ASSESSMENT SUMMARIES AND MANAGEMENT PLAN

New Planting Procedure for Extention scope PT. GSB

PT GALEMPA SEJAHTERA BERSAMA
DISTRICT OF EMPAT LAWANG
SOUTH SUMATERA PROVINCE

Contents

TABLE

FIGURE

MAPS

SUMMARIES OF ASSESSMENT AND MANAGEMENT PLAN
PT GALEMPA SEJAHTERA BERSAMA
Sub District of Ulu Musi and Sikap Dalam, Distric. Empat Lawang
South Sumatera Province

1. Preliminary

1.1. Executive summary

PT Galempa Sejahtera Bersama (PT GSB) is one of palm oil company in Sub Distric of Ulu Musi, District of Empat Lawang, South Sumatera Province. Land Permit of PT GSB coverage 8.817 ha issued by Online Single Submission (OSS) NIB 8120218180054 on 5th November 2018, in Simpang Perigin village, Sub Distric of Ulu Musi, District of Empat Lawang.

In Line with Sustainability Policy of PT Austindo Nusantara Jaya Tbk and RSPO New Planting Procedure (NPP) 20th Nov 2015, PT GSB had conducted assessment of Social Enviroment Impact (SEIA/AMDAL), High Conservation Value (HCV), High Carbon Stock (HCS) and Land Use Change (LUC), so that all of requirement in Sustainability Policy and RSPO Principle & Criteria have been fulfilled.

The Assessment was carried out in Agustus 2016 by Sonokeling Akreditasi Nusantara (SAN) with the appraisal team who has received approval from the High Conservation Value Resource Network (HCVRN) and the assessment report has been declared *satisfactory* by HCVRN *Quality Panel* on 23rd October 2018.

The result of the assessment report of HCV and LUC shown that no primary Forest in the Consession of PT GSB. At the current, there is only one type ecosystem found in the additional area of replacement of PT GSB, it is mixed dipterocarp forest on basalt. Land Cover dominated by mixed cover (84.28%). There are 5 types consisting of HCV 1,3,4,5 and 6 with the total area 199.54 Ha (15.30% from total area extention scope 1308 Ha). The HCV management in area of PT GSB needs to be done in an integrated by considering 2 (two) aspects, the landscape's socio-political and the socio-political of the watershed.

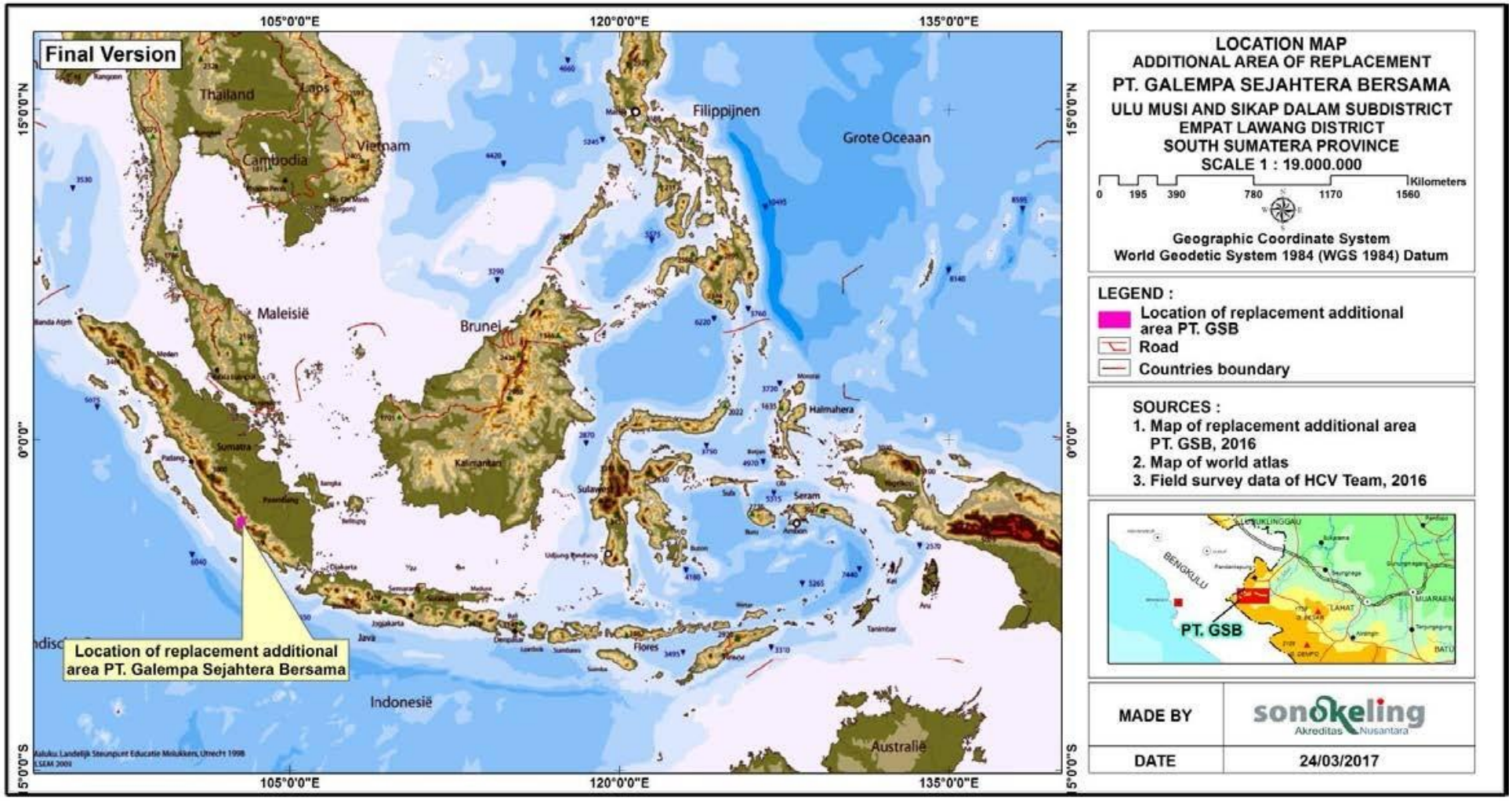
The result of Social Impact Assessment (SIA) provide positive perception of oil palm plantation development, especially in the recruitment of workers and the potential for economic improvement as well as various concerns and assistance that the company has provided, both programmed and incidental assistance.

1.2. Scope of HCV and SEIA Assessment

1.2.1 General information/Contact person

Name of Company	:	PT Galempa Sejahtera Bersama (PT GSB)

Address of company	:	Simpang Perigi Village, Sub district of Ulu Musi, District of Empat Lawang, Province of . South Sumatera.
Legal of Entity	:	Perseroan Terbatas
Type of Business	:	Oil Palm Plantation
Capital Status	:	Foreign Investment
Permit Location type	:	Online Single Submision : Single Business Number 8120218180054
Tax ID Number	:	03.178.764-1.121.000
No of Certificate Company Registration	:	02.12.1.01.23050/2641/2960/05/2018
Contact person	:	Antoperis Tarigan
		Phone +62-61-4537480
		Fax +62-61-4538366
		Email antoperis.tarigan@anj-group.com
Website	:	https://anj-group.com



Map 1 Additonal area of replacement PT GSB in Indonesia

1.3. List of Legal, Regulatory Permits and Property Deeds

Table 1. Type of PT GSB Permit

No.	Kind of Permit/ Recommendation	Approved by	No. and Date	Remarks
1	Deeds of Establishment	Notary H. Zulkifli Sitompul, SH, Palembang	No. 6 dated 14th December 2011	
2	Limited Company Approval Deeds	Ministry of Justice and Human Rights Republic of Indonesia	AHU-04071.AH/01.01, 2012	Approved in 20 January 2012
3	Deeds of Shareholder Statement	Kartika, S.H, M.Kn, Jakarta (Notary)	No, 2428 dated March 26, 2018	
4	Notification Receipt of Company Data Changes PT Galempa Sejahtera Bersama.	Ministry of Justice and Human Rights	AHU-AH.01.03-0127734, dated March 28, 2018	
5	Tax Identification ID (NPWP)	Region Office of Taxes Medan Polonia, North Sumatera.	03.178.764-1.121.000, based on Registered Letter No: PEM.00167/WPJ.01/ K P.0303/2014/PB	
6	Company Registration Certificate	Integrated Licensing Services Agency of Palembang	02.12.1.01.23050/2 641/2960/05/2018, dated April 27, 2020	
7	Status of area PT Galempa Sejahtera Bersama	Ministry of Forestry	No 76/Kpts-II/2001, dated 15 March 2001	Status of area PT Galempa Sejahtera Bersama in Permit Area based on Forest Area Indicated (TGHK) is Non Forest Designated Area (Area Penggunaan Lain).
8	Location Permit	Regent of Empat Lawang Regent of Empat Lawang Regent of Empat Lawang Online Single Submission Online Single Submission Online Single Submission	525/535/KEP/HUTBUNTAMBEN/2012 503/07/KEP/BPMPT/ 2015 503/128/KEP/BPMPT /3/2016 Single Business Number 8120218180054 Single Business Number 8120218180054	Total Area 20,000 Ha Location permit rxtention Total area 12,800 Ha Land aquaisition permit for the unification of plot land and replacement of part of the land area PT GSB Total area 12800 Ha Total Area 12,800 Ha, located in Village of Simpang Perigi, Sub district Ulu Musi. Empat Lawang Regency. Total Area 3,982.5800 Ha, located in Village of Simpang Perigi, Sub district Ulu Musi. Empat Lawang Regency.

			Single Business Number 8120218180054	Total Area 88,170,000 Ha, located in Village of Simpang Perigi, Sub district Ulu Musi. Empat Lawang Regency.
9	Plantation Permit	Regent of Empat Lawang	No.525/423/KEP/HUT BUNTAMBEN/2013, dated 8th Mei 2013	Total Area ± 20,000 Ha, located in Village of Lubuk Puding Lama, Lubuk Puding Baru, Pula Kemang, Muara Betung, Padang Tapong, Galang,Tanjung Agung, Batu Lintang, Kalangan, Simpang Perigi, Kanduran, Talang Bengkulu dan Air Kalinsar Sub district Ulu Musi. Village Puntang, Padu Raksa, Bandar Aji, Karang Gede, Karang dapo Lama, Karang Dapo Baru, Tangga Rasa, Tapa Baru, Karang Anyar dan Martapura Sub district Sikap Dalam Empat Lawang Rgency. Attach of Map, Scale 1 : 100,000
10	Environment Permit, Development Plan of Oil Palm Plantation and Mill ± 20.000 Ha, Sub district Ulu Musi and Sub district Sikap Dalam, Regency of Empat Lawang Province of South Sumatera	Regent Empat Lawang	No.211, 2013, dated 6 May 2013	Total area ± 20,000 Ha, located in Village of Lubuk Puding Lama, Lubuk Puding Baru, Pula Kemang, Muara Betung, Padang Tapong, Galang,Tanjung Agung, Batu Lintang, Kalangan, Simpang Perigi, Kanduran, Talang Bengkulu dan Air Kalinsar Sub district Ulu Musi. Village Puntang, Padu Raksa, Bandar Aji, Karang Gede, Karang dapo Lama, Karang Dapo Baru, Tangga Rasa, Tapa Baru, Karang Anyar dan Martapura Sub district Sikap Dalam Empat Lawang Regency
11	SEIA or Environmental Feasibility Permit	Head of AMDAL Commission, Empat Lawang Regency	No. 210, 2013, dated 1 May 2013.	Total area ± 20,000 Ha, and Palm Oil Mill (Capacity 60 Ton FFB/Hour)
12	Land Clearing Permit	Agency of Forest, Plantation, Mining and Energy	525/681/HUTBUNTAMBEN/ 2013, dated 16 August 2013	Totally of Land Clearing Plan 2013 – 2016 is 15,000 Ha
13	Permit Letter of Commerce	Integrated Permits Services Agency, Palembang	503/SIUP.B/0457/KPPT/2012, dated 8 February 2012	
14	Business Domicile Letters	Government of Medan Sub district Medan Polonia Kelurahan Madras Hulu	470/475/SK-DP/MH/X/2018 dated October 24, 2018	

1.4. **Historical of Land**

In running its business, PT GSB will combine additional areas of replacement of PT GSB area of 1,308 hectares in Regency of Empat Lawang with permit area of PT GSB in Empat Lawang Regency

of 11,492 hectares which has been previously obtained. The PT GSB has conducted operational activities in the field in the permit area of 11,492 hectares and prior to the operational activities preceded by the HCV Review. It is hoped that the merger of 12,800 hectares of permit area in Empat Lawang Regency can be sufficient for economic viability by establishing one factory in the area. In addition, the company will also build a plasma plantation.

PT GSB has not yet conducted any operational activities in the additional area of renewal. The additional area of renewal is the secondary dryland Forrest, dryland agriculture, mixed fields, paddy field, open area, shrubs, ripariant and Palm oil plantation has been managed by the community before land acquisition by company. Based on Ministry of Forestry and Plantation Decree No. 76/Kpts-II/2001 15th Maret 2001 concerning the appointment of forest area and water areas that the additional area of renewal of PT GSB included in other land use area (APL), so that the area has been managed by the community. The history of land cover changes in the additional area of renewal of PT GSB presented in 2006, 2009, 2011 and 2016 are presented in Table 2.

Table 2. Change of land Cover in additional area of renewal of PT GSB

No.	Land Cover	Ha			
		2006	2009	2011	2016
1	Secondary forest dry land	1.26	1.26	1.26	1.26
2	Agricultural of dry land	9.63	9.60	9.55	7.58
3	Mixed agricultural	141.2	168.57	188.30	1102.36
4	Palm Oil Plantation	0.00	0.00	0.00	7.41
5	Paddy field	24.15	24.23	30.01	64.17
6	Open area	240.51	228.34	201.77	14.09
7	Shurbs	890.73	875.48	871.44	105.46
8	Ripariant	0.52	0.52	5.67	5.67
Total		**1,308.00**	**1,308.00**	**1,308.00**	**1,308.00**

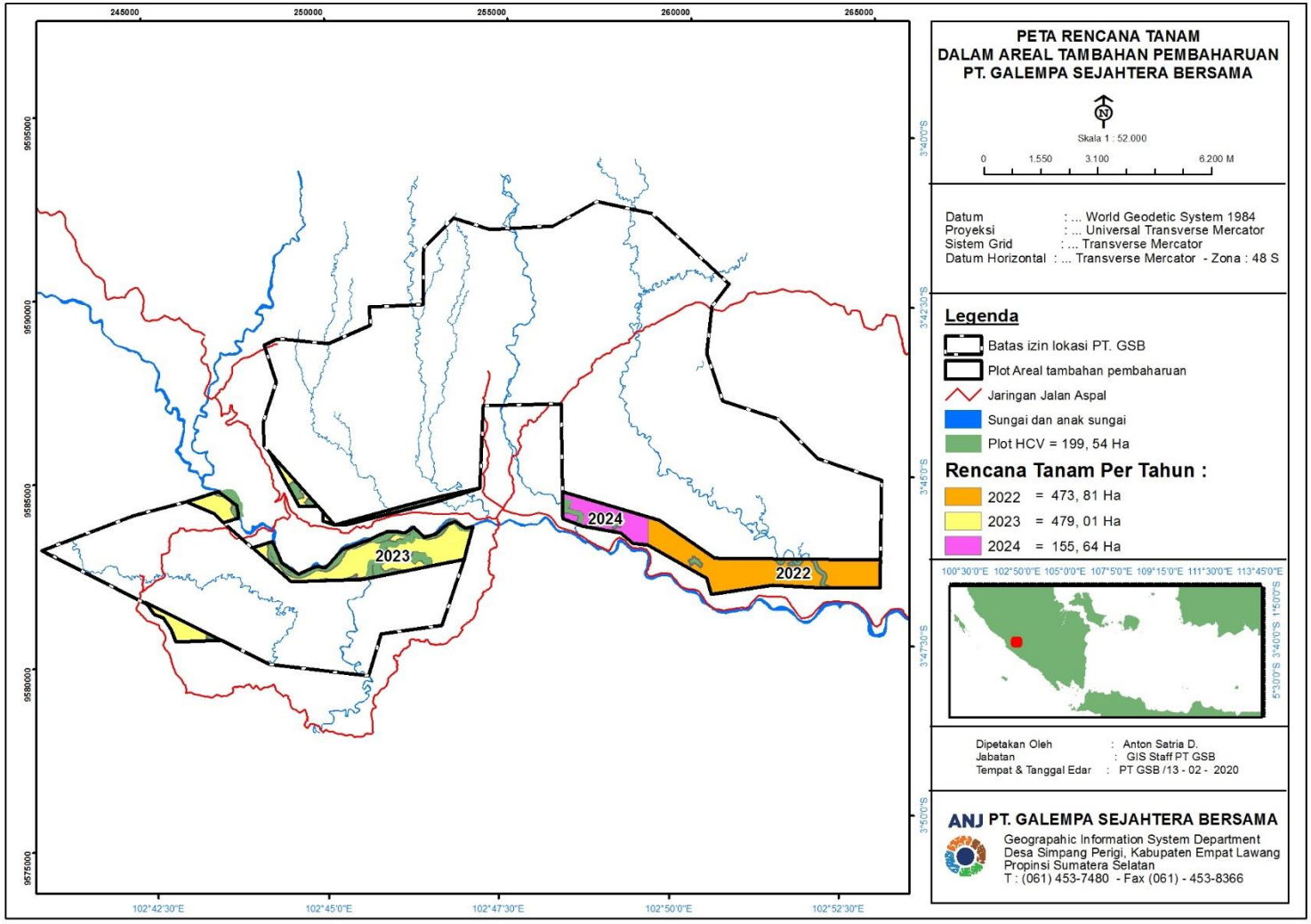
1.5. Area and New planting plan

Area of new planting in the additional area of renewal proposed by PT GSB have been approved by the land owner through a free, prior and informed consent process. The development and planting of oil palm will be carried out after the new RSPO planting procedures are fulfilled.

Table 3. Land Use and Time plan for new planting

Description	Area (Ha)
a. Conservation Area	199.54
b. Time Plan for new Planting	
2022	473.81
2023	479.01

2024	155.64
Total For New planting	1,108.46
Total Area	1,308.00



Map 2. Plan of new planting in additional area of renewal of PT GSB

2. Procedure and Assessment Process

2.1 Assessment Team

2.1.1 Social Environment Impact Assessment (AMDAL/ SEIA)

The AMDAL of PT GSB (September 2012 – February 2013) compilation team is based on assignment letter No: 005/AMDAL/X/2012 on 8th oktober 2012 with Assessor team in the table below:

Table 4. The SEIA of PT GSB Team Assessor

No	Nama	Jabatan	Keahlian
1	Dr. Ir. Yakup Parto, MS	Team Leader Chemical and Physic	chemical and physic expert
2	Dr. Ir. Zidan, M. Sc	Team Member	Chemical dan Physic Expert
3	M. Toyieb Farsyah, A.Md	Team Member	Soil and water expert
4	Dr. Indra Yustian, M.Si	Team Leader Biological	Biological expert
5	Rulli Aranto SE, M.Si	Team Member	Social, economic cultural expert
6	Asep Indra M Ali, S.Pt, M.Si	Team Member	Support Staff

2.1.2 Social Impact Assessment (SIA)

The Social Impact Assessment of PT GSB (September – November 2016) was prepared by PT Sonokeling Akreditas Nusantara (PT SAN), office address at Komplek Sari Inten 44, Ciomas, Bogor, Prov. Jawa Barat, Assessor lead by Dr. Ir. Tutut Sunarminto, M.Si.

2.1.3 High Conservation Valua Assessment (HCV)

The High Conservation Value Assessment conducted on Agustus 2016 to March 2017 (Table 6) and got the satisfactory status from HCV-RN was on October 23, 2018, in additional area of renewal of PT GSB by PT Sonokeling Akreditas Nusantara, office address at Komplek Sari Inten 44, Ciomas, Bogor, Prov. Jawa Barat, lead by Ir. Siswoyo, M. Si. (ALS 15010SS). The Assessment was conducted together with LUC and HCS. The team members are on Table 5 below:

Table 5. Team member HCV Assessment

Name	Lisensi of ALS	Possition	Expertise
Ir. Siswoyo, MSi Siswoyo65@yahoo.com	(ALS15010SS) Provisional	Team Leader / Biodiversity expert, Inventory of Flora and Fauna	Biodiversity, Botany, Forest Ecology, Ethnobotany and conservation.
Dr. Ir. Tutut Sunarminto, Msi tututsunarminto@yahoo.com	N/A	Social Expert	Community Forestry social sciences
Ir. Wahyu Wardaya wahyu_aday@yahoo.com	N/A	Environmental Specialist	Hidrology, water and Soil Conservation
Hendi Kusnadi kusnadi.bgr@gmail.com	N/A	Mapping Expert dan GIS	GIS sciences and Landscape

Tabel 6. Timeline of HCV assessment in additional area of PT. Galempa Sejahtera Bersama

No	Activities	Time

A.	Pre-assessment phase	
1	Information exchange	8 – 13 August 2016
2	Tier rating	15 – 20 August 2016
3	Information gathering	22 – 27 August 2016
4	Analysis preparation and initial mapping	29 August - 3 September 2016
5	Scoping study*)	5 – 8 September 2016
6	Preparation and planning	9 – 14 September 2016
B.	Assessment phase	
1	Data collection in the field	
a.	Opening meeting	16 September 2016
b.	Data collection:	
	- Data collection for flora	16 - 20 September 2016
	- Data colection for fauna (mammals, bird and herpetofauna)	16 - 20 September 2016
	- Data collection for environmental services	16 - 20 September 2016
	- Data collection of socio-economic and cultural aspects and participative mapping	16 - 20 September 2016
	- Validation of mapping and landscape	16 - 20 September 2016
c.	Data processing and analysis, and mapping	17 – 21 September 2016
d.	Closing meeting	22 September 2016
2	Public Consultation	23 September 2016
3	Reporting	September 2016 – February 2017
4	Peer Review	22 March 2017
5	Completion of the final report	March 2017
6	Submission to quality panel review of HCVRN	August 2017

2.1.4 *Land Use Change Analysis (LUCA*)

LUCA Assessment was held on September – November 2016. Assesor team of *Land Use Change Analysis (LUCA)* from PT Sonokeling Akreditas Nusantara is Team leader and Analist below on Table 6.

Tabel 7. List of land use cover change analysis assessor in additional area of renewal of PT Galempa Sejahtera Bersama

No.	Nama	Bidang	Akreditasi RSPO
1	Ir. Siswoyo, M.Si	Team Leader	Registered
2	Kasuma Wijaya, S.Hut, M.Si.	GIS and Spatial Analist	-

2.1.5 *Carbon Stock Analysis* (CSA)

Activity of Carbon Stock Analysis in the additional area of renewal of PT GSB, Empat Lawang Distric – South Sumatera province provided together by PT GSB and PT Sonokeling

Akreditas Nusantara. The team of *Carbon Stock Analysis assessor from* PT Sonokeling Akreditas Nusantara is on Table 7.

Table 8. Team assesor of Carbon Stock Analysis in additional area of renewal of PT GSB

No	Nama	Peran	Keterangan
1	Kasuma Wijaya, S.Hut, M.Si.	Team Leader dan Land cover image analysis and GIS experts	Registered HCS Approach Practitioners
2	Ir. Siswoyo, M.Si	Conservation Expert	Registered HCS Approach Practitioners
3	Dr. Ir. Tutut Sunarminto, M.Si	Social Expert	-
4	Hendi Kusnadi	Forest inventory team members	-

2.2 Assessment of methods

All assessment that have been done in the study area (AMDAL/SEIA, SIA, HCV, LUCA and CSA) was always involves the active role of the community participation. In addition to because the local community is more familiar and understand with the condition of the study area, and also to ensure that the local community is aware of the planned development activities of oil palm plantations and also knows the impacts, both positive and negative, that will potentially be received by the local community. This is inline to FPIC approachs, so the community freely give or withhold their consent, without coercion from any party and should be informed regards with all information about the process.

2.2.1 Social Environtment Impact Assessment (AMDAL/ SEIA)

The AMDAL study approach carried out in PT GSB through several methods. The initial method used is the Desk Study Method by using secondary data regarding the location condition of the PT GSB area.

To strengthen the results of the desk study data, primary data collection was conducted directly in the field. Besides primary data, the valid secondary data collection is also conducted to strengthen the information that has been collected previously. Some of these data include physical component data, biological components, socio-economic components of society and components of the environment, occupational safety and health. In addition to environmental data, data on regulatory requirements regarding quality standards and permits were also collected to become a standard in preparing AMDAL.

All existing data will be measured through a formal and non-formal approach so that the potential impacts that will arise if operational activities are carried out. The final approach taken through the impact evaluation approach is important for determining management and monitoring of potential impacts that can arise.

Analysis Data methods.

Data analysis method uses qualitative and quantitative analysis methods. Qualitative analysis method is carried out if quantitative analysis cannot be done. Data analysis methods were carried out namely physics-chemistry (climate, air quality and noise, water quality, soil and land hydrology), Biology (vegetation and aquatic biota).

Method of siqnificant impact estimation

The environmental impact caused by the development of Oil Palm Plantations at each stage of the activity (Pre-construction, Construction, Post-Construction) is estimated by using several alternative methods. Formal methods use some of mathematical models and/or use

causality and stochastic phenomena. Non-formal methods are used if a case cannot be approached by the existing formal method.

2.2.2 Social Impact Assessment (SIA)

Social Impact Assessment (SIA) on palm oil plantation is a review process to know the social impacts of the presence and operation of oil palm plantations, both positive and negative impacts on surrounding communities, employees or workers and the region, both the impacts that have occurred and the potential impacts that occur on future. This includes knowing people's perceptions and managing sources of conflict that might occur.

Data collection in the Social Impact Assessment (SIA) study was carried out with the Rapid Rural Assessment (RRA) technique that combined in-depth interviews, Focus Group Discussion (FGD), questionnaires and observations. In order to ensure the validity of information, the principle of triangulation (multiple data sources) and data saturation no more changes in the data collected) are used in this study.

Data needed in the preparation of the study includes secondary and primary data. Secondary data is taken from various studies or literature by collecting and studying the related documents. Primary data collection was carried out by field observation methods, in-depth interviews, questionnaires and Focus Group Discussion (FGD) with basic representation of socio-economic aspects, work areas and patterns of interaction relationships with companies.

The Secondary and primary data collected were analyzed by a combination of quantitative and qualitative methods. Quantitative analysis places more emphasis on counts and numbers such as demographics (population, population density, population growth, etc.). The qualitative analysis emphasizes the descriptio of various facts and the relationships between variables found in the process on the ground. The PT Galempa Sejahtera Bersama SIA Analysis Framework can be seen in Figure 1

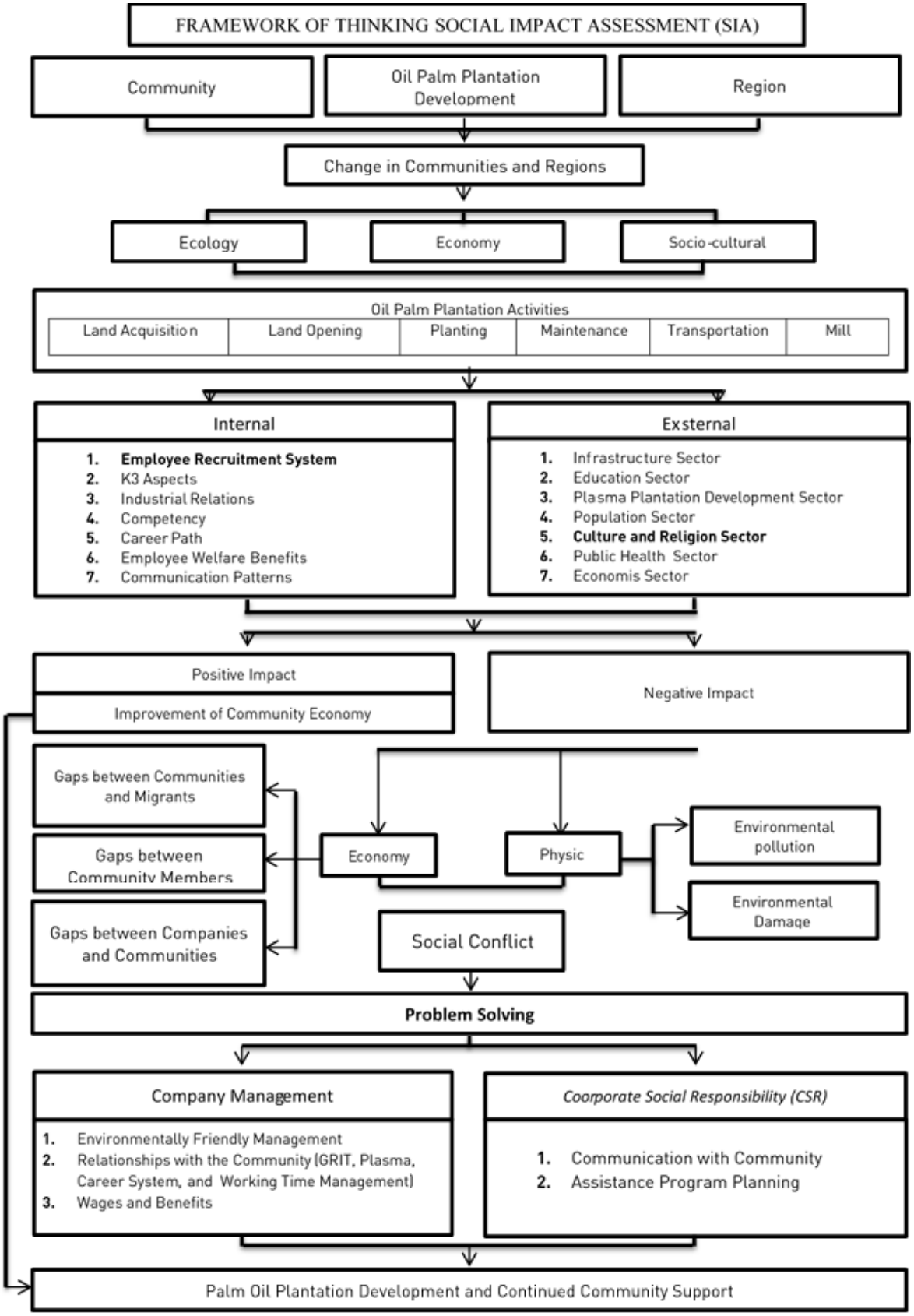


Figure 1. SIA Analysis framework of PT Galempa Sejahtera Bersama

2.2.3 High Conservation Value (HCV) Assessment

2.2.3.1 Secondary data collection

2.2.3.1.1 Sources of data and information

Secondary data and information collected are presented in Table 8.

Table 9. Secondary data and information collected during HCV Assessment in the additional area of replacement of PT GSB

HCV	Sources of main data and information	Year
HCV1	Additional Area Map of Replacement of PT. Galempa Sejahtera Bersama	2016
	Map of Forest and Water Areas of South Sumatera Province Scale 1: 250,000 (Ministry of Forestry Decree Number: 866 / Menhut-II / 2014, September 29, 2014).	2014
	Regional Spatial Plan of South Sumatera Province	2011 - 2012
	Indicative Map Delays on Permitting New Utilization of Forest, Use of Forest Areas and Changes of Allocation of Forest Areas and Other Use Areas Revision X.	2016
	Environmental Management Plan (RKL) Plantation Development Plan and Palm Oil Factory of PT. Galempa Sejahtera Bersama in Ulu Musi and Sikap Dalam Districts, Empat Lawang Regency, South Sumatera Province.	2015
	Government Regulation No. 7 of 1999	1999
	IUCN Red List of Threatened Species (www.iucnredlist.org)	2016
	Appendix I dan II, June 2016 version (CITES, 2016)	2016
	Land Cover: Landsat Imagery 8 OLI Band Path / Row 125/63 ETM Satelite images coverage August 6, 2016	2016
	Vegetation – Whitmore and Tantra.	1986
	Plants: PT. Focus Consulting Group (2013)	2013
	Mammals: Payne, *et al.*	2000
	Mammals: PT. Focus Consulting Group (2013)	2013
	Birds: MacKinnon *et al.*	1992, 2010
	Birds: PT. Focus Consulting Group (2013)	2013
	Herpetofauna: Cox *et al.*	1998
	Map of the Distribution of Sumatran Tiger, WWF	2010
	Map of the Distribution of Elephant, World Conservation Institution - IUCN	-
	Map of the Distribution of IBA (Important Bird Area), Birdlife Internasional	2004
	Map of the Distribution of EBA (Endemic Bird Area), Birdlife Internasional	2004
HCV2	Additional Area Map of Replacement of PT. Galempa Sejahtera Bersama	2016
	Map of Forest and Water Areas of South Sumatra Province Scale 1: 250,000 (Ministry of Forestry Decree Number: 866 / Menhut-II / 2014, September 29, 2014).	2014

HCV	Sources of main data and information	Year
	Regional Spatial Plan of South Sumatera Province	2011 - 2012
	Indicative Map Delays on Permitting New Utilization of Forests, Use of Forest Areas and Changes of Allocation of Forest Areas and Other Use Areas vevision X.	2016
	Land Cover: Landsat Imagery 8 OLI Band Path / Row 125/63 ETM Satelite	2016
	Ecosystem: RePProt	1987
	Map of Eco-Region of Sumatra Island (Ministry of Environment, 2013)	2013
	Map of *Intact Forest Landscapes* (IFLs) (www.intactforests.org).	2013
	Map of the Distribution of Sumatran Tiger, WWF	2010
	Map of the Distribution of Elephant, World Conservation Institution – IUCN	-
	Map of the Distribution of IBA (Important Bird Area), Birdlife Internasional	2004
	Map of the Distribution of EBA (Endemic Bird Area), Birdlife Internasional	2004
HCV3	Additional Area Map of Replacement of PT. Galempa Sejahtera Bersama	2016
	Ecosystem: RePProt	1987
	Land Cover: Landsat Imagery 8 OLI Band Path / Row 125/63 ETM Satelite	2016
	Land System: RePProt	1987
	Biophysiographical Map of Sumatera	1997
	Map of Eco-Region of Sumatera Island (Ministry of Environment, 2013)	2013
	Map of Spatial Pattern of Sumatera	2012-2023
HCV4	Additional Area Map of Replacement of PT. Galempa Sejahtera Bersama	2016
	Environmental Management Plan (RKL) Plantation Development Plan and Palm Oil Factory of PT. Galempa Sejahtera Bersama in Ulu Musi and Sikap Dalam Districts, Empat Lawang Regency, South Sumatera Province.	2015
	Land System: RePProt	1987
	Map of Watershed (DAS) South Sumatera Province	-
	Land Cover: Landsat Imagery 8 OLI Band Path / Row 125/63 ETM Satelite	2016
	River Network: DEM SRTM 90 m USGS NASA	2014
	Slope: DEM SRTM 90 m USGS NASA	2014
	Topography: Topographic Map of Indonesia, Geospatial Information Agency	1998
	Land: Land Resource Map of Palembang Sheet Exploration (MA48), Soil and Agro-climate Research Center	2000
	Rainfall: Kenten Climatology Station, Palembang	2006-2015
	Suhu : Kenten Climatology Station, Palembang	2006-2015
HCV5	Additional Area Map of Replacement of PT. Galempa Sejahtera Bersama	2016
	Environmental Management Plan (RKL) Plantation Development Plan and Palm Oil Factory of PT. Galempa Sejahtera Bersama in Ulu Musi and Sikap Dalam Districts, Empat Lawang Regency, South Sumatera Province.	2015
	Regency of Empat Lawang in Numbers 2016, BPS of Empat Lawang Regency	2016
	District of Ulu Musi in Numbers 2016, BPS of Empat Lawang Regency	2016
	District of Sikap Dalam in Numbers 2016, BPS of Empat Lawang Regency	2016
	Report of Social Impact Assessment in the additional area of replacement of PT Galempa Sejahtera Bersama (PT. Sonokeling Akreditas Nusantara, 2016)	2016
	Report of Social Impact Assessment in the permit area of PT. Galempa Sejahtera Bersama ((Focus Consulting Group, 2013))	2013
	Map of the Distribution of Sumatera Ethnic (http://www.ethnologue.com/)	2016
HCV6	Additional Area Map of Replacement of PT. Galempa Sejahtera Bersama	2016
	Environmental Management Plan (RKL) Plantation Development Plan and Palm Oil Factory of PT. Galempa Sejahtera Bersama in Ulu Musi and Sikap Dalam Districts, Empat Lawang Regency, South Sumatera Province.	2015

HCV	Sources of main data and information	Year
	Regency of Empat Lawang in Numbers 2016, BPS of Empat Lawang Regency	2016
	District of Ulu Musi in Numbers 2016, BPS of Empat Lawang Regency	2016
	District of Sikap Dalam in Numbers 2016, BPS of Empat Lawang Regency	2016
	Report of Social Impact Assessment in the additional area of replacement of PT. Galempa Sejahtera Bersama (PT. Sonokeling Akreditas Nusantara, 2016)	2016
	Report of Social Impact Assessment in the permit area of PT. Galempa Sejahtera Bersama ((Focus Consulting Group, 2013))	2013
	Map of the Distribution of Sumatera Ethnic (http://www.ethnologue.com/)	2016

Secondary data and information collected from various literatures are obtained from IPB Library, Company of PT GSB, and other internet websites.

2.2.3.1.2 Secondary data analysis

Species data

The species data are required for HCV 1 and 2 assessments. Potential species data are found in additional area of replacement of PT GSB where they are extracted from various sources (Vegetation - Whitmore and Tantra (1986) and PT. Focus Consulting Group (2013); Mammals - Payne, *et al.* (2000) and PT. Focus Consulting Group (2013); Birds - MacKinnon et al. (1992, 2010) and PT. Focus Consulting Group (2013), and Herpetofauna - Sardi et al., 2013) and made in tabular form. The species data are then checked for conservation status based on Government Regulation No. 7 of 1999, IUCN Red List of Threatened Species (www.iucnredlist.org 2016), and Appendices I and II, valid from June 2016 (CITES, 2016). The data of species that have been arranged in the form of the table is then verified to the community around the additional area of replacement of PT GSB and field observations to ensure its existence.

Land cover

Land cover is required in HCV assessments 1 to 4. The main data used for land cover classification in additional area of replacement of PT. The GSB is the current land cover and land cover in 2016. The satellite imagery data used is the Landsat-8 OLI Band Path / Row 125/63 2016 Satellite Imagery obtained from the USGS website obtained from the USGS website. The latest satellite images of 2016 are further analyzed and verified with satellite imagery in previous years, then classified land cover by digitizing the screen on a scale of 1: 50,000. Classification of land cover in the early stages of image interpretation activities using the classification of The Southeast Asia 2005 Land Cover data set (Gunarso *et al*., 2013) published by RSPO.

Ecosystems

In assessing HCV 3, ecosystem mapping in a bio-physiographic unit where additional area of replacement of PT. The GSB is using a proxy for the RePPProT classification in Sumatera. The ecosystem map in one bio-physiographic unit is then overlaid with a 2016 land cover map and subsequently analyzed to determine whether the ecosystem is rare or threatened.

Environmental services

In the assessment of HCV 4, the mapping of the river network of the presence of water springs is conducted by overlaying between the additional area map of replacement of PT GSB with Map of Watershed Zones of South Sumatera Province and Digital Elevation Model (DEM) SRTM 90 m USGS NASA (2014). River network maps that have been prepared subsequently used as a material verification to the community around the additional area of replacement of PT GSB and field observations to ascertain its existence and name. Determination of topography and slope in additional area of replacement of PT GSB is conducted by overlaying between maps of additional area of replacement of PT GSB with Digital Elevation Model (DEM) SRTM 90 m USGS NASA (2014). Determination of land in additional area of replacement of PT GSB is conducted by overlaying between map of additional area of replacement of PT GSB with landsystem Map from RePPProT (1987). Furthermore, the slope and soil class data plus the rainfall and soil data are used as the material for calculating and preparing the Erosion Hazard Map (TBE).

Map of river / spring network, and TBE in additional area of replacement of PT GSB is then overlaid with a land cover map, then used as a reference for field checks, as well as to see if it is possible to find areas that can function as natural / fire break barriers or not.

Social culture data

In the assessments of HCV 5 and 6, the determination of the distribution of villages is conducted by overlaying the map of additional area of replacement of PT GSB with Indonesian Topographic Map (Geospatial Information Agency); While for the distribution of the tribe is conducted by overlaying the map of additional area of replacement of PT GSB with Tribal Distribution Map on the Island of Sumatra. Other secondary data used in the assessments of HCV 5 and 6 are sourced from Empat Lawang Regency in Numbers 2016 (BPS, Empat Lawang Regency, 2016), Ulu Musi District in Numbers 2016 (BPS Empat Lawang Regency, 2016), Sikap Dalam District in Numbers 2016 (BPS-Statistics of Empat Lawang Regency, 2016), Social Impact Assessment Report at additional area of replacement of PT Galempa Sejahtera Bersama (PT Sonokeling Akreditas Nusantara, 2016), and Social Impact Assessment Report in

additional area of replacement of PT Galempa Sejahtera Bersama (PT. Focus Consulting Group , 2013).

Other activities undertaken in the preparation of secondary data analysis and early mapping are (1) Identify potential and indications of the presence of HCV attributes or elements; (2) Understanding the landscape context; and (3) Identify conservation issues and potential threats to HCVs.

2.2.3.2 Primary data collection

Flora/plants and Fauna/wild animals

Observation of flora / plants and fauna / wild animals (mammals, birds and reptiles) in the additional area of replacement of PT GSB was conducted on five (4) observation routes and 17 observation points, including: secondary dryland forest (1 observation point), scrub (4 observation points), mixed garden (9 observation points), bare land (1 observation point), rice field (1point observation), and oil palm plantations (1 point of observation). For observation amphibians are focused on iver areas, rice fields and checks.

Flora/plants

The flora data collection in the sample unit was conducted by using the encounter method by checking and recording the types of flora found in each observation point, where at each observation point is through the length of 200 to 500 meters. Before the sample path is established, firstly make the list of plant species obtained from the HCV Identification Report document in the concession area of PT GSB (Focus Consulting Group, 2013) and interviews with local communities / UP staff to improve data accuracy. The flora data taken were data of the presence of flora species in sample units and the quality of their habitats.

Fauna/wild animals

1. Mammals

Mammal data collection in each sample unit was conducted using a rapid assessment technique, combining four (4) ways: (1) Interviews with communities, especially hunters and company staff; (2) Checklist of list of mammal species obtained from document of HCV Identification Report in concession area of PT GSB (PT. Focus Conculting Group, 2013), (3) Direct, visual or indirect encounters (footprint, sound, scratch and faeces), and (4) Observation of the quality of mammal habitat was conducted in collaboration with the flora team. Interviews with the community to inquire about the type of mammals found and the quality of their habitats in nine (9) villages. Observation of mammals with checklists and encounter techniques was conducted at each observation point, where at each observation

point is through the length of 200 to 500 meters. In general, mammalian observations were conducted at 07.30 - 17.00, but night time observations were also made on the way home from the field to the accommodation due to occasionally returning at night and passing the additional area of the replacement.

2. Birds

Bird data collection in each sample unit was conducted using rapid assessment techniques, combining four (4) ways: (1) Interviews with communities, especially hunters and company staff; (2) Checklist of bird species list obtained from document of HCV Identification Report in concession area of PT GSB (PT. Focus Conculting Group, 2013), (3) Live, visual or indirect encounters (sounds, fallen body parts, and faeces), and (4) Observation of the quality of bird habitat was conducted in collaboration with the flora team. Interviews with the community to inquire about the species of birds found and the quality of their habitats in nine (9) villages. Observation of birds with checklists and encounter techniques performed at each observation point, where at each observation point is through the length of 200 to 500 meters. In general, bird observations were conducted at 07.30 to 17.00, but night time observations were also made on the way home from the field to the accommodation due to occasionally returning at night and passing the additional area of the replacement.

3. Hepetofauna (reptiles and amphibians)

Herpetofauna data collection in each sample unit was performed using a rapid assessment technique, combining three (3) ways: (1) Interviews with communities, especially hunters and company staff; (2) Check the list of types of herpetofauna obtained from the HCV Identification Report document in the concession area of PT GSB (Focus Consulting Group, 2013), (3) Live, visual or indirect encounter (voice), and (4) Observation of herpetofauna habitat quality was conducted in collaboration with the flora team. Interviews with the community to inquire about the types of herpetofauna found and the quality of habitats performed in nine (9) villages. Observations of reptiles were conducted at each observation point conducted together with bird and mammal observations; While the observation of amphibians was focused on river areas, rice fields and checks. In general, reptile observations were carried out from 07.30 to 17.00, while amphibian observations were made at night on the way home from the field to the accommodation due to occasional nights as well and through the additional area of replacement.

Environmental services

Data collection of environmental services in additional area of replacement of PT GSB was carried out on the planned sample unit, i.e., the river borders (6 locations) i.e., Betung,

Betung Kecil, Musi, Keruh, Latak, and Latak Kecil; 1 reservoir / check dam; and 1 water catchment area. Data and information taken for the purpose of verification of physical aspect is the existence and condition of river network, road network, territorial boundary, type of land, topographic area, and conducting overview of the assessed area as a whole. With regard to environmental services, verifiable data and information are the conditions of land cover in the river border, the area around the stern, and the catchment area; Condition of river water quality and check dam; River flow, river flooding, reservoir / catchment, and catchment area; Flood events and the presence of puddles; Landslide-prone areas and areas that have a serious potential-very heavy Erosion Hazard level; Checking area with slope> 40%; and checking community habits in land preparation, with burning or not.

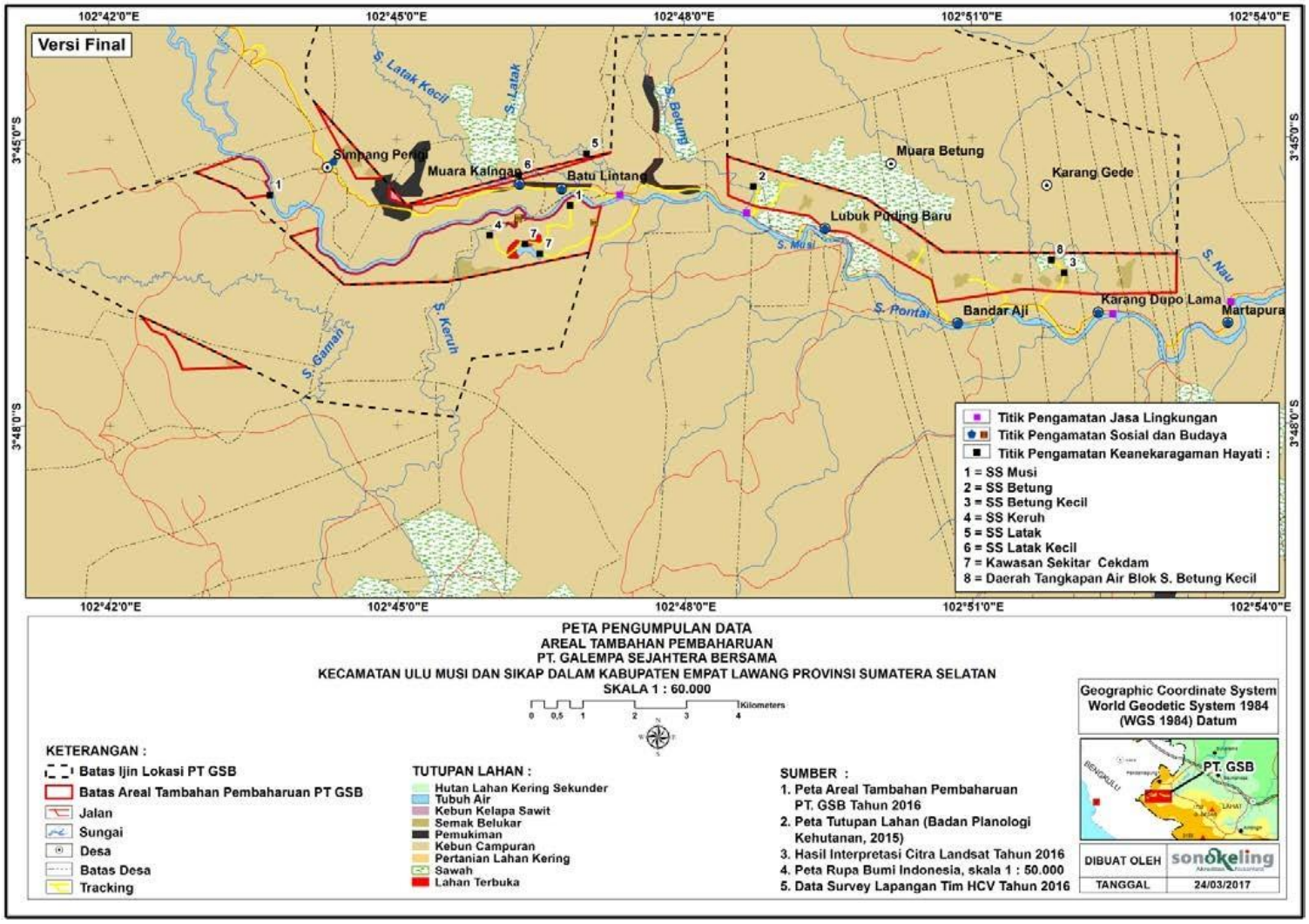
Social and culture

Data sources in HCV 5 and HCV 6 assessments were obtained from local community subjects i.e., local community leaders and citizens, as well as information from secondary data and other documents. In-depth information for identification of HCV 5 and HCV 6 was also conducted through in-depth interviews and Focus Group Discussion (FGD) in villages around additional area of PT GSB, as well as conducting field observation and verification together with community representatives to check the existence of HCV 6 and map it. FGDs and interviews were conducted in nine (9) villages around the replacement area of PT GSB are Simpang Perigi Village, Batu Lintang, Muara Betung, Karang Gede, Lubuk Padang Baru, Bandar Aji, Karang Dapo Lama, Martapura and Muara Kalangan, with a total of 42 respondents. Based on *Toolkit* of Indonesian HCV (2008), number of respondents which should be interviewed for eaach subgroup (ethnic group, religion, or livelihood) was at least 10%. However, due to limited amount of time, that minimal number of respondents which should be intervewed for each sub-group, could not be achieved. However, respondents which were interviewed and involved in FGD were representatives of various interest groups, comprising: village official (village chief, hamlet chief, chief of various village affairs), Village Consultative Agency (BPD), LPM (Community Representative Institution), Chairman of Forum of Ulu Musi Subdistrict Village Chiefs, and people community representatatives. Besides that, number of responedents being interviewed and involved in FGD were representatvie for each ethnic group, religion, gender group (male and female, 1 : 14), and livelihood group (hunter, traders, farmers and government civil servants).

Validation of mapping and landscape

Mapping and landscape validation was conducted to assess the accuracy of additional area boundaries of replacement of PT GSB, village / settlement location, topographical conditions, land cover, river network, water catchment area, and ecosystem. Field checks were carried out at several additional areas of replacement, type of land cover, rivers, water catchment areas, and dam checks.

Location of data collection of biodiversity (flora and fauna), environmental services, and social and culture in additional area of replacement of PT GSB is presented in Map 3.



Map 3. Location of Collection of Biodiversity Data (Flora and Fauna), Environmental Services, and Social and Culture in the additional area of renewal of PT GSB Updates

2.2.4 Land Use Change Analysis (LUCA)

Land use change analysis (LUCA) was carried out to determine changes to vegetation since November 2005 which indicated changes in HCV status. The Land Use Change Analysis (LUCA) activity in the context of implementing the Remediation and Compensation Procedure that follow the RSPO scheme is a form of PT GSB commitment to Sustainability.

Areas cleared without prior HCV assessment will be classified into four vegetation categories through Remote Sensing analysis presented in Table 9. These four categories basically represent a calculated scale for habitat quality, ecological value and conservation, and will be used in the form of a vegetation coefficient (multiplier) in calculating compensation obligations.

Table 10. Vegetation Category Based on RSPO Compensation Procedure

Coefficient 1.0: Structurally complex forest (including primary forest), selectively logged forests regenerate with high canopy elements.
Coefficient 0.7: Natural forests that are structurally degraded but still ecological functions *.
Coefficient 0.4: Multi species agroforestry
Coefficient 0: Plantations of monoculture plants, both woody and non-timber; and other land that is cultivated and developed permanently or has degraded open land.
* Includes degraded low-lying secondary forests but still functions and forests and forests are dominated by pioneer plants, forests that experience heavy and / or repetitive logging or burned-out forests, and forests that regenerate
Note: The interpretation of these coefficients must refer to the HCV guidelines that apply when clearing, for example wetland ecosystems that include peat swamps (especially forested swamps), freshwater swamps, mangroves, lakes and grassy swamps identified as High Conservation Value Areas (HCV) in Indonesia in 2008 [declared as HCV 4.1 in the Indonesian HCV 2008 Guide].

The process of Land Use Change (LUC) Analysis related to the RSPO compensation procedures (Land Use Cover Change / LUC) by using the remote sensing are as follows:

a. Acquire best available satellite images

The basic data used in this study is satellite imagery series data from four years series as material for analysis and interpretation of land cover changes, period November 2005 and November 2007, the period November 2007 and December 2009, the period January 2010 and May 9 2014, May 2016, October 2018 and October 2019. The satellite image data used is Landsat Imagery with a resolution of 30 meters.

b. Preparation of Satellite Image Processing (*Pre-Processing)*

The preparation of satellite image processing activities includes three stages, namely; 1) Radiometric correction, 2) Giomet correction, and 3) Improvement of satellite imagery.

c. Land Cover Classification

The land cover classification used in this activity is a classification from The Southeast Asia 2005 Land Cover data set (Gunarso et. Al, 2013) that distinguishes land cover in 22 types of land cover (Table 9). The classification of land cover was adopted from the Planology Agency, Indonesian Ministry of Forestry (in 2001). Furthermore, the land cover of the four years series that have been classified above is divided into four categories of vegetation coefficients as described in Table 10.

Table 11. Land Cover Classifications from Southeast Asia 2005 Land Cover (Gunarso et. al, 2013) Which Was Adapted from Badan Planologi, Ministry of Forestry of Indonesia (2001)

Value	Code	Class	Description	Corresponding GFW-C* RSPO Land Use Change Analysis Classification
1	UDF	**Undisturbed Forest**	Natural forest cover with dense canopy, highly diverse species and high basal areas. It has no logging roads, indicating that it has never been logged, at least under large-scale operation, and in some areas in Indonesia located in areas with rough topography. Canopy cover of undisturbed forest is usually >80%. In satellite image, it is indicated by high value of vegetation index and infrared spectrum channels, and lower value in visible spectrum channels.	**Primary Forest**
2	DIF	**Disturbed Forest**	Natural forest area with logging roads and degraded forest cover or logged spots.	**Secondary Forest**
3	USF	**Undisturbed Swamp Forest**	A swamp forest is a natural forest in wetland featuring temporary or permanent inundation of large areas of land by shallow bodies of water.	**Primary Forest**
4	UDM	**Undisturbed Mangrove**	Undisturbed mangrove is area along the coastline with high density of mangrove tree species, usually consists of diverse mangrove species composition, and has never been logged.	**Primary Forest**
5	DSF	**Disturbed Swamp Forest**	Logged-over swamp forest is swamp with natural forest cover that has sign of been logged or degraded.	**Secondary Forest**
6	DIM	**Disturbed Mangrove**	Logged-over mangrove is area along the coastline with various species of mangrove trees, has been logged in the past and partly degraded.	**Secondary Forest**
7	RPL	**Rubber Plantation**	Rubber Plantation	**Non-Forest**
8	OPL	**Oil Palm Plantation**	Oil Palm Plantation.	**Non-Forest**
9	TPL	**Timber Plantation**	Monoculture timber plantation (e.g. *Gmelina* sp., *Paraserianthes falcataria, Acacia mangium*) where the area is less than 1 ha. Tree canopy cover is around 30-50%.	**Non-Forest**

Value	Code	Class	Description	Corresponding GFW-C* RSPO Land Use Change Analysis Classification
10	MTC	**Mixed Tree Crops**	Agroforest is a mixed tree based system with more than 30% of the area consists of various species of trees. Mixed garden usually located in 0.5-1km distances to settlement or road. Tree canopy cover can reach 5-60%. Several example of agroforest are rubber agroforestry system, coffee agroforestry system, and home garden.	**Agroforest**
11	SCH	**Shrubs**	Non-tree-based system consists of non tree vegetation usually less than 5-6 m (15-20 ft) tall, usually resulted from swidden agriculture activities or logging area that has been left for 2-3 years as part of the fallow/rotational systems.	**Non-Forest**
12	SSH	**Swamp Shrubs**	Non-tree-based system consists of non tree vegetation usually less than 5-6 m (15-20 ft) tall, usually resulted from swidden agriculture activities or logging area that has been left for 2-3 years as part of the fallow/rotational systems on the area that temporary or permanent inundation of large areas of land by shallow bodies of water.	**Non-Forest**
13	DCL	**Dry Cultivation Land**	Open area characterized by herbaceous vegetation that has big probability planted or intensively managed such as row crops. Sometimes it mixed with wide spaced brushes or trees. The features usually associate with settlements.	**Non-Forest**
14	SET	**Settlements**	Characterized by settlement-included homestead, urban, rural, harbor, airports, industrial area, open mining. Associates with road network or constructed materials.	**Non-Forest**
15	GRS	**Grass**	Extensive cover of grasses with scattered shrubs or trees.	**Non-Forest**
16	SGR	**Swamp Grass**	Extensive cover of grasses with scattered shrubs or trees in swamp area.	**Non-Forest**
17	RCF	**Rice Field**	Open area characterized by herbaceous vegetation that has big probability human managed such as paddy field. The features usually associate with settlement or irrigation structure.	**Non-Forest**
18	CFP	**Coastal Fish Pond**	Open area in the coastal with block pattern and always inundated.	**Non-Forest**
19	BRL	**Bareland**	Areas characterized by bare rock, gravel, sand, silt, clay, or other earthen material, with little or no woody vegetation present regardless of its inherent ability to support life; include forest clear-cut, forest conversion, and changes due to natural causes (e.g. fire, flood, etc.).	**Non-Forest**
20	MIN	**Mining**	Open area with mining activities.	**Non-Forest**
21	WAB	**Water Bodies**	Water bodies - seen from its reflection of water on the image.	**Non-Forest**
22	NCL	**Not classified including cloud cover**	Not classified including Cloud Cover.	**Non-Forest**

*Global Forest Watch Commodities (GFW-Commodities)

d. Land Cover Interpretation

Analysis of land cover data and changes in land use was carried out using the method of visual manual interpretation (manual interpretation) with the "screen digitzing" technique.

e. Groundtruthing

Groundtruthing is a field checking activity using land cover data from the initial interpretation of satellite image data which aims to validate data (Image Validation). In addition, groundtruthing activities are also used to obtain or explore information relating to the history of land cover and the existence of HCV areas in the study area by conducting interviews with companies and communities

f. Reinterpretation

After validating the land cover, a reinterpretation process is carried out. Reinterpretation is a process to improve the results of previous interpretations so that they are in accordance with the actual conditions in the field.

g. Map Composition.

Map Composition is to compile a land cover classification map from four time periods determined based on the vegetation category specified in the RSPO compensation procedure (Land Use Cover Change / LUC).

The flow chart of Land Use Change Change analysis activities related to the application of the RSPO compensation procedure (Land Use Cover Change / LUC) at the study location is presented in Figure 2

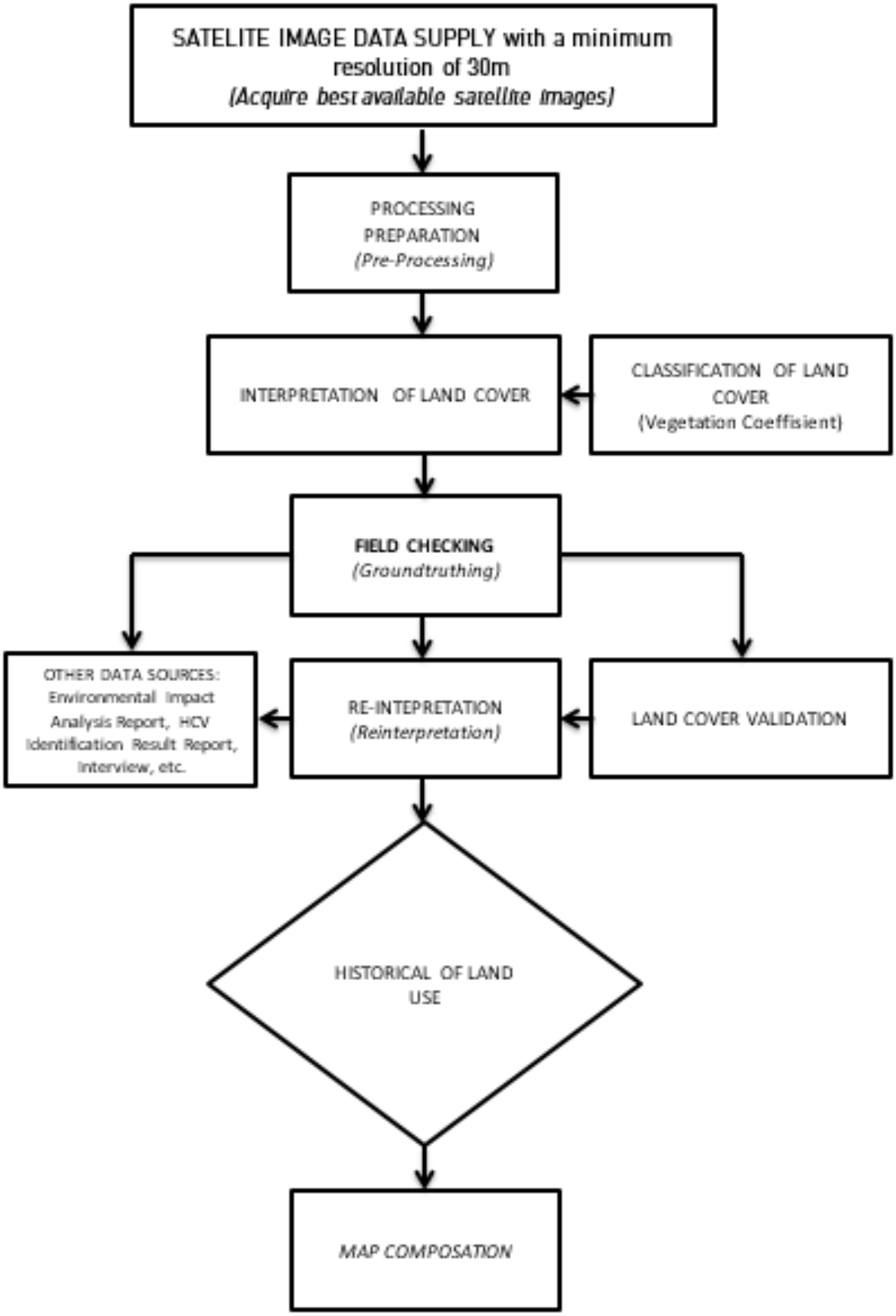


Figure 2. Flowchart Land Use Change Analysis

2.2.5 Carbon Stock Analysis (CSA)

Analysis of Carbon Stock Analysis (CSA) in the additional area of renewal of PT GSB generally uses the High Carbon Stock Approach (HCSA). The HCS assessment methodology has a process stage consisting of two main phases. The first phase is the classification of vegetation to identify forest areas. Whereas the second phase is the analysis and conservation of HCS forests. The aim of the first phase of the HCS study is to make an indicative map of potential HCS forest areas in a concession and the surrounding landscape, using a combination of satellite images and field data. While the purpose of the second phase is to make patches of isolated small forests and integrate potential HCS forest areas with HCV areas, areas that are important for community needs, river boundaries, peatlands and other related land categories to make final plans for development and conservation activities. Classification of HCS potential vegetation which is the output of Phase 1 of the HCS assessment in the additional area of renewal of PT GSB was carried out in several stages, namely Pre Satellite Image Processing, Initial Classification of Land Cover, Field Survey, Improvement of Land Cover Classification and Early Stratification of Soil HCS.

The HCS forest conservation area is the output of the HCS Phase 2 assessment process in the additional area of renewal of PT GSB. The HCS forest analysis was carried out using the HCS Analysis Patch Decision tree. In most potential HCS forest landscapes that have been analyzed in the Phase 1 process, there are patches of forest of various sizes and distances, which are mixed between plantations and other land uses. Use of the HCS Patch Analysis Decision tree to determine the importance of each patch and whether it needs to be included in a conservation plan based on its size, shape, and connectivity with other patches, river boundaries, peatlands, or high conservation value areas (HCV areas). The flow of the main process stages of the HCS assessment in the additional area of renewal of PT GSB is presented in Figure 3

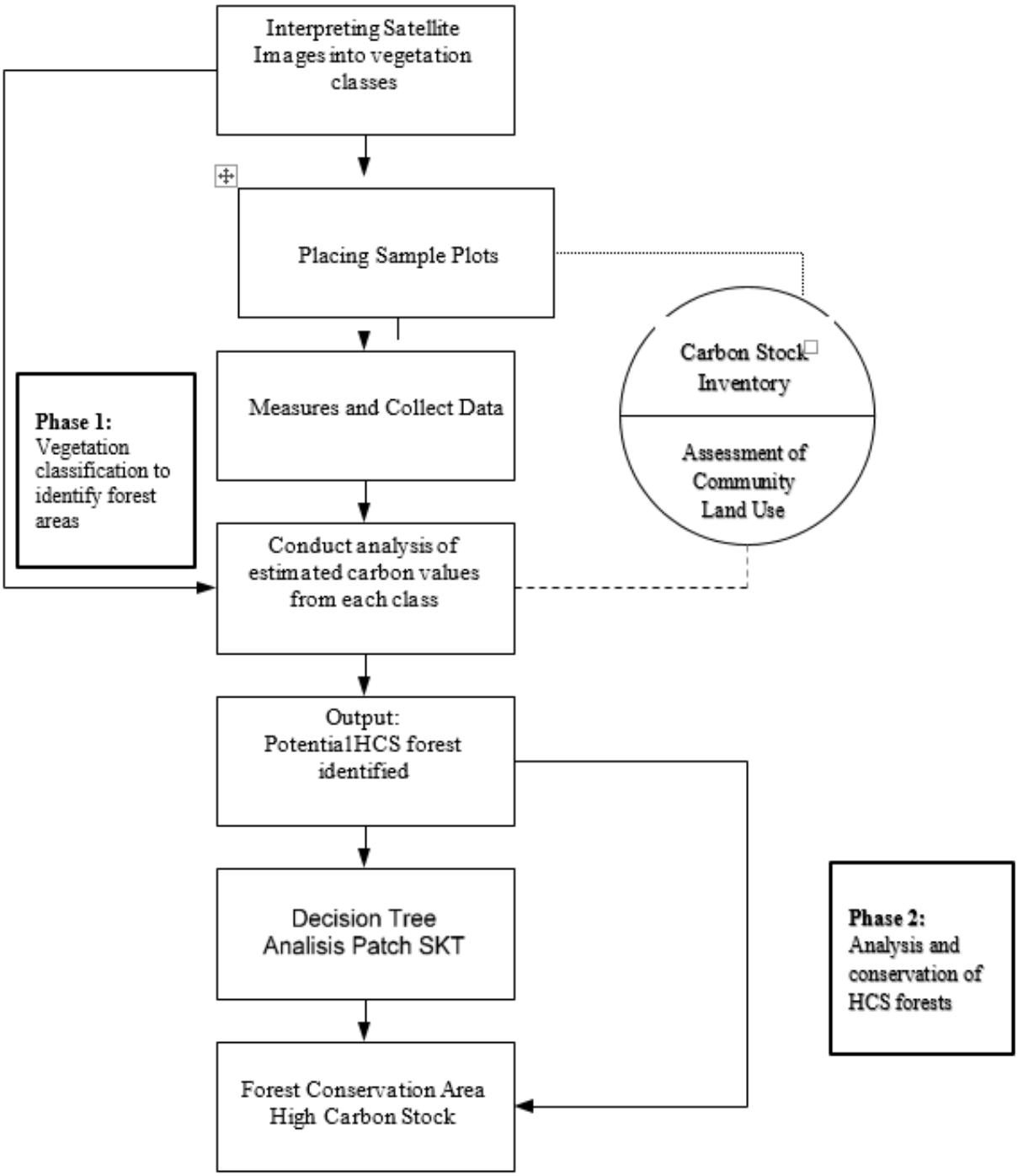


Figure 3. Flowchart Stages of High Carbon Stock Assessment

3. Summary of assessment Findings

3.1 Social Environtment Impact Assessment (AMDAL/ SEIA)

Based on the results of Environmental Impact Analysis on some plans for the construction of PT Galempa Sejahtera Bersama's Oil Palm Plantations and Mill which include the pre-construction, construction and operation phases, it is known that they will cause important positive and negative impacts both directly and indirectly on environmental components. Estimates of important impacts that will occur will be carried out by analyzing the interaction between plantation development activities with the environment according to the stages.

The positive impacts that will occur include increasing people's income, increasing regional income, and increasing company income. In addition, it also affects the absorption of workers. While the negative impacts that have the potential to emerge on the impact of the components of the physical-chemical, biological, and social, economic and cultural environment include:

a. Decreasing ambient air quality

b. Increased noise

c. Decrease in soil fertility

d. Increased erosion and sedimentation

e. Decrease in groundwater and river quality

f. Decreasing diversity of flora & fauna

g. Restlessness and negative perceptions in society.

h. Social jealousy due to differences in income differences

i. Damage to traffic jams

j. The threat of drought and fire in the garden

k. Decreasing public health

Important negative impacts from the activities of PT Galempa Sejahtera Bersama's Plantation and Palm Oil Plantation development that will arise need to be suppressed or even eliminated, while important positive impacts need to be optimized. In an effort to anticipate important negative impacts, an environmental management and monitoring program was prepared. The environmental management approach is carried out with a technological, socio-economic and institutional approach. Monitoring activities are carried out to determine the success of environmental management activities carried out and carried out and evaluated periodically.

3.2 *Social Impact Assessment* (SIA)

3.2.1 General Condition of Community

PT Galempa Sejahtera Bersama is administratively located in the Ulu Musi Subdistrict and Sikap Dalam Subdistricts, Empat Lawang District, South Sumatra Province. Administratively, the

PT GSB area is in 9 (nine) village areas in 2 (two) sub-districts, Simpang Perigi Village, Muara Kalangan Village, Batu Lintang Village, Muara Betung Village, and Lubuk Puding Baru Village in Ulu Musi Subdistrict, and Bandar Aji Village, Karang Gede Village, Karang Dapo Lama Village, and Marta Pura Village in Sikap Dalam Subdistrict.

The communities around the PT GSB area are almost all indigenous people called the Empat Lawang community. This community claims to be a Malay family. Community settlements are located on the left and right along the highway that connects Bengkulu and South Sumatra Provinces, namely specifically between Kapahiang (Bengkulu) and Empat Lawang Regencies (South Sumatra). The existence of the oil palm plantation company PT GSB produces a level of social interaction, social relations or partnership or intensity of land use by the village community around the company. The dynamics of change are influenced by people's daily activities such as livelihoods.

From the quantity review, the villages around the PT GSB area as well as UU no 56 / PRP / 1960 fall into the less crowded category (51-250 people / Km2). The population of 9 (nine) villages around the PT GSB area was 11,218 with details of a total population of 5,666 people and women as many as 5,552 people, thus the sex ratio ratio (RJK) was 102.

The types of people's livelihoods tend to be less varied. The main livelihoods of almost all residents around PT GSB are coffee farmers, pepper and candlenut as rice farmers in several villages (especially in the Sikap Dalam Subdistrict area). Since the inclusion of oil palm plantation companies, some people have become employees of oil palm plantation companies.

The education level of the community around PT GSB is classified as low with an average of elementary and junior high school graduates. However, now the community has begun to experience an increased interest in sending their children to a high level. At present the community has no difficulty in being able to access education. In the community around the PT GSB area, each village has an elementary school, while junior and senior high schools are in each sub-district.

The condition of facilities, facilities and health personnel in each study village around the PT GSB area is generally available. Every village has at least 1 unit of Posyandu and Poskesdes. The availability of medical personnel in the villages around the PT GSB area is generally nurses and midwives. Doctors are only available in puskesmas located in the sub-district center.

3.2.2 Social Impact and Management

The presence of PT GSB's oil palm plantations has various internal and external impacts. Various impacts and various potential impacts, both positive and negative values on the external environment (community) and the potential for conflict

Below are alternative strategy and activity of social Impact and its management based on quistionare from several respondent from community around the study area, such as type of activity for living, total income, land owned by community/person, attitude towards new community member, attitude towards PT GSB's activity. Beside information from quistionare, the information also gain by interviewing local government (Kepala Desa, Camat dan Ketua Badan Permusyawaratan Desa) and community/group leader (Tokoh Adat, Kelompok Pemuda and others).

Table 12. Strategically Impact Management Model of PT GSB, Empat Lawang District, South Sumatra Province

No	Component	Alternative Strategy and Activity
1	Estate Management	- Maintaining a balance between planning and implementation of PT. GSB - Establish communication with stakeholders, especially with village leaders who are local sources of labor, especially with regard to social impacts both positive and negative - Implement effective management, leadership, and decision-making mechanisms by building intensive relationships with all workers - Develop procedures for routine tasks and solicit input from workers and lead to basic training - The company prepares systems and mechanisms on forming work unions or other similar mechanisms
2	Human Resources and Recruitment	- The company carries out HR Management and recruitment of workers in accordance with Law No. 13 of 2003 concerning Manpower. - Conducted socialization on the mechanism and requirements for workers recruitment to all communities in every village around PT. GSB. - The company gives opportunities for the community around the plantation to become employees through effective communication with the Village leader. - The company organizes educational / training activities to improve the capacity of workers '/ employees' knowledge, attitudes and skills / skills according to company needs
3	Wage System	- The company is consistent in implementing the wage system following regional wage standards (UMR) and adjusting to local social / economic conditions - The company carries out open communication to the workforce regarding wage systems and standards - The company prepares a standard mechanism for the career path system or employee promotion that is socialized and executed transparently - The company sets the standard mechanism for the provision of welfare benefits and disseminates them to workers
4	CSR	- Develop a CSR mechanism with an integrated, sustainable and open scheme by proportionally considering all surrounding villages - The company plans to conduct community coaching continuously through CSR programs by establishing a kind of open community communication forum to foster local community participation - The company made a special position in the Public Relations and ComDev sections that deal with the company's Social Management in each village - The development priority programs expected by each village are: 1) Construction of clean water facilities. 2) Development and improvement of road access to the estate

		3) Providing scholarships and improving the quality of education (training for teachers and improving education facilities). 4) Development of a program to increase knowledge for school children and the community through out-of-school activities.
5	Environmental maintenance	- The company applies the principles of conservation, specifically the maintenance of water catchment areas and springs that are also needed by rural communities. - Companies need to build water reservoirs at various drought-prone points so that the availability of water for the company can be maintained and can also be used for community agriculture or community consumption needs in the dry season. - The company developed a transparent mechanism for control of environmental maintenance guarantees by involving the participation of local community - The company manages the river border with part of it planted with plants that can provide economic benefits for the community
6	Social and Economic Development	- The company realizes its community development commitment around the plantation by conducting education and training in management of oil palm plantations and agriculture and other productive businesses in accordance with the conditions of human and natural resources owned by the community. - Designing an integrated community development mechanism based on local resources and community needs - Planning activities to increase the value added of coffee plantations, vegetables and candlenut which are the main livelihoods of the community
7	Smallholder Development	- The company coordinates with the BPN and related agencies regarding spatial planning for the development and development of plasma plantations. - The company approached the community to formulate a partnership scheme through the pattern of developing plasma plantations immediately - The company carried out socialization to the surrounding community to overcome the confusion in understanding and perception of the community about the realization of the partnership scheme through the pattern of plasma plantation development - The company developed a plasma implementation plan in a participatory manner involving all relevant stakeholders, especially in coordination with the Village Leaders - The company immediately realized the results of the plasma plantations in the form of the provision of harvested crops even though the amount was small to encourage increased public confidence in the company

Table 13. Potential Conflict and Impact Management Model of PT GSB, Empat Lawang District, South Sumatra Province

No	Overview of Potential Conflicts	Activity Alternatif	Parties Involved	Goal	Time line
1.	The condition of the highway that will be traversed by the company's operational vehicles bordering directly with community settlements is predicted to cause inconvenience in the form of noise and potential health problems from dust in the dry season.	- Plan the provision of water hydrants to flush the road during the dry season so that it does not cause dust - Arrangement the mobilization of the company's vehicles. - Carry out medical examinations and assistance to the community.	Company, community, local government, public offices, health offices, community health centers.	- Noise level will be reduced - There will be community participation in dealing with dust - Will reduce the clouds of dust along the road -Preventing respiratory illnesses suffered	- Conducted all the time to carry out monitoring of the dust and impacts that are caused

				by the community	
2	Damage to road infrastructure built by the government, while the road infrastructure is used jointly by the community and companies	¯ Monitor road conditions ¯ Prepare the system and mechanism of road maintenance and repair ¯ Making agreements with local and village governments in the use of roads.	Company, Public Works Office, District, Sub District and Village Government	-There is agreement in the joint use of the road ¯ The conditions of road pre-construction are always good because there is no damage	Conducted all the time to monitor road conditions
3	The availability of clean water for people's drinking consumption is increasingly difficult to obtain.	¯ The company immediately makes a water governance plan that is integrated with the water needs of the village community. ¯ The company cooperated with the Forestry and Plantation Agency of the Four Lawang Regency regarding community water management plans ¯ Monitor river water quality at the beginning and end of the river flow at the location permit limit.	Companny, Village goverment, District BPLHD and District Irrigation Service / Public Works Irrigation	¯ Water is available throughout the year for drinking consumption needs ¯ Sufficient water is available for palm oil plants. .	Conducted at regular intervals (3 months) to monitor river and ground water conditions.
4	Recruitment of workers who are not well socialized to the whole community in the village and the company's commitment to recruit workers in accordance with the level of education and ability as well as the tests carried out as well as the local community feel competed with the quantity and quality of work with employees from outside the area will cause turmoil in the community .	- The company conducts socialization about the requirements to become an employee. - The company informs the opening of job vacancies to the village government and subsequently ensures that the information reaches the community. - The company follows up on the suitability of job applicants with education and ability standards. - The company proactively develops education/training activities to increase the capacity of community knowledge and skills. - Education/training activities are targeted as part of CSR schemes that are openly communicated with the community.	Companies, Manpower Office, Village Government	¯ The community is aware of the requirements for working for the company. ¯ Opening information received by the community. ¯ There are more employees from the local community compared to employees from outside the area. ¯ Community knowledge and skills capacity increases. - Communities get wider opportunities to work in companies.	Following the needs of the workforce and managed in a sustainable way.
5	The unclear plasma mechanism and management will trigger conflicts between the community and the	- The company communicates with the Agriculture Service / Plantation Service	Companies, Agriculture/ Forestry Services, sub-	¯ Communities can get certainty about the	Priority for immediate implementation and

	company to prevent the community from giving the company land.	regarding the plasma management mechanism in accordance with government regulations - Conduct ongoing training and coaching for the administrators of plasma cooperatives - The company conducts socialization to the community regarding all matters relating to plasma plantations in the presence of relevant stakeholders.	district government, village government, plasma cooperatives and communities	mechanism of land acquisition and plasma realization according to the rules - The company obtained land certainty to be cultivated in an oil palm plantation.	management on an ongoing basis

3.2.3 FPIC Process

PT GSB has carried out socialization to the community both formally and informally. Formally through a meeting forum between the management of PT GSB and the Government both at the district, sub-district and village levels. Informal socialization is carried out by visit the community's homes. The company also recruited local people as public relations from each village.

Another thing that was presented was the plan to develop oil palm plantations, partnership mechanisms, land requirements and agree on the value of compensation for land on community land. People who will receive compensation are given compensation for benefits and risks and implementation procedures if their land is to be used as oil palm plantations to avoid potential conflicts in the future.

Land Realease is carried out directly between interested parties through buying and selling rights or the release of rights carried out by making a sale and purchase deed before PPAT / notary or rights release deed before the head of the land office with agreed consensus losses. Land acquisition refers to the Pergub South Sumatra no. 25 tahun 2009 concerning guidelines for the rate of compensation for land use and planted land acquisition, the above buildings due to exploration, exploration of BUMN, BUMD and other private companies. Until August 2018, the additional area of renewal of PT GSB which has been replaced is 440.87 hectares

3.3 High Conservation Value Assessment (HCV)

3.3.1 National and or regional context

3.3.1.1 National context

Key area of biodiversity is a nationally identified area that has global significance. Several international organizations have identified key areas for biodiversity with their respective criteria. Several key areas of internationally recognized biodiversity around the Study area include:

- **Heritage area**, in Sumatra, there are three (3) national parks including UNESCO Tropical Rainforest Heritage of Sumatera (TRHS), classified under the World Heritage List in Danger. The three conservation areas are Gunung Leuser National Park (TNGL) in Nangroe Aceh

Darussalam and North Sumatera Provinces (± 905,5 kilometers to the northwest), Kerinci Seblat National Park (TNKS) in Jambi, West Sumatera, Bengkulu and South Sumatera (± 35.0 kilometers to the northwest) and South Bukit Barisan National Park (TNBBS) in Lampung, South Sumatra and Bengkulu provinces (± 105.5 kilometers to the southeast).

- **Ramsar sites;** In Sumatera, there are two (2) Ramsar Sites namely Berbak National Park in Muaro Jambi and Tanjung Jabung Timur, Jambi Province (± 285.0 kilometers to the southeast) and Sembilang National Park in Musi Banyuasin Regency, South Sumatera Province (± 241.0 kilometers to east).
- ***Endemic Bird Area*** **(EBA)**; the nearest EBA is located in the west of the replacement area of PT GSB and is ± 4.19 kilometers away.
- ***Important Bird Area*** **(IBA);** In additional area of replacement of PT GSB owns or is within the scope of the IBA; however, the land cover conditions have been in the form of mixed plantation, dryland farming, dry land agriculture, and oil palm plantation, so it cannot function optimally as an important bird area.
- **Ecoregion**; in the vicinity of additional area of replacement of PT GSB, there are four (4) types of ecoregion, the structural mountains of Bukit Barisan Line, structural hills of Bukit Barisan Path, structural plain of Bukit Barisan Line, and volcanic hills of Bukit Barisan Line.
- **Distribution of Sumatran Tiger**; Sumatran tiger distribution area around the nearest additional area of replacement of PT GSB is located in the southwest, about 5.19 kilometers from the additional area of the replacement.
- **Distribution of Elephant**; Elephant distribution area around the nearest additional area of replacement of PT GSB is located in the east, that is approximately 63.54 kilometers from the additional area of replacement.

From the above description shows that in the additional area of replacement of PT GSB was not found protected forests or conservation areas; no species were found to be of global concern, namely Sumatran Tigers and Elephant; no wildlife migration corridor found in the landscape; and does not have or be in the IBA and / or EBA; however, around the additional area of replacement of PT GSB was found the existence of protected forests, conservation areas, EBA, and IBA. Related to that, the additional area of replacement of PT GSB in national contexts does not provide an important supporting function for protected forests and / or adjacent conservation areas. However, with the identification of HCVs in additional areas of replacement of PT GSB and its management and monitoring actions are expected to contribute to the conservation of biodiversity, environmental services and socio- cultural values of the community in Empat Lawang Regency, South Sumatera Province in particularly and in the Republic of Indonesia in general.

3.3.1.2 Regional context

Additional areas of replacement PT GSB is located in Sumatra Province, Indonesia. Indonesia is one of the countries included in Southeast Asia. Broadly speaking, the landscape of Southeast Asia consists of two kinds of landscape, lands and waters. Based on the location of latitude and physical condition, Southeast Asia has a tropical sea monsoon with nature that is always wet and warm. The climate in Southeast Asia is influenced by the monsoon that every half year turns the opposite direction, resulting in two seasons, the rainy and dry seasons. The dry season occurs in April-October.

Plants (flora) in Indonesia are part of Indo-Malaya plant geography. Flora Indo-Malaya includes plants that live in India, Vietnam, Thailand, Malaysia, Indonesia, and the Philippines. Flora grown in Malaysia, Indonesia, and the Philippines is often referred to as the flora of *Malesiana*. Forests in the Malesiana flora area have approximately 248,000 species of high plants, dominated by trees from the Dipterocarpaceae family, which are trees that produce winged seeds. Dipterocarpaceae is the highest plant and forms a forest canopy. Plants belonging to the Dipterocarpaceae family such as *Keruing* (*Dipterocarpus sp*), *Meranti* (*Shorea sp*), *Garu* (Gonystylus bancanus), and *kapur* (*Drybalanops aromatica*). The forest in Indonesia is a biome of tropical rain forest or wet forest, characterized by a tight canopy and many liana plants (climbing plants), such as rattan. Typical Indonesian plants such as *durian* (*Durio zibetinus*), Mango (*Mangifera indica*), and *Sukun* (*Artocarpus sp*) in Indonesia are spread among others in Sumatra. In Sumatra, there are several endemic plants, among others: Raflesia (*Rafflesia sp*), Corpse Flower (*Amorphophallus titanum*), and *Cempaka Harum* (*Magnolia champaca*).

Seen from its zoogeography, the fauna of the Sumatran region includes the oriental type (Western Indonesia Region), where typical wildlife are Asian elephants (*Elephas maximus*), tigers (*Panthera tigris*) and Malay Tapir (*Tapirus indicus*). In relations with the above description shows that the island of Sumatra in the regional context is one of the most important locations for the conservation of endemic flora and fauna of endemic islands of Sumatra, Malesiana flora, and fauna that belong to oriental type (Asian elephant, Tiger, and Malay Tapir). The preservation of flora and fauna on the island of Sumatra will affect the sustainability of flora fauna in Southeast Asia.

3.3.2 Landscape context

3.3.2.1 Land cover

Based on Landsat 8 satellite imagery analysis results 2016, land cover in the landscape of the study are four main land cover types: (1) dryland forest, (2) dryland farming, (3) rice fields, and (4) shrubs. Meanwhile, land cover within the additional area of replacement of PT GSB can be

divided into eight (8) types, namely secondary dryland forest, shrubs, mixed plantation, oil palm plantation, dryland farming, rice field, bare land, and water body, where the dominant land cover in the study area is mixed garden. Around the additional area of replacement of PT GSB contains primary dryland forest and secondary dryland forest in the north (Protected Forest of Bukit Balai Rejang) and in the south (Protected Forest of Bukit Sanggul). Inside additional areas of replacement of PT GSB was found the existence of forested area of 1.26 hectares, while the forested area around the study area is located not directly adjacent to the additional area of replacement. Therefore, in the study landscape there is no forest connectivity.

3.3.2.2 Spatial planning at nasional

Based on the map of Forest and Water Areas of South Sumatra Province Scale 1: 250,000 (Ministry of Forestry Decree Number: 866 / Menhut-II / 2014, September 29, 2014), the additional area of replacement of PT GSB including Other Use Areas (APL); according to the Spatial Plan Pattern of Empat Lawang Regency Year 2011 - 2012, additional area of replacement of PT GSB includes Fault Prone Areas, Urban Settlements, Plantations, and Holticulture Agriculture; whereas according to Indicative Maps Delays on Permit for New Utilization of Forests, Use of Forest Areas and Changes of Allocation of Forest Areas and Other Use Areas Revision X of 2016 includes Other Areas of Use.

3.3.2.3 Land history

Additional area of replacement of PT GSB has not yet conducted operational activities in the field. Regions used as additional area of replacement of PT GSB was originally a secondary forest, forest / pecan garden, coffee plantation, oil palm plantation, mixed garden, fields, shrubs, rice fields and bare fields, with the type of commodity to be developed is oil palm. Additional area of replacement of PT GSB has suffered serious damage caused by illegal logging and encroachment activities. Based on the map of Forest and Water Areas of South Sumatra Province Scale 1: 250,000 (Ministry of Forestry Decree Number: 76/Kpts- II/2001, March 15, 2001), the additional area of replacement of PT GSB including Other Use Areas (APL), so that the area has been managed by the community.

3.3.2.4 Physical environment

Based on watershed boundaries, additional area of replacement of PT GSB are in the Musi basin. With an area of 1,308 hectares, the study area covered 0.02% of the area of the Musi basin (8,701,741 hectares). This area is crossed by the Latak River, Latak Kecil River, Betung River, Betung Kecil River, Keruh River and Musi River which flow into Musi River.

The study area is included in type A according to the Schmidth-Ferguson climate classification. In the period of 10 years (2006-2015), rainfall and the number of annual rainy days in this region fluctuate, annual rainfall ranges from 1,651 to 4,033 milimeters and the number of annual rainy days ranges from 111 to 202 days, with average annual rainfall is about 2,896 milimeters and the average annual rainfall amounts to about 155 days. The annual temperature in this region also fluctuates, the annual maximum temperature in the additional area of replacement of PT GSB for 10 years ranges from 32.4˚ to 34.6˚ celcius, the minimum annual temperature ranges from 22.3° to 24.4° celcius, and the average annual temperature range from 26.9° 27.7°celcius; while the maximum annual average temperature is around 33.3° celcius, a minimum of about 23.5° celcius and an average of about 27.3° celcius.

Additional area of replacement of PT GSB is located at an altitude of places ranging from 264 to 360 meters above sea level. The dominant slope rate in this region is 0 to 15% and some have slopes of land varying from 15% to 40%. Based on the calculation of Erosion Hazard (TBE), in this area, there are areas that have the potential of erosion hazard that is ranged from heavy to very heavy.

Physiographic forms of land in the study area of most or 93.047% of the landform of small valley basins between the hills with Bukit Masung land system (BMS); while the

remainder is a landform of irregular mountain backs over volcanic rocks with Bukit Balang (BBG) land system, volcanic alluvial plain landform sloping slopes with Kuranji (KNJ) land system, and a hilly ground lava base landform with Barong Tongkok land system (BTK). By type of soil, most or 58.17% is dominated by the association of Dystrudepts; Eutrudepts (Latosol), while the remaining 36.27% are associations of Endoaquepts, Endoaquents (Gleisol), and 5.56% are associates of Hapludults; Dystrudepts (Podsolic). Latosol soil is formed by weathering of the parent material of volcanic tuff rocks. In general, this type of soil is formed in wet climates with rainfall between 2,000 to 7,000 millimeters per year. This soil has resistance to erosion and has moderate to high productivity.

3.3.2.5 Biodiversity

Around additional regeneration area of PT GSB, there were Bukit Kaba Nature-based Tourism Park (NTP), Bukit Balai Renjang Protection Forest (PF), Gunung Dempo (PF) and Bukit Sanggul PF. Flora species found in those areas included: Quercus (*Quercus lineata*), Santiria (*Santiria sp*.), Pandanus (*Pandannus sp*), Stinking corpse lily (*Rafflesia arnoldii)*, Corpse flower (*Amorphophallus beccarii*), and Titan arum (*A. titanum*). *A. titanium* and *R. arnoldii* were protected by the Governmental Regulation No. 7 year 1999.

Fauna species found in Bukit Kaba NTP, Bukit Balai Renjang PF, Gunung Dempo (PF) and Bukit Sanggul PF included: (1) mammals, such as: Sumatran elephant (*Elephas maximus sumatrensis*), Asiatic golden cat (*Felis termmincki*), Sumatran serow (*Capricornis sumatrensis*), Siamang (*Sympalagus syndactylus*), Yellow-handed mitered langur (*Presbytis melalophos melalophos*), Nicobar crab-eating macaque (*Macaca fascicularis*), Small-toothed palm civet (*Arctogalidia trivirgata*), Southern pig-tailed macaque (*Macaca nemestrina*), Southern red muntjac (*Muntiacus muntjak*), and Mountain treeshrew (*Tupaia montana*), (2) bird, such as: Rhinoceros hornbill sumatranus (*Buceros rhinoceros sumatranus*), White-breasted kingfisher (*Halcyon smyrnensis*), Black-capped kingfisher (*Halcyon pileata*), Grey-faced buzzard (*Butastur indicus*), Black eagle (*Ictinaetus malaiensis*), and Crested serpent- eagle (*Spilornis cheela*) (3) reptiles, such as: Reticulated python (*Python reticulatus*), Green crested lizard (*Bronchocela cristatella*), and Asian common toad (*Bufo melanostictus*). Among the species, there were endemic fauna species that were protected under the Governmental Regulation No. 7 year 1999, which were facing high level of extinction threat in Bukit Kaba NTP, Bukit Balai Renjang PF, Gunung Dempo (PF) and Bukit Sanggul PF.

3.3.2.6 Protected forest and conservation areas

In the additional area of replacement of PT GSB, it is not found protection forest, conservation area, EBA, and IBA; however, it has or is within the scope of the IBA. Around

the additional area of replacement of PT GSB, it was found protected forests, conservation areas, and EBA. The nearest protected forest lies to the west and south, about 1.6 kilometers and most of the land cover is dryland farming. The nearest conservation area lies to the southwest (Bukit Kaba Natural Tourism Park), approximately 15.39 kilometers and the dominant land cover of dryland farming and shrubland. The nearest EBA lies to the southwest, about 4.19 kilometers, and the land cover is dominated by dryland farming. Areas of IBA are present in the study area; land cover conditions are already in the form of dryland agriculture, oil palm plantation and rubber plantation.

Related to that, the additional area of replacement of PT GSB does not provide an important support function for protected forest and biodiversity areas in the landscape and development of oil palm plantations and in additional area of replacement of PT GSB will have no impact on protected forest, conservation area, the EBA and the IBA regions.

3.3.2.7 Ecosystem

In the past (before the land conversion was occurred), the ecosystem found in the additional area of replacement of PT GSB consists of four types, namely (1) mixed dipterocarp forest on basalt, (2) mixed dipterocarp forest on alluvium, and (3) mixed dipterocarpforest on volcanic rock, and (4) sub-montane or montane or cloud forest on other substrates. At the current (after the land conversion was occurred), the ecosystem found in the additional area of replacement of PT GSB consists of one types ie mixed dipterocarp forest on basalt.

3.3.2.8 Social, economic and cultural

Around the additional area of replacement of PT GSB identified as many as nine villages that could potentially be affected by the development project: Villages of Simpang Perigi, Muara Kalangan, Batu Lintang, Muara Betung, Lubuk Puding Baru, Bandar Aji, Karang Gede, Karang Dapo Lama and Martapura. The level of community education around PT GSB is low with average of elementary and junior high school graduates. People's livelihoods around the study area tend to be less varied and almost all residents around the additional replacement of PT GSB main livelihood as coffee farmers, sahang or pepper and candlenut and rice paddy; however, since the presence of oil palm plantation companies, some people have begun to switch livelihoods to employees of oil palm plantation companies. Other community livelihoods are hunting and fishing. Generally, local people rely heavily on river networks located in hilly areas for their water needs, including drinking water and latrines.

Religion adopted by residents in the vicinity of additional area of replacement of PT GSB are majority Islam. People in the villages around the additional area of replacement of PT GSB almost all are Ethnic / Malay Tribe. The Malay ethnic group located in the area is

also known as the Malay Lintang or Tribe Lintang. Tribe Lintang community generally live along the river banks of the Musi River in South Sumatra Province and they live in the city of Batu Lintang in the Musi River. Institutional village and social and religious organizations that exist such as Village Community Resilience Institute (LKMD), Family Fostering Organization (PKK), Youth Organization (Karangtaruna), sports clubs, majlis taklim and teenage mosques. Lintang tribe people speak in Lintang, which is Tribe Lintang is grouped into Malay language family. The Lintang family adheres to the patrilineal system, namely: the adat community that regulates the flow of divisions based on the father's side. Where one of his policies in carrying out heavy duty and related in farming done by man. The Lintang Malay or Lintang tribe meets the needs of their daily lives by focusing on farming in the fields. Although they live by the river, they are more likely to focus their activities by cultivating their fields (farming).

3.3.3 HCV outcomes and justification

Based on the results of the HCV assessment in the additional area of renewal of PT GSB, there were 5 (five) HCV categories, That is HCV 1 category (subcategories: HCV 1.1, HCV 1.2, HCV 1.3, and HCV 1.4), HCV 3 categories, HCV 4 categories (subcategories: HCV 4.1, HCV 4.2, and HCV 3.3), HCV 5 categories and HCV 6 categories, as presented in Table 13.

Table 14. Summary of Findings HCV Assessment in area of additional area of renewal of PT. GSB

HCV	Definition	Present	Potential	Absent
1	Concentrations of biological diversity including endemic species, and rare, threatened or endangered (RTE) species that are significant at global, regional or national levels.			
1.1	Areas that contain or provide biodiversity support function to protection or conservation areas			
1.2	Critically endangered species			
1.3	Areas that contain habitat for viable populations of endangered, restricted range or protected species			
1.4	Areas that contain habitat of temporary use by species or congregations of species			
2	Large landscape-level ecosystems, ecosystem mosaics and Intact Forest Landscapes (IFL) that are significant at global, regional or national levels, and that contain viable populations of the great majority of the naturally occurring species in natural patterns of distribution and abundance.			
2.1	Large natural landscapes with capacity to maintain natural ecological processes and dynamics			
2.2	Areas that contain two or more contiguous ecosystems			
2.3	Areas that contain representative populations of most naturally occurring species			
3	Rare, threatened, or endangered ecosystems, habitats or refugia.			

HCV	Definition	Present	Potential	Absent
4	Basic ecosystem services in critical situations including protection of water catchments and control of erosion of vulnerable soils and slopes.			
4.1	Areas or ecosystems important for the provision of water and prevention of floods for downstream communities			
4.2	Areas important for the prevention of erosion and sedimentation			
4.3	Areas that function as natural barriers to the spread of forest or ground fire			
5	Sites and resources fundamental for satisfying the basic necessities of local communities or indigenous peoples (for example for livelihoods, health, nutrition, water), identified through engagement with these communities or indigenous peoples.			
6	Sites, resources, habitats and landscapes of global or national cultural, archaeological or historical significance, and/or of critical cultural, ecological, economic or religious/sacred importance for the traditional cultures of local communities or indigenous peoples, identified through engagement with these local communities or indigenous peoples			

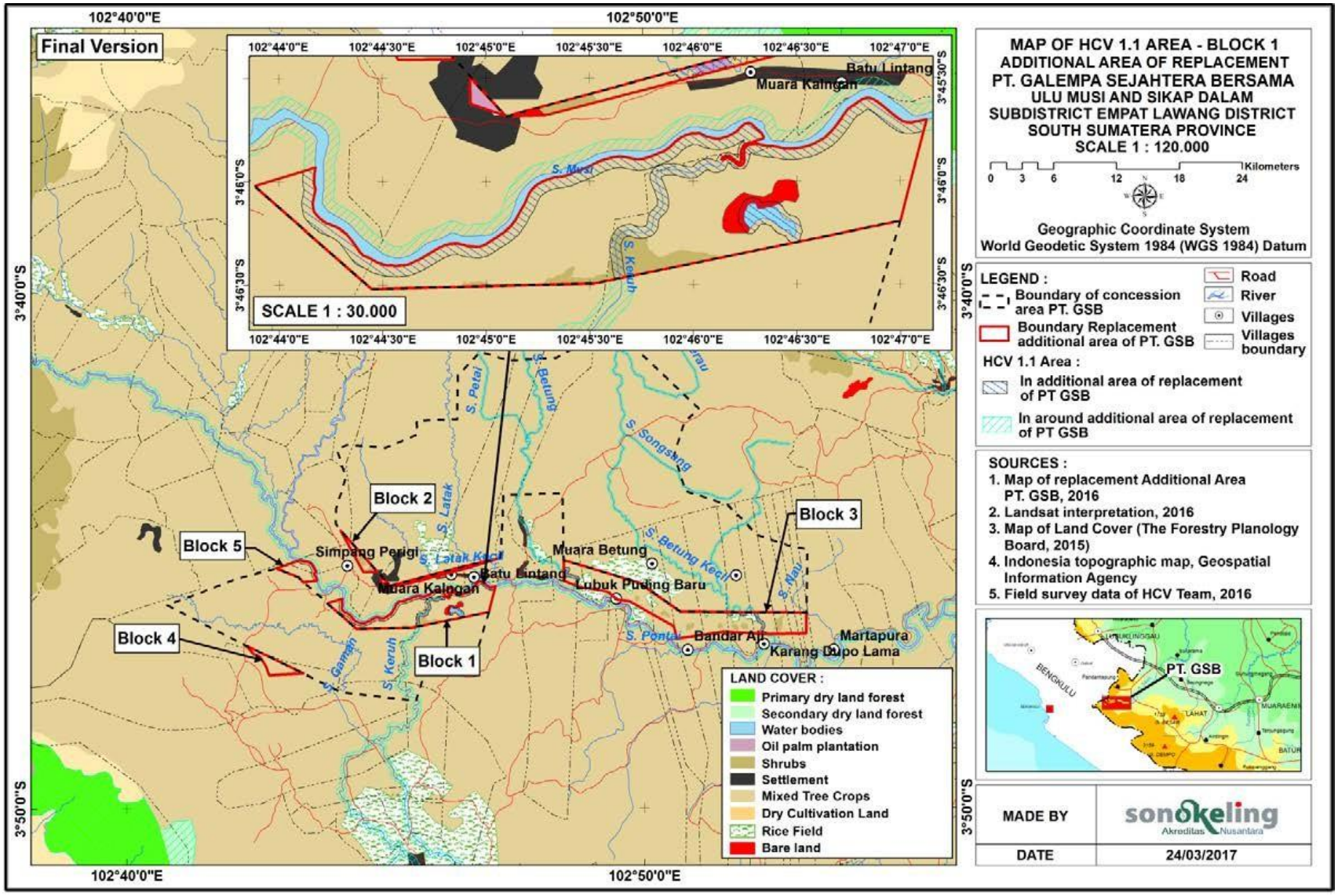
3.3.3.1 HCV 1. Species diversity

3.3.3.1.1 HCV 1.1. Area that have or provide biodiversity support functions for protected and / or conservation areas

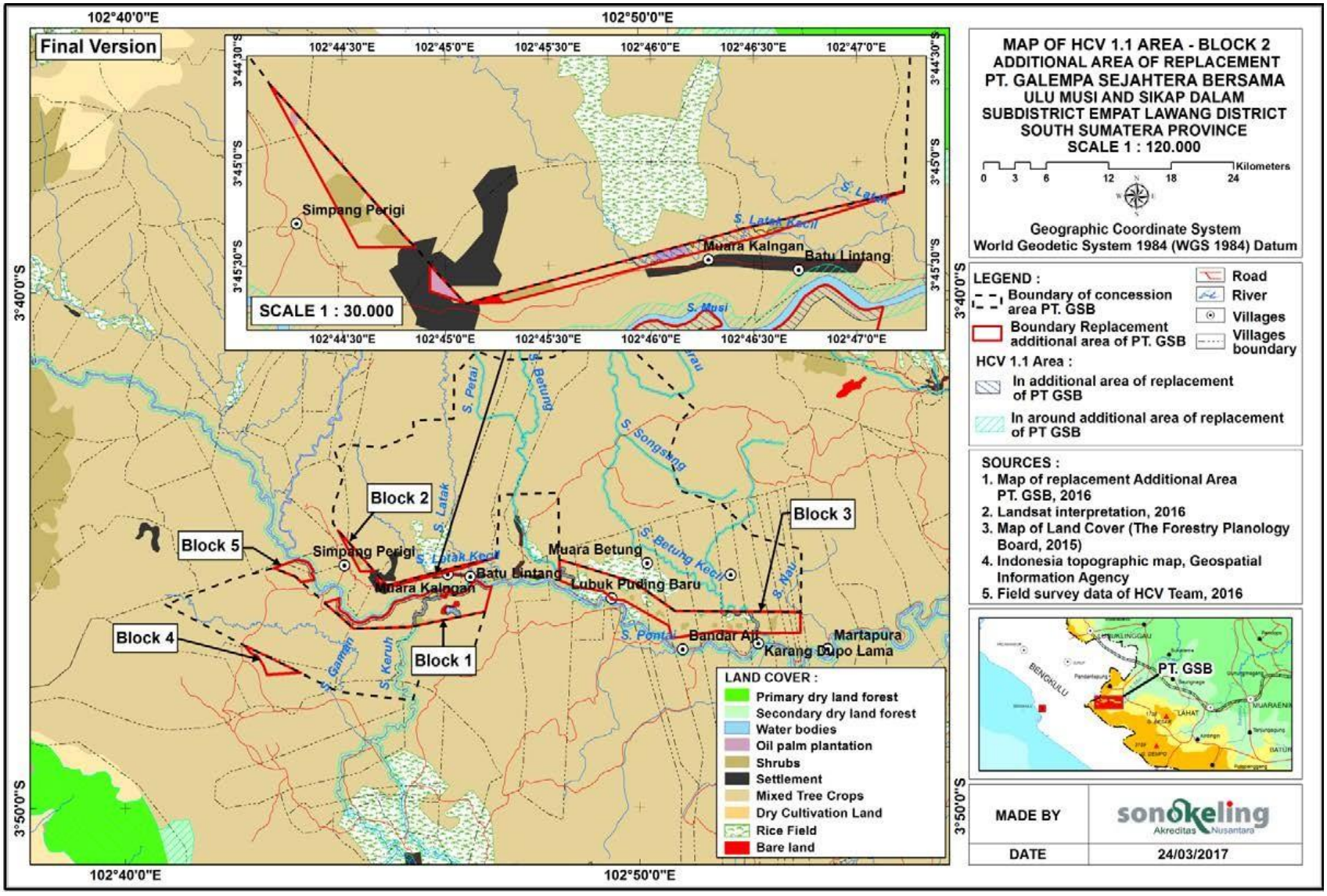
HCV 1.1 is the existence of areas established for the purpose of biodiversity conservation, either within or adjacent to the study area. Both desktop and field HCV assessment activities did not find any protected areas, protection forest or Endemic Bird Area (EBA) that overlapped with or adjacent to the additional regeneration area of PT GSB; however, there was Important Bird Area (IBA) found in the area, and there were protected areas, protection forest, and EBA around the area. The nearest protected area was Bukit Kaba Nature-based Tourism Park (NTP) on 15.39 km distance to the Southwest; the nearest protection forest was Bukit Sanggul PF on 1.60 km distance to the West, and; the nearest EBA was located on 4.19 km distance to the Southwest of the additional regeneration area of PT GSB. Even though the study area hold IBA or located inside IBA coverage, most of the land cover of the IBA in the study area were mixed garden (white leadtree and coffee, white leadtree and black pepper, gliricidia and coffee, or gliricidia and black pepper), dry agricultural land, and oil palm plantation. In the maintenance of coffee and black pepper plants, the white leadtree and gliricidia trees in mixed garden were periodically trimmed. Rubber tree plantations were found in IBA inside study area, however the coverage were

small, the location were dispersed, and the plants were monoculture. Therefore, IBA in the study area could not provide an optimal function of an IBA area.

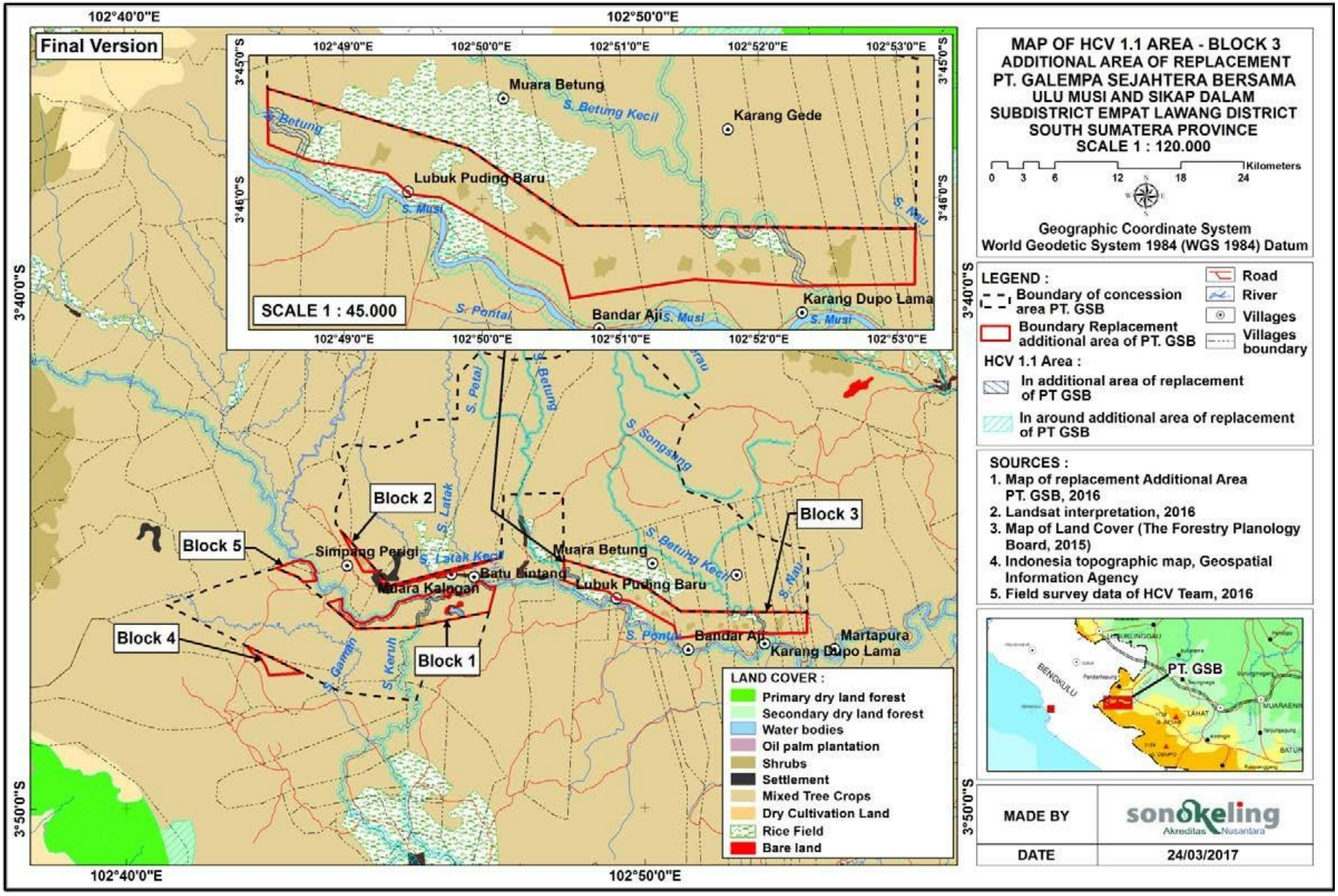
In the additional area of renewal, PT GSB was found to have a river border and the area around Cekdam. Referring to Keputusan Presiden No. 32 tahun 1990, the two areas are local protected areas designed to protect their ecological functions, so that the border of the river and the surrounding area in the additional area of renewal of PT GSB is designated as HCV 1.1 area, namely Musi River, Betung River, Betung Kecil River, Keruh River, Latak River and Latak Kecil River. The HCV 1.1 area in the additional area of renewal of PT GSB is presented on Maps 4 to 7.



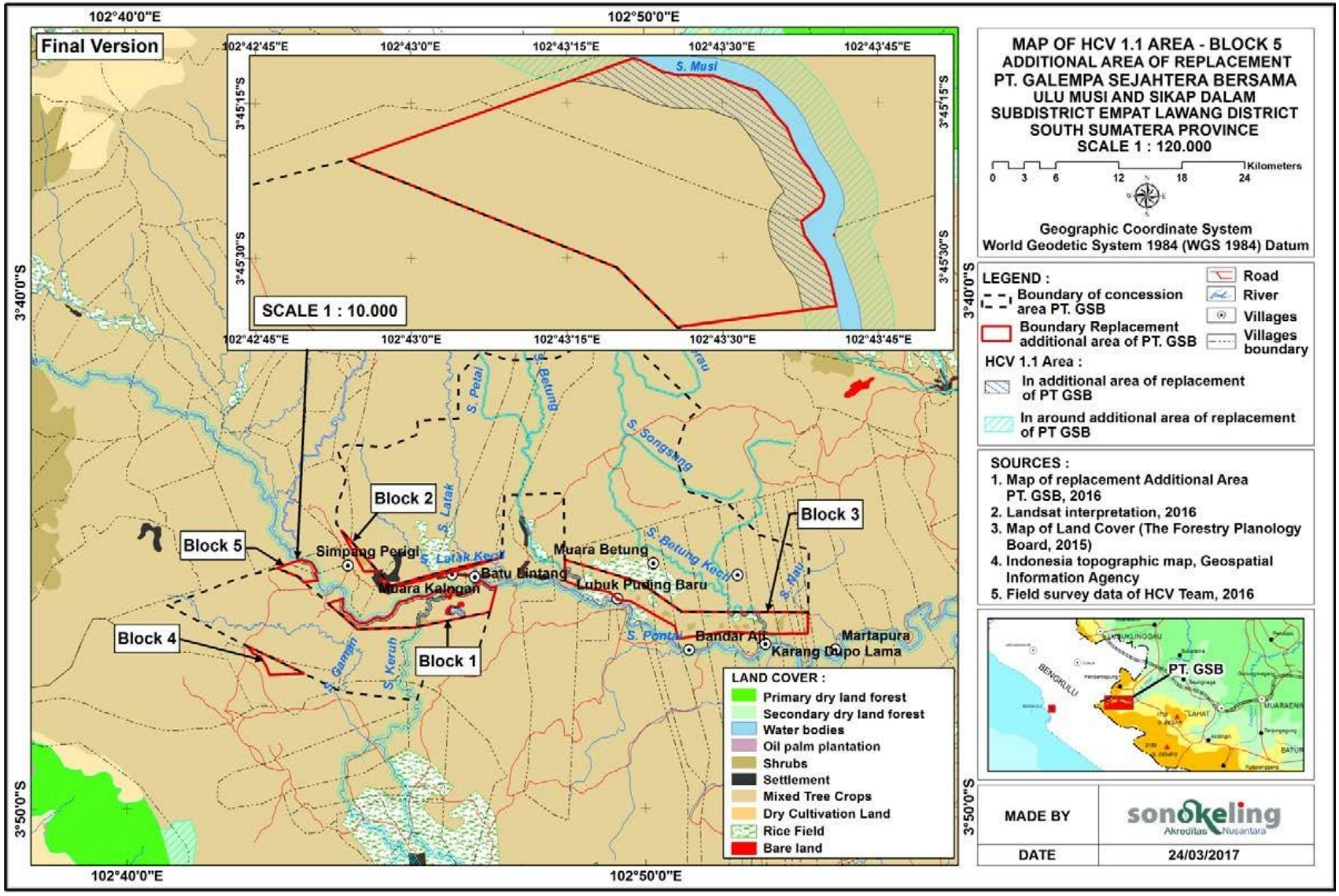
Map 4. Distribution of HCV 1.1 in Block 1 in the additional area of renewal of PT GSB



Map 5. Distribution of HCV 1.1 Block 2 in the additional area of renewal of PT GSB



Map 6. Distribution of HCV 1.1 Block 3 in the additional area of renewal of PT GSB



Map 7. Distribution of HCV 1.1 Block 5 in the additional area of renewal of PT GSB

3.3.3.1.2 HCV 1.2. Endangered species

The presence of HCV 1.2 is characterized by the presence of endangered flora and fauna species (CR / Critically Endangered) based on the IUCN Red List of Critically Endangered Species. Based on the results of field observations, in the additional area of renewal of PT GSB there were no flora and fauna found in the category of endangered species (CR / Critically Endangered) according to IUCN, but based on the results of overlapping between maps of the additional area of renewal of PT GSB with the Pangolin (Manis javaniva) Distribution Map (IUCN, 2017), the study area includes the anteater distribution area. By using the principle of prudence, the pangolin is potentially present in the region. Viewed from its habitat, pangolins like habitats in the form of primary and secondary forests because there are large trees and old age with basins suitable for sleeping and for use as habitat, and lower human activities. In the additional area of renewal of PT GSB, which has the potential to be found pangolin is the S. Betung Kecil Water Infiltration Area with land cover in the form of secondary dryland forest, so that it is designated as HCV 1.2. The HCV 1.2 area in the additional area of renewal of PT GSB is presented on Map 8

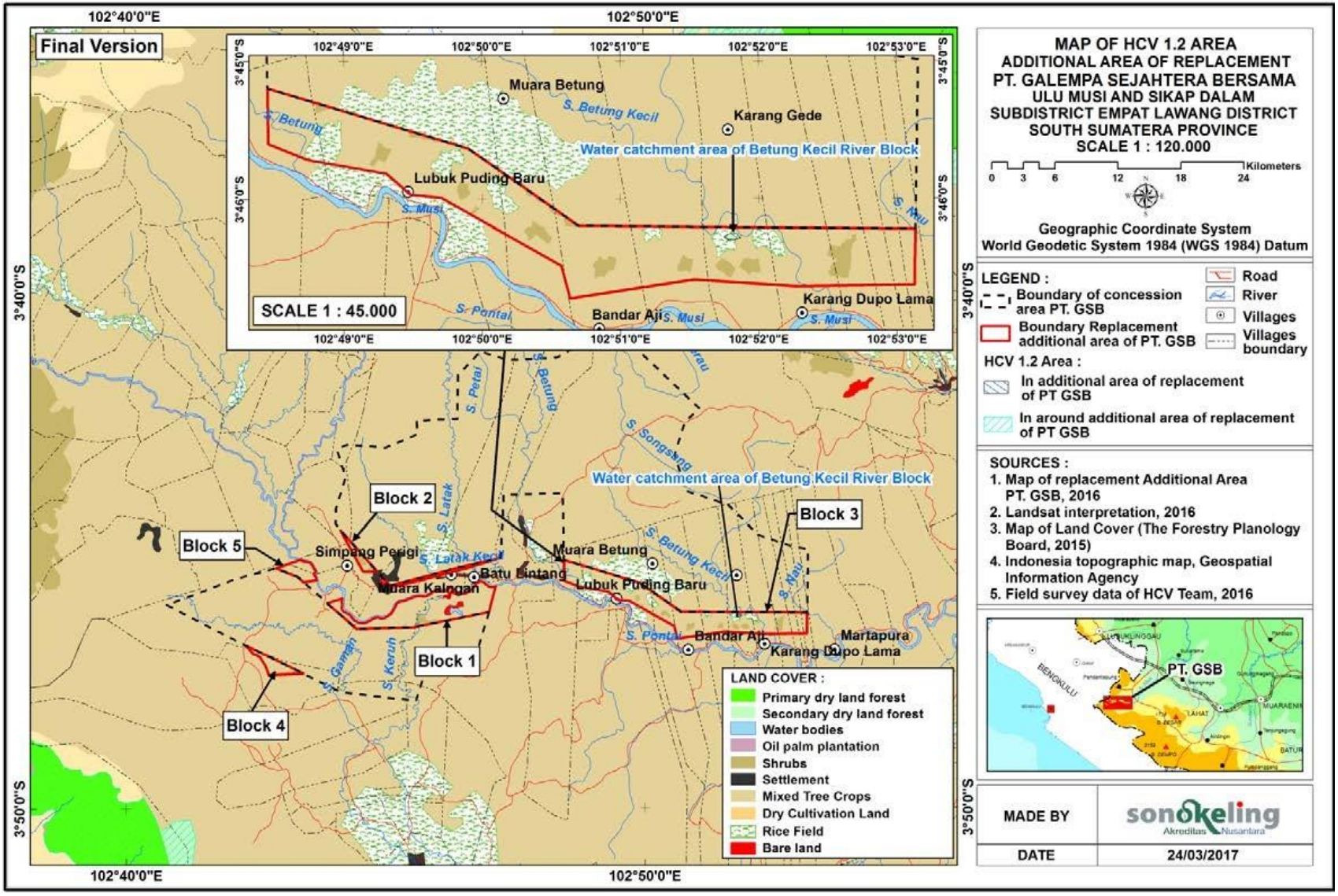
3.3.3.1.3 HCV 1.3 The area which is a habitat for populations of threatened, limited or protected species that are able to survive (viable population)

The presence of HCV 1.3 is characterized by the presence of threatened flora and fauna species, limited (endemic), and / or protected. Species that need to be considered in HCV 1.3 include all species identified in HCV 1.2. Nearly Extinct Species plus other species considered endangered, vulnerable, limited distribution (on an island or part thereof) or protected by the Indonesian Government (protected species). Sumatran endemic mammals found in the additional area of renewal of PT GSB are red / Flatfoot Lutung (Presbytis melalophos). In the additional area of renewal PT GSB found fauna species protected according to PP No. 7 of 1999 as many as 11 types (1 type of mammal and 10 species of birds); and including 10 types of CITES Appendix II List (3 types of plants and 7 species of wildlife). Besides that, as described in HCV1.2, in this area one species of wildlife potentially found in the category of CR / Critically Endangered (critical) according to the IUCN is the Pangolin (Manis javanica). Of the 13 species of wildlife which are endemic (limited distribution), protected, and / or including CITES Appendix II found in the additional area of renewal of PT GSB, 9 of them are found also at the landscape level namely TWA Bukit Kaba, HL Bukit Balai Rejang, HL Gunung Dempo and HL Bukit Sanggul. The nine types in the additional area of renewal of PT GSB were found in Clammy SS, S. Betung Kecil Water Infiltration Area, IBA Region which overlapped with the additional area of renewal of PT GSB and 2 scrub areas in Block 3 in the additional area of renewal of PT GSB, so those areas that have cover in the form of secondary forest or shrubs function to support MVP (Minimum Viable Population) at the landscape level,

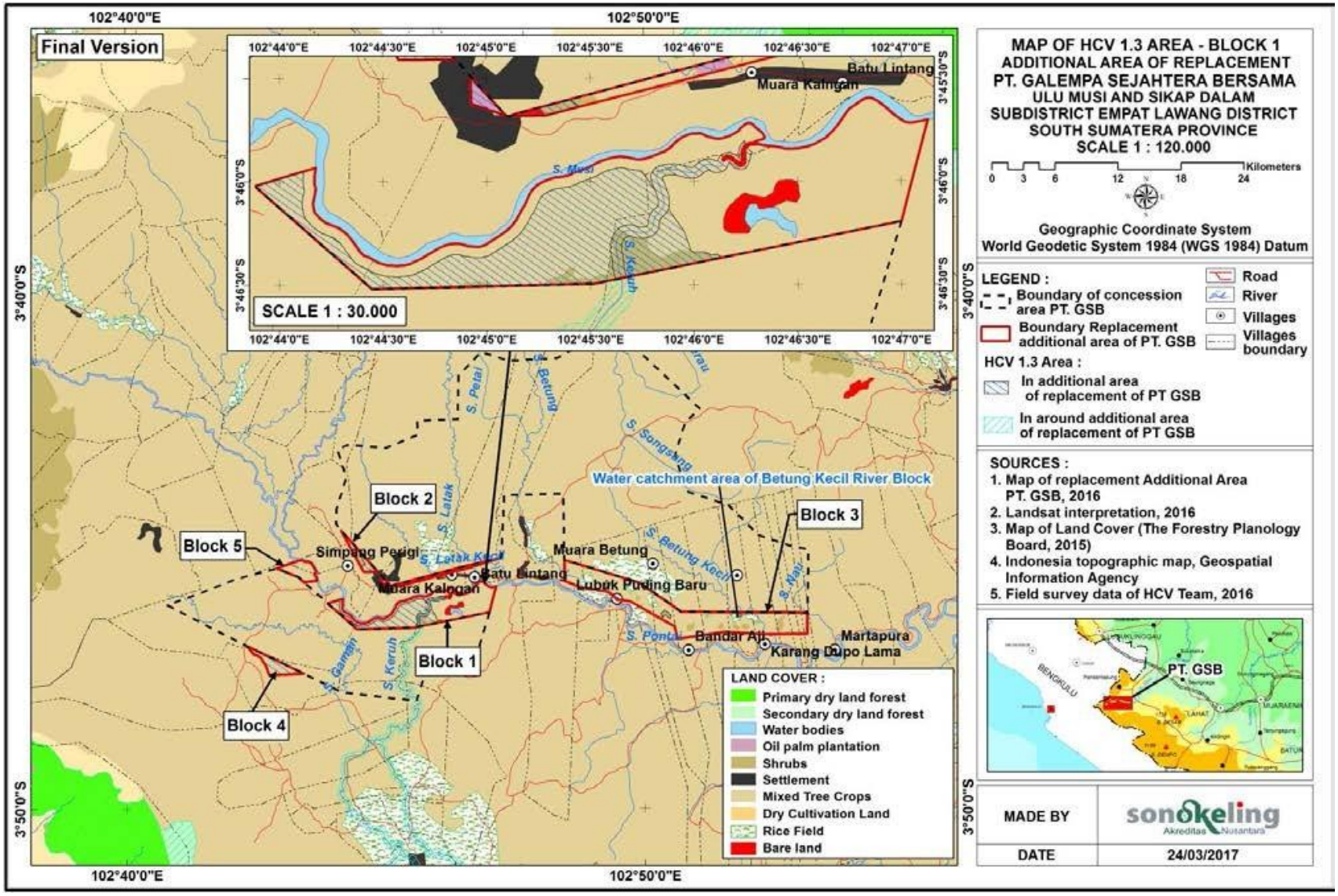
namely as temporary transit or foraging. Therefore in the additional area of renewal of PT GSB HCV 1.3 was found.

Especially for the IBA area which overlaps with the additional area of renewal of PT GSB covering 280.24 ha, with details: an area of 27.23 ha overlaps with SS Musi, an area of 9.85 ha overlaps with SS Keruh, and an area that is not overlapping with other locations covering 243.16 ha is designated as HCV 1.3. Judging from the land cover, the land cover of the IBA area designated as HCV 1.3 can be divided into 3 types, namely mixed gardens (204.54 ha), oil palm plantations (3.73 ha), open land (1.18 ha), and bushes thicket (33.71 ha). Therefore the construction of oil palm plantations in the additional area of renewal of PT GSB will not have an impact on the IBA area with land cover in the form of mixed gardens, oil palm plantations, and open land; but it will have an impact on the IBA region with land cover in the form of shrubs.

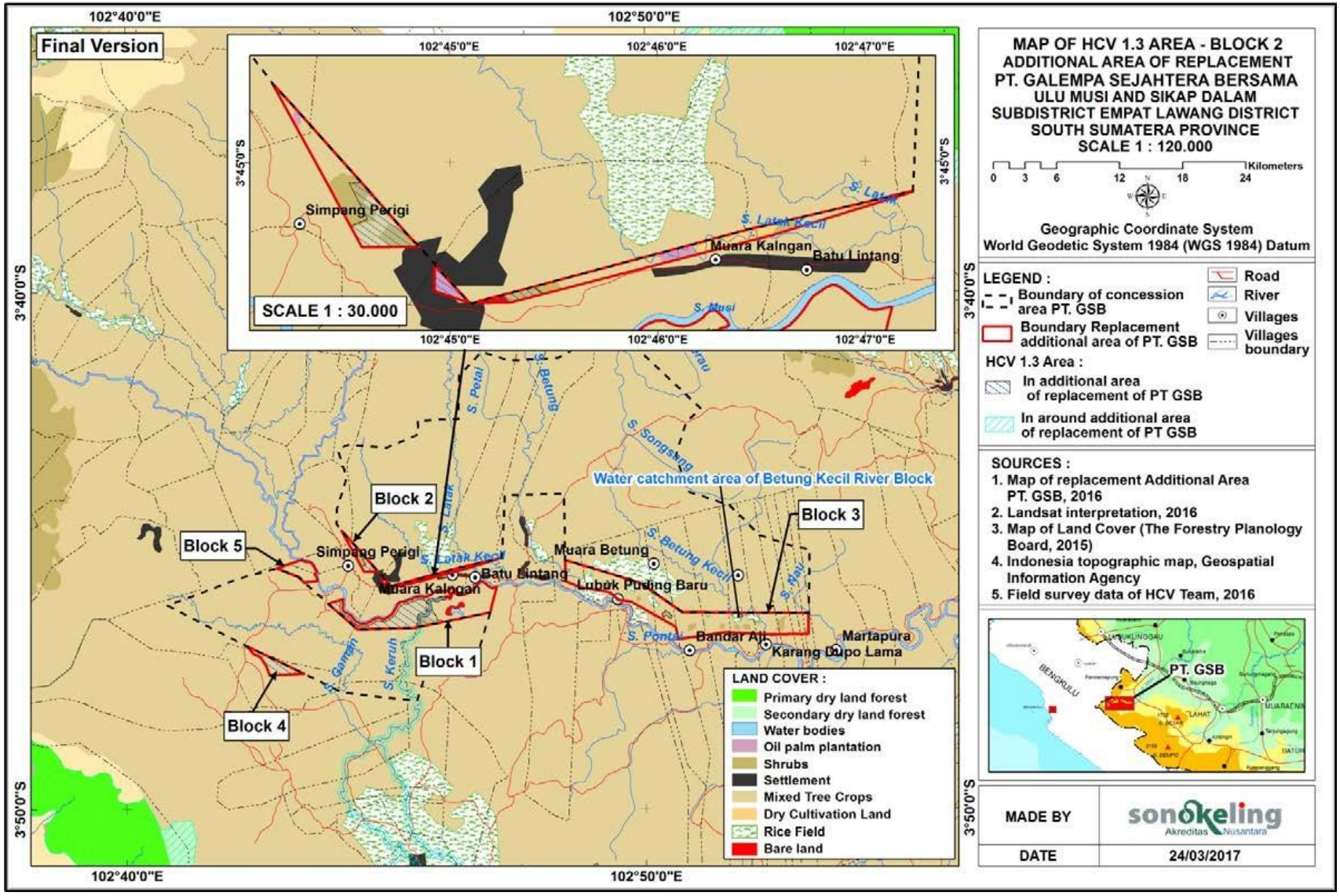
The IBA area which overlaps with the additional area of renewal of PT GSB which is designated as HCV 1.3 and has land cover in the form of mixed gardens, oil palm plantations and open land may be converted into oil palm plantations; while the IBA area with land cover in the form of scrub should not be converted into oil palm plantations. However, efforts of management and monitoring of HCV 1.3 are needed specifically in IBA area which overlaps with the study area. Activity of HCV 1.3 management which is conducted in IBA area which possess shrubs land cover is enrichment planting with species of wild animal feed, so that this could support the efforts to maintain MVP (Minimum Viable Population) of RTE species in the landscape. Monitoring of HCV 1.3 is focused on RTE species. The HCV 1.3 area in the additional area of renewal of PT GSB is presented on Maps 9-12 and management and monitoring of HCV 1.3 species are presented in Maps 13 & 14.



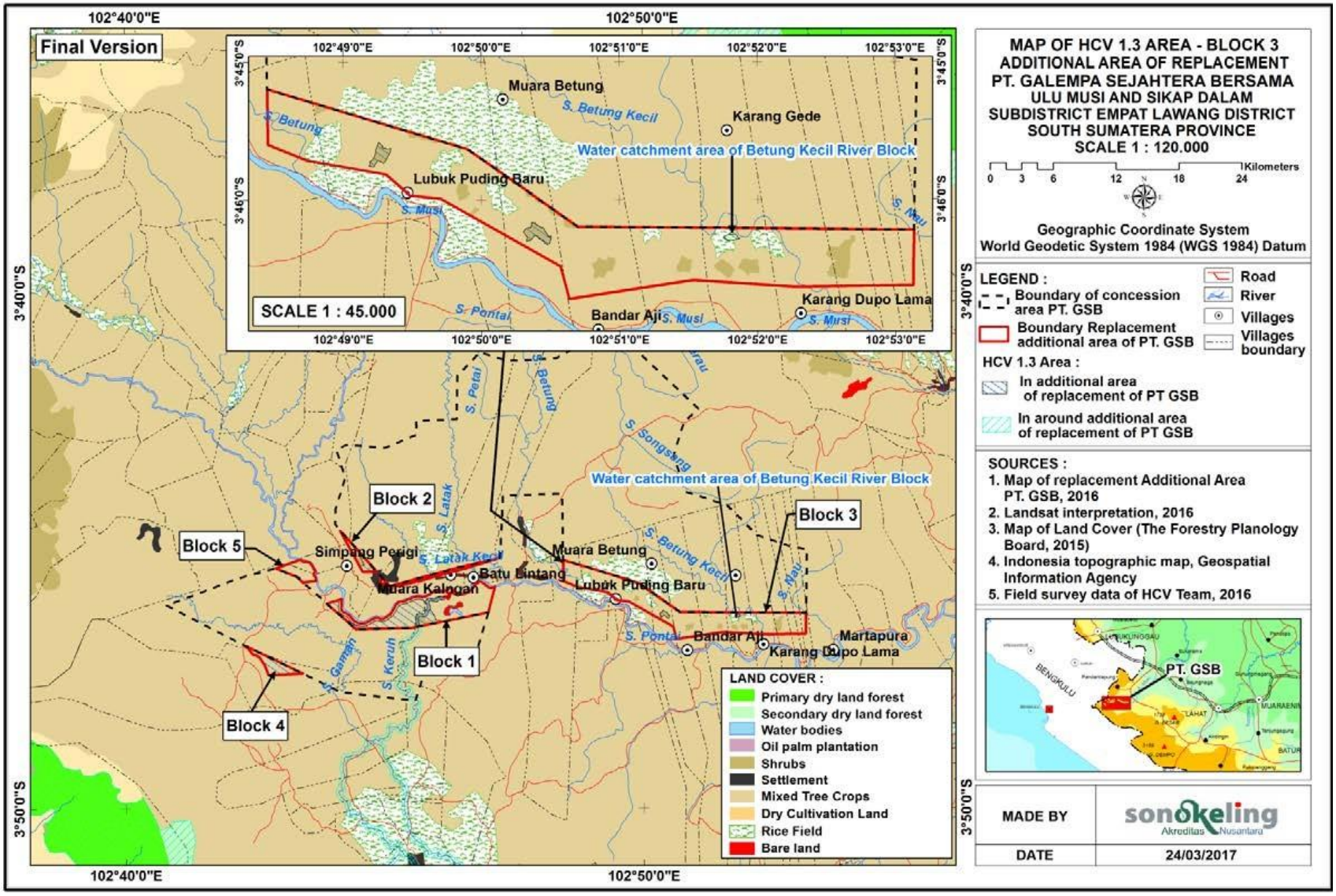
Map 8. Distribution of HCV 1.2 in the additional area of renewal of PT GSB



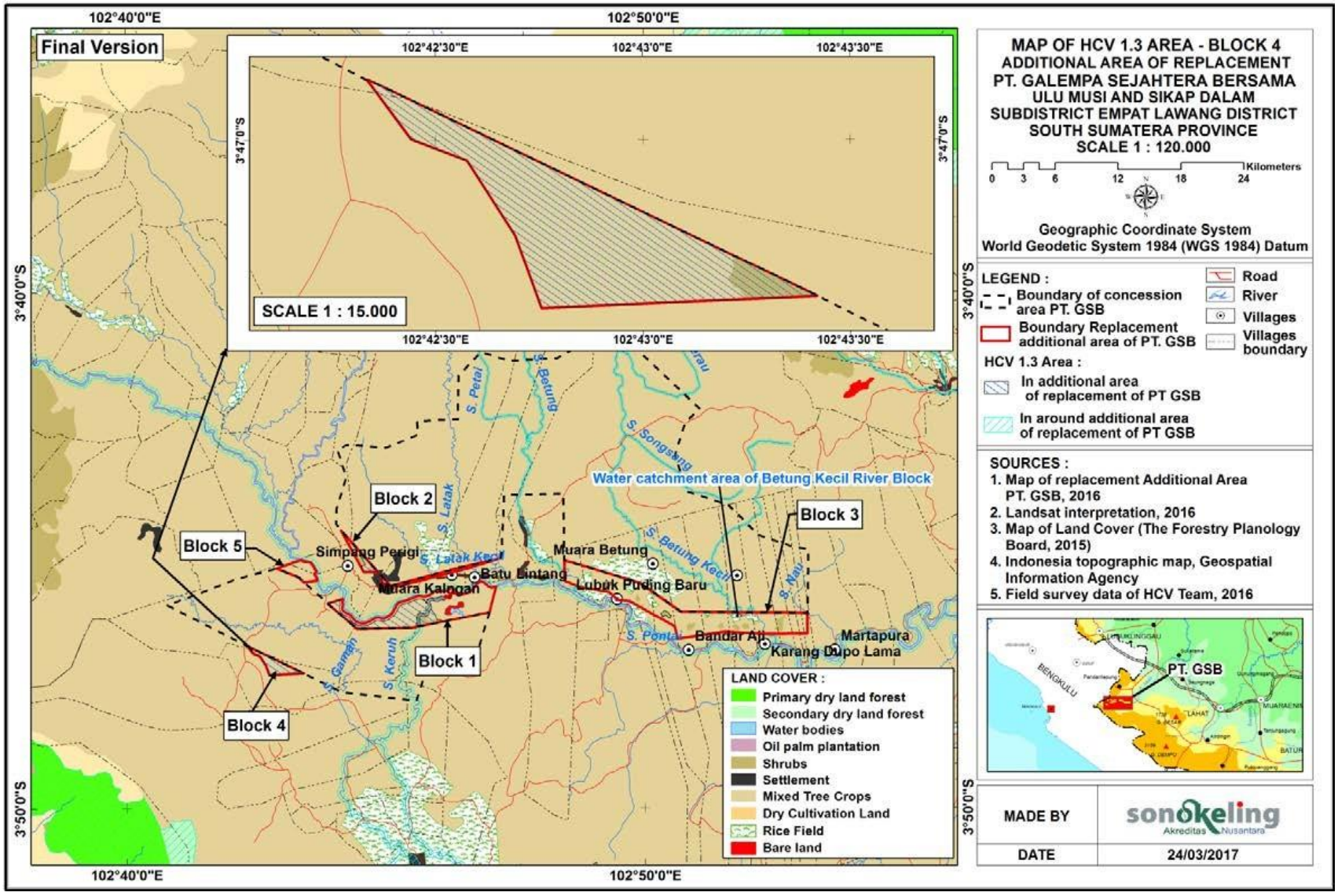
Map 9. Distribution of HCV 1.3 Block 1 in the additional area of renewal of PT. GSB



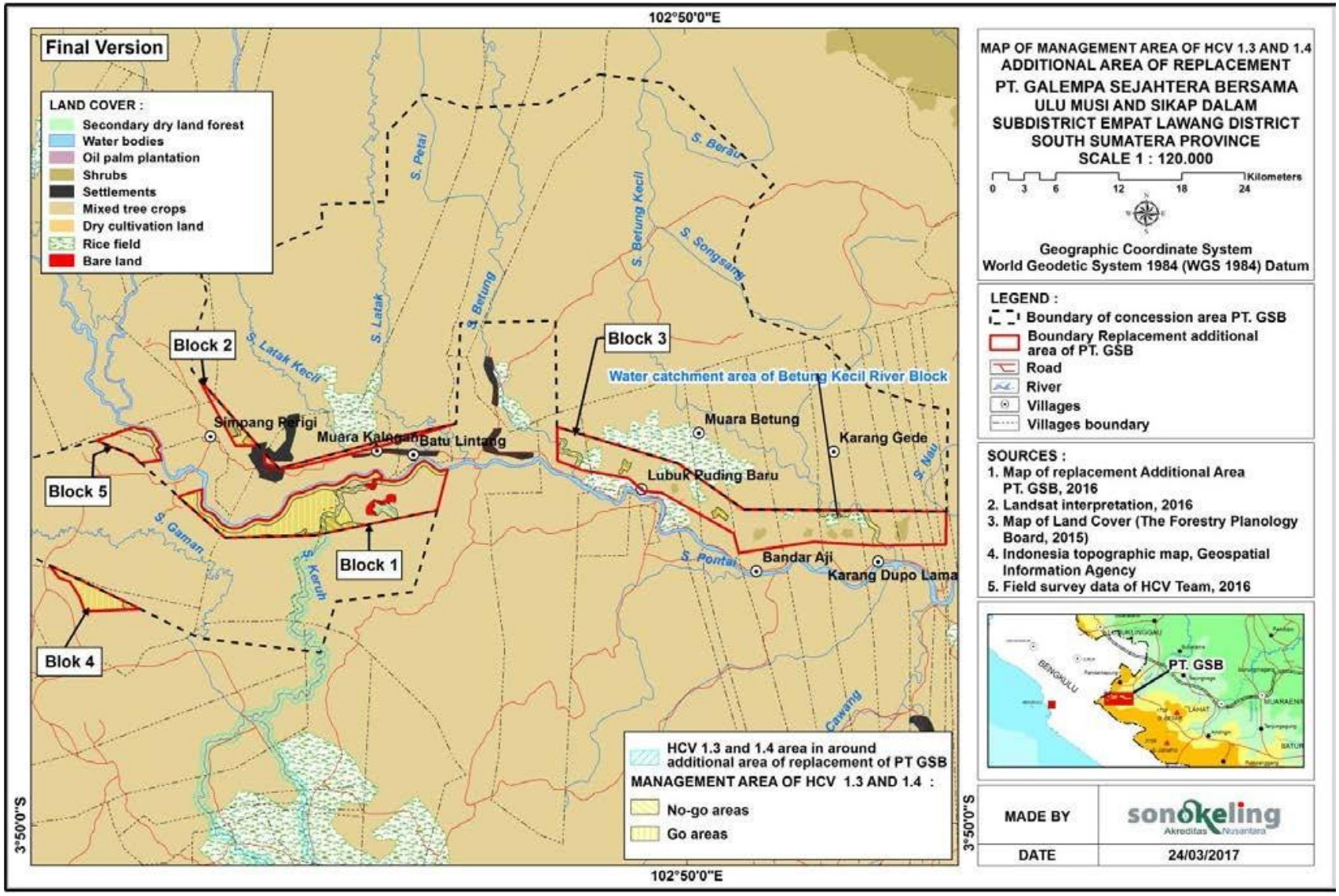
Map 10. Distribution of HCV 1.3 Block 2 in the additional area of renewal of PT. GSB



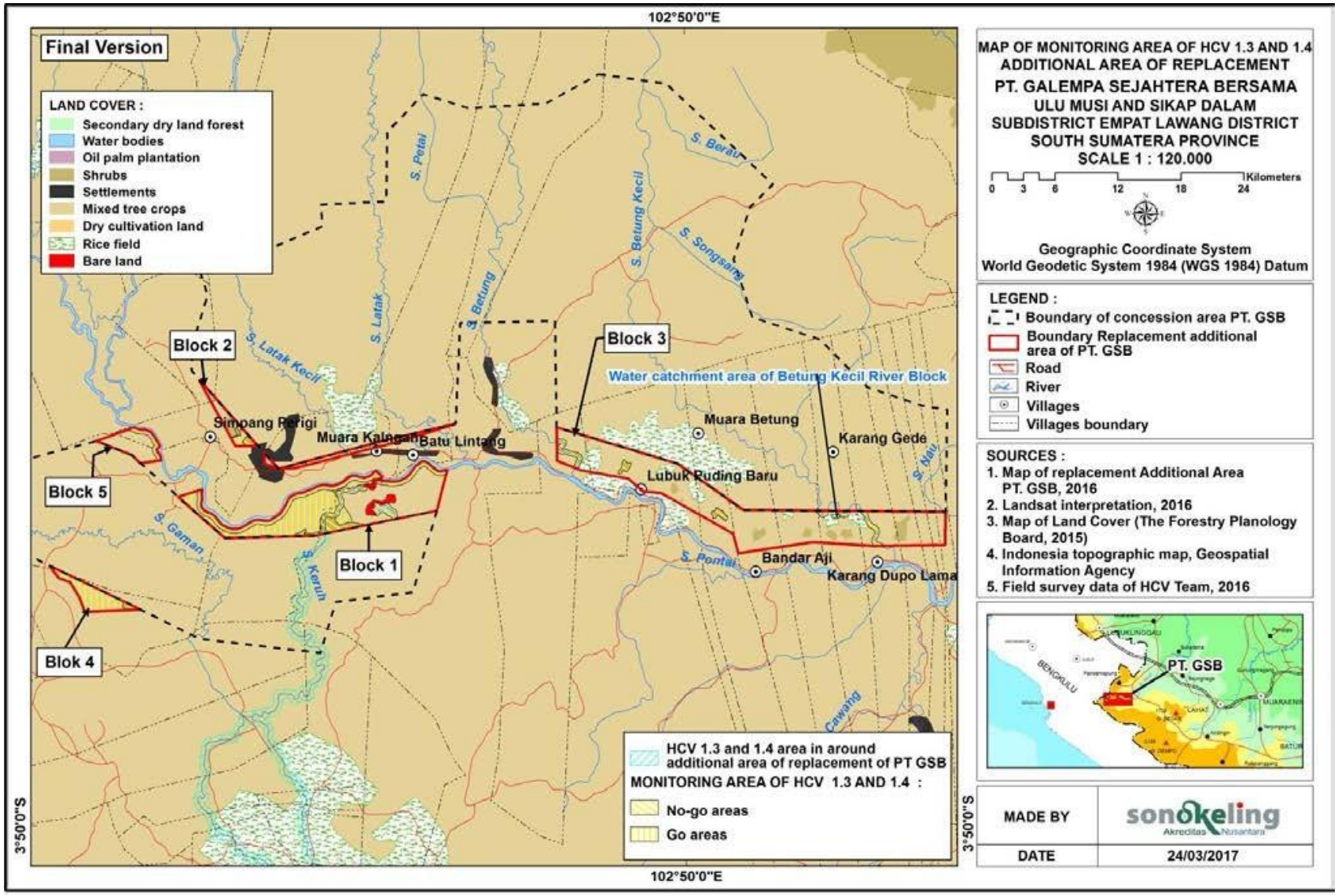
Map 11. Distribution of HCV 1.3 Block 3 in the additional area of renewal of PT. GSB



Map 12. Distribution of HCV 1.3 Block 4 in the additional area of renewal of PT. GSB



Map 13. Map of management area of HCV 1.3 and 1.4 in the additional area of replacement of PT GSB



Map 14. Map of monitoring area of HCV 1.3 and 1.4 in the additional area of replacement of PT GSB

3.3.3.1.4 HCV 1.4. Areas that contain habitat of temporary use by species or congregations of species

The existence of HCV 1.4 is characterized by areas that serve as temporary habitats, such as caves, nesting sites, feeding or resting places for migratory birds, corridors or stepping stones. The existence of rare or endangered or endemic species of flora and fauna needs to be assessed in terms of a wider landscape, not just within the additional area of renewal of PT GSB. In the additional area of renewal of PT GSB, there was indirect finding of one bird species which possibly uses secondary forest area and several shrubs that area as part of its temporary habitat (perching in tall crown for resting, while waiting for prey and searching for food), namely Grey-faced Buzzard (Butastur indicus).

This phenomenon is due to the fact that part of the study area belongs to IBA area and in the western and southern side, there is protection forest (HL) of Bukit Sanggul, so there is possible movement of the bird from the study area to IBA area and / or Protected Forest of Bukit Sanggul or vice versa. Besides that, in the riparian of Keruh river in the additional area of renewal of PT GSB, there was found one endemic species of Sumatra island, namely Sumatran surili (Presbytis melalophos melalophos), where the species is also found in Protected Forest of Bukit Sanggul, which is located in the western and southern part of the study area. In relation with such information, it is possible that the species Sumatran surili uses riparian of Keruh river as local movement path (corridor) to protection forest (HL) of Bukit Sanggul, or vice versa in its effort to seek food under seasonal availibity of food. Areas with land cover in the form of secondary forest and shrubs land in the additional area of renewal of PT GSB, which was possibly used as part of temporary habitat of Grey-faced Buzzard (Butastur indicus) and is possibly used as local movement (corridor) of Sumatran surili are riparian of Keruh river, water catchment area of Betung Kecil river block, IBA area inside the additional area of renewal of PT GSB, an two areas of shrubs land in Block 3 of additional area of renewal of PT GSB. Although Grey-faced Buzzard (Butastur indicus) was found indirectly in the area, and land cover in the area which possibly is used by Grey-faced Buzzard as part of its temporary habitat, and as local movement path (corridor) of Sumatran surili, has been mostly in the form of mixed tree crops and shrubs land, but with the principle of cautiousness in mind, it is suggeested that HCV1.4 is potential to be found in the area.

As has been explained in HCV 1.3, area of IBA which overlaps with the additional area of renewal of PT GSB, which does not overlap with other location, is as large as 243.16 ha, so that the area is established as HCV 1.4. Considered from its land cover, IBA area which does not overlap with other location, comprise 3 kinds of land cover, namely mixed tree crops, oil palm plantation, bare land, and shrubs land. In relation with that phenomenon, it is suggested that development of oil

palm plantation in the area will not have impact on IBA with land cover of mixed tree crops, oil palm plantation and bare land, but it will have impact on IBA area wth land cover in the form of shrubs land. IBA areas with land cover in the form of mixed tree crops, oil palm plantation and bare land, are allowed to be converted to oil palm plantation; whereas IBA area in the form of shrubs land is not allowed to be converted to oil palm plantation. However, efforts of management and monitoring of HCV 1.4 are needed specifically in IBA area which overlaps with the study area. Activity of HCV 1.4 management which is conducted in IBA area which possess shrubs land cover is similar with that of HCV 1.3; whereas monitoring activity of HCV 1.4 is focused on species of Grey-faced Buzzard and Sumatran surili. HCV 1.4 area in additional area of renewal of PT GSB is presented in maps 15 to 18, whereas map of management and monitoring of HCV 1.4 area in the additional area of renewal of PT GSB as described before in HCV 1.3 (Maps 13 & 14).

3.3.3.2 HCV 2. Landscape-level ecosystems, ecosystem mosaics and IFL

3.3.3.2.1 HCV 2.1. Large natural landscapes with capacity to maintain natural ecological processes and dynamics

The existence of HCV 2.1 is characterized by intact forest landscapes (> 50,000 hectares) and core areas of the landscape. The core area is defined as a reserved area to ensure that natural ecological processes can take place without interruption due to fragmentation and the influence of opening area (edge effect). The core area is determined by size (> 20,000 hectares) plus the buffer area around it i.e., at least three (3) kilometers from the opening area. Location of additional area of renewal of PT GSB is not adjacent to the intact forest landscape. The intact forest landscape is located to the south of the additional area of renewal of PT GSB and the nearest location is approximately 5.0 km (www.intactforests.org) (Figure 19). Besides, the additional area of renewal of PT GSB is not adjacent to the core area, however, the nearest core area is Bukit Kaba Natural Tourism Park which covers 13,490 hectares and is about 15.39 kilometers to the southwest. We consider that PT GSB will not affect the intact forest landscape and the core area surrounding it. Therefore, HCV 2.1 was not found in additional area of renewal of PT GSB.

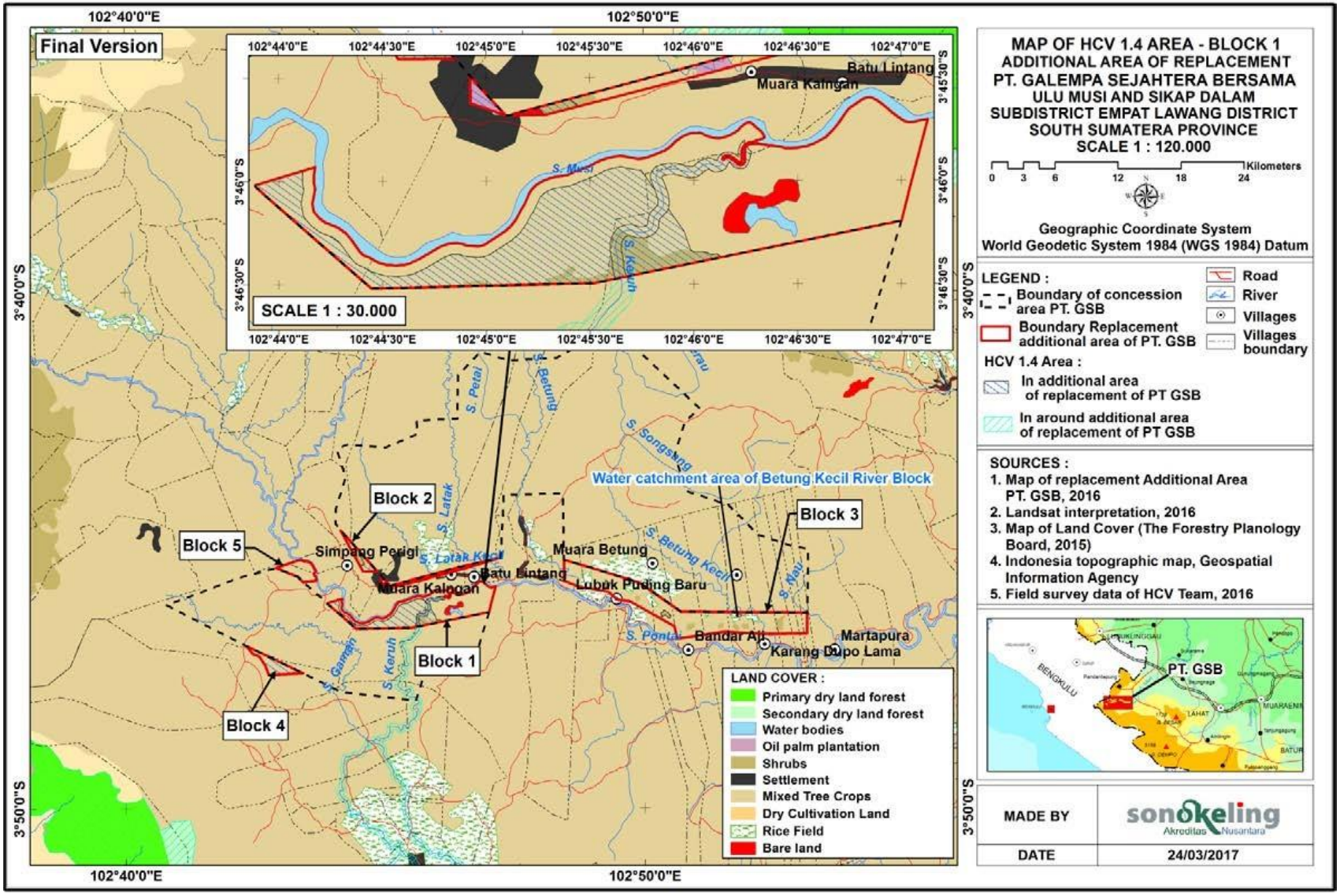
3.3.3.2.2 HCV 2.2. Areas that contain two or more contiguous ecosystems

The existence of HCV 2.2 is characterized by the presence of landscapes that have various types of ecosystems to ensure that the core areas of the ecosystem and its continuity of borders are well maintained. Based on the results of GIS analysis and field survey showed that the ecosystems found in and around additional area of renewal PT GSB in the past (before conversion) as many as four kinds, namely (1) mixed dipterocarp forest on basalt; (2) mixed dipterocarp forest on alluvium; (3) mixed dipterocarp forest on volcanic rock, and (4) sub-montane or montane or

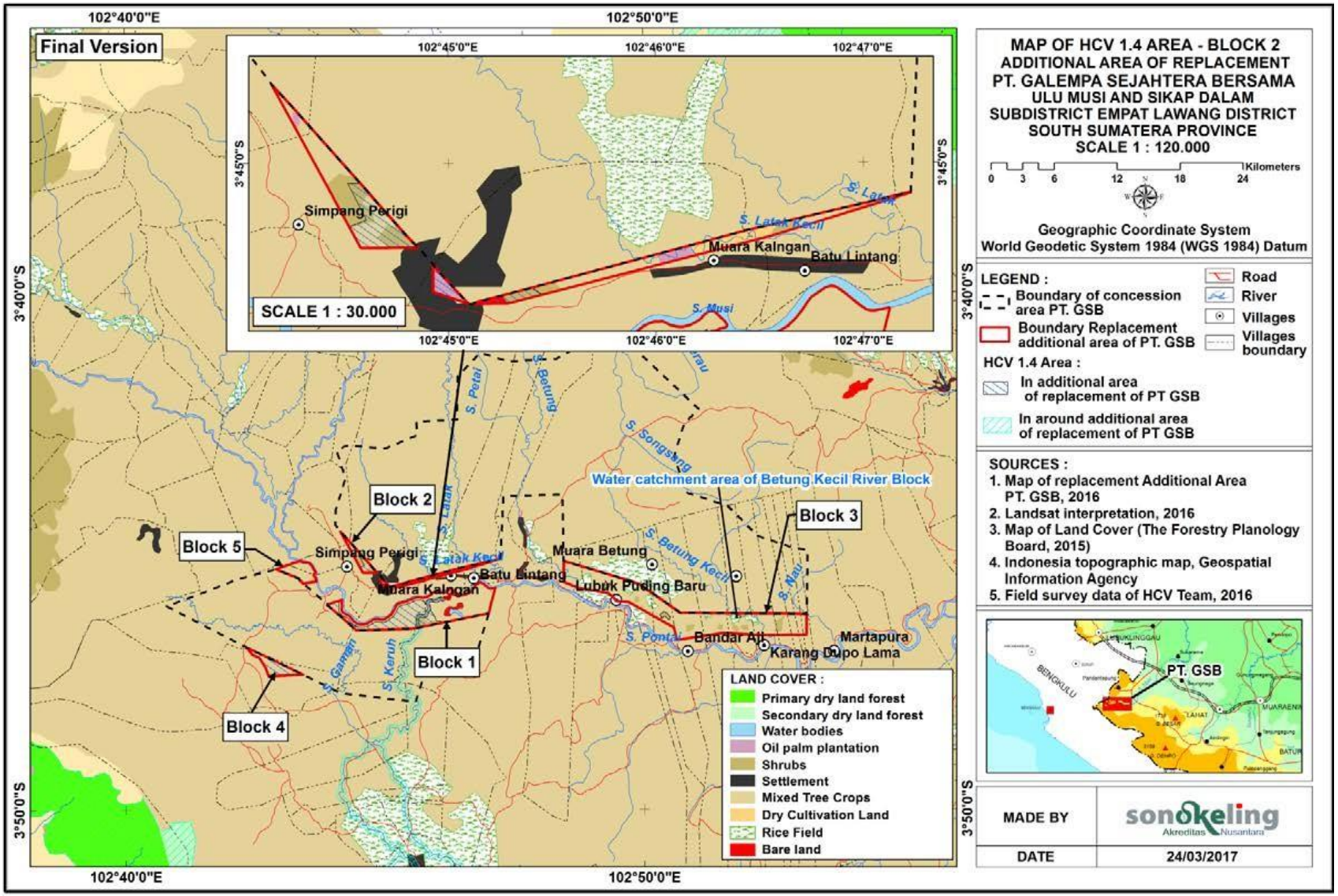
cloud forest on other substrates. At present, natural land cover is found only in mixed dipterocarp forest on basalt, i.e., 1.26 hectare of secondary dryland forest; while land cover of three other ecosystems are shrubs, mixed plantations, oil palm plantations, dryland farming, rice fields, open land, settlements, and water bodies (Map 20). Because in the additional area of renewal PT GSB, it was not find ecoton or natural transitions of two (sustainable) ecosystems or areas containing populations and representative natural species. Related to this, HCV 2.2 was not found in additional area of renewal of PT GSB

3.3.3.2.3 HCV 2.3. Area that contain representative population of most naturally

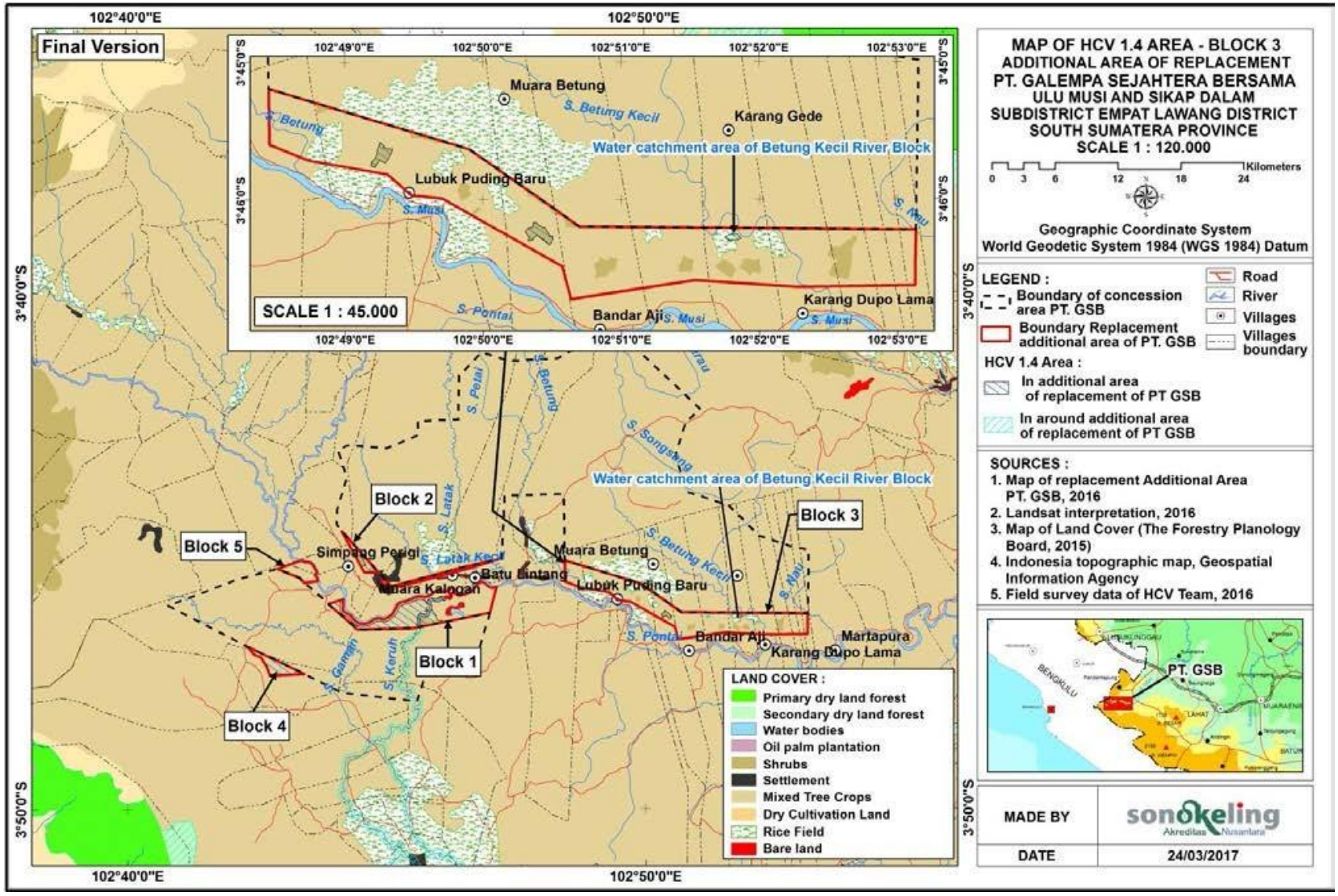
The existence of HCV 2.3 is characterized by the presence of landscapes with special potential that can maintain the survival of the population representative of species. In additional area of renewal of PT GSB, it was found four species of birds that include high predators namely Grey-faced Buzzard (Butastur indicus), Black Eagle (Ictinaetus malayensis), Black-thighed Falconet (Microhierax fringillarius), and Crested Serpent Eagle (Spilornis cheela); however, there are no core areas or buffer zones for important landscapes. Thus, in the additional area of renewal of PT GSB does not contain HCV 2.3.



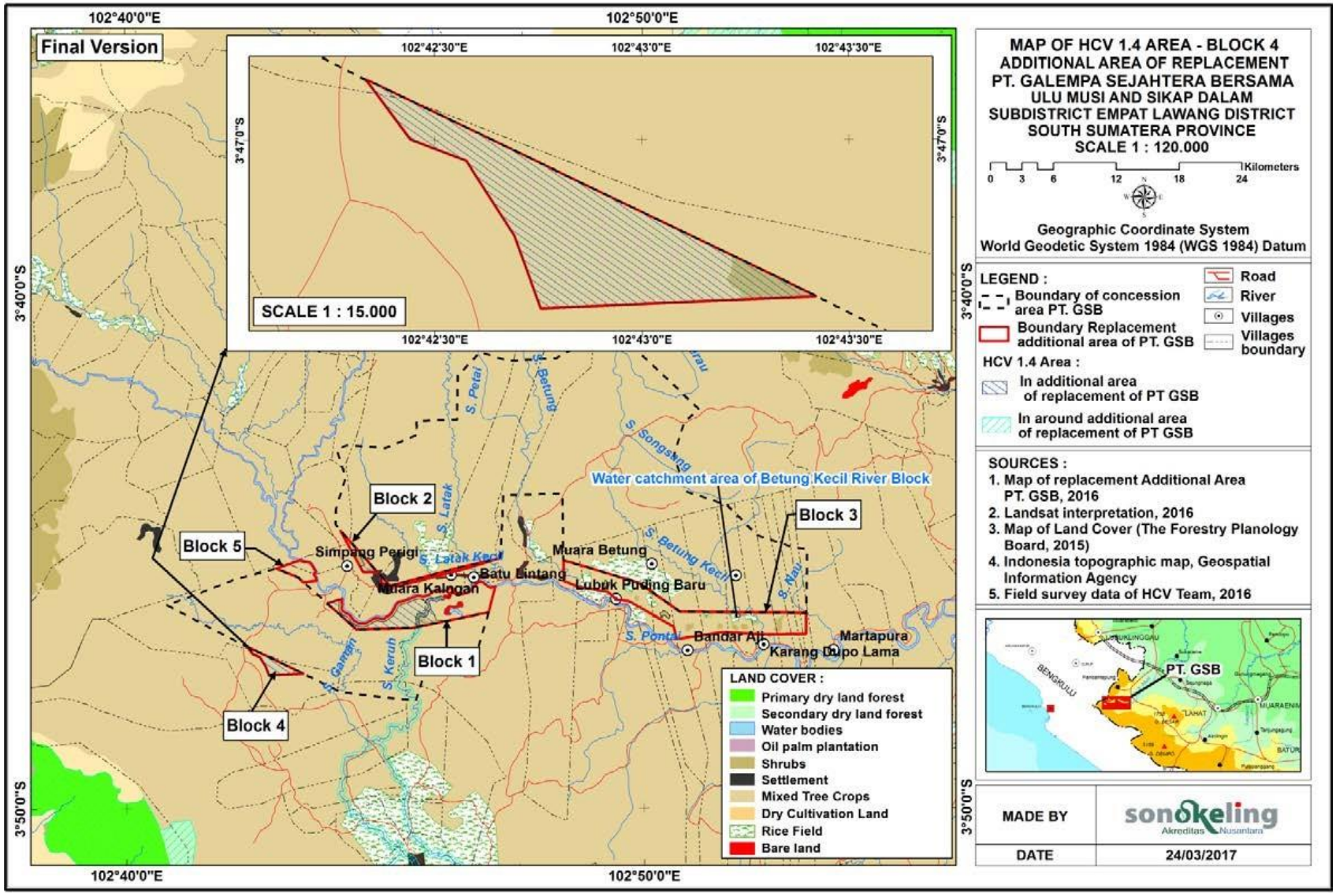
Map 15. Map of area distribution of HCV 1.4 – block 1 in additional area of renewal of PT GSB



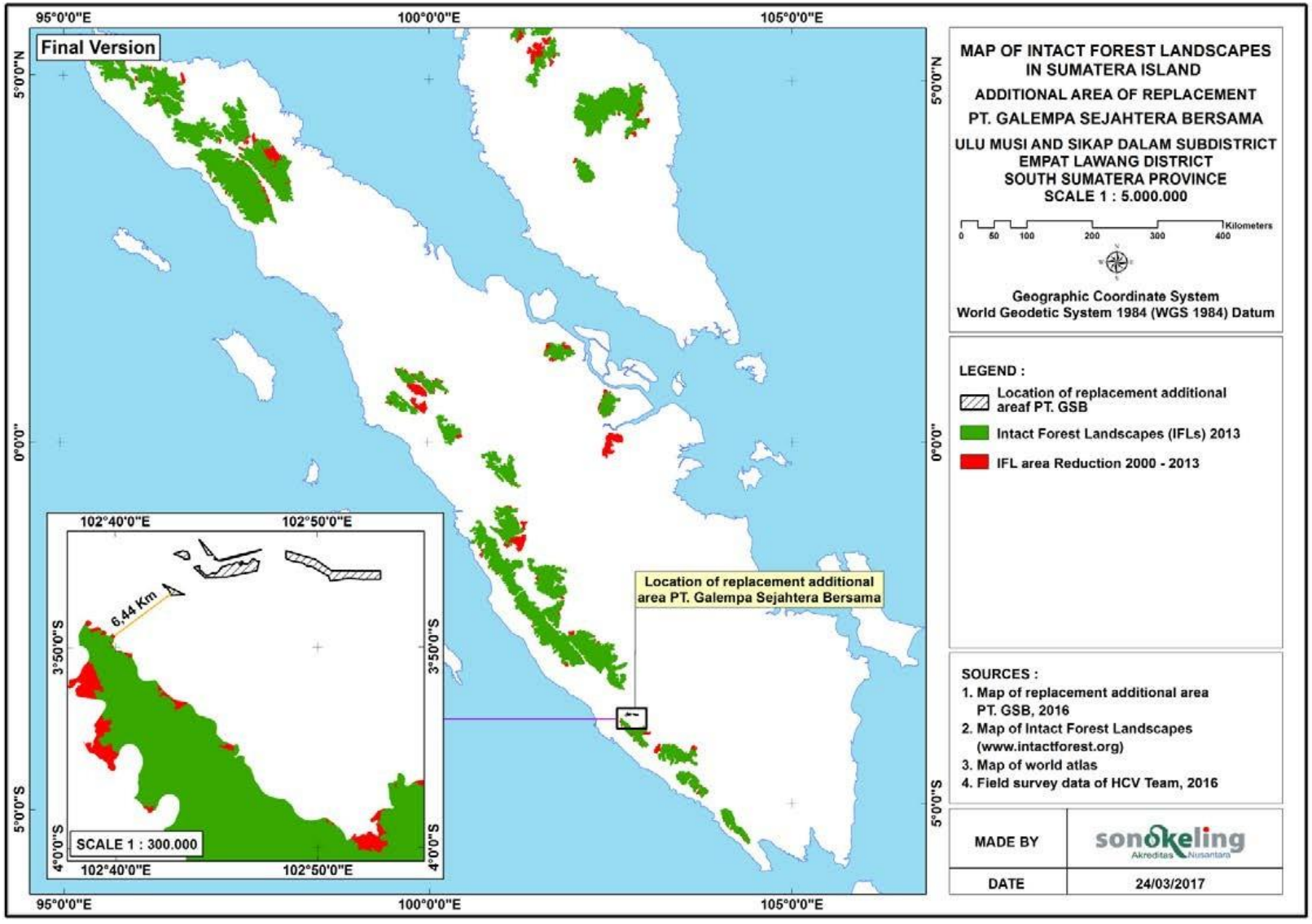
Map 16. Map of area distribution of HCV 1.4 – block 2 in additional area of renewal of PT GSB



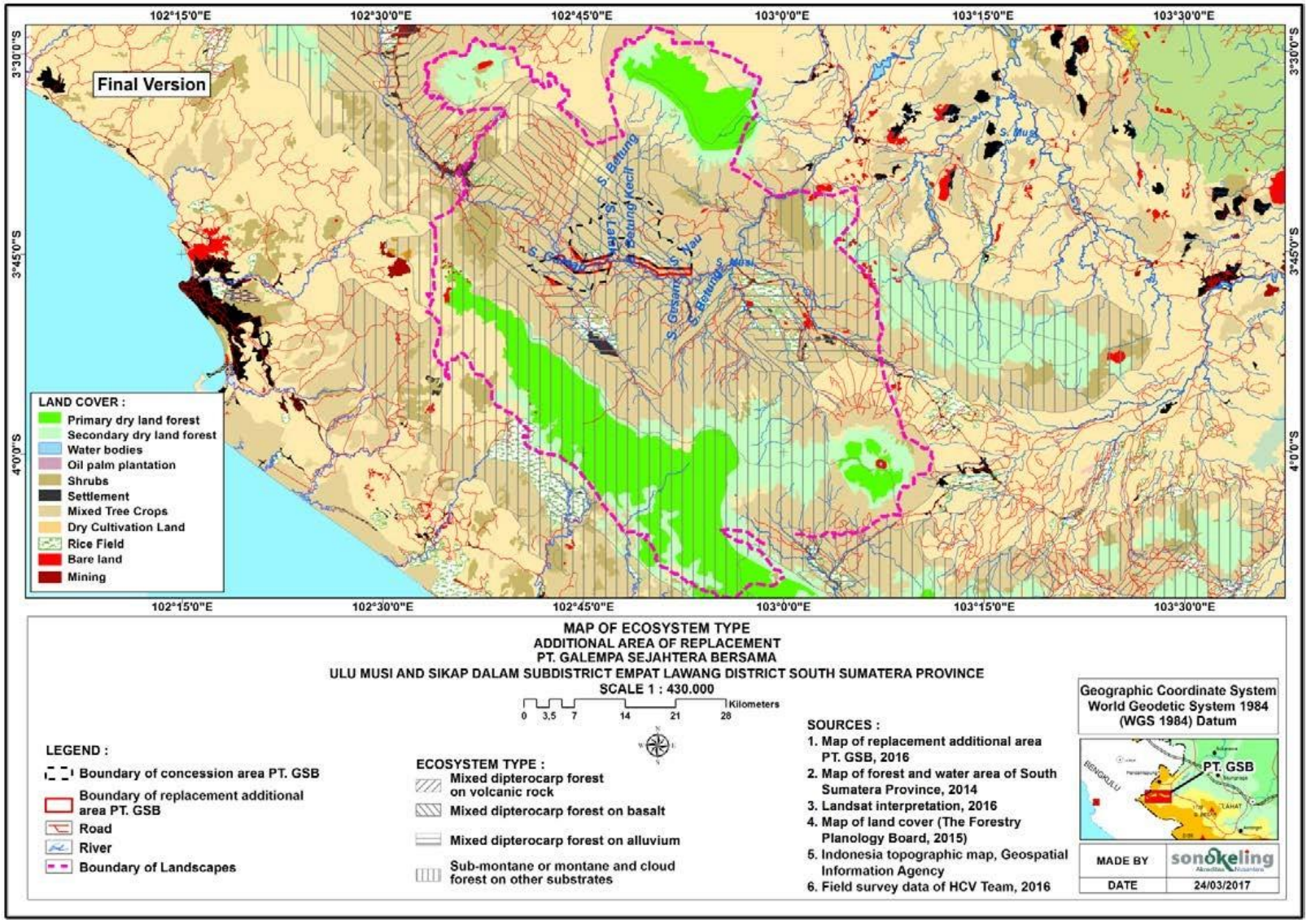
Map 17. Map of area distribution of HCV 1.4 – block 3 in additional area of renewal of PT GSB



Map 18. Map of area distribution of HCV 1.4 – block 4 in additional area of renewal of PT GSB



Map 19. Intact Forest Landscape (IFLs) around additional area of renewal of PT GSB



Map 20. Map of Ecosystems in and around the additional area of renewal of PT GSB

3.3.3.3 HCV 3. Ecosystems and habitats

The existence of HCV 3 is characterized by: (1) The presence of threatened ecosystems (a) In a bio-physiographic unit, an ecosystem has already lost 50% or more of its initial extent or (b) In a bio-physiographic unit, there are ecosystems that will experience losing 75% or more of its original area based on the assumption that all conversion areas within the spatial plan can be converted; and (2) Presence of rare ecosystems: natural or human factor natural ecosystems covering less than 5% of total area of a bio-physiographic unit. In additional area of renewal of PT GSB does not have a rare ecosystem naturally because there are no limestone forests found in karst, inselberg, montana forest, or river forest in the barren zones; and there are no anthropogenic rare ecosystems because there is no grassland found in fertile soils naturally experienced seasonal floods or fragments of primary forests that have been eliminated. With a precautionary approach, mixed dipterocarp forest on basalt in additional area of renewal of PT GSB are rare and threatened; but at present the threatened and endangered ecosystems are only found in an area of 1.26 hectare, i.e., areas that still have land cover in the form of secondary dryland forest. Therefore, the area that has a land cover is secondary dryland forest area of 1.26 hectare is in the mixed dipterocarp forest on basalt in the additional area of renewal of PT GSB which is designated as HCV 3 area. HCV 3 area in additional area of renewal of PT GSB is presented in Map 21.

3.3.3.4 HCV 4. Ecosystem Services

3.3.3.4.1 HCV 4.1. Areas or ecosystems important for the provision of water and prevention of floods for downstream communities

The existence of HCV 4.1 is characterized by an important area or ecosystem as a provider of water and flood control for downstream communities such as cloudy forests, ridge forest, riparian ecosystems, karst forests and various wetland ecosystems, including peatlands (especially forested ones), freshwater swamp forest, mangrove forests, lakes and swamps of grasslands. In additional area of renewal of PT GSB identified as HCV 4.1 are, as follows:

a. Rivers and its borders

In the additional area of renewal of PT GSB was found as many as 6 rivers and its borders, including: Musi River, Betung River, Betung Kecil River, Keruh River, Latak River, and Latak Kecil River. The main river in the region is Musi River. The width of the river in the area ranges from 7.5 to 40 meters, the border width ranges from 50 to 100 meters, and the length of the river ranges from 0.12 to 8.09 kilometers. The rivers in the region during the dry season have never experienced drought and in the rainy season it has never

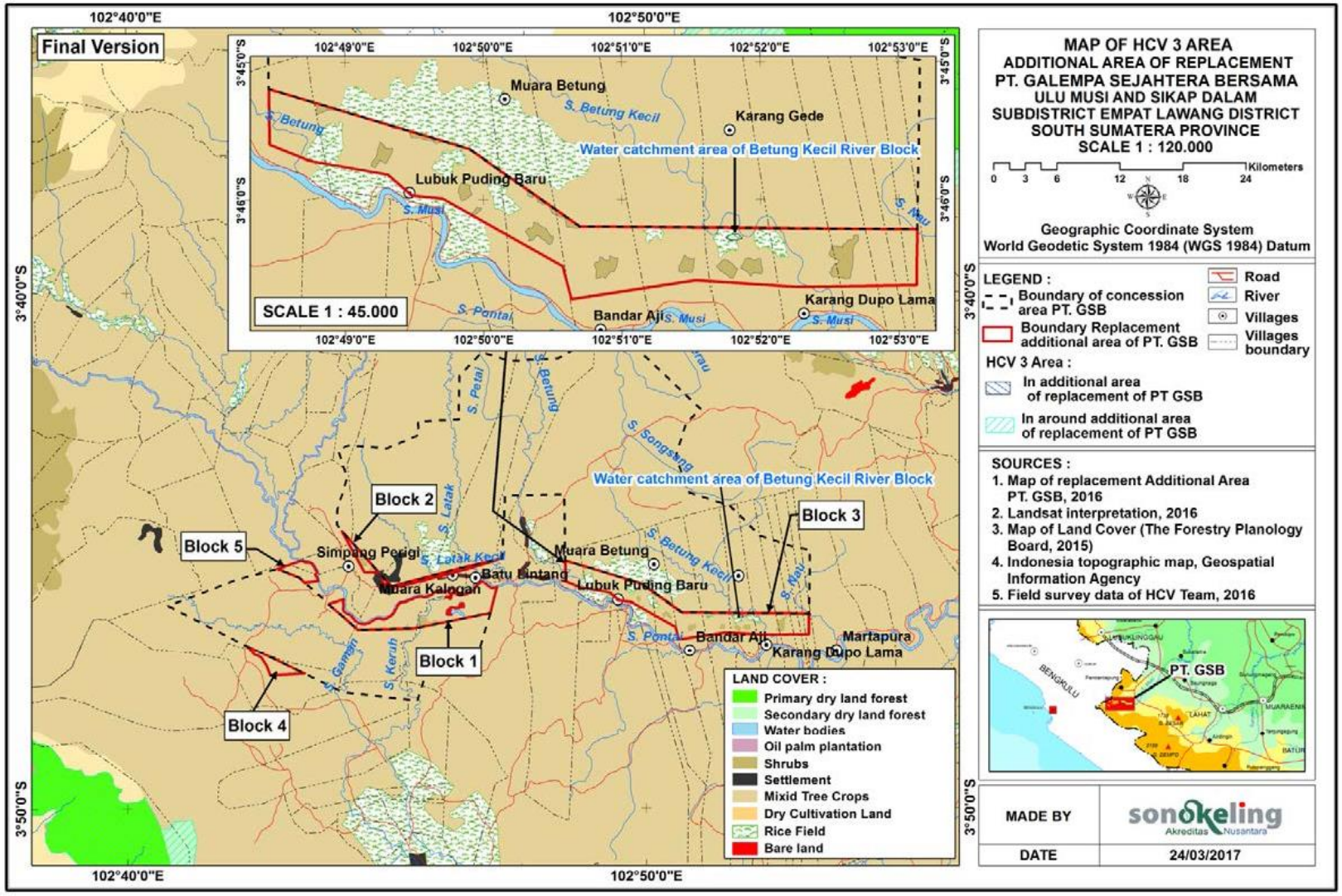
overflowed. In general, land cover in the river basin consists of mixed gardens, shrubs, and oil palm plantations. Although not forested anymore, the existence of these mixed gardens and shrubs still has important value in terms of slope stability, as well as filtering pollutants from the land.

b. Water Catchment Area

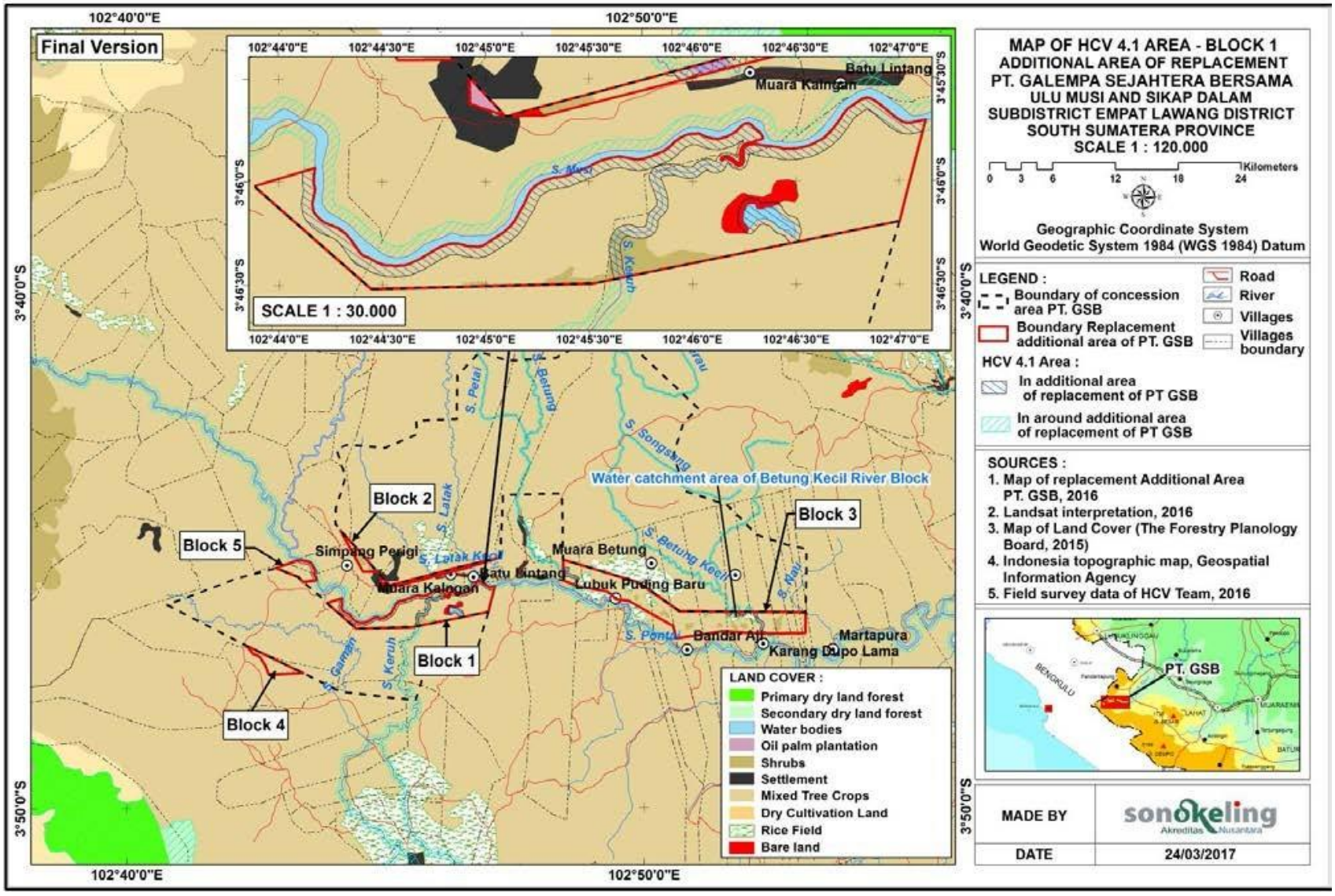
In additional area of renewal of PT GSB, it was found one catchment area that is water catchment area of Betung Kecil River block. The land cover in that catchment area is secondary forest, so it can function as a water catchment area and has an important value as a flood control area through its recharge function.

c. The area around checkdam

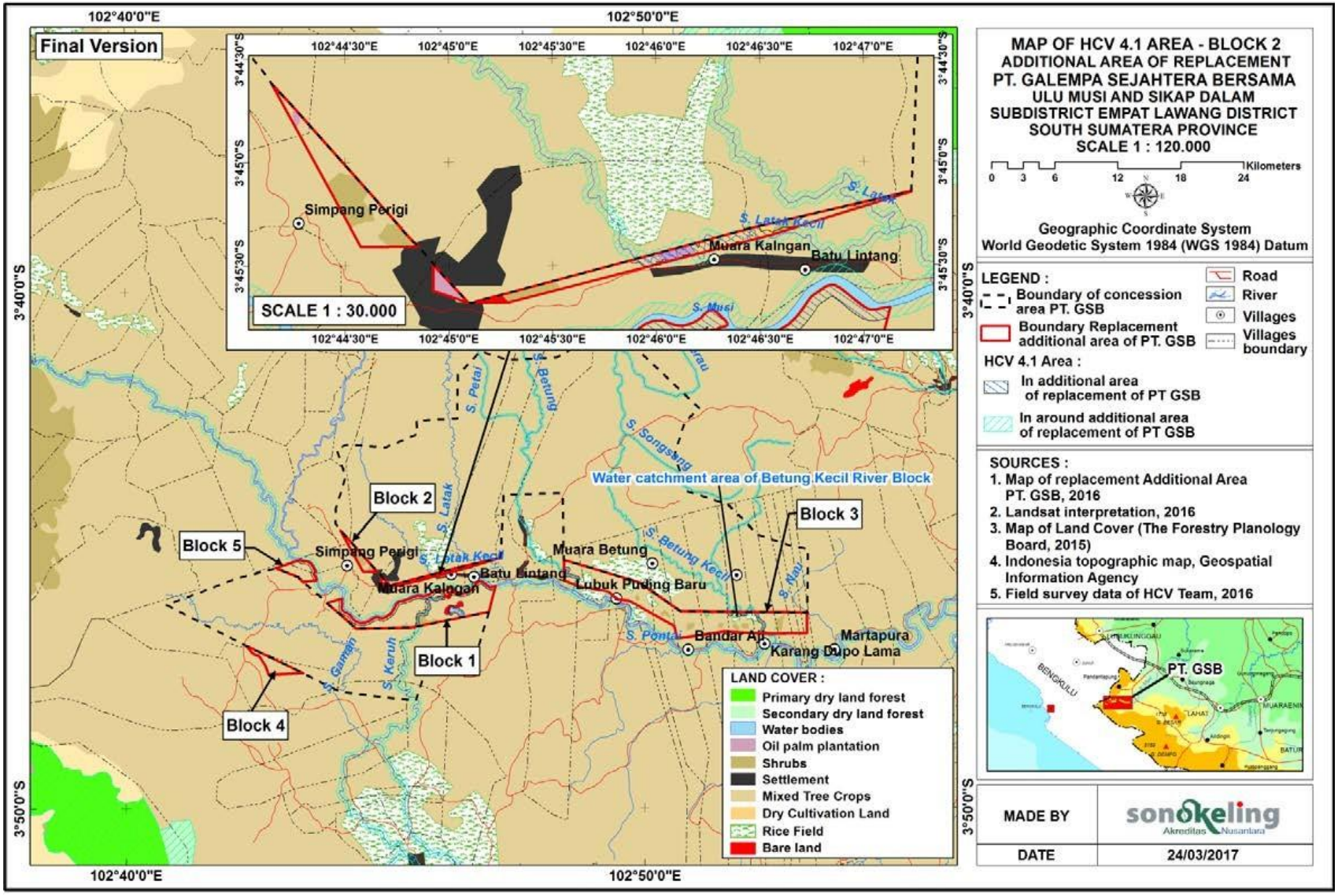
In additional area of renewal of PT GSB, it was found one area around the checkdam. Land cover area around the checkdam consists of two types, namely mixed gardens and open land. Although not forested anymore, the existence of these mixed gardens and shrubs still has important value in terms of slope stability, as well as filtering pollutants from the land. Based on the areas found in additional area of renewal of PT GSB is important as a provider of water and flood control for downstream communities, which then identified eight (8) locations as HCV 4.1 area, namely rivers and its borders (Musi, Betung, Betung Kecil, Keruh, Latak, and Latak Kecil), water catchment area of Betung Kecil block, and area around Checkdam. HCV 4.1 area in additional area of renewal of PT GSB is presented in Map 22-25.



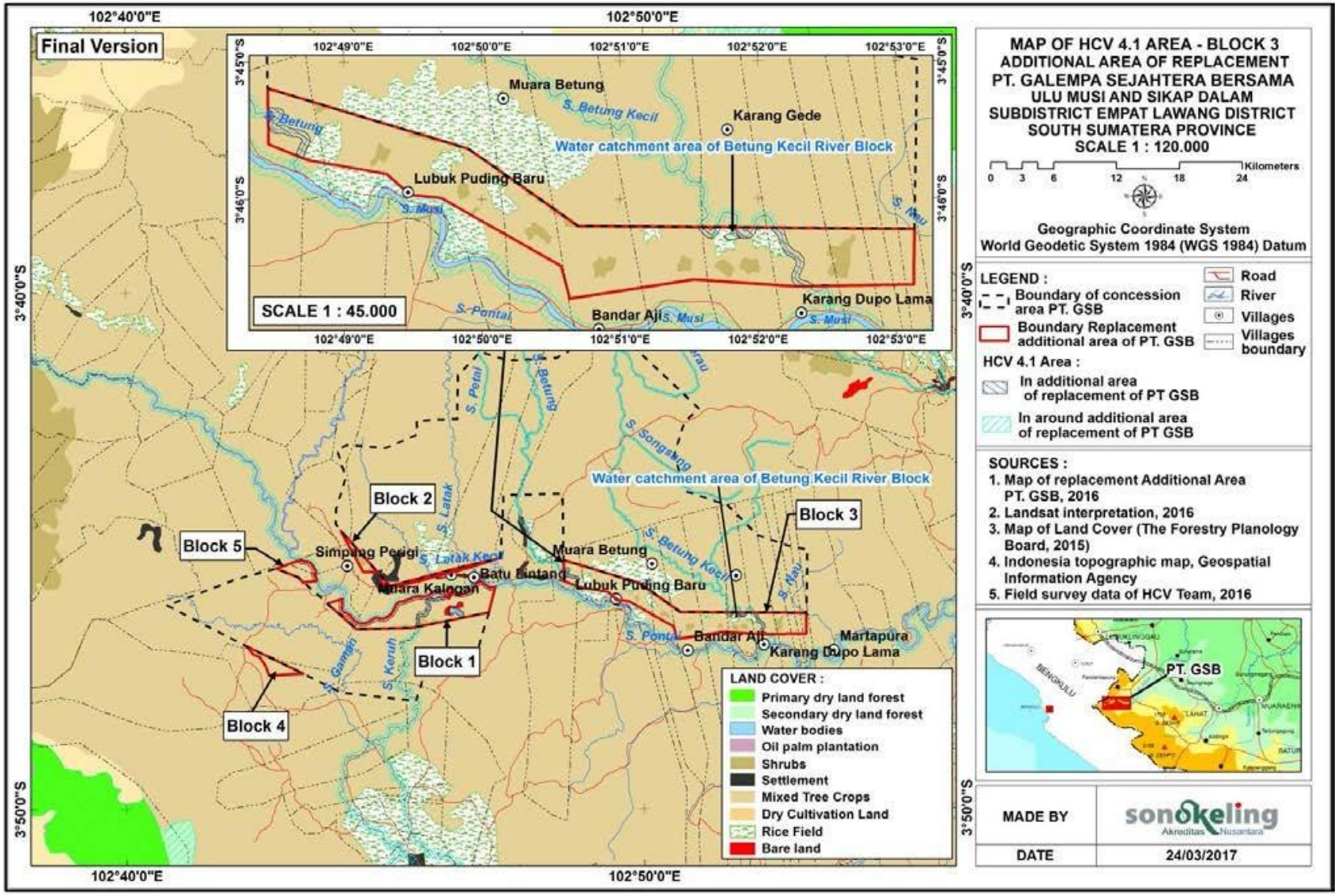
Map 21. Map of area distribution of HCV 3 in additional area of renewal of PT GSB



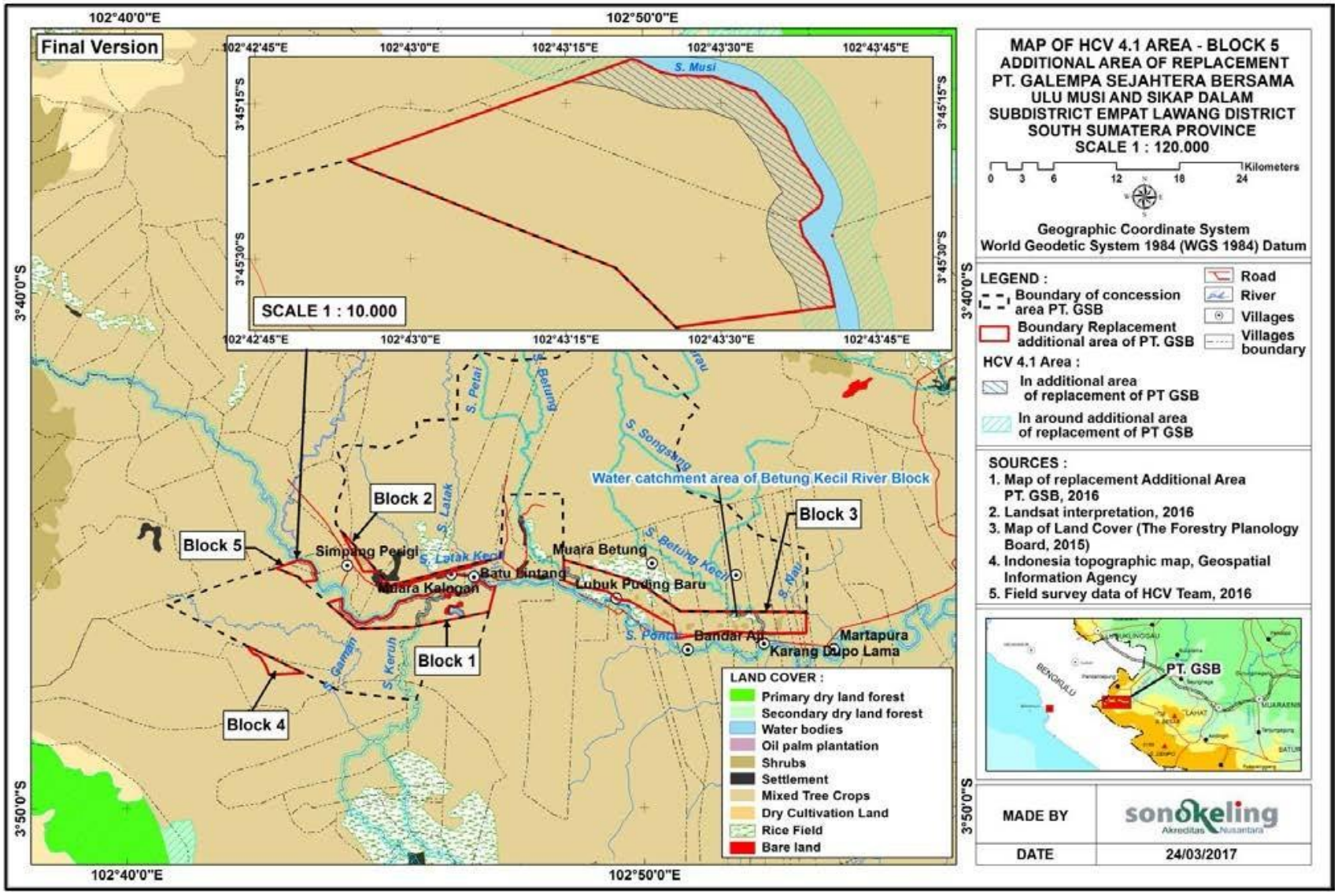
Map 22. Map of area distribution of HCV 4.1 – block 1 in additional area of renewal of PT GSB



Map 23. Map of area distribution of HCV 4.1 – block 2 in additional area of renewal of PT GSB



Map 24. Map of area distribution of HCV 4.1 – block 3 in additional area of renewal of PT GSB



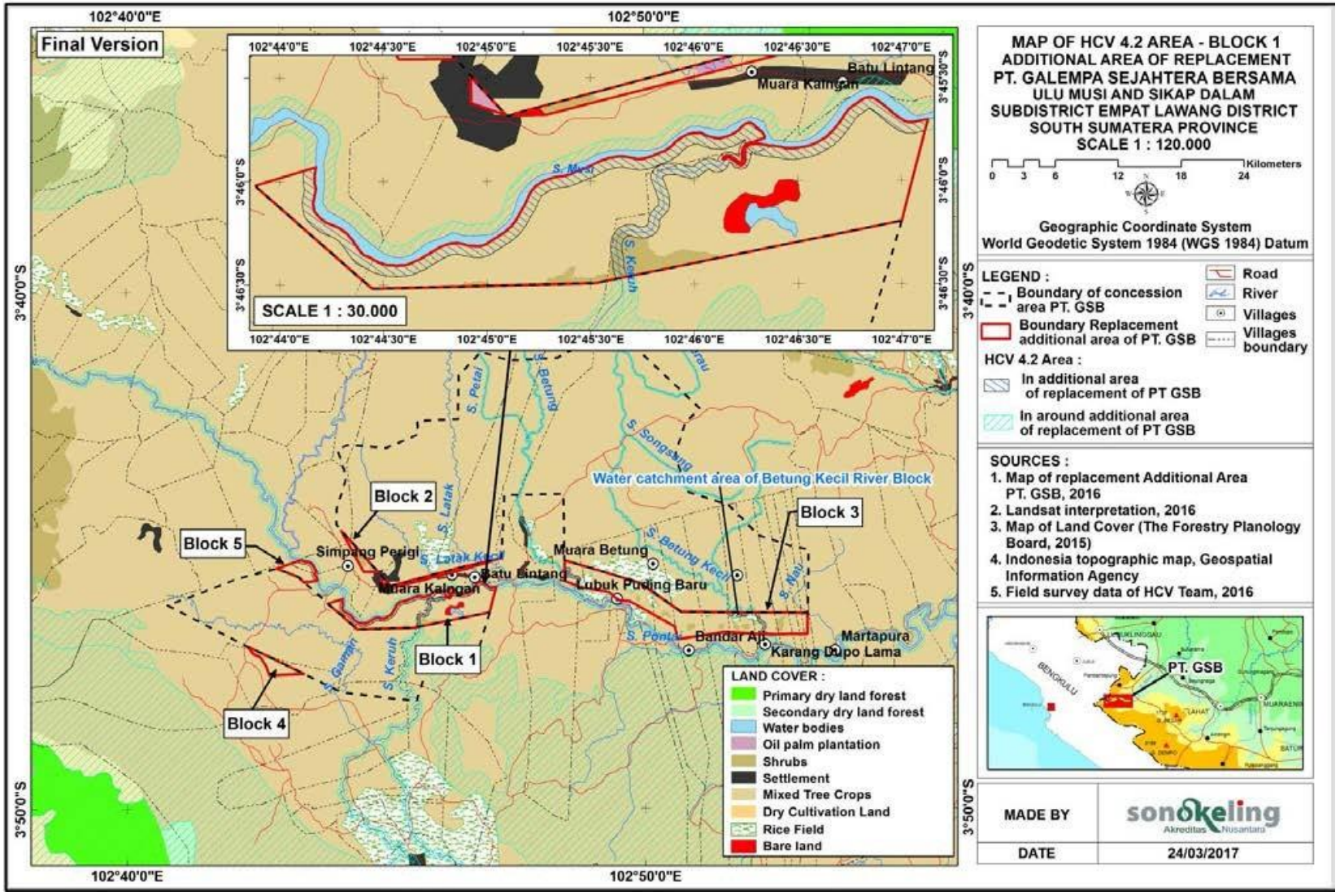
Map 25. Map of area distribution of HCV 4.1 – block 5 in additional area of renewal of PT GSB

3.3.3.4.2 HCV 4.2. Areas important for the prevention of erosion and sedimentation

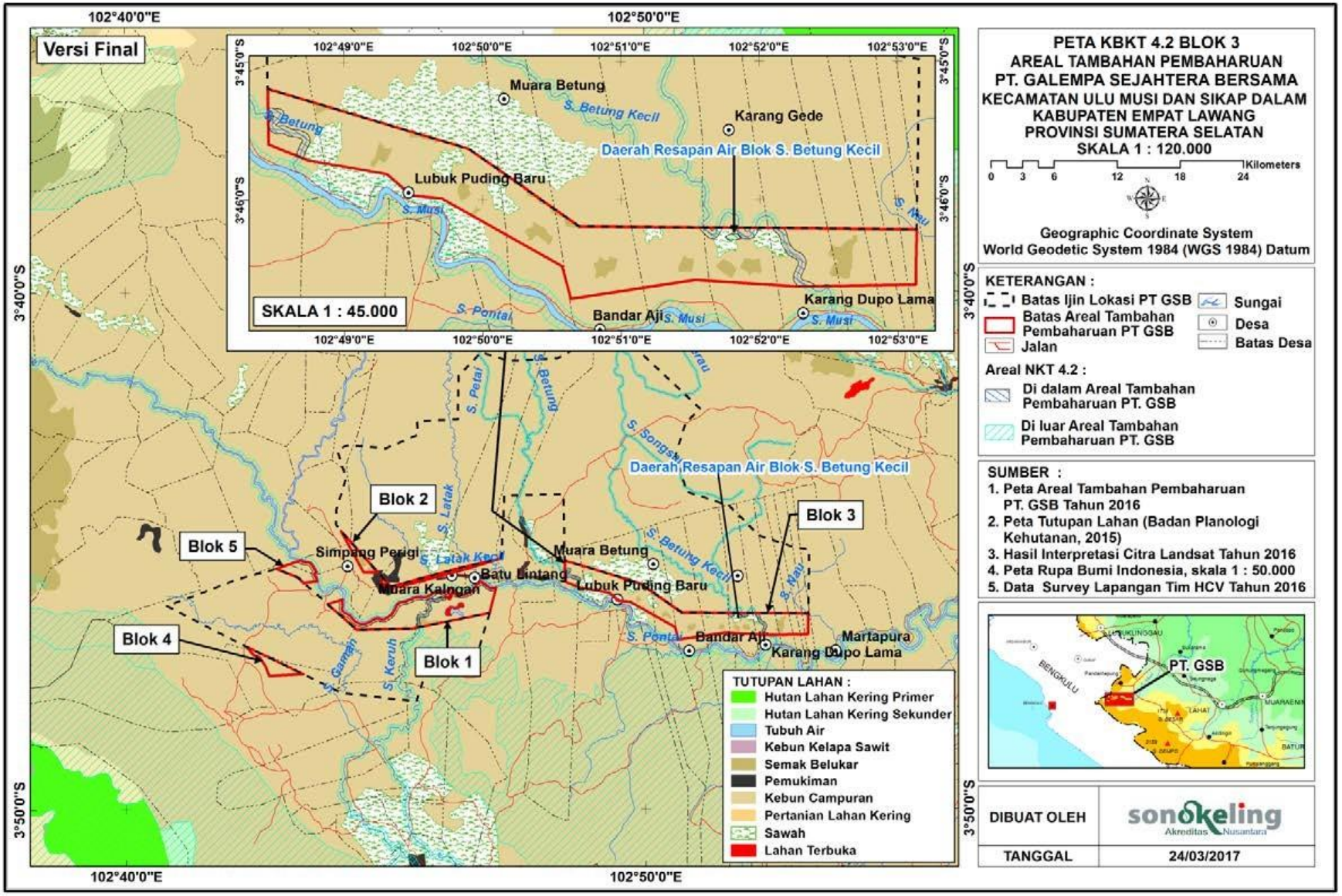
The existence of HCV 4.2 is characterized by the presence of important areas or ecosystems as erosion and sedimentation control, i.e., forested or other vegetation areas that have a very serious or very severe Erosion Hazard (TBE) potential. In additional area of renewal of PT GSB, it was found as many as five (5) locations that have Erosion Hazard (TBE) that is classified as heavy or very heavy, covering river borders (Musi, Betung, Betung Kecil, Keruh) and water catchment area of Betung Kecil River block. Based on the calculation, the TBE at the site ranged from 44.35 to 822.53 tonnes/ hectare / year. In general, the land cover of these five sites consists of secondary forests, shrubs, and mixed gardens. Secondary forest cover conditions are able to minimize soil erosion and scrubland cover or mixed gardens are still able to suppress erosion, so the five areas have important value as erosion control and sedimentation. Therefore, in the additional area of renewal of PT GSB is located in the area of HCV 4.2, covering: river borders (Musi, Betung, Betung Kecil, Keruh) and water catchment area of Betung Kecil River block. HCV 4.2 area in additional area of renewal of PT GSB is presented in Map 26-28.

3.3.3.4.3 HCV 4.3. Areas that function as natural barriers to the spread of forest or ground fire

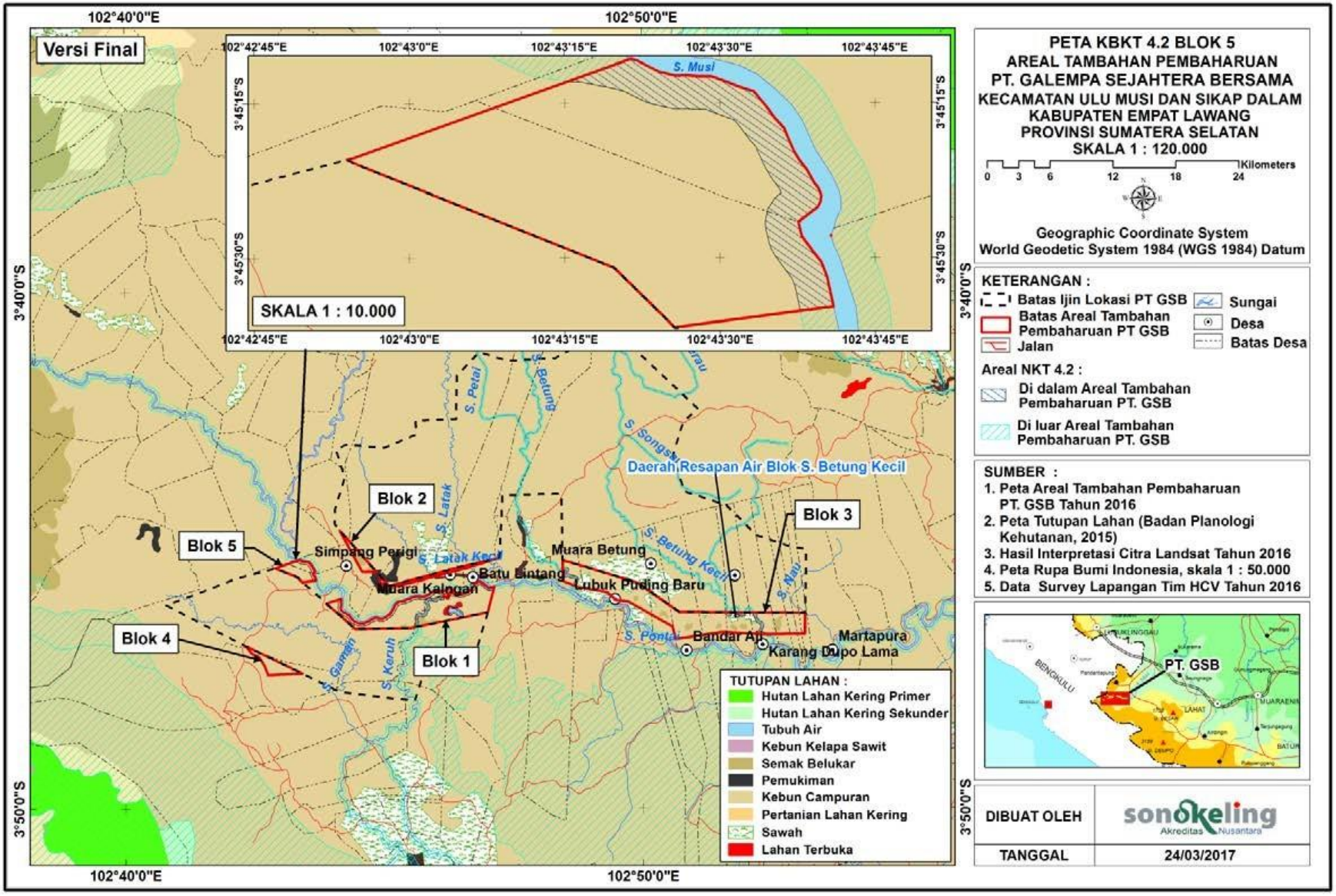
The existence of HCV 4.3 is characterized by the presence of areas that function as natural barriers to prevent the spread of forest and land fires, such as: various types of natural forests that are still in good condition peatlands that are no longer forests but hydrological systems are still functioning properly, fresh swamps, puddle areas, other wetlands and green belts. In additional area of renewal of PT GSB, it was not found a well-conditioned natural vegetation area and wetlands; however, in the area of Musi River along the 8.09 kilometers and has a width of about 40-50 meters can function as a natural barrier / fire breaks to prevent the spread of forest and land fires that may occur on community land and in additional area of renewal of PT GSB. Therefore, in the additional area of renewal of PT GSB, it was found HCV 4.3. HCV 4.3 area in additional area of renewal of PT GSB is presented in Map 29 & 30.



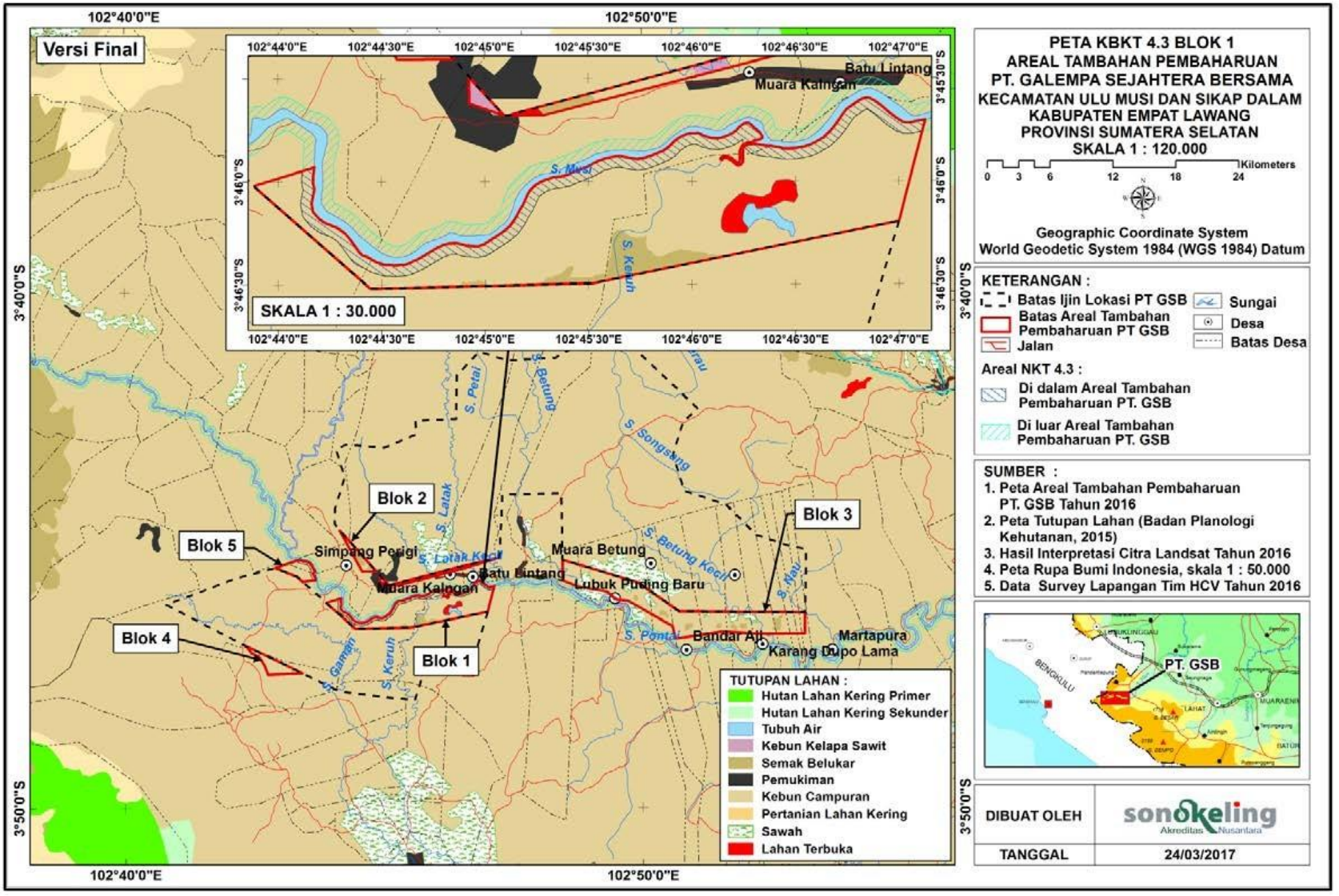
Map 26. Map of area distribution of HCV 4.2 block 1 in additional area of renewal of PT GSB



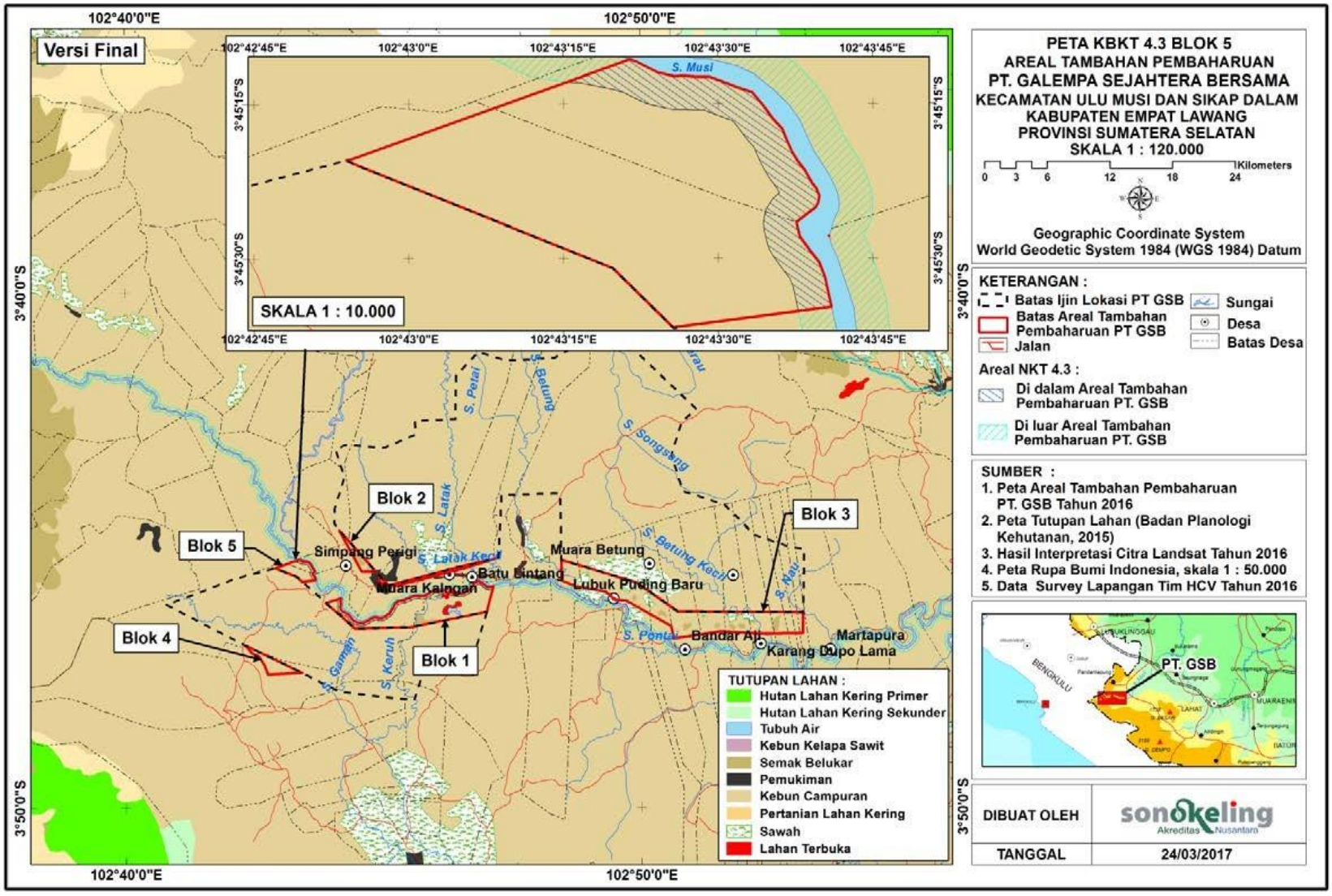
Map 27. Map of area distribution of HCV 4.2 block 3 in additional area of renewal of PT GSB



Map 28. Map of area distribution of HCV 4.2 block 5 in additional area of renewal of PT GSB



Map 29. Map of area distribution of HCV 4.3 - block 1 in additional area of renewal of PT GSB



Map 30. Map of area distribution of HCV 4.3 – block 5 in additional area of renewal of PT GSB

3.3.3.5 HCV 5. Community Needs

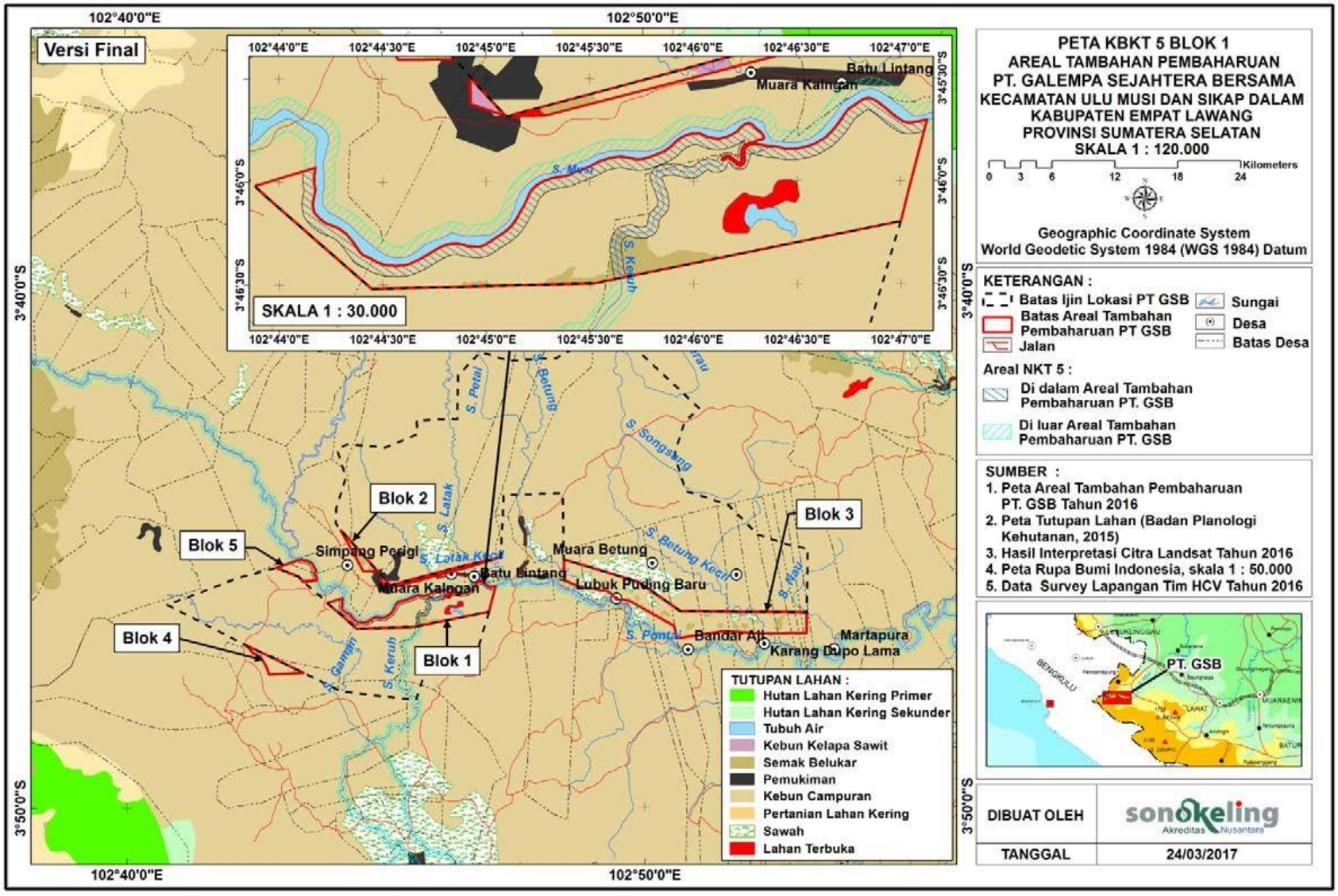
In the Indonesian HCV Toolkit (2008), HCV 5 is areas that have important functions as a source of livelihood for local communities, in particular to fulfil the basic needs of the community for example food, water, clothing, materials for homes and tools, firewood, medicines, animal feed, and cash income cash for subsistence needs. Based on the results of consultations with communities in nine (9) villages and field observations, most of the basic needs of the nine villages originated from non-natural ecosystems, i.e., markets, stalls or cultivation, except for water which is sourced from natural ecosystem in additional area of renewal of PT GSB. The community fulfilled their need of timber for constructions material by buying the timber from carpenters or chainsaw workers and materials stores; however, most of the people did not know the origin of the timber they buy from the carpenters or chainsaw workers and materials stores. The FGD and interview with the community found that a small number of people knew that there were illegal logging operated by community members in Bukit Sanggul PF in the Southern of and Bukit Kaba NTP in the Northern of additional area of renewal of PT GSB. In addition, the Forum Lintang Empat Lawang stated that the timbers resulted from illegal logging activities in protection forest at Empat Lawang District and its surrounding were freely traded in the area. For that reason, there was a conjecture that the timbers traded by the carpenters and materials stores might be coming from the illegal logging activities in protection forest around the additional area of renewal of PT GSB.

Water needed for drinking, cooking, bathing, washing and other necessities which is sourced from natural ecosystem in additional area of renewal of PT GSB that is Musi Keruh Rivers which are utilized by people in Muara Kalangan, Batu Lintang, and Muara Betung, and hunter in Bandar Aji, especially in the dry season. Communities in the three villages have a 50% and hunter have a 100% dependence rate on the Musi and Keruh Rivers for their water needs. Water utilization conducted by the community is carried out sustainably. Community water needs can actually be obtained from other sources as an alternative, such as buying in the market or shop, but it takes a more expensive cost. Therefore, Musi and Keruh Rivers are used by community in additional area of renewal of PT GSB to meet water needs and such is designated as HCV 5. HCV 5 area in additional area of renewal of PT GSB is presented in Map 31 and 32.

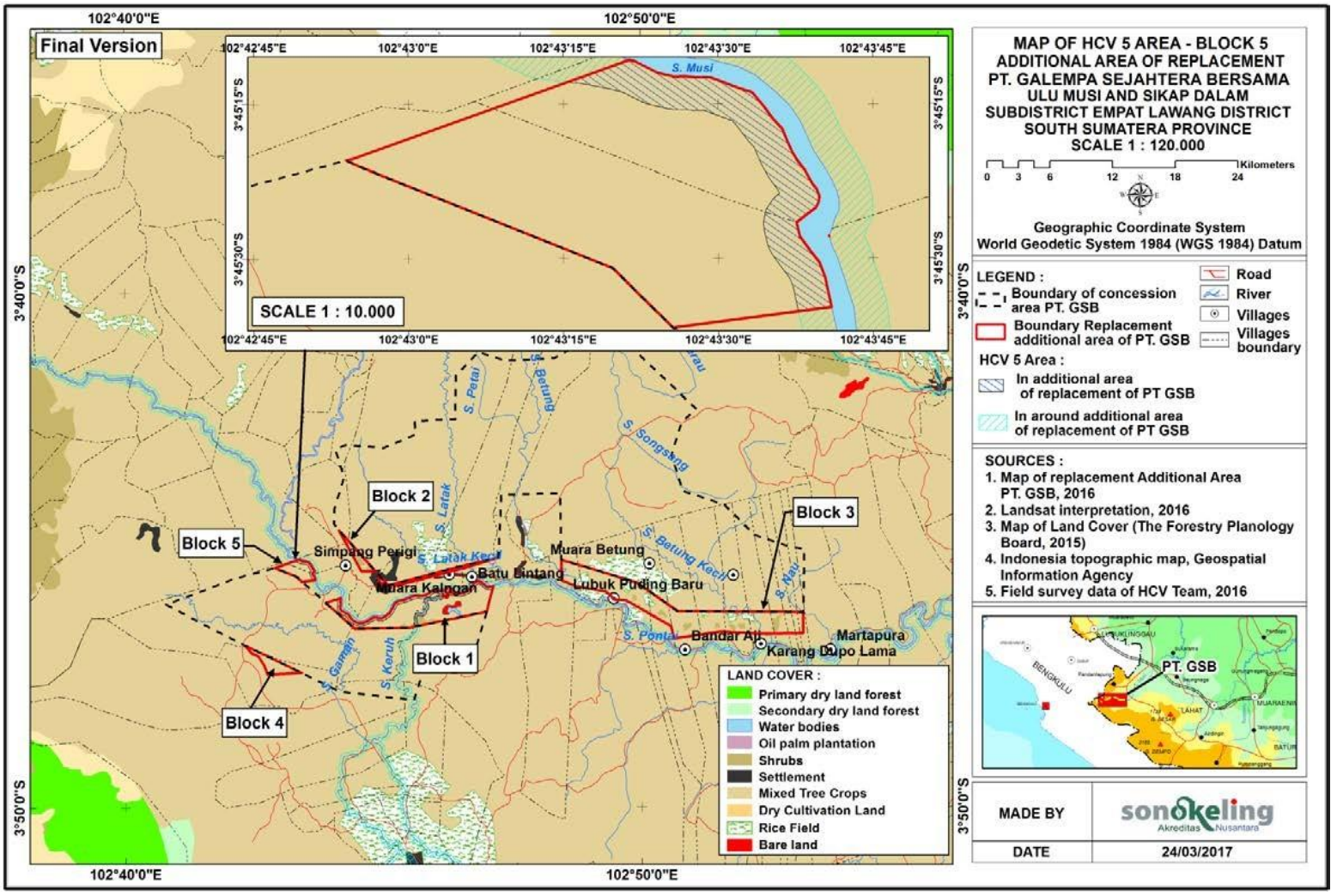
3.3.3.6 HCV 6. Cultural Values

At the Common Guide for Identification of HCVs (HCVRN, 2013), it is described that HCV 6 is a site, resource, habitat and landscape with cultural, archeological or historical significance at global or national level and / or with cultural, ecological, economic or religious interests / sacred critical to the traditional culture of local communities or indigenous peoples, identified through interaction / engagement with local communities or indigenous peoples concerned. Desktop

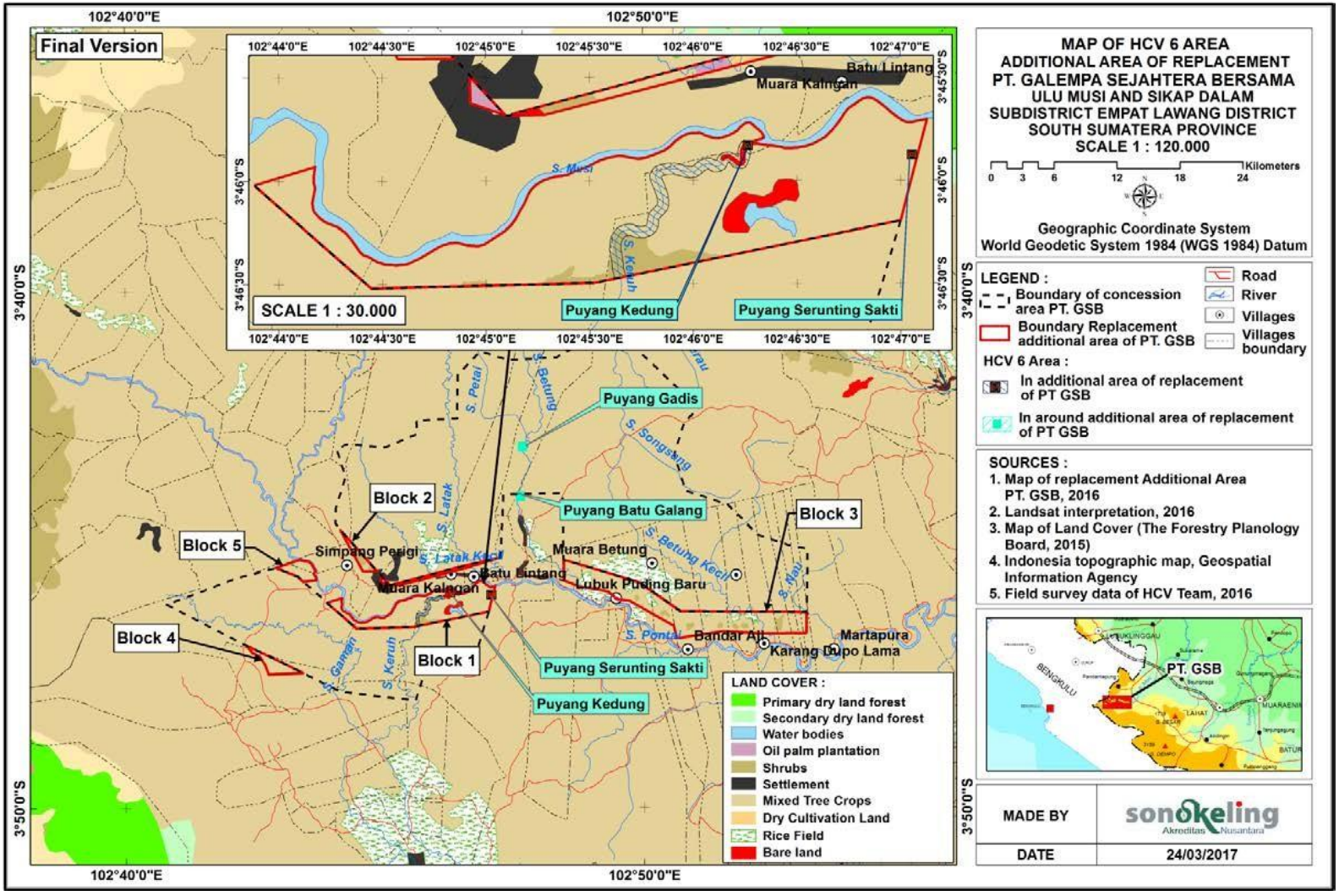
study, FGD and interview with the community, and field observation did not find any site known as having high cultural value in the national policy and regulation, UNESCO world heritage site, site with recognized and important historical and cultural value, and plant or animal resources with totemic value or those used in traditional ceremony inside the study area. However, such sites could be found around the study area on quite a far distance. Religious or sacred sites, burial (funeral) grounds or locations, in which traditional ceremony important for local or traditional community being held, could be found inside the additional area of renewal of PT GSB, i.e. Puyang Serunting Sakti Tomb and Puyang Kedung Tomb. For that reasons, HCV 6 was established in the additional area of renewal of PT GSB. HCV 6 area in additional area of renewal of PT GSB is presented in Map 33.



Map 31. Map of area distribution of HCV 5 – block 1 in additional area of renewal of PT GSB



Map 32. Map of area distribution of HCV 5 – block 5 in additional area of renewal of PT GSB



Map 33. Map of area distribution of HCV 6 in additional area of renewal of PT GSB

3.3.4 Public Consultation

Consultations with stakeholders through FGDs and interviews with communities in villages around additional area of renewal of PT GSB conducted on 17 - 21 September 2016. Public consultation with stakeholders through meetings with various stakeholders was conducted on Friday, September 23, 2016 in the Meeting Room of Ulu Musi District Office attended by 39 people covering several government agencies such as: BAPPEDA, Forestry Agency, Plantation, Mining and Energy Office of Empat Lawang Regency, Muspika from Districts of Ulu Musi and Sikap Dalam (District Head, Head of District Police, Head of District Military), UP staff, Local Communities (village head, BPD, village apparatus, customary heads, and community leaders) and non-governmental organizations. In addition, public consultations were also conducted through FGD (Focus Group Discussion) in each village with village heads, village apparatus, and community leaders. The issues conveyed in public consultations include: understanding of HCVs and their categories / sub-categories, objectives and benefits of HCV assessments, HCV assessment process, HCV assessment methods, field observations (biodiversity, environmental and socio-cultural services), findings / the results of the interim HCV assessments along with its maps (draft version), threats to HCV, and recommendations for the management and monitoring of its HCV areas. Key issues and recommendations from the results of public consultations with stakeholders and responses from HCV assessments in additional area of renewal of PT GSB is presented in Table 14; while the main issues / recommendations and recommendations of FGD results and interviews, as well as responses from HCV assessments are presented in Table 15.

Table 15. Summary of consultations with stakeholders as well as the main issues raised by them and their recommendations.

Date	Name	Position/ Role	Organiza-tion/ CSO	Matters/Major issues & recommendation	Feedback from Assessor Team
23 Septem-ber 2016	Sayidina Ali	Commu-nity leader	Ulu Musi District	I am glad that this was the first time I am invited to this public consultation. My advices to company that it should work with stakeholders, company must conduct a clear socialization, there must be a witness, to coordinate with elements of the village community. Must be careful and neat in the administration from the lower level / community.	Thank you for your inputs. Co-operation and coordination with stakeholders are one of the HCV management activities recommended by the HCV Assessment Team to the company.
23 Septem-ber 2016	A. Sukarni	Village Head	Tanjung Agung Village	The role of the village head, hoping that this will be continued, the historical value must be maintained. What do you mean by exposing those "puyang-puyang" tombs?	Puyang-puyang must be maintained because it has a social-cultural value for the community or become the cultural identity of local communities. Puyang-puyang are exposed in the hope whether the puyang-puyang that we delivered has been all accommodated or still there have not been accommodated.
23 Septem-ber 2016	Erlan Antoni	Village Head	Galang Village	The correct river name is Musi River, not Ulu Musi. What is the urgency of what Mr. Sis says? Telling how the young generation of this region has good potential in terms of human resources and natural resources.	Thank you for your input, related to the correction of the river name. We will then accomodate the materials for improvement and include in the preparation of the report. Our urgency describes the interim results of HCV assessments that have been done in additional area of renewal of PT GSB and a process of public consultation is one of the steps that must be done in conducting HCV assessment.

Table 16. Summary of FGD activities and interviews with communities around the additional area of renewal of PT GSB as well as the main or key issues raised by them and their recommendations

Date	Name	Position/ Role	Organiza-tion/ CSO	Matters/Major issues & recommendation	Feedback from Assessor Team
17 Septem-ber 2016	Dekki Suarno	Village Head	Simpang Perigi Village	• The presence of long-tailed monkey and wild boar attacks that damage the community crops. • The potential for pollution of river water for public consumption by company waste.	• Sufficient forested areas as wildlife habitats are designated HCV areas, so that in the future, they will be maintained. • HCV areas that have been damaged are recommended for rehabilitation, where the selected species serve as animal feed. • Areas acting as water sources have been designated as HCV areas, so that future will be maintained.
18 Septem-ber 2016	Kiswoyo	Head of Public Wealth	Batu Lintang Village	• The presence of long-tailed monkey and wild boar attacks that damage the community crops. • Waste of companies that are not managed properly or the use of chemicals will pollute water, river water can no longer be consumed and fish populations decrease.	• Responses have been described in previous explanation. • Rivers and its borders have been designated as HCV areas, so that in the future, they will be maintained.
19 Septem-ber 2016	Jon Heri	Village Head/ Head of Forum of Ulu Musi	Muara Betung Village	• The potential for pollution of river water for public consumption by company waste.	Responses have been described in previous explanation.
19 Septem-ber 2016	Haris	Village Head	Karang Gede Village	• The potential for pollution of river water for public consumption by company waste.	Responses have been described in previous explanation.
20 September 2016	Gunawan	Village Head	Lubuk Puding Baru Village	• The potential for pollution of river water for public consumption by company waste.	Responses have been described in previous explanation.
20 Septem-ber 2016	Ridon Cahyadi	Secretary of BPD	Bandar Aji Village	• The potential for pollution of river water for public consumption by company waste.	Responses have been described in previous explanation.
21 Septem-ber 2016	Pauzu	Village Head	Karang Dapo Lama Village	• The potential for pollution of river water for public	Responses have been described in previous explanation.

Date	Name	Position/ Role	Organiza-tion/ CSO	Matters/Major issues & recommendation	Feedback from Assessor Team
				consumption by company waste.	
21 Septem-ber 2016	Dansih	Hamlet Head (Dusun I)	Martapura Village	• The presence of long-tailed monkey and wild boar attacks that damage the community crops. • There is a negative perception of the community about the diminishing of water resources to meet the needs of drinking and agricultural consumption caused by the opening of oil palm plantations if the company does not make the water system.	Responses have been described in previous explanation.
16 Septem-ber 2016	H. Fauzi	Village Head	Muara Kalangan Village	• The presence of long-tailed monkey and wild boar attacks that damage the community crops. • Operational activities of the oil palm plantation potentially cause pollution of soil and water resulting from fertilizing and spraying activities of plants using chemicals so that river water can not be consumed and fish populations are reduced.	Responses have been described in previous explanation.

3.4 Soil and Topography

3.4.1 Soil

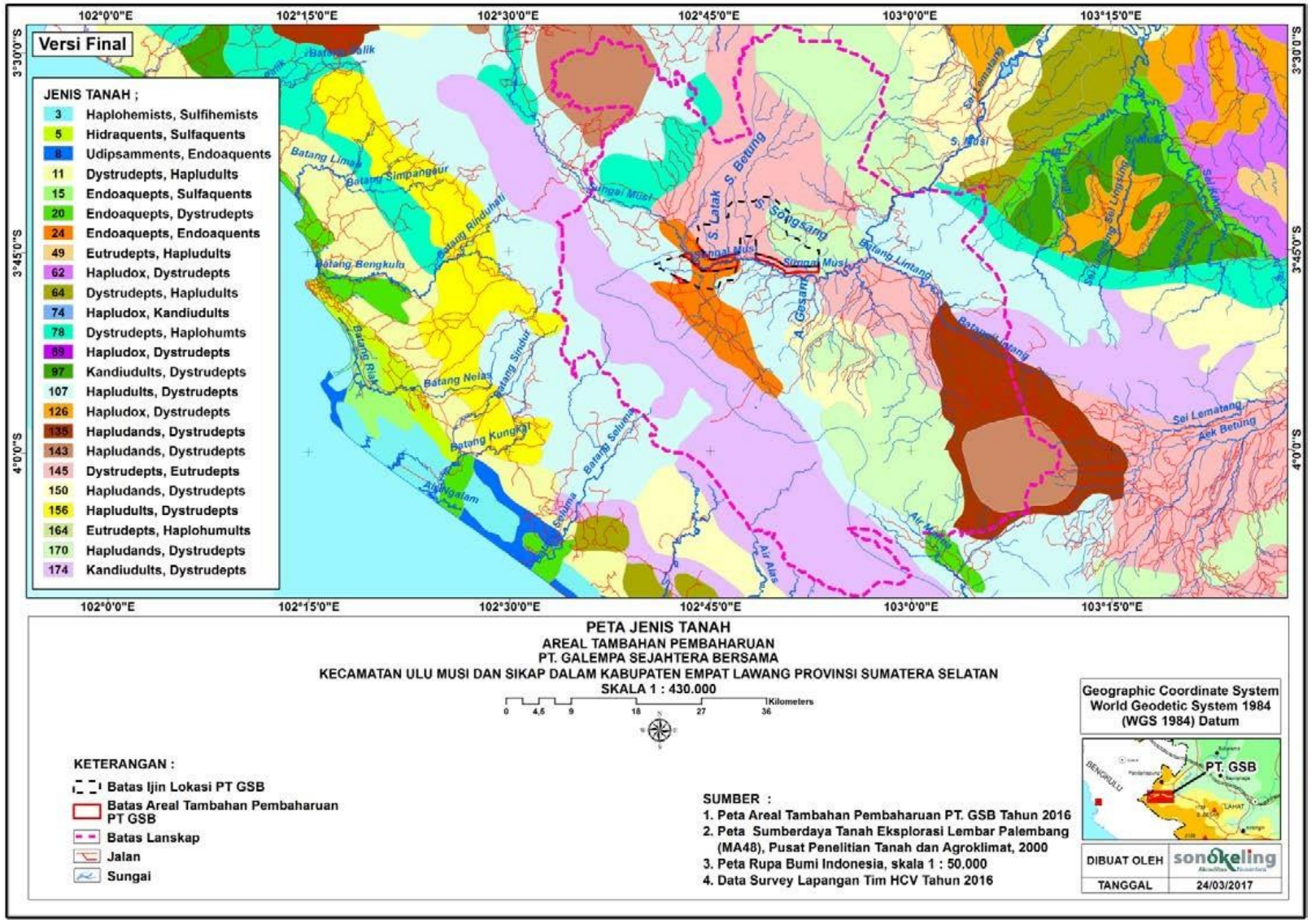
Based on Exploration Soil Resources Map (*Peta Sumberdaya Tanah Eksplorasi*) Sheet Palembang (MA48), *Pusat Penelitian Tanah dan Agroklimat* (2000), soil type that founded in additional area of renewal of PT GSB are 3 (three) types, (1) Endoaquepts, Endoaquents with area 474.41 Ha (36.27%), (2) Hapludults; Dystrudepts with area 72.69 Ha (5.56%) and (3) Dystrudepts; Eutrudepts with area 760.90 Ha (58.17%). There's no Peat Soil that found in the study area, because the area additional of renewal of PT GSB. The characteristic of three soil types are explain in Table 16, and the Map of Soil Distribution are in Map 34

Table 17. The Characteristic of Soil Type in additional area of renewal of PT GSB

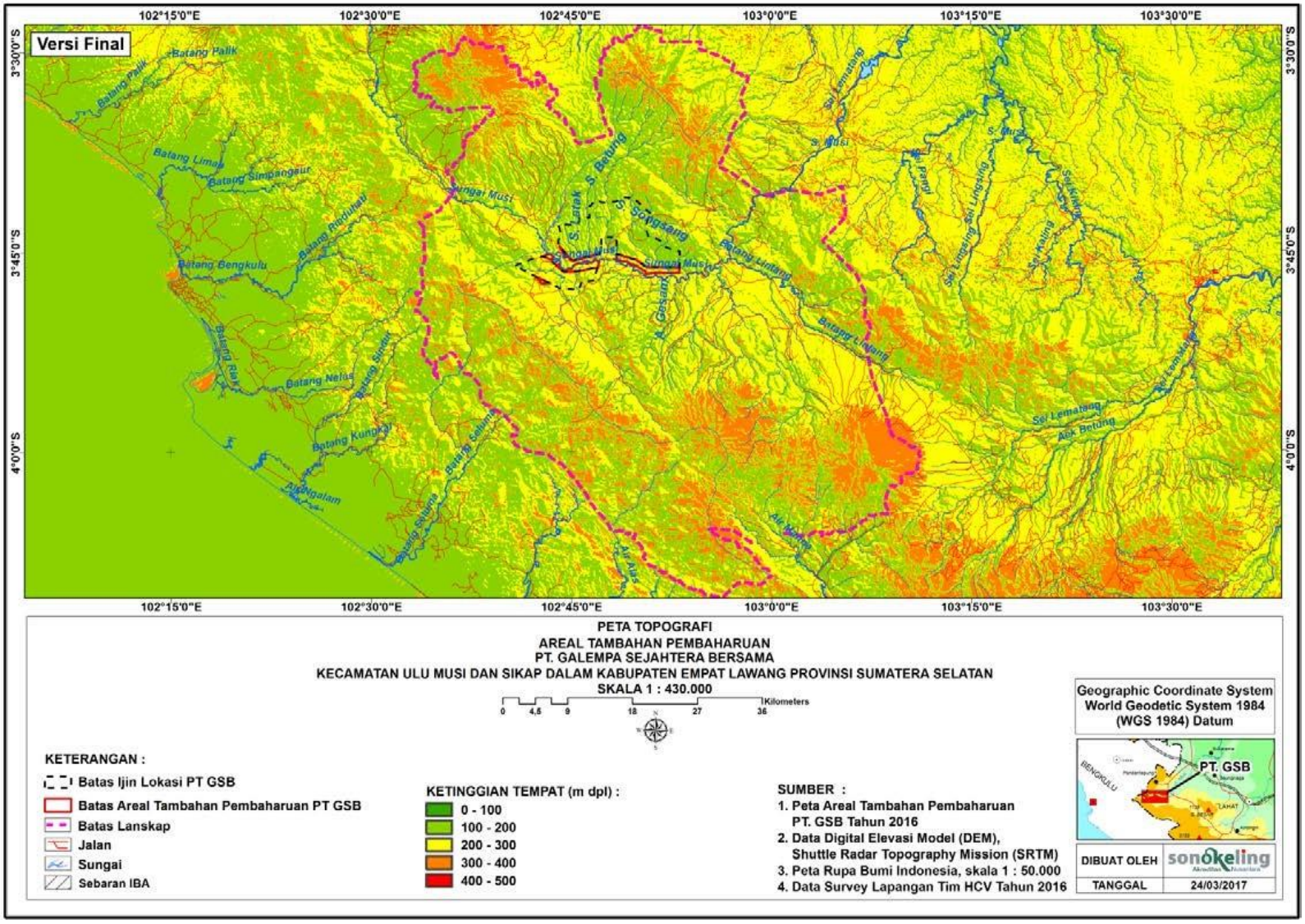
No.	Soil Association	Equivalency (PPT Bogor (1982)/ Dudal Supraptohardjo (1957))	Description
1	*Endoaquepts, Endoaquents*	Gleisol	The type of soil whose development is more influenced by local factors, namely topography which is a lowland or basin and is almost always inundated. The characteristics of gleisol soil are medium soil solum, gray to yellowish, dark to clay texture, muddy to massive structure, sticky consistency and acidity (pH 4.5 - 6.0). The soil fertility of gleisol depends on the type of parent material and soil water depth which limits the root system.
2	*Hapludults; Dystrudepts*	Podsolik	Mineral soil has developed, solum (depth) deep, clay to sandy texture, lumpy structure, sticky consistency, slightly acidic (pH less than 5.5), low to moderate fertility, red to yellow, low base saturation, erosion sensitive. This land comes from quartz sandstone, volcanic tuf, acidic. Spread in wet climates without dry months, rainfall more than 2500 mm / year.
3	*Dystrudepts; Eutrudepts*	Latosol	Latosol soil is formed due to weathering of the parent material volcanic tufa rock. In general, this type of land is formed in wet climates with rainfall between 2,000 - 7,000 mm per year. This land has properties that are resistant to erosion and have moderate to high productivity.

3.4.2 Topography and Slope

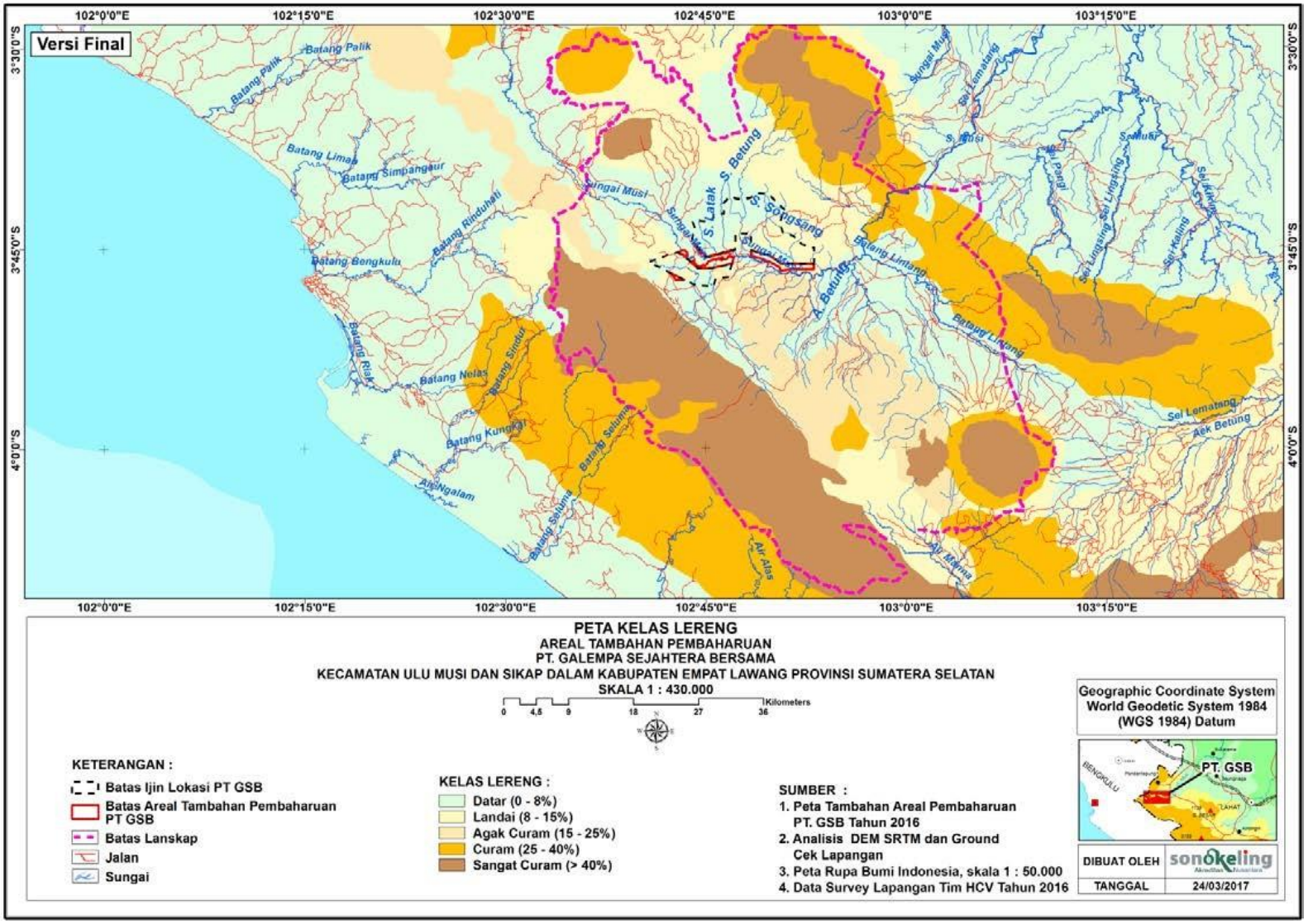
The additional area of renewal of PT GSB is located at an altitude of places ranging from 264 to 360 meters above sea level (Map 35). Based on slope class, the area consist of 4 (four) slope class, which is 0 – 8% class in 415.10 Ha (31.74%), (2) 8 – 15% slope class in 846.59 Ha (64.72%), (3) 15-25% slope class in 42.26 Ha (3.23%) and 25-40% slope class in 4.05 Ha (0.31%) (Map 36).



Map 34. Types of Soil in and around additional area of renewal of PT GSB



Map 35. Topography Map in and around additional area of renewal of PT GSB



Map 36. Slope Classes in and around additional area of renewal of PT GSB

3.5 Carbon Stock Assessment and Greenhouse Gases Emissions

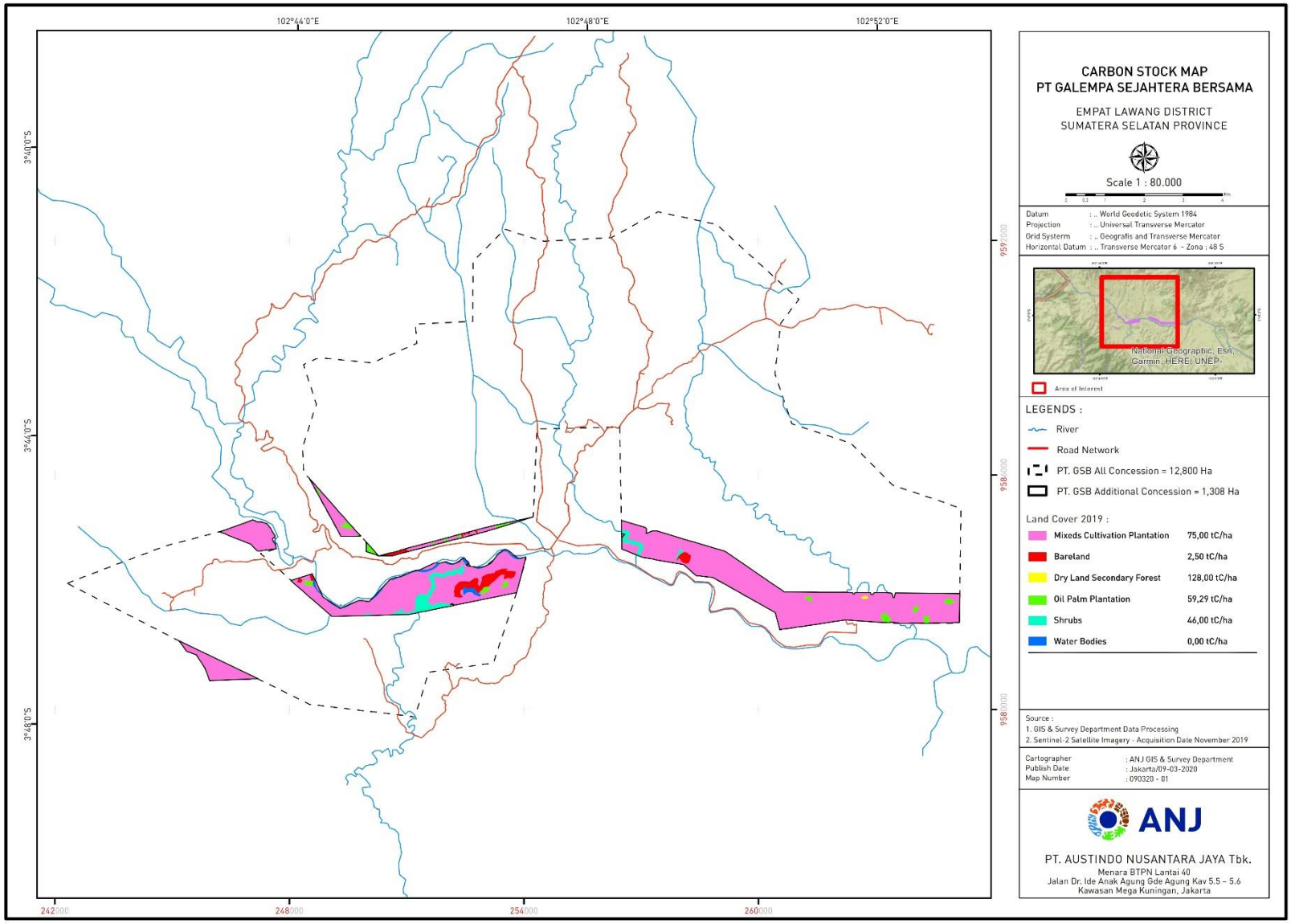
3.5.1 HCS Land Cover Classification Indicative

HCS Land Cover Classification Indicative in additional area of renewal of PT GSB covers 4 (four) land cover type, which are grouped into 2 (two) categories namely HCS Land Cover and Non HCS Land Cover. HCS Land Cover consist of Young Regeneration Forest and Open Field. Non HCS Land Cover consist of Agro Forestry and Water Body, spread according to Map 37 and in detail are presented in Table 18.

Table 18. HCS Land Cover Classification Indicative and the Area in the additional area of renewal of PT GSB

Land Cover	Code	Area (Ha)	%
HCS Land Cover			
1. Young Regeneration Forest	YRF	1.26	0.10
2. Open Field	OF	119.55	9.14
Non HCS Land Cover			
3. Agro Forestry	Agri	1,181.52	90.33
4. Water Body	WB	5.67	0.43
Total		**1,308.00**	**100.00**

The condition of Young Regeneration Forest Land Cover Classification with an area 1.26 Ha (0.10 %) are relatively in good condition, with tree in DBH > 30 cm. The vegetation are dominantly *Aleurites Moluccana (L) Wild* and *Ficus Uncinata Becc*. Open Field (OF) with an area 119.55 Ha (9.14%) founded scattered in additional area of renewal PT GSB. Agro Forestry with an area 1,181.52 Ha (90.33%) founded in groups of small scale intensive plantation and agriculture that own by surrounding community. Water Body are river and “CekDam” with an area 5.67 Ha (0.43%).


102°44'0"E
102°48'0"E
102°52'0"E
3°40'0"S
3°44'0"S
3°48'0"S
242000
248000
254000
260000
9592000
9584000
9580000
CARBON STOCK MAP
PT GALEMPA SEJAHTERA BERSAMA
EMPAT LAWANG DISTRICT
SUMATERA SELATAN PROVINCE
Scale 1 : 80.000
Datum : .. World Geodetic System 1984
Projection : .. Universal Transverse Mercator
Grid Systerm : .. Geografis and Transverse Mercator
Horizontal Datum : .. Transverse Mercator 6 - Zona : 48 S
National Geographic, Esri, Garmin, HERE, UNEP
Area of Interest
LEGENDS :
River
Road Network
PT. GSB All Concession = 12,800 Ha
PT. GSB Additional Concession = 1,308 Ha
Land Cover 2019 :
Mixeds Cultivation Plantation 75,00 tC/ha
Bareland 2,50 tC/ha
Dry Land Secondary Forest 128,00 tC/ha
Oil Palm Plantation 59,29 tC/ha
Shrubs 46,00 tC/ha
Water Bodies 0,00 tC/ha
Source :
1. GIS & Survey Department Data Processing
2. Sentinel-2 Satellite Imagery - Acquisition Date November 2019
Cartographer : ANJ GIS & Survey Department
Publish Date : Jakarta/09-03-2020
Map Number : 090320 - 01
ANJ
PT. AUSTINDO NUSANTARA JAYA Tbk.
Menara BTPN Lantai 40
Jalan Dr. Ide Anak Agung Gde Agung Kav 5.5 – 5.6
Kawasan Mega Kuningan, Jakarta

3.5.2 Inventarization of Carbon Stock

Carbon Inventarization was done as part of HCV Assessment. The study of Carbon Stock Inventarization can be seen at Map 20 on page 68. Carbon Stock inventarization and Greenhouse Gases Emission in additional area of renewal of PT GSB at Young Regeneration Forest is done by 3 sample plot. Carbon Stock Estimation in every sample plot for each HCS Land Cover Class is based on field data analysis that presented at Table 18. Carbon Stock Value in every sample plot is an average of three class diameter which are stakes, poles and trees. The maximum carbon stock value in Young Regeneration Forest is 46.8 Ton/Ha and the minimum value is 23.25 Ton/Ha and the average is 30.95 Ton/Ha

Table 19. Carbon Stock Estimation in every sample plot in additional area of renewal of PT GSB

Track	Plot	Carbon Stock (Ton/Ha) in Young Regeneration Forest
1	1	23.43
	2	46.18
	3	23.25

Carbon Stock Estimation based on species group in three land cover class of HCS Area are presented in table 16. Tree vegetation species in the study area can be grouped as Non Dipterocarp. Based on table 19, Non-Dipterocarpaceae in young regeneration forest, highest carbon stock value is Aleurites Moluccana (L). Wild (kemiri) (24.53 Ton C/Ha) and the lowest is Coffee Robusta Linden ex de Wildem (Kopi) (0.28 ton C/Ha).

Poles calculation per hectare in HCS is one of the criteria to define HCS Land Cover Class in additional area of renewal of PT GSB are presented in table 19. Poles per hectare analysis using field data / field inventarization of tree with diameter bigger than 30 cm. The analysis said that tree in Young Regeneration Forest with >30 cm diameter the average is 50 poles/Ha.

Table 20. Carbon Stock Estimation based on Species Group in additional area of renewal of PT GSB

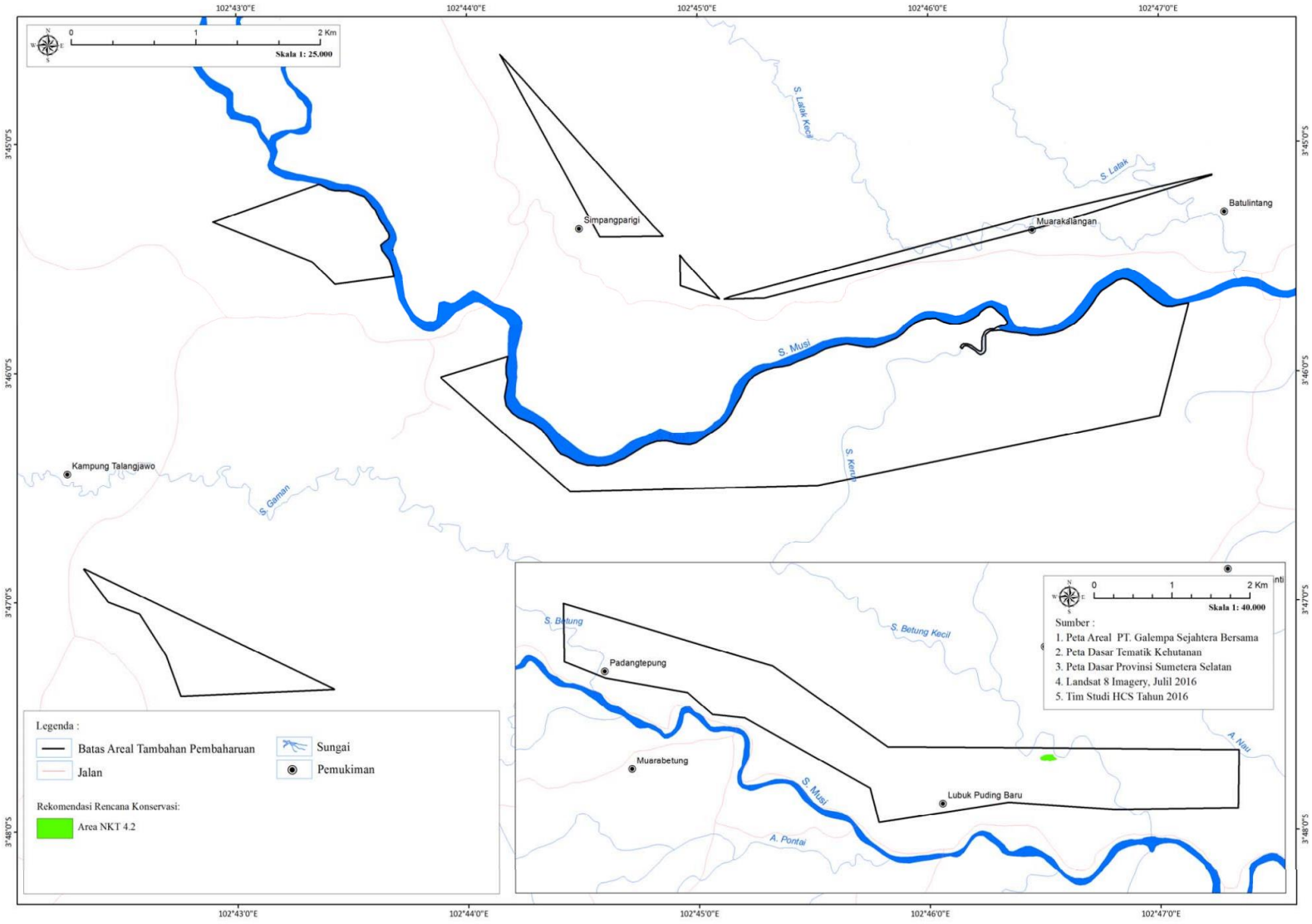
Local Name	Scientific Name	Species Group	Young Regeneration Forest (ton C/ha)	Carbon Value per Species (ton C/ha)
Kemiri	*Aleurites moluccana* (L.) Willd.	Non-Dipterocarpaceae	24.53	24.53
Kopi	*Coffea robusta* Linden ex de Wildem	Non-Dipterocarpaceae	0.28	0.28
Kayu ara daun besar	*Ficus glomerata* Roxb.	Non-Dipterocarpaceae	3.10	3.10
Luwingan	*Ficus hispida* Linn.	Non-Dipterocarpaceae	1.15	1.15
Kayu ara	*Ficus racemosa* L.	Non-Dipterocarpaceae	1.32	1.32
Kayu ara daun Kecil	*Ficus uncinata* Becc.	Non-Dipterocarpaceae	19.77	19.77
Gondang	*Ficus variegata* Bl.	Non-Dipterocarpaceae	15.29	15.29
Ris	*Glyricidia sepium* (Jacq.) Kunth. Ex Walp.	Non-Dipterocarpaceae	11.81	11.81
Kelumbuk	*Kleinhovia hospita* L.	Non-Dipterocarpaceae	1.41	1.41
Lamtoro	*Leucaena glauca* (L.) Benth.	Non-Dipterocarpaceae	2.26	2.26
Mahang	*Macaranga mappa* Muell. Arg.	Non-Dipterocarpaceae	3.10	3.10
Talop	*Microcos hirsuta* Burret	Non-Dipterocarpaceae	5.83	5.83
Benuang daun besar	*Octomeles sumatrana* Mig.	Non-Dipterocarpaceae	1.15	1.15
Kecrutan	*Spathodea campanulata* P. Beauv.	Non-Dipterocarpaceae	1.87	1.87

Table 21. Number Poles pe Hectare (>30 cm diameter) in Additional Areas of Renewal of PT GSB

HCV Land Cover	Plot Number	DBH>30 cm	Average (tree/Plot)	Plot Area (ha)	Poles/ha
Young Regeneration Forest	3	6	2	0.04	50

Based on the results of the HCS Patch Analysis Decision tree process, it shows potential SKT classes in the form of Young Regenerated Forests with an area of 1.2 on the result of 6 ha including low priorities without cores or without core zones. Thus the area is included in the indicative development category. The young regenerated forest area in the additional area of renewal of PT GSB covering an area of 1.26 ha is a steep slope area. Based on the HCV identification study, the area includes the HCV 4.1 area and is located adjacent to the Small Betung River border. So in its management, conservation is still carried out in the area, and the area won't be cleared for palm oil. It can be seen on Map 2 Plan of new planting in additional area of renewal of PT GSB, on page 8. It's shown that the conservation area that already identified on HCV Assessment and Carbon Assessment won't be cleared for Palm Oil Development.

The result of High Carbon Stock Study in additional area of renewal of PT GSB are already mapped that can be seen at Map 37 on page 96. The map shows that areas that identified as HCS area in additional area of renewal of PT GSB.



Map 38. Recommended Plan for Areas Conserved in additional area of renewal of PT GSB

3.5.3 Greenhouse Gas Assessment

The revised RSPO P&C (2013) has a new 7.8 Criteria which requires that new plantations be designed to minimize net GHG emissions. Indicators in this criterion include the identification and estimation of potential sources of emissions and carbon sinks related to new development. Another indicator is that new development must be designed to minimize GHG emissions by considering avoidance of lands with high carbon stocks, Estate Management and also considering sequestration options.

Based on High Carbon Stock Study of the additional area of renewal of PT GSB, the High Carbon Stock Potential are the area whitin landcover Young Regeneration Forest, with carbon stock about 30,95 Ton/Ha, and the are around 1.26 Ha. Actualy this area include in development category, because the area do not have Core Zone or Low Priority, but based on HCV Assessment, the area are located around buffer zone of Betung Kecil River and the condition are in step slope, so the area should be conserved. To minimaze GHG Emission, PT GSB develop new development scenarios to guidance the selection of the optimal development plan as in Table 21. The main focus on the scenario are in plant management to mitigate the GHG emission from cultivation.

Table 22. Description of new development scenarios in PT GSB

Scenario 1	All potential areas for new development cleared for oil palm, No methane capture facilities planned for mill. No clearing on HCV areas identified. Optimazation of fertilization according to MPOB (Malaysian Palm Oil Board)
Scenario 2	All potential areas for new development cleared for oil palm, No methane capture facilities planned for mill. No clearing on HCV areas identified. Optimazation vertilizer of fertilization according to soil and leaf analysis

		S1	S2
Area avoided for development	HCV Area	199,5	199,5
Potential areas for new development	*Mixeds Cultivation Plantation*	1034,88	1034,88
	Shrubs	0,2	0,2
	bareland	42,65	42,65
	Oil Palm Plantation	30,32	30,32
POME Treatment	Conventional Treatment	-	-
	Methane capture	-	-
Fertilizer Treatment	MPOB	Y	-
	Soil and leaf analysis	-	Y

Based on GHG Calculation of RSPO Palm GHG for New Planting V2 (Table 22), the most emission are sourced from land clearing and fertilizer. As shown at Map 2 Plan of new planting in

additional area of renewal of PT GSB, on page 8, it describes the distribution of HCV Area that will be conserve and the planted plan area include it's timeframe.

Table 23. Projection of GHG Emissions associated with different development scenarios

	S1			S2		
Emission Source	t CO_2e	t CO_2e/ha	t CO_2e/t FFB	**T CO_2e**	**T CO_2e/Ha**	**T CO_2e/T FFB**
Land Clearing	12.305,96	11,72	0,49	12.289,46	11,70	0,49
Crop Sequestration	-9.832,57	-9,36	-0,39	-9.832,57	-9,36	-0,39
Fertilizer	1.706,02	1,62	0,07	1.361,89	1,30	0,05
N_2O	1.050,29	1,00	0,04	1.050,29	1,00	0,04
Fuel in Estate	74,98	0,07	0,00	74,98	0,07	0,00
Peat Soil	0,00	0,00	0,00	0,00	0,00	0,00
Conservation Credit	-3,15	0,00	0,00	-3,15	0,00	0,00
Total	5.301,52	5,05	0,21	4.940,89	4,70	0,20

Based on the GHG analysis from 2 (two) scenarios above, management PT GSB choose scenario 2 as the lowest GHG emission for palm oil new developing. The emission of scenario 2 are 4.940,89 ton CO2 eq or 4.70 ton CO2 eq/Ha. Scenario 2 has lowest emmision due to optimizing fertilizer application that only need for Oil Palm.

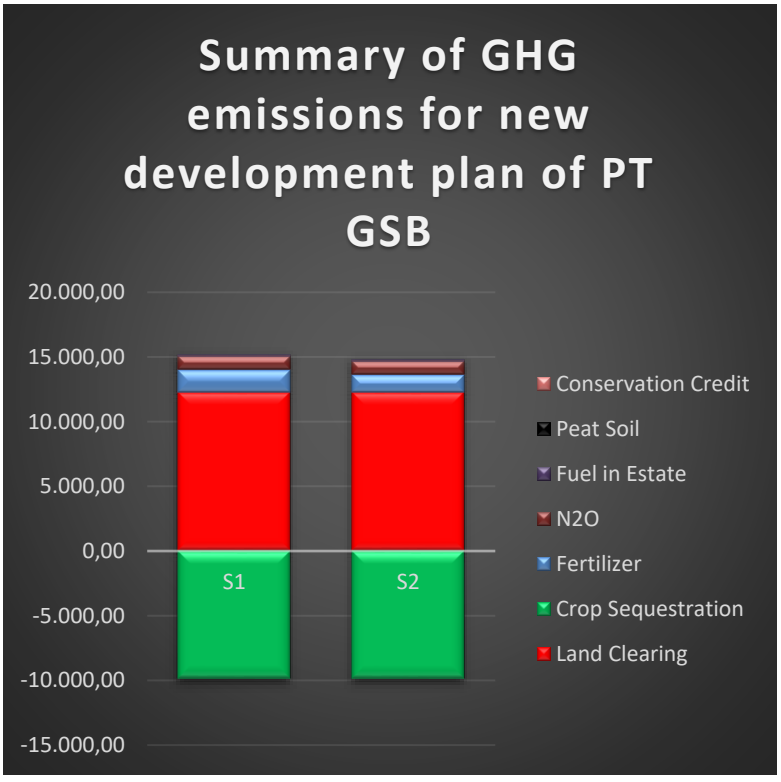


Figure 4. Projection of GHG Emissions (tCO2e) associated with different development scenarios

3.6 Analysis of Land Change (*Land Use Change Analysis*/LUCA)

The main data used in this study are vector data and satellite image data (satellite imagery) as material for analyzing land use change. The satellite image data used is Landsat Imagery with a

resolution of 30 meters that already has a Georeferenced. In addition, the satellite image data used for the analysis of changes in land utilization in additional acreage Palm Plantation PT. Galempa Sejahtera Bersama in Table 24.

Tabel 24. Satellite Imagery Data used for Analysis of Changes in Land Use in additional areas of PT Galempa Sejahtera Bersama

1 Relevant time of clearance period - *pleasetick*			
☐ November 1, 2005-November 31, 2007		☐ December 1, 2007-Desember 31, 2009	
☐ January 1, 2010-May 9, 2014		☑ After May 9, 2014	
2 Date of satellite image acquisition for each time of clearance period			
Periode		**Date Acquisition**	**Cloud cover (%)**
Before November 1, 2005 (baseline)		08/08/2005	2%
November 1, 2005-November 31, 2007		30/08/2007	4%
December 1, 2007-December 31, 2009		03/08/2009	6%
January 1, 2010-May 9, 2014		27/04/2014	3%
May 9, 2014 - May 9, 2016		05/07/2016	4%
After HCV identified			
After becoming RSPO member (if relevant)			
After the management unit acquired (if relevant)			
Latest satellite image used for ground truthing		05/10/2019	4%
3 Satelite images used in the LUC Analysis			
Satelite name		Landsat	
Resolution		30 meters	

The results of the landsat image interpretation from 2005, 2007, 2009, 2014, 2016, 2018 and 2019 in the additional area of renewal of PT Galempa Sejahtera Bersama's Palm Oil Plantation have historically had 7 types of land cover namely Shrubs (SCH / Shrubs), Mixed Rubber (RPL / Rubber Plantation), Open Land (BRL) / Bareland), Dryland Agriculture (DCL / Dry Cultivation), Palm Oil (OPL / Oil Palm Plantiation), Rice Fields (RCF / Rice Field), and Water Bodies (WAB / Water Bodies) Changes in land use in additional area of renewal of PT Palm Oil Plantation Galempa Sejahtera Bersama is very dynamic because of the high land clearing activities for agricultural and plantation cultivation activities. The results of a historical analysis of changes in land use in the additional area of renewal of PT Galempa Sejahtera Bersama Oil Palm Plantation using classifications from The Southeast Asia 2005 Land Cover data set (Gunarso et. Al, 2013) are presented in Table 25. Land Cover Maps for each time period represented by 2005, 2007, 2009, 2014, 2016, 2018 and 2019 respectively presented on Maps 39-45.

Tabel 25. Historical Changes in Land Use in the additional area of renewal of PT Galempa Sejahtera Bersama Palm Oil Plantation

No.	**Code**	**Land Cover**	**Ha**					
			2006	**2009**	**2011**	**2016**	**2018**	**2019**

1	SCH	*Shrubs*	890,73	875,48	871,44	105,46	57,38	57,38
2	MCP	*Mixeds Cultivation Plantation*	141,2	168,57	186,3	1102,36	1131,49	1141,28
3	DCL	*Dry Cultivation Land*	9,63	9,6	9,55	7,58		
4	OPL	*Oil Palm Plantation*	0	0	0	7,41	34,08	34,08
5	BRL	*Bareland*	240,51	228,34	203,77	14,09	61,81	52,03
6	RCF	*Rice Field*	24,15	24,23	30,01	64,17		
7	WAB	*Water Bodies*	0,52	0,52	5,67	5,67	21,99	21,99
8	DLS	*Dry Land Secondary Forest*	1,26	1,26	1,26	1,26	1,26	1,26
Total			1308	1308	1308	1308	1308	1308

Based on the Land Cover Map in the additional area of renewal of the PT Galempa Sejahtera Bersama Palm Oil Plantation, for each year it is divided into four categories of vegetation coefficients derived from the classification of land cover from satellite imagery. Based on the analysis of land use cover changes, it is known that in the additional area of renewal of PT Galempa Sejahtera Bersama Palm Oil Plantation contains one category of vegetation coefficient, namely Coefficient 0.00 which describes Non Forest (Table 26).

Tabel 26. Vegetation Coefficient Category in the additional area of renewal of PT Galempa Sejahtera Bersama Palm Oil Plantation

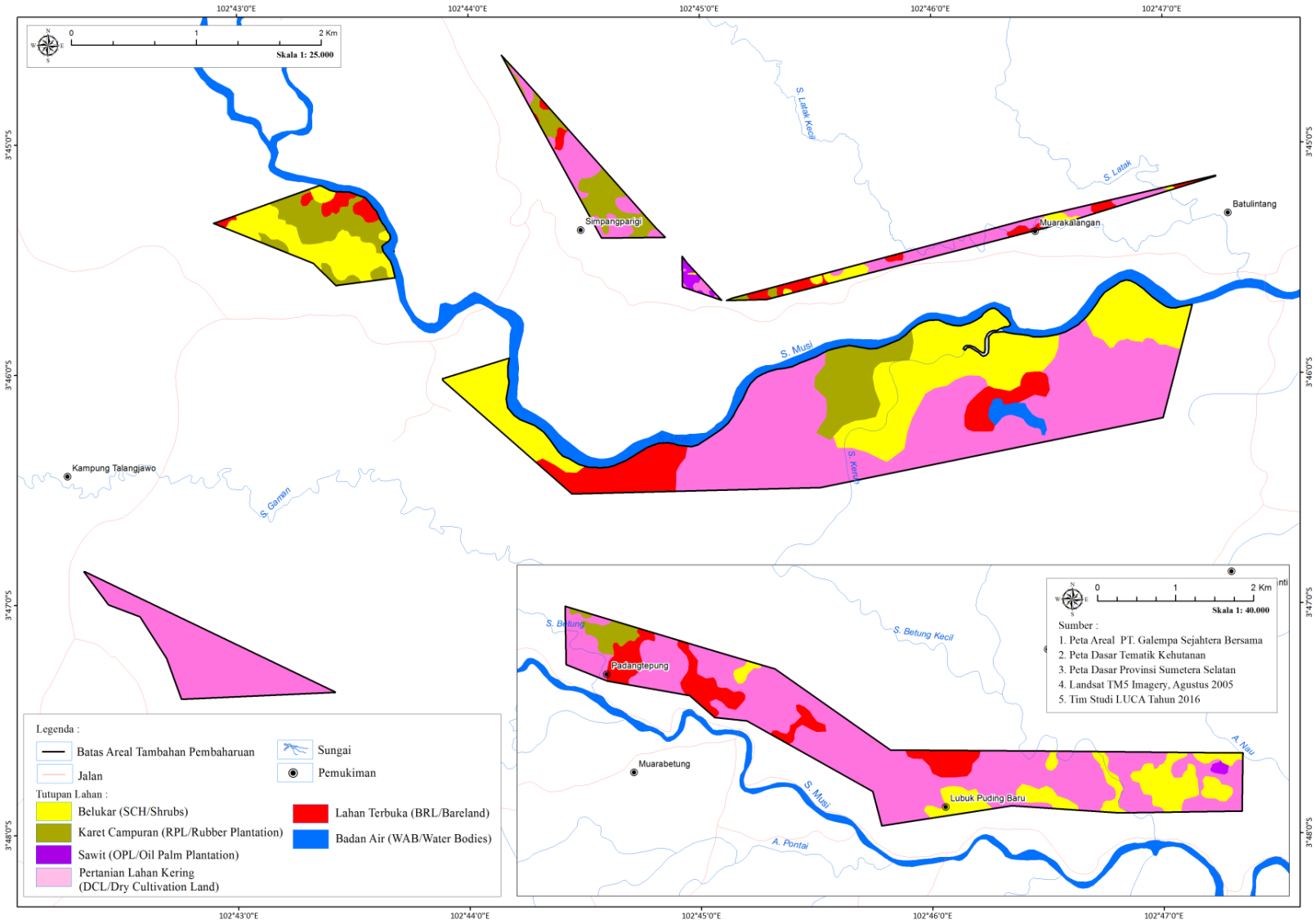
Coeficient	**Vegetation**	**HA**				
		2005 (*Baseline*)	**November 2005 – November 2007**	**1 Desember 2007 – 31 Desember 2009**	**1 Januari 2010 – 9 Mei 2014**	**After 9 Mei 2014**
1,00	Primary Forest	-	-	-	-	-
0,70	Secondary Forest	-	-	-	-	-
0,40	Agroforestry	-	-	-	-	-
0,00	Non-Forest	1.308,00	1.308,00	1.308,00	1.308,00	1.308,00
Total		**1.308,00**	**1.308,00**	**1.308,00**	**1.308,00**	**1.308,00**

PT. Galempa Sejahtera Bersama is a management unit that is controlled by a member of the RSPO namely Austindo Nusantara Jaya (ANJ) Group, which has a RSPO-certified plantation unit. So that the compensation procedure is included in category three (3) for determining the conservation obligation.

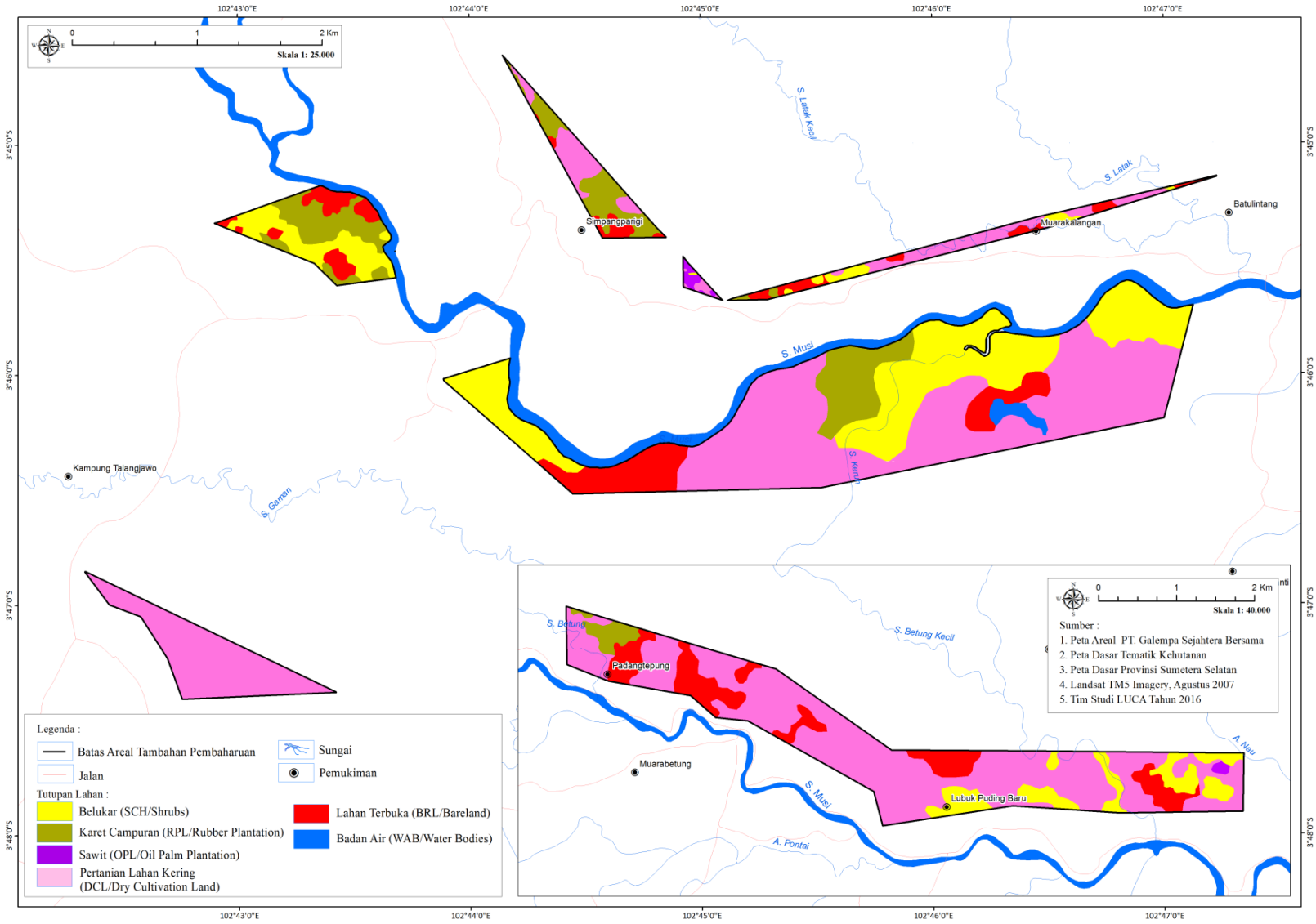
Based on the analysis of data overlay results between the area of palm oil land cover up to 2016 and the distribution of areas that are not allowed by the P&C for planting palm oil, it is known the area of area that has the potential for remediation in additional areas of

palm oil plantations of PT Galempa Sejahtera Bersama is measuring 0 Ha or no areas that have the potential remediation obligations until the end of the period (after May 9th, 2014).

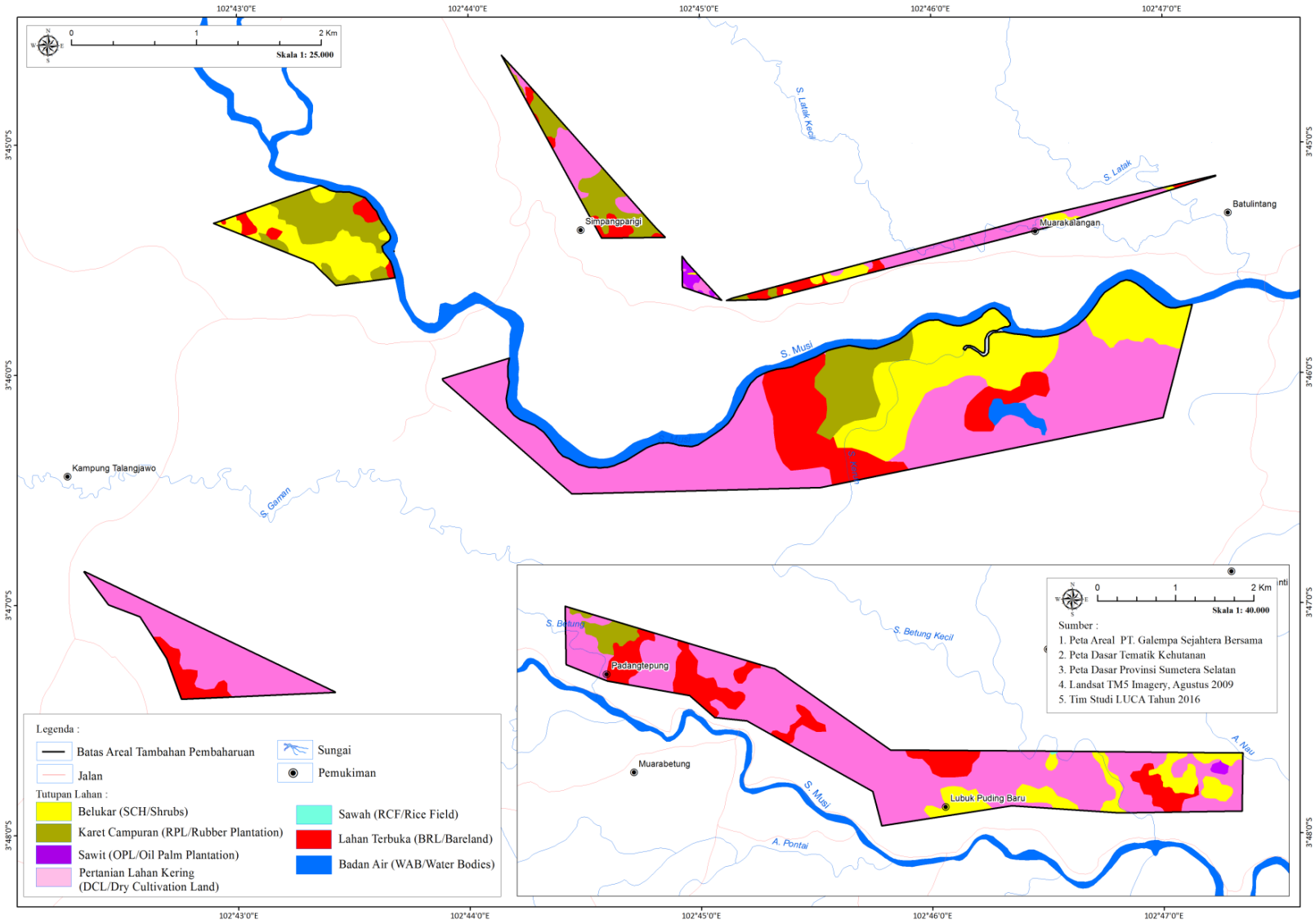
Based on the calculation results, the amount of compensation for the opening of palm oil land in the additional area of PT. Galempa Sejahtera counted for the period of January 1, 2010 - May 9, 2014 covering an area of 0 hectares and after 2014 covering an area of 0 hectares.



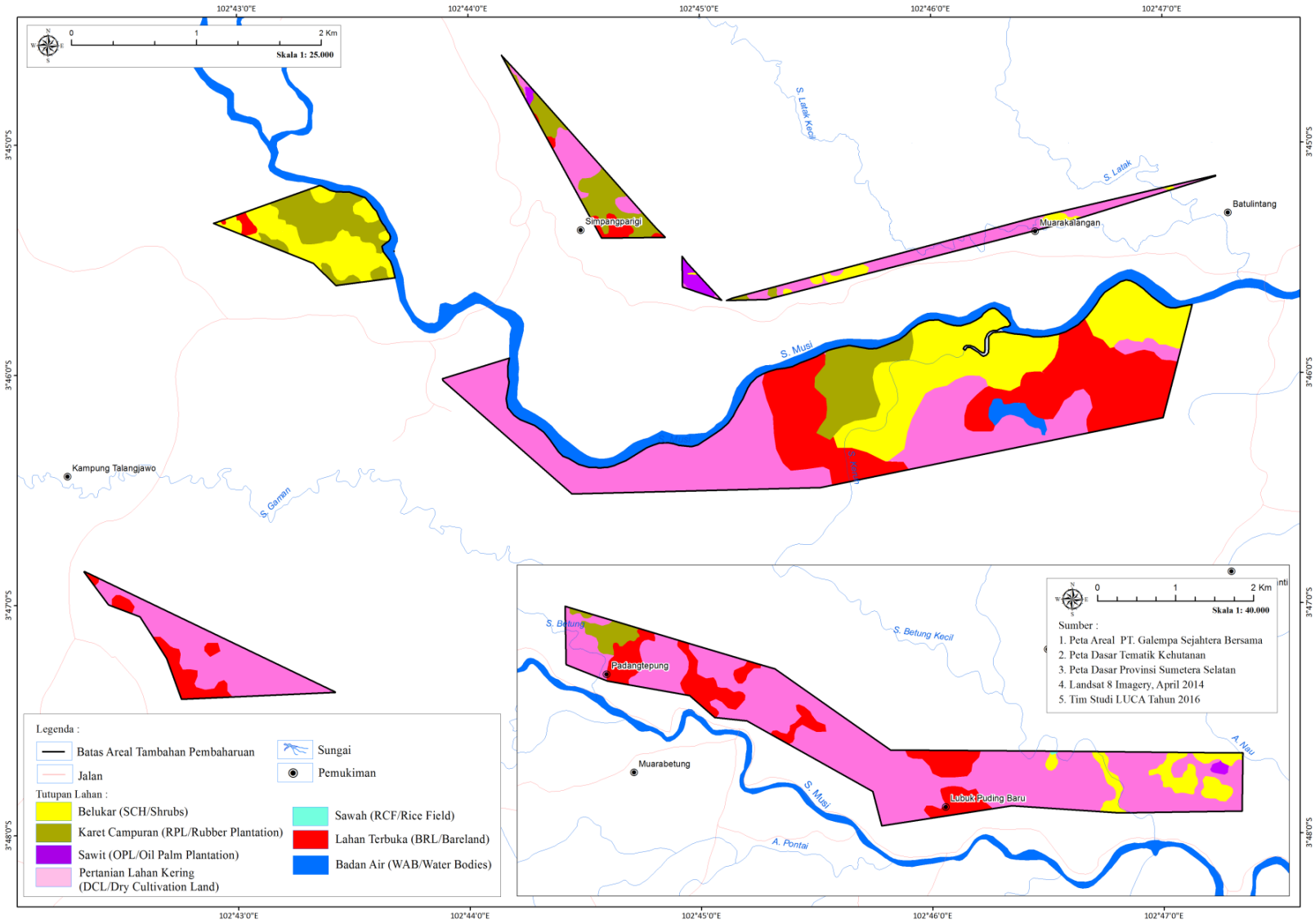
Map 39. Land cover year 2005 (Baseline) in the additional area of renewal of PT Galempa Sejahtera Bersama



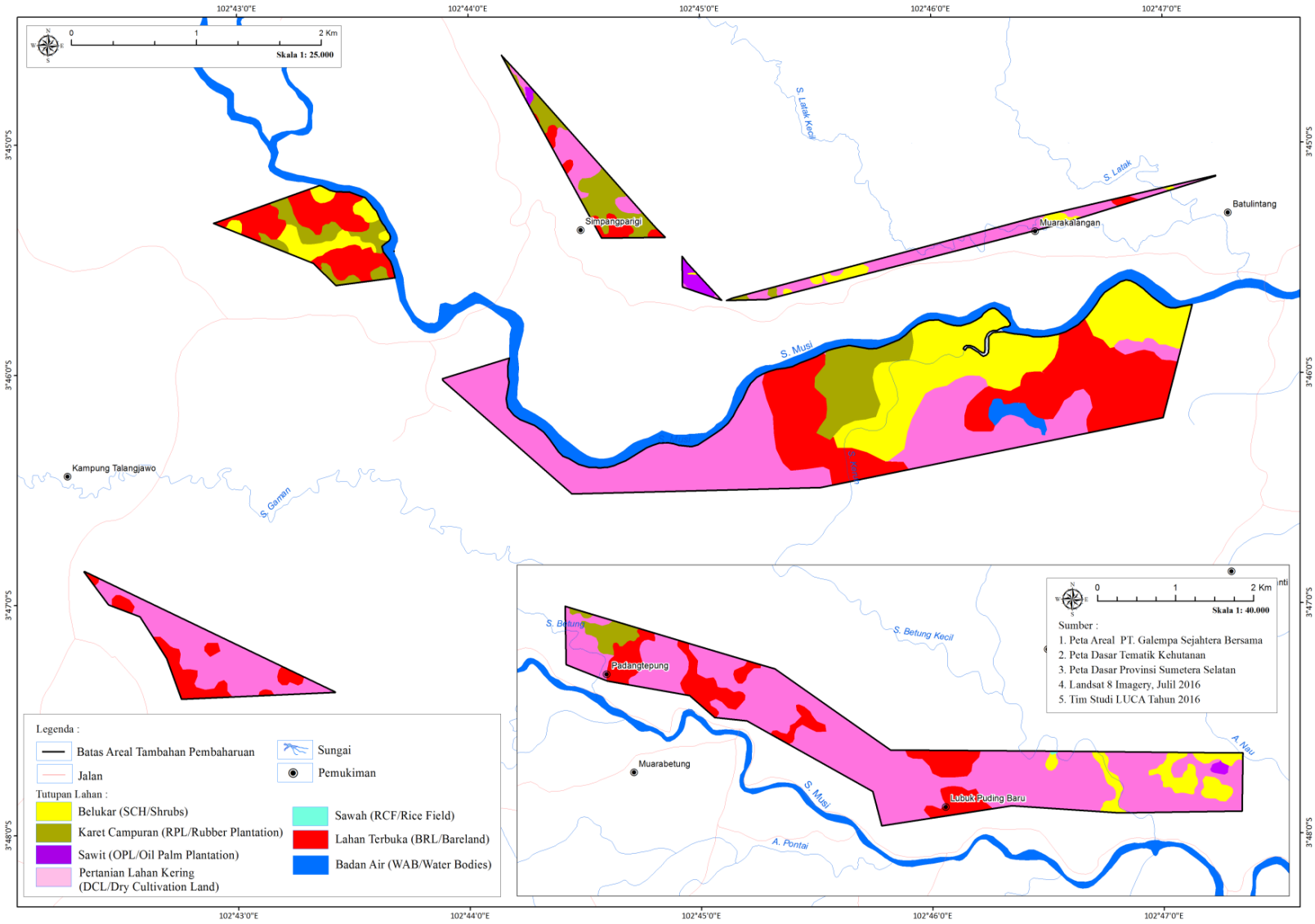
Map 40. Land cover year 2007 in the additional area of renewal of PT Galempa Sejahtera Bersama



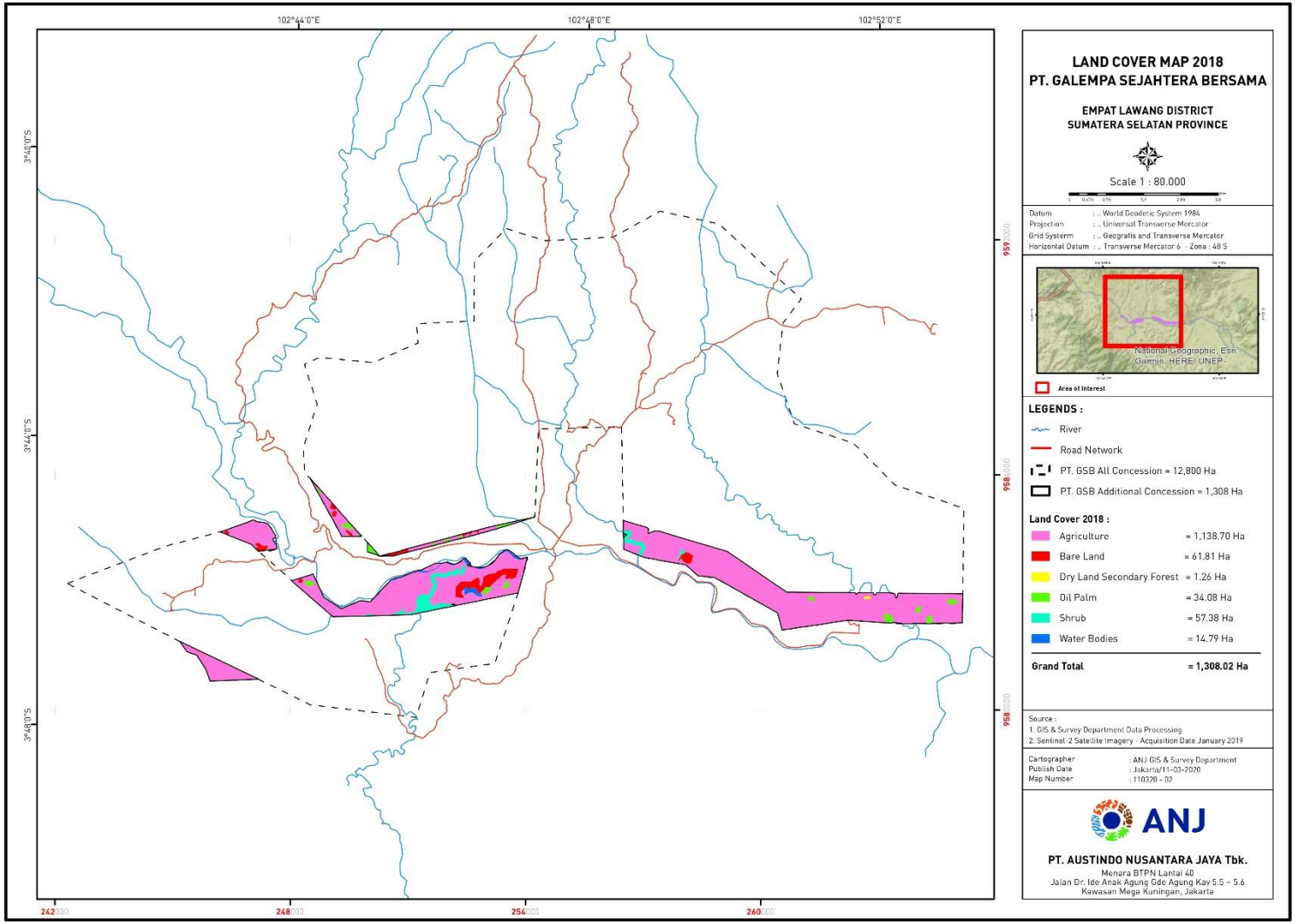
Map 41. Land Cover year 2009 in the additional area of renewal of PT Galempa Sejahtera Bersama



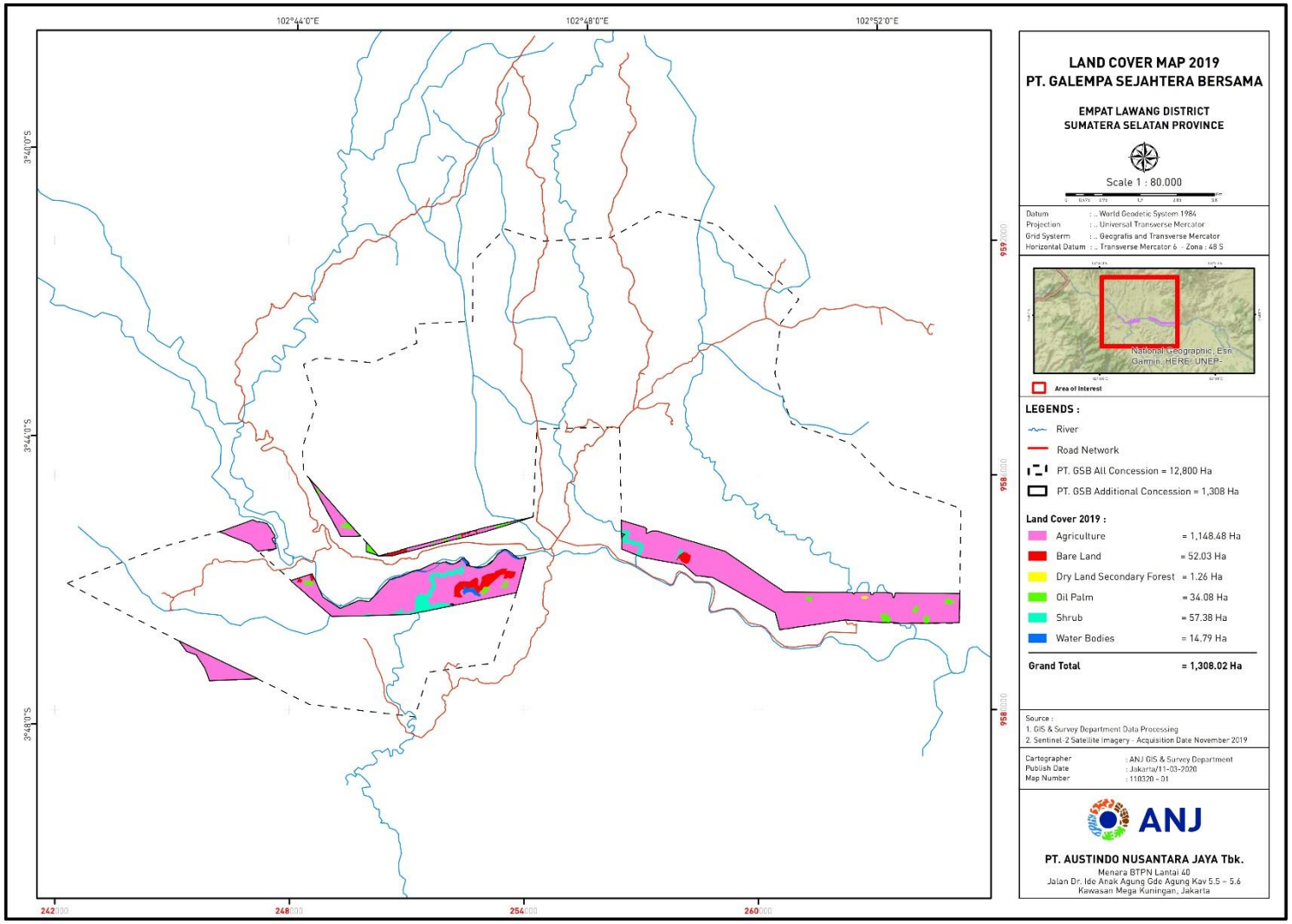
Map 42. Land Cover year 2014 in the additional area of renewal PT Galempa Sejahtera Bersama



Map 43. Land Cover year 2016 in the additional area of renewal of PT Galempa Sejahtera Bersama



Map 44. Land Cover year 2018 in the additional area of renewal of PT Galempa Sejahtera Bersama



Peta 45. Land Cover year 2019 in the additional area of renewal of PT Galempa Sejahtera Bersama

4. Management Plan Summary

4.1 Management Plan Responsible Team

Below in Figure 4 is the structure responsible of management and monitoring plans of SEIA, HCV, SIA, HCS and GHG. The details will be explained in the plan and management table.

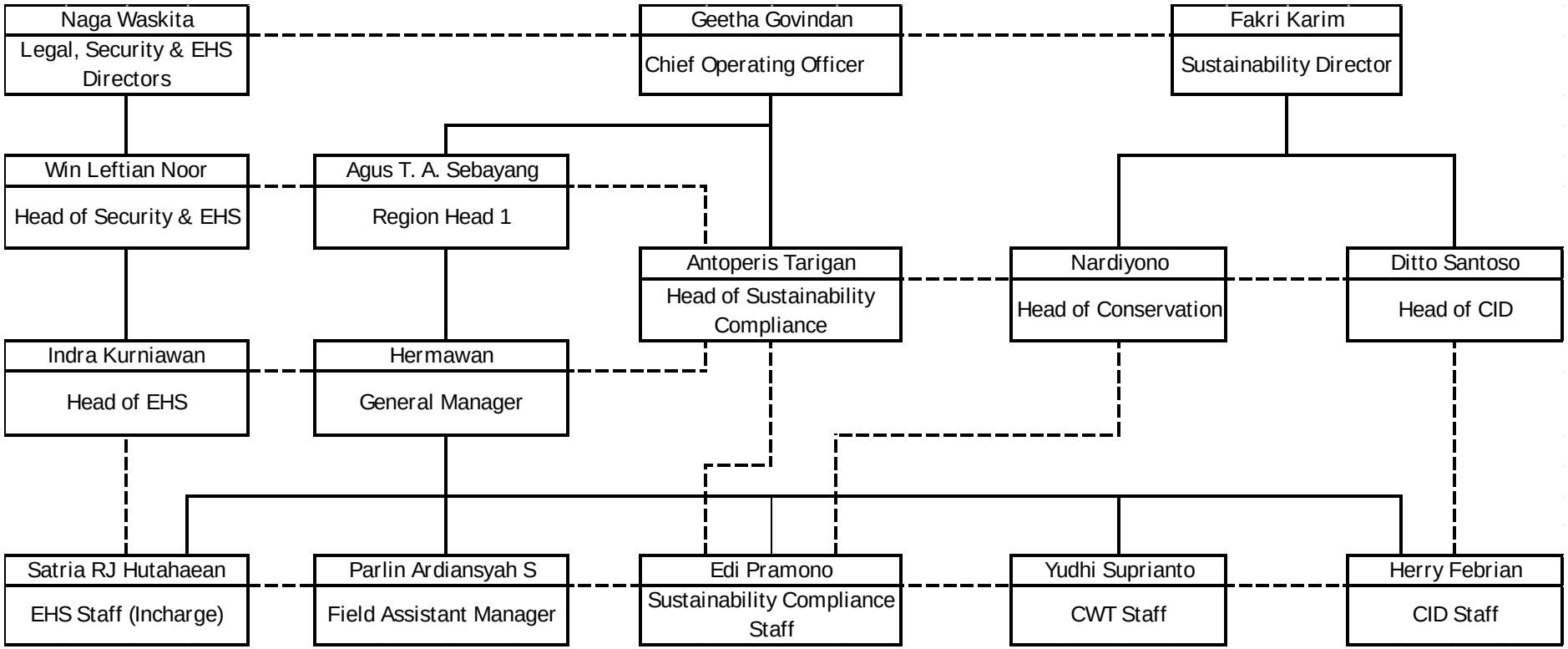


Figure 5. Organisation Chart of Resposible Management Plan of PT GSB

4.2 Management Plan

4.2.1 Environment Impact Analysis (AMDAL/ SEIA)

No	Environment Component	Significant Impact	Source of Impact	Location	Significant Impact Management		Significant Impact Monitoring	
					Management Plan & Responsible	**Period**	**Indicator, Method**	**Period**
Pre-Construction Stage								
1	Community Perceptions	Positive and Negative Community Perceptions	Feasibility study activities, permit management and information on land acquisition inventory and plasma membership	Lubuk Puding Lama Village, Lubuk Puding Baru, Kemang Island, Muara Betung, Padang Tepong, Galang, Tanjung Agung, Batu Lintang, Kalangan, Simpang Perigi, Kunduran, Talang Bengkulu, Air Kelinsar, Sub-District Ulu Musi, Desa Puntang, Padu Raksa, Bandar Aji, Karang Gede, Karang Dapo Lama, Karang Dapo Baru, Tangga Rasa, Tapa Baru, Karang Anyar dan Martapura Sub-District Sikap Dalam	Public Notification **By CID Staff**	Management is carried out before the construction phase takes place	The number and frequency of problem claims from the community around the location of activities that accept or reject certain activities in each set of activity plans and the level of community and local government support is done by direct observation to the field and interviews. The data obtained were analyzed descriptively qualitative	One time during the pre-construction on land acquisition and inventory of prospective plasma participants
					Accommodate the community inputs for plans to develop the oil palm plantation **By CID Staf**			
					Plasma programs are carried out with clear and detailed agreements which give benefit for both parties. The progress of gradually development based on proper planning and scoping. **By CID Staff**			
					Promote productive communication and cooperation with the community and local government. **By CID Staff**			
					Approach with community leaders such as village heads and community leader and other government elements. **By CID Staff**			
					Explanation that the land acquisition process, the			

No	Environment Component	Significant Impact	Source of Impact	Location	Significant Impact Management		Significant Impact Monitoring	
					Management Plan & Responsible	**Period**	**Indicator, Method**	**Period**
					community can receive compensation or compensation for land that has been tilled. **By CID Staff**			
					Involve communities whose land is affected by land acquisition in determining the value of land. **By CID Staff**			
Construction Phase								
1	The area	Potensial for land degradation (erotion and fertility)	Land clearing activities	Area used as oil palm plantations	a. Using Vehicles and Machine Tools in Good Conditions in Accordance with Standards. **By CWT Staff**	Conducted throughout the construction period of oil palm plantations.	▪ The level of erosion and decline in soil quality test parameters according to the center of soil research and agro-climate (1983). ▪ The method used is the observation of soil sampling and analysis refers to the soil research center and compared with the soil quality baseline on reliable documents to see trends between times.	Once a year at the construction and operation stage.
					b. Conduct land clearing by considering land slope above 23 Degrees Not Opened. **By Asmen Estate**			
					c. Planting Legum Cover Crop (Lcc) in the area that has been cleared. **By Asmen Estate**			
2	Flora and fauna	The loss of vegetation will subsequently have an impact on the disappearance of the	Land Clearing	Along the river bank [Conservation area/ Buffer Zone]	a. Maintaining vegetation on the river border that is 50 meters on the right and left of the river. **By SC Staff**	During construction phase	The natural vegetation in the protected area is still available, especially along the rivers area that well maintained.	Once a year in the Construction Phase

No	Environment Component	Significant Impact	Source of Impact	Location	Significant Impact Management		Significant Impact Monitoring	
					Management Plan & Responsible	**Period**	**Indicator, Method**	**Period**
		wildlife associated with that location			b. Planting woody vegetation on the conservation area / river border. **By SC Staff**			
					c. Install boundaries clearly for protected area. **By SC Staff**			
					d. Put a sign of prohibition or appeal not to hunt protected animals in the area. **By SC Staff**			
					e. Securing endemic [protected] animals when found at land clearing area or other activities. **By SC Staff**			
					f. Create, install, and maintain sign board about preservation of protected area. **By SC Staff**			
					g. Maintain and enrich the type of vegetation in forest area with native species that have multiple functions. **By SC Staff**			
					h. Conduct counseling and outreach to the public and			

No	Environment Component	Significant Impact	Source of Impact	Location	Significant Impact Management		Significant Impact Monitoring	
					Management Plan & Responsible	Period	Indicator, Method	Period
					employees about high conservation area. **By SC Staff**			
3	Job and business opportunities	Work force recruitment, land clearing, construction of plantations for processing factories and waste management facilities.	The number of workers absorbed in PT GSC's activities and the comparison between local workers and migrant workers	Lubuk Puding Lama Village, Lubuk Puding Baru, Pulau Kemang, Muara Betung, Padang Tepong, Galang, Tanjung Agung, Batu Lintang, Kalangan, Simpang Perigi, Kunduran, Talang Bengkulu, Air Kelinsar, Sub-District Ulu Musi, Desa Puntang, Padu Raksa, Bandar Aji, Karang Gede, Karang Dapo Lama, Karang Dapo Baru, Tangga Rasa, Tapa Baru, Karang Anyar dan Martapura Sub-District Sikap Dalam	Prioritizing local workers in activities that allow to addomocate local workers who meet the requirements. **By CID Staff**	At the Construction Stage	Conducted by obersation, interview study of documents related to employment. The data obtained were then analyzed descriptively qualitative.	Conducted once a year at the construction stage
					Provide wages according to applicable regulations **By CID Staff**			
					Conduct regular health checks to employees who are exposed to chemicals. **By EHS Staff**			
					Conduct training for employees **By Asmen Estate**			
					Use and prioritize local contractors for sub-plantation development and maintenance activities. **By Asmen Estate**			
4	Income	a. Income level	Workforce recruitment, land clearing, construction of supporting facilities for the construction of plantations for processing factories	Desa Lubuk Puding Lama, Lubuk Puding Baru, Pulau Kemang, Muara Betung, Padang Tepong, Galang, Tanjung Agung, Batu Lintang, Kalangan, Simpang Perigi, Kunduran,	a. Conduct local workforce recruitment if specifications meet. **By CID Staff**	At the Constructions Stage	The income of the community increased compared to before the project took place and the opening of access for economic growth in the form of the availability of facilities to support economic activities.	Once a year at the stage of construction
		b. Absorption of Labor			b. The construction of the road inside plantation also facilitate access for community			

No	Environment Component	Significant Impact	Source of Impact	Location	Significant Impact Management		Significant Impact Monitoring	
					Management Plan & Responsible	Period	Indicator, Method	Period
			and waste management facilities.	Talang Bengkulu, Air Kelinsar, Kecamatan Ulu Musi, Desa Puntang, Padu Raksa, Bandar Aji, Karang Gede, Karang Dapo Lama, Karang Dapo Baru, Tangga Rasa, Tapa Baru, Karang Anyar dan Martapura Kecamatan Sikap Dalam	**By CID Staff**			
		c. The formation of physical accessibility of the area in the form of roads			c. Improving the ability and quality of human resources so that they can work with high productivity through job training and intensive and disincentive systems. **By CID Staff**			
		d. The availability of access to economic growth in the form of facilities and infrastructure for economic activity.			d. Encourage opportunities for local communities to try as an effort to support plantation development activities [Core Plasma] **By CID Staff**			
					e. Provide wages accordance with regulations and policies for providing incentives to boost labor productivity **By Asmen Estate**			
					f. Skills training to improve the ability of employees and local communities **By Asmen Estate**			
					g. Use and prioritize contractors for development and maintenance of plantation			

No	Environment Component	Significant Impact	Source of Impact	Location	Significant Impact Management		Significant Impact Monitoring	
					Management Plan & Responsible	Period	Indicator, Method	Period
					By Asmen Estate			
5	Public Health	Increasing numbers of people with illness and the spread of disease	Land Clearing Activities	Desa Lubuk Puding Lama, Lubuk Puding Baru, Pulau Kemang, Muara Betung, Padang Tepong, Galang, Tanjung Agung, Batu Lintang, Kalangan, Simpang Perigi, Kunduran, Talang Bengkulu, Air Kelinsar, Kecamatan Ulu Musi, Desa Puntang, Padu Raksa, Bandar Aji, Karang Gede, Karang Dapo Lama, Karang Dapo Baru, Tangga Rasa, Tapa Baru, Karang Anyar dan Martapura Kecamatan Sikap Dalam	a. Respond to community complaints in accordance with SOPs that have been determined. **By CID Staff** b. Company representatives conduct periodic meetings with communities which affected by the company's operations **By CID Staff** c. Conducting socialization related to water and air quality management due to plantation development **By CID Staff** d. Responsive to any related issues. **By CID Staff**	At the Construction Stage	The bencmarks used are the number of people who have health problems, both within the company environment and aroung the project compared to before the project.	Once a year at the construction stage.

No	Environment Component	Significant Impact	Source of Impact	Location	Significant Impact Management		Significant Impact Monitoring	
					Management Plan & Responsible	**Period**	**Indicator, Method**	**Period**
					e. Road maintenance such as hardening of the road with sand and stones, maintenance and repair of the road leading to the surrounding residential areas. This is so that the road remins in good condition for the transportation for labor and the community **By CWT Staff**			
					f. Carry out CSR programs with the asporations of the community, especially in improving health facilities and infrastucture and clean water and coordinating with local governments. **By CID Staff**			
					g. Periodic inspection both to workers and the community around the location of the activity. **By CID Staff**			
					h. Operational Optimization of the farm polyclinic. **By EHS Staff**			
					i. The use of PPE on workers/ employees to prevent occupational diseases. **By EHS Staff**			

No	Environment Component	Significant Impact	Source of Impact	Location	Significant Impact Management		Significant Impact Monitoring	
					Management Plan & Responsible	Period	Indicator, Method	Period
6	Dry season	Potential for drought and land fires	Land clearing activity	Management of locations in all major areas at the time of land clearing and planting.	a. Build fire control tower equipped with binoculars and communication tools to detect fires quickly. **By EHS Staff**	During the construction period of oil palm plantation	In accordance with Government Regulation No. 4 of 2001 concerning the control of environmental damage and/or pollution related to forest and/or land fires.	On land during land clearing and burnt areas during construction
					b. Make artificial catchment ponds [retensi] and natural water reservoir as the source of water for fire fighting. **By EHS Staff**			
					c. Cooperating with surrounding communities and landowners, especially when the community opens the land **By CID Staff**			
					d. Formed a company internal fire extinguishing unit **By EHS Staff**			
					e. Install prohibition signboards for no smoking area or make a fire in the area prone of fire **By EHS Staff**			
					f. Numbering the site blocks for registration and administration in controlling land fires. **By Asmen Estate**			

No	Environment Component	Significant Impact	Source of Impact	Location	Significant Impact Management		Significant Impact Monitoring	
					Management Plan & Responsible	**Period**	**Indicator, Method**	**Period**
					g. Counseling and socialization to the community not to burn in land clearing. **By CID Staff**			
					h. Coordinate with the Empat Lawang District Fire Department in strengthening the capacity of fire prevention human resources. **By CID Staff**			
7	Community Perception	Positive and negative community perceptions	Workforce recruitment activities, mobilization of equipment and materials for land clearing, construction of supporting facilities, construction of plantations, mill and waste management facilities	Desa Lubuk Puding Lama, Lubuk Puding Baru, Pulau Kemang, Muara Betung, Padang Tepong, Galang, Tanjung Agung, Batu Lintang, Kalangan, Simpang Perigi, Kunduran, Talang Bengkulu, Air Kelinsar, Kecamatan Ulu Musi, Desa Puntang, Padu Raksa, Bandar Aji, Karang Gede, Karang Dapo Lama, Karang Dapo Baru, Tangga Rasa, Tapa Baru, Karang Anyar dan Martapura Kecamatan Sikap Dalam	a. Respond to community complaints in accordance with SOPs that have been determined. **By CID Staff**	At the construction stage	There are numbers of complaints about problems from the community around the location of activities, both those who accept or reject certain activities in each set of activity plans as well as the level of community and local government suppot.	Once a year at the construction stage.
					b. Company representatives conduct periodic meetings with communities which affected by the company's operations **By CID Staff**			
					c. Conducting socialization related to water and air quality management due to plantation development and vehicle transportation **By CID Staff**			
					d. always reactive and responsive to any related problems			

No	Environment Component	Significant Impact	Source of Impact	Location	Significant Impact Management		Significant Impact Monitoring	
					Management Plan & Responsible	Period	Indicator, Method	Period
					By CID Staff			
					e. carry out CSR programs in accordance with community aspirations and coordination with local governments **By CID Staff**			
Operational Stage								
1	Quality of Air and Noise	Decreasing air quality, namely increasing the dust and CO gas, especially in Mill and along the road that is passed either through the emplacement or housing residents.	At the operational stage of harvesting, transporting and processing FFB and waster management	The location of air quality and noise management at the operation stage is the FFB transportation	a. Use vehicles and machine tools in good condition according to the standard. **By CWT Staff**	At the Operasional Phase	Determination of air quality degradation refers to Governor Regulation No. 17 of 2005, 2007 concerning the emission quality standard of immovable sources for boilers using biomass fuel Regulation of the Minister of the Environment No. 21 of 2008 concerning the emission quality standard for moving sources for businesses or activities of thermal power plants Kepmenaker No. 51 / Men / 1999 about the threshold value of physical factors at work	Twice a year during the Operasional phase
					b. Watering the road in dusty locations continously, especially in the dry season. **By CWT Staff**			
					c. Planting types of trees that function as buffers and absorbers of dust and other pollutants along the road. **By SC Staff**			
					d. carry out maintenance and repair of roads especially in zones close to the project site. **By CWT Staff**			
					e. cover the transport vehicles both while loading or on the way to and from oil palm plantations and mills.			

No	Environment Component	Significant Impact	Source of Impact	Location	Significant Impact Management		Significant Impact Monitoring	
					Management Plan & Responsible	Period	Indicator, Method	Period
					By CWT Staff			
					f. Material and Equipment tranportation uses vehicles with routine maintenance **By CWT Staff**			
					g. Install scrubers and dust collectors on boiler chimneys. **By EHS Staff**			
					h. Requires the use of earplug masks to minimize the negative impact of decreasing air quality and increasing noise on employees. **By EHS Staff**			
					i. filtration of odorous waste gas sreams to hold or filter dust in ppks. **By EHS Staff**			
					j. Construct factory chimneys in accordance with technical spesifications and provisions of annex III, Kepdal 205 in 1996 so as to minimize air pollution. **By EHS Staff**			

No	Environment Component	Significant Impact	Source of Impact	Location	Significant Impact Management		Significant Impact Monitoring	
					Management Plan & Responsible	**Period**	**Indicator, Method**	**Period**
					k. Prepare equipment such as sampling holes, stairs, work floors, electrical sockets, and other fazilities to facilitate sampling of immovable air emissions in accordance with technical specifications and provisions of Annex III Kepdal 205 of 1996 so as to facilitate the management and monitoring of air quality in the mill chimney. **By EHS Staff**			
2	Land and Area	Level of erosion and physical and chemical properties of the soil.	TBS and waste treatment activities.	The area used as an oil palm plantation	a. Technical planning of land cover with vegetation and immediately planting LCC or other plants on land that has been in land clearing. **By Asmen Estate**	Conducted throughout the operation of oil palm plantations	Erosion rates and decreases in oil quality test parameters according to the soil and agro-climate research center [1983]	Once a year in the Operation Phase
					b. Optimizing the use of organic fertilizers. **By Asmen Estate**			
3	Water Quality	Water quality decrease	The decrease of water quality due to crop maintenance and processing of yields and waste	The surrounding plantation and river area as the water body that receives water flow and wastewater treatment plant for waste management	a. Conduct LB3 management in accordance with the procedures stipulated in the regulation and distribution to other parties if excessive. **By EHS Staff**	During plantation operations	South Sumatra Governor Regulation No. 16, year 2015 concerning the designation of water and river water quality standards.	Surface water twice a year
					b. Utilization of unused solid waster as fuel for use as organic fertilizer so it does not pollute water. **By Asmen Estate**		Republic of Indonesia Health Minister Regulation No. 492/menkes/per/iv/2010/	

No	Environment Component	Significant Impact	Source of Impact	Location	Significant Impact Management		Significant Impact Monitoring	
					Management Plan & Responsible	**Period**	**Indicator, Method**	**Period**
							concerning the quality of drinking water for well water	
					c. Efforts to manage fertilizers and pesticides and use of environmentally friendly chemicals in the maintenance of plantation/fertilizers are carried out with the right type, dosage and methods and methods. Pest control uses chemical minimally and maximizes natural pesticides. **By Asmen Estate**		South Sumatra Governor Regulation No. 8 of 2012 concerning the quality standard of liquid waste.	Waste water is carried out every month
					d. Optimizing the use of environmentally friendly chemicals in the maintenance of plantation and maintenance with natural predator. **By Asmen Estate**			
					e. Construct and function of wastewater disposal installation to reduce levels of pollutants from wastewater mill ponds systems and a combination of chemical and biological pyhsical methods. **By EHS Staff**			

No	Environment Component	Significant Impact	Source of Impact	Location	Significant Impact Management		Significant Impact Monitoring	
					Management Plan & Responsible	**Period**	**Indicator, Method**	**Period**
					f. Adjust the technical design of Wastewater Disposal Installation by reference; physical, chemical and biological characteristics, wastewater. Chemical characteristics include the content of organic matter [carbohydrates, fats, oils, etc] and inorganic substances [chloride, nitrogen, pH, phosphorus, sulfur] **By EHS Staff**			
					g. Not throwing the unthreated liquid waste into the river **By EHS Staff**			
					h. Good inhouse keeping activities. **By EHS Staff**			
					i. Dredging sludge from the Wastewater Disposal Intallation pool periodically, making the Wasterwater Disposal Installation sludge processing unit. **By EHS Staff**			

No	Environment Component	Significant Impact	Source of Impact	Location	Significant Impact Management		Significant Impact Monitoring	
					Management Plan & Responsible	Period	Indicator, Method	Period
4	Aquatic Biota	The decreased quality of aquatic biota (plankton, bentos, dan nekton)	Plant maintenance and processing of yield and waste	Preformed at the point in river aound the location of the observation point as stated in the Environmental Monitoring Map	All surface water management is also a management of aquatic biota. **By SC Staff**	The location of water quality management is in the plantation area, as well as the surrounding river as a water body that receives water flow.	The abundance of diversity index types and the dominance of water biota [plankton, benthos and nekton] were compared to baseline data before the activity was carried out the number of workers absorbed in the PT GSB's activities and a comparison between local workforce and migrant workers.	Twice a year during the Operation Phase
5	Job and Business Opportunities	Employment and Opening Up business Opportunities	Producing plant maintenance activities, harvesting FFB transportation, processing FFB and managing waste transportation resulting from plasma management and utilizing social infrastructure and CS-CDR	Desa Lubuk Puding Lama, Lubuk Puding Baru, Pulau Kemang, Muara Betung, Padang Tepong, Galang, Tanjung Agung, Batu Lintang, Kalangan, Simpang Perigi, Kunduran, Talang Bengkulu, Air Kelinsar, Kecamatan Ulu Musi, Desa Puntang, Padu Raksa, Bandar Aji, Karang	a. Socialization to the public about the existence of oil palm plantation construction activities that require workers with certain expertise and specifications. **By CID Staff** b. Prioritizing local workers in activities that allow accommodating qualified local workers. **By CID Staff**	At the operational stage	Observation, interviews and willingness of documents related to absorption of labor	Once a year during the operation phase.

No	Environment Component	Significant Impact	Source of Impact	Location	Significant Impact Management		Significant Impact Monitoring	
					Management Plan & Responsible	Period	Indicator, Method	Period
				Gede, Karang Dapo Lama, Karang Dapo Baru, Tangga Rasa, Tapa Baru, Karang Anyar dan Martapura Kecamatan Sikap Dalam	c. Provide wages and incentive according to the regulation. **By Asmen Estate**			
					d. Collaboration with health authorities for workforce health services **By EHS Staff**			
					e. Skills training to improve the ability of employees and the local community **By Asmen Estate**			
					f. Use and prioritize local contractors for sub-plantation development and maintenance activities. **By Asmen Estate**			
6	Income	Income of surrounding community is increase	Producing plant maintenance activities, harvesting FFB transportation, processing FFB and managing waste transportation resulting from	Desa Lubuk Puding Lama, Lubuk Puding Baru, Pulau Kemang, Muara Betung, Padang Tepong, Galang, Tanjung Agung, Batu Lintang, Kalangan, Simpang Perigi, Kunduran,	a. Utilize local human resources in accordance with the needs of labor in the plantation development activities and supporting facilities. **By Asmen Estate**	At the Operational Phase	1. The community income is increase compared to before the project took place.	Once a year during the Operation Phase

No	Environment Component	Significant Impact	Source of Impact	Location	Significant Impact Management		Significant Impact Monitoring	
					Management Plan & Responsible	Period	Indicator, Method	Period
			plasma management and utilizing social infrastructure and CD-CSR programs.	Talang Bengkulu, Air Kelinsar, Kecamatan Ulu Musi, Desa Puntang, Padu Raksa, Bandar Aji, Karang Gede, Karang Dapo Lama, Karang Dapo Baru, Tangga Rasa, Tapa Baru, Karang Anyar dan Martapura Kecamatan Sikap Dalam	b. Job development and fulfillment take precedence over the local community in accordance with the required skills. **By Asmen Estate**		2. Open accessibility for economic growth in the form of facilities to support economic activity can take place	
					c. Improve the ability and quality of human resources so that they are able to work with high productivity through job training and intensive and disincentive systems. **By Asmen Estate**			
					d. Encourage local community oppotunities to try as an effort to support plantation development activities [nucleus plasma] **By Asmen Estate**			
					e. Provide wages according to insive rules and policies and disincentives to spur labor productivity **By Asmen Estate**			

No	Environment Component	Significant Impact	Source of Impact	Location	Significant Impact Management		Significant Impact Monitoring	
					Management Plan & Responsible	**Period**	**Indicator, Method**	**Period**
					f. Skills training to improve the ability of employees and the local community **By Asmen Estate**			
					g. Use and prioritize contractors for the sub-development and maintenance of the plantation. **By Asmen Estate**			
7	Publich Health	Increasing number of people who are sick and the spread of disease,.	plant maintenance activities, Transporting FFB harvest, Processing TBS and managing waste transportation resulting from plasma management and utilizing social	Desa Lubuk Puding Lama, Lubuk Puding Baru, Pulau Kemang, Muara Betung, Padang Tepong, Galang, Tanjung Agung, Batu Lintang, Kalangan, Simpang Perigi, Kunduran, Talang Bengkulu, Air Kelinsar, Kecamatan Ulu Musi, Desa	a. Respond to all complaint of community according to SOP **By CID Staff**	At the operation Phase	The benchmark used is the number of people who have health problems, before the project	Once a year in the Operation Phase
					b. Conduct regular meetings between company representatives and the community around the location. **By CID Staff**			

No	Environment Component	Significant Impact	Source of Impact	Location	Significant Impact Management		Significant Impact Monitoring	
					Management Plan & Responsible	Period	Indicator, Method	Period
			infrastructure and CD-CSR programs	Puntang, Padu Raksa, Bandar Aji, Karang Gede, Karang Dapo Lama, Karang Dapo Baru, Tangga Rasa, Tapa Baru, Karang Anyar dan Martapura Kecamatan Sikap Dalam	c. Socializing about other matters related to the management of air and water quality due to plantation development and the existence of project vehicle traffic. **By CID Staff & SC Staff**			
					d. Always reactive and responsive to any related problems. **By CID Staff**			
					e. Do hardening of the road with sand and stone, maintenance and repair of the road to the surrounding residential areas for transportation of labor and other communities so that the road always in good condition. **By CWT Staff**			

No	Environment Component	Significant Impact	Source of Impact	Location	Significant Impact Management		Significant Impact Monitoring	
					Management Plan & Responsible	**Period**	**Indicator, Method**	**Period**
					f. Implementing CSR programs in accordance with community aspirations and coordination with local governments. **By CID Staff**			
					g. medical check-up both for workers and community around the location of the activity **By EHS Staff**			
					h. Optimization of farm polyclinic operasional. **By EHS Staff**			
					i. The use of PPE on workers to prevent accident. **By EHS Staff**			
8	Traffic and Road damage	Traffic jams and road damage	Transportation of results.	Path taken	a. Set the mobilization of transport vehicle [in and out] **By CWT Staff**	During plantation operations [oil palm and rubber] and MCC with a	Congestion and level of road damage	Twice a year during the operation phase
					b. Install the traffic signboards. **By CWT Staff**			

No	Environment Component	Significant Impact	Source of Impact	Location	Significant Impact Management		Significant Impact Monitoring	
					Management Plan & Responsible	**Period**	**Indicator, Method**	**Period**
					c. Make strict warning and regulation for transportation services regarding the maximum tonnage speed, and the condition of the vehicle must be good. **By CWT Staff**	reporting period per 6 months		
					d. The amount of cargo does not exceed the tonnage of the road. **By CWT Staff**			
					e. Maintain and repair damaged roads through Community Development and CSR programs. **By CWT Staff & CID Staff**			
9	Drought and fire hazard	Potential for drought and land fires	Plant maintenance	Desa Lubuk Puding Lama, Lubuk Puding Baru, Pulau Kemang, Muara Betung, Padang Tepong, Galang, Tanjung Agung, Batu Lintang, Kalangan, Simpang Perigi, Kunduran, Talang Bengkulu, Air Kelinsar, Kecamatan Ulu Musi, Desa Puntang, Padu Raksa, Bandar Aji, Karang	a. Build fire monitoring towers equipped with binoculars and communication tools to detect fires quickly **By EHS Staff**	Throughout the Operational Phase	Referring to PP No. 4 of 2001 concerning the protection of environmental damage and / or pollution related to forest damage and / or frequency of land related to fire, extensive damage and the level of loss, qualification of land and flora / fauna damage related to land fires	Once a year in the Operation Phase, especially during dry season
					b. Making firebreaks **By EHS Staff**			
					c. Making pool of potential and natural water resevoir as a source of water for fire fighting **By EHS Staff**			

No	Environment Component	Significant Impact	Source of Impact	Location	Significant Impact Management		Significant Impact Monitoring	
					Management Plan & Responsible	**Period**	**Indicator, Method**	**Period**
				Gede, Karang Dapo Lama, Karang Dapo Baru, Tangga Rasa, Tapa Baru, Karang Anyar dan Martapura Kecamatan Sikap Dalam	d. Cooperation with surrounding communities and landowners, especially when the community opens the land. **By EHS Staff & CID Staff**			
					e. Form a company internal fire extinguisher **By EHS Staff**			
					f. Create a prohibition signboards of burn activities or throw cigarette butts in the plantation. **By EHS Staff**			
					g. Numbering the estate blocks for registration and administration in controlling land fires. **By Asmen Estate**			
					h. Counseling and socialization to the community not burn the area for land clearing **By EHS Staff & CID Staff**			
					i. Provide fire extinguisher at the location of the activity **By EHS Staff**			

No	Environment Component	Significant Impact	Source of Impact	Location	Significant Impact Management		Significant Impact Monitoring	
					Management Plan & Responsible	Period	Indicator, Method	Period
10	Community Perceptions	Positive and Negative Community Perceptions	Plant maintenance activities, harvesting FFB transportation, processing FFB and managing waste transportation resulting from plasma management and utilizing social infrastructure and CD-CSR programs	Galang, Tanjung Agung, Batu Lintang, Kalangan, Simpang Perigi, Kunduran, Talang Bengkulu, Air Kelinsar, Kecamatan Ulu Musi, Desa Puntang, Padu Raksa, Bandar Aji, Karang Gede, Karang Dapo Lama, Karang Dapo Baru, Tangga Rasa, Tapa Baru, Karang Anyar dan Martapura Kecamatan Sikap Dalam	a. Respond to community complaints in accordance with SOPs that have been determined. **By CID Staff**	At the operational stage	Availability of a list of complaints or problems from the community around the location of activities that accept or reject certain activities in each set of activity plans as well as the level of community and local government support	Once a year during the operation phase
					b. Company representatives conduct periodic meetings with communities which affected by the company's operations **By CID Staff**			
					c. Conducting socialization related to water and air quality management due to plantation development and vehicle transportation **By CID Staff**			
					d. Always reactive and responsive to any related problems **By CID Staff**			

No	Environment Component	Significant Impact	Source of Impact	Location	Significant Impact Management		Significant Impact Monitoring	
					Management Plan & Responsible	Period	Indicator, Method	Period
					e. Implementing CSR programs in accordance with community aspirations and coordination with local governments **By CID Staff**			

4.2.2 Social Impact Assessment [SIA]

No	Overview of Potential Conflicts	Alternatif Activities	Expected Results	Time Management	Responsible
1.	The condition of highway that will be traversed by the company's operational vehicles bordering directly with community settlements, is expected to cause discomfort in the form of noise and potential health problems from dust in the dry season.	▪ Plan the provision of water hydrants to flush the road during the dry season so that it does not cause dust. ▪ Arrangement of lane and time of company vehicle mobilization. ▪ Carry out health checks and assistance on the community	▪ Noise level will be reduced. ▪ Community participation will occur in dealing with dust ▪ Will reduce the clouds of dust along the road. ▪ Preventing respiratory illnesses suffered by the community	Conducted all the time to carry out monitoring of dust and its effects.	CID Staff
2	Damage to road infrastructure buld by the government, while road infrastructure is used both by the community and companies.	▪ Monitor road conditions ▪ Prepare the system and mechanism of road maintenance and repair ▪ Enter into agreement with local and village governments on road use	▪ There was an understanding and agreement on the use of the road. ▪ Road infrastructure is in good condition [not damaged]	Done all the time to monitor the road conditions.	CID Staff & CWT Staff

No	Overview of Potential Conflicts	Alternatif Activities	Expected Results	Time Management	Responsible
		▪ The company immediately makes a water governance plan that is integrated with the water needs of the village community			
3	The availability of clean water for people's drinking consumption is increasingly difficult to obtain.	▪ The company immediately makes a water governance plan that is integrated with the water needs of the village community. ▪ The company cooperated with the Forestry and Plantation Agency of the Four Lawang Regency regarding community water management plans. ▪ Monitor river water quality at the beginning and end of the river flow at the boundaries of land permit.	▪ Water is available all year for drinking consumption needs. ▪ Sufficient water is available for palm oil plants.	Conducted all the time periodically (3 months) to monitor the condition of river and ground water	EHS Staff
4	Recruitment of workers who are not well socialized to the whole community in the village and the company's commitment to recruit workers in accordance with the level of education, abilities and tests conducted. Local people who feel competed with the existence of employees from outside the area will cause turmoil in the community.	▪ The company conduct socialization about the requirements to become an employee ▪ The company informs the opening of job vacancies to the village government and subsequently ensures that the information reaches the community ▪ The company follows up on the suitability of job applicants with education and ability standards. ▪ The company proactively develops education/training activities to increase the capacity of community knowledge and skills. ▪ Educational/training activities are packaged as part of Coorporate Social Responsibility [CSR] schemes that openly communicated with the community.	▪ The community knows the requirements for working for the company. ▪ Opening information received by the community. ▪ There are more employees from the local community than from outside of the area. ▪ Community knowledge and skills increase. ▪ Communities get wider opportunities to work in companies.	Keep up with the needs of the workforce and managed sustainably	SC Staff
5	The unclear mechanism and management of plasma will trigger the birth of conflict between the community and the company so as to prevent the community from giving land to the company.	▪ The company communicates with the Agriculture/Plantation service regarding the plasma management mechanism in accordance with government regulations. ▪ Conduct ongoing training and coaching for the administrators of plasma cooperatives. ▪ The company conducts socialization to the community regarding all matters relating to	▪ Communities can get certainty about the mechanism of land acquistition and plasma realization according to the rules. ▪ The company obtained land certainty to be cultivated in an oil palm plantation.	Priority for immediate implementation and sustainable management.	CID Staff & SC Staff

No	Overview of Potential Conflicts	Alternatif Activities	Expected Results	Time Management	Responsible
		plasma plantations in the presence of relevant stakeholders.			

4.2.3 Identification, Management and Monitoring of High Conservation Value Area (HCV)

HCV management activities are an inseparable part of the sustainable management of oil palm plantations, especially in realizing the preservation of ecological / environmental functions and social sustainability. Therefore HCV areas found in additional areas of renewal of PT. GSB must be maintained and enhanced. Threats are all human activities that can interfere with the sustainability of HCVs and / or eliminate the existence of HCV areas. Assessment of HCV threats in additional area of replacement of PT GSB was conducted through three (3) ways, namely field observation, literature study, and interviews with MU staff and community. In assessing the threats in additional area of replacement of PT GSB was directed towards two (2) internal and external sources, as well as against current and potential events. The activities that could threaten the existence of HCVs in additional area of replacement of PT GSB is presented in table 27.

Table 27. Threats to HCV areas in additional area of replacement of PT GSB and its surrounds

HCV	Brief Description Value Presence of Assessment Areas	Main Threats
1	**Species Diversity** • Area of HCV 1.1: River borders of Musi, Betung, Betung Kecil, Keruh, Latak, Latak Kecil, and area around checkdam. • Species of HCV 1.2: Sunda Pangolin (*Manis javanica*). • Species of HCV 1.3: protected fauna species according to Government Regulation Number 7 of 1999 as many as 11 species (2 species of mammals and 2 bird species); species of flora and fauna including the CITES Appendix II list of 10 species (3 plant species and 7 species of wild animals); and critically endangered species according to the IUCN red list of 1 species (mammals). • Species HCV 1.4: Grey-faced Buzzard (*Butastur indicus*) and Sumatran Surili (*Presbytis melalophos melalophos*).	**Current:** • Hunting wild animals by the community. • River water pollution due to the use of chemicals (fertilizers and pesticides) in the gardens / farm fields from community rice fields. **Potential:** • Reduced habitat area due to the conversion of scrubland especially in riparian areas and secondary dryland forest in the water catchment area by the community into farms / fields. • Occurrence of habitat fragmentation due to illegal logging in areas with land cover in the form of secondary dryland forest. • Reduced river water quality due to land clearance, leaching / fertilizer runoff & pesticides or other pollution from oil palm plantations entering rivers. • Pollution of household waste.

HCV	Brief Description Value Presence of Assessment Areas	Main Threats
3	**Ecosystem and Habitat** ▪ Association of mixed dipterocarpaceae forest ecosystems of volcanic and basalt rocks that have secondary forest cover i.e., in the water catchment area of Betung Kecil River block.	**Current:** • Hunting wild animals by the community **Potential:** • Conversion of secondary forest land in the water catchment area by the community into a farm / farm field. • Illegal logging in areas with secondary land cover.
4	**Ecosystem services** ▪ HCV4.1 area: rivers and its borders (Musi, Betung, Betung Kecil, Keruh, Latak, and Latak Kecil), water catchment area of Betung Kecil River	**Current :** • The loss of bushland cover in riparian and secondary forest areas in the catchment area. • Reduced river water quality due to the use
5	**Local Community Needs** • Muara Kalangan, Batu Lintang, Muara Betung and Lubuk Puding Baru villages have >50% dependence on Musi and Keruh Rivers for drinking water, washing, and latrines (MCK). • Water utilization conducted by the community is carried out sustainably. • There is an alternative water source such as by buying in the market or shop, but it takes a more expensive cost.	**Current:** • Reduced river water quality due to the use of fertilizers and pesticides in farms / farm fields and community rice fields. **Potential:** • Reduced river water quality due to land clearing and washing / run-off of fertilizers & pesticides or other pollution from oil palm plantations into rivers. • Loss of community access in hunting activities. • The loss of drinking water sources due to river water is polluted.
6	**Cultural Values** ▪ Distribution of archaeological sites: Tomb of Puyang Serunting Sakti in Batu Lintang Village and Tomb of Puyang Kedung in Muara Kalangan Village	**Current:** • None **Potential:** • Land clearing activities, road construction and other facilities that do not consider the existence of archaeological sites. • Loss of public access to archaeological sites.

HCV monitoring is an inseparable part of HCV management. HCV monitoring aims to determine the extent of success and effectiveness of HCV management activities that have been carried out. Based on data and information obtained from HCV monitoring activities, it is then used as information to improve the HCV management that will be carried out next, so that the existence and preservation of the function of HCV areas can be maintained and enhanced in the long term.

The total area of HCV management and monitoring in the additional area of renewal of PT GSB covering an area of 408.99 ha, with details: an area that cannot be converted is 199.54 ha and an area that can be converted is 209.45 ha.

Table 28. Table The Area of HCV Management and Monitoring in additional areas of renewal of PT. GSB

HCV Management and Monitoring Type		Total Area (Ha)	Unconvertible Area (Ha)	Convertible Area (Ha)
HCV 1[1)]	HCV 1.1	156.74	156.74	0.00
	HCV 1.2	1.26	1.26	0.00
	HCV 1.3	275.07	65.62	209.45
	HCV 1.4	275.07	65.62	209.45
HCV 3[1)]		1.26	0.00	0.00
HCV 4	HCV 4.1	158.00	158.00	0.00
	HCV 4.2	132.93	132.93	0.00
	HCV 4.3	80.94	80.94	0.00
HCV 5[2)]		103.76	103.76	0.00
HCV 6[3)]		2.0006	2.0006	0.00
TOTAL[4)]		**408.99**	**199.54**	**209.45**

Keterangan

1) = *HCV 1.1 based on Kepres 32 tahun 1990 include protective area, HCV 1.2, HCV 1.3, and HCV3 are the HCV Management Area that has secondary dry land forest and bushes land cover but the management of HCV 1.1, HCV 1.2, HCV 1.3, and HCV 3 has to be done holistically (inside and outside HCV Area) considering the wildlife species (mamal and aves) are in mobile.*

2) = *HCV 5 bounding either HCV 4.1.*

3) = *The area of HCV 6 are 2.0006 ha (overlapping with other HCV 2.00 ha (inside the buffer of Sungai Keruh) and 0.0006 ha are not overlapping with other HCV area.*

4) = *Total area of HCV Management is no equal to the sum of all HCV area, because some of the HCV area overlapping each other.*

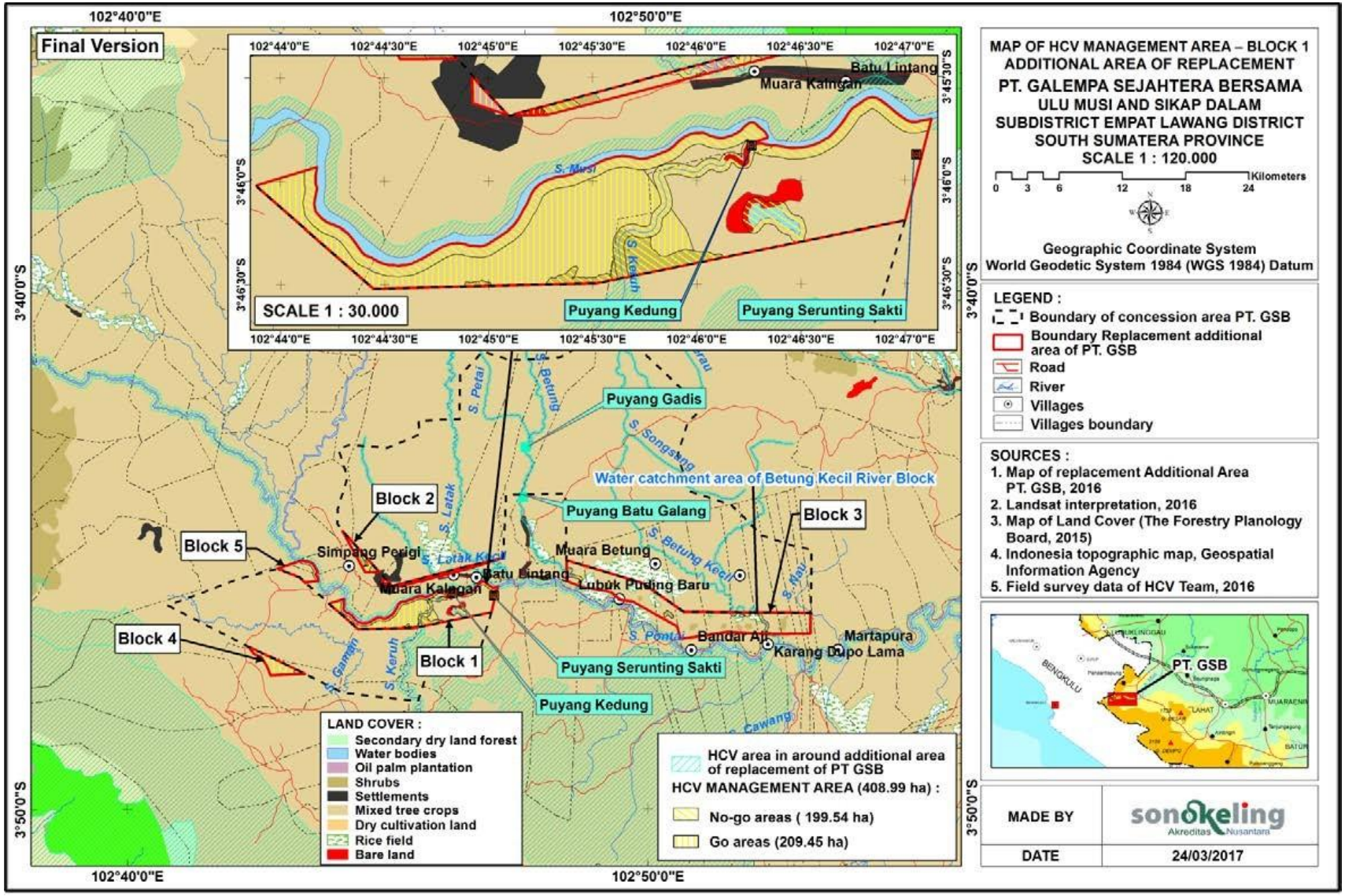
Table 29. Table Recommendation of HCV Management and Monitoring

HCV	Threat	Management Recommendation	Monitoring Recommendations	Responsible
1 & 3	▪ Wildlife hunting by the community	▪ Maintenance the boundaries marker of river border areas [width of 50 – 100m], areas around natural water reservoir [width of 20m] and water catchments in the field.	▪ Conduct annual monitoring of HCV 1 population in HCV Management Areas.	SC Staff
	▪ Pollution of river water due to the use of fertilizers and pesticides on community agricultural land.	▪ HCV Socialization for internal and external.	▪ Develop periodic monitoring systems to ensure that hunting, illegal logging and conversion activities are minimized.	SC Staff
	▪ Reduced habitat area due to the conversion of shrub land, especially in the border area of riparian and High Conservation Value area, as well as secondary forest in the catchment area carried out by the community into agricultural land.	▪ Conduct prevention, protection and control of disturbances to HCV management areas [wildlife hunting, illegal logging and area conversion] through activities; installation and maintenance of HCV markings in strategic access points, and routine patrols.	▪ Conduct periodic monitoring of the effectiveness of prevention, protection and mitigation activities against disturbances in HCV management areas that have been carried out.	SC Staff
	▪ Habitat fragmentation due to illegal logging in the area that have land cover in the form of secondary forest.	▪ Conduct further surveys to ascertain the status of HCV 1 species populations.	▪ Monitor periodically the intensity of disturbance in the face of rivers, catchments and areas around the checklist, including illegal hunting, illegal logging and area conversion.	SC Staff
	▪ Decreased river water quality due to land clearing, washing/runoff of fertilizers and pesticides or other pollution from oil palm plantations that enter rivers.	▪ Maintenance the riparian areas.	▪ Conduct periodic monitoring of rehabilitation and restoration activities in river border areas and areas around the natural water reservoir.	SC Staff & Asmen Estate
	▪ Pollution of household waste	1. Carry out rehabilitation and restoration of river border areas that have land cover in the form of shrubs; 2. On land cover in the form of mixed gardens and palm oil plantation is applied in a sustainable management practice of oil palm and mixed plantation, in example, land clearing is only done around plants with a radius of 1m and no herbicide and fertilization is carried out by means of burial. 3. Making rorak or ridudan.	▪ Perform periodic monitoring of Gray Eagle species [Butastur Indicus] and Lutung Simpai [Presbytis melalophos] in the Important Birds Region. ▪ Conduct periodic monitoring of enrichment planting activities in Important Birds areas that have land cover in the form of shrubs.	SC Staff & Asmen Estate

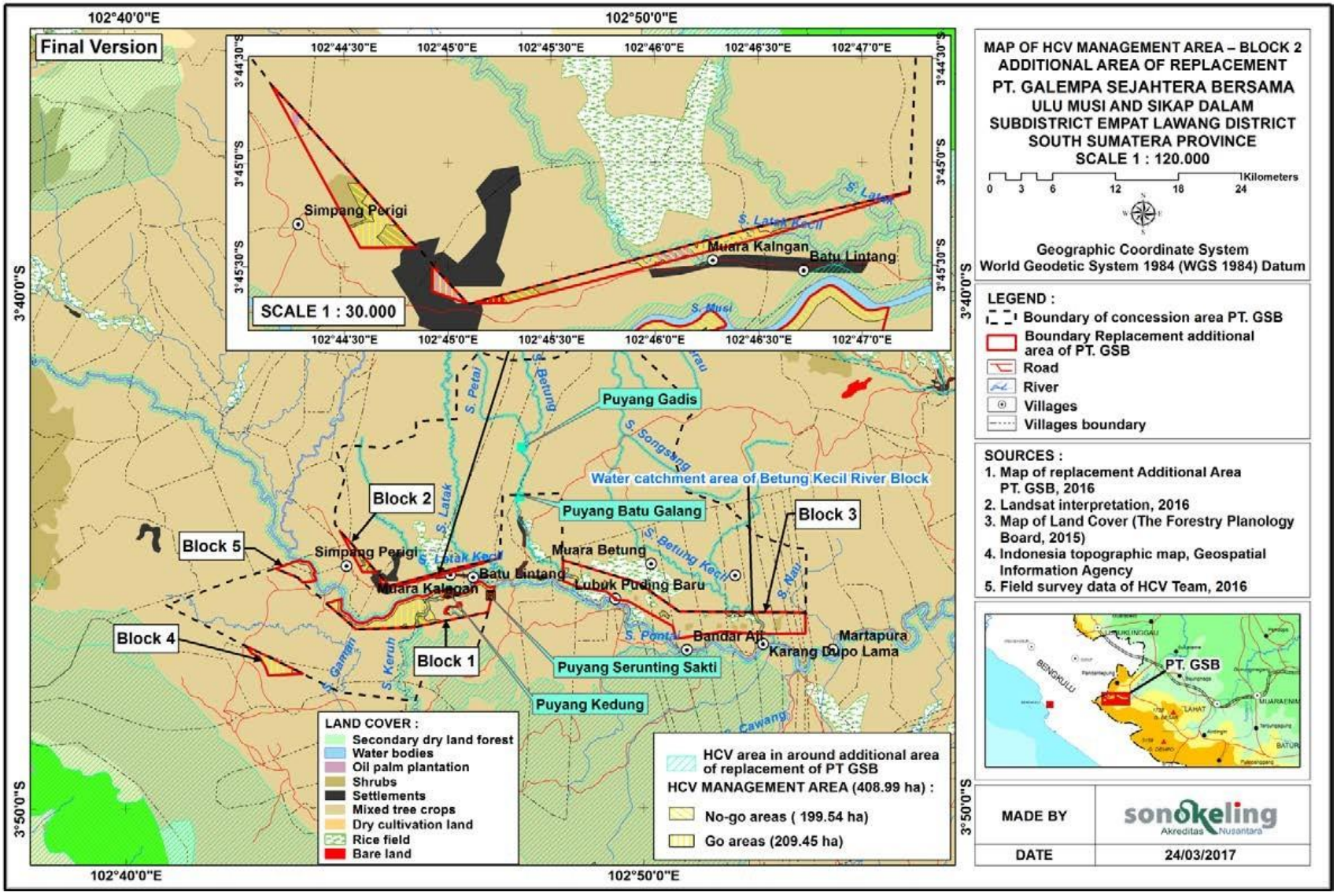
HCV	Threat	Management Recommendation	Monitoring Recommendations	Responsible
		4. Tackling narrowing [due to rubbish and other river silting] 5. On land cover in the form of secondary dryland forest, activities are carried out to overcome and prevent the spread of exotic and invasive species 6. Improvement of watershed 'filters' especially along riparian by planting grasses or other plants that can close the ground surface, and 7. Securing riparian that are prone to landslides, for example by planting relatively light and deep-rooted plants such as bamboo [if sediment originates from river bank erosion].		
		▪ Carry out rehabilitation and restoration of areas around the natural water reservoir		SC Staff
		▪ Plant enrichment in Important Bird areas that have land cover in the form of shrubs with species of animal feed plants.		SC Staff
		▪ Coordinate with relevant agencies in order to reduce poaching, illegal logging, and conversion of areas within the permit area, as well as effective law enforcement.		SC Staff & CID Staff
4	▪ Loss of shrub land cover in river border areas and secondary forests in catchments.	▪ Maintenance the boundaries marker of river border areas [width of 50-100 m], areas around natural water reservoir [width of 20m border] and water catchments in the field.	▪ Establish a monitoring station for the physical condition or rivers and waterways, as well as the quality and quantity of water.	SC Staff & Asmen Estate
	▪ Decreased river water quality due to the use of fertilizers and pesticides in the agricultural area of the community.	▪ Conduct prevention, protection and control of disturbance to HCV management areas [illegal logging and area conversion] through activities: installation and maintenance of HCV marks on strategic access points, and routine patrols.	▪ Conduct periodic joint community monitoring of the physical condition of rivers and natural water reservoir, and the quality and quantity of river and natural water reservoir	SC Staff

HCV	Threat	Management Recommendation	Monitoring Recommendations	Responsible
	▪ Loss of water supply needed by downstream communities.	▪ Develop and implement SOPs on the use of chemicals and SOP on waste management, as well as SOP on land clearing, construction and maintenance of roads and other facilities, as well as planting and maintaining plants that are able to minimize erosion and maintain water quality.	▪ Conduct periodic monitoring of illegal logging and land conversion by the community	Head of EHS & GM Estate
	▪ Company operational activities that will result in river siltation, increase river water discharde in the rainy season and decrease river water flow in the dry season, and increase erosion.	▪ Ensure that the road construction activities and other facilities, as well as land clearing have been carried out correctly in accordance with the SOP.	▪ Periodically perform the erosion monitoring	CWT Staff
	▪ Decreased river water quality due to land clearing and washing/runoff fertilizers and pesticides or other pollution from from oil palm plantations that enter the rivers		▪ Conduct periodically monitoring of changes in land cover and natural regeneration in border area of rivers and areas around checklists.	SC Staff
	▪ Pollution of household waste.		▪ Monitor and evaluate SOPs that are applied periodically	SC Staff
5	▪ Decreased river water quality due to the use of fertilizers and pesticides in community agricultural fields.	▪ Installed signboard for not hunting protected and endangered animals.	▪ Develop and implement a participatory monitoring system to track the availability of basic community needs periodically.	SC Staff
	▪ Decreased river water quality due to land clearing and washing/runoff fertilizers and pesticides or other pollution from oil palm plantation that enter the rivers.	▪ Controll hunting activities that carried out by the community	▪ Conduct periodic monitoring of community participation in reducing environmental impacts [for example: illegal logging, land conversion, and the use of fertilizers and pesticides in the fields.	SC Staff & CID Staff
	▪ Loss of community access to hunting activities.	▪ Protect the HCV 5 through clear boundary marking activities on the ground and routine patrols.	▪ Conduct periodic monitoring of community perceptions of the quantity and quality or fiver and natural water reservoir.	SC Staff & CID Staff
	▪ Loss of drinking water sources due to river water pollution.	▪ Prevention, protection and control of disturbances to HCV management areas [wildlife hunting, illegal logging and land conversion] through activities such as installation and maintenance of HCv		SC Staff

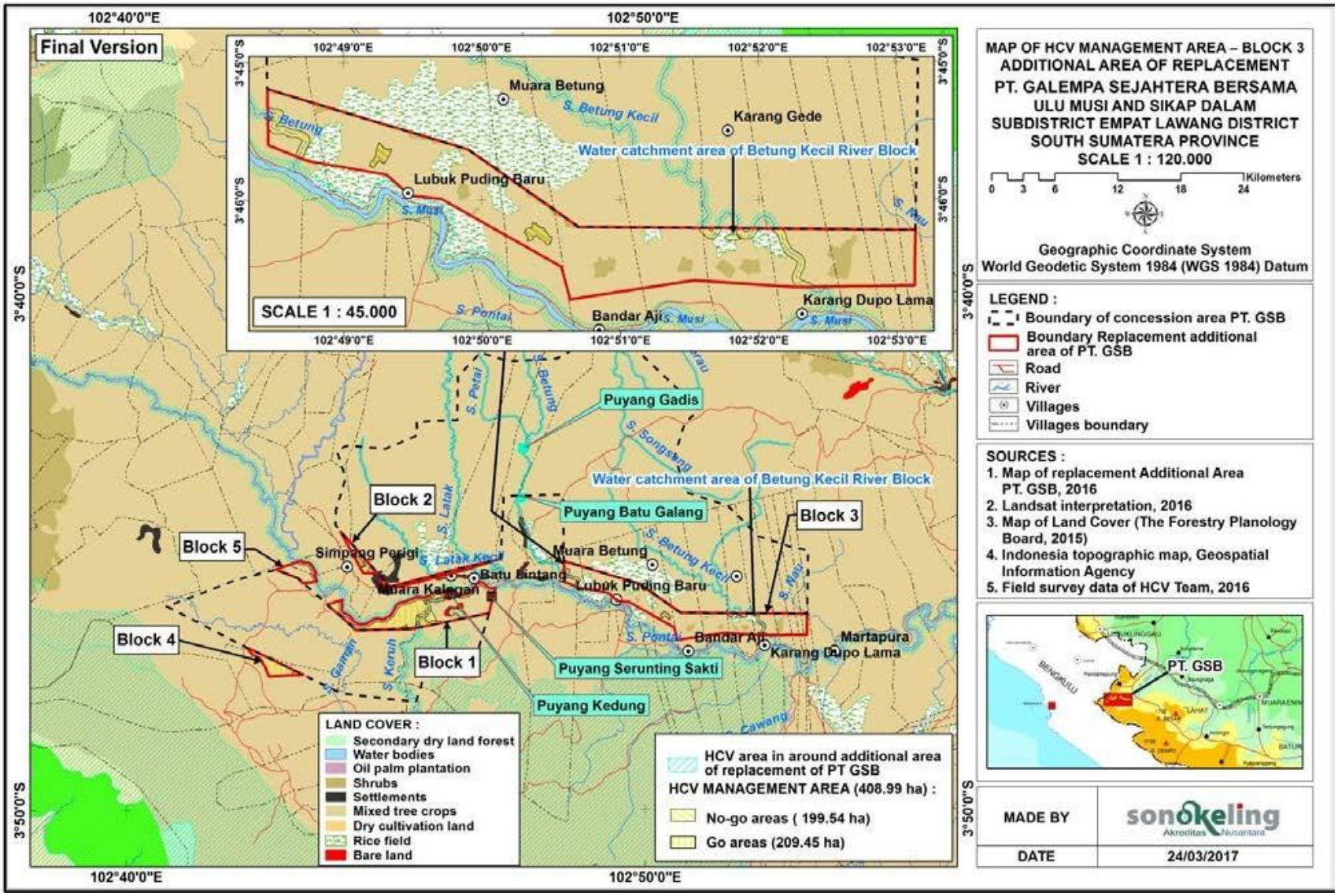
HCV	Threat	Management Recommendation	Monitoring Recommendations	Responsible
		marker on the strategic access points and routine patrols.		
6	▪ Land clearing activities, road construction and other facilities that do not pay attention to the existence of archeological sites.	▪ Marking HCV 6 boundaries if permitted by the community and periodically maintenance of boundary markers in the field so that disruption to the site does not occur.	▪ Develop a simple HCV 6 monitoring system that is easily understood by the community.	SC Staff
	▪ Loss of public access to archeological sites.	▪ Involving community members during land clearing activities, especially those located adjacent to HCV 6 areas to avoid disturbance to existing sites.	▪ The company, together with the community, conducts periodic (annual) monitoring of HCV 6 sites and prepares its reports.	SC Staff & CID Staff
		▪ Develop SOPs for identification, boundary marking and maintenance of boundary markers in the field, as well as the protection of all HCV 6 sites together with the community.		Head of CSV
		▪ Provide access for the community to enter HCV 6 site.		SC Staff



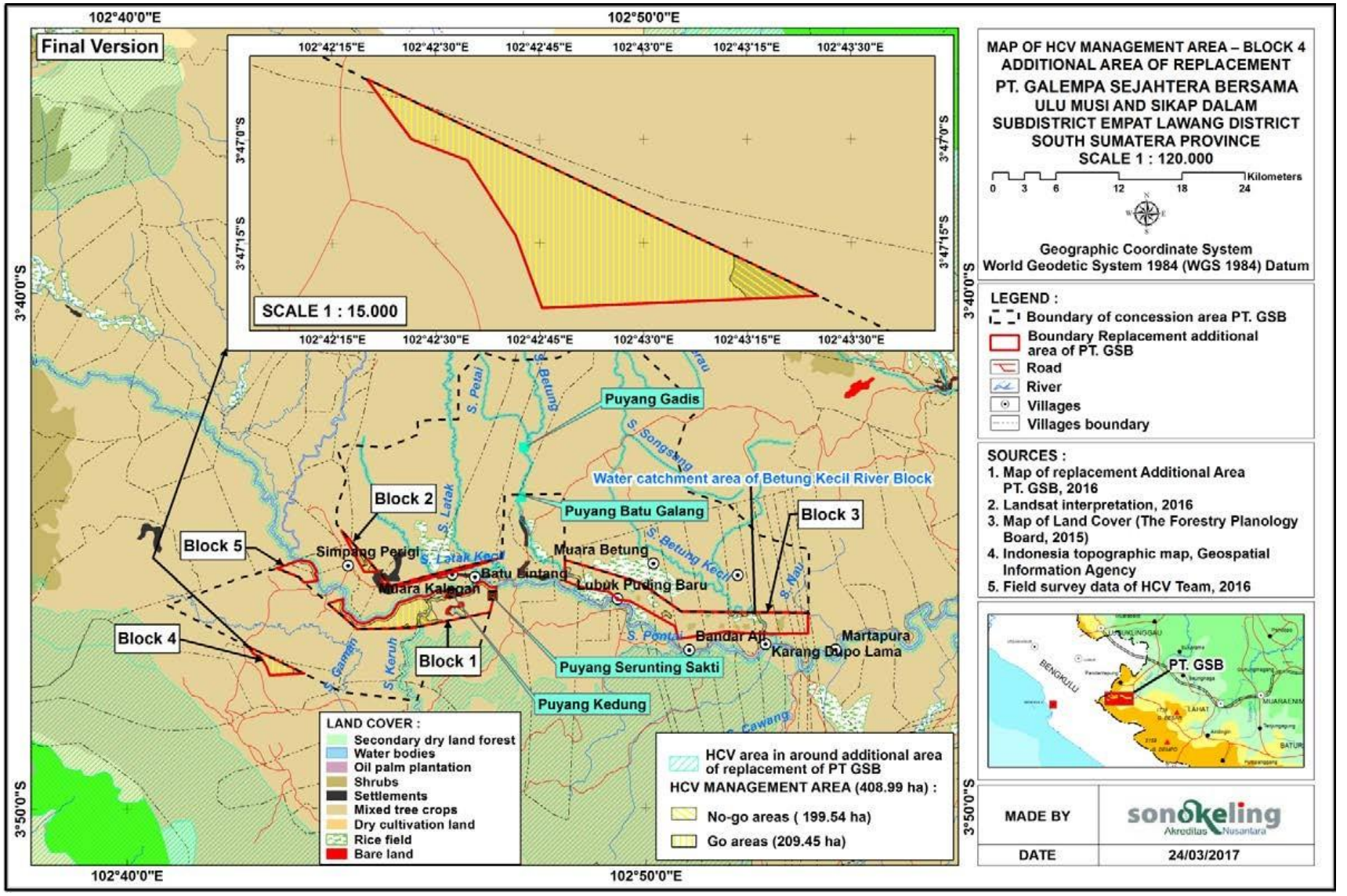
Map 46. Map of HCV management area of Block 1 in the additional area of replacement of PT GSB



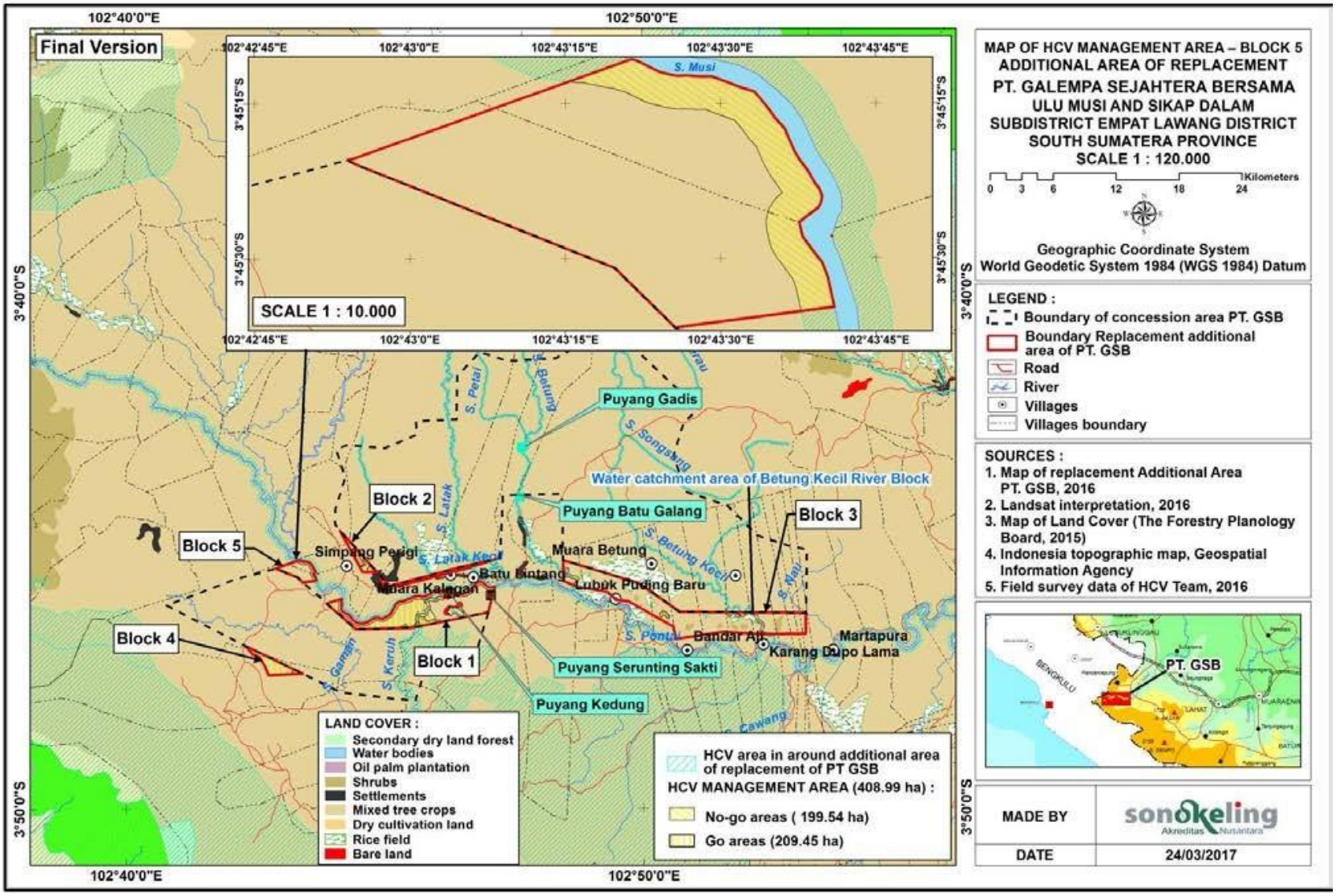
Map 47. Map of HCV management area of Block 2 in the additional area of replacement of PT GSB



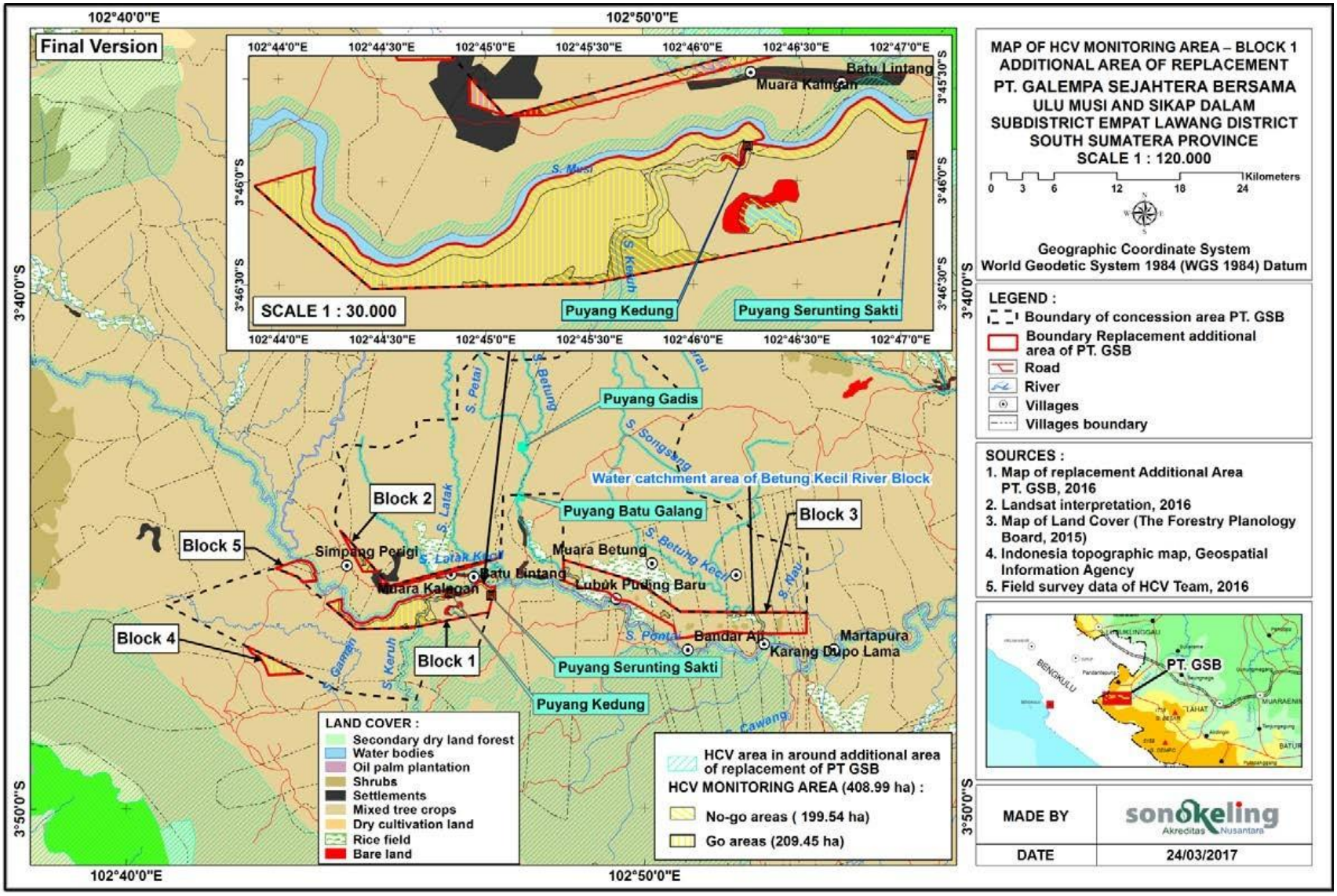
Map 48. Map of HCV management area of Block 3 in the additional area of replacement of PT GSB



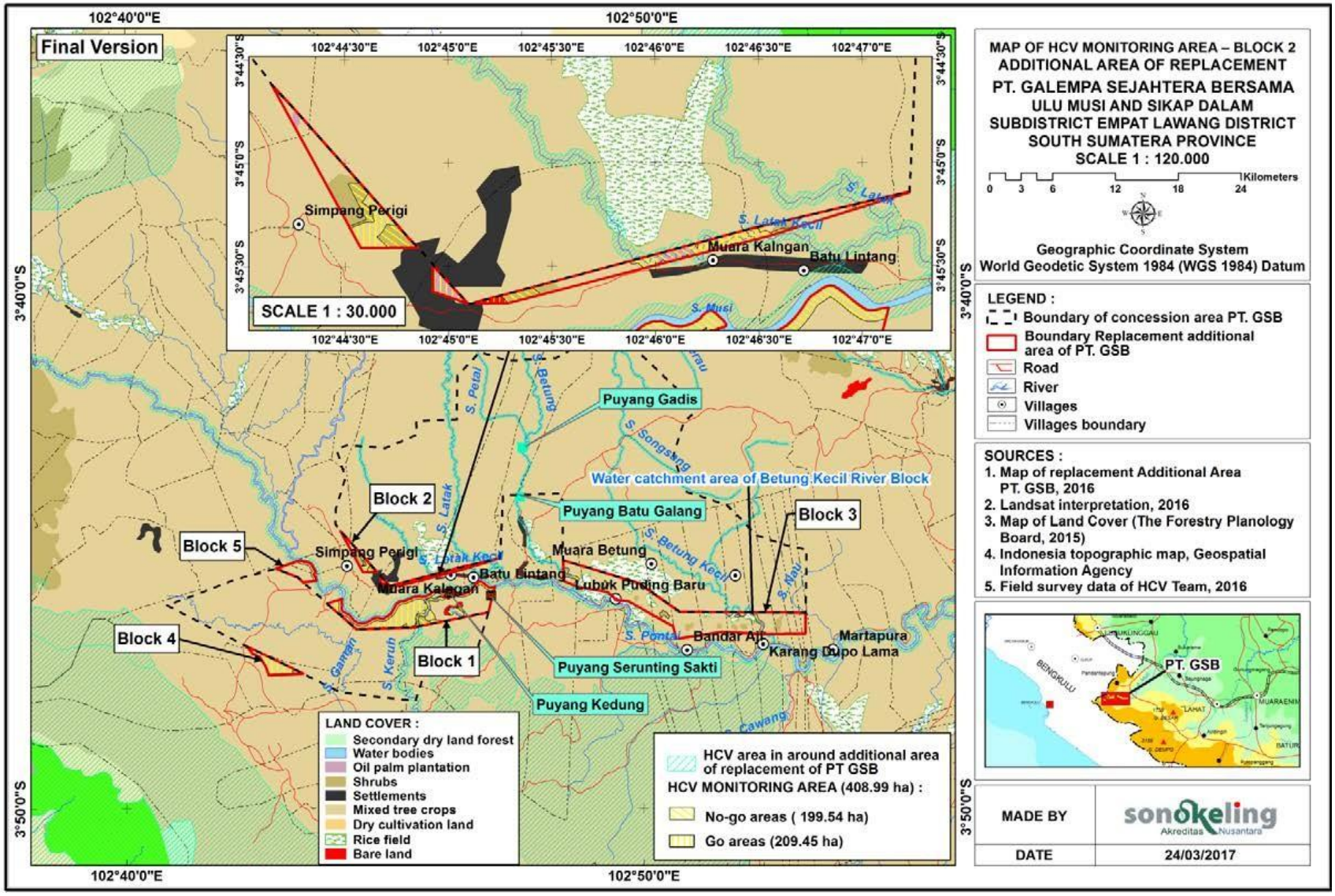
Map 49. Map of HCV management area of Block 4 in the additional area of replacement of PT GSB



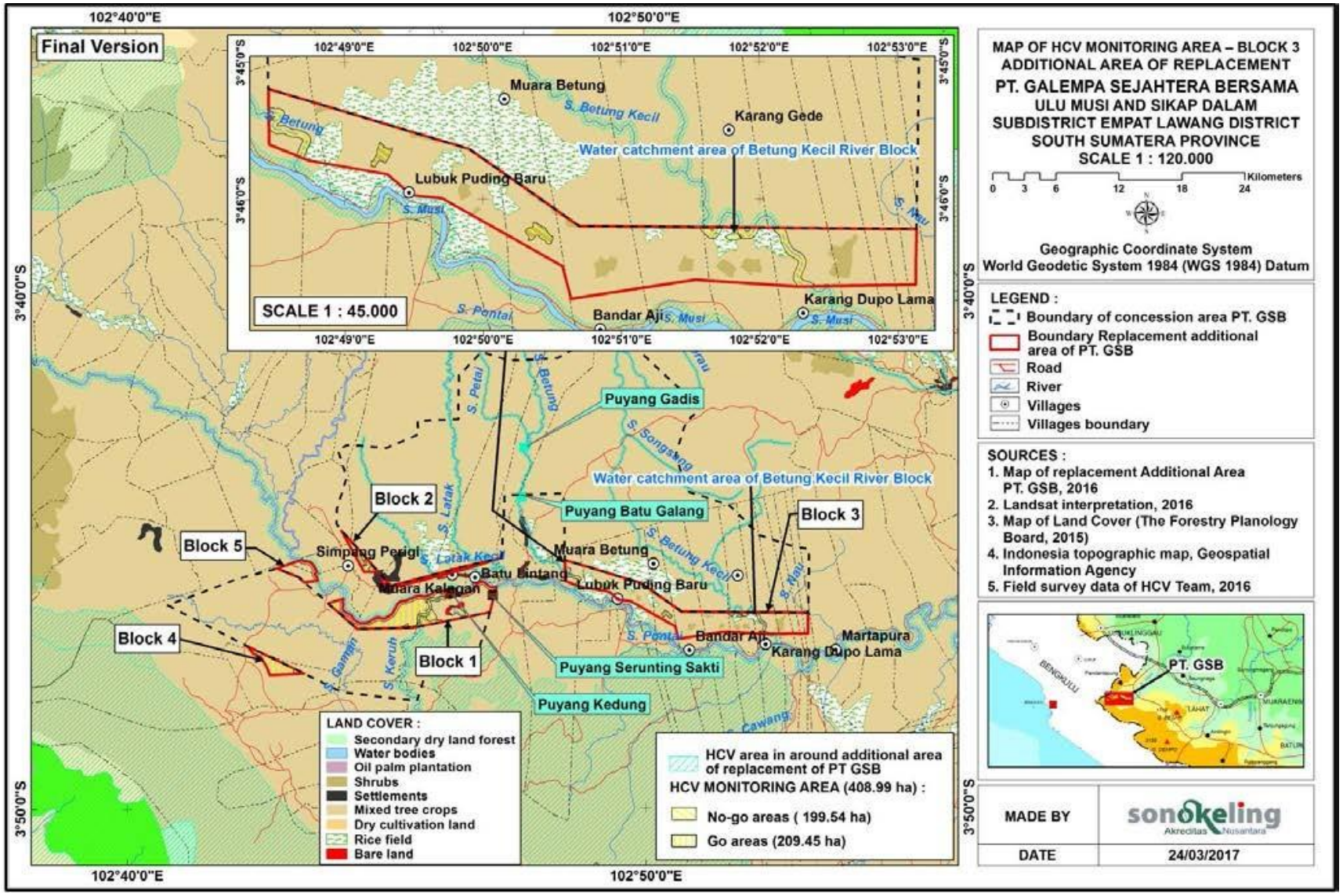
Map 50. Map of HCV management area of Block 5 in the additional area of replacement of PT GSB



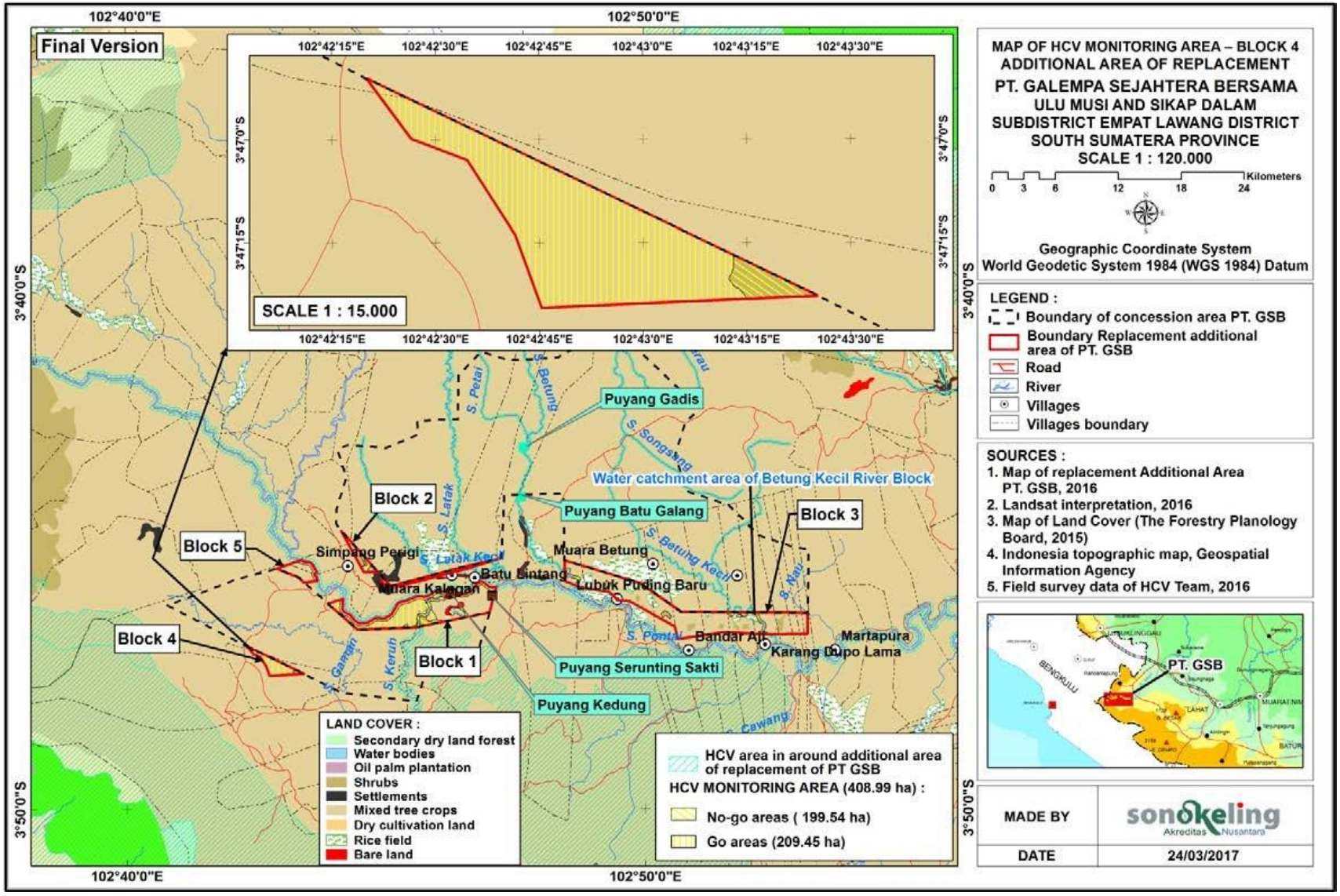
Map 51. Map of HCV monitoring area of Block 1 in the additional area of replacement of PT GSB



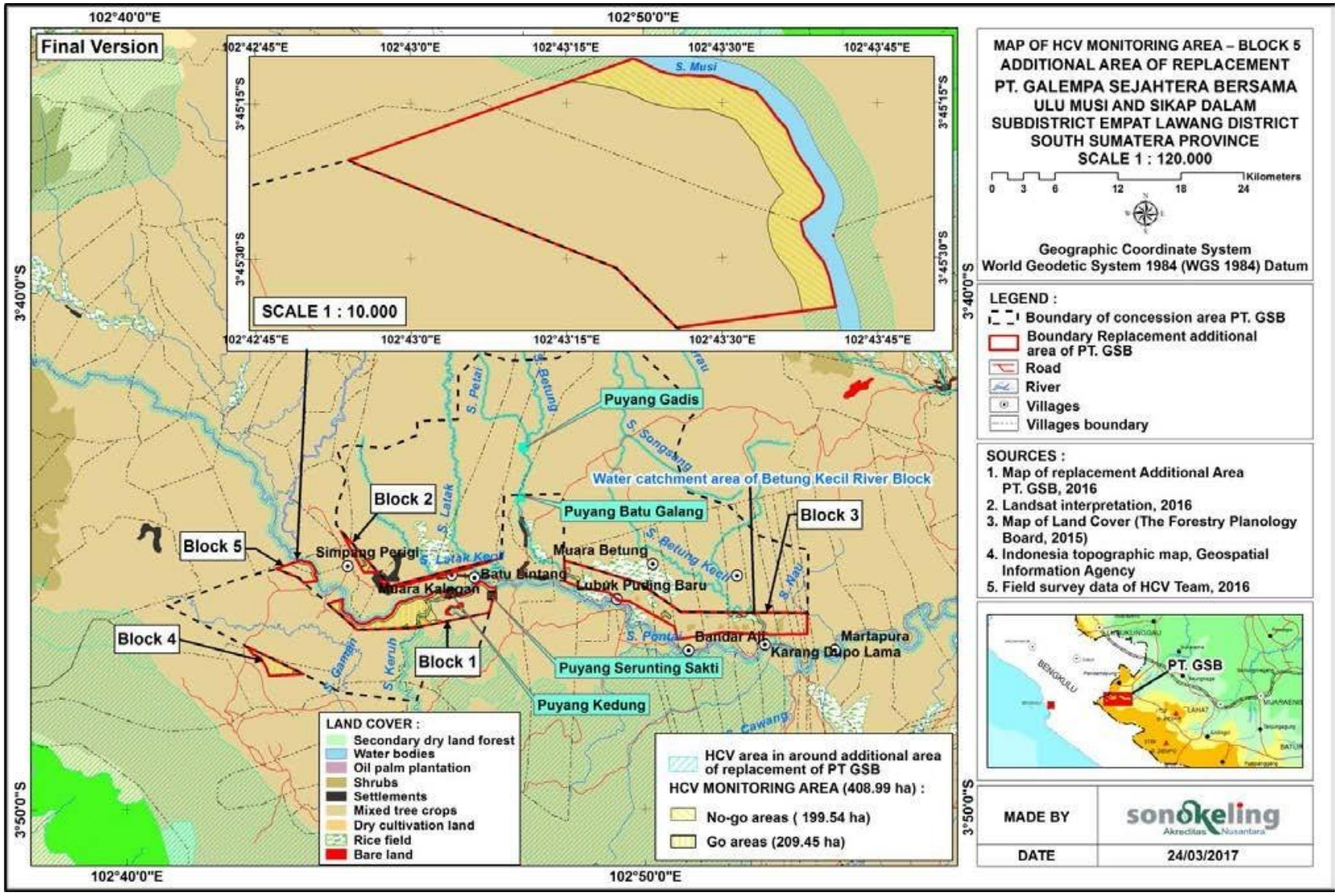
Map 52. Map of HCV monitoring area of Block 2 in the additional area of replacement of PT GSB



Map 53. Map of HCV monitoring area of Block 3 in the additional area of replacement of PT GSB



Map 54. Map of HCV monitoring area of Block 4 in the additional area of replacement of PT GSB



Peta 55. Map of HCV monitoring area of Block 5 in the additional area of replacement of PT GSB

4.2.4 Land Management Plan

The land monitoring and management strategy is outlined in the Agronomy SOP. Land management has been carried out at the stage of land clearing through SOP AGR 03 guidelines on Land Clearing and Zero Burning. Tilt areas above 23° must not be opened and planted. On land with a slope above 5° a contour terrace is made to facilitate planting, maintenance and also to reduce the rate of erosion. When the land is cleared, planting of ground cover is immediately carried out. Soil management strategis to prevent soil erosion and loss area set out in SOP AGR 05 on soil and water conservation. To manage marginal land or critical land that has a limiting factor is outlined in SOP AGR 06 regarding marginal land management.

4.2.5 GHG Management and Monitoring Plan

The challenges faced today and in the future by Indonesian oil palm plantations in the global market are the demands of environmentally friendly management of oil palm plantations, namely the management of plantations that can guarantee the sustainability of production, environment and social culture. In order to achieve a balance between production, environment and socio-economic culture, the palm oil management unit must apply the best practices management principles, both voluntarily and in compliance with applicable laws and regulations. In maintaining these functions, in addition to assessing High Conservation Value Areas, it is also necessary to conduct a Carbon Stock Analysis. This assessment of carbon stock is very important at the moment amid the emerging climate change / global warming issues. Every development of an oil palm plantation must be considered to the extent to which business action can minimize emissions that occur through carbon stock conservation efforts.

Based on Palm GHG Calcualtion for New Development (RSPO Palm GHG Calculator for New Planting versi 3), the total estimate GHG that will release to atmosphere are around 5,146.73 Ton CO_2 eq or 4.90 Ton CO_2 eq/Ha. The most significan potential emission came from Land Use Change (11,23 Ton CO_2 eq /Ha), and second one are came from Fertilizer Aplication include N_2O emission.

Based on High Carbon Stock Study of the additional area of renewal of PT GSB, that find the area 1,26 Ha that consist of Carbon Stock 30,95 Ton/Ha, PT GSB will not cleared the area to minimize the carbon release to atmosphere.

The activities to minimize the emission from new development of Palm Oil are land clearing with zero burning and manage fertilizing activity, such as using organic fertilizer or using land cover crop to capture the “N” from the environment. Fertilizing recommendation should

considered the actual nutrient that available in the soil due to minimize application of anorganic fertilizer. The complete recommendation of minimizing GHG are available in the table below.

Table 30. Recommendation on Carbon Stock and GHG Mitigation

Operational Stages	Activities		Mitigation		Monitored	Responsible
Land Clearing and Planting (Land Use Change)	1	Tree Logging	1	Land Clearing without burning [zero burning]	Weekly (during land clearing)	Asmen Estate
			2	Planting emmisions-absorbing plants	Monthly	SC Staff
			3	Identify conservation areas and reserve conservation areas	Monthly	SC Staff
			4	Implement good plantation practices in accordance with the guidelines for oil palm cultivation [for example : Not planting in areas with a certain degree of slope]	Weekly (during palm palnting)	Asmen Estate
			5	Conduct riparian management	Monthly	Asmen Estate
			6	Planting trees in the riparian and critical areas	Monthly	SC Staff
			7	Patrolling for prevention of land fires	Daily	EHS Staff
			8	Disseminating information to all levels of workers regarding greenhouse gas emission mitigation programs in land clearing activities.	Yearly	SC Staff
	2	Use of machinery/Heavy equipment	1	Maintenance of vehicles and engines on a regular basis.	Monthly	CWT Staff
			2	Testing vehicle emissions regularly	Yearly	CWT Staff
			3	Planting green plants in strategic places	Monthly	SC Staff
			4	Effective and efficient transportation arrangements.	Yearly	CWT Staff
			5	Disseminate all workers about the mitigation program of greenhouse gas of fossil fuels to run transportation and machinery.	Yearly	SC Staff
	3	Fertilization	1	Perform effective fertilization according to the dosage in the fertilizer	Monthly	Asmen Estate
			2	Using cover crop to minimize the evaporation and increase the “N” content in the soil.	Monthly	Asmen Estate
			3	Using EFB as organic fertilizer to maintain the soil texture and structure	Monthly	Asmen Estate
			4	No fertilizer application when it rains	Daily	Asmen Estate
			5	No fertilizer application in riparian area	Daily	Asmen Estate
			6	Disseminating information to all levels of workers regarding the mitigation program for greenhouse gass emissions	Yearly	SC Staff

Operational Stages	Activities		Mitigation		Monitored	Responsible
				resulting from fertilization activities.		
Care and harvesting	1	Use of fossil fuels for transportation (FFB, Fertilizers, etc)	1	Maintenance of vehicles and engines on a regular basis.	Monthly	CWT Staff
			2	Testing vehicle emissions regularly	Yearly	CWT Staff
			3	Planting green plants in strategic places	Monthly	SC Staff
			4	Effective and efficient transportation arrangements	Yearly	CWT Staff
			5	Disseminate all workers about the mitigation program of greenhouse gas emmissions that may result from the use of fossil fuels to run transportation and machinery.	Yearly	SC Staff
	2	Fertilization and application of pesticides	1	Perform effective fertilization according to the dosage in the fertilizer recommendation	Monthly	Asmen Estate
			2	Using cover crop to minimize the evaporation and increase the "N" content in the soil.	Monthly	Asmen Estate
			3	Using EFB as organic fertilizer to maintain the soil texture and structure	Monthly	Asmen Estate
			4	No fertilizer application when it rains	Daily	Asmen Estate
			5	No fertilizer application in riparian area	Daily	Asmen Estate
			6	Disseminating information to all levels of workers regarding the mitigation program for greenhouse gas emissions resulting from fertilization activities.	Yearly	SC Staff
Housing	1	The use of fossil fuels for diesel engine energy sources that are used as electricity providers	1	Perform regular machine maintenance and service	Monthly	CWT Staff
			2	Conduct periodic emission monitoring	Semester	EHS Staff
			3	Socializing electricity savings	Yearly	EHS Staff
	2	Garbage decay in landfills	1	Hoard garbage after full in the landfills	Monthly	EHS Staff

5. Bibliography

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STATEMENT LETTER

This document is a summary of the results of an Environmental Impact Assessment (AMDAL), Social Impact Assessment (SIA), High Conservation Value Assessment, Analysis of Changes in Land Cover and Analysis of High Carbon Stock at PT Galempa Sejahtera Bersama, Simpang Perigi Village, Ulu Musi District, Empat Lawang District, South Sumatera Province which has been approved by PT Galempa Sejahtera Bersama management.

Management recommendations for the results of the study will be applied and monitored according to the specified period. In general, will be a guide to Management of PT Galempa Sejahtera Bersama in the management of oil palm plantations.

Management of	Management of
PT Galempa Sejahtera Bersama	PT Sonokeling Akreditas Nusantara
Antoperis Tarigan	Ir. Siswoyo, Si
Sustainability Compliance Manager	**Assessor**
Date: 27th June 2018	Date: 27th June 2018