New Planting Procedure - Summary of Assessments

NPP Reference Number:	SCS-RSPONPP-000610
Country of the NPP submission:	Nigeria
RSPO Membership Number:	2-0017-05-000-00

Section 1: General Information

Wilmar International is a globally recognized leader in the production, processing, and merchandising of oil palm and lauric oils. As part of its strategic expansion and commitment to increasing its production footprint in Africa, Wilmar International established Wilmar Africa Investment Limited, which subsequently incorporated Biase Plantations Limited (BPL).

BPL was incorporated in Nigeria on 10th February 2011 under the Companies and Allied Matters Act (CAMA) and is fully registered in Cross River State, Nigeria. Currently, BPL operates three plantation estates located within Akamkpa, Odukpani, and Biase Local Government Areas of Cross River State. These estates include the Ibiae, Calaro, and Calaro Extension Estates.

In line with its expansion strategy and commitment to sustainable agricultural development in Cross River State, BPL intends to redevelop the former Cross River Estates Limited (CREL) concession located at Uyanga. The concession, previously managed as a rubber plantation under the former CREL and later Eng Huat operations, was not found to be under any sustainability certification scheme.

In 2025, the Uyanga Estate was officially handed over to BPL, representing a significant milestone in the state government's efforts to attract responsible private investment, rehabilitate underperforming plantation assets, and promote sustainable economic growth within the agricultural sector.

The Uyanga Estate comprises approximately 8,509 hectares of managed and unmanaged monoculture rubber plantation, including nine (9) existing worker camps and other associated infrastructure assets, acquired outright by BPL.

As part of the proposed redevelopment plan, BPL intends to gradually convert all plantable areas identified through the HCV-HCSA assessment process from rubber to oil palm cultivation upon approval of the RSPO New Planting Procedure (NPP). The project will involve phased land preparation, replanting activities, and the development of supporting infrastructure for plantation operations, logistics, and local employment opportunities.

The redevelopment is expected to contribute significantly to employment generation, improved rural livelihoods, and the broader socio-economic development objectives of Cross River State. Land preparation and planting activities are proposed to commence in 2027, with first harvest anticipated between 2030 and 2031.

In line with BPL's commitment to sustainability and RSPO certification requirements, BPL intends to carry out the proposed development in accordance with the RSPO requirements for new plantings. In fulfilment of these requirements, BPL has carried out the required various stakeholder engagements and Free Prior and Informed Consent (FPIC) processes. Additionally, the company has undertaken the required assessments which include:

- Integrated High Conservation Value – High Carbon Stock Approach (HCV-HCSA)
- Social Impact Assessment
- Land Use Change Analysis
- Greenhouse Gas Assessment
- Soil Suitability and Topographic survey
- Environmental and Social Impact Assessment

The results of these assessments and the stakeholder engagements and FPIC are summarized in this report. The proposed NPP area is in the Uyanga, Akamkpa Local Government Area, Cross Rivers State, Nigeria. The size of the NPP area is 8,509.70 ha (out of which 7857.07 ha is the total planting area).

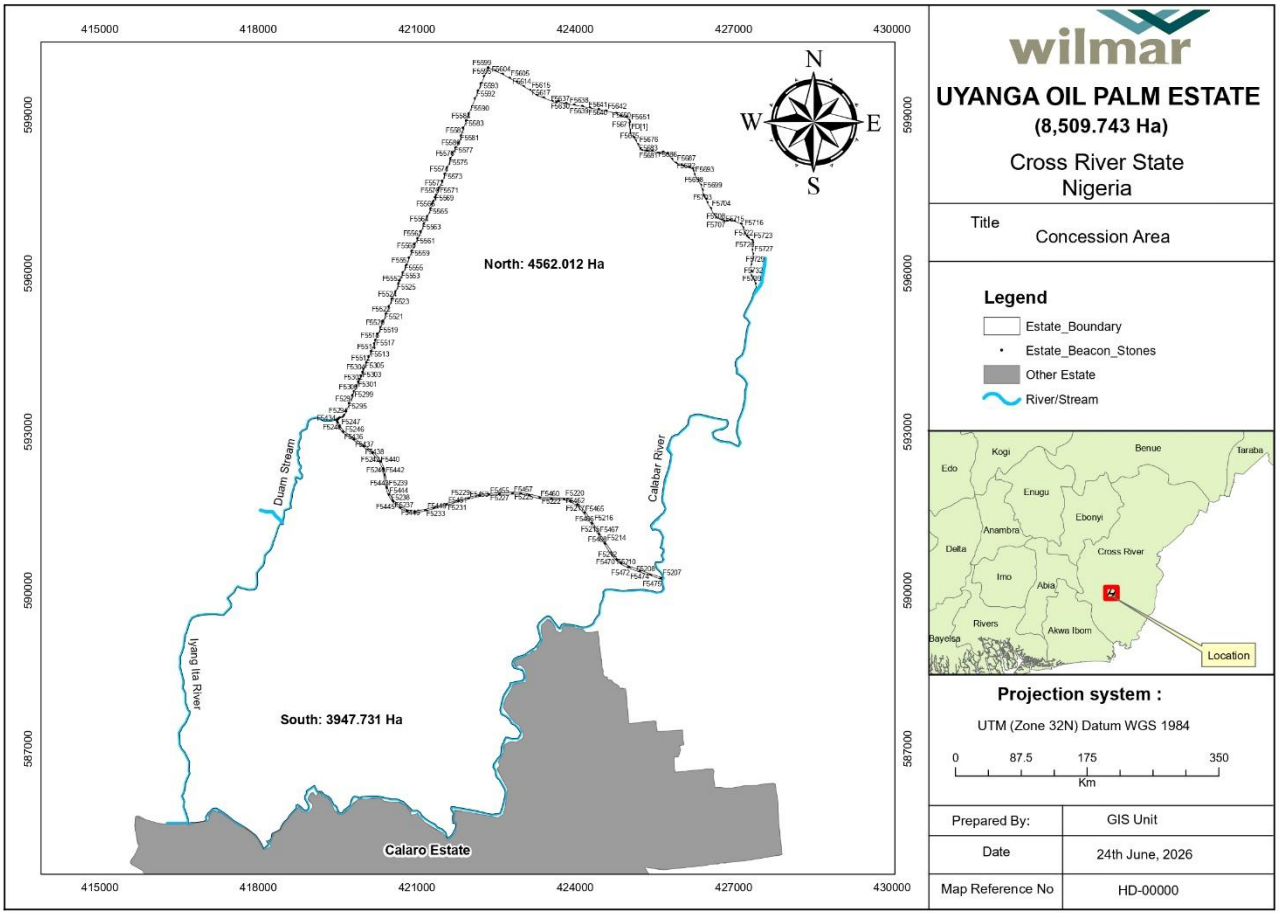


Figure 1: Location map of the assessment area

In line with responsible business practices, BPL has obtained all regulatory permits required for the operation of its business and development of the NPP area. These are outlined below in Table 1.

Table 1: List of regulatory permits

S/N	*Permit/License*	*Issuing Authority*	*Reference Number*	*Validity Period*
1	*Land Allocation Paper*	*Cross River State Ministry of Land*	LUAC/BSE/CRS/ADS/13/001/VOL.1/4	*99 years*
2	Certificate of Incorporation	Corporate Affairs Commission (CAC)	RC935794	*As long as the company exists*
3	Tax Identification Number	Federal Inland Revenue Service	11228156-0001	Permanent
4	Interim Environmental Permit	Federal Ministry of Environment	FMEnv/EA/EIA/8905/001.1/70	Valid for 3 months from date of issue 22/12/2025

The development of the NPP area will follow a planting schedule as follows:

Table 2 NPP area planting schedule

Location	**Proposed Time Plan for Development**		**Approx. size of clearing**
	Month	Year	
Phase 1	May	2027	721.42 ha
Phase 2	May	2028	1,429.35 ha
Phase 3	May	2029	1,978.85 ha
Phase 4	May	2030	1,958.85 ha
Phase 5	May	2031	1,768.64 ha
Total Plantable Area			**7,857.11 Ha**

Section 2: Maps

Boundary Maps owned by the company

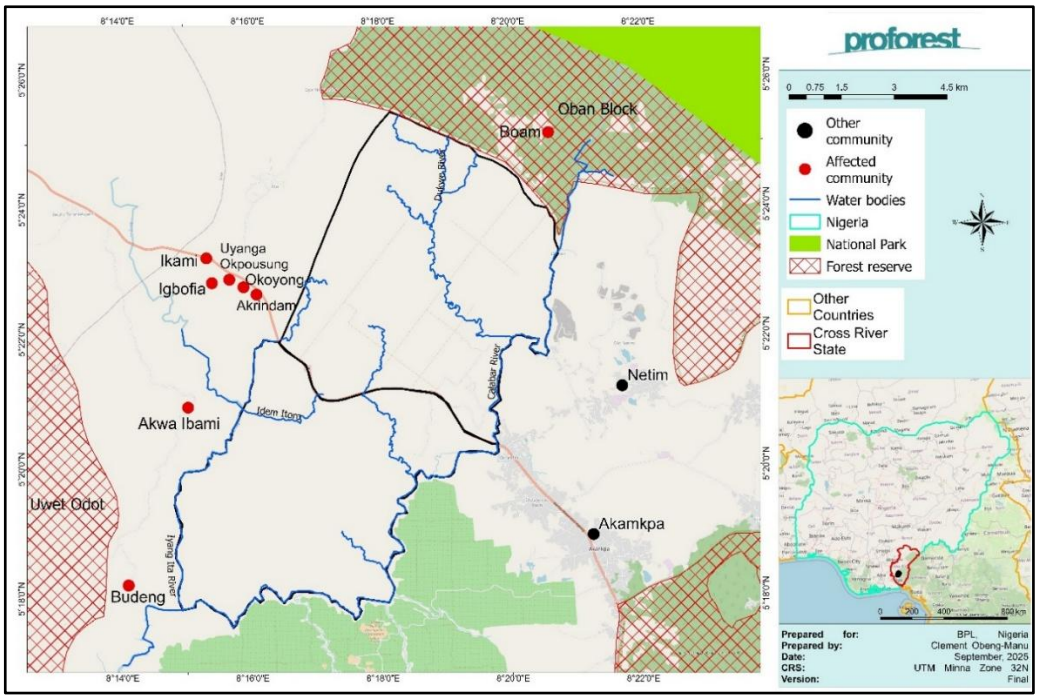


Figure 2: Boundary map of the NPP area

Proposed NPP area Maps

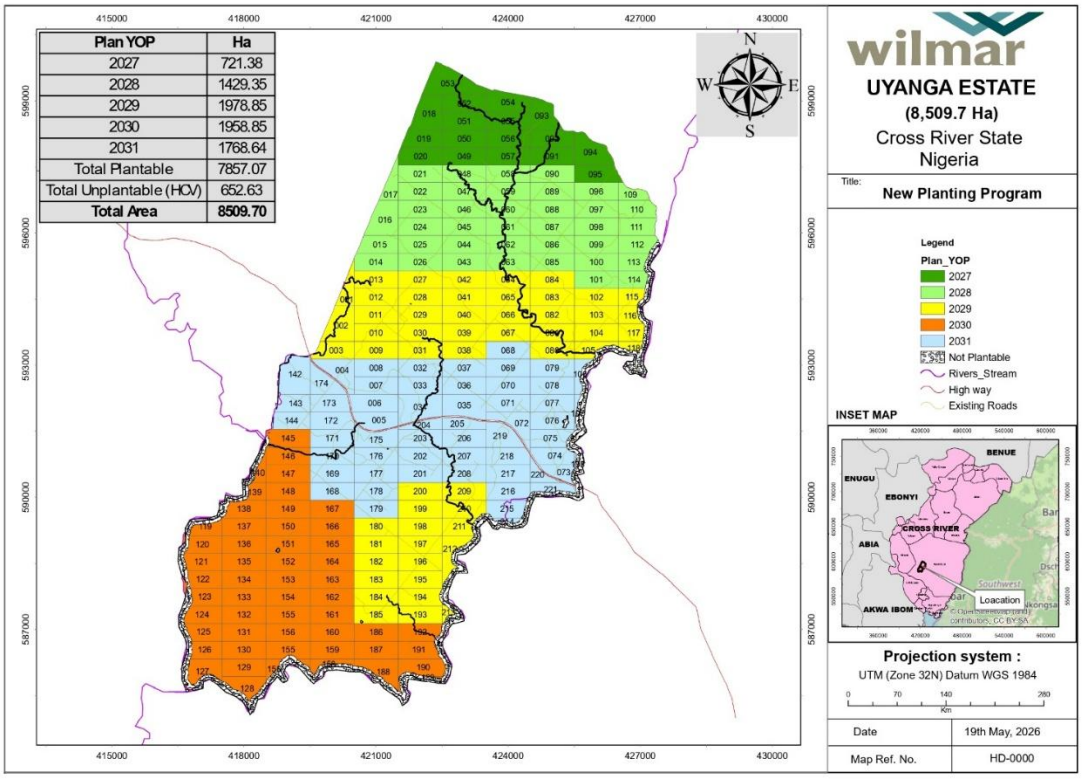


Figure 3: Map of proposed planting schedule and area

Proposed NPP area Maps overlay with HCV and HCS areas

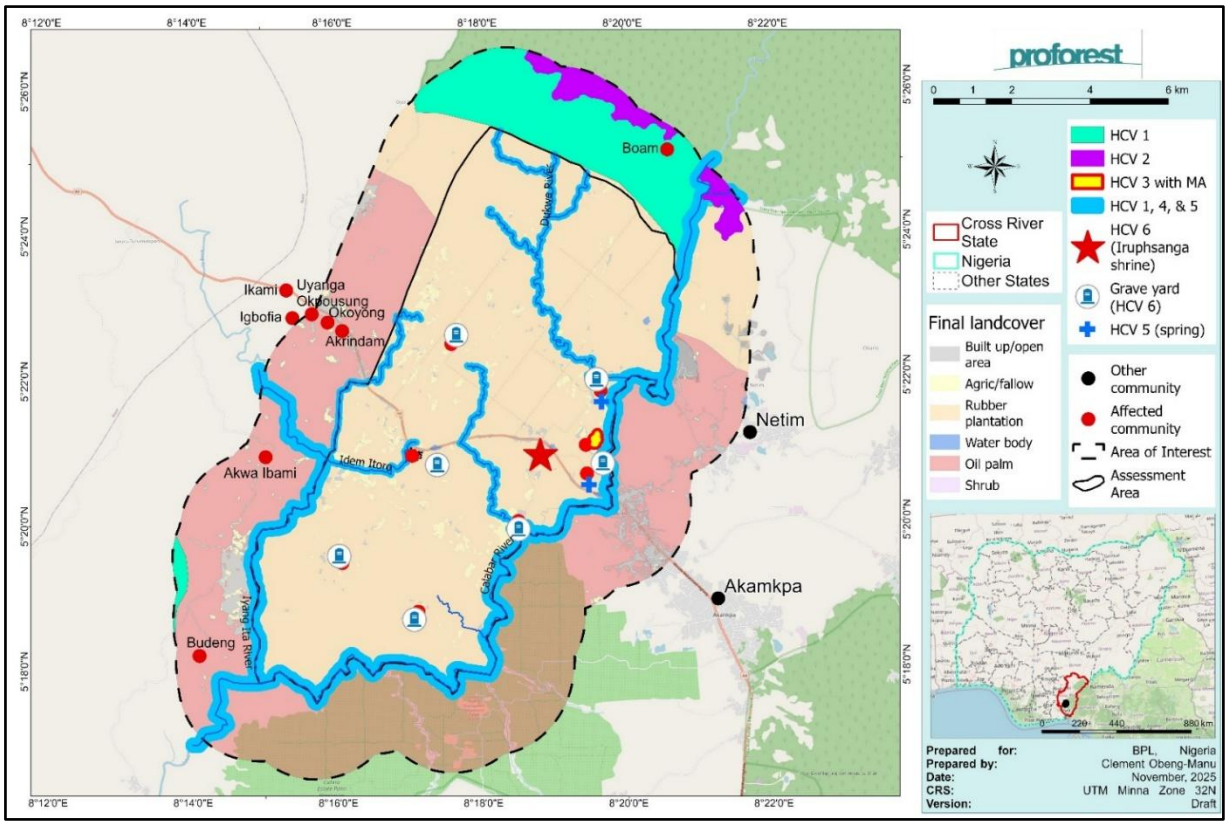


Figure 4: Map of new plantings overlay with HCV and HCS areas

Section 3: SEIA

SOCIAL AND ENIRONMENTAL IMPACT ASSESSMENT

Date of assessment: 16 and 17 October 2025

Name of Assessors: Mr. Ahmeed. A. Olanigan / Prof Joseph Amodu

Assessor Designation and Company: Consultant / Foremost Development Services

Details of persons involved in various aspects of the assessment are found below in Table 3:

Table 3: SEIA Assessment Team

Names of Consultant	Qualification	Role played
Fatai A. Afolabi	PhD. Environmental Resources Management	Overall, Job Execution and Delivery
Mr. Ahmeed. A. Olanigan	M.Phil. Environmental Management & Protection	Project Coordination/Air Quality and Noise Expert
Engr. Rofiat Badmos (Mrs)	B.Eng. Mechanical Engineering	Operations; Team Lead
Mr. Abiodun Makinde	B.Sc. Soil Science, RSS	Team Lead: Soil, Air Quality and Noise Measurement
Mr. Esetejovwo Kelvin	B.Sc. Public Health	Member: Soil, Air Quality and Noise Measurement
Professor Joseph Amodu	PhD. Agricultural Economics	Lead Assessor; Socioeconomic and Social Impact Assessment
Dr. G.F Koledoye	PhD. Agricultural Extension	Assistant Lead Assessor; Socioeconomic and Social Impact Assessment
Darlington Omoregie	Bachelor of Agriculture	Assistant Lead Assessor: Socioeconomic & Social Impact Assessment (SIA)
Dr. Egwumah, F. A	PhD. Forestry and Wildlife Technology	Member; Biodiversity Survey; Flora and Fauna
Mr. Akinyemi Akinniyi Ibukunoluwa	M.Sc Environmental Resource Management	Member; Biodiversity Survey; Flora and Fauna
Dr. E. T. Adebayo	PhD. Fisheries Management	Aquatic Ecology
Mr. Hakeem Olajobi	M.Sc. Remote Sensing and Geographic Information System (GIS)	GIS Expert
Dr. Femi Oyediran	PhD. Analytical Chemistry & Environmental Management and Protection	Laboratory Analyst
Environmental Services Limited (No. 28, Apaola Street, Off Aladelola Street, Ikosi-Ketu)	Federal Ministry of Environment Accredited Laboratory	Technical and Laboratory Services

Methodology

Review of Maps and Documents of the NPP area

Maps of the NPP area were reviewed to provide a basis for defining the limits of the impacts of the proposed oil palm development project. The review of maps was supplemented with field visits to the NPP area to provide a better understanding of the geographic scope of the area, the affected communities, current land use, and identify key social issues.

Review of available literature

As part of the preparatory work for the social impact assessment of the NPP area, relevant documents were reviewed to obtain background information and understand the social context of the proposed project area. The reviewed documents provided the assessment team with secondary data and background information on the landlord communities within the scope of the project. These include the local economy of the communities, vegetation types, demographic, and cultural attributes of the people in these communities. The documents reviewed include but not limited to:

- SEIA Report, dated December 2025
- ALS Integrated HCV-HSC Report
- Nigeria Land Use Act 2004
- Land Title documents for the Uyanga Estate, including Land Allocation Paper and Assets Sale agreement
- Memoranda of Understandings between the Landlord Communities and Biase Plantations Limited
- National Park Service Act No. 46 of 1999 (amended 2006)
- National Forest Policy
- Environmental Impact Assessment (EIA) Act of 1992 (Decree No. 86)

Key Institutional Consultations

Federal- and state-level stakeholders, as well as NGOs relevant to the proposed oil palm project were consulted during the ESIA. The consulted stakeholders include Federal Ministry of Environment's Environmental Impact Assessment Department, Cross River State Ministry of Lands, Cross River Geographic Information Agency, Cross River State Ministry of Agriculture and Irrigation, Cross River Forestry Commission, Nigerian Conservation Foundation and Wildlife Conservation Society. The institutional consultations involved the adoption of semi-structured interviews which generally allows for focused, conversational, two-way communication between the interviewer and the interviewees. For such high-level consultations, this approach is helpful because several important issues (not planned ahead of time for discussions) tend to be raised for further discussions and analyses.

Field Surveys and Community Consultations

Focused Group Discussions were held with chiefs and elders of the communities, including the youth and women leaderships. These communities are Uyanga-Igbofia, Uyanga-Okposung, Ikami, Akirindam, Boam, Okoyong, Akwa-Ibami and Budeng. The community consultations were held to:

- understand the socio-cultural structure of the communities i.e., the local governance structure and the interrelationships that exist.

- have a profile of social amenities or infrastructure in terms of education, health, recreation, and sanitation in these communities.
- have an idea of the socio-economic activities of the communities in the proposed development area and how it could be impacted by the proposed development and
- understand the profile of key community-level stakeholders.

Study Approach

This section presented the summary of the outcome of the Environmental Impact Assessment (EIA) study of the proposed 8,509.70 ha of Oil Palm Plantation by Biase Plantations Limited in Uyanga Oil Palm Estate, Akamkpa Local Government Area, Cross River State, Nigeria. The EIA study has been conducted in line with the Federal Ministry of Environment's (FMEnv) EIA Procedural Guidelines, as well as the relevant International Standards and Guidelines. The Nigerian (FMEnv) EIA process is summarized in Figure 5.

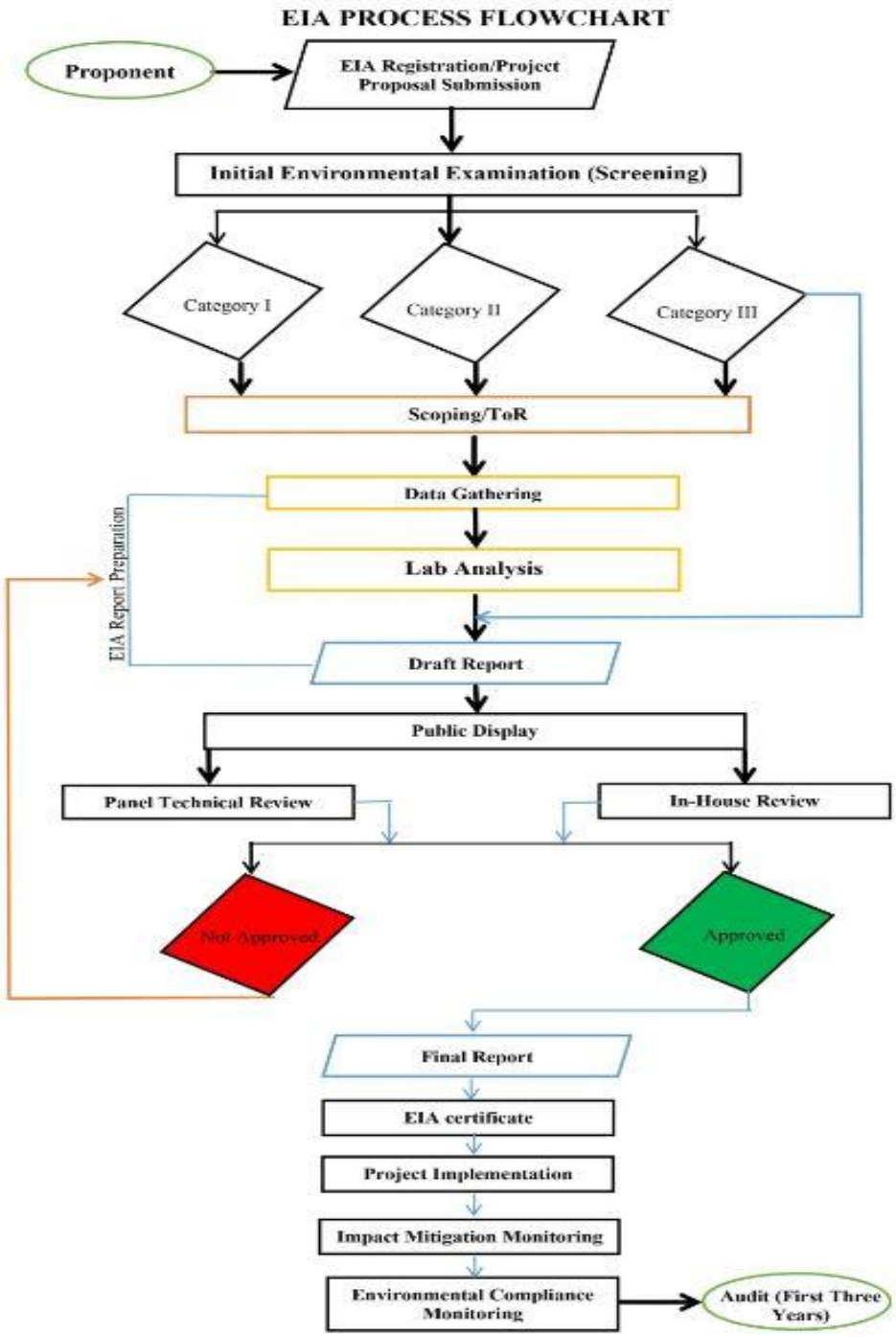


Figure 5: EIA processes

The EIA assessment involved a number of key activities carried out in a stepwise manner. These include:

- Screening and Site verification
- Scoping
- Literature review

- Field data gathering
- Laboratory analysis of field samples
- Stakeholder engagement
- Impact identification and evaluation
- Development of mitigation measures and EMP
- Report writing and disclosure

The study was conducted around Akamkpa LGA of Cross River State. The community is essentially rural area under the traditional rulership of HRM Ophot Agbor Ewa, the Paramount ruler of Akamkpa Community. Consultation for this EIA took place within the community. Primarily affected by the proposed project are; Uyanga community, Ikami community, Ojo village, Budeng village, Boam village, Akwa Ibami community. These villages were represented in the meeting by their respective leader. The study covered the socio-cultural resources of this community, demographic issues including population and growth, age and sex distribution, and adult literacy. Others were such indicators of the quality of life of the residents as the quality of housing, access to potable water, availability of functional infrastructural amenities, livelihood activities and patterns, and income levels. Health facilities and their patronage, disease prevalence and disease vectors, water and sanitation, and nutrition were also studied. Additionally, the study discusses the perceptions, concerns, and expectations of members and residents of the study area.

To further obtain relevant data and information on the socio-cultural and economic characteristics of the host environment, both quantitative and qualitative methods of data collection were employed.

Quantitative Data

To understand the socio-economic makeup of the project's host community, a survey was designed to gather information on demographics, economic activities, and other relevant aspects. The survey included multiple-choice questions on pre-defined socio-economic themes.

Sampling and Administration

A simple random sampling technique was used to select households/individuals for the survey. Questionnaires were administered systematically to ensure a substantial number of participants and a high return rate. More than 50% of the population is likely to fall below the age bracket of target respondents' age (18 and above).

Sample Size Determination

The size of the sample is crucial for both economic and ethical reasons. If a study has too few participants, it may not yield valuable results, but it is wasting resources. Conversely, an excessively large sample consumes more resources than necessary. In experiments involving human or animal subjects, the sample size is particularly significant ethically. A small sample might subject subjects to potentially harmful treatments without gaining meaningful knowledge, while an excessively large sample could expose an unnecessary number of subjects to harmful treatments or deprive them of beneficial ones. In determining the sample size for this study, several steps were undertaken.

- Population Size: Firstly, the population size was carefully considered, ensuring that experimental and observational units were selected from the appropriate population and randomized correctly. The study size was deemed adequate relative to its goals, ensuring scientific and statistical significance without being excessively large.

- Determination of the desired precision of results: The desired precision of results was determined, representing the closeness between replicated analysis results and the true values in the population. This helps to minimize sampling error, which is the difference between the sample and the actual population.
- Confidence Level Determination: The confidence level was established as a percentage, indicating how often the true percentage of the population responding falls within the confidence interval. For this study, a 90% confidence level was chosen for response collation.

Qualitative Data Collection

To gain a deeper understanding of the project's impact on the community, the socioeconomic team went beyond the survey and conducted various in-person discussions. This included:

- Stakeholder Engagement Meetings: These meetings brought together community members with a vested interest in the project to discuss its potential impacts.
- Community Consultations: Open forums were held to allow all community members to voice their concerns and perspectives.
- Focused Interviews: The socioeconomic team conducted in-depth interviews (IDIs) and key informant interviews (KIIs) with key figures within the community. This included community leaders, youth representatives, and women's group representatives. These interviews provided valuable insights from people with specific knowledge and experience.
- Discussions with Survey Respondents: In some cases, the socioeconomic team followed up with survey participants to gather more detailed information about their socio-economic background. This helped to enrich the survey data.

By using a combination of these methods, the socioeconomic team were able to collect a well-rounded picture of the human and socio-economic aspects of the community. This mix of data gathering approaches ensured a diverse range of perspectives and experiences were captured. These mix of data-gathering approaches include:

- Reconnaissance survey of the project site to identify host and neighboring settlements.
- A review of secondary data including published literature and online official documents such as the National Bureau of Statistics (NBS); and
- Field observations including photographs were carried out for the graphical presentation of observed features for appraisal.

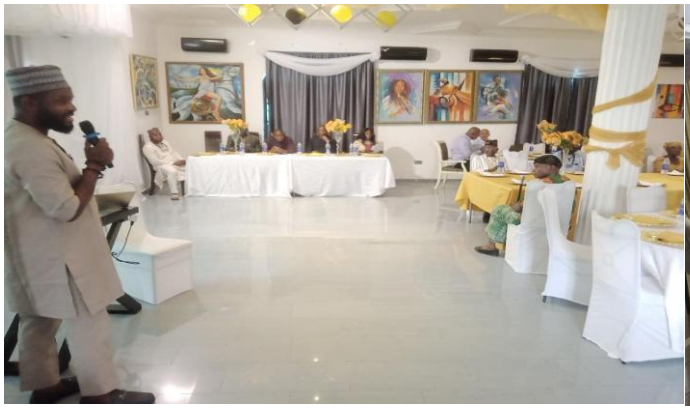


Plate 1: Stakeholders engagement with the landlord communities during the ESIA the scoping workshop

Scoping workshop

A scoping workshop with respect to the proposed Oil palm plantation project of Biase Plantations Limited was held on 15th of October 2025**.**

Introductions

The following personnel were present:

- Tuagho Eddo, Representative Federal Ministry of Environment (FMEnv), Abuja
- HRM Ophot Agbor Ewa, Paramount ruler of Akamkpa Community
- Prince Dominic Akposi, Secretary Ikami community
- Deacon Emem Useweke, Secretary Ojo community
- Ophot Bassey Akponwa, Boam village head
- Ophot Dennis Nyong, Budeng village head
- Charles Ofulue, Representative from Ministry of Agriculture
- Angela Ogboaka, Representative from Ministry of water resources, Cross River
- FDS EIA Multidisciplinary team (Consulting firm).

Members of the affected communities by the proposed project in attendance were also recognized.

The opening speech was given by the Federal Ministry of Environment representative and went ahead to state that the meeting's primary aim which was to discuss the mutual expectations between the communities and the company. The scoping process will help define the terms of reference and categorize the project into either Category I, II, or ESMP. It was emphasized that the ministry's role is to enhance the project's value, not to halt it, ensuring that the project is sustainable and environmentally conscious. Continuous monitoring will be conducted. The consultant serves as the company's advocate during the Environmental Impact Assessment (EIA) process if any issues arise with the government. It was noted that the development was welcomed by the host communities, and are expected to benefit from it.

Needs of the community and issues raised

To strengthen already existing community relations during the cause of development and utilization of the project, the landlord communities' members at the workshop raised the following concerns also using the medium to ask the company for aid during the workshop;

- The first speaker, the secretary Ikami Community, Prince Dominic Akposi asked if the Proponent (Wilmar expatriates) will be assessable whenever the community members need to farm on the allotted lands, patronize locals for fruits and other food materials and how exactly the proposed project will benefit the communities.
- Deacon Emem Useweke (Secretary to Ojo Village) requested for his community to be included in the list of the primarily affected host communities of the proposed project.

- How will community be involved in ensuring strict compliance with the EIA expected outcomes? – Ophot Bassey Akponwa (Boam, Village Head)

- We want to appeal to Wilmar on how private farmers can evacuate their products from their land without problems, so there will not be friction – Chief Vincent Awambe (Akwa Ibami Community).

- Women should be carried along so that life will be better for both women and children. We recommend integrated farming where both crops and oil palm can be grown together – Angela Ogboaka (Min. of Water Resources, Cross River State).

- The landlord community should be considered in Wilmar's managerial positions – Aidam Ikey Aidam (Uyanga Community).

Responses

- We have a whole department to train independent smallholders and we are ready to work with you giving technical support –Solange Wankwi (Wilmar)

- As for the farmers supply of fruits, we have about 1500 smallholders that sell their crops to Wilmar. We came up with a strategy, that post-harvest loss must be minimized for the smallholder. Our target is to build capacity of smallholders to move them from local farmers to agribusiness men. We can achieve this by training them through capacity building. We are always available to assist the farmers – Solange Wankwi (Wilmar).

We have a robust Corporate Social Responsibility (CSR) program with our landlord communities, which addresses their basic livelihood needs and supports local development initiatives. These include the provision of potable water supply, road maintenance, scholarships for indigenes, and annual free medical outreach programs, among others. – Paul Hameed (Wilmar)

- There will be compliance monitoring to ensure they do not deviate from the EIA processes as it concerns monitoring activities (Tuagho Eddo, FMEnv. Abuja)

- We will like to know those farmers that are affected. The number of people that are affected with their means of livelihood in the case of this development, so that we can communicate to the EIA experts to put such people into consideration - (Tuagho Eddo, FMEnv. Abuja).

<u>Impact Identification and Significance</u>

The proposed project involves the establishment of an oil palm plantation aimed at enhancing local production of palm oil and its derivatives to meet increasing domestic and export demand. The project seeks to promote agricultural diversification, rural employment, and economic growth, aligning with national goals for sustainable agribusiness development. The plantation will occupy approximately 8,509.70 hectares of land within Uyanga Oil Palm Estate, an area characterized by suitable agro-climatic conditions including high rainfall, fertile soils, and adequate temperature for oil palm cultivation.

The Impact Assessment for the proposed project evaluating the interactions across all project phases, activities, and associated environmental aspects identified forty-eight (48) potential impacts with varying significance ratings. The majority of the impacts fall within the medium significance category, accounting for twenty-two (22)

impacts, representing 45.8% of the total and considered effectively manageable with standard mitigation measures. This is followed by fourteen (14) High-significance impacts, representing 29.2% of the total. Beneficial-significance impacts constitute seven (7) cases, accounting for 14.6%, while the least represented category is Low impacts, comprising five (5) impacts, equivalent to 10.4%.

Negative Impacts

- Habitat Loss and Biodiversity Reduction
- Soil Degradation and Erosion
- Deterioration of Surface and Groundwater Quality
- Increased Water Demand and Hydrological Alteration
- Air Quality Deterioration
- Waste Generation and Improper Disposal
- Community and Social Pressure
- Land Use Conflicts
- Long-term Impact on Food Security

Positive Impacts

- Enhanced Local and Regional Economic Growth
- Employment Generation and Skills Development
- Improved Agricultural Productivity
- Development of Rural Infrastructure
- Strengthened Local Value Chains
- Increased Government Revenue
- Long-term Carbon Sequestration and Vegetation Cover Enhancement

Table 4: Probability of project's impact, consequences of some actions, stakeholders involved and parties responsible

Category of impact	Probability (High, Moderate, or Low)	Consequence (High, Moderate, or Low)	Stakeholders involved	Responsible parties
In-migration/population increase	High	High	Local communities, project developers	Community leaders, BPL project team
Out-migration	Low	Low	Local communities	BPL project team, local authorities

Displacement of settlements	Low	Moderate	Local residents, traditional leaders	BPL project team, local authorities
Employment	High	High	Local community members, workforce	BPL project team, HR departments
Increase in income and food security	High	High	Local community members, agricultural groups	BPL project team, local farmers
Decrease in income and food security	Low	High	Local community members, agricultural groups	BPL project team
Bursary to students and support to schools	Moderate	Moderate	Students, schools, educational authorities	BPL project team, educational partners
Skill acquisition	Moderate	Moderate	Local community members, vocational training centers	BPL project team, educational partners
Adulteration of cultural values and traditions	Low	Moderate	Local community members, cultural leaders	BPL project team, local leaders
Destruction of sacred forest and shrines	Low	High	Local communities, religious/cultural groups	BPL project team, local authorities
Damaging of existing roads	Low	Moderate	Local residents, transport authorities	BPL project team, government
Rehabilitation/grading of existing roads and construction of new ones	High	High	Local community members, road construction workers	BPL project team, local authorities
Attraction of electricity supply	High	High	Local residents, business owners	BPL project team, local government
Attraction of market facilities	High	Moderate	Local community members, business owners	BPL project team, local government
Telecommunication network	High	High	Local residents, telecommunication companies	BPL project team, telecommunication companies
Provision of portable water (borehole)	Moderate	High	Local residents, health organizations	BPL project team, local authorities
Building of residential quarters for staff	Low	Moderate	Project staff, local residents	BPL project team

Building of recreational centre	Low	Moderate	Local residents, youth organizations	BPL project team, local authorities
Renovation of buildings and construction of classrooms for schools	High	High	Local schools, students, educational authorities	BPL project team, educational partners
Establishment of staff primary and secondary schools	Low	High	Local students, staff	BPL project team, educational partners
Establishment of skills acquisition centre	Moderate	Moderate	Local community members, vocational training centers	BPL project team, local authorities
Health hazards caused by noise and pollution	Moderate	High	Local community members, health organizations	BPL project team, environmental agencies
Risk of accidents caused by project vehicles	Low	High	Local community members, transportation authorities	BPL project team, government
Use of community land for the project	High	High	Local residents, traditional leaders	BPL project team, local government
Pollution of the environment (land, water and air)	Moderate	High	Local community members, environmental groups	BPL project team, environmental agencies
Destruction of economic trees and other forest resources	Low	High	Local farmers, environmental groups	BPL project team, environmental agencies
Change in lifestyles (dressing, greetings, eating, music, etc.)	Moderate	Low	Local community members, cultural organizations	BPL project team, local leaders
Change in values (respect, honesty, generosity, etc.)	Moderate	Moderate	Local community members, cultural leaders	BPL project team, local leaders
Equal opportunity, justice and fair treatment for all	High	High	Local community members, human rights groups	BPL project team, local authorities
Unequal opportunity, injustice and unfair treatment for all	Low	High	Local community members, advocacy organizations	BPL project team, local authorities

Result of the Cumulative Positive Impacts

Table 5: Cumulative positive impacts of the proposed Uyanga Oil Palm Estate Project

Impact	Nature of impact	Extent of impact	Duration
Enhanced local and regional growth through sustained economic activities	Direct	Local/Regional	Long-term
Employment generation and skill development capable of reducing unemployment and rural poverty	Direct	Local/ Regional	Long-term
Improved agricultural productivity will increase overall yield and strengthen regional agricultural output	Indirect	Local/Regional	Long-term
Development of rural infrastructure through corporate social responsibility (CSR)	Direct	Local	Long-term
Strengthening local value chains including storage and distribution	Indirect	Local/Regional	Long-term
Increase government revenue streams through taxes, levies and land-use charges	Direct	Local/Regional	Long-term
Carbon sequestration and vegetation cover enhancement through establishment of perennial vegetation	Direct	Local/Regional	Long-term

Table 6: Summary of impact significance ranking

Project Phases	Project Activity	Number of Identified Impacts	Impact Significance Ranking			
			Beneficial	Low	Medium	High
Pre-planting and Planting	Vegetation clearing, land preparation, nursery development, soil tilling, plantation layout, workers' mobilization, construction of access roads, and installation of support infrastructure.	18	3	5	7	3
Operation Phase	Routine plantation maintenance, fertilizer and agrochemical application, harvesting, semi-processing, irrigation, and workers' accommodation.	16	3	0	7	6

Decommissioning Phase	Uproot of palm trees, Demolition and Transportation of removed structures From plantation	14	1	0	8	5
Total		**48**	**7**	**5**	**22**	**14**
Percent Significance			**14.6**	**10.4**	**45.8**	**29.2**

Table 7: Environmental components and potential impact indicators

Environmental Components	**Potential Impact Indicators**
Air Quality/Noise	Particulate Matter ($PM_{2.5,}$ PM_{10}), Nitrogen dioxides (NO_2), Sulphur dioxide (SO_X), Carbon Monoxide (CO), Carbon dioxide (CO_2), Hydrogen sulphide (H_2S), Total Volatile Organic Compounds (TVOCs), Hydrocarbons ($C_xH_{y)}$ and Noise Levels
Soil Quality	Total Organic Carbon (TOC), Soil Nutrients, Total Heterotrophic bacteria and fungi, Hydrocarbon Utilizing bacteria and fungi and Coliform, Hydrocarbon Utilizer, Soil type, Soil pH; topography
Biodiversity	Loss of biodiversity, wildlife displacement, fragmentation of habitats, and reduction of carbon sinks.
Surface Water Quality	Dissolved and suspended solids, pH, Dissolved Oxygen, Biochemical Oxygen Demand (BOD), Chemical Oxygen Demand (COD), turbidity, toxicity, Lead (Pb), Cadmium (Cd), Arsenic (As), Nickel (Ni), Iron (Fe), Mercury (Hg) Magnesium (Mg) and Total Heterotrophic bacteria and fungi, Hydrocarbon Utilizing bacteria and fungi and Coliform, Hydrocarbon Utilizer
Ground water Quality	Dissolved and Suspended solids, Turbidity, pH, DO, BOD, COD, Toxicity, Pb, Cd, As, Ni, Fe, Hg, Mg. and Total Heterotrophic bacteria and fungi, Hydrocarbon Utilizing bacteria and fungi and Coliform, Hydrocarbon Utilizer
Socio-economic / Health Infrastructures	Needs and concern of host communities, perceived employment, income level, health risks, waste streams, Handling, Treatment and disposal, population increase, population structure, ill health etc.
Transportation System	Logistics involving transport of construction materials into the project site. Movement of people in and out of the project throughout the life cycle of the project

Table 8: Summary of Impacts, Mitigation Measures and Residual Impact Matrix

Environmental/Social	Nature of Impact	Pre-mitigation Significance	Control Measure	Residual Impacts Significance
Biodiversity & Habitat	Habitat loss; ecosystem alteration	High	Selective clearing; buffer zones; High Conservation Areas (HCV); fauna protection	**Medium**
Soil Quality	Soil erosion; compaction; nutrient loss	Medium	Mulching; cover crops; erosion control; restricted machinery movement	**Low**
Surface water quality	Sediment runoff; agrochemical wash-off	Medium	Buffer strips; spill control; drainage stabilization	**Low**
Ground water quality	Chemical leaching; infiltration	Medium	Controlled chemical application; proper storage; monitoring wells	**Low**
Hydrology & Water Resources	Increased water abstraction; altered flows	High	Water abstraction limits; efficient irrigation; channel protection	**Medium**
Air Quality	Dust emissions; combustion fumes	Medium	Dust suppression; equipment maintenance; no open burning	Low
GHG Emission	CO_2, CH_4, N_2O from land clearing & fertilizers	High	Dust suppression; equipment maintenance; no open burning	Low
Noise & Vibration	Machinery and vehicle operations	Medium	Restricted operational hours; maintenance; noise buffers	Low
Soil & Organic Waste	Accumulation of plastics/biomass waste	Medium	Waste segregation; composting; recycling; proper disposal	Low
Socio-economic condition	Pressure on community services; livelihood impacts	Medium	CSR programs; stakeholder engagement; local hiring	Low
Occupational Health & Safety	Worker exposure to hazards and chemicals	High	PPE; OHS training; emergency response plan; supervision	Medium

Land-use Conflicts	Competing land interests; access concerns	Medium	Compensation; grievance mechanism; land-use planning	Low
Disturbance of Cultural Heritage	Disturbance of heritage sites or artefacts	Medium	Chance-find procedures through stakeholders' engagement and traditional rulers' consultation	Low

Table 9: Impact management and mitigation plan

S/N	Impact category / Impacts	Management & Mitigation measures	% Agreement / Occurrence	Timeframe
Demography				
	Impact on population (in-migration/out-migration)	– Provision of employment– Skill acquisition training– Provision of social amenities	87.5% consider impact likely	At inception & continuously 2–5 years after based on MoU
	Displacement of settlements & farmers	– Resettlement of displaced households	25% communities foresee displacement	At commencement and during expansions
Socioeconomic				
	Employment impact	– Local hiring preference (20–90%)– Transparent recruitment monitored by community	100% expect employment impact	At commencement & periodically
	Education impact	– Bursary scheme– Classroom renovations– Equipment/material donations– Establishment of staff schools– Skills training centres	75% support bursary & school support; 37.5% support skills programme	Usually after 2–5 years subject to resources & MoU
Health				

	Health hazards (noise, pollution, emissions)	– Wetting of construction areas– Barriers / modern low-noise machinery	25% foresee hazards	At inception based on MoU
	Support to health facilities	– Support for community-led health monitoring– Support to establish/upgrade clinics	75% concern level (high consequence risk)	After 2–5 years based on MoU
	Accident risks from project vehicles	– Driver safety training– Routine vehicle maintenance	12.5% believe risk exists (low probability but high consequence)	At initiation & periodically
Cultural Impacts				
	Adulteration of cultural values	– Awareness programs to promote cultural preservation	25% anticipate value change impact	When necessary
	Destruction of sacred places	– Avoidance of sacred cultural zones	Low probability but high consequence (not quantified but implied)	Always
Social Infrastructure Development				
	Infrastructure (roads, power, markets, telecom, boreholes, staff housing, recreation)	– Road grading/new road construction– Electricity extension– Market development– Telecom improvement– Borehole provision– Staff quarters & recreation centre	Highly expected improvements: – Roads 75%– Power 75%– Markets 87.5%– Telecom 100%– Water 62.5%	At varying phases throughout project life
Natural Resources / Environment				
	Use of community land	– Full compensation & transparent acquisition process	50% expect land use change	At inception & expansion
	Destruction of economic trees	– Full compensation	25% reported expectation (equal Yes/No)	At inception & expansion

	Environmental pollution (air, water, land)	– Environmental compliance– Dust suppression– Noise barriers– Ongoing environmental monitoring	75% foresee pollution impacts	At inception & from time to time
	Damaged roads due to project traffic	– Road rehabilitation– New-road construction– Bridge construction	12.5% expect negative effect; 75% expect improvement	At inception & periodically based on MoU
Lifestyle & Values				
	Lifestyle changes	– Seminars to promote responsible work & lifestyle behavior	50% expect lifestyle shifts	When need arises
Social Equity				
	Equal opportunity and justice	– Ensure fairness, transparency, and inclusive benefit distribution	62.5% expect positive equity outcome; 25% fear unfairness	Entire project lifespan

The significance of the impacts associated with the proposed projects was determined after potential impacts were identified through field surveys and stakeholder consultations. The significance of impacts was determined by identifying their magnitude, extent or location, duration and mitigation measures.

Extended Impacts' Mitigation Measures

The mitigation measures for the above negative impacts will include but are not limited to the following:

Impact on Biodiversity and Land Use

- Develop a Biodiversity Management Plan (BMP) including habitat enrichment and replanting of native species.
- Prohibit hunting, trapping, and disturbance of wildlife through strict enforcement of a wildlife protection policy.

Soil Degradation and Erosion

- Apply erosion control structures such as contour ridges, silt traps, check dams, and grassed waterways.
- Promote mulching and cover cropping to maintain soil moisture and reduce erosion.
- Adopt controlled traffic farming to minimize soil compaction.

- Introduce soil fertility management using organic amendments and controlled fertilizer application based on soil tests.
- Conduct routine soil quality monitoring to detect degradation early.

Surface and Groundwater Contamination

- Use precision fertilizer application and avoid application before heavy rainfall.
- Install monitoring boreholes to evaluate groundwater quality changes over time.
- Establish chemical storage and handling protocols including bunded areas, spill kits, and proper labeling.
- Maintain buffer strips (≥30 m) around water bodies to reduce nutrient and pesticide runoff.

Increased Water Demand & Hydrological Alterations

- Use water-efficient irrigation technologies, e.g., drip or regulated deficit irrigation.
- Develop a Water Abstraction Management Plan aligned with natural seasonal flow patterns.
- Maintain and protect natural drainage channels to prevent flooding and downstream flow disruption.
- Rehabilitate degraded areas with vegetation to enhance infiltration and reduce runoff.

Air Quality Deterioration

- Conduct regular maintenance of machinery and vehicles to minimize emissions.
- Prohibit open burning of biomass; encourage chipping, composting, or mulching.
- Implement speed limits on plantation roads to reduce dust generation.

Waste Accumulation and Disposal Issues

- Implement a Waste Management Plan (WMP) covering segregation, recycling, and proper disposal of plastics and hazardous waste.
- Compost organic waste for soil amendment or biomass energy.
- Provide collection points and sealed containers for empty chemical containers, with disposal through licensed waste contractors.

Social & Community Pressure (Influx, Amenities, Services)

- Develop a Community Engagement Plan (CEP**)** with regular consultations and grievance redress mechanisms.
- Prioritize local recruitment to reduce external influx.
- Support community development through CSR initiatives: water supply, health outreach, educational aid.
- Collaborate with local authorities to strengthen public services and infrastructure impacted by project operations.

Land Use Conflicts

- Maintain continuous dialogue with host communities to address grievances early.
- Establish clear boundary demarcations and legal documentation to prevent disputes.

Food Security Concerns

- Support alternative livelihood and out-grower schemes for local farmers to ensure continued food production.
- Promote integrated farming around the plantation to enhance community resilience.
- Provide training on sustainable agriculture and input support for local farmers.

Socio-Economics Baseline

Socio-economic and community health impact assessment tools for the study were designed to integrate the desires and aspirations of the project host community with those of the project proponent. In line with the EIA objectives, wide consultations were held, and the community's aspirations were also recorded. This socio-economic baseline survey conducted seeks to determine the socio-cultural, demographic, and quality of life of the population around the project site. Structured questionnaires, interviews, and group discussions were used primarily to obtain necessary information from households and other target groups. Other sources of information included similar studies, existing records in the local government, and other public institutions.

Environmental Management Plan

An EMP has been developed to satisfy long-term objectives of managing and monitoring the environment, health, safety, security and socio-economic impacts of the proposed project. This plan has been designed to achieve, enhance and demonstrate good environmental performance, in accordance with National and International standards and regulations. The EMP covers an environmental audit and monitoring program, waste handling, waste segregation and waste minimization guidelines.

Remediation Plan After Decommissioning

Prior to decommissioning and rehabilitation activities, a monitoring program shall be developed and submitted to the Ministry for approval, as a part of the final decommissioning plan. This shall be done to cover proposed monitoring during and after the closure of the proposed project.

Key Institutional Engagements and Findings

A summary of outcomes from the engagements with institutional representatives are detailed below in table 10:

Table 10: Outcome of key institutional consultations

Date / Location	Stakeholder / Mode of Engagement	Summary of Comments, Concerns and Management Responses
15 October 2025 Calabar	**Scoping Workshop** involving government agencies, landlord	The workshop introduced stakeholders to the proposed Social and Environmental Impact Assessment (SEIA), outlining the potential environmental, social and economic impacts of the proposed oil palm development. Stakeholders

	communities, NGOs and other stakeholders	welcomed the project and raised key issues including: (i) accessibility of the company to communities; (ii) support for local farmers and integration of smallholders; (iii) inclusion of Ojo Village in CSR programmes; (iv) transparent management of farmers affected by the development; (v) participation of women throughout the project lifecycle; (vi) opportunities for integrated farming; and (vii) employment opportunities, including supervisory and managerial positions for qualified community members. **Management Response:** BPL confirmed its commitment to stakeholder engagement, local employment, smallholder capacity building, CSR implementation (water supply, roads, scholarships and medical outreach), and compliance with the EIA process. The Federal Ministry of Environment emphasized continuous compliance monitoring and requested proper identification of all Project Affected Persons (PAPs) to ensure appropriate livelihood mitigation measures.
16 October 2025 Paramount Ruler's Palace, Akamkpa	**Focus Group Discussion (FGD)** with representatives of Akrindam, Igbofia, Ikami, Okoyong and Uyanga Okpousung	Community representatives expressed strong support for the project, anticipating increased employment opportunities, improved infrastructure and enhanced community welfare. Stakeholders requested priority employment for qualified indigenes, including managerial positions, scholarship opportunities for students and improved community development compared to the previous estate management. **Management Response:** BPL acknowledged the expectations and reaffirmed its commitment to local employment, community development and implementation of its CSR programme in collaboration with host communities.
17 October 2025 Palace of the Village Head, Akwa-Ibami	**Focus Group Discussion (FGD)** with Akwa-Ibami Community	The community welcomed the project and expressed willingness to support its implementation. Key concerns included the provision of potable water, road rehabilitation and employment opportunities for community youths. Community representatives also assured BPL of their continued cooperation and support in safeguarding company facilities. **Management Response:** BPL acknowledged the requests and indicated that these priorities would be considered within its community development and CSR programmes.
17 October 2025 Community Square, Budeng	**Focus Group Discussion (FGD)** with Budeng Community	Budeng Community expressed support for the project while emphasizing its status as an autonomous community that should receive independent recognition during stakeholder engagement and CSR implementation. The community also requested urgent intervention to improve road access and

		reconstruct the collapsed bridge linking the community. **Management Response:** BPL acknowledged the concerns and committed to maintaining direct engagement with Budeng while considering priority infrastructure needs within future CSR planning.
17 October 2025 Uyanga Estate Camps	**Focus Group Discussion** with Former Eng Huat Workers and Camp Dwellers	Participants appreciated BPL for retaining employees following the transition from Eng Huat Rubber Plantation and noted improvements in employment conditions. Key concerns included continued access to subsistence farming areas, phased land development with adequate notice before land clearing, protection of culturally significant sites (cemeteries and shrines), and improved access to potable water. Representatives identified a former cemetery within Block 24 requiring protection and highlighted natural springs that serve as important domestic water sources. **Management Response:** BPL committed to implementing phased development, providing advance notice before land preparation, considering designated buffer areas for subsistence farming, mapping and protecting cemeteries and shrines as **HCV 6**, conserving identified water sources as **HCV 5**, and assessing opportunities to improve camp water infrastructure based on population and operational requirements.

Overall Implications

Overall, the findings show that the communities operate within a stable, customary land tenure system that supports smallholder farming and diversified agricultural production outside the established plantation area. While farming remains central to livelihoods, it is largely independent of the plantation land, which has historically functioned as a commercial enterprise.

In this context, the proposed conversion from rubber to oil palm is not expected to adversely affect local farming systems or land access. Instead, it presents an opportunity to strengthen existing economic structures. Increased plantation productivity and investment are likely to generate employment opportunities, improve income levels, and stimulate related economic activities such as trading and transportation.

Furthermore, the alignment between existing local production systems, particularly palm oil, and the proposed land use enhances the potential for positive synergies between the plantation and surrounding communities.

With appropriate safeguards, inclusive engagement, and fair compensation where required, the project can support improved livelihoods while maintaining the integrity of community land-use systems and agricultural practices.

Section 4: HCV-HCSA Assessment; OR

ALS HCV and Standalone HCSA assessment

HCV-HCSA report first submission on 31st January 2026 with feedback dated 16th April, 2026

HCV-HCSA report first re-submission on 8th June 2026 with Quality Panel feedback dated 15th June, 2026

ALS Satisfactory Date Obtained (ALS HCV-HCSA assessment): 15th June, 2026

Link to HCV-HCSA assessment report: https://www.hcvnetwork.org/reports/a0anz00000kxsommap and https://hcvrn.egnyte.com/fl/mWckG89Mg6Mp

Name of Assessor: Stephen Doso Jnr.
ALS Number: ALS22003SD

Details of persons involved in various aspects of the assessment are found in tables 11 and 12 below:

The integrated HCV–HCS assessment commenced in August, 2025, when BPL engaged Proforest to undertake the study. The initial phase of the assessment involved pre-assessment, which was carried out in August. This was followed up with the scoping study, which was conducted between August and September, 2025. The full assessment phase was subsequently carried out between September and November, 2025. The final stakeholder consultation was carried out in December, 2025 and the report finalised based on feedback from the final consultation.

All three (3) phases of the Integrated HCV-HCSA Assessment were carried out by Proforest. However, other related major assessments including the Environmental Impact Assessment (EIA) and Social Impact Assessment (SIA) were carried out by local consultants engaged by BPL. Soil Studies as well as the Land Tenure and Use Study (LTUS) were carried out by internal technical experts of BPL. These related assessments were carried out concurrently with the Integrated HCV-HCSA Assessment. Some results from these studies were obtained through BPL and findings incorporated into the Integrated HCV-HCSA Assessment report. The detailed timeline of the assessment activities is presented in Table 12.

HCS-HCS Assessment Team

The assessment team comprised a lead assessor, a GIS and remote sensing expert, and environmental and social experts. The details of the assessment team are presented in

Table 11.

Table 11: Details of the assessment team

Name	Role	Institution	Relevant expertise	Relevant country or regional experience (including language proficiency)
Lead assessor and GIS/remote sensing expert				
Stephen Doso Jnr.	Lead assessor (ALS22003SD)	Proforest	Stakeholder engagement, participatory mapping, agroforestry, environmental management	Uganda, Sierra Leone, Cameroon, Nigeria, Ghana, Benin, Togo (English, Akan, Nigerian Pidgin)
Clement Obeng-Manu	GIS and remote sensing expert, Registered HCSA Practitioner	Proforest	GIS and remote sensing, Forest ecology, Conservation, participatory mapping	Liberia, Ghana, Netherlands, Nigeria, Tanzania, Uganda (English, Akan, Nigerian Pidgin)
Environmental and social expert				
Dr. Augustus Asamoah	Fauna team lead	Proforest	Avifauna, wildlife, and forest ecology	Cameroon, Sierra Leone, Ghana, Nigeria, DRC, Uganda (English, Akan, Nigerian Pidgin)
Kingsley Severine Fitz-Gerald	Social and Environmental	Proforest	GIS, stakeholder engagement, participatory mapping, environmental management	Ghana, Cote d'Ivoire, Nigeria (English, Akan, Nigerian Pidgin)

Assessment Timeline

Table 12: Timeline for the Integrated HCV-HCS Assessment for BPL

Assessment process	Main activities	Location of field activities	Actual Dates	Timeline Jun 25	Jul 25	Aug 25
Other related major assessments (carried out by third parties)	EIA	AA, affected communities, Calabar	August 2025 – February 2026			
	SIA	AA, affected communities, Calabar	October 2025			
	Soil studies	Uyanga estate (AA)	October 2025			
	Land tenure and use study		July – August 15, 2025			
Pre-assessment	Document review and preliminary land cover classification		August 1 – 8, 2025			
Scoping study	Opening meeting with Management of BPL	Office of BPL Calaro Estate, Akamkpa	August 9, 2025			
	Landscape and reconnaissance, ground-truthing	Uyanga estate, Uyanga	August 9 – 10, 2025			
	Meeting with Community relations and sustainability teams of BPL	Office of BPL Calaro Estate, Akamkpa	August 10, 2025			
	Meeting with former employees of rubber estate now employed by BPL	Uyanga estate, Uyanga	August 12, 2025			
	Institutional engagements in Akamkpa	Akamkpa	August 11, 2025			
	Institutional engagements in Calabar	Calabar	August 12 – 13, 2025			
	Community engagements	Budeng and Uyanga	August 14, 2025			
	Closing meeting with Management of BPL	Office of BPL Calaro Estate, Akamkpa	August 14, 2025			

Assessment process	Main activities	Location of field activities	Actual Dates	Timeline Jun 25	Jul 25	Aug 25
	Participatory mapping and identification of social HCVs with community consultations.	Uyanga estate, Uyanga	October 7 – 10, 2025			
	Consultations and engagements with government agencies, experts, and NGOS	Uyanga, Akamkpa and Calabar	October 2 – 6, 2025			
Analysis and Reporting	Validation and analysis of data Preparation of draft report		October 10 – December 10, 2025			
Final consultation	Stakeholder (community and institutions) forum	Akamkpa	December 12 and 15, 2025			
Reporting	Finalizing report		December 15, 2025 – January 30, 2026			
HCV Quality Panel review	Submission of the final report to HCVN for review		January 31, 2026			
Addressing HCV QP review comments and Re-submission	Report review, engagement of worker camps and participatory mapping	Uyanga	April 23, 2026 (Worker camp engagement)			
	Re-submission 1		May 16, 2026			

Methods and results

Social Methods

A combined approach of reviewing relevant available literature and conducting community consultations, focus group discussions, participatory mapping, and federal- and state-level key informant interviews were employed to gather information for the social aspects of the assessment.

Literature review and use of secondary data

Desk-based review of relevant secondary data was done. This entailed a systematic literature review based on previous studies or work done in the area/landscape. The literature reviewed include:

- Report on agricultural transformation in Nigeria.
- Social and Environmental Impacts Assessments for the Uyanga Oil Palm Estate.
- Published articles on oil palm in Nigeria and Africa.
- Report of High Conservation Value (HCV) and High Carbon Stock (HCS) Scoping Study for Uyanga Oil Palm Estate
- Land tenure study report for the Uyanga Oil Palm Plantation
- 2006 Population and Housing census for demographic and socio-economic baseline data

Stakeholder consultations

Meetings with affected landlord communities and relevant institutions were carried out to obtain information on social aspects of the assessment. The selection of affected communities to be engaged followed the criteria below:

- communities that are within the landscape and have rights within the concession area i.e., are listed in the land tenure and use report. All communities located within the NPP AREA and/or approximately within a 5 km buffer of the NPP AREA with user rights in this area.
- All communities located within the NPP AREA and/or approximately within a 5 km buffer of the NPP AREA with user rights in this area.

All the affected communities including Uyanga Okpousung, Akrindam, Boam, Igbofia, Ikami, Okoyong, Akwa Ibami and Budeng were consulted (Figure 6). These communities were informed ahead of time for the meeting and efforts were made to have all sections of the community including chiefs, elders, women, men, youth, aged, farmers and hunters represented. The meetings in the communities presented avenue to solicit the concerns and inputs of the communities on the proposed project and validate some of the primary data. Free Prior and Informed Consent (FPIC) for the proposed project was also verified from all the affected communities during the community consultations.

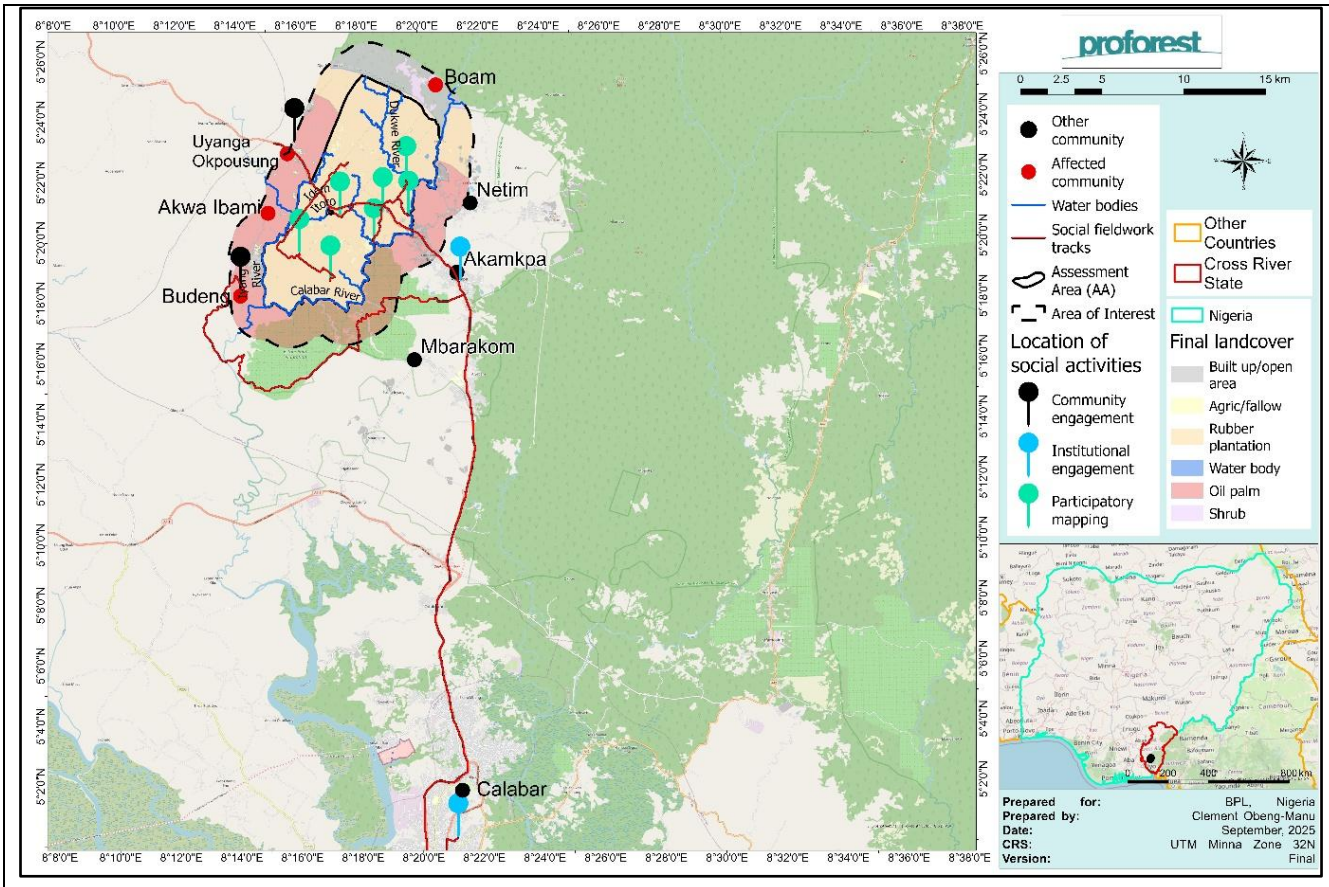


Figure 6: Map showing the location of affected communities as well as the sites where social data were

Institutional consultations were conducted during the scoping and full assessment phases. These consultations were in the form of interviews with the departmental heads or representatives of the various institutions in their offices. The institutions consulted were the Cross River Forestry Commission, Ministry of Lands, Ministry of Agriculture and Irrigation, Cross River National Park, Wildlife Conservation Society, Nigerian Conservation Foundation and Community Relations and Sustainability Team of BPL.

Participatory Mapping

Participatory mapping was used to identify HCV 4, 5 and 6 categories in the NPP Area and subsequently help establish management areas for these HCVs. This was carried out for all affected communities. Participatory mapping proceeded in the following stages:

- Stage 1 involved showing a copy of the NPP Area map to all affected communities to arrive at a common knowledge on the location of the community during the meeting.
- Stage 2 followed with discussions of key resources, religious and cultural values and their locations within the NPP Area. Community members were tasked to point the location of these identified resources on the map of the NPP Area which were marked and formed the basis to discuss and agree on what is present (e.g., waterbodies, shrine/cultural sites) and their relative locations.
- Stage 3 involved the community nominating 2 or 3 persons to assist the social team to visit the site of the identified resource or cultural value to observe and collect GPS coordinates of the land use, feature or value for mapping purposes.

At the end of this exercise, primary data collected via the participatory mapping approach was simplified into a geo-referenced map of HCV 4, 5 and 6 values for validation during the final consultation meetings with the

communities.

Limitations to social studies

The social data collection methodology was designed to be comprehensive and objective. However, the dynamic nature of social information and specific contextual factors introduced certain limitations and necessitated clearly defined assumptions to ensure the assessment's practical completion. The following key considerations and assumptions underpin the social findings.

- First, socio-economic data collected at specific points during the fieldwork period is considered representative of conditions within the area of interest for the duration of the assessment, with the acknowledgment that social conditions are fluid and may change over time.
- Second, where hyper-localized data for specific communities within the area of interest was unavailable, broader socio-economic data from Akamkpa LGA was applied as a proxy to inform the local context. This approach is recognized as a limitation where significant intra-community variation may exist.
- Third, engagement protocols for the landlord communities respected the customary governance structures and the mode of engagement agreed with BPL during FPIC. Formal consultations with landlord communities were conducted through existing decision-making forums presided over by male titleholders. It is therefore assumed that the perspectives presented by these representatives encompass the collective interests of their entire communities, including women and youth. However, the assessment team acknowledges that where women and youth have distinct land use patterns or resource dependencies, this assumption may not fully hold. This limitation is addressed by the dedicated workers' camp engagement, which explicitly included women leaders as formal representatives from each camp, and by the presence of female and youth representatives during the final consultation with landlord communities.
- Fourth, the workers' camp residents were initially not engaged during the primary social fieldwork due to the stakeholder mapping focus on customary landowners. This gap was subsequently addressed through a dedicated engagement meeting held on 23rd April 2026, led by Proforest and facilitated by BPL, which involved representatives from all eight camps within the AA. The outcomes of this engagement, including identified HCV 5 and HCV 6 areas, have been incorporated into the assessment findings.
- Fifth, a number of participants in the community consultations during the scoping and assessment stages are employees of BPL or receive royalties and donations from BPL. These stakeholders could be considered beneficiaries or proponents of the project with a degree of vested interest. The assessment team sought to mitigate this bias by cross-checking information against secondary sources. Sixth, information from older secondary sources was rigorously validated against primary data collected in the field, with contemporaneous field evidence prioritised where discrepancies existed.

Results

Pre-assessment phase

Following the signing of the contract for the Integrated HCV-HCSA assessment with the Proforest, the assessment team engaged the management of BPL to obtain relevant background information and data on the proposed Uyanga Oil Palm Plantation Project. This due diligence was conducted to ascertain whether BPL fulfilled some pre-conditions, including demonstration of legal ownership of the land; commitments to environmental and social safeguard; moratorium on any form of development or clearing until the necessary

assessment and processes are completed; FPIC process has been initiated with full disclosure of the proposed project with allpotentially-affected communities and stakeholders, as well as the process for negotiation and consent going forward has been agreed, with representatives appointed in a fair process.

FPIC Gate

From the due diligence conducted, the assessment team concluded that BPL has met all the preconditions. Hence, the team proceeded to conduct the scoping study.

Scoping

Table 13 below shows a summary of the consultations conducted during the scoping study. The consultations revealed that all the affected communities and the external (interested) stakeholders were aware of the proposed oil palm plantation project, including its benefits and negative impacts. Concerns were raised about people living in the camps, and admonishing the company to ensure their integration; impacts of intense agricultural activities in the norther part of the concession; and the landlord communities confirmed their consents.

Table 13: Summary of stakeholder consultations during scoping phase of the assessment

Date/ Location	Stakeholder/ Mode of engagement	Summary of comments, questions and/or concerns & assessor's response
August 11, 2025 at CRNP Office	Cross River National Park (via FGD)	▪ The Cross River National Park is one of the biodiversity hotspots – rich in biodiversity. ▪ The Oban Block Forest Reserve serves as a buffer for the Cross River National Park. The buffer is a multiple-use zone which is managed with the adjoining communities. ▪ The buffer is collaboratively managed by a committee which involves the local communities, the Forestry Commission and the CRNP. ▪ The use of the buffer includes selective logging for community needs and sustainable utilization of Non-Timber Forest Products (NTFPs), etc. ▪ Destructive harvesting of timber is not permitted within the National Park. ▪ Decree 36 of 1991 prescribed a 2 km buffer for the National Park but the new legislation, Act 46 of 1999 (Part VII Section 46 sub-section 2), revised the buffer area to be "as wide as may be practicable". ▪ No reports of large animals such as elephants moving into adjoining communities or the rubber plantation area.

		▪ Ensure that the plantation boundary and activities do not encroach into the Forest Reserve, which serves as a buffer for the National Park. This is crucial due to the European Union Deforestation Regulations (EUDR) requirements. ▪ Collaborative management should be encouraged to ensure enhancement of the buffer zone. ▪ A recent biodiversity study has been carried out in the National Park and the buffer and could provide some baseline for potential RTEs in the area. ▪ The assessment team thanked the CRNP for the useful discussions and inputs, explained the next steps of the assessment and requested for the biodiversity survey report.
August 11, 2025 at the FC office	Forestry Commission (via One-on-one discussion) Donatus Acada Adie, Director of Forestry, Cross River State, adiedonatusalada@gmail.com, 09091269644	▪ The National Park was initially a forest reserve. Of the 18 forest reserves in Cross River State, 4 are being managed by the CRNP. These areas legally remain as forest reserves. ▪ The designation of a forest reserve and de-reservation are under the mandate of the State government. The Federal government is only notified of the changing designations. ▪ The Commission is responsible for managing the Oban Block Forest Reserve, which also serves as a buffer for the CRNP. ▪ Official notification of the Commission is required prior to conversion of the rubber to oil palm. ▪ Current threats in the Oban Block Forest Reserve include encroachment from farming, logging, mining and isolated incidents of poaching. ▪ The assessment team expressed their appreciation for the useful discussions and inputs and explained the next steps of the assessment including the full assessment and final consultation process.
August 11, 2025 at the LGA Chairman's Home Office	Akamkpa Local Government Authority (via One-on-one discussion) Felix Akposi, LGA Chairman, felixakposi2014@gmail.com, 08035040669	▪ The rubber plantation was established in the 1950s with about 8-9 workers camps. ▪ BPL should consider initiating development from plots with very old rubber trees and still maintain the young rubber trees to generate some income for the company.

		▪ People living in the camps should be integrated into the project and renovation/ improvement of the camps should be considered. ▪ Expressed support for BPL in the implementation of the project due to the socio-economic benefits it would bring to the adjoining communities and the LGA. ▪ BPL must comply with the regulations and bylaws of the LGA. ▪ Expect that the good practices of BPL demonstrated in other projects would be extended to the Uyanga Estate operations. ▪ The assessment team thanked the Chairman for the useful discussions and inputs and explained the next steps of the assessment. The BPL representative assured him of their commitment to following best practices for the project.
August 13, 2025 at BPL's Guesthouse meeting room	Community Relations and Sustainability Team of BPL (via FGD)	▪ There are 8 affected communities. The communities were identified based on historic engagements with the erstwhile rubber plantation managers. The 8 communities are known as the landlord communities since they originally gave out portions of their community lands to the state to develop the rubber plantation. ▪ Seven of the 8 affected communities which are under one paramount chief prefer to be engaged collectively through their community leaders. This has been the historical arrangement, and those communities have decided to continue with that mode of engagement. The remaining affected community, Budeng, is engaged separately. ▪ FPIC is far advanced with all the 8 affected communities. The communities are very enthusiastic about the project and its inherent benefits. They have therefore given consent for the project and the HCV-HCSA assessment process. ▪ BPL has communicated their commitment to initiate the implementation of their Corporate Social Responsibility (CSR) though development of the Uyanga Estate is yet to commence.

August 14, 2025 at the Paramount Chief's palace	Community Consultations (7 communities - Uyanga Okposung, Akrindam, Ikami, Okoyong, Boam, Uyanga Igbofia and Akwa Ibami) via public discussion	▪ Chiefs indicated knowledge of the project and the assessment area. Also expressed willingness to support the participatory mapping process during the full assessment. ▪ Potential presence of HCVs o HCV1 – Pythons are important species as well as "carve wood" o HCV2 – The Cross River National Park and the Oban Block Forest Reserve are present in the area o HCV3 – There are known swampy areas in the rubber plantation o HCV4 – Streams provide water, though not the main source. Buffers need to be protected. Fishing is not actively carried out in the area o HCV5 – Ibo Forest is a place where hunting and gathering of medicinal plants are carried out. This area is not in the AoI. o HCV6 – There are areas where sacrifices are carried out ▪ Local regulations regarding buffer zone protection should be integrated into the HCV-HCSA Assessment and delineation of management areas. ▪ The assessment area has long been a rubber plantation and is not a farming area for the communities. There are enough alternative lands for community farming and expansion. ▪ Confirmed their consent for the proposed development and the HCV-HCSA Assessment process. ▪ Mapping of all relevant HCVs should be done through the Community Liaison Officer (CLO) appointed by the communities. ▪ The paramount chief confirmed their decision and preference to be collectively engaged through the community heads. ▪ The assessment team thanked the Chiefs and participants for the useful discussions and inputs, explained the next steps of the assessment and

		assured that the agreed process of engagement and participatory mapping will be followed.
August 13, 2025 at the Director's Office at the Ministry of Agriculture	Ministry of Agriculture, Cross River State (via One-on-one discussion) Charles E. Ofulue, Director, Public Private & Development Partnership, Ministry of Agriculture, Cross River, 08033416930 (see Annex 3 for pictures)	▪ The concession was historically a rubber plantation established in 1934 but has not been sustainably managed over the years. ▪ The Ministry is aware of the project and was excited that the plantation is going into responsible management by BPL. ▪ Oil palm development aligns with the strategic agricultural plans of the State. ▪ BPL has demonstrated commitment to sustainable development of its plantations and the Ministry expects the same commitment in the development of the Uyanga Estate. ▪ Water bodies should be protected, and pollution of the water bodies should be avoided. ▪ The State did not take all the lands from the landlord communities. Therefore, there is vast land available for community farming activities. ▪ The assessment team thanked him for the useful discussions and inputs and explained the next steps of the assessment.
August 12, 2025 at the Uyanga Estate office	Old workers of Rubber Plantation (Now engaged by BPL under the Uyanga Estate Development) via FGD Barr. Eyong Lisani, Administrative Manager, 08034704586, eyongusani123@gmail.com Etuk Otobong Effiong, Plantation Officer, 08068414153, otobongetuk96@gmail.com	▪ Some portions of the plantation (at the north of the estate) got burnt in the 1980s and were not redeveloped. ▪ Pockets of subsistence farming within the plantation are mostly carried out by some old workers of the rubber estate. ▪ More than 200 old workers of the rubber plantation have been recruited as part of the Uyanga estate development. ▪ Expressed excitement about the project by BPL and is optimistic that the project will create positive socio-economic impacts and ripple effects across the local economy.
August 14, 2025 at the Chief's Palace	Budeng Community (via public discussion)	▪ The Chief of Budeng indicated the community's decision to be engaged separately from the other 7 affected communities.

		▪ Expressed excitement about implementation of the project due to the beneficial socio-economic impacts it will create for the community.
		▪ Potential HCVs
		  o HCV4 – Buffers along streams should be protected to provide habitat for small mammals for hunting.
		  o HCV6 – No knowledge of HCV 6 in the AA. There is an area along the Calabar River called Ijokum, which is historically used for hunting and fishing. However, it is outside the AA.
		▪ Expect BPL to employ community members during development of the Uyanga Estate.
		▪ The chief confirmed the community's consent for the project and the HCV-HCSA assessment process.
		▪ BPL confirmed their commitment to continued engagement, implementation of CSR programmes including scholarship schemes, health screening and employment of locals.
		▪ The assessment team thanked the Chief and other participants for the useful discussions and inputs, explained the next steps of the assessment and assured the Chief that the agreed engagement process with the landlord communities will be followed.

August 18, 2025 (virtual via Microsoft Teams)	Virtual Meeting with Wildlife Conservation Society (via virtual one-on-one discussion) Mr. Atah Anthony, Director of the Cross River Landscape, tatah@wcs.org	▪ Official forest reserve and national park boundaries should be used for the assessment to ensure there are no encroachments of the planned development into these areas. ▪ The 7-year Cross River State Development Plan in draft (final consultation with stakeholders completed recently) should be considered during the full assessment. ▪ The potential risk of increasing farming activities within the forest reserve north of the assessment area should be identified and collaboratively managed. ▪ The assessment team expressed their appreciation for the useful discussions and inputs and explained

		the next steps of the assessment including the full assessment and final consultation process.

- FPIC gate

Consultations were held with all the affected/landlord communities and stakeholder institutions. This involved public meetings to facilitate open discussions, focus group discussions (FGD) for detailed thematic inputs and one-on-one meetings with key stakeholder representatives. The engagement with the communities was carried out in pidgin, while English was used during engagement with the government and environmental NGOs. Tailored messaging was deployed for each stakeholder engaged to clearly communicate the study's objectives while emphasising the value of their participation. The consultation process adhered to FPIC principles to ensure all consultations were participatory, voluntary, non-discriminatory and transparent. These consultations ensured that stakeholder perspectives were meaningfully integrated into the assessment while upholding ethical and social safeguards.

Full assessment

The full assessment consultations were carried out to validate initial findings from the scoping stage, gather detailed local knowledge and support the identification and mapping of HCVs. In addition to the institutions engaged during the scoping study, Nigeria Conservation Foundation (NCF) was consulted during the full assessment. The summary of the meetings with stakeholder institutions and affected communities are presented in Table 14.

Table 14: Details of stakeholder consultations during full assessment

Date/ Location	Stakeholder/ Mode of engagement	Summary of comments, questions and/or concerns & assessor's response
October 2, 2025 at Forestry Commission Office, Calabar	Forestry Commission (via one-on-one discussion) Donatus Acada Adie, Director of Forestry, Cross River State, adiedonatusalada@gmail.com, 09091269644 (see Annex 3 for pictures)	▪ The National Park was initially a forest reserve. Of the 18 forest reserves in Cross River State, 4 are being managed by the CRNP. These areas legally remain as forest reserves. ▪ Official notification of the Commission is required before the conversion of the rubber to oil palm. ▪ Farming, logging and mining continue to be the current threats in the Oban Block Forest Reserve. ▪ Forestry Commission wants to be involved in the clearing of the rubber.

		▪ The assessment team thanked the FC representative for the input which will be incorporated in the assessment and explained the final consultation process.
October 3, 2025 at NCF office	Nigeria Conservation Foundation (NCF) via one-on-one discussion Emmanuel Owan, Zonal Project Coordinator 08035030122 Ruth Asek Agbor, Administration & Finance Officer 07067050571	▪ The existing fauna species in the rubber plantation will be affected by the project, as they will lose their habitat. ▪ The rivers are very vital and must be protected. ▪ BPL need to respect their CSR. ▪ The assessment team explained that the buffer areas of the water bodies will be conserved as an HCV area and will also serve as habitat and corridor for any existing fauna species.
October 2, 2025 at Ministry of Agriculture office, Calabar	Ministry of Agriculture, Cross River State (via one-on-one discussion) Charles E. Ofulue, Director, Public Private & Development Partnership, Ministry of Agriculture, Cross River, 08033416930 (see Annex 3 for pictures)	▪ Oil palm development aligns with the strategic agricultural plans of the State. ▪ BPL has demonstrated commitment to the sustainable development of its plantations in other areas and the Ministry expects the same commitment in the development of the Uyanga Estate. ▪ Water bodies should be protected, and pollution of the water bodies should be avoided. ▪ The State did not take all the lands from the landlord communities. Therefore, there is vast land available for community farming activities. ▪ The assessment team thanked him for his input and explained that the buffer areas of the water bodies will be protected as HCV areas.
October 6, 2025 at CRNP office	Cross River National Park (via FGD) (see Annex 3 for attendance and pictures)	▪ The Oban Block Forest Reserve serves as a buffer for the Cross River National Park. The buffer is a multiple-use zone which is managed with the adjoining communities. ▪ The use of the buffer includes selective logging for community needs and sustainable utilization of NTFPs, etc. but some farming activities are ongoing ▪ Destructive harvesting of timber is not permitted within the National Park.

		▪ No reports of large animals such as elephants moving into adjoining communities or the rubber plantation area. ▪ Collaborative management should be encouraged to ensure enhancement of the buffer zone as well as sensitization of the communities. ▪ The assessment team thanked the CRNP for their input and explained the final consultation process.
October 6, 2025 via phone call	Akamkpa Local Government (via virtual one-on-one discussion) Felix Akposi, LGA Chairman, felixakposi2014@gmail.com, 08035040669	▪ BPL should respect the rights of the affected communities and pay royalties. ▪ People living in the camps should be integrated into the project and renovation/ improvement of the camps should be considered. ▪ BPL must comply with the regulations and byelaws of the LGA. ▪ The assessment team thanked him for his input and explained the final consultation process.
October 7, 2025 at the Paramount Chief's palace	Community Consultations (7 communities - Uyanga Okposung, Akrindam, Ikami, Okoyong, Boam, Uyanga Igbofia and Akwa Ibami) via public discussion (see Annex 3 for pictures, minutes and attendance sheet)	▪ Chiefs indicated permission granted for the assessment to be carried out. ▪ Potential presence of social HCVs ▪ HCV 6 to be mapped after discussions. ▪ The communities stressed that the project will not cause food security issues, as the AA has long been a rubber plantation and is not a farming area for the communities. There are enough alternative lands for community farming and expansion. ▪ Confirmed their consent for the proposed development. ▪ The paramount chief confirmed their decision and preference to be collectively engaged through the community heads. ▪ The assessment team thanked the host communities for their continuous support to the process and assured that there will be opportunity for final inputs during the final consultations.
October 4, 2025 at the Uyanga Estate office	Old workers of Rubber Plantation (Now engaged by BPL under the Uyanga Estate Development) via FGD	▪ Expressed optimism that the project will have positive impact on the communities.

	Barr. Eyong Lisani, Administrative Manager, 08034704586, eyongusani123@gmail.com Etuk Otobong Effiong, Plantation Officer, 08068414153, otobongetuk96@gmail.com (See Annex 3 for pictures)	▪ Expressed excitement that the project has employed some of the workers of the rubber plantation. ▪ The assessment team expressed their appreciation for the support to the assessment.
October 7, 2025 at Chief's palace	Budeng Community (via public discussion) (see Annex 3 for pictures, minutes and attendance sheet)	▪ The Chief of Budeng confirmed the community's decision to be engaged separately from the other 7 affected communities. ▪ The chief confirmed the community's consent for the project and assessment. ▪ The people of Budeng are looking forward to the socio-economic benefits of the project on the community. ▪ Expect BPL to employ community members during development of the Uyanga Estate ▪ BPL confirmed their commitment to continued engagement, implementation of CSR programmes including scholarship schemes, health screening and employment of locals. ▪ The assessment team thanked the Chief for the community's support.
October 2, 2025 at WCS office, Calabar	Wildlife Conservation Society (WCS) via one-on-one discussion Mr. Atah Anthony, Director of the Cross River Landscape, tatah@wcs.org Ova Sunday, Project Coordinator 08132236282	▪ Cocoa is becoming one of the main causes of deforestation in the state. ▪ Gorilla, antelope and pangolin are within the national park and not the forest reserve that acts as a buffer ▪ The proposed project by BPL is a low environmental risk project as the area is already a monoculture plantation. ▪ Cross River State used to be a pilot for sustainable development, and the State still sees agriculture and the private sector as key to achieving its sustainable goals. ▪ The assessment team thanked him for his contributions and explained the next steps of the assessment process.

Status of FPIC

In all the affected communities, the community members were aware of the proposed oil palm plantation project by BPL, and gave their consent to the project and for the full HCV-HCSA assessment. They had been engaged in series of meetings by BPL during which the project was explained to them. The consultations revealed that the communities were aware of some of the project impacts, both positive and negative, including designations of the HCV areas and integration of former occupants of the camps and benefits from the additional livelihood options, as well as payment of royalties and execution of CSR projects.

Consultations also revealed that affected communities have already entered memoranda of understandings (MoUs) with BPL with government involvement and partnership with BPL to ensure proper implementations. The team therefore concluded that FPIC was ongoing and all the affected communities had given consent to the project and the assessment.

Social fieldwork

- Participatory Mapping

The participatory mapping aimed to identify and delineate areas of social significance that qualify as social HCVs. The process was carried out in an inclusive and transparent manner by involving community representatives with local knowledge of the locations of these HCVs as part of the mapping team.

For the landlord communities, participatory mapping was conducted during the full assessment stage, allowing for direct engagement and early identification of socially significant areas. In contrast, for the camp communities, participatory mapping was carried out after the final consultation stage, specifically following meetings with camp representatives. This was done by camp representatives and BPL and results shared with the assessment team.

During the process with the landlord communities, the assessment team presented the land cover map to community members to ensure a shared understanding of spatial boundaries and key landscape features. Discussions were held with community members to identify areas of cultural, religious, and livelihood importance, including shrines and cemeteries/graveyards. These features were then marked directly on the map by the participants. Subsequently, selected community representatives and the assessment team/BPL conducted site visits to ground-truth the identified locations, including the mapped shrine. GPS coordinates were recorded, and field observations were made to verify the accuracy of the mapped features (Figure 7).

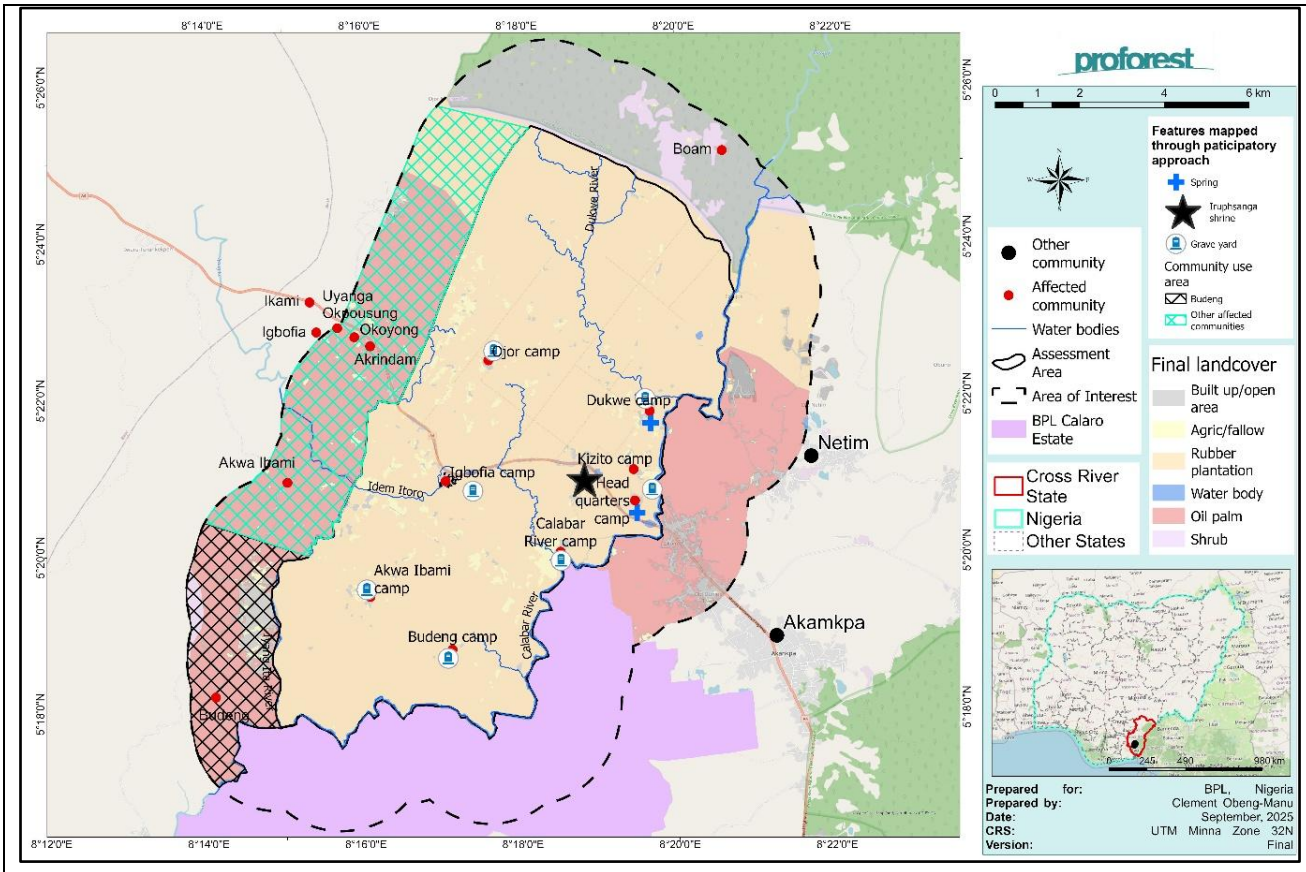


Figure 7: Map showing features mapped during participatory mapping exercise

Social HCVs and Livelihoods

A summary of the outcomes of the identification of social HCVs are presented in table 15. This is followed by discussion and justification of these outcomes.

Table 15: Summary of findings of social HCV

HCV	Description	Finding
5	Sites and resources fundamental for satisfying the necessities of local communities or indigenous peoples (for livelihoods, health, nutrition, water, etc...), identified through engagement with these communities or indigenous peoples.	Present
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.	Present

- **HCV 5: Local people's needs**

These included areas important for livelihoods (HCV 5) such as water sources. Some of the communities

consulted as part of the NPP verification stakeholders' consultation including Uyanga-Igbofia, Uyanga-Okposung, Ikami, Akirindam, Boam, Okoyong, Akwa-Ibami and Budeng confirmed that, they depend on the riparian buffer zones of Calabar and Iyang-Ita Rivers which form boundaries with the concession, and Dukwe River for non-timber forest products collection and fishing at the two boundary rivers including giant snails. However, none of the communities indicated dependance on any part of the NPP area for farming and domestic water use. According to them, the land had been a rubber plantation for a very long time being managed by different ownerships including private entities and state government at different times. Nevertheless, the two springs at Headquarters Camp and Dukwe Camp have been identified by the HCV assessment as critical sources of drinking water for some of the old rubber plantation worker, who reside at the camps. The two springs have already been identified as part of HCV 5 areas. Meanwhile abandoned farmlands confirmed to be owned by the previous camp residents were also noticed. The representatives of the communities confirmed that none of the indigenes of the landlord communities farmed or owned a farm within the project area.

Nevertheless, at the workers' camps, some signs of old farming activities were observed with many pockets of abandoned farms. The old farming activities were confirmed to occur under an informal arrangement between the workers residing at the camps and the previous management of the rubber estate. As reviewed, the HCV assessment estimated a minimum land area 381.5 ha are required to sustain the food security and livelihood of the workers' camp residents as per the HCV-HCSA formula. This indicative area is feasible to be allocated by BPL for the residents of the workers' camps due to the size of the NPP area, and the phased approach to be adopted for the oil palm plantation development. BPL is committed to identifying designated active farming buffer zones close to the camps.

Plate 2: Abandoned farmland in the norther part of NPP area

Plate 3: Abandoned farmland near Igbofia Camp with NPP area

Plate 4: Abandoned cassava farm near Akwa Ibami Camp within NPP area

Plate 5: Abandoned plantain farm near Headquarters Camp with in the NPP area

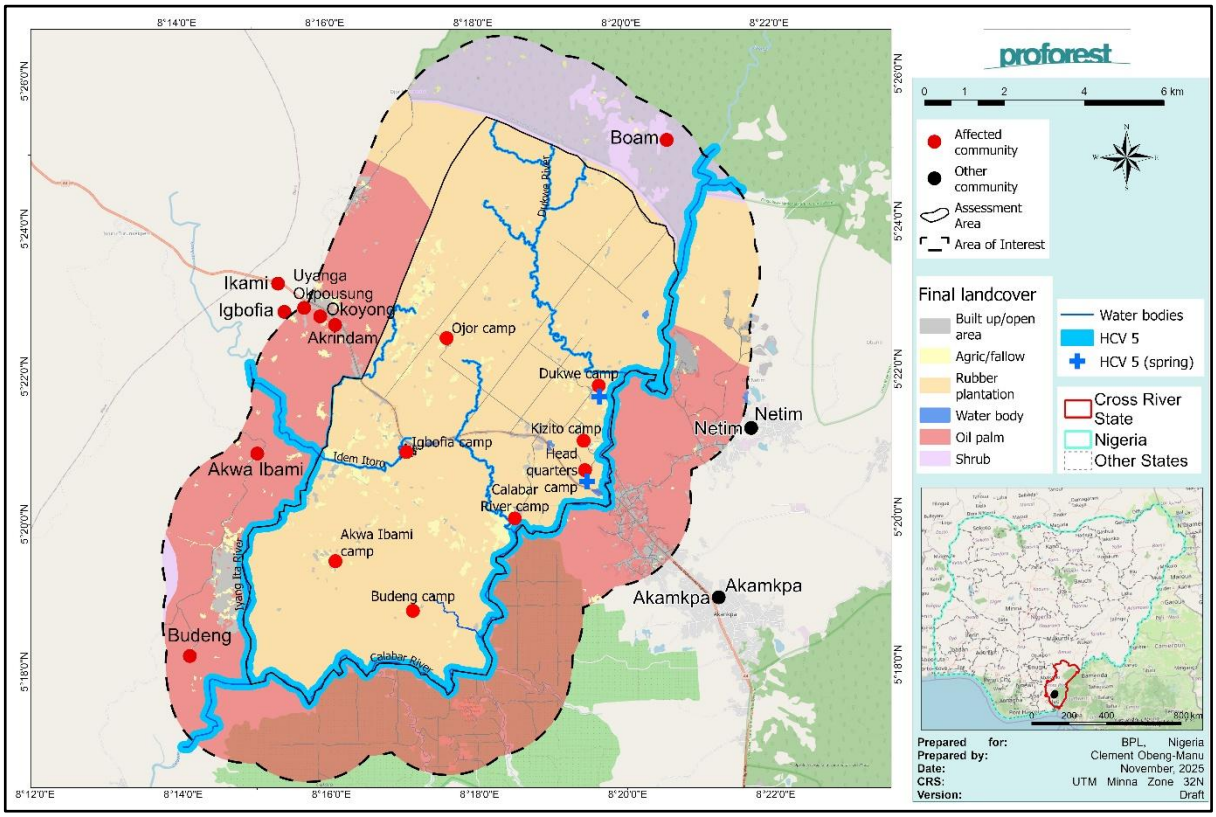


Figure 8: Map showing the location of HCV 5 within the NPP area

- HCV 6: Cultural Values

HCV 6 areas are sites, resources, habitats and landscapes of global or national cultural, archaeological or historical significance, and/or of critical cultural or religious/sacred importance for the traditional cultures of local communities or indigenous people.

For the landlord communities, participatory mapping identified key HCV 6 sites including the Irupshinga shrine (located within the AoI) and Ijokum shrine, which was noted to be outside the AoI but remains culturally significant to the communities. Representatives from the Uyanga Paramountcy accompanied the assessment team to the field to ground-truth the Irupshinga shrine. The location was verified using GPS data collection and field observations, ensuring compliance with HCV requirements for validation of mapped features. The Ijokum shrine was mapped after the full assessment by BPL staff and members of the Budeng communities.

About seven graveyards identified within the NPP area around the old rubber plantation workers' camps set aside for burials of non-indigens have been designated as HCV 6 areas. These were areas historically designated as cemeteries during the CREL operational period for non-indigens, who were not allowed to bury their dead ones in or around the landlord communities. Agreed actions included demarcating and excluding the HCV 6 areas from plantation development activities and other forms of development.

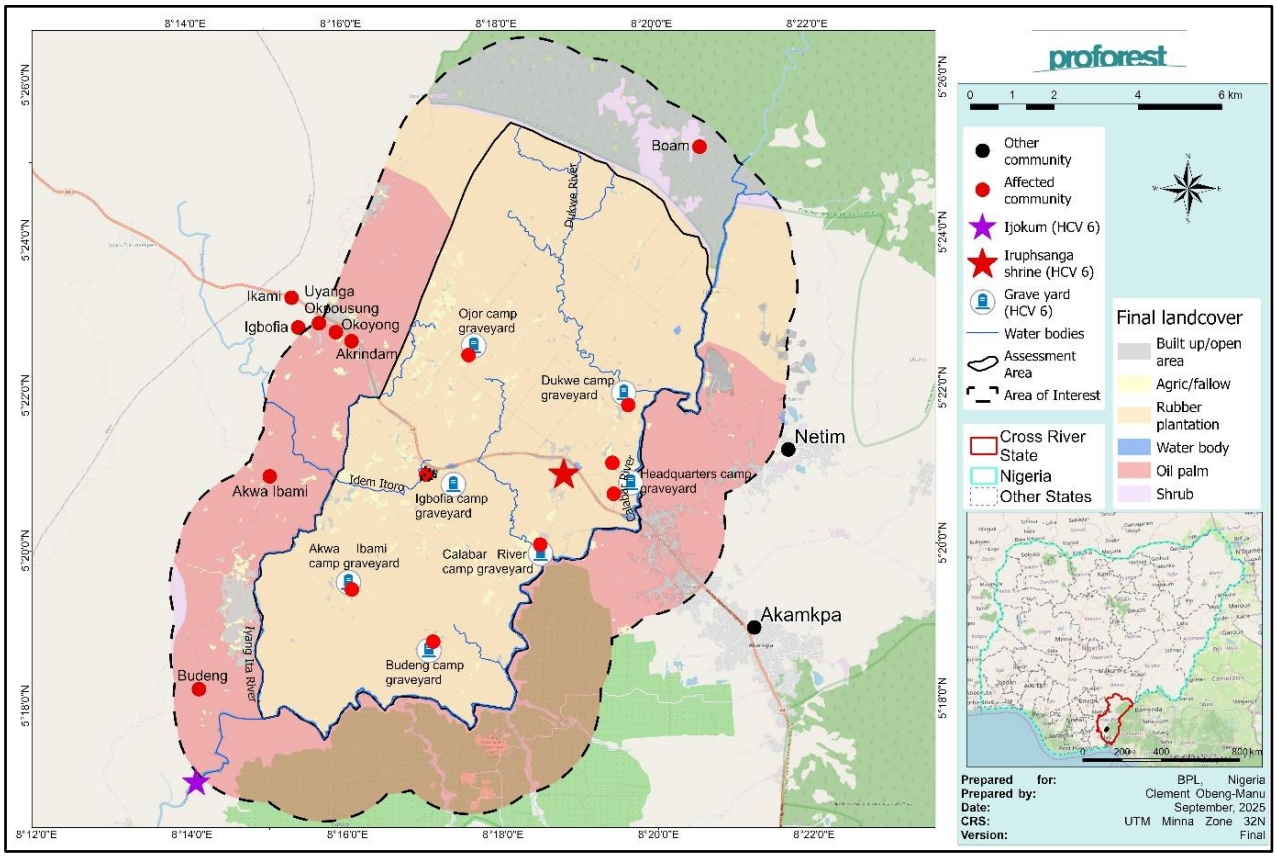


Figure 9: Map showing HCV 6 within the NPP area

Environmental Methods

Literature review and use of secondary data

A systematic desk-based literature review of relevant secondary data was carried out to support the assessment and provide contextual understanding of the landscape. The assessment team sought to obtain comprehensive information on historical land use, community impacts, and RSPO certification baseline assessment reports. The main objective of the review was to gather information on land tenure arrangements, potential environmental

and social impacts, and key environmental considerations that are relevant to the landscape. To achieve the objectives of the literature review, the steps below were followed:

- Identification of sources: The assessment team identified relevant literature from academic databases, industry reports, and organisational publications. Key sources included public articles on oil palm production in Nigeria and Africa, integrated HCV-HCSA scoping reports, HCV and HCSA assessment reports, social impact assessments, and land tenure analyses, as well as previous environmental and social impact assessment (EIA) reports.
- Selection criteria: The selection of literature was based on its relevance to the assessment landscape, the credibility of the sources, and the recentness of the data. Priority was given to peer-reviewed articles, reports from reputable organisations, and documents directly related to the proposed project.
- Collation and assessment of data: The identified literature were carefully collated and assessed. This assessment process involved evaluating the methodologies, findings, and conclusions of each source to ensure they provided valuable insights into the assessment landscape.
- Narrowing down: The literature was then narrowed down to those sources that directly address the key questions relevant to the assessment. This included reports on land tenure, social and environmental impacts, and environmental sustainability, ensuring a focused and relevant review.

Some key secondary data sources include:

- Public articles on oil palm in Nigeria and Africa (Biodiin et al., 2021; Ogunbode et al., 2022).
- Relevant legislation and regulations (i.e., national and international) including CITES, IUCN Red List.
- Geospatial data and relevant demographic statistics
- Integrated HCV-HCSA reports (Proforest, 2025)
- IUCN Red List of Ecosystems
- Integrated HCV-HCSA scoping report for BPL's proposed outgrower projects (Proforest, 2022)
- Past EIA (Andelsta Limited Consultants, 2015)
- Past HCV Assessments (Proforest, 2021)
- Social Impact Assessment report of BPL's proposed outgrower projects (Proforest, 2023)
- Land tenure analysis for BPL's proposed outgrower projects (Biase Plantations Limited, 2022).

The literature review carried out provided the team with the baseline information for the environmental component of the assessment. The result of the literature review was used as input for the environmental fieldwork that was used to support the identification of environmental HCVs.

Environmental fieldwork

Data quality, relevance and limitations of secondary data

The secondary data set obtained and used had different spatial and temporal coverage. Some datasets provided datasets specific to the wider landscape (previous HCV-HCSA and EIA report), while other datasets provided regional datasets (IFL dataset, topographic data, rainfall data, etc). Although these limitations were identified, the secondary datasets provided the relevant environmental background and context that were used as input in the fieldwork design. All identified gaps in the datasets were verified during the fieldwork using targeted field verification.

Fauna survey

Vertebrate fauna study was carried out to provide input into the biological information for the integrated HCV-HCS assessment of the AA. Primary information on the ecological attributes of the assessment area was collected directly from a field study using standard field survey methods. This was supported with secondary data obtained from an extensive desk study of existing ecological and biodiversity studies of the AA. Sixteen (16) linear sampling transects, each measuring about 1.2 kilometres, were distributed in the AA such that there was even coverage of the AA. The transect lines were laid across different habitat types and vegetation fragments on the AA including the area of the AA that was reported to had historically burnt and was therefore not actively managed resulting in some level of regeneration.

The fauna study focused on three vertebrate fauna taxa: large mammals, avifauna and herpetofauna. For each of the three fauna taxa, observations were made within 25 metres on either side of the linear transect. For each of the three taxa, a standard taxon-specific field sampling technique was deployed. This approach was deemed the most appropriate considering that though the AA is largely homogeneous (rubber plantation), there are patches of other land cover types including farmlands, water bodies, riparian vegetation, previously burnt areas and open lands. Hence, the transects purposely distributed to include most of these land cover types.

The fauna survey, using standard field survey methods, was carried out to document vertebrate fauna of the AA with the following specific objectives:

- Identify and document the vertebrate fauna community of the AA and adjoining areas.
- Determine the conservation significance of the vertebrate fauna within the AA with focus on RTEs as defined by the International Union for the Conservation of Nature (IUCN) Red List of threatened species.
- Determine the presence or potential presence of biological and ecological entities of high conservation values within the AA.
- Identify areas with unique vegetation and habitats critical for the protection of key biological and ecological entities and maintenance of high conservation values.
- Make recommendations for the management of HCV areas in the concession.

The fauna fieldwork was carried out from 30th September 2025 to 7th October 2025. Evidence of the fauna fieldwork, including GPS tracks, photographs, and species records, is provided in the Annex 10. The location of the planned and traversed fauna transects superimposed on the final land cover is shown in Figure 10.

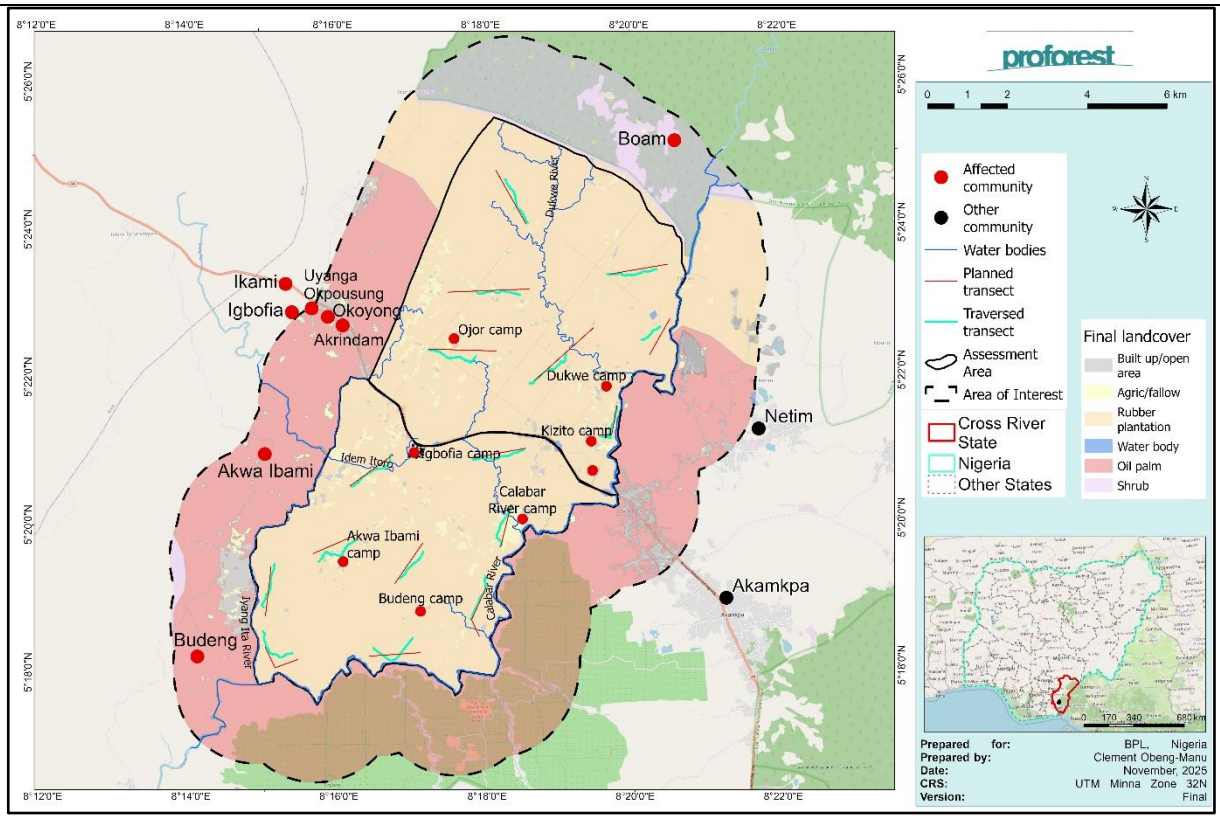


Figure 10: Map showing the planned and surveyed fauna transects

Herpetofauna (Amphibians and Reptiles)

Herpetofauna play an essential role in the ecosystem, serving as bio-indicators of ecosystem health and significant contributors to ecosystem stability. They can occur at high densities in the tropics and play important role as consumers (Leache et al., 2006). Herpetofauna species are getting increasingly threatened by the ever-changing global environmental conditions. Despite these threats, data on distribution and threats assessment of herpetofauna remain scarce (Deikumah et al., 2024). Amphibians and reptiles, prominent and conspicuous components of tropical fauna are sensitive to adverse changes in environmental conditions due to their permeable skin (Nowakowski et al., 2017). For conservation value assessment, amphibians and reptiles are especially useful for evaluating the health and integrity of the environment (Valencia-Zuleta et al., 2014); Piquet et al., 2025). Herpetofauna are good indicators of environmental health because they are highly sensitive to changes in their habitat, pollution, and climate, and their populations can reflect the overall health of an ecosystem. Their porous skin makes amphibians particularly susceptible to toxins, and their presence, absence, or decline can signal problems with water quality, habitat loss, and other environmental stressors.

Field survey of herpetofauna species was carried out using mainly refuge examination (Behangana et al., 2020) along linear transects and in puddles. The approach involved turning over rocks and fallen logs, and dead tree stumps, tree buttresses, termite mounds and burrows. In areas with wet marshes (inundated riverine, ponds and puddles) along the transect, searches were intensified within about 25 metres on either side of the transect, for the sign of herpetofauna species. Identification of herpetofauna species was mainly through sight and sound.

General herpetofauna identification followed Leache et al., (2006), while amphibian species were identified using (Channing & Rödel, (2019).

Large Mammal

Large mammal component of the fauna studies was carried out using direct and indirect observations along linear transects. Direct observation entailed direct sighting of mammal species along linear transects, whereas indirect observation involved identification of signs left behind by the activities of a live mammal species (feeding sites, tracks, footprints, faecal pellets, nests, etc.). Large mammal survey involved attentive walks and ground observations along transects (trails, foot paths and other access routes) looking out for signs of the presence of large mammals. Attention was paid to signs such as footprints, trails and faecal pellets. Supplementary information on the occurrence of large mammals in the AA was secured from local people, especially those reputed to have in-depth indigenous knowledge on the large mammal fauna in the area. Farmers encountered on their farms during the field surveys were interviewed informally on the mammal species often encountered on their farms. (Kingdon, 1997) was used as the main guide to confirm the identity of species encountered both directly and indirectly. Pictures from the field guide was used to confirm the identity of large mammal species, particularly those whose presence was claimed by local people.

Avifauna

With their consistent presence across different habitat types, birds are arguably one of the important components of terrestrial ecosystems. Bird species have been studied in different ecological zones with well-documented range and responses to environmental pressures and are regularly used in assessing the biological quality and conservation value of a habitat. Through the work of Birdlife International and the Special Survival Committee of the IUCN, the global conservation status of bird species is regularly assessed. Bird survey at the AA was carried out using transect counts along linear transects across the AA.

Transect count procedure involved slow attentive walk along transect during which any bird encountered by sight or sound, was identified, and recorded. The method provides a rapid and effective way of carrying out avifauna survey in open habitats where the chance of hearing and seeing birds are high and where the fauna expert has good knowledge of the sight and sound of the avifauna of the area. Distant observations along the linear transects were aided by a pair of binoculars (x10 magnification). Birds encountered by sight and sound within about 50 metres on either side of the linear transects were identified and documented. Birds of Western Africa (Borrow & Demey, 2010) was used as the field guide to confirm the identity of unfamiliar species seen.

Rapid vegetation survey

The AA is dominated by rubber plantation with limited undergrowth and no intact forest cover, hence no HCS forest was identified within the AA. Hence, a detailed flora survey involving measurement of stem diameter at breast height (DBH) and tree height for carbon stock estimation was not carried out. However, in accordance with the 2023 HCV–HCSA Assessment Manual, a rapid vegetation survey was conducted concurrently with the fauna survey along the 16 linear transects distributed across the AA. The main purpose of this rapid flora survey was to identify, map, and document any rare, threatened or endangered (RTE) plant species composition present within the AA for conservation consideration in the identification of HCVs.

Method for the rapid vegetation survey

The rapid vegetation survey was conducted along the same 16 linear transects (each approximately 1.2 km) used for the fauna survey, providing comprehensive spatial coverage of the AA across all habitat types. Along each transect, all plant species encountered within a 25-metre belt on either side of the transect line were recorded. Dominant canopy and understorey species were recorded, along with observations on vegetation structure,

understorey density, and ground cover. Signs of disturbance and/or regeneration were also recorded where present. Any flora species suspected to be of conservation significance were cross-referenced against the IUCN Red List as well as knowledge of the indigenous people and flora experts to determine their conservation status.

The identification of flora species was supported by standard reference materials, including Trees of Nigeria (Keay, 1989) and Woody Plants of Western African Forests (Hawthorne and Jongkind, 2006), alongside the IUCN Red List database. Secondary data on species potentially present in the AA were also extracted from past HCV assessment reports (Proforest, 2021; Proforest, 2014) and were validated against primary field observations recorded during the transect surveys.

Results

Findings of the rapid vegetation survey

Field observations confirmed that the AA is structurally simple and dominated by rubber (*Hevea brasiliensis*) plantation. The monoculture nature and structural simplicity of the AA is characterised by limited undergrowth, uniform canopy height for different sections of the NPP Area according to the planting year, and the absence of any HCS forest provides few ecological niches capable of supporting diverse and/or specialised plant assemblages. Riparian buffer zones along the Calabar, Iyang Ita, and Dukwe Rivers and associated streams has some presence of flora diversity, with species typical of lowland riparian forest including Raphia spp., Uapaca spp., and various ferns and herbaceous riparian plants.

Two RTE plant species were identified within the riparian buffer zones of the AA during the rapid flora survey:

- *Nesogordonia papaverifera* - categorised as Vulnerable (VU) on the IUCN Red List. This species is a commercially valuable timber tree of West and Central African lowland forests, increasingly threatened by logging.
- *Hallea ledermannii* (Abura) - categorised as Near Threatened (NT) on the IUCN Red List. This riparian forest tree is typically associated with riverine and swamp forest habitats and is susceptible to over-exploitation for timber.

Both species were recorded within the riparian buffer zones of the AA and were not observed within the rubber plantation matrix. Their presence within the buffer zones underscores the conservation importance of the riparian areas and supports the identification of HCV 1 within the AA. A vegetation inventory summarising all plant species recorded across the 16 transects is provided in Annex 10.

Limitations of the methods

Fauna survey

The fauna survey method was designed to identify species through encounter by sight and sound. The reliability of the results is determined largely by the representativeness of the sampling design and the ability of the fauna expert to accurately identify species encountered. The field sampling methods for all the fauna species were designed to enhance the probability of encounter with species. The methods assumed a random distribution of fauna species across the AoI but skewed towards areas with habitat conditions conducive to the species. Sampling effort was predetermined to ensure adequate sampling intensity. The efficiency of the method is based on the ability to accurately identify all fauna species within a sampling site. The ability to be able to identify all species present at a sampling site depended on the chance of encounter. The chance of encounter is enhanced by expending equal effort across all sampling sites and by strategically selecting sampling areas across all the

different habitat fragments and types in the AoI. To address the limitation of chance of encounter, field sampling on each sampling day was carried out early in the morning and late afternoon when fauna activities are highest.

Rapid vegetation survey

Although the rapid vegetation survey was not exhaustive comparing the size of the transect relative to the size of the AA, the approach and sampling was appropriate considering the structurally uniform character of the AA. The integration of secondary data sources which were validated through primary field observations along the 16 transects provided a sufficient basis for flora-related HCV identification. Any gaps in primary species records were addressed through cross-referencing with past HCV assessment reports (Proforest, 2021; Proforest, 2014).

Peatlands

Within the AoI or the wider landscape, peat is not known to extensively occur as the peat systems in Nigeria are generally restricted to the coastal, lowlands, mangrove swamps and the deltaic environment. The AoI is located within a basement complex upland terrain with soils that are well-drained. These conditions are not favourable for the formation of peats. Hence, the presence of peatland is considered unlikely within the AoI.

High Carbon Stock (HCS) assessment

The patch analysis is an integral part of the HCV-HCSA assessment, as it aims to evaluate the ecological importance of natural vegetation within the AA. With regards to assessing the forest patches, the patch analysis helps to determine which forest patches are of biodiversity importance for conservation within the AA. The patch analysis was carried out using the steps and conditions stated in the HCSA Toolkit Module 5 Version 2.0, with inputs from the final land cover classification and HCV identification.

According to the integrated HCV-HCS assessment report, no HCS forest patch was identified within the NPP area. Hence, the riparian forest buffers along the major water bodies, including Calabar, Dukwe, Iyan-Ita Rivers and other internal streams within the project area have been identified as HCVs and mapped as potential conservation areas.

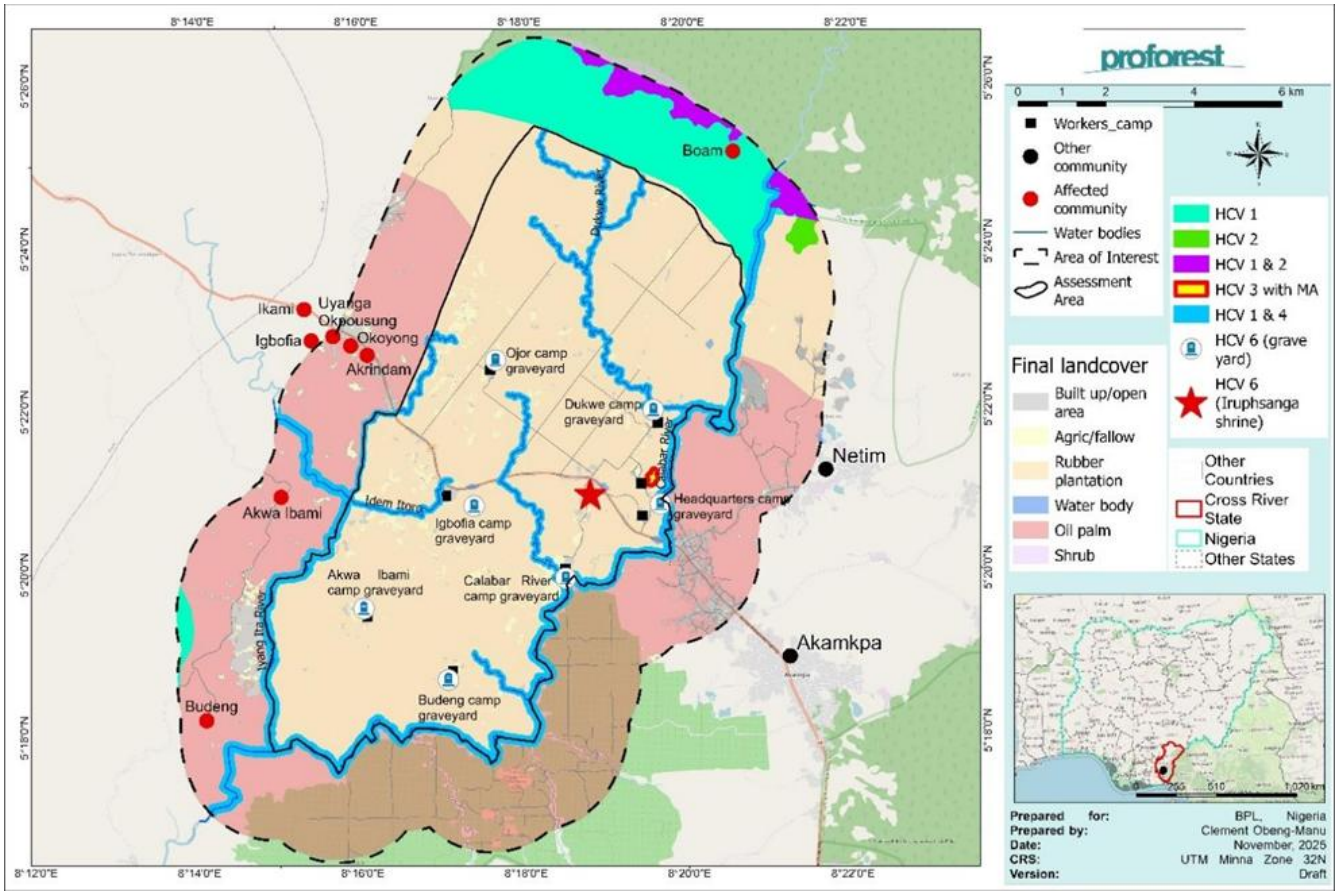


Figure 11: Mapped HCVs overlaid on the final land cover classification

Table 16: Summary of identified HCVs and HCS forest

Values to be conserved	HCV-HCS areas (ha) within NPP	Management areas (ha)
HCS forest	0.00	0.00
Peat	0.00	0.00
HCV 1	397.04	397.04
HCV 2	0.00	0.00
HCV 3	1.85	12.21
HCV 4	397.04	397.04
HCV 5	649.91	649.98
HCV 6	0.87	0.87
Net total HCV area	652.63	663.06

A visit to the NPP area during the onsite verification, established that no land clear has begun, including in the nursery site, established that no land clearing, hence the HCV-HCS areas are yet to be mapped out and demarcated for their protection and enhancement as detailed in the management plan. However, interview

with BPL management, as well as the landlord communities (i.e., Uyanga-Igbofia, Uyanga-Okposung, Ikami, Akirindam, Boam, Okoyong, Akwa-Ibami and Budeng), confirmed they were involved in the identification of the HCV-HCS areas led by the team from Proforest. They also confirmed that stakeholder meetings were held after the assessment, where the HCV-HCS areas identified were shown to them on the Map. They also confirmed that until the time of NPP verification no land clearing for oil palm cultivation has begun. The landlord communities added that Proforest team informed that these areas would be mapped out as shown in Figure 11 below, and will be demarcated and conserved when land clearing begins.

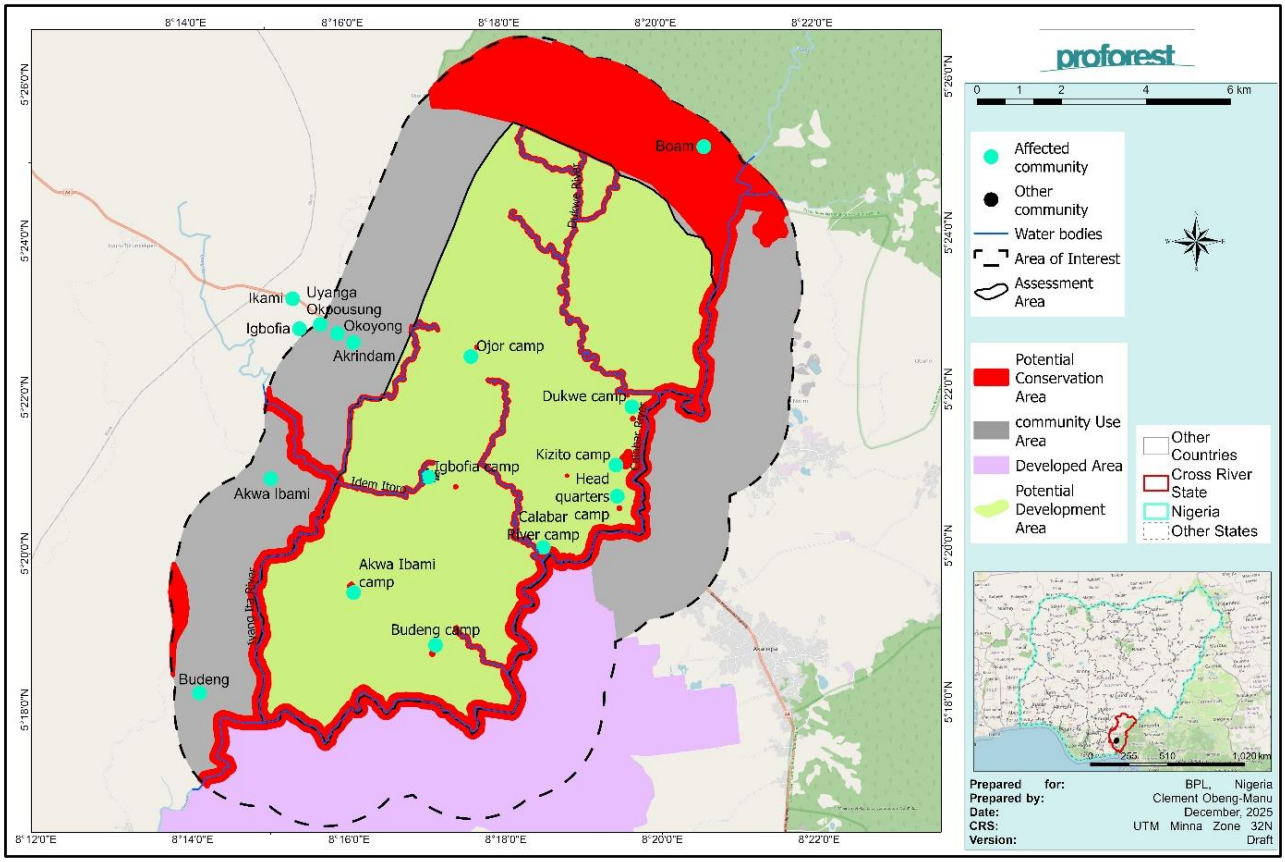


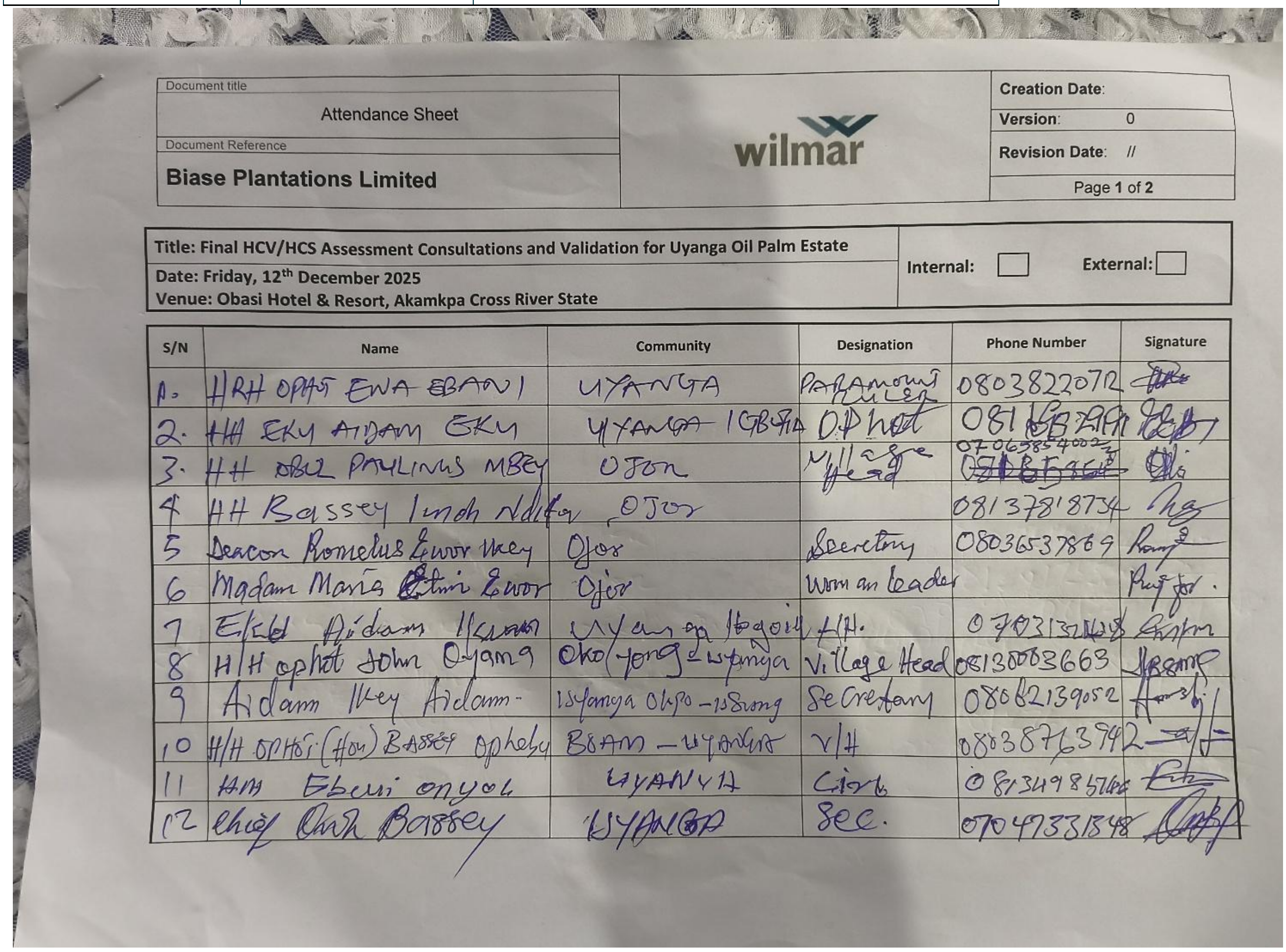
Figure 12: Map showing the location of potential conservation area, and community use areas

Final Consultation

The final consultation for this assessment was carried out on 12 December 2025 in Akamkpa. Formal invitation to the final stakeholder consultation workshop was sent by BPL to all the stakeholders consulted for the assessment. During the workshop, the draft results of the assessment was presented to the participants, including showing a large printout map of the identified HCV areas, which was followed by a discussion to respond to any questions and receive comments and inputs on the assessment findings. Details for the final consultations are provided in Table 22.

Table 22: Group discussion at the final stakeholders' consultation in Akamkpa

Name	Title/role	Organisation/social group	Place and date
See attendance sheet in Figures 17(a-e).	See attendance sheet in Figures 17(a-e)	- Management of BPL - Traditional leaders and community members of the eight affected communities - Ministry of Agriculture (Cross River) - Cross River National Park - Akamkpa LGA - Old workers of the Rubber Plantation - Community Relations and Sustainability Team of BPL	12 December 2025 at Akamkpa

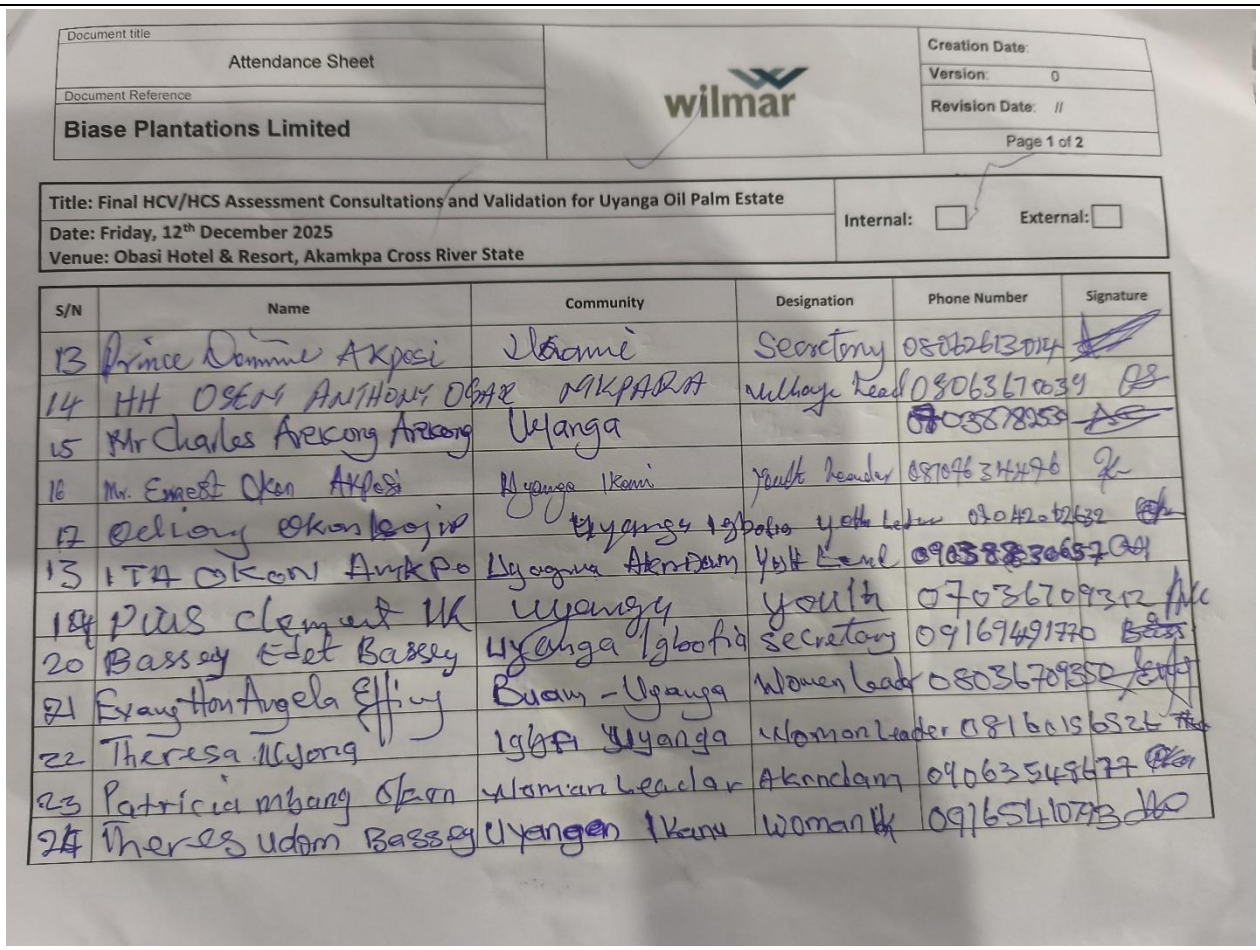


Document title		Creation Date:
Attendance Sheet	wilmar	Version: 0
Document Reference		Revision Date: //
Biase Plantations Limited		Page 1 of 2

Title: Final HCV/HCS Assessment Consultations and Validation for Uyanga Oil Palm Estate
Date: Friday, 12th December 2025
Venue: Obasi Hotel & Resort, Akamkpa Cross River State
Internal: ☐ External: ☐

S/N	Name	Community	Designation	Phone Number	Signature
1.	HRH OPAT EWA EBANI	UYANGA	PARAMOUNT RULER	08038220712	[signature]
2.	HH EKU AIDAM EKU	UYANGA IGBO [illegible]	O.P head	081 [illegible]	[signature]
3.	HH OBU PAULINUS MBEY	OJOR	Village Head	07063854002	[signature]
4	HH Bassey Inah Ndifon	OJOR		08137818734	[signature]
5	Deacon Romelus Ewor Ikey	Ojor	Secretary	08036537869	[signature]
6	Madam Maria Etim Ewor	Ojor	Woman leader		[signature]
7	Elder Aidam Ikwan	Uyanga Ibogoi	V.H.	0703[illegible]	[signature]
8	H/H ophot John Oyama	Oko(yong) Uyanga	Village Head	08130083663	[signature]
9	Aidam Ikey Aidam	Uyanga Okpo - Isong	Secretary	08062139052	[signature]
10	H/H OPHOT (Hon) BASSEY Ophelu	BSAM - UYANGA	V/H	08038763942	[signature]
11	HM Ebuni Onyoh	UYANGA	Clerk	0813498574[illegible]	[signature]
12	Chief Okah Bassey	UYANGA	Sec.	07047331848	[signature]

Figure 13a: Attendance of the final stakeholders' consultation meeting



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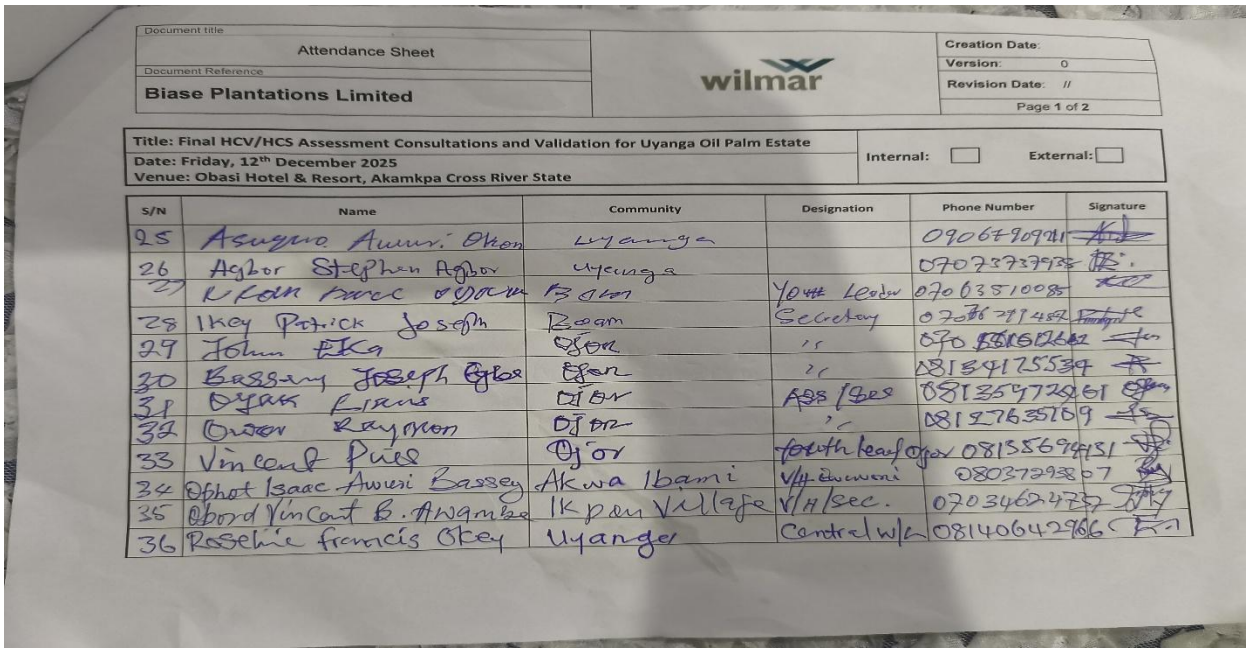
Page 1 of 2

Title: Final HCV/HCS Assessment Consultations and Validation for Uyanga Oil Palm Estate
Date: Friday, 12th December 2025
Venue: Obasi Hotel & Resort, Akamkpa Cross River State
Internal: ☐ External: ☐

S/N	Name	Community	Designation	Phone Number	Signature
13	Prince Donnie Akpesi	Ukami	Secretary	08062613014	
14	HH OSEN ANTHONY OBAR	NKPARA	village head	08063670349	
15	Mr Charles Arkong Arkong	Uyanga		08038785	
16	Mr. Ernest Okon Akpesi	Uyanga Ikoni	Youth leader	08104634496	
17	Odiong Okon Bojie	Uyanga Igbofia	youth Leader	08042062632	
18	Pius clement Uk	Uyanga	youth	07036709312	
20	Bassey Edet Bassey	Uyanga Igbofia	secretary	09169491770	
21	Evang Hon Angela Effiong	Buam - Uyanga	Women leader	08036709350	
22	Theresa Ukpong	Igbofia Uyanga	Woman Leader	08160156526	
23	Patricia mbang Okon	Woman Leader	Akanda	09063548677	
24	Theresa Udom Bassey	Uyangen Ikoni	Woman Uk	09165410713	

Figure 13b: Attendance of the final stakeholders' consultation meeting continued



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Document Reference: Biase Plantations Limited
wilmar
Creation Date:
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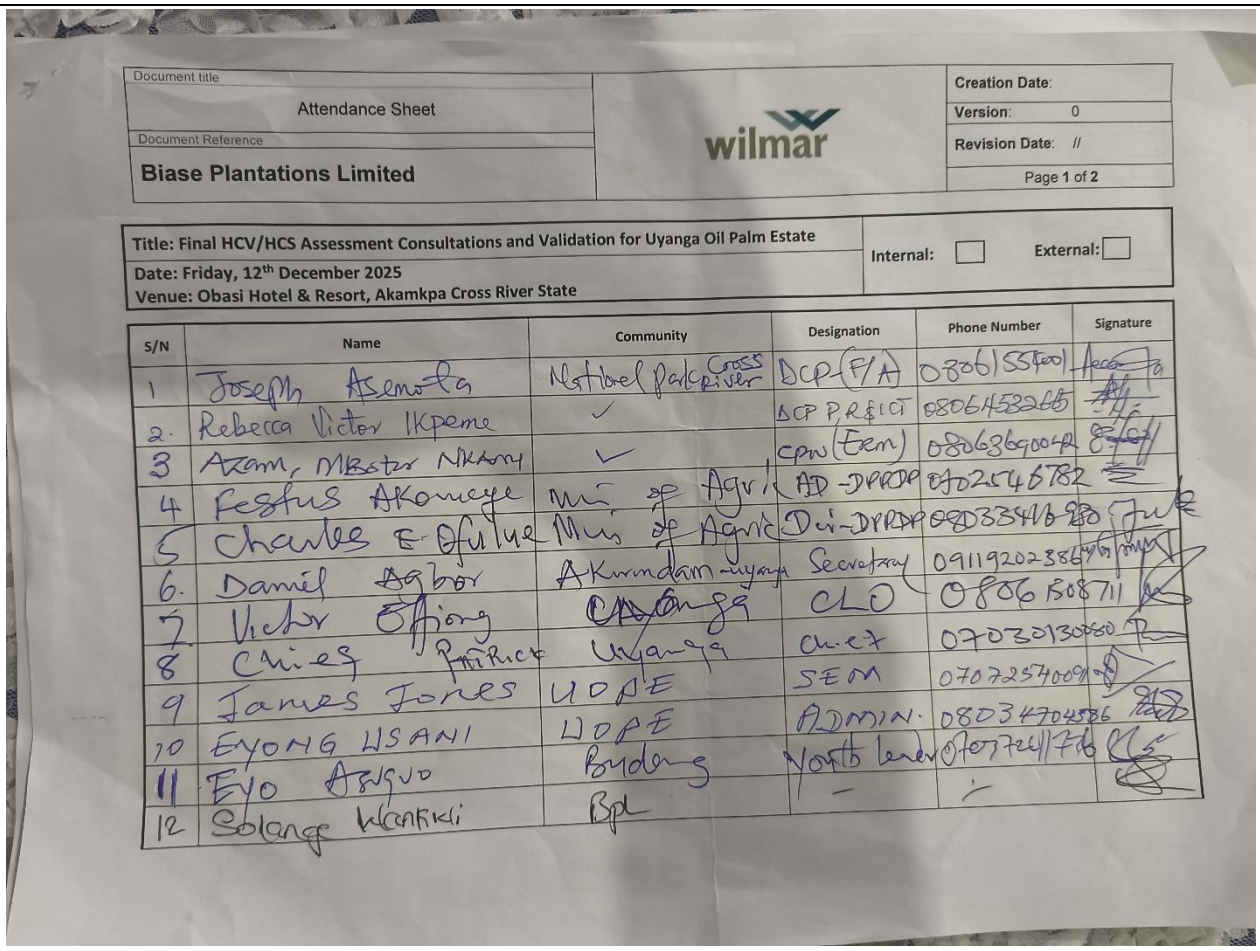
Revision Date: //
Page 1 of 2

Title: Final HCV/HCS Assessment Consultations and Validation for Uyanga Oil Palm Estate
Date: Friday, 12th December 2025
Venue: Obasi Hotel & Resort, Akamkpa Cross River State
Internal: ☐ External: ☐

S/N	Name	Community	Designation	Phone Number	Signature
25	Asuquo Awusi Okon	Uyanga		09067909711	
26	Agbor Stephen Agbor	Uyanga		07073737938	
27	Okon [illegible]	Buam	Youth Leader	07063510085	
28	Ikoy Patrick Joseph	Buam	Secretary	07086791489	
29	John Eka	Obor	"	090[illegible]	
30	Bassey Joseph Ogbor	Ogbor	"	08154175539	
31	Ogar Evans	Ogbor	APC/PDP	08135472961	
32	Owan Raymon	Ogbor	"	08157635709	
33	Vincent Pius	Ogbor	Youth leader Ogbor	08155694151	
34	Obhot Isaac Awusi Bassey	Akwa Ibami	Vice Chairman	08037293807	
35	Obord Vincent B. Awamba	Ikpan Village	V/H/Sec.	07034624737	
36	Rosehie francis Okey	Uyanga	Central W/C	08140642966	

Figure 13c: Attendance of the final stakeholders' consultation meeting continued



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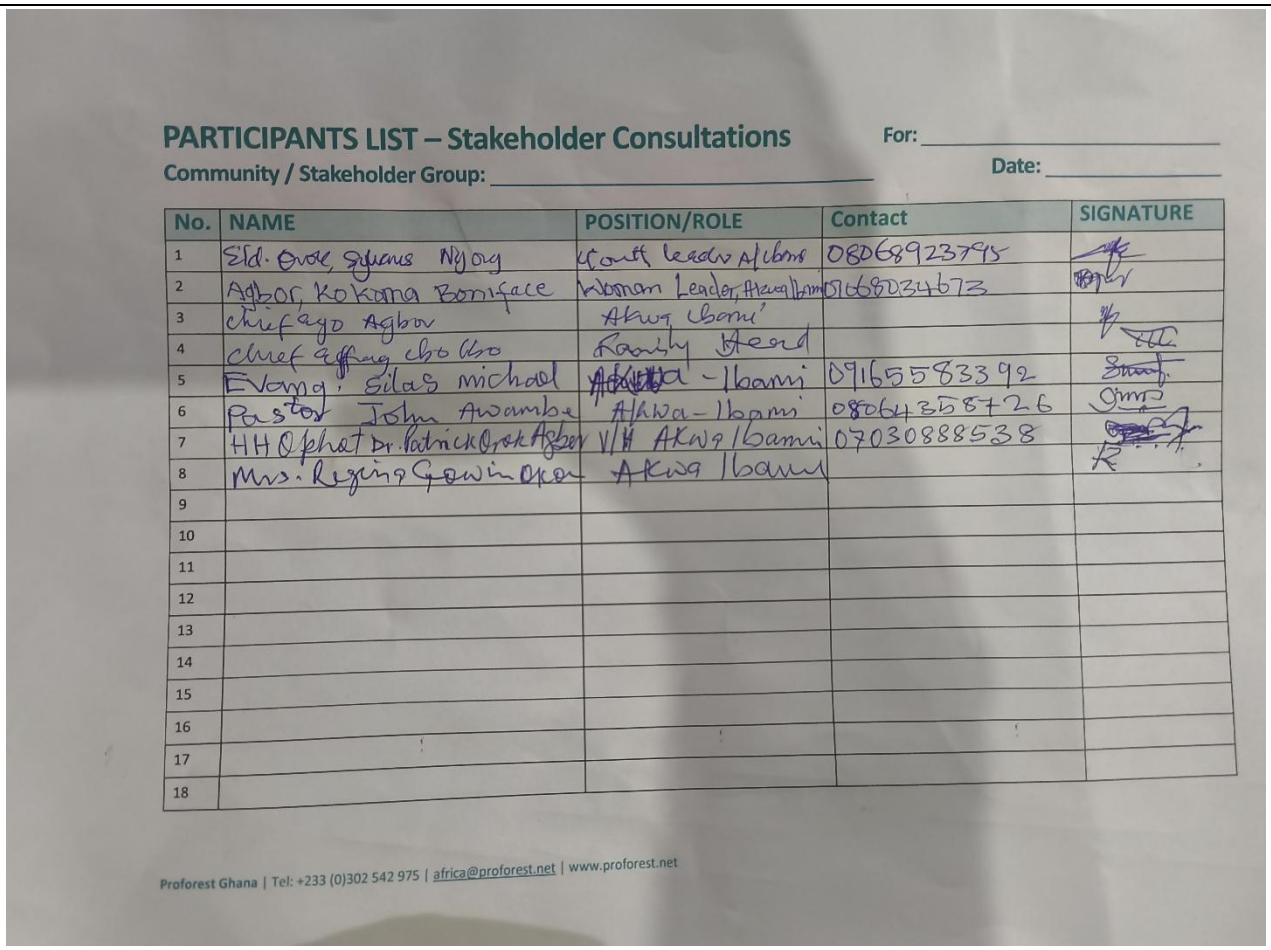
Attendance Sheet	wilmar	Version: 0
Document Reference		Revision Date: //
Biase Plantations Limited		Page 1 of 2

Title: Final HCV/HCS Assessment Consultations and Validation for Uyanga Oil Palm Estate — Internal: ☐ External: ☐

Date: Friday, 12th December 2025
Venue: Obasi Hotel & Resort, Akamkpa Cross River State

S/N	Name	Community	Designation	Phone Number	Signature
1	Joseph Asemota	Natural park Cross River	DCP (F/A)	08061550[illegible]	
2.	Rebecca Victor Ikpeme	✓	ACP PR&ICT	08064582665	
3	Akam, Mbaster Nkang	✓	CPW (Fem)	08063690[illegible]	
4	Festus Akomaye	Min of Agric	AD-DPRDP	07025467[illegible]	
5	Charles E. Ofuke	Min of Agric	Dir-DPRDP	08033[illegible]	
6.	Daniel Agbor	Akamdam-uyanga	Secretary	0911920238[illegible]	
7.	Victor Effiong	Uyanga	CLO	08061508711	
8	Chiefs	Uyanga	Chief	07031303[illegible]	
9	James Jones	HOPE	SEM	07072574009	
10	EYONG USANI	HOPE	ADMIN.	08034704586	
11	Eyo Asuquo	Bondong	Youth leader	07077241[illegible]	
12	Solange Kkanikki	Bpl	–	–	

Figure 13d: Attendance of the final stakeholders' consultation meeting continued



PARTICIPANTS LIST – Stakeholder Consultations For: _____

Community / Stakeholder Group: _____ Date: _____

No.	NAME	POSITION/ROLE	Contact	SIGNATURE
1	Eld. Ovie Sylvanus Nyong	Youth Leader Akwa Ibami	0806892379[illegible]	
2	Agbor Kokana Boniface	Woman Leader, Akwa Ibami	0166803467[illegible]	
3	Chief ayo Agbor	Akwa Ibami'		
4	Chief Effiong Ebo Ebo	Family Head		
5	Evang. Silas michael	[illegible] - Ibami	0716558339[illegible]	
6	Pastor John Awambe	Akwa-Ibami	0806435872[illegible]	
7	HH Ofhat Dr. Patrick Orok Agbor	V/H Akwa Ibami	0703088853[illegible]	
8	Mrs. Regina Gowin Okon	Akwa Ibami		
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				

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Figure 13e: Attendance of the final stakeholders' consultation meeting continued

A public discussion was held for the final stakeholder consultation workshop which was attended by the stakeholders listed above. A total of 44 participants were present. A PowerPoint presentation of the draft results was made by the lead assessor which was followed by discussions, questions and inputs. A large, printed map showing the AoI and the identified HCVs and their management areas was also shown.

Key concerns and recommendations

- The representatives from the National Park recommended the need for sensitisation and collaborative management to protect the RTEs. They also recommended that the location of the fauna identified should be stated to aid in the management of the fauna species identified. They mentioned to the group that the killing of RTEs is a crime irrespective of their location. They further encouraged that the buffers be protected so the fauna species are protected.
- The representative from the Ministry of Agriculture asked why such a big buffer size was used for an area that is an existing plantation.
- The secretary of the affected communities recommended that the final report be printed and shared with each affected community.
- Another community member asked what efforts BPL is putting in place to avoid confrontations with local communities with regards to stealing of fresh fruit bunches (FFBs).
- The Paramount Chief also mentioned that BPL will need to improve and handle security issues well to avoid confrontation with communities.
- Another community member asked the criteria for members of the affected communities to be employed

by BPL.

Assessment team response

- The assessment team advised BPL to collaborate with relevant experts, institutions and other stakeholders in the management of the HCV areas as recommended by the CRNP. The assessor used the opportunity to explain the Integrated Conservation and Land Use Plan (ICLUP) which is to be developed and implemented in a collaborative manner.
- The team explained that the fauna species identified were the hornbill, and the fauna transect where they were found is known. However, birds are not located in a specific area, so it will be impractical to manage only the area where they were found, especially because the area is monocultured.
- The assessment team reiterated the rational for the buffer size which is in line with international best practice (RSPO requirements) in the absence of a national buffer regulation/policy. The RSPO buffer requirements is based on the size (width) of the waterbody. The 100-metre buffer is also HCV 1 area, serving as habitat and corridor for wildlife including RTEs. Also, enrichment planting of the buffer area has been recommended to make it a diverse habitat for multiple species.
- The BPL team responded to the questions on employment and security issues. They explained that employment is based on merit and anyone who meets the qualifications stands a chance to be employed. Measures to address theft and security include use of different palm variety for the plantation, construction of different access roads for communities and continuous training for security personnel.

The Forestry Commission, WCS and NCF were not present at the final stakeholder consultation workshop although they had been invited. A follow-up consultation was held with NCF at their office in Calabar on 15 December 2025 and details are provided in Table 23 below. Follow-up emails were sent to the Forestry Commission and WCS with a copy of the final stakeholder consultation slide deck which shows the draft results of the assessment for their review and inputs, and to request for a virtual consultation if necessary.

Table 23: Discussion with Nigeria Conservation Foundation in Calabar

Name	Title/role	Organisation/social group	Place and date
Emmanuel Owan	Principal Conservation Officer/ Project Manager – Calabar Office	Nigeria Conservation Foundation	15 December 2025 at NCF Office, Calabar

One-on-one interview with the NCF officer in his office in Calabar.

Key concerns & recommendations

- Considering the objective of protecting the water bodies, which is the same riparian buffer size not used?

Assessment team response

The assessment team responded that although Nigeria has no buffer zone regulation, RSPO has buffer requirements that was adhered to, which is dependent on the width of the water body. Hence, the buffer width used is based on the RSPO requirements. Additionally, the 100 metre buffers are also to serve as habitats and corridor for wildlife including RTEs.

Plate 6: Final HCV-HCS assessment stakeholders' consultation meeting pictures

Section 5: FPIC

Methodology

Social methods including document reviews, stakeholder consultations, focus group discussions and participatory mapping were employed in verifying FPIC (Figure 18).

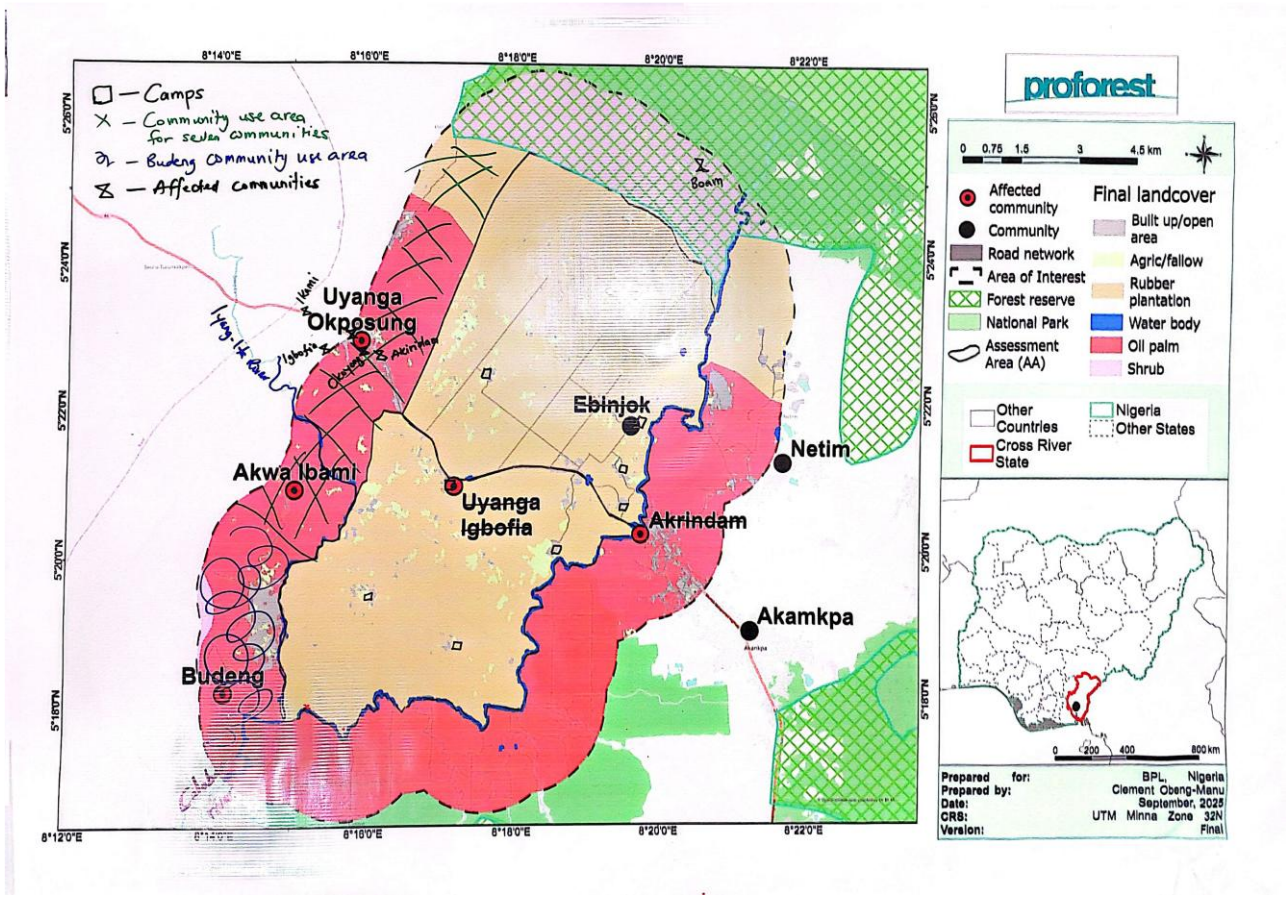


Figure 14: Map presented to stakeholders during FPIC engagements

Results

Pre-assessment phase

The review of a land tenure assessment report of the proposed project area and other relevant documents submitted by BPL confirmed that the NPP area is government land, totaling 8,509.74 ha. The acquisition of the NPP area was through a direct allocation by the Cross River State Government. The area comprises an existing rubber plantation originally developed through the collective contribution of lands by the surrounding host communities. Historically, the land was jointly-donated to the government by the communities in the 1950s to support industrial plantation development, and this collective understanding has been maintained over the years.

Eight (8) communities were identified as the primary landlord and contributing communities within the project area, including Uyanga Okpousung, Akrindam, Boam, Igbofia, Ikami, Okoyong, Akwa Ibami and Budeng. Other

neighbouring communities and enclaves, including Ojor and Efumkpa, also contributed portions of ancestral land during the original establishment of the plantation estate.

The acquisition of the concession followed a formal Letter of Intent submitted by Biase Plantations Limited (BPL) to the Cross River State Government for the allocation of the moribund rubber estate. Prior to the allocation, consultations were held with the host communities, who expressed their support and interest for the estate to be allocated to BPL. This process was subsequently formalized on 13th June 2025 during an official meeting held at the State House involving representatives of the landlord communities and the State Government.

Following the official handover of the 8,509.74-ha former Eng Huat/CREL assets to BPL on 13th June 2025 and 12th July 2025 (Plate 8), further stakeholder engagements were conducted with the affected communities and other interested parties.

Plate 7: Formal handover of the former Eng Huat/CREL assets to BPL

Full Assessment

The assessment was conducted consistent with the principles of Free, Prior, and Informed Consent (FPIC) to ensure that the interests, rights, and decision-making authority of affected communities are fully respected throughout the assessment process. FPIC considerations were incorporated from the pre-assessment phase and applied consistently during all engagements.

Free: In all consultation**,** participation in was voluntary. No coercion or undue influence was applied. Communities were informed of their right to withdraw consent at any stage of the assessment process, and the independence of the assessment team from BPL was clearly communicated to all participants at the outset of each consultation.

Prior: All affected communities were notified in advance of the purpose and objectives of the assessment through recognised traditional and local communication protocols, before the commencement of fieldwork. The FPIC process was formally introduced at a community engagement meeting held at the Palace of the Paramount Ruler, providing community leadership with sufficient time to deliberate internally before providing consent.

Informed: During community consultations, clear explanations of the assessment objectives, methodology, the types of information to be collected, the FPIC process, and the potential impacts of the proposed development were provided. Communities were given the opportunity to ask questions and seek clarification before providing their views.

Consent: Formal written consent was obtained from all affected stakeholder groups. Evidence of FPIC is documented through the following consent letters, which are provided as annexes to this report (Annex 3):

- **Uyanga Landlord Communities**: Formal Community Consent Letter signed by representatives of the communities under the Uyanga Paramountcy.
- **Budeng Landlord Community**: Formal Community Consent Letter signed by H/H Obort Dennis Nyong Effiong (Community Head) and Prince Eyo Asuquo Ojong (Youth Leader).
- **Akwa Ibami Landlord Community**: Formal Community Consent Letter signed by H/H Ophot Patrick Orok Agbor (Community Head) and Elder Sylvanus Nyong Orok (Community Secretary).
- **Workers' Camp Dwellers**: Workers consent letter signed by the camp masters, secretaries, and women Leaders of all eight camps within the NPP Area.
- These consent letters collectively demonstrate that FPIC was sought from and granted by all directly affected stakeholder groups. The assessment process was planned to ensure inclusive participation and respect for community decision-making structures. FPIC was sought at different stages of the assessment. Meeting records of community consultations and participation were maintained via attendance lists and meeting notes.

Brief social context

The engagement meetings were convened to:

Introduce BPL management to the landlord communities;

Officially inform stakeholders about the FPIC process and RSPO New Planting Procedure (NPP) requirements;

Seek community consent to proceed with pre-development assessments, including HCV-HCSA, SIA, EIA, and soil studies;

Present proposed Corporate Social Responsibility (CSR) commitments; and

Establish communication and engagement channels between BPL and the communities.

The stakeholder engagement process was conducted in accordance with the principles of Free, Prior, and Informed Consent (FPIC), with emphasis on inclusive participation and transparency. Affected communities were identified primarily based on customary land ownership and resource-use rights within the Area of Influence (area of interest), as these groups hold the greatest interests and potential risks associated with the proposed land-use change.

Engagement sessions were structured to ensure representation from:

Paramount rulers

Chiefs and elders

Women & Youth representatives

Community stakeholders

The engagement approach adopted was consistent with the traditional structure and consultation mechanism previously used between the communities and the former rubber plantation operators. Out of the eight affected

communities, seven communities opted to be collectively represented under the Uyanga Paramountcy, while Budeng community requested separate engagement sessions with its leadership (Plate 9).

Traditionally, customary decision-making processes within these communities are led by male titleholders, including chiefs and councils of elders, with women often excluded from formal public deliberations. Nevertheless, efforts were made during the FPIC process to ensure broader stakeholder inclusion and participation where practicable.

Post-assessment activities

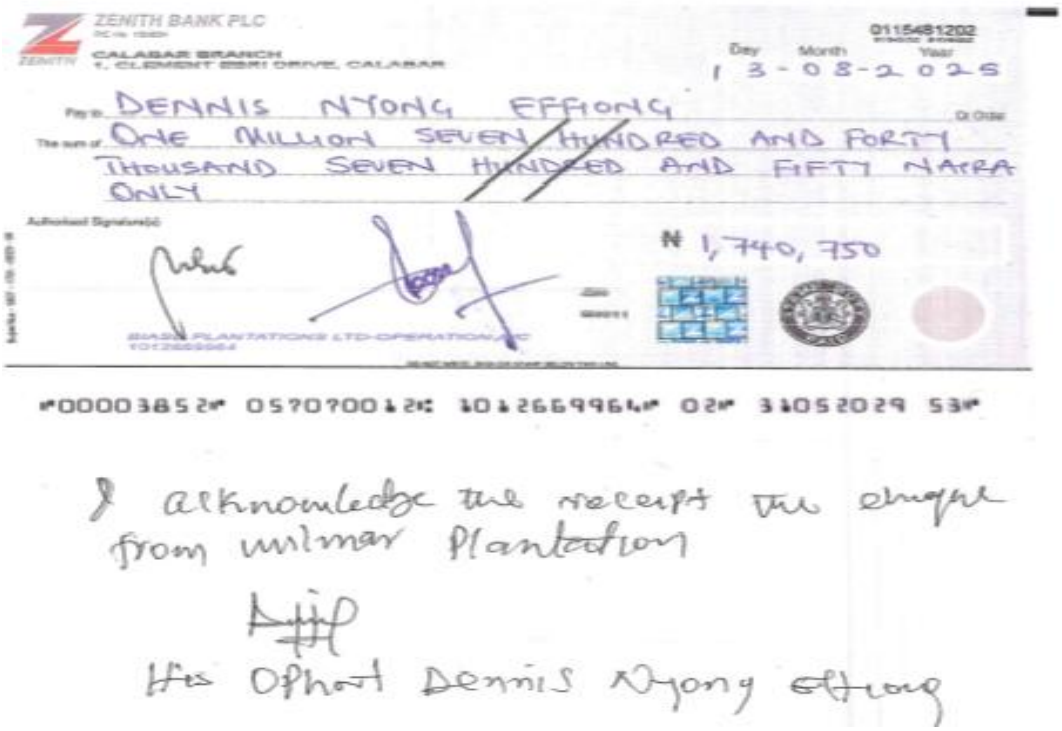
Memorandum of Understanding (MoU) was signed between BPL and the landlord communities, and royalty arrangements have been established in line with existing agreements. Community engagement and consultation processes will continue throughout the implementation and operational phases of the project. Subsequently, the royalties were paid to the landlord communities, with evidence of payments shown in Figure 19.

Plate 8: Stakeholders' engagement meetings pictures


ZENITH BANK PLC
CALABAR BRANCH
1, CLEMENT EBRI DRIVE, CALABAR
0105076100
Day 13 Month 08 Year 2025
Pay to UYANGA COMMUNITY ACCOUNT
The sum of EIGHT MILLION FOUR HUNDRED AND NINETEEN THOUSAND FIFTY NAIRA ONLY
₦ 8,419,050
BASE PLANTATIONS LTD-OPERATION A/C
#00003850# 057070012# 10126699646# 02# 29032028 32#

Figure 15a: Evidence of roralty payment to the landlord communities


ZENITH BANK PLC
CALABAR BRANCH
1, CLEMENT EBRI DRIVE, CALABAR
0115481201
Day 13 Month 08 Year 2025
Pay to AKWA IBAMI VILLAGE COUNCIL
The sum of TWO MILLION SIX HUNDRED AND SIXTY EIGHT THOUSAND FIVE HUNDRED NAIRA ONLY
₦ 2,668,500
BASE PLANTATIONS LTD-OPERATION A/C
#00003851# 057070012# 10126699646# 02# 31052029 30#


ZENITH BANK PLC
CALABAR BRANCH
1, CLEMENT EBRI DRIVE, CALABAR
0115481202
Day 13 Month 08 Year 2025
Pay to DENNIS NYONG EFFIONG Or Order
The sum of ONE MILLION SEVEN HUNDRED AND FORTY THOUSAND SEVEN HUNDRED AND FIFTY NAIRA ONLY
Authorised Signature(s)
N 1,740,750
0000038529 057070012: 10126699641 02 31052029 53

I acknowledge the receipt the cheque from unimar Plantation

His Ophon Dennis Nyong Effiong

Figure 15b: Evidence of roralty payment to the landlord communities continued

Section 6: Soil and topography

Date of Assessment: October, 2025

Name of Assessor: Joshua Mathews

Assessor Designation and Company: Group Eco Management Unit Lead, Wilmar Agronomy, Research and Development (Plantation), Calaro Estate, Akampka, Cross River State, Nigeria

BPL commissioned a detailed soil survey of the NPP Area as part of studies carried out in the NPP Area to determine suitability of the land for oil palm plantation development. The soil survey involved soil sampling in the field and soil profile observations. The soil survey report, including soil map of the NPP Area and description of the soil types, is provided in the subsequent section. The soil survey report was used as the primary data source the to determine the presence or absence of soil organic matter, including peat.

The soil survey was conducted internally by research team of Wilmar Agronomy, Research and Development (Plantation), Calaro Estate. The team included Joshua Matthews, Palaniyel and Kenneth Ekong. Another soil study was conducted by the Foremost ESIA team and were analyzed for physico-chemical parameters. As most the soils in Nigeria are classified according to elevation and slopes, the elevation and contour map became an important tool for the classification. The desktop study conducted on the location. The geology gave a better idea of the expected soils in the Uyanga Oil Palm Estate. Soil and terrain points were taken by traversing along the road, and provided the indication of the soil at great group level (Figure 20 below). During the survey, the soils were classified according to the USDA soil taxonomy. The soil survey report was used as the primary data source the to determine the presence or absence of soil organic matter, including peat.

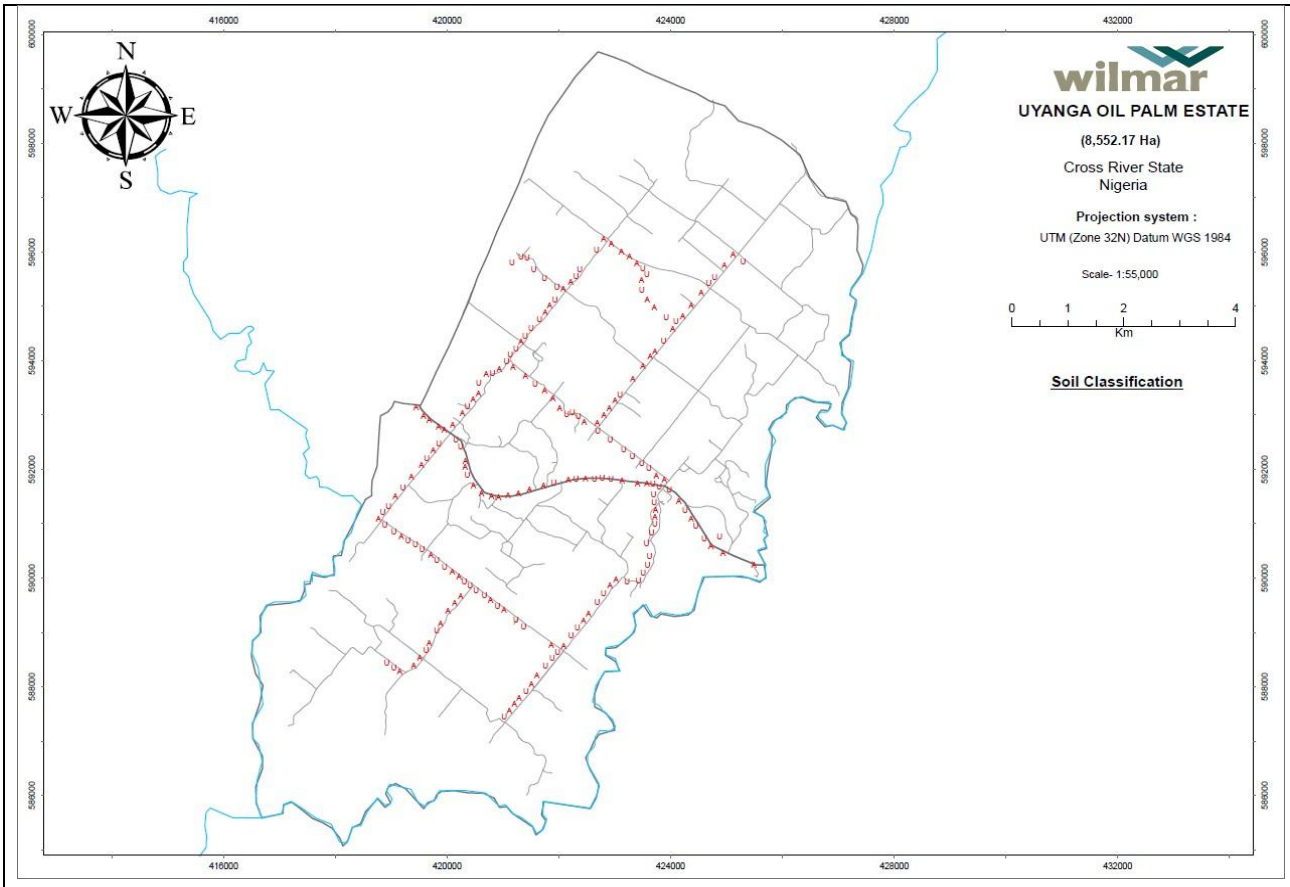


Figure 16: Soil and terrain points used for soil sampling

The soil classification was done up to Great group level. Soil profiles were dug in different locations across the proposed Uyanga Oil Palm Estate (Figure 21 below), and samples were collected for analysis. The soil samples collected were sent to laboratory for mechanical and chemical analyses. The mechanical analysis determined the percent Sand, Silt and Clay to identify the soil texture. The chemical analysis conducted included determinations of pH, organic carbon, nitrogen, total phosphorous, available phosphorus, exchangeable Ca, K and Mg, as well as Cation Exchange Capacity (CEC). The mechanical and chemical analysis are required for the identification of base saturation and CEC in clay to classify kandic, argillic and alfic levels. In total, 16 soil profiles were used for the soil examination.

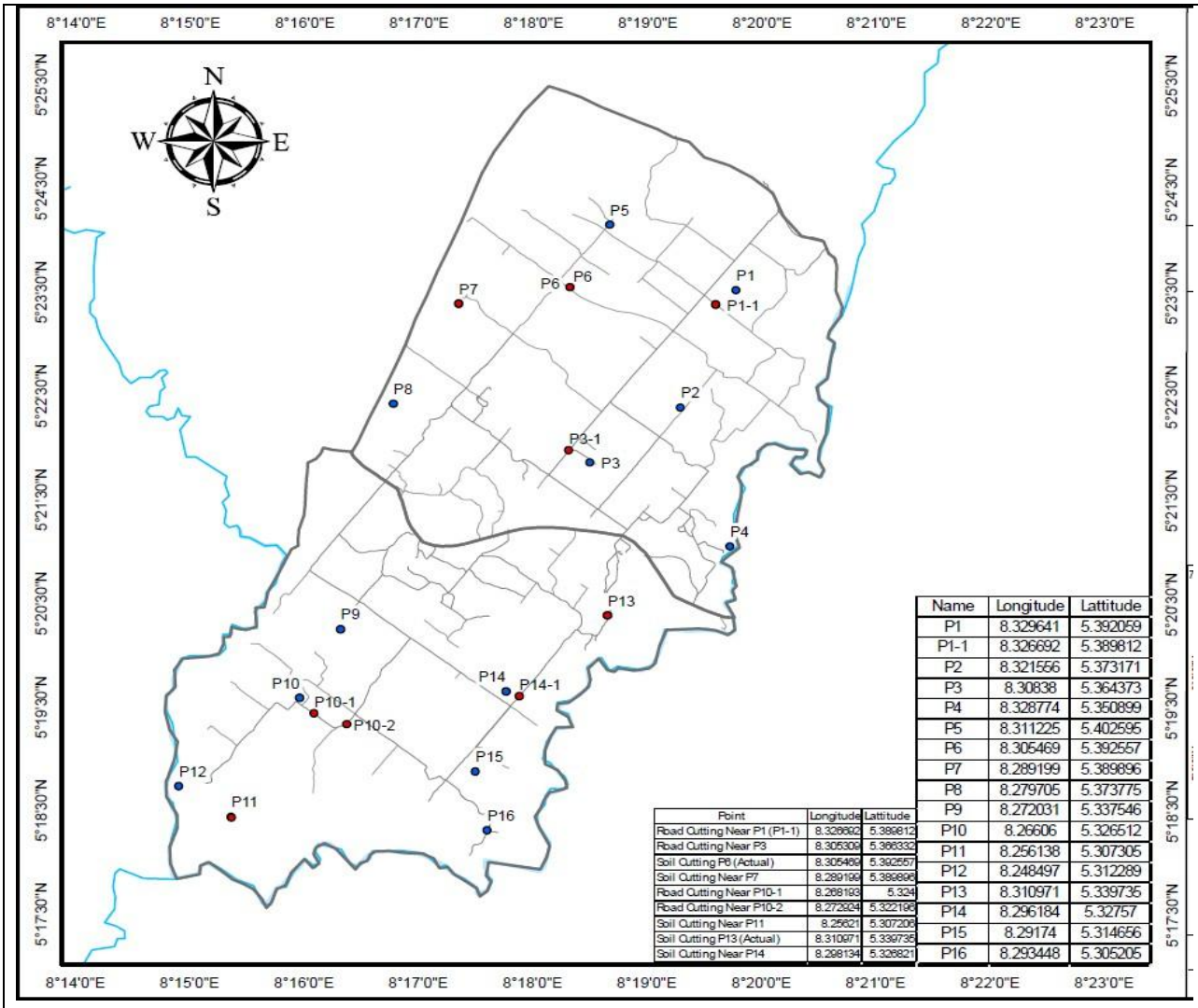
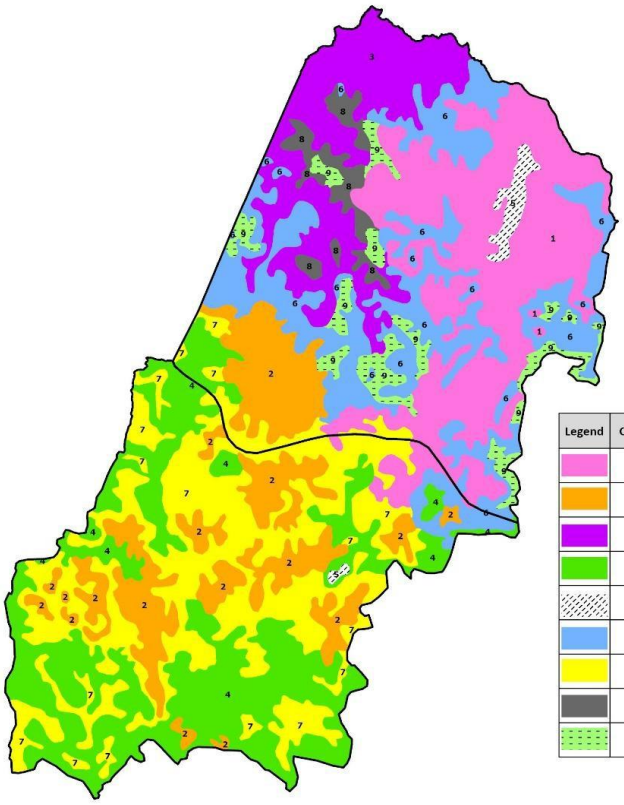


Figure 17: Soil profiles used for sampling across the NPP area

The resulting soil map of Uyanga Oil Palm Estate is presented shown in Figure 22 below. The soil quality assessment shows clear seasonal variations in key parameters. During the dry season, soils were acidic, with a mean pH of 4.30 (range: 3.80-5.80), falling below NESREA limits, whereas wet season pH values for both topsoil and subsoil (6.24-6.25) were within acceptable standards. Dry season soil organic carbon ranged from 0.30% to 2.42%, with an average of 0.97%, while no wet season organic matter data were available. Mean nitrogen concentration during the dry season was low at 0.10%, increasing to 0.167% in both topsoil and subsoil during the wet season. Phosphorus levels in the dry season varied widely (0.44-12.57 ppm; mean 3.10 ppm), compared to relatively low and uniform wet season values (0.672-0.673 mg/kg). Exchangeable cations during the dry season were generally low, with mean values of 1.03 cmol/kg for calcium and ≤0.31 cmol/kg for magnesium, potassium, and sodium, while wet season results showed higher concentrations of calcium, magnesium, and potassium in both topsoil and subsoil.



Legend	Code	USDA Soil Classification	FAO or WRB Equivalent Classification	Ha	%
	1	Kandiudox (Granite Acid Igneous Phase)	Haplic Nitisol or Kandi Nitisol	1569.53	18%
	2	Kandiudox (Metamorphic Phase)	Haplic Nitisol or Kandi Nitisol	1076.98	13%
	3	Kandiudox (Sedimentary Phase)	Haplic Nitisol or Kandi Nitisol	836.63	10%
	4	Udorthents (Shallow Sandy/Metamorphic Phase)	Dystric Regosols	1620.31	19%
	5	Acrudox (Granite Igneous Phase)	Geric Ferralsol	76.50	1%
	6	Kandiudult (Acid Igneous)	Haplic Acrisols (Acid Igneous)	1245.19	15%
	7	Hapludult (Acid Igneous/Metamorphic Schist	Haplic Acrisols (Acid Igneous/Metamorphic Schist Stones)	1656.07	19%
	8	Kandiudult (Sedimentary Phase)	Haplic Acrisols mixed with Haplic Ferralsol	175.31	2%
	9	Kandiudult (Older Alluvium)	Haplic Acrisols (Older Alluvium)	298.24	3%
				8554.78	100%

Figure 18: Soil survey map for proposed Uyanga Oil Palm Estate

Section 7: Greenhouse Gas (GHG)

Date of Assessment: 19th June, 2026

Name of Assessor: Clement Obeng-Manu

Assessor Designation and Company: Geospatial Data Scientist, Proforest, Ghana

Methodology

The methodology comprised of a comprehensive desktop review of relevant documents with the application of the latest version of the RSPO New Development GHG Calculator, the prescribed tool under the RSPO New Planting Procedure (NPP) for estimating greenhouse gas emissions and sequestration associated with new oil palm developments. Four scenarios were modelled to ensure that the analysis captured a range of possible development pathways. These scenarios are:

- Scenario 1 (S1): assumes that the entire area of the concession will be converted to oil palm. This represents the maximum option for development, with all identified land classes used for planting. This scenario provides the highest production potential and generates the maximum greenhouse gas emissions due to extensive land use change and minimal conservation.
- Scenario 2 (S2): assumes baseline case where no additional land is developed beyond the existing oil palm area (3.01 ha). It shows what the emissions would look like if the concession remains largely undeveloped, with only current oil palm areas maintained.
- Scenario 3 (S3): assumes only selected portions of the concession are developed into oil palm, while conservation and community use areas are preserved. This scenario balances oil palm development with environmental and social safeguards to reduce net emissions.
- Scenario 4 (S4): assumes the development of selected areas, including community lands, but ensures that conservation areas are fully protected. The scenario represents a compromise between production expansion and conservation commitments while maintaining biodiversity and carbon storage areas.

Each scenario was systematically modelled, and the outputs analysed to quantify the projected emissions and sequestration. The scenario that best aligns with RSPO's requirement of minimizing net greenhouse gas emissions while balancing production objectives with environmental and social safeguards was identified by comparing the results of the scenarios.

Findings

The main sources of emissions that were identified are:

- Land-use change,
- FFB transport fuel consumption, and
- Fertilizer usage.

The concession area does not contain peatlands and is largely composed of mineral soils. Hence, no emissions are anticipated from the potential decomposition of peat. The soil analysis also confirmed the absence of peat and this strengthens BPL's compliance with RSPO's no-peat development requirement. The desk-based study indicates that the NPP area consists of approximately 94% rubber plantation, 2% open land, and 4% of agriculture area. The current vegetation has moderate carbon sequestration potential. Hence, conversion of the NPP area

to oil palm is expected to yield a net gain in carbon stock over time.

The High Conservation Value (HCV) areas identified after the approval of the Integrated HCV-HCSA Assessment included recommendations to conserve these zones for biodiversity and community values. The HCV areas delineated are not forest areas, and therefore do not contribute to immediate carbon sequestration offsets in the GHG calculator. However, their long-term protection and management, including enrichment planting with native trees, will enhance the carbon sequestration potential of the landscape, while also safeguarding ecological and social functions.

Results of Scenario Analysis and GHG Estimation

Each scenario shows a distinct land-use plan option that ranged from development of the full concession to partial development of the concession while protecting the conservation areas. Table 24 summarizes the land cover distribution, proposed development area, and conservation commitments under each scenario.

Table 24: Characteristics of the different scenarios used for the estimation of GHG emission

	Scenario 1	Scenario 2	Scenario 3	Scenario 4
Concession lease area (ha)	8555.3	8555.3	8555.3	8555.3
Rubber (ha)	7999.60	7999.60	7999.60	7999.60
Waterbody (ha)	51.26	51.26	51.26	51.26
Agriculture/fallow (ha)	316.35	316.35	316.35	316.35
Built up/open area (ha)	185.08	185.08	185.08	185.08
Oil palm (ha)	3.01	3.01	3.01	3.01
Set aside area for conservation (ha)	0.00	0.00	663.06	663.06
Percentage of conservation area (%)	0.00	0.00	7.75	7.75
Land in hectare cleared for other use (%)	0.00	0.00	0.00	0.00
Proposed development (ha)	8504.04	3.01	7892.24	7892.24
Percentage of proposed development area (%)	100.00	0.04	92.25	92.25
Total planted area (ha)	8504.04	3.01	7892.24	7892.24
Percentage of planted area (%)	100.00	0.04	92.25	92.25

Table 25 presents the results of the carbon emissions per the four different scenarios

	Scenario 1 tCO_2e	Scenario 2 tCO_2e	Scenario 3 tCO_2e	Scenario 4 tCO_2e
Land clearing	88,476.15	26.17	82,621.98	82,621.98
Crop sequestration	-79,612.55	-28.17	-73,885.05	-73,885.05
Fertilisers	5,423.33	1.92	5,033.17	5,033.17
N_2O	5,086.96	1.80	4,720.99	4,720.99
Field fuel	1,857.28	0.66	1,723.67	1,723.67
Peat	0.00	0.00	0.00	0.00
Conservation credit	0.00	0.00	0.00	0.00
POME	26,670.97	9.44	24,752.20	24,752.20

Mill fuel	161.32	0.06	149.71	149.71
Purchased electricity	0.00	0.00	0.00	0.00
Credit (excess electricity exported)	0.00	0.00	0.00	0.00
Credit (sale of biomass for power)	0.00	0.00	0.00	0.00
Field emission & sinks	**21,231.17**	**2.37**	**20,214.76**	**20,214.76**
	Scenario 1 tCO_2e	**Scenario 2 tCO_2e**	**Scenario 3 tCO_2e**	**Scenario 4 tCO_2e**
Mill emissions & credit	**26,832.29**	**9.50**	**24,214.76**	**24,214.76**
Total emissions (field and mill)	**48,063.46**	**11.87**	**45,116.68**	**45,116.68**

Scenario 3 is recommended as the preferred development pathway for the Uyanga Estate. On GHG performance, Scenarios 3 and 4 return the same result: 45,116.68 t CO_2e in total emissions. Both conserve the HCV areas, and both develop the concession under the same emissions profile. Emissions do not distinguish between the two, so the choice comes down to land-use efficiency and risk. Scenario 3 reaches this result while disturbing less land. It excludes community-use areas from the development footprint rather than converting them to oil palm, whereas Scenario 4, once its land-use inputs correctly reflect the inclusion of community land, would clear more land for the same emissions and production outcome. Scenario 3 delivers the same GHG and yield results at a lower land-conversion cost. Also, Oil palm development commits land for the length of a planting cycle, well over twenty years, and that commitment is not easily undone. Between the two scenarios with identical emissions, the one that commits less land was selected as the sustainable option.

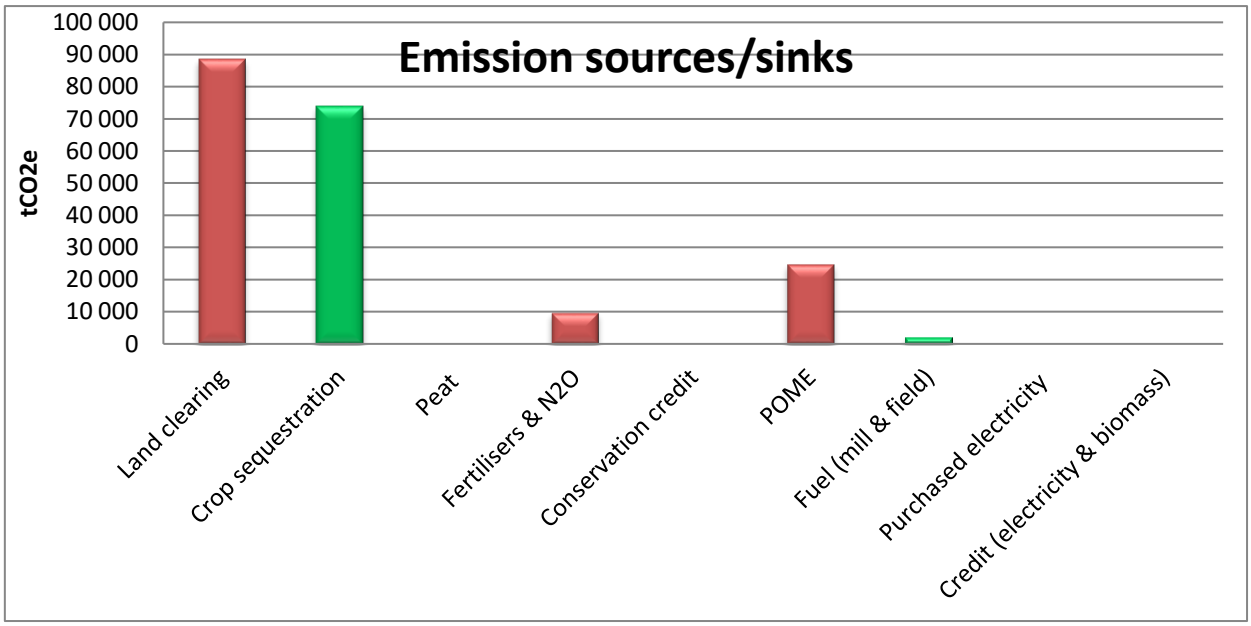


Figure 19: Expected field emission from the proposed development in Scenarios 3

No High Carbon Stock (HCS) forest was identified within the NPP area during the assessment. Hence, the conservation areas do not contribute to immediate carbon sequestration credits in the GHG calculator. However, their long-term protection and management, including enrichment planting with native trees, will enhance the sequestration potential of the landscape by maintaining ecological integrity, supporting biodiversity, and allowing gradual biomass accumulation over time. By conserving and enhancing the HCV areas, BPL demonstrates compliance with RSPO's requirements for responsible development by ensuring that non-forest conservation areas contribute to climate mitigation actions, water protection, and community values. It appears

that, the oil palm development will contribute to sequester more carbon than the current vegetation in the conservation areas. Studies have shown that there is considerable carbon sequestration potential in oil palm plantations if the plantations are established on land with modest carbon content such as degraded forest or agricultural land, and not on land with pristine or mature forest.

Emissions from fertiliser application represent the second largest source of greenhouse gases on the plantation, contributing 5,033.17 tCO_2e under both Scenario 3 and Scenario 4. Fertiliser applications will be guided strictly by evidence-based agronomic practice rather than routine or blanket applications. All fertilizer use must be justified through periodic soil and leaf (tissue) sampling, ensuring that nutrients are applied only where a genuine deficiency has been identified. This data-driven approach helps avoid over-application of fertilizer, which not only increases emissions but also raises input costs and risks nutrient runoff into surrounding ecosystems. Application of fertilizer will also be carried out exclusively by trained staff operating under the direct supervision of management to ensure consistency, accuracy, and adherence to recommended dosages and timing.

To minimize emissions from the transportation of FFB, BPL will ensure the use of trucks that are fuel efficient and large enough to minimize the number of trips. Also, additional measures including regular and scheduled maintenance of vehicles, will be put in place to maintain fuel efficiency. Furthermore, appropriate measures will also be taken to ensure road planning, design, and construction, minimize travel distance between harvesting sites and the processing mill to reflect industry practice of sitting mills close to plantations to cut down transit time and reduce the risk of spoilage before processing. It is recommended that BPL develop and implement a road maintenance programme that keeps roads in good condition year-round.

Section 8: Land Use Change Analysis (LUCA)

Date of RSPO approval as satisfactory: 4th February, 2026

Name of Assessor: Stephen Doso Jnr, Proforest Team

Assessor Designation and Company: Deputy Director, Proforest

Methodology

The LUCA was carried out in accordance with the RSPO requirements, using the guidance on land cover assessment for each recommended cut-off date. The specific cut-off dates are to ensure that any land that is used for new plantations adheres to sustainable standards for land management and forest conservation. These reference cut-off dates for the LUCA are important as they help to determine if any land clearing occurred in violation of RSPO requirements.

Below are the RSPO-required reference dates:

- November 1, 2005 (primary forest cut-off) – is the date that corresponds to RSPO's baseline for forest conservation. Any land clearing that results in the loss or degradation of primary forest after this date is considered non-compliant according to the RSPO standards. The conversion before this date is not classified as liability, as it predates the RSPO's sustainability framework cut-off date.

- November 15, 2018 (HCV/HCS forest cut-off) – is the date that corresponds to the implementation phase of the updated RSPO Principles and Criteria (2018) to strengthen the protection of identified High Conservation Value (HCV) and High Carbon Stock (HCS) forests. Any conversion that occurred and resulted in the degradation or destruction of any identified HCVs or HCS forest after this date is not permitted and classified as non-compliant and cannot be certified under RSPO. As it concerns HCVs and the HCS forest, this cut-off date is to make certain that any new development that occurs will ensure environmental and social integrity, as well as avoid destruction of any areas of ecological significance.

- other reference dates – in addition to the cut-off dates stated above, other images, including 1st November 2007 and May 9, 2014, are used to ensure temporal accuracy of the process, monitor and track gradual changes that may have occurred between 2005 and 2018. These other reference cut-off dates help to identify when any conversion of land occurs, especially when there are data gaps or cloud cover from the other RSPO cut-off dates.

- current land cover – the current land cover of the assessment area to help identify what is currently present in the AA. Although this is not part of the official RSPO cut-off date, it provides an indication of recent spatial information for evaluating the NPP area. It also helps to confirm whether any land cover changes have occurred after the 2018 cut-off date. With this date, LUCA captures the historic and current land cover of the NPP area.

The LUCA was structured on a series of analytical steps which included a desk study, satellite image acquisition, image pre-processing, land cover classification, change detection, and statistical analysis. Satellite imagery was acquired from Landsat and Sentinel 2 based on factors such as cloud cover and spatial resolution to ensure the best image available. The analysis conducted considered the dates stated above or the closest available dates

with suitable remote sensing data. The methodological workflow used is presented in Figure 24 below.

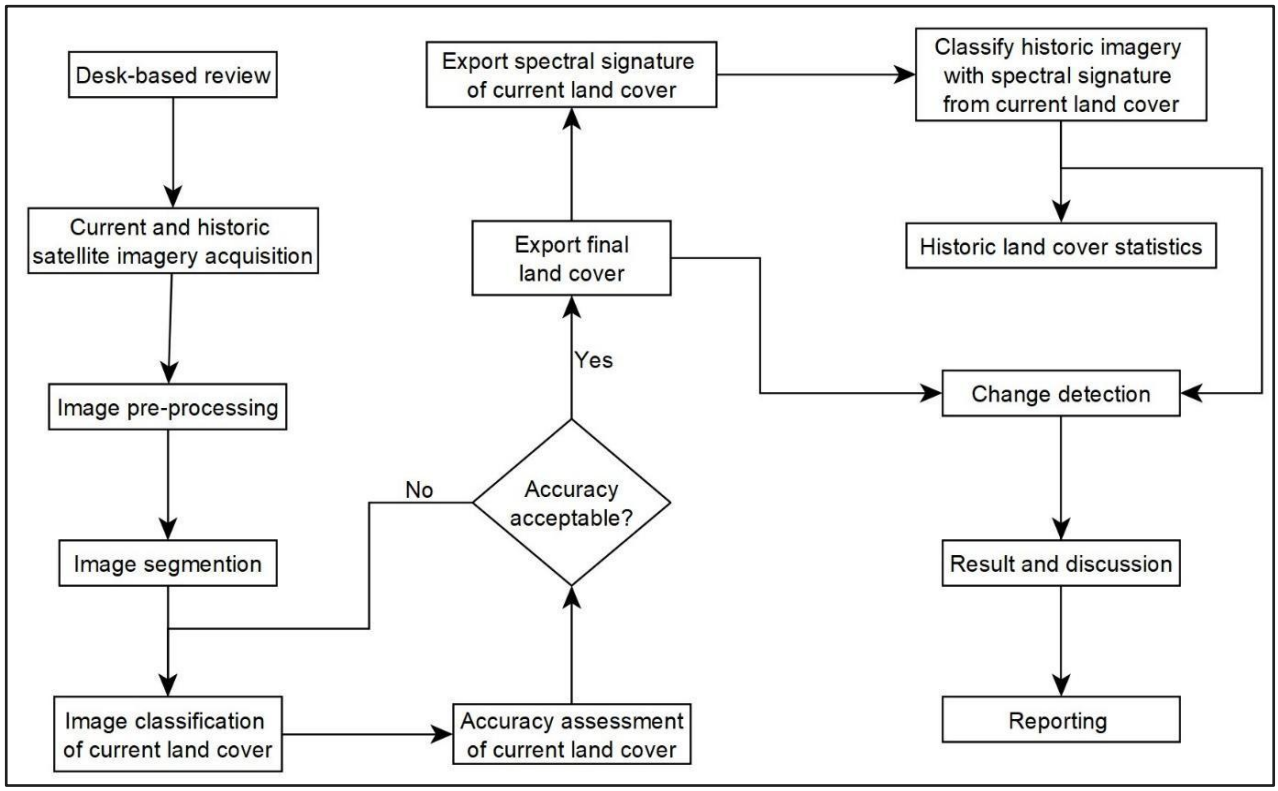


Figure 20: Summary of workflow implemented for the LUCA

The analysis conducted considered the dates stated above or the closest available dates with suitable remote sensing data.

Desk-based review

The Proforest team requested and conducted a comprehensive review of relevant documentation, which included land tenure reports, land lease documents, and satellite imagery. This step was essential to validate the land ownership and usage rights and ensure the accuracy of the spatial and legal information of the assessment area.

Current and historic satellite image acquisition

Level 2 Landsat and Sentinel-2 satellite imagery were acquired from the United States Geological Survey and Copernicus Browser, respectively, using the assessment area as the boundary and the RSPO cut-off dates. Level 2 satellite imageries were obtained because they provided satellite imageries that are geometric, atmospheric and topographically corrected. This reduced the volume of pre-processing that is required, as the only additional pre-processing performed was masking the assessment area to optimize processing efficiency. The imagery sources and their respective acquisition dates are presented in Table 26 below.

Table 26: Imagery sources and their respective acquisition dates

Date	2005-01-13	2007-01-19	2009-12-26	2014-01-15	2018-12-31	2025-08-01
Resolution	30 m	30 m	30 m	30 m	10 m	10 m

Source	United States Geological Survey	Copernicus Browser

The NPP area was used to mask the satellite area, reducing the processing time required. A false color composite was created for these satellite images. Maps of the satellite imagery used for the 2018 and 2025 are presented in Figure 26 below.

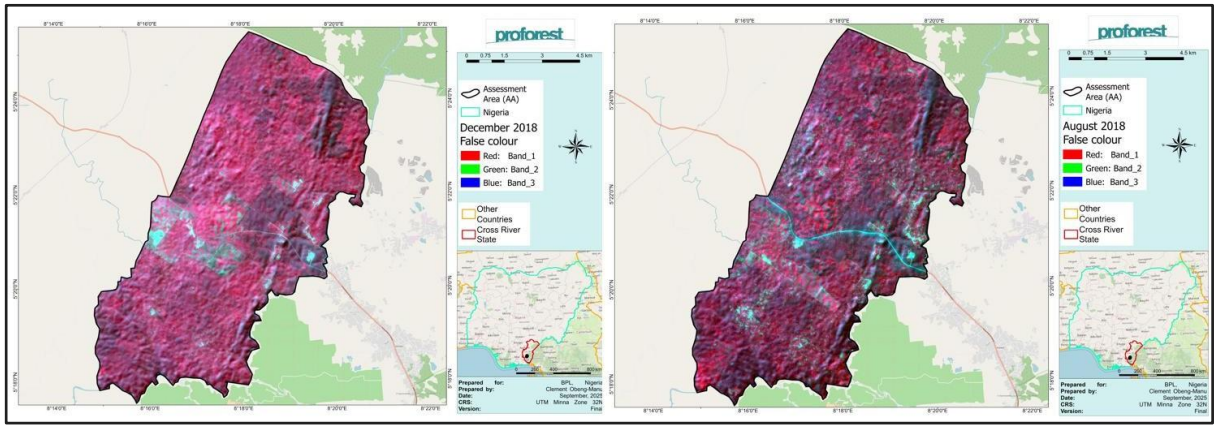


Figure 21: Input used for the 2018 and 2025 satellite image classification

Image segmentation

After the image pre-processing step, image segmentation, which involved creating image objects from the pre-processed satellite imagery, was carried out. The image segments were created using the mean shift segmentation algorithm in ArcGIS Pro, which is a process widely used in object-based image analysis (OBIA) (Blaschke, 2010). The mean shift segmentation algorithm integrates both spectral and spatial properties of pixels to create homogeneous image objects that produce segments that represent real-world features than traditional pixel-based approaches. The mean shift algorithm produces better results than the traditional pixel-based approach because it uses a non-parametric clustering approach that does not depend on predefined assumptions regarding the number or structure of clusters in the data (Comaniciu & Meer, 2002). The non-parametric approach iteratively repositions data points toward the densest zones of the feature space to efficiently identify any natural groups within the imagery. This is what makes OBIA using the mean shift algorithm principally effective for spatial analysis, such as land-cover classification and environmental monitoring, where identification of spatial boundaries is essential (Zhang et al., 2015).

For this analysis, the false color composite (near infra-red, green, and red bands) was used as input for the image segmentation. The false color composite using these bands was essential as these bands store information that are useful for vegetation analysis, as they help in the identification of vegetated and non-vegetated surfaces (Lillesand et al., 2015). During the image segmentation, a trial-and-error approach was used to identify the optimal segmentation parameters for each satellite imagery. After identifying the optimal parameters for each satellite imagery, the parameters were applied to the satellite imagery. For each set of parameters tested, the resulting image objects were visually inspected to assess how well they identified and extracted the boundaries of the features. The iterative improvement of the image objects is a standard practice in OBIA workflows, and it is aimed at ensuring a balance between over-segmentation and under-segmentation (Drăguţ et al., 2010). Below are the parameters used for each satellite imagery (Table 27).

Table 27: Parameters used for the respective satellite imageries

Segmentation parameters	Satellite imagery date					
	Nov. 2005	Nov. 2007	May 009	May 2014	Nov. 2018	Aug. 2025
Spatial detail	18	18	20	20	20	20
Spectral detail	17	17	17	20	18	20

Land cover classification

Current land cover classification (August 2025 satellite imagery)

The image segments were used as input for the image classification. The image classification was carried out in ArcGIS Pro 3.5 using the Iterative Self-Organizing (ISO) Cluster Unsupervised Classification algorithm, which integrates the ISO clustering approach with the Maximum Likelihood Classification (MLC) method. This combined approach was selected because it enables the automatic grouping of pixels or image objects into statistically similar clusters, which can then be interpreted as land cover classes. Unsupervised classification was considered appropriate because it prevents the overestimation of minor land-cover classes by allowing the algorithm to detect natural groupings of the image objects based solely on their spectral characteristics, without introducing bias from predefined training datasets. This was essential as the assessment area is predominantly a rubber plantation (Lillesand et al., 2015).

The classification was applied to the segmented raster dataset, derived from pre-processed remote sensing imagery. The classification was set to generate 25 classes, providing sufficient thematic detail to capture spectral variability across the landscape. A threshold of 10 pixels was defined, ensuring that very small, spectrally distinct pixel groups were merged into the nearest larger class, thereby minimizing noise. A value of 5 was specified, meaning every fifth pixel in the input raster was used for clustering, balancing computational efficiency with accuracy. The algorithm iteratively assigned pixels to clusters based on spectral similarity, refining class boundaries until convergence was achieved.

The resulting 25 spectral classes were subsequently interpreted by recoding and aggregating the spectral signatures into meaningful land cover categories. Through this interpretative step, the 25 spectral clusters were consolidated into a set of meaningful land cover classes, which included categories such as rubber plantation, agriculture, water, and open land/built up. The definitions and characteristics of each landcover class are presented in Table 28 below.

Table 28: Description of landcover classes

Land cover class	Description
Rubber plantation	Areas under monoculture rubber cultivation, typically characterized by uniform tree spacing, regular canopy structure, and distinct spectral signatures associated with managed plantations. Rubber plantations were identified as significant land use areas.

Agriculture	Comprise mixed cultivation plots that support food crops and subsistence farming. These areas are often spatially fragmented, interspersed with patches of fallow land or secondary regrowth.
Shrub	An area that is predominantly comprised of shrubs. The vegetation cover is sparse
Water	Includes rivers, streams, and other surface water bodies present within the AoI. Water is spectrally distinct from vegetated or built-up areas, typically appearing dark in both visible and near-infrared bands due to strong absorption.
Open land/built up	This includes non-vegetated land areas, including settlements, roads, bare soil, and cleared areas. These classes were grouped under a single class because of their shared functional role as non-vegetated surfaces within the AoI.

Ground-truthing of land cover classification

Reconnaissance

Before conducting ground truthing, initial surveys and exploratory walks and rides were carried out across the landscape to observe the ecological and physical characteristics of the landscape. These activities provided an overview of vegetation patterns, terrain conditions, and potential environmental pressures. The findings from these preliminary surveys helped the team to better plan the ground-truthing activities, allowing for the identification of potential hazards, logistical considerations, and measures to mitigate risks during fieldwork.

Land cover verification

Ground-truthing was conducted to validate the preliminary land cover classifications derived from satellite imagery. This process is essential for ensuring that remote-sensing interpretations accurately reflect on-the-ground conditions and for providing a reliable foundation for the HCV-HCSA assessment. Sampling locations were determined based on the preliminary classification to ensure coverage across different vegetation types. While 220 sampling points were originally planned, a total of 316 points were ultimately visited during the fieldwork. This increase was due to several factors, including the need to capture additional data in areas where preliminary classifications showed uncertainty, to cover heterogeneous patches more thoroughly, and to take advantage of accessible locations that provided valuable verification data. Expanding the number of sampled points improved the robustness of the ground-truthing process, enhanced the accuracy of the land cover validation, and ensured a more comprehensive representation of the landscape for the HCV-HCSA assessment.

At each verification point, detailed observations were recorded, including vegetation type, photographs (North, South, East, West, and Canopy) and GPS coordinates were captured to support accurate mapping and documentation (see Annex 6). The ground-truthing data were systematically compiled and used to refine the preliminary land cover maps, improving the accuracy of spatial representations of different vegetation types and potential HCV/HCS areas. In addition, this information was subsequently helpful in designing the environmental and biodiversity surveys. Deviations from planned sampling points and any field challenges encountered were recorded to ensure transparency.

Post-processing: improving the land cover classification

The land cover classification was refined through the integration of multiple datasets and field-based observations. The improvements were guided by the ground-truthing points collected during the field verification visit. Approximately 16% of the 316 ground-truthing points (52 samples) were applied directly to refine the classification outputs, providing data for calibration to correct any misclassifications (especially for agriculture) as well as validating the spectral signatures. Also, the road networks that were mapped were incorporated to improve the delineation of built-up and open land areas, ensuring that infrastructure was not misclassified. These steps were critical as they incorporated knowledge base into the land cover classification.

Improving the preliminary landcover classification involved a systematic review of the output against field observations. Misclassified spectral profiles were reassigned to their correct land cover categories. For instance, areas initially confused between agriculture and rubber were corrected using field verification data, while water and open land/built-up classes were consolidated with high reliability through reference to ground-truth points and company records. By combining the initial landcover classification with the field-verified data and road network, the classification was significantly improved. This integrated approach ensured that the final land cover more accurately represents the land cover dynamics as well as the spatial distribution of the classes. A map of the final land cover is presented in Figure 26 below.

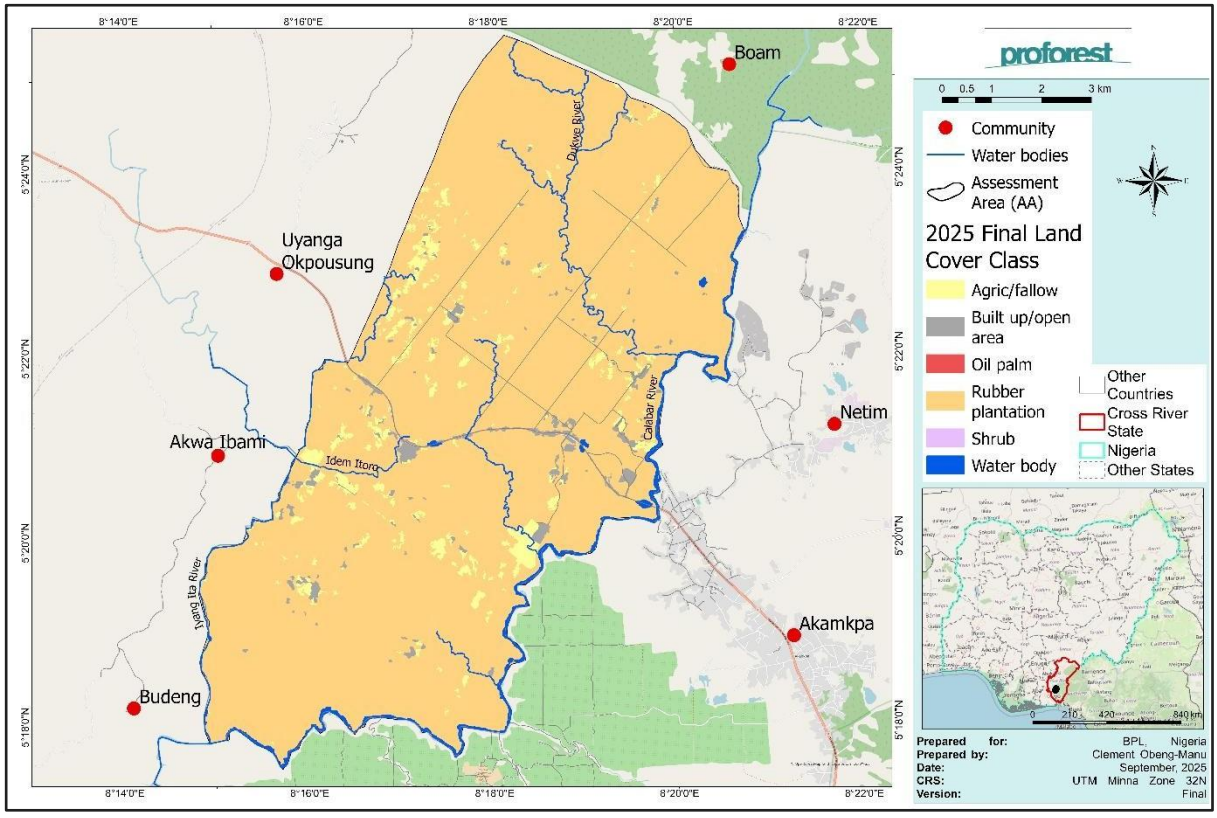


Figure 22: Final land cover classification

Statistics of the current land cover

The result of the final landcover classification shows that the AA is dominated by rubber plantation, which covers about 7,999.60 ha (93.53%) of the total AA. This reflects the industrial-scale plantation footprint within

the AA, as observed during the fieldwork. Other land cover classes occupy comparatively smaller proportions of the area. Agriculture/fallow land accounts for 316.35 ha (3.70%), while built-up/open areas cover 185.08 ha (2.16%). Water bodies make up 51.26 ha (0.60%), providing critical hydrological and ecological functions despite their limited spatial extent within the boundary of the assessment area. The oil palm plantation represents a minor component of the NPP area, covering only 2.34 ha (0.04%) as shown in Table 29 below.

Table 29: Statistics of the final landcover classification

Landcover class	Area (ha)	Percentage coverage
Water body	51.26	0.60%
Built-up/open area	185.08	2.16%
Agriculture/fallow	316.35	3.70%
Rubber plantation	7,999.60	93.50%
Oil palm plantation	3.01	0.04%
Shrub	0.00	0.00%
Total	**8555.31**	**100.00%**

Accuracy assessment

The remaining 264 validation points (out of 316 of which 52 were used for improving the preliminary land cover classification) collected during the ground truthing were across the four dominant land cover classes identified within the AA, with 80 points for built-up/open land, 68 points for rubber plantation, 101 points for agriculture, and 15 points for water bodies. This distribution ensured that all key classes were represented in the validation dataset, although the relatively lower number of samples for water reflects its limited spatial extent within the AoI. Agriculture/fallow had the lowest producer and user accuracy during the accuracy assessment of the preliminary landcover. Hence, more samples were collected for this class to address this limitation and improve confidence in the representation of agriculture.

The accuracy assessment resulted in an overall accuracy of 89.02%, which exceeds the minimum accuracy threshold of 80% mentioned in the 2023 HCV-HCSA Assessment Manual. This indicates that the final landcover classification demonstrates strong performance across the four mapped classes: rubber, agriculture/fallow, water, and open land/built-up. Rubber shows a user accuracy of 89.71% and a producer accuracy of 83.56%, indicating that most reference rubber samples were correctly identified, with only limited misclassification into agriculture. Agriculture also was reliably identified, with 88.12% user accuracy and 83.96% producer accuracy, though some overlap with rubber was observed. The water class demonstrates the highest accuracy, achieving 100% producer accuracy and 86.67% user accuracy, confirming that all pixels classified as water were indeed water in the reference data, with only minor omission errors. Similarly, open land/built-up exhibits strong classification performance, with both user and producer accuracies above 90% (100.00% and 90.00% respectively), confirming high reliability in detecting this class. Table 30 below shows the detailed confusion matrix obtained during the accuracy assessment.

Table 30: Accuracy assessment for final land cover classification

Landcover class	Rubber	Agriculture	Water	Open land/ Built-up	Total	Producer Accuracy

Rubber	61	7	0	0	68	89.71%
Agriculture	11	90	0	0	101	89.11%
Water	0	2	13	0	15	86.67%
Open land/ built up	0	8	0	72	80	90.00%
Total	72	107	13	72	264	
User accuracy	84.72%	84.11%	100.00%	100.00%		89.39% (Overall accuracy)

Historic land cover classification

As we aim to ensure consistency and comparability of the land cover classification across the multi-temporal dataset, the spectral signatures obtained from the current land cover classification (August 2025) were used as reference inputs for classifying the historic images. The spectral signatures provided a unique characteristic per land cover type within the assessment area. Due to the spectrally distinct and consistent nature of the spectral signature, they can be applied to classify the historic satellite imagery.

The spectral signatures were extracted from the output of the Iso Cluster classification, as they provide the spectral characteristics of each land cover within the feature space. After extracting the spectral signature, histogram matching and cross-year normalization were applied to the spectral signature to account for potential differences in illumination, atmospheric conditions, as well as sensor characteristics. These steps were essential to ensure that the historical imagery has a similar spectral signature to the 2025 reference spectral signature. The spectral signatures were then applied to the historic imageries, and each image object of the historic imageries was classified.

Using the spectral signature from August 2025 satellite imagery ensured that all the land cover classes were identified and mapped using the same spectral conditions and eliminated biased deviation across multiple years. This was a relevant step for the LUCA, where the land cover changes occurring need to be identified with or without classification bias and little or no temporal error. For a landscape that is dominated by rubber, which has similar spectral signature, this approach was essential as it helps avoid over-estimation of rubber and potentially leads to errors in the change detections.

Change detection

The process of identifying variations in a phenomenon's state by studying it at various time intervals is known as change detection. To gain a better understanding of such changes to make informed decisions, it is relevant to analyse and comprehend how anthropogenic activities affect the natural environment (Lu et al., 2004). Although advances made in remote sensing and technological advancement have enhanced the Land Use Land Cover Change Detection approach, having a thorough grasp of the assessment area or region, the satellite imagery system, as well as the different pros and cons of the various change detection algorithms, improves the change detection results.

Among the various land use change analyses available, the post-classification change detection approach was employed for this analysis, as it creates a matrix that illustrates land cover class transitions by comparing each pixel/object in the classified images. The post-classification approach gives a thorough grasp of the dynamics

and metrics, including the rate of change, percentage change, and total area of change. The post-classification approach can yield very reliable change detection results when land cover classification is representative of the assessment area. The approach also enables the examination of changes throughout a range of periods, from single-term research to multi-decadal analysis. It also provides thorough information on the kind and scope of land use changes, which is helpful when making decisions concerning environmental management.

Some of the advantages of the post-classification method that are relevant for the RSPO LUCA workflow are:

- determining if a change has occurred
- identifying the type of change that has occurred
- quantifying the actual extent of the change
- evaluating the spatial distribution of the change.

The post-classification change detection approach works by comparing two independently classified satellite images of different dates. As the satellite imagery is classified independently, one of the main benefits of the post-classification approach is reducing the radiometric calibration between the imagery of different dates (Coppin et al., 2004). The post-classification change detection used the land cover classification dated 2005, 2007, 2009, 2014, 2018, and 2025 as the input to identify how the changes in the land cover over time. The land cover change detection was carried out between 2005 and 2007, 2007 and 2009, 2009 and 2014, 2014 and 2018, 2018 and 2025.

2005 to 2007 change detection

The result of the change detection from 2005 and 2007 shows that the assessment area remained largely unchanged with minimal land cover changes. The dominant land cover was identified to be rubber plantation, covering about 95% of the assessment area between November 2005 and 2007. This aligns with the fact that the assessment area has been under rubber cultivation for decades. The results also show that about 114 ha of the rubber plantation was converted to agriculture/fallow. This gives an indication of a small-scale community use area. All the classes, however, remained very stable between these dates. The land cover classification and change detection indicate that no forest area was present either in November 2005 or November 2007. The 2005 to 2007 change matrix is presented in Table 31.

Table 31: 2005 to 2007 change matrix

2007 land cover							
2005 land cover	2005 - 2007 changes	Agric/falloff	Built up/open area	Oil palm	Rubber plantation	Water	**Total**
	Agric/fallow	99.29	0.00	0.00	0.00	0.00	**99.29**
	Built up/open area	0.00	181.71	0.00	0.00	0.00	**181.71**
	Oil palm	0.00	0.00	3.01	0.00	0.00	**3.01**
	Rubber plantation	114.25	0.00	0.00	8,105.79	0.00	**8,220.04**
	Water	0.00	0.00	0.00	0.00	51.26	**51.26**
	Total	**213.54**	**181.71**	**3.01**	**8,105.79**	**51.26**	**8,555.31**

2005 to 2007 change detection map is presented in Figure 28 below.

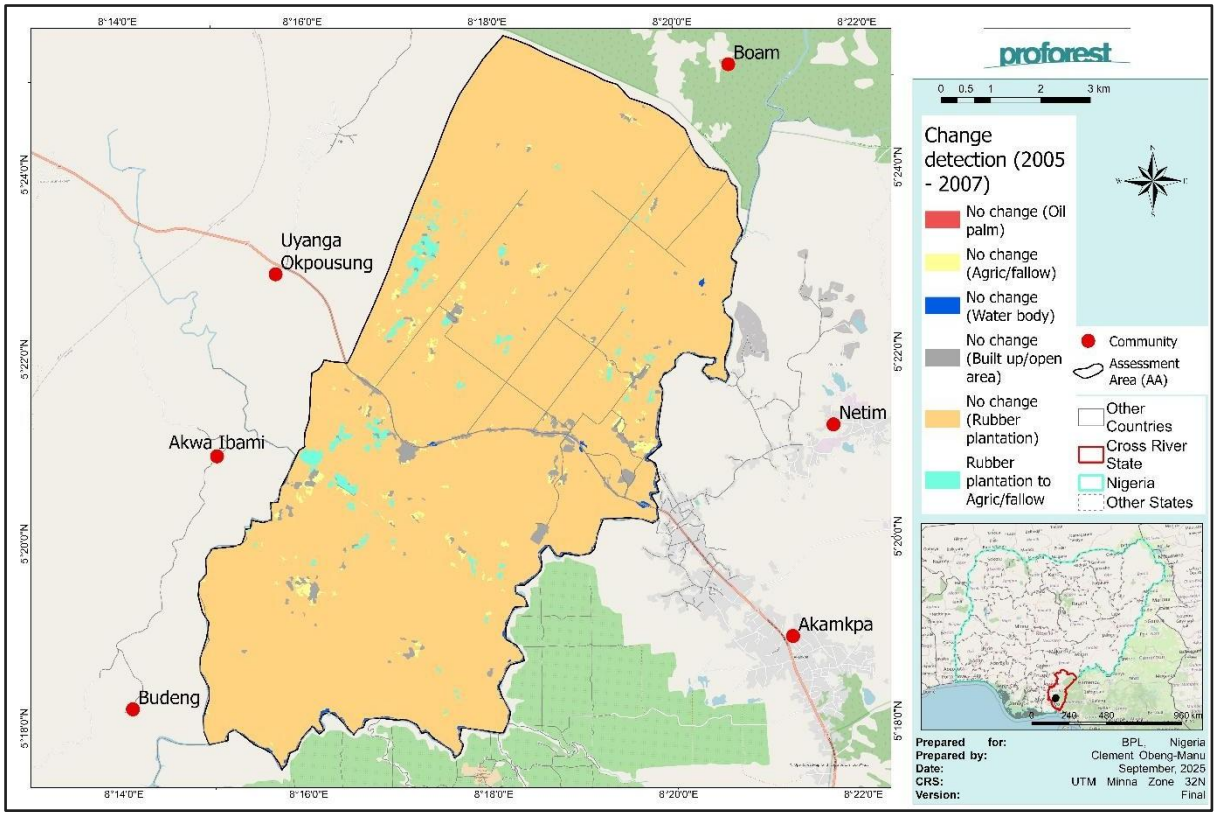


Figure 22: 2005 to 2007 land change detection map

2007 to 2009 change detection

The land cover change detection from 2007 and 2009 also indicates that the assessment area does not undergo any rapid changes and is consistent with the history of the assessment area. Similar to the 2005 to 2007 change detection results, the dominant land cover type present was identified to be rubber, which covers about 93% of the assessment area between 2007 and 2009. About 1.3% of the rubber plantation was converted to agriculture in 2009, and this may be attributed to community members increasing the farming area or a decline in some of the old rubber plantation areas. While the agricultural area increased, there was a small reduction in the rubber plantations, signifying an increase in the community use area for agriculture. The change matrix for 2007 to 2009 is presented in Table 32.

Table 32: 2007 to 2009 change matrix

2009 land cover							
2005 land cover	2007 to 2009 changes	Agric/fallow	Built-up/open area	Oil palm	Rubber plantation	Water	**Total**
	Agric/fallow	213.54	0.00	0.00	0.00	0.00	**213.54**
	Built-up/open	0.00	181.71	0.00	0.00	0.00	**181.71**

	area						
	Oil palm	0.00	0.00	3.01	0.00	0.00	**3.01**
	Rubber plantation	107.30	0.00	0.00	7,998.49	0.00	**8,105.79**
	Water	0.00	0.00	0.00	0.00	51.26	**51.26**
	Total	**320.84**	**181.71**	**3.01**	**7,998.49**	**51.26**	**8,555.31**

Figure 23 below shows the 2007 to 2009 change detection map.

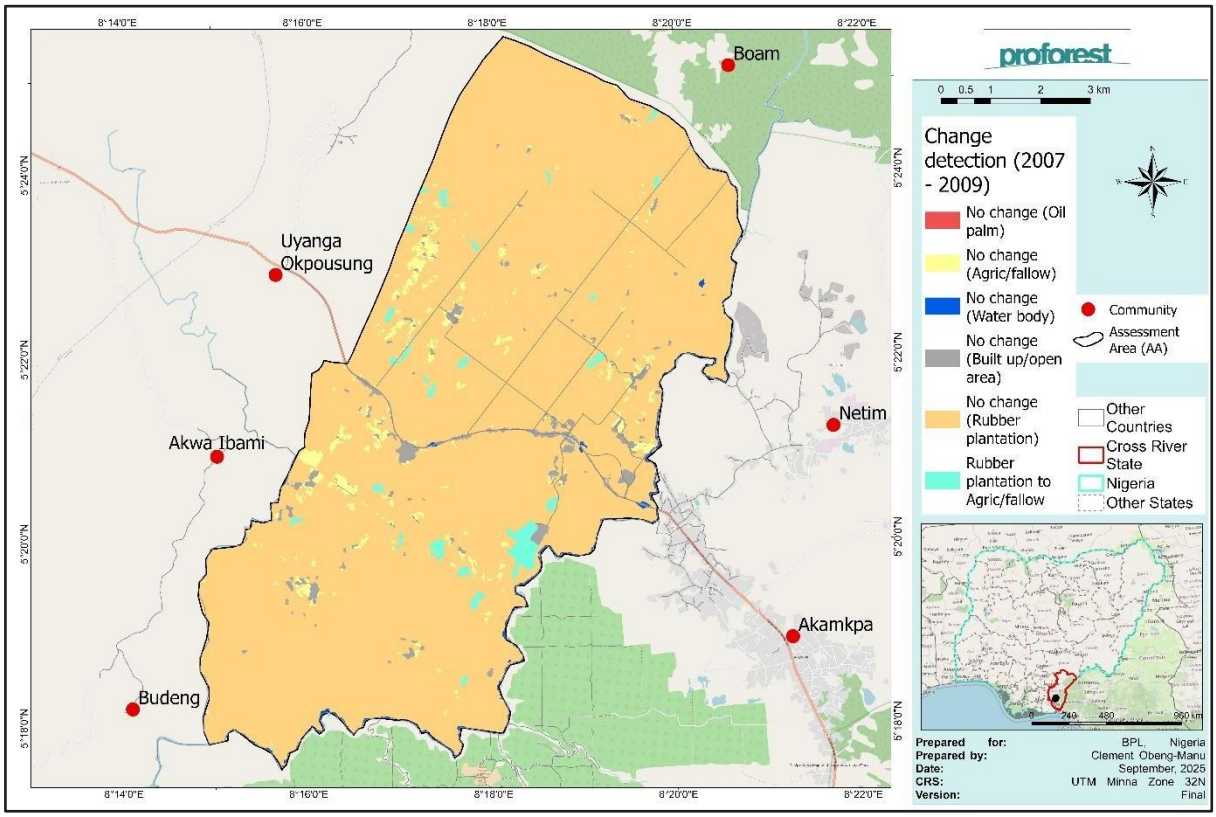


Figure 23: 2007 to 2009 change detection map

2009 to 2014 change detection

The 2009 to 2014 change detection also showed a land cover that is dominated by rubber, indicating that rubber is a stable land cover type within the assessment area. The dominant nature of the rubber plantation through the years reinforces the conclusion that the assessment area is a rubber plantation and has no forested areas within. The change matrix that shows the details of the changes between 2009 and 2014 is presented in Table 33.

Table 33: 2009 to 2014 change matrix

2014 land cover							
2009 land cover	2009 to 2014 changes	Agric/fallow	Built-up/open area	Oil palm	Rubber plantation	Water	**Total**

	Agric/fallow	213.54	107.30	0.00	0.00	0.00	**320.84**
	Built-up/open area	0.00	181.71	0.00	0.00	0.00	**181.71**
	Oil palm	0.00	0.00	3.01	0.00	0.00	**3.01**
	Rubber plantation	0.00	0.00	0.00	7998.49	0.00	**7,998.49**
	Water	0.00	0.00	0.00	0.00	51.26	**51.26**
	Total	**213.54**	**289.01**	**3.01**	**7,998.49**	**51.26**	**8,555.31**

While there was a reduction in the area for agriculture/fallow (from 320 ha in 2009 to 213 ha in 2014), built-up/open areas increased from 181 ha to 289 ha in the same time period. The reduction in agriculture/fallow may be attributed to the agricultural patterns, including allowing the fallow cycles, or reversion of marginal open areas to shrub vegetation or plantation understory cover. However, the increase in the built-up/open areas may be attributed to an increase in community activities, expansion of access roads, and clearing. Such activities are usually expected in plantations where settlements and infrastructure expand over time. Rubber, oil palm, and water body remained relatively unchanged (Figure 30).

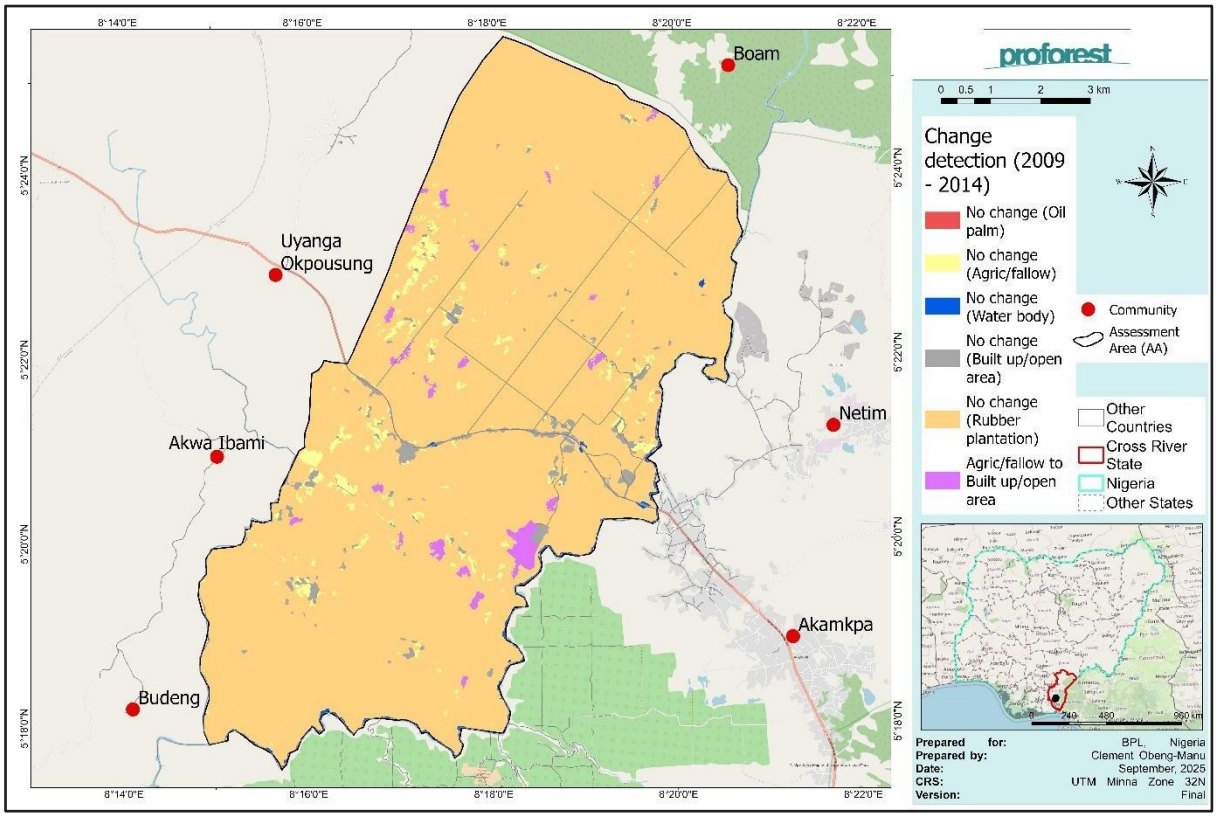


Figure 24: 2009 to 2014 land cover change map

2014 to 2018 change detection

Similar to the previous land cover and change result, the result of the land cover for 2014 and 2018 also has rubber plantation as the dominant land cover type, covering an area of 7998 ha in 2018 and 8088 ha in 2018. The increase in the area for rubber in 2018 can be attributed to replanting or the maturity of young rubber

within the assessment area that was carried out within the assessment area. There was a notable reduction in agricultural area which may be attributed to the new planting that was carried out, as those areas were identified to be farmland between 2009 and 2014. Also, the built-up/bare areas increased, reflecting the continued expansion of access routes and settlement. The detailed change matrix between 2014 and 2018 is presented in Table 34.

Table 34: 2014 to 2018 change matrix

	2018 land cover						
2014 land cover	2014 to 2018 changes	Agric/fallow	Built-up/open area	Oil palm	Rubber plantation	Water	**Total**
	Agric/fallow	102.06	21.56	0.00	89.92	0.00	**213.54**
	Built-up/open area	0.00	289.01	0.00	0.00	0.00	**289.01**
	Oil palm	0.00	0.00	3.01	0.00	0.00	**3.01**
	Rubber plantation	0.00	0.00	0.00	7,998.49	0.00	**7,998.49**
	Water	0.00	0.00	0.00	0.00	51.26	**51.26**
	Total	**102.06**	**310.57**	**3.01**	**8,088.41**	**51.26**	**8,555.31**

The results from the 2014 to 2018 land cover changes also reaffirmed the presence and stability of the rubber plantation and the absence of primary forest or natural ecosystems within the assessment area. These results support compliance with RSPO requirements with regard to historical land cover and land use conditions, as well as no deforestation or degradation. Figure 30 shows the change map between 2014 and 2018.

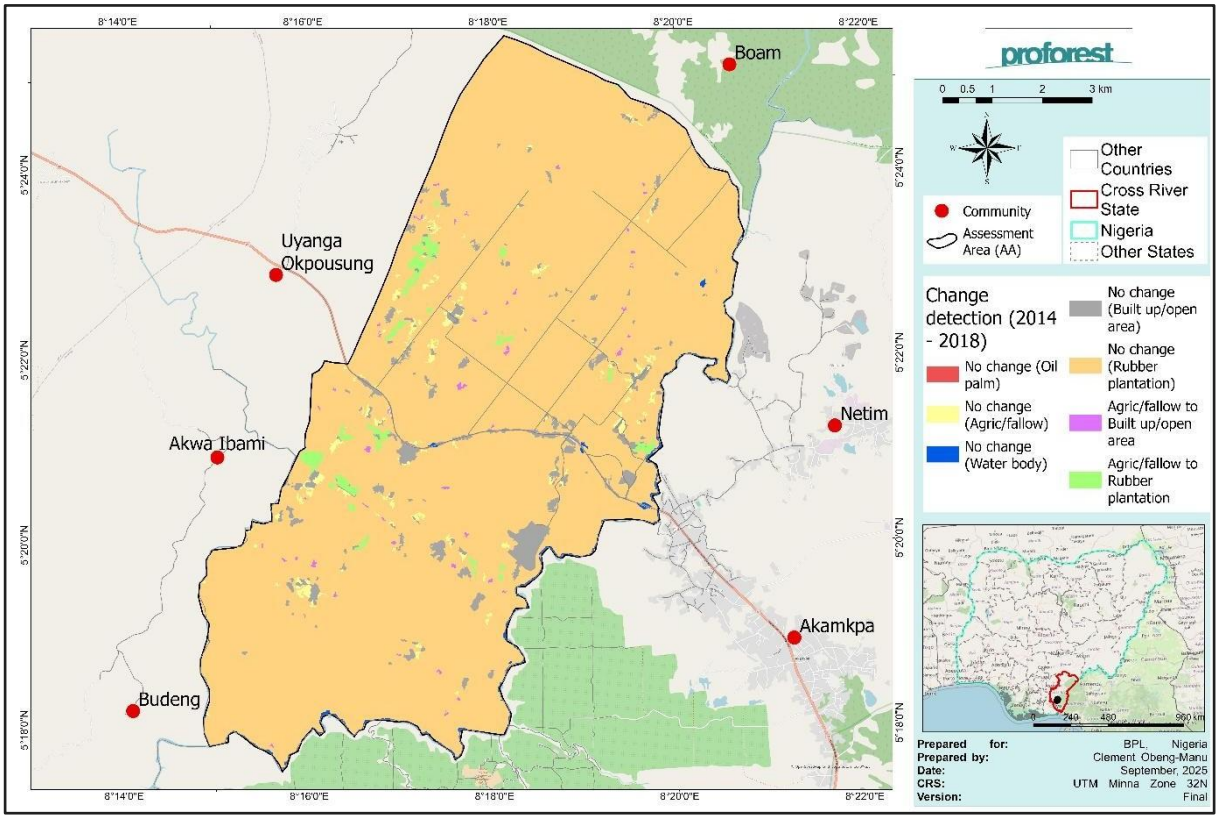


Figure 25: 2014 to 2018 land cover change map

2018 to 2025 change detection

Rubber continued to be the dominant land cover type between 2018 and 2025, although there was a decrease in area (from 8088 ha in 2018 to 7998 ha in 2025). The changes between 2018 and 2025 is presented in Table 35.

Table 35: 2018 to 2025 change matrix

2025 land cover							
2018 land cover	2018 to 2025 changes	Agric/fallow	Built up/open area	Oil palm	Rubber plantation	Water	**Total**
	Agric/fallow	102.06	0.00	0.00	0.00	0.00	**102.06**
	Built up/open area	125.49	185.08	0.00	0.00	0.00	**310.57**
	Oil palm	0.00	0.00	3.01	0.00	0.00	**3.01**
	Rubber plantation	88.81	0.00	0.00	7,999.60	0.00	**8,088.41**
	Water	0.00	0.00	0.00	0.00	51.26	**51.26**
	Total	**316.36**	**185.08**	**3.01**	**7,999.60**	**51.26**	**8,555.31**

The reduction in rubber can be attributed to an increase in farming activities due to the abandonment/non-

maintenance of the rubber plantation. A considerable increase was observed for agriculture/fallow as the area increased from 102 ha in 2018 to 316 ha in 2025. The increase in the agriculture/fallow area suggests an intensification of agricultural practice not only within the rubber areas but also within open areas.

Built-up/open areas reduced from 310 ha in 2018 to 185 ha in 2025, and this may be attributed to changes in settlement patterns as well as some open areas being used for farming. The result for 2018 to 2025 changes also indicates that there were no forests present within the assessment area or no natural ecosystems present. The land cover changes that were observed are changes that are common for any existing plantations and do not show any land cover changes that would contradict the RSPO requirements with regard to pre- and post-cutoff conditions. Figure 32 below shows the change map between 2018 and 2025.

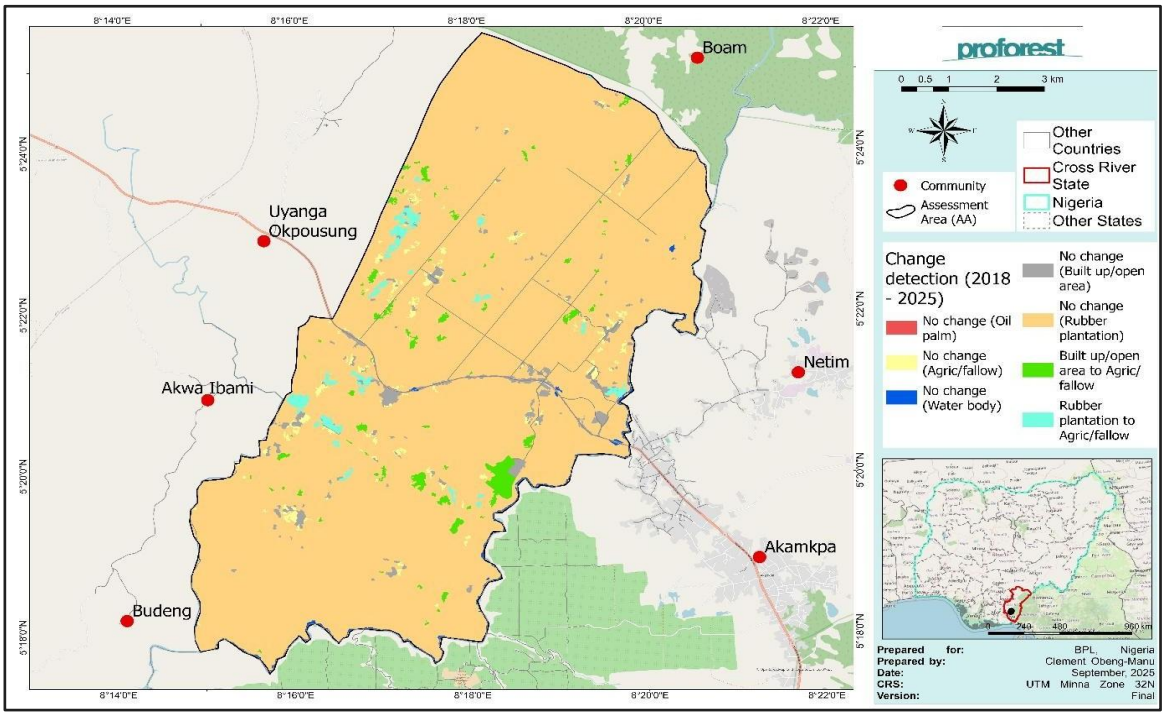
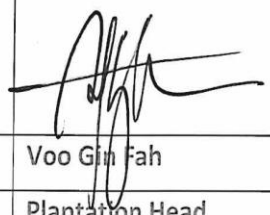


Figure 26: 2018 to 2025 land cover change map

Section 9: Conclusions

- As a subsidiary of Wilmar International Limited, a member of RSPO), BPL conducts its operations in line with national and international best practices as well as social and environmental sustainability requirements, including that of the RSPO.
- BPL has followed due diligence procedures in respect of wanting to develop the NPP Area under the RSPO NPP including demonstrating FPIC (from key stakeholders) to develop the land.
- As expected of agricultural land development projects, the proposed project will generate social and environmental impacts. These have been summarized in this report with key management and monitoring recommendations and mitigation measures detailed in the integrated management plan for implementation by BPL.
- Significant issues (also included in the integrated management plan) which the management of BPL need to follow up with to ensure the successful implementation of the project include:
  - Continuing engaging the affected communities and relevant interested stakeholders during the integrated management plan development, and throughout the project lifespan.

Management of BPL accepts and approves of the findings in this report which is a summary of various assessments including HCV-HCSA, SEIA, Soil and Topography Study, GHG and FPIC. The report will serve as an invaluable resource in guiding the Management of BPL to implement the project.	
Date of Completion	10 July 2026
Signature	
Name	Voo Gin Fah
Position	Plantation Head