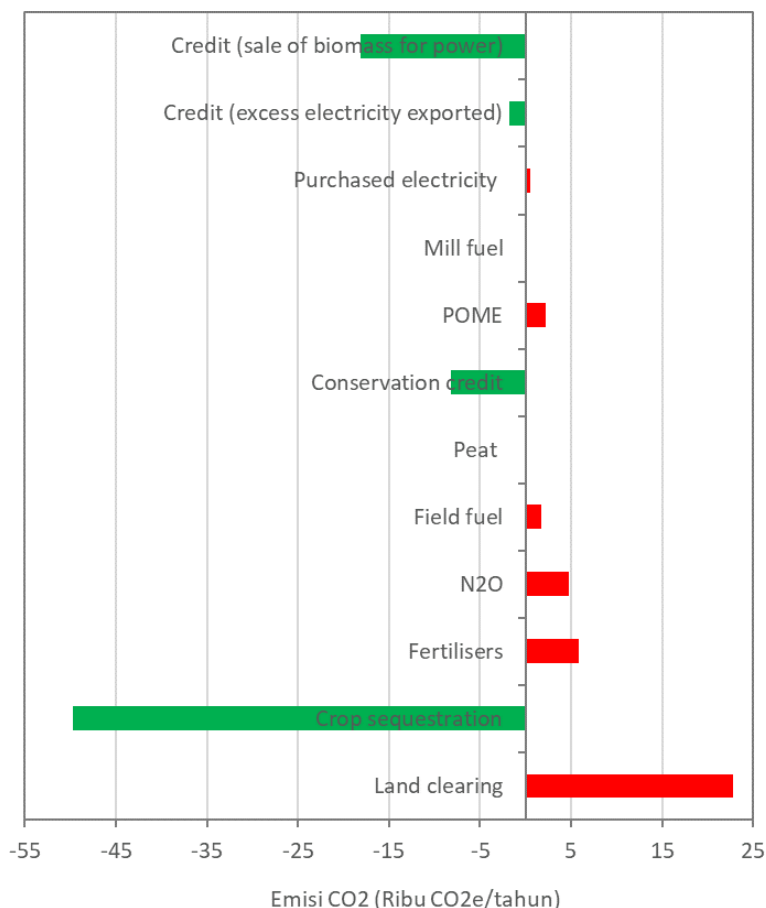


Figure 27. Comparison of CO2 emissions (tonCO2e/year) for the S3 scenario of new planting

The new oil palm development area based on scenario 3 (without buffer area at the perimeter of the HCS area) is presented in **Figure 28**. The conservation area as a result of the HCSA and HCV assessment is a prohibited area for land clearing.

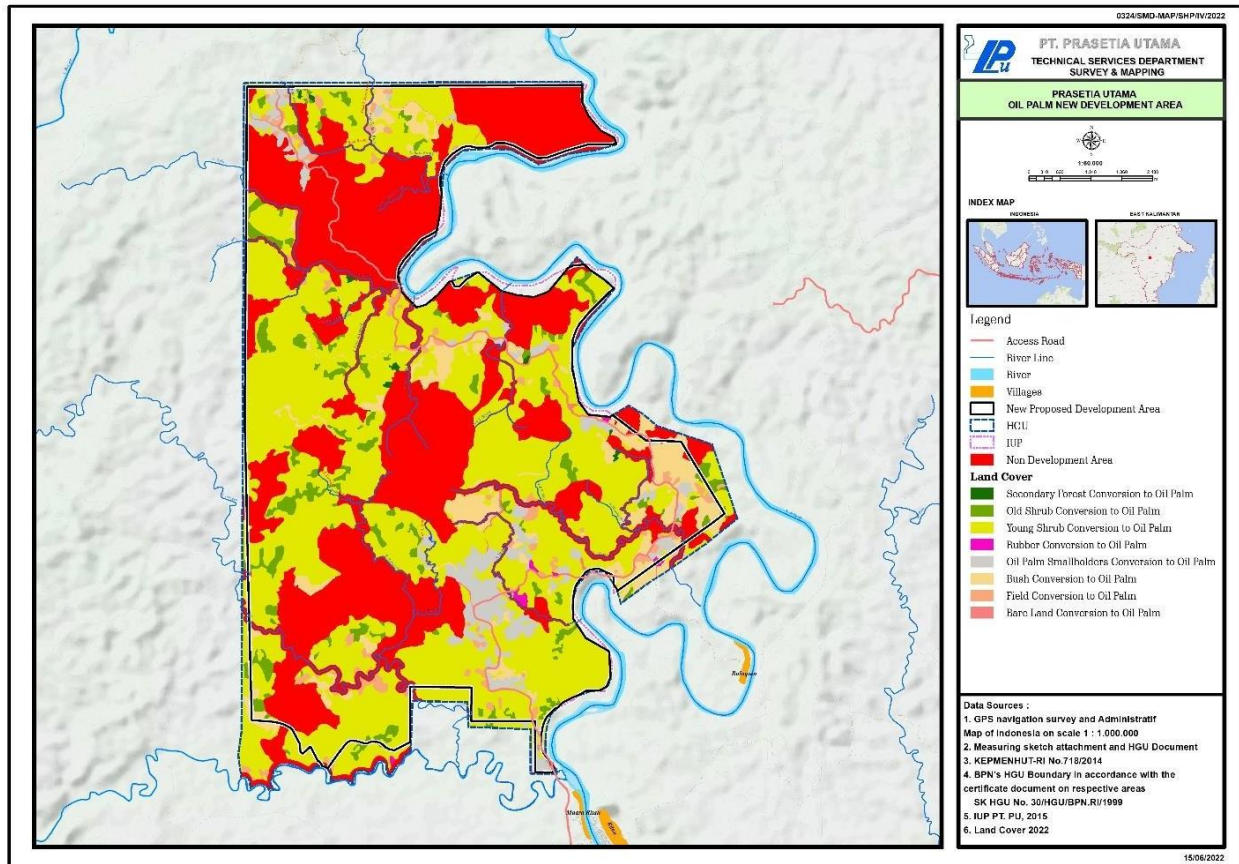


Figure 28. Map of new oil palm plantation development based on scenario 3 (S3)

Section 9: Land Use Change Analysis (LUCA)

Date of activities

Land Use Change Analysis (LUCA) for new planting was carried out in November 2021 – February 2022, while field survey was on 15th – 26th November 2021, simultaneously with HCS field assessment.

Assessor and their credential

Study of land use cover change analysis in the location permit area of PT PU was conducted by an independent consultant PT Gagas Dinamiga Aksenta, consisting of 3 people. Below is a brief description of the name, qualifications, expertise and role in the team.

Table 40. LUCA assessor team

Name	Role	Expertise
Andrini Eka Diah	Team Leader	Land use change analysis, Land Use Risk Identifications, remote sensing, GIS
Pungky Alim Febriani	Team Member	Land use change analysis, remote sensing, GIS, Carbon Stock Assessment,
Risa Desiana Syarif	Supervisor	Land use change analysis, Land Use Risk Identifications, remote sensing, GIS, Forestry, High Carbon Stock Identification, HCV Assessment

Assessment methods

Effective 1st January 2010, RSPO members are required to follow the New Planting Procedures (NPP) policies before starting land management, including anything related to development, for the planting of new oil palm plantations. The NPP policy is intended so that new oil palm plantings do not have a negative impact on HCV, HCS, peatland, fragile and marginal lands or impact on the rights of local communities, including their rights to the land to be developed. Therefore, the company carried out a Land Use Change Analysis (LUCA) as one of the requirements in the 2021 NPP to identify the presence or absence of changes in primary forest or any area needed to maintain or enhance HCV since November 2005 and HCS since November 2018. The guidance for LUCA refer to RSPO Guidance for Land Use Change Analysis. Revision version March 2017.

Based on the 2021 RSPO NPP, the LUCA cut-off date follows the recommended cut-off, namely (a) **November 2005 – November 2007; (b) December 2007 – December 2009; (c) 1st January 2010 – 9th May 2014; (d) 9th May 2014 – 15th November 2018; and (e) 15th November 2018 – currently (not later than the NPP submission date).** The time studied for LUCA NPP at PT PU is November 2005 until the ground truthing in November 2021.

The area of interest LUCA study is proposed development area with the total area of 9,097.35 Ha. Multi-temporal analysis of land cover was used to look at the dynamics of land cover that occurred in the new concession area PT PU as proposed development areas from 2005, 2007, 2010, 2014 and the current field conditions in November 2021.

Liability calculation based on land cover change that has taken place since 2005 up to the HCV and HCS Integrated Assessment (2014) indicates that the company has no compensation liability and no area is subject to environmental remediation. **There is no compensation and remediation liability according to the RSPO Remediation and Compensation Prosedure (RaCP). No operational plantation activity until PT PU has completed the NPP Process.**

Table 41. Result of Land Cover Analysis For Each Period

Land cover data-in hectares						
Land Cover	November 2005	December 2007	1 January 2010	9 May 2014	15 November 2018	November 2021
Secondary Forest	1,725.8	1,664.6	1,508.3	1,217.1	787.4	658.2
Scrub	2,544.7	2,566.2	2,426.4	2,208.3	1,910.8	1,867.1
Shrub	4,179.5	4,066.0	3,921.9	4,414.1	5,472.6	5,221.3
Rubber	-	-	-	3.5	19.5	21.1
Oil Palm	61.2	61.2	61.2	74.9	272.2	386.1
Bush	341.6	528.1	955.7	950.9	209.5	644.4
Cultivated Land	150.6	106.0	175.3	180.7	377.7	237.8
Open Land	94.0	105.3	48.7	48.0	47.7	61.4
Total	9,097.4					

Table 42. The period of Matrix of land cover change in the period of November 2005 – November 2007

Period November 2005 – November 2007 – in hectares										
	Land Cover	November 2007								Total Nov 2007
		S. Forest	Scrub	Shrub	Rubber	Oil Palm	Bush	Cultivat ed Land	Open Land	
November 2005	Non-corporate									
	S. Forest	1,664.6	28.8	23.6	-	-	3.6	5.4	-	1,725.8
	Scrub	-	2,537.4	-	-	-	-	7.3	-	2,544.7
	Shrub	-	-	4,031.4	-	-	60.6	76.2	11.3	4,179.5
	Rubber	-	-	-	-	-	-	-	-	0.0
	Oil Palm	-	-	-	-	61.2	-	-	-	61.2
	Bush	-	-	-	-	-	328.0	13.7	-	341.6
	Cultivated Land	-	-	11.1	-	-	136.0	3.5	-	150.6
Open Land	-	-	-	-	-	-	-	94.0	94.0	
Total Nov 2005	1,664.6	2,566.2	4,066.0	0.0	61.2	528.1	106.0	105.3	9,097.4	

Table 43. The period of Matrix of land cover change in the period of December 2007 – December 2009

Period December 2007 – December 2009 – in hectares										
December 2007	Land Cover	December 2009								Total Dec 2009
		S. Forest	Scrub	Shrub	Rubber	Oil Palm	Bush	Cultivated Land	Open Land	
Non-corporate										
	S. Forest	1,508.3	79.5	27.5	-	-	41.4	0.9	7.0	1,664.6
	Scrub	-	2,346.9	177.0	-	-	11.6	30.7	-	2,566.2
	Shrub	-	-	3,624.2	-	-	324.1	111.3	6.5	4,066.0
	Rubber	-	-	-	-	-	-	-	-	0.0
	Oil Palm	-	-	-	-	61.2	-	-	-	61.2
	Bush	-	-	32.3	-	-	461.8	30.8	3.2	528.1
	Cultivated Land	-	-	61.0	-	-	43.5	1.5	-	106.0
	Open Land	-	-	-	-	-	73.3	-	32.0	105.3
Total Nov 2007		1,508.3	2,426.4	3,921.9	0.0	61.2	955.7	175.3	48.7	9,097.4

Table 44. The period of Matrix of land cover change in the period of 1 January 2010 – 9 May 2014

Period 1 January 2010 – 9 Mei 2014 – in hectares										
January 2010	Land Cover	May 2014								Total Jan 2010
		S. Forest	Scrub	Shrub	Rubber	Oil Palm	Bush	Cultivated Land	Open Land	
Non-corporate										
	S. Forest	1,217.1	59.2	146.4	-	-	39.7	45.7	0.2	1,508.3
	Scrub	-	2,095.4	296.6	-	-	18.4	16.0	-	2,426.4
	Shrub	-	53.8	3,558.3	3.5	8.6	238.5	50.0	9.2	3,921.9
	Rubber	-	-	-	-	-	-	-	-	0.0
	Oil Palm	-	-	-	-	61.2	-	-	-	61.2
	Bush	-	-	342.1	-	5.1	548.2	60.0	0.3	955.7
	Cultivated Land	-	-	70.6	-	-	95.6	9.0	-	175.3
	Open Land	-	-	-	-	-	10.5	-	38.2	48.7
Total May 2014		1,217.1	2,208.3	4,414.1	3.5	74.9	950.9	180.7	48.0	9,097.4

Table 45. The period of Matrix of land cover change in the period of 9 May 2014 – 15 November 2018

Period 9 May 2014 – 15 November 2018 – in hectares										
May 2014	Land Cover	November 2018								Total May 2014
		S. Forest	Scrub	Shrub	Rubber	Oil Palm	Bush	Cultivated Land	Open Land	
Non-corporate										
	S. Forest	787.4	122.7	245.9	-	16.0	4.5	38.9	1.6	1,217.1
	Scrub	-	1,672.4	441.9	-	1.1	3.9	88.4	0.6	2,208.3
	Shrub	-	115.7	4,075.1	3.5	31.3	42.8	136.7	9.0	4,414.1
	Rubber	-	-	-	3.5	-	-	-	-	3.5
	Oil Palm	-	-	-	-	74.5	-	-	0.4	74.9
	Bush	-	-	558.9	5.5	140.7	134.3	102.9	8.6	950.9
	Cultivated Land	-	-	150.8	6.9	8.6	4.7	9.7	0.0	180.7
	Open Land	-	-	-	-	-	19.3	1.1	27.6	48.0
Total Nov 2018		787.4	1,910.8	5,472.6	19.5	272.2	209.5	377.7	47.7	9,097.4

Table 46. The period of Matrix of land cover change in the period of 15 November 2018 – November 2021 (Ground-thruthing LUCA NPP)

Period 9 Mei 2014 – 15 November 2018 – in hectares										
November 2018	Land Cover	November 2021								Total Nov 2021
		S. Forest	Scrub	Shrub	Rubber	Oil Palm	Bush	Cultivated Land	Open Land	
Non-corporate										
	S. Forest	658.2	88.5	28.7	-	-	2.1	10.0	-	787.4
	Scrub	-	1,720.6	173.7	-	0.0	9.2	7.0	0.2	1,910.8
	Shrub	-	58.0	4,736.8	-	73.0	414.8	174.6	15.5	5,472.6
	Rubber	-	-	-	19.5	-	-	-	-	19.5
	Oil Palm	-	-	-	-	272.2	-	-	-	272.2
	Bush	-	-	52.1	-	15.5	130.1	3.5	8.3	209.5
	Cultivated Land	-	-	230.0	1.6	22.7	80.6	42.7	0.0	377.7
	Open Land	-	-	-	-	2.8	7.5	-	37.5	47.7
Total Nov 2021		658.2	1,867.1	5,221.3	21.1	386.1	644.4	237.8	61.4	9,097.4

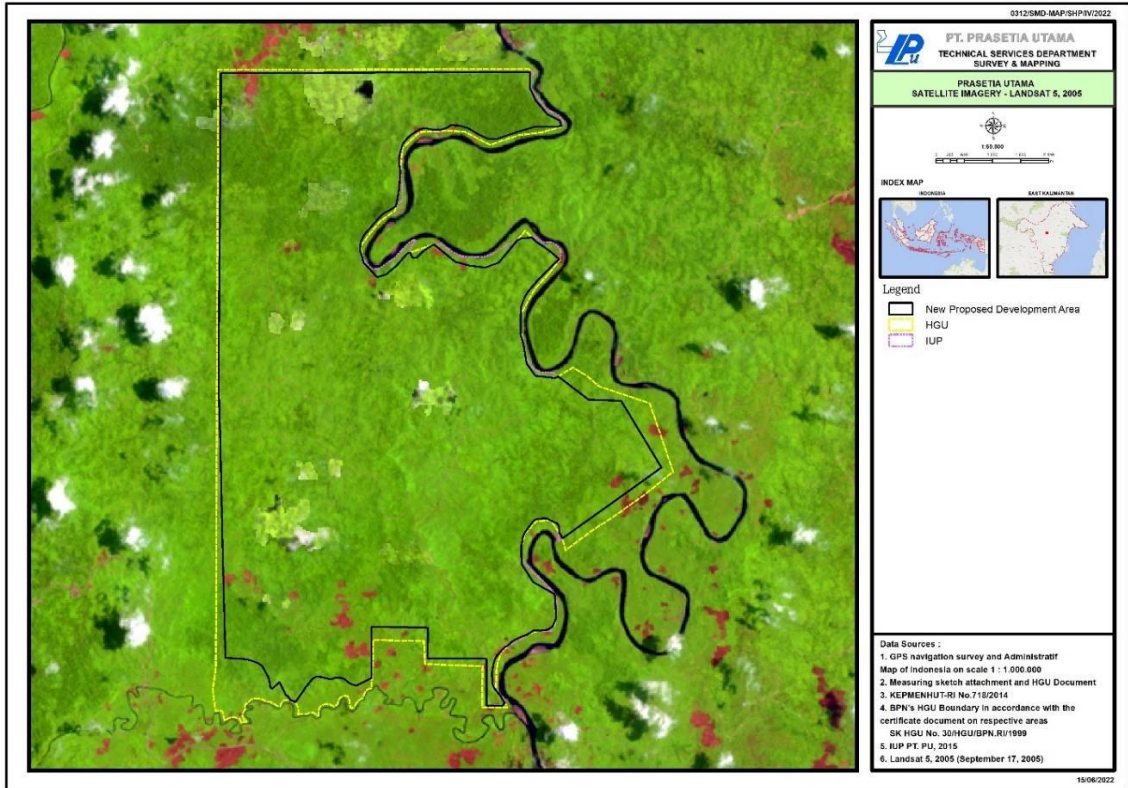


Figure 29. Satellite imagery period 1 November 2005.
 Source: Landsat 5 TM, 17 September 2005 (main) dan 12 May 2005 (cloud mask)

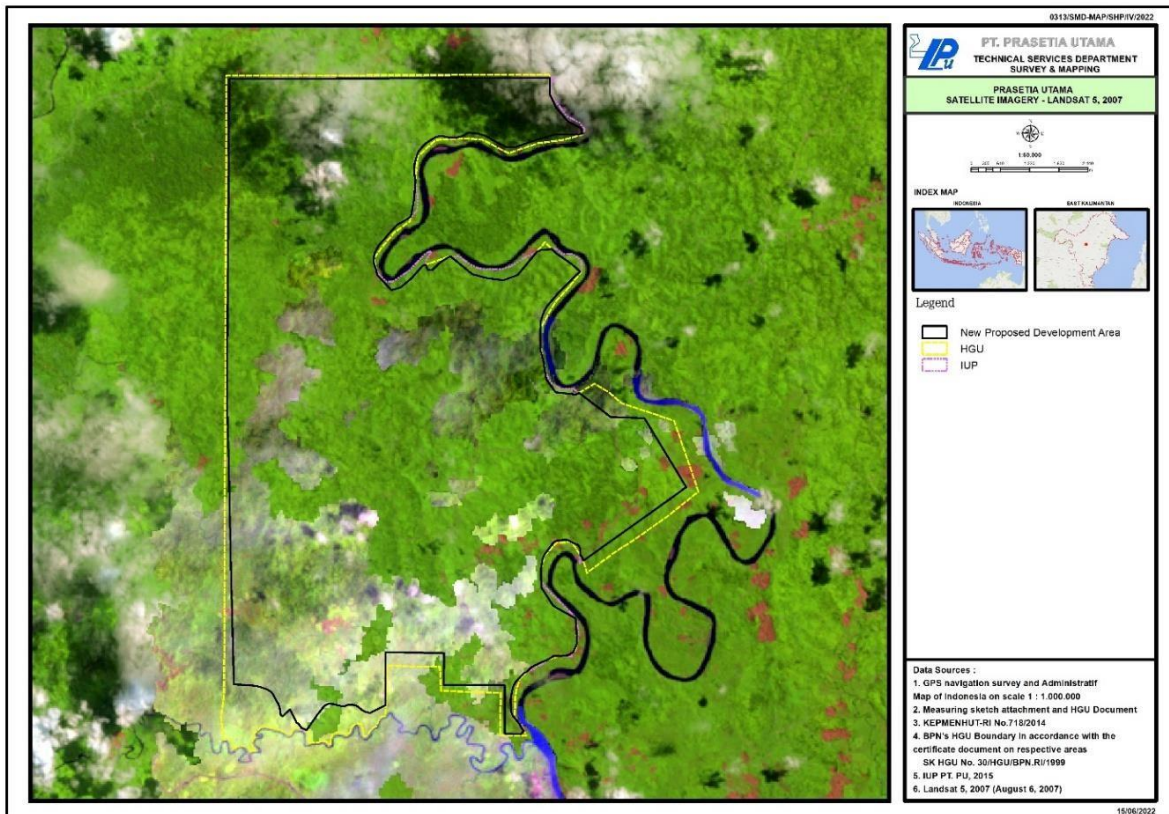


Figure 30. Satellite imagery periode: 1 Desember 2007
 Source: Landsat 5 TM, 6 August 2007 (main) dan 11 February 2007 (cloud mask)

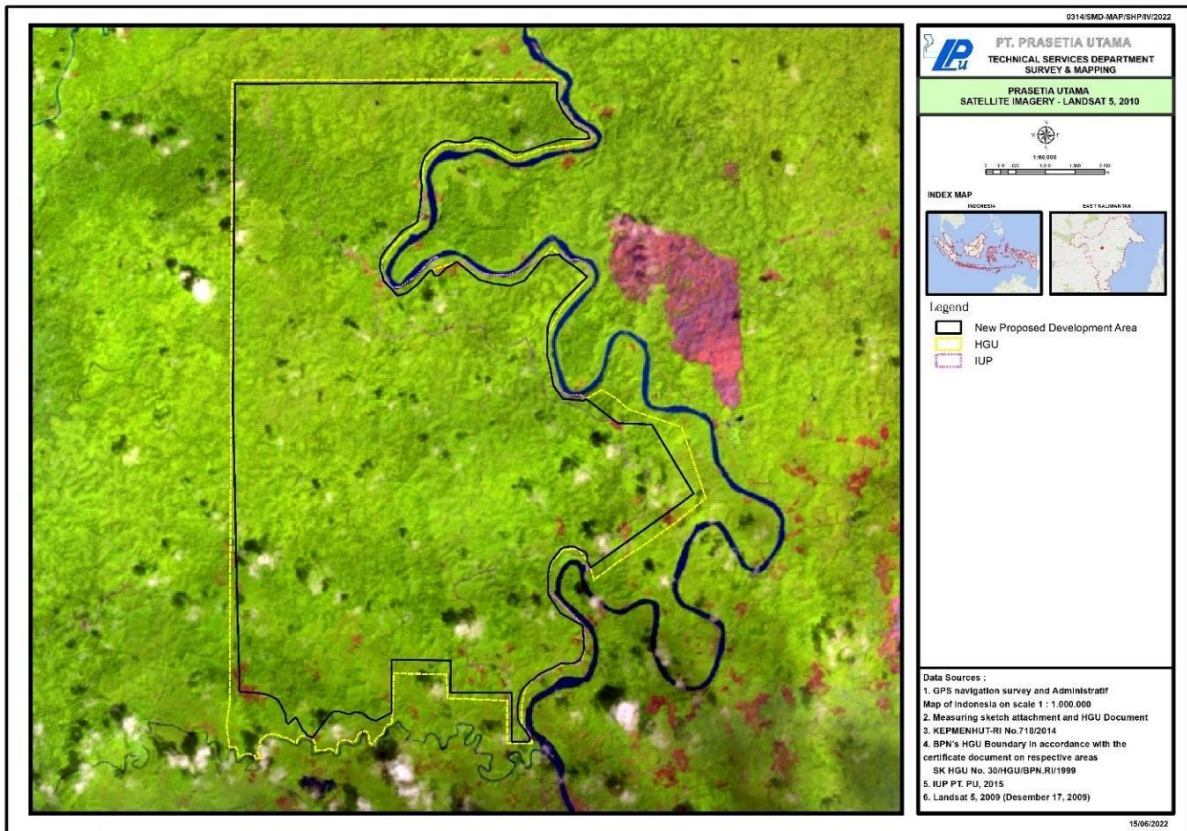


Figure 31. Satellite imagery period 1 January 2010
Source: Landsat 5 TM, 17 Desember 2009

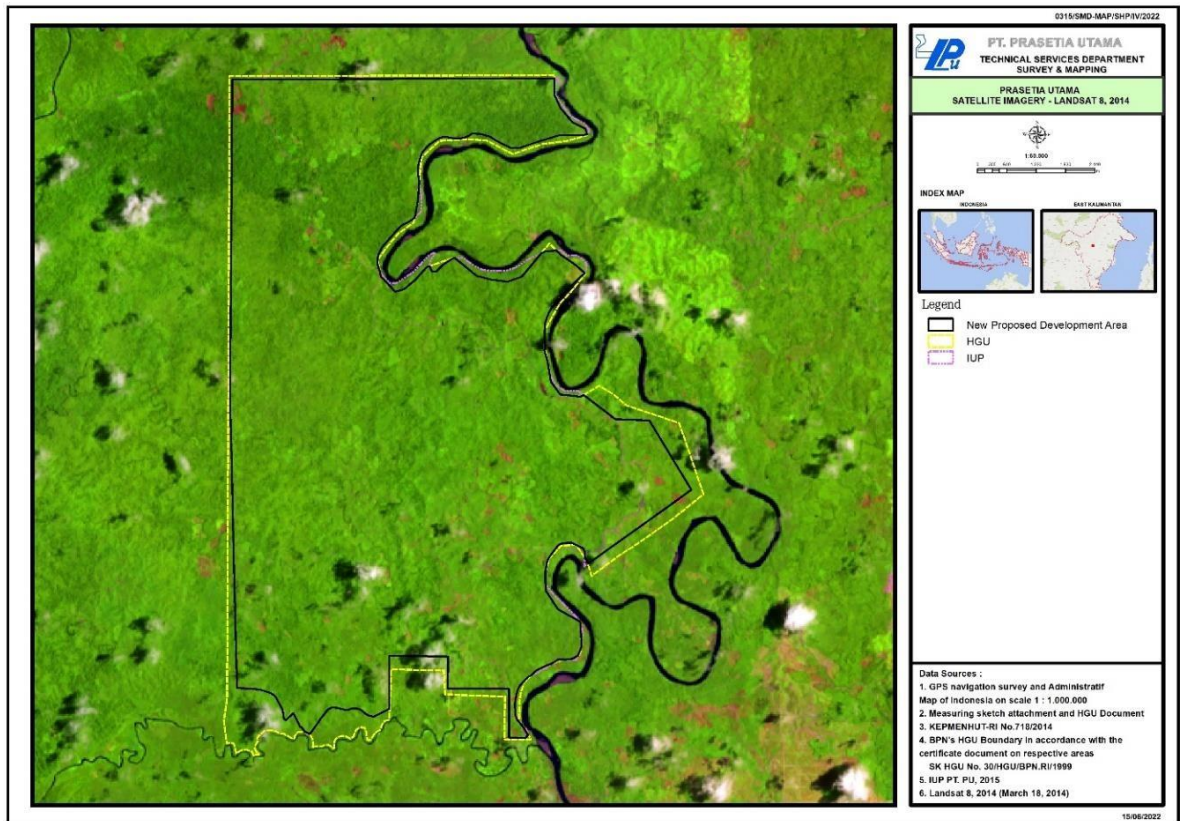


Figure 32. Satellite imagery period 9 May 2014
Source: Landsat 8 OLI TIRS, 18 March 2014

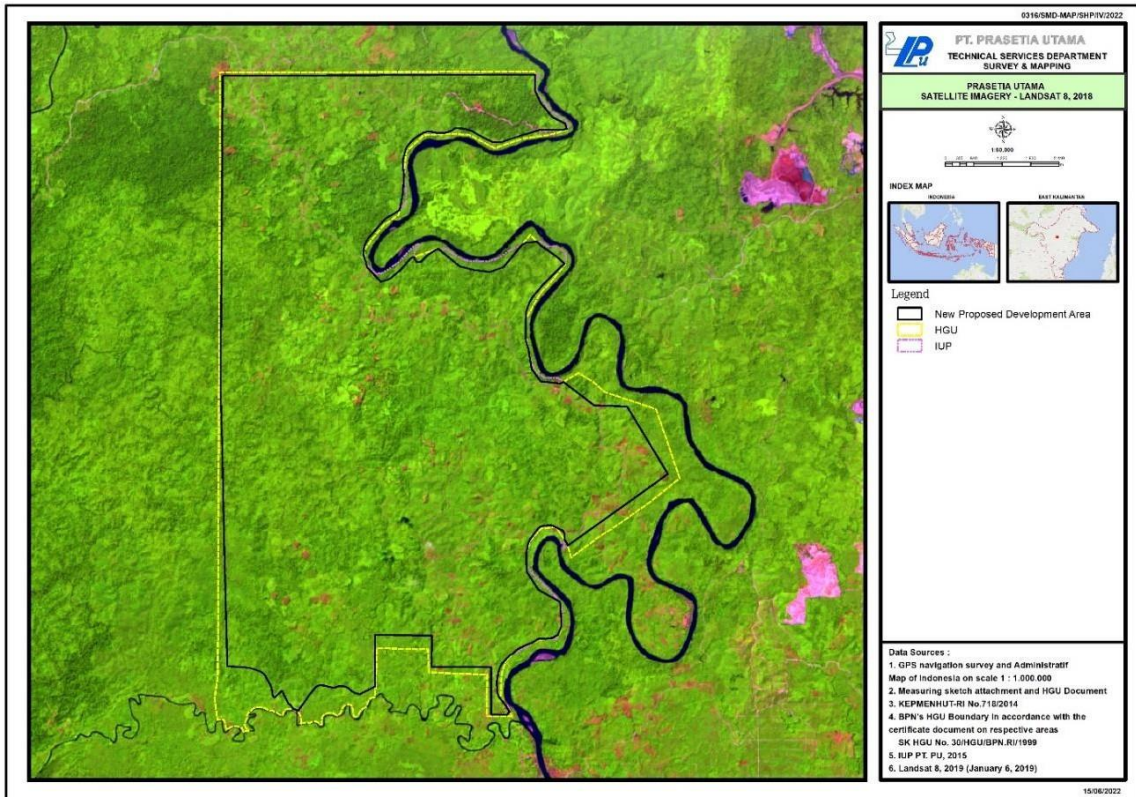


Figure 33. Satellite imagery period 15 November 2018
 Source: Sentinel-2A, 6 January 2019

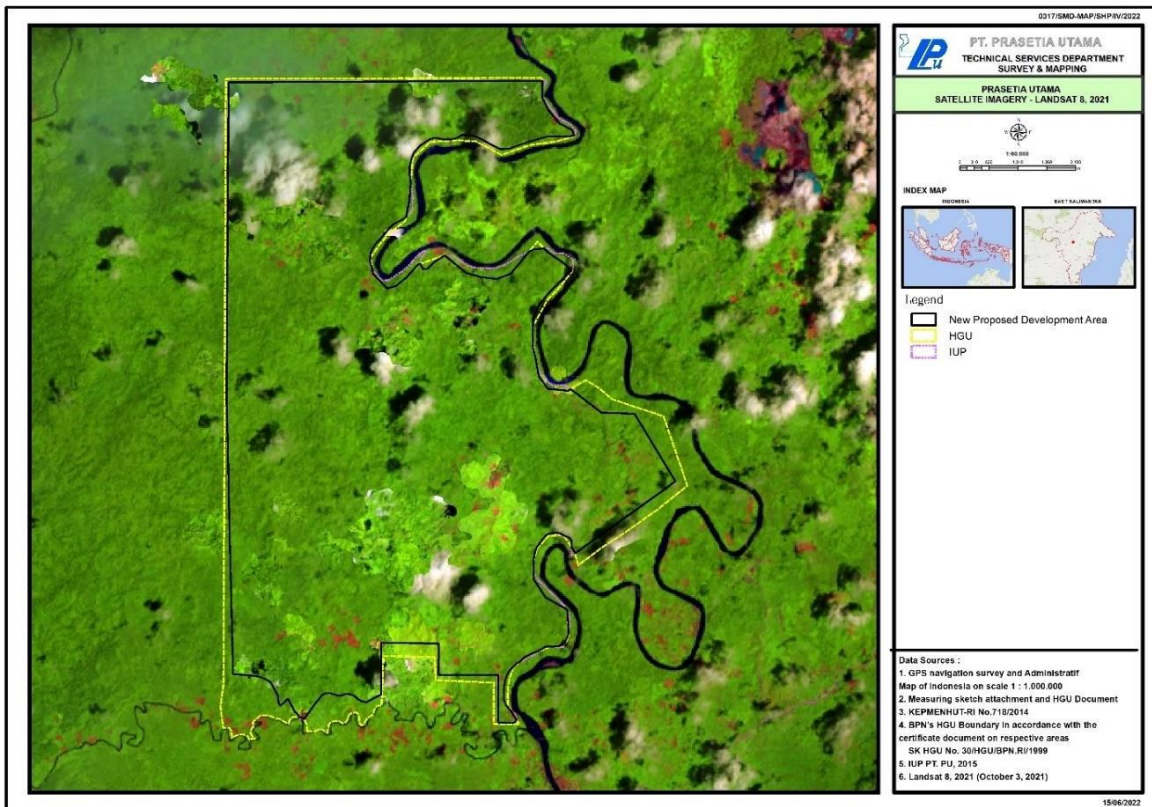


Figure 34. Satellite imagery period November 2021 (Ground-truthing conducted)
 Source: Landsat 8 OLI TIRS, 31 October 2021 (main) with cloud mask Landsat 8 OLI TIRS, 21 March 2021;
 Sentinel-2A, 12 October & 1 December 2021; Sentinel-2B, 27 October 2021

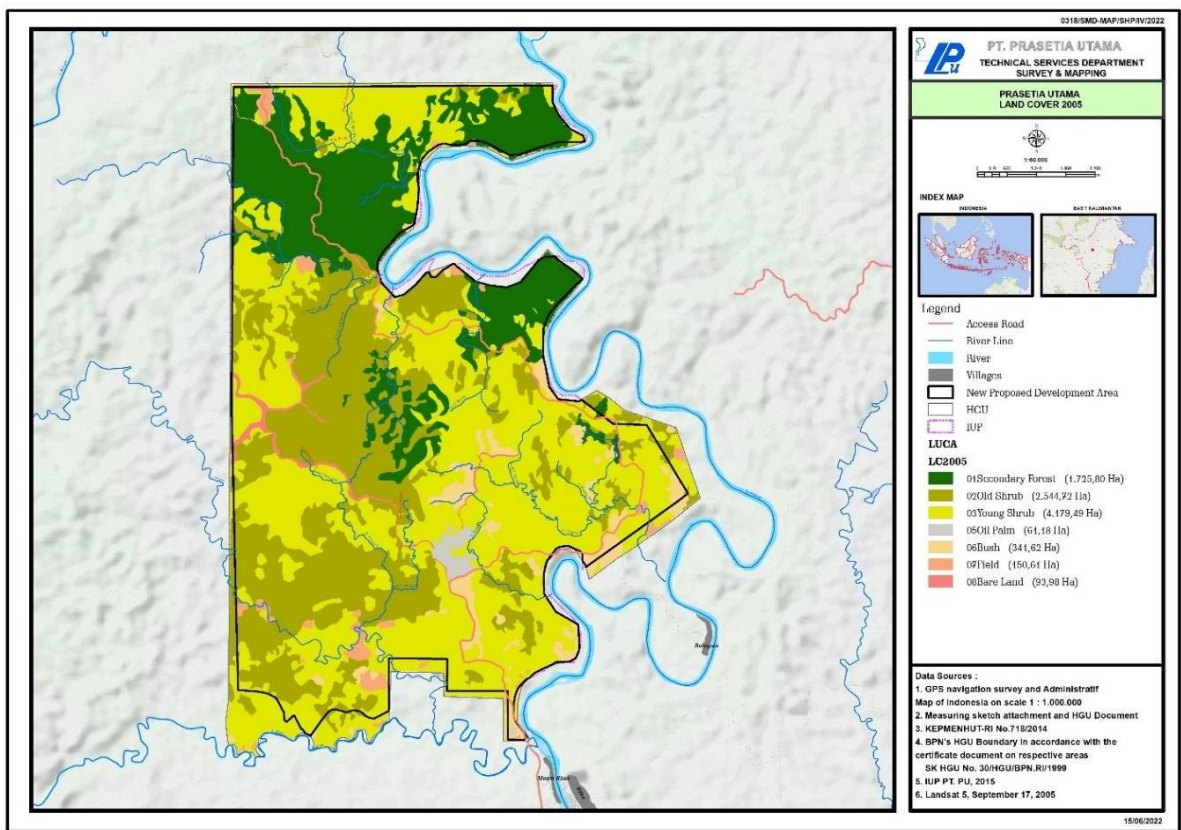


Figure 35. Prasetia Utama land cover period 1 November 2005
Source: Landsat 5 TM, 17 September 2005 (main) & 12 May 2005 (cloud mask)

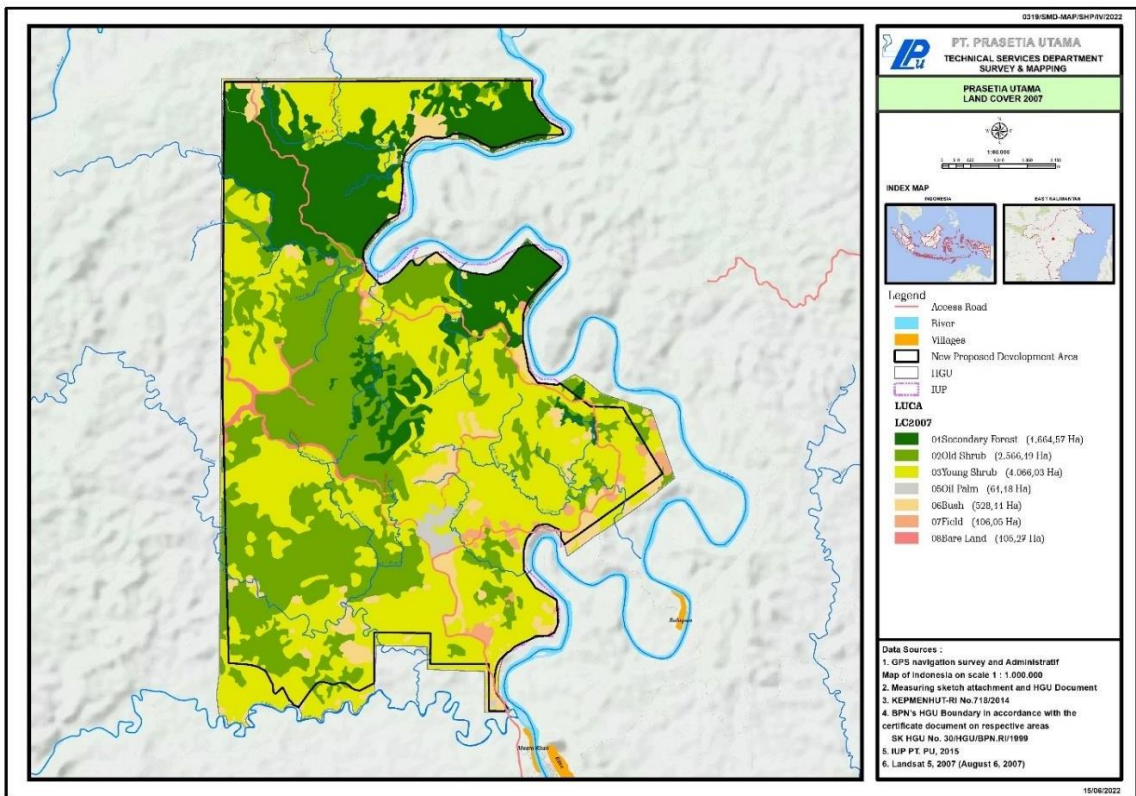


Figure 36. Prasetia Utama land cover period 1 December 2007
Source: Landsat 5 TM, 6 Agustus 2007 (main) dan 11 February 2007 (cloud mask)

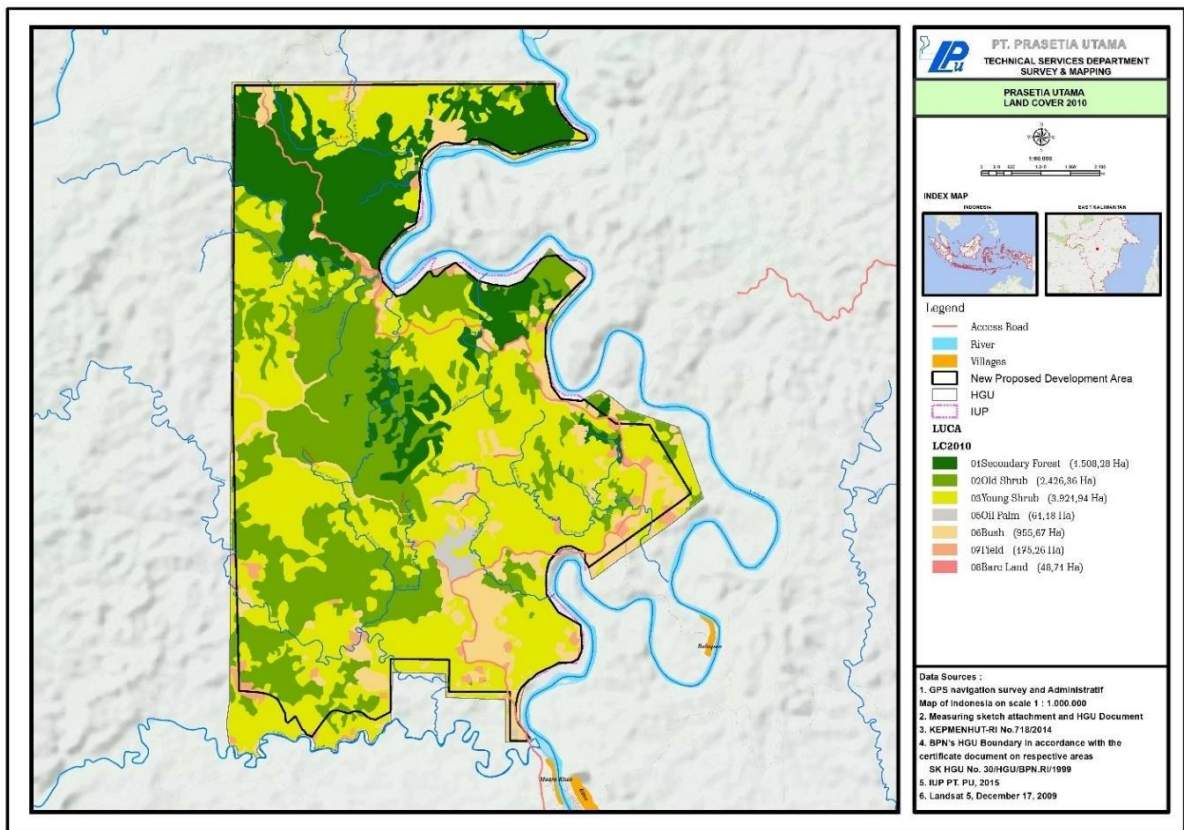


Figure 37. Prasetia Utama land cover period 1 January 2010
Source: Landsat 5 TM, 17 December 2009

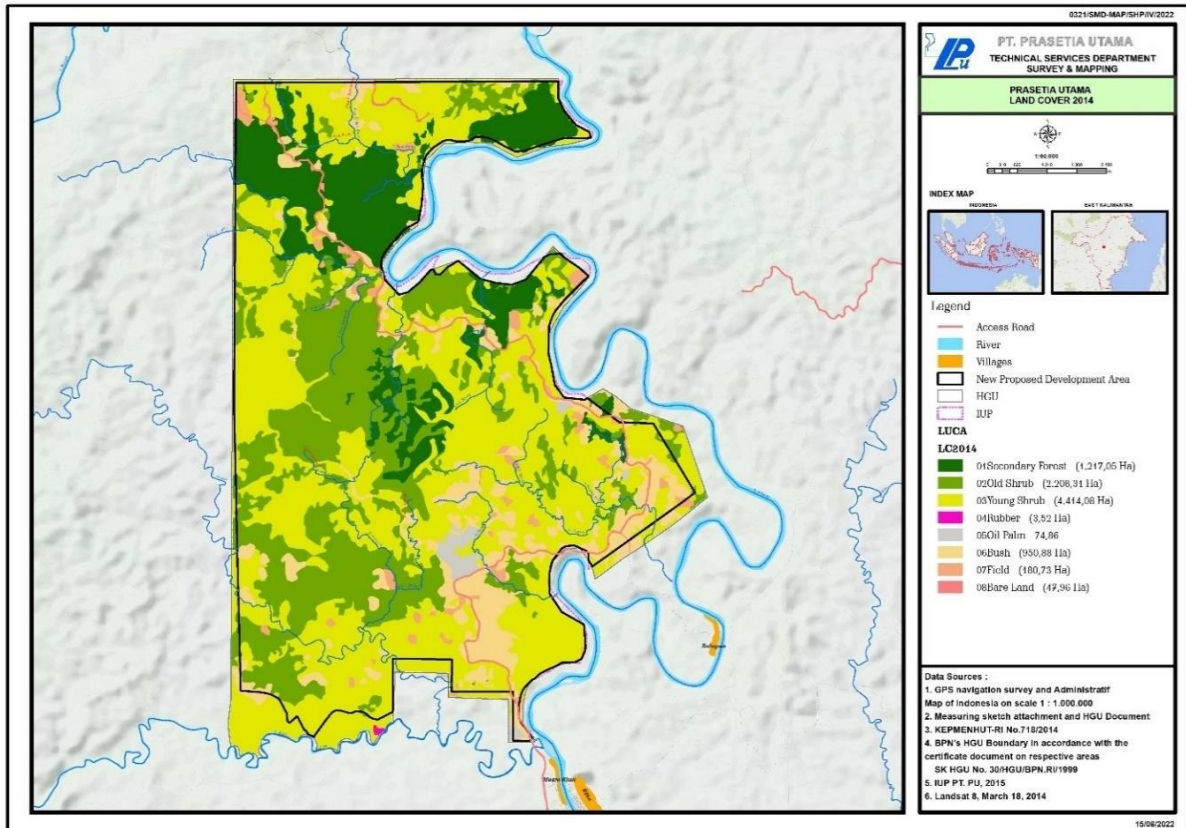


Figure 38. Prasetia Utama land cover period 9 May 2014
Source: Landsat 8 OLI TIRS, 18 March 2014

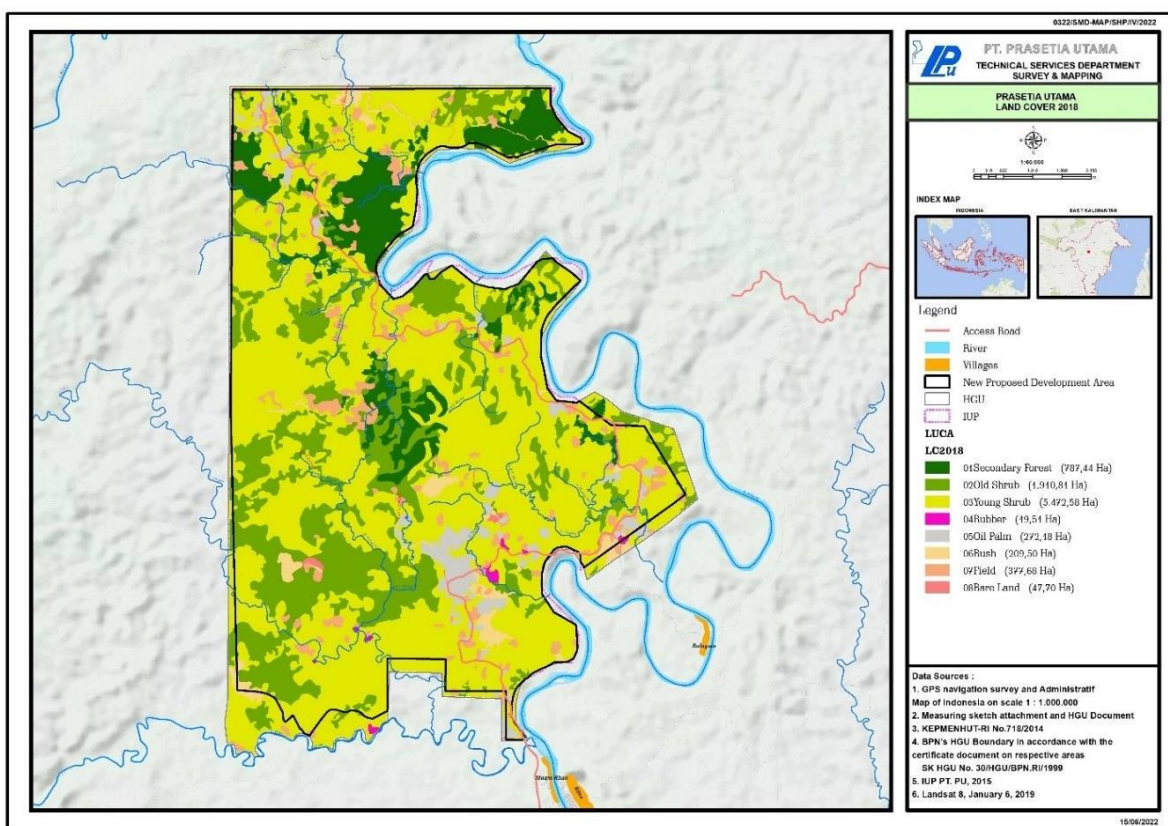


Figure 39. Prasetia Utama land cover period 15 November 2018
Source: Sentinel-2A, 6 January 2019

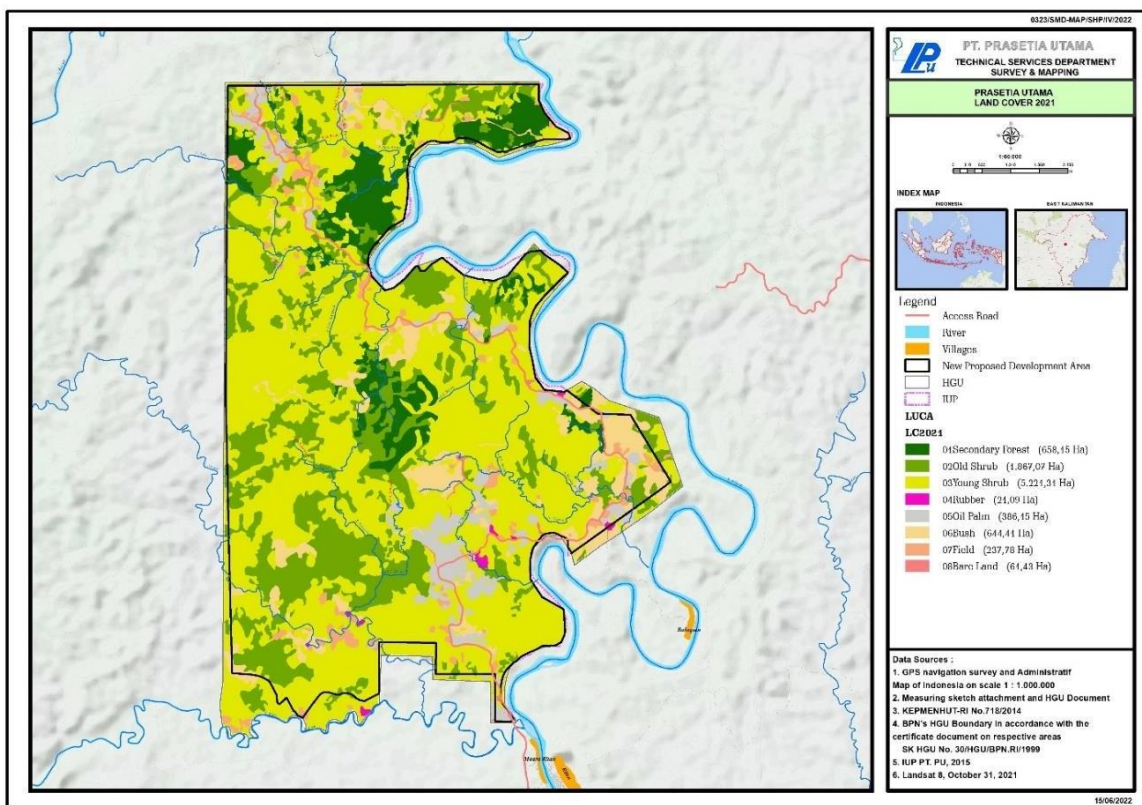


Figure 40. Prasetia Utama land cover period November 2021 (Ground-truthing conducted)
Source: Landsat 8 OLI TIRS, 31 October 2021 (main) with cloud mask Landsat 8 OLI TIRS, 21 March 2021;
Sentinel-2A, 12 October & 1 December 2021; Sentinel-2B, 27 October 2021

Section 10: Conclusions

Refer to the land clearing plan that has been planned by the company, there will be several locations where the results of the study in this management plan are outside the planned area for the development and planting of oil palm by the company. This happens because based on management's decision that the company has a commitment to only develop and plant oil palm over the overlapping permit area between the **Cultivation Rights Title or Hak Guna Usaha (HGU)** and the **Plantation Business Permit or Ijin Usaha Perkebunan (IUP)**. Based on the overlay that we carried out on the two permits, it was found that not all of the HGU areas (used in the scope of the study) overlapped with the IUP, so there were HGU areas outside the planned area for oil palm development and planting. **This company refers to government regulations that companies can only develop and plant oil palm on top of the IUP that they already have.**

For this matter, as a commitment from the company to the study activities that have been carried out, among others:

1. Environmental Impact Assessment (EIA).
2. Social Impact Assessment (SIA).
3. High Conservation Value Assessment (HCV).
4. High Carbon Stock (HCS).
5. Greenhouse Gases (GHG).
6. Soil Survey.
7. Land Use Change Analysis (LUCA).
8. Implementation of FPIC Process.

Where in the study that has been carried out on all of the above studies, it refers to the area of the company's HGU area of 9,097.35 ha. The company remains committed that the management and monitoring plan of conservation areas will continue to be carried out throughout the Company's HGU area, referring to all the results of the study that have been determined by the management and monitoring plan referring to the **Final of Integrated Conservation Land Use Plan Development and Implementation (ICLUP)**.

Section 11: Confirmation of Report

RSPO Note: This section is used to confirm that all findings are accepted by the grower company and will be responsible for its ownership and development process for as long as it is within their control.

Formal Signoff by Assessor and the Company

This document is the Summary of Assessments and Management Plan for the New Planting Procedures for PT Praselia Utama (PT PU) concession under the company management.

Assessment Team



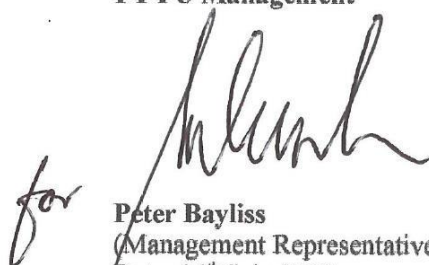
Idung Risdiyanto
(HCV Team Leader)
Date: 04th July 2022

Assessment Team



Fersely Getsemani Feliggi
(HCSA Team Leader)
Date: 04th July 2022

PT PU Management




for

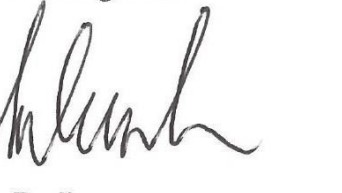
Peter Bayliss
(Management Representative)
Date: 04th July 2022
Date: 04th July 2022

Statement of Acceptance of Responsibility for Assessments

Results of the Assessments on New Planting Procedures for PT PU concession carried out by PT Gagas Dinamiga Aksenta will be applied as part of the guidelines to develop and manage PT PU management units.

PT PU Management

for 
Peter Bayliss
(Management Representative)
Date: 04th July 2022

Date of Completion	04 July 2022
Signature	<p align="center">PT PU Management</p> <p><i>for</i>  Peter Bayliss (Management Representative) Date: 04th July 2022</p>
Name	Peter Bayliss
Position	Management Representative