RSPO

RSPO NOTIFICATION OF PROPOSED NEW PLANTING

This notification shall be on the RSPO website for 30 days as required by the RSPO procedures for new plantings (http://www.rspo.org/?q=page/535). It has also been posted on local on-site notice boards.

Date of notification:

Tick whichever is appropriate

√	This is a completely new development and stakeholders may submit comments.
	This is part of an ongoing planting and is meant for notification only.

COMPANY:	Equatorial Palm Oil
SUBSIDIARY (If any):	LIBINCO
Office Address:	Palm Bay Estate, District #4, Grand Bassa County, Republic of Liberia
RSPO Membership No.:	1-0040-07-000-00
Location of proposed new planting:	(New Cess, District #4, Grand Bassa County, Republic of Liberia (See Location map)
Geographical Location:	Latitudes 5°48'3" N and 5°53' N Longitudes 9°43'30" W and 9°51'30" W
New planting area:	1,570 hectares (phase 1)

Legal Documents/ Permits:

List Of Legal Document	Issue By And Through	Date And Code Number
Government of Liberia and LIBINC Oil Palm Inc. Ratified Concession Agreement	Republic of Liberia by Authority Ministry of Foreign Affairs Monrovia, Liberia	Approved May 22, 2008

ESIA Permit (13,961.61 ha)	Environmental Protection Agency of Liberia (EPAL)	certificate #:EPA/EC/EIS/001-0611 Renewal issued :October 10, 2013 Expiration: September 10, 2015
Import permit for plants or other goods governed by the Phytosanitary Regulation	Ministry of Agriculture (MOA)	RL/ NOES -012612 January 26,2012
Memorandum of Understanding	Management of LIBINCO and Affected Citizens and People of District #4, Grand Bassa County	October 13, 2012

Figure 1: Location of project in Liberia

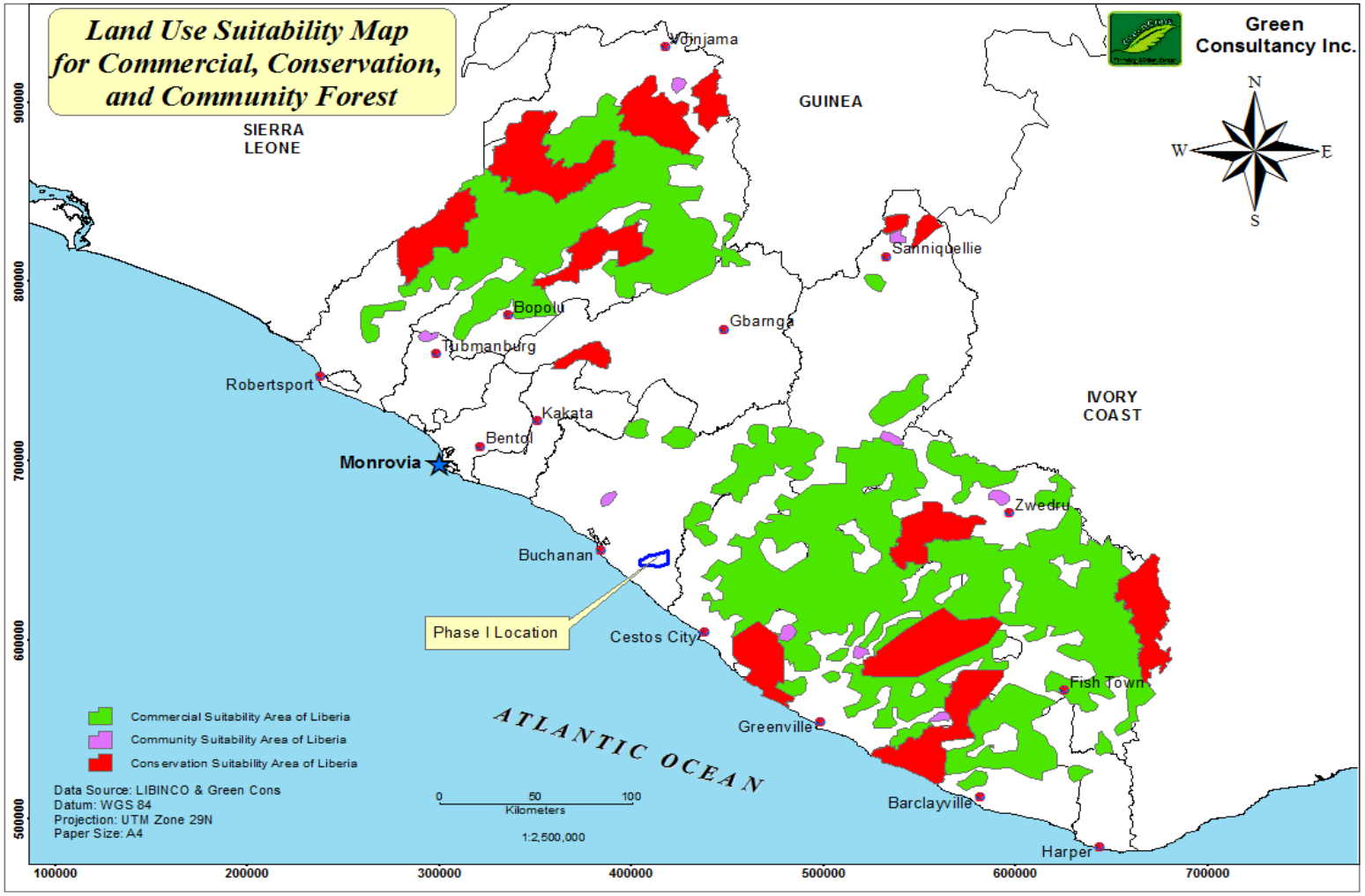


Figure 2: Location map of LIBINCO Phase 1 planting area (New Cess District #4,), Grand Bassa County, in reference to large landscape protected areas of Liberia

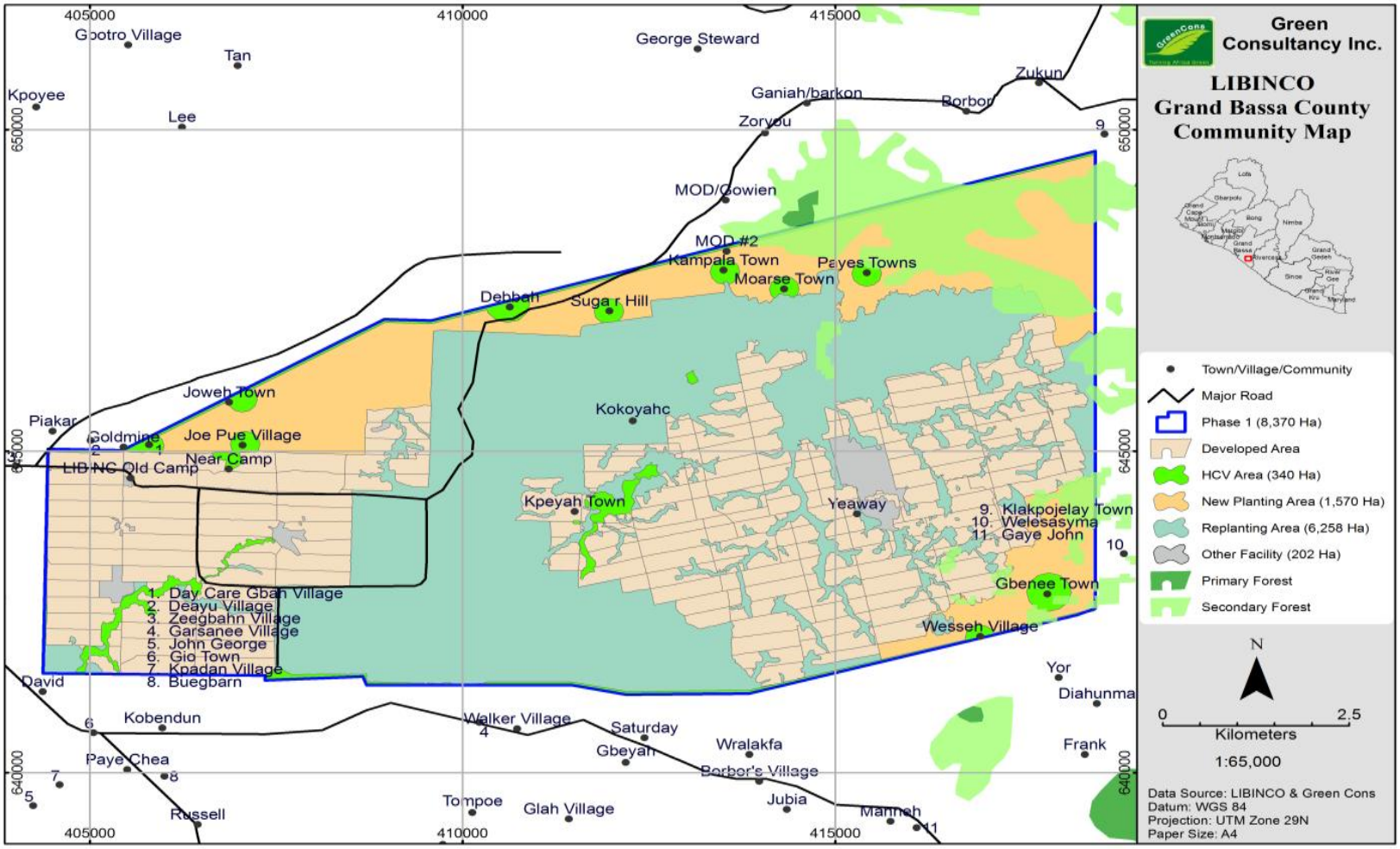


Figure 3: Land Cover Map: Vegetation covers of the project area

1.0 Summary from SEIA Assessments

The new inclusions for New Planting Procedure NPP (with regards to Criterion 7.8) will be incorporated on a later date as this assessment was prepared and complied prior to the announcement from RSPO dated 1st July 2014. The submission of these reports was delayed by the restrictions imposed due to the Ebola Outbreak in Liberia.

The assessment on behalf LIBINCO is in reference to RSPO New Planting Procedure(NPP) inaugurated on 1st January 2010 which called for among other things a High Conservation Value Assessment Report for areas set aside for new planting. LIBINCO has paved the way for accelerated development of land and the rehabilitation of existing plantation.

LIBINCO on December 14, 1965 entered into a concession agreement for the development of oil palm and other related agricultural products on a tract of land situated in New Cess area, Grand Bassa County. The company is to operate under Liberia's own laws and regulation to develop an Oil Palm estate namely LIBINCO Palm Bay Oil Palm Estate in District 4 of the Grand Bassa County. LIBINCO holds a 50 year concession agreement of 13,962 ha. The agreement was signed on 21st December 2007 and ratified on May 22, 2008. The agreement reached called for LIBINCO to rehabilitate and develop the 13,962ha LIBINCO Palm Bay Oil Palm Estate. Since the 1960's, this land has been deeded by Palm Bay. However, following the restoration of activities by the company, there was a robust FPIC process conducted with the towns and villages within and surrounding the project area in which consent was given and signed by all affected communities, leading to an MOU for the resurvey and land development processes in the concession area. At the end of the participatory resurvey process, the land area was reduced to 13,006.88 hectares under this new ratified agreement; the government also allows LIBINCO to develop an additional 20,234ha after the completion of development in the existing concession area. The additional area, of which 50% of this land area needs to be used for an out-growers' scheme The existing concession area involves the rehabilitation of the existing oil palm plantation which was abandoned and engulfed by shrubs and other wild woody growth The replanting of existing oil palm as per concession agreement is at a rate of 1,500 acres per year during the Rehabilitation Term, planting of the reserved concession area up to 1,000 acres per year for the first ten years of the Regular Term, rehabilitation of the infrastructures within the concession including staff houses, clinic, school, roads, preparation of palm nursery and the development of an oil palm mill.

The parent company Equatorial Palm Oil is a registered member of the RPSO (membership number: 1-0040-07-000-00) since 13th September 2007 and upon membership with the RSPO certification body, the company desires to immediately comply with the new planting procedure. LIBINCO in January 2014 requested for the conduct of a High Conservation Value Assessment (HCV) within the non-cleared area bordering the already rehabilitated and replanting area. The assessment area covers phase 1 of the project which makes up the 8,370 hectares areas, of which only 1,570 hectares is set for new planting activities. The remainder 4,637 ha from the existing concession land heading until the Timbo River will be developed later in phases.

As a result of the concession agreement acknowledging compliance to the Environment Protection and Management Law of Liberia (EMPL) and the Round Table on Sustainable Oil Palm (RSPO), LIBINCO committed herself to fulfilling these guidelines. The HCV

assessment and report conducted and prepared by Green Consultancy Inc. is therefore in recognition of LIBINCO to adhere to the January 1, 2010, New Planting Procedure (NPP).

Annex 1, Section 6 of the EMPL mandates all proponents of new projects which fall within this annex to conduct Environment Impact Assessment (EIA/ESIA), oil palm project being one of the projects. The company in compliance to the Environmental Protection Agency (EPA) conducted an Environmental Scoping report in December 2010. This was followed by an Environmental and Social Impact Assessment for the rehabilitation and replanting of existing oil palm plantation including the proposed new planting of the gross 13, 967.61 hectares ratified area. The area has since been permitted by the Environmental Protection Agency of Liberia (EPA). An Environmental, Social and Health Impact Assessment (ESHIA) was initiated by the management of LIBINCO. Therefore, in 2012 an ESHIA was conducted by Coastal and Environmental Services (CES) and completed in April 2013. This report has also been permitted by the EPA following a public hearing in which communities members and all in attendance were allowed to give input to the presentation. Inputs and recommendation which were accepted by the body were incorporated into the final report which was permitted by the EPA.

1.1 Project Area and Location

According to Grand Bassa County Development Agenda, Grand Bassa County was among the three counties that originally formed the Republic of Liberia. The two major tribes are Bassa and Kpelle, followed by the Kru. Previously one of the more economically vibrant counties, during the war most economic activities was halted and the infrastructure was looted. Traditional culture remains strong, with the Poro and Sande societies playing a major role in the education and initiation of boys and girls. The county was established in 1833 and its capital is Buchanan City, named for Thomas Buchanan, an American who served as the first Governor of the Commonwealth of Liberia. The County is located in the area from latitude 6°45' to latitude 5°30' North, and from longitude 10°30' to longitude 9°00' West (ISO 3166-2 geocode: LR-GB). On the Southwest of the County there is the Atlantic Ocean. Grand Bassa borders with four counties: Margibi on the Northwest, Bong on the North, Nimba on the East, and River Cess on the Southeast. The total land area of the County is approximately 3,382 square miles (8,759 square kilometers).

The new planting area is found between latitudes $5^{o}48'3"$ N and $5^{o}53'$ N and between longitudes $9^{o}43'30"$ W and $9^{o}51'30"$ W. The new planting block borders the rehabilitated and replanted oil palm estate. Most of the area lie in vegetation which has been impacted greatly by slash and burn agriculture. Apart from the fragmented late secondary forest found in the north of the new planting block, the remaining areas lie within agriculture degraded and agriculture impact areas. Today the site can be described as a mosaic of vegetation types, including: active and fallow farmlands, young bush, scrub, raphias wetlands, as well as young and intermediate secondary forest. The few patches of dense (secondary) forest that remain are the otherwise untouched dense forests that were commercially logged in the 1990s.

1.2 Need

Between1990-2005, Liberia has been faced with instability and severe decline in infrastructure, social services and employment. President Ellen Johnson Sirleaf, Africa's first female President, took office in mid-January 2006 facing severe challenges. Fourteen years of civil war had destroyed much of Liberia's physical and human capital and severely damaged its institutions. The new government endorsed programs aimed at improving governance, building capacity, and managing post conflict recovery through establishing policies to stabilize the economy and support economic reconstruction. Although progress has been substantial (broad price stability, and accomplished structural reforms to reinforce public financial management), the government still faces numerous challenges. Per capita GDP was estimated at US$195 in 2007, still below prewar levels, ranking Liberia among the poorest countries in the world; in current circumstances, the nation is unlikely to achieve any of the MDGs by 2015. According to the nation's Poverty Reduction Strategy (PRS), 64% of the population lives below the poverty line, and about 48% live below the extreme poverty line. Of these, 73% reside in rural areas. Grand Bassa County, with a 2008 census population of 221,693 has a poverty head count of 58.9%. In order to improve these conditions GOL is determined to create jobs and opportunities that would improve the condition of the people in support of its poverty reduction strategy.

The proposed Oil Palm plantation development in particular, is undertaken as an approach to create jobs, provide basic social services, add value to Liberia's oil palm sector and generate sufficient revenues from taxes to support GOL post war development agenda. LIBINCO management is confident oil palm development is environmentally safe for the following reasons:

- A perennial tree crop like oil palm provides permanent crop cover to reduce soil erosion especially where terracing and natural ground cover are used.
- It is not affected by serious pests or diseases, thus minimizing the use of pesticides.
- Existing and future technology utilizes many plant parts and products to reduce waste generation.
- The crop cycle of 25 years makes it an effective crop in 'greening' of the environment.
- The main rationale for the present Project proposal is the expected positive economic and development expectations. The oil palm plantation development will in addition to the direct economic benefits to the stakeholders, GOL, LIBINC OIL PALM INC, bring about economic spin-offs to Grand Bassa County in general and the New Cess area in particular. A forecast done by LIBINCO indicates that oil palm plantation in Liberia is expected to generate about 5,000 – 10,000 direct jobs within 10 years at Palm Bay subject to availability of expansion land. Also development of small holder oil palm schemes provide further employment and economic development in the area.

LIBINCO strives towards practices that are environmentally and socially sound, and all their companies uphold this as one of their principal responsibilities The Company is committed to reduce their environmental and social impact by continuously improving their environmental performance against national and international standards and guidelines. The company has inaugurated several guiding policy frameworks to give effect to their sustainability goals, environmental, health and safety considerations and the upliftment of local communities.
According to LPD's Environmental Policy, the company is committed to manage possible negative effects of its operations and to maintain the biodiversity of the areas in which they operate by partnering with stakeholders, but above all, local communities. Under various international, but also Liberian policies and guidelines, the company is also required to ensure that local villagers are consulted and provided with adequate benefits. Therefore community participation and the provision of economic benefits to communities through local partnerships are emphasized. Human rights are also upheld, such as social, economic and cultural rights. Thus, the company is committed to ensure the following:

- Degraded areas and savanna dominate the proposed project area. There is also commitment on the part of the company to isolate or avoid original or primary forest, diversity areas, traditional forests etc.
- A perennial tree crop like oil palm provides permanent crop cover to reduce soil erosion especially where terracing and natural ground cover are used.
- The minimum use of pesticide which could potentially pollute surface water body due to the fact that the plant is not seriously affected by pests or diseases
- Existing and future technology utilizes many parts of the plants products and wastes resulting in minimal waste generation, which is then managed to mitigate potential environmental impacts.
- The crop cycle of 25 years makes oil palm an effective crop in 'greening' of the environment.

1.3 Project Activities

The project activities can be summarized as follows:

- Replant old oil palms areas;
- Rehabilitate immature oil palm areas:
- Establishing new Oil Palm plantations in project blocks;
- Oil Palm plantation maintenance and harvesting;
- Rehabilitation of an existing Palm Oil Mill ;
- Establishing and expanding nurseries;
- and
- Infrastructure development (building access roads).

In areas of the project where palms are not economic, these trees are felled, biomass stacked and the area replanted with seedlings grown in the estates nursery.

In immature oil palm areas, the palm circles and inter-row growths are cleaned, which involves spraying the palm circles with herbicides and manually slashing the undergrowth. This latter material is then piled in windrows and left to rot.

Land preparation for new planting involves the removal of standing vegetation, which includes felling of standing trees and shrubs. All trees are felled inwards at the perimeter of the area away from roads, rivers or streams.

1.3.1 Planting Patterns and Maintenance

The conventional planting pattern is usually 9x9x9m triangular spacing, which provides 143 points per ha. It is generally recommended that land slopes greater than 12 degrees to be terraced for Oil Palm cultivation, as this helps to avoid erosion on hilly and steep slopes and also facilitates improved access and water retention. Moreover, where contour terracing is necessary, contour lining will be done to provide the same planting density of 143 points per ha. Planting terraces are mechanically cut 4m wide. Constructed terraces usually have 5 degree back slopes and the height of the back wall depends on the slope of land.

The felled biomass is stacked along the contour in terraced areas, which also prevents soil erosion and facilitates organic matter decomposing. In order to avoid significant soil losses after clearing, a quick creeping leguminous groundcover is established immediately after clearing. Groundcovers also have the added advantage of being capable of fixing nitrogen in the soil. This will prevent soil erosion and land degradation during development and replanting stage.

In terms of palm maintenance, pruning, weeding, application of fertilizers and pest and disease control where required are all measures that are adopted. No frond pruning is carried-out while the plants are still at immature stage.

The pruned fronds are stacked in the windrows to decompose. In terms of weed control, all major competitive weeds are periodically removed to protect the natural groundcover and Oil Palm by ring-weeding and selective herbicide spraying. Lastly, biological control measures against pests are also considered as and when necessary to reduce the use of chemicals.

Fungicide spraying is used in the nursery mainly in the event of any fungus disease outbreak.

1.3.2 Irrigation and Water Supply

Irrigation only takes place at the nurseries during dry weather. On average, water consumption for nursery irrigation is approximately 78,000L/ha per day during dry weather and all irrigation water for the nurseries is extracted from local rivers using suitably sized pumps. Potable water for the development will be obtained from boreholes and rainwater tanks. This water will need to be treated prior to consumption. Allowance has been made for

a consumption rate of 20L/person/day. As yet, details of the treatment plant are not available, but all potable water will meet appropriate drinking water standards.

1.4 Infrastructure Development

Infrastructure development for the project is expected to occur at two phases - farm rehabilitation and development. During farm rehabilitation, existing infrastructure will be rehabilitated and restored to function. Additional infrastructure will be constructed during the development period to accommodate additional needs of the plantation operation and capacity. The main infrastructure required for rehabilitation/development includes roads (access road, main road, collection/in field road), bridges, culverts, drains, and palm oil mill (which was severely damaged during the civil conflict)

1.4.1 Development Plan

Area statement phase 1 (8,370 ha)		
Left out of planting	HCV/riparian zone/towns	340 ha
	Road	170 ha
	Nursery	69 ha
	Others/infrastructure	32 ha
2011/ 2012/ 2013 fields		3,126 ha
2014/2015 replanting		3,063ha
Undeveloped area (Inclusive of conservation area)		1,570 ha
Area statement phase 2 (4,637 ha)		
Undeveloped area		4,637 ha
Out growers scheme		NOT applicable in the concession area

This systematic progressive clearing plan is one of management's strategies to reduce the impact on wildlife in the area and better preparation of land area.

1.5 Project Alternative

In the absence of development by the company, the old palms of very low productivity will continuously be utilized by the local communities until at such time when the trees are no more productive. Communities will then return to their normal subsistence way of life, i.e., slash and burn agriculture, hunting, alluvial mining, etc. However, the rehabilitation of the plantation will bring hope, major infusions of cash regularly through monthly salary payments and better living standards and conditions for towns and villages within and surrounding the project sites. Social services will be improved and developed; job opportunities and employment will be created; infrastructures will be developed and the Government of Liberia will obtain revenue for the development of the nation.

1.6 The Existing Environment

Three distinct studies and reports were conducted and prepared by Green Consultancy Inc. and CES respectively. In December, an Environmental Scoping reports was conducted to solicit views and concerns from local communities and established the baseline for the study along with the term of reference for the EIA. Two separated studies were also conducted, an Environmental and Social Impact Assessment for the rehabilitation and replanting of existing oil palm plantation including the proposed new planting of the gross 13,967.61 hectares ratified area; an Environmental, Social and Health Impact Assessment (ESHIA) conducted in 2012 and approved in 2013.

1.6.1 Atmospheric Environment

Rainfall in Liberia decreases from coastal to inland areas but increases again in the highlands. The coastal area experiences the heaviest annual precipitation which ranges from 3 937 mm to 4 445 mm per annum in the western part of Liberia and 2 540 mm in the southeast (UNDP, 2006).

The equatorial position and distribution of high and low pressure belts over the African continent and the Atlantic Ocean determines the climate of Liberia. Just as the rest of Liberia, the climate in the project area is influenced by the prevailing precipitation, wet or dry. The rainy season, which lasts approximately from late April to the end of October, is caused by the Maritime tropical Air Mass. The dry season extends from October to early April. The humidity is low during the day and increase slightly as the temperature cools at night. A relative humidity of 90% to 100% is common during the rainy season. During the dry season it decreases to between 80% and 85%. Total wind speed is greatest in the rainy season and lowest in the dry season. The climate of the area can generally be described as tropical, experiencing warm dry seasons and cold wet seasons[1]. The average temperature recorded during the study was 25.4°C. This record was as a result of the installation of a mobile weather station at the site for a period of three weeks during the conduct of the ESIA.

1.6.2 Aquatic Environment

Surface water resources identified in the project area comprised of small patches of wetlands scattered through the proposed project area along with small streams and creeks. The major surface water identified in the area was the Kpoi River. This is the main surface water body that drains the project area. The eastern boundary of the existing concession is the Timbo River. This is found outside of the phase 1 LIBINCO project area. There are other small streams and creeks like the Yana Creek, Bo Creek, Kpayekoni Creek and the Zeohn Creek and wetlands found in the area. Some of the communities assessed during the study use the water from the rivers and surrounding streams for domestic purpose including drinking, bathing and cooking.

[1] UNEP, (2004). Desk Study on the Environment in Liberia

Water testing of the natural surface water in the region can generally be regarded as being slightly acidic. This may be due to the decomposition of vegetation in the system as well as the composition of the geological features in the catchment of the local system. The natural surface and ground water of the region can be described as being soft with very low concentrations of calcium carbonate. It can be concluded that water quality in the area is generally good.

Apart from hand pumps constructed by LIBINCO's management for the usage of the communities, most communities still depend on river and creek waters for drinking, bathing, washing and fishing. The tradition of women and children going to the streams and creeks to fetch water is ever present among the towns within and surrounding the project area. These streams and creeks are protected from the ever present sunlight by the surrounding vegetation along it. This vegetation also protects the streams from runoff most especially at the peak of the rains in June to August. Most of the streams and creeks in the proposed new planting block (NPB) and rehabilitation area are tributaries of the Timbo and Kpoi Rivers. Communities of the project area also depend on these aquatic environments for non-forest timber product, some of the water bodies may have high turbidity mainly due to alluvial gold mining in some area, the pH of these water bodies is relative in the range of the World Health Organization Water Standard between 6.5-8.5. Several fresh water fish species were seen during the assessment and a number of them reported by the communities.

1.6.3 Geology

The rocks of northern Liberia form part of the West African Craton. It is recognized by stability and absence of tectonic activity during the last 2.5 billion years. The rocks of Liberian Age extend into neighboring Sierra Leone, Guinea, and Ivory Coast and are highly foliated granitic gneisses exhibiting a regional foliation and structural alignment in a northeast direction. This old and stable base was subsequently penetrated by younger rocks and then covered by meta-sedimentary and meta-volcanic rocks of at least two younger tectonic events. Granitic gneisses and the meta-sedimentary rocks have been intruded by numerous northwest trending diabase dikes. These are parallel to the coast and represent intrusive activity associated with the onset of continental break up in Jurassic time. None of the mountains in the region, Sierra Leone, Liberia and Guinea is of an active volcanic type (Brandolini & Tigani, 2006). In Grand Bassa, the County's soils can be categorized as laterite (55%), which is leached out, alluvial (19%) and sandy and loamy (26%). Alluvial soil is prevalent in the leeward districts.

Two onshore sediment-filled basins are located along the coastline: Roberts Basin, which is filled with sediments of the Farmington River formation and Paynesville sandstone; and the Bassa Basin, which is filled with material from the St. John River formation. (Grand Bassa County Development Agenda-2008). LIBINCO project area falls likewise within this geological belt.

1.6.4 Floral Environment

A 10-day site survey was conducted in November 2012. An additional site survey was conducted for 15 days in March 2014. Both surveys were concentrated in areas of the already established palm oil plantation, referred to as the 'current estate', and the proposed new planting areas for which this HCV assessment report is concentrated on.

Anthropogenic factors are without doubt the strongest factor influencing ecological functioning and landscape diversity within the proposed new planting block. People and their need for food, resulting in considerable loss of most of the primary forests and further loss or segregation of the remaining secondary forest, have dramatically transformed the landscape. Frequent clearing of vegetation has resulted in the area remaining as Secondary Forest. The 'natural' state of the vegetation types, before such widespread disturbance took place, has not been researched but it is suggested that at some point primary forest extended over most of Liberia. In essence, the vegetation is in a dynamic state of equilibrium, with the vegetation responding to primarily human induced disturbance factors (mainly clearing, burning and logging). Consequently, most of the forests observed in the study site are secondary forests (i.e. have been or are being impacted through forest resource utilization); forests are also utilized on a rotational basis and are left, sometimes for a number of decades, to regenerate.

During the site surveys of both the current estate area and the proposed new planting area, five general vegetation types were identified. The vegetation types recorded during the assessment include late Secondary Forest (+ 20 years), Swamp (Wetlands), Riparian Forest (patches of forest along streams and rivers), palm plantation and Agricultural land. There are many permanent and

Mature secondary forest with open canopy dominated by *Lophira alata* up to 40cm-50cm diameter breast height comprise of other trees species such as *Pentadesma butyracea*, *Pcynathus spp*., *Newtonia aubrevillie*, Didelotia idea\distemonathus betthamianus, *Gilbertiodendron preussii* etc. noted during the assessment. The area is also associated with huge outcrops of rocks and fall within the transect numbered T-5. Other timber species such as *Canarium schweinfurthii/ieile*, *Danilia thurifera/Faro*, *Erythrophyleum Ivorensis/Tali*, Tetraberlina Tubmaniana/Tetra, Honoa klaineana/Honoa(Effeu), Mammea Africana/Mammea(oboto),Lophira alata(Ekki) etc. were also observed within the vegetation. This fragment of late secondary forest found within the proposed new planting areas has also been identified to form part of the LIBINCO conservation area.

Within the estate, very few of the vegetation types consisted of extended or integrated (gradual mixing from one vegetation type to another) ecotones (boundaries between habitats) but rather presented abrupt boundaries/edges. Majority of the other reconnaissance done by the team was in agriculturally degraded land, along streams and rivers and within the already planted area. The vegetation found within these areas is mainly composed of degraded secondary vegetation and land that have been impacted by shifting cultivation by residents living within the existing towns and villages. As a result of the degradation, the vegetation within these areas is predominantly dominated by secondary growth, shrubs, weeds and native grasses (*scleria spp, Andropogan spp, Mongifera indica, Anthosthema senegalense, Alchornea, Macaranga, odorata* etc).Plant species adapted to the swamp habitat were also assessed and include dense stands of *Raphia palma-pinus, Halopegia azurea* and *Mapania ivornesis.* The swamp zone was characterised by low species diversity. Although the species diversity was low, epiphytic Orchidaceae species were observed.

As a result of slash and burn agriculture practices within the area, many of the flora species discovered within the agriculturally degraded area include *Odorata spp, Alchornia spp, Pteris vittata, Lenzites elegan, Scleria, Gleichenia polypodiodes, Mohria caffrorum, Macaranga, Imperata cylindrical.*

There were numerous inundated areas encountered while walking along valley bottoms and many of these areas would be inaccessible during the wettest time of the year. Raphia palms, many of which are used by local villages for roofing houses, dominated the vegetation. These wetlands associated with the streams and rivers running through the dense forest are so very difficult to identify from aerial photography or satellite imagery and therefore very difficult to delineate and define their extent and boundaries.

There were areas of more permanent open wetland, which were dominated by aquatic species such as *Nymphaea lotus* and the invasive *Eichhornia crassipes*.

1.6.5 Fauna Environment

The Biodiversity Hotspot in which Liberia occurs has international significance for almost all taxonomic groups due to its high levels of endemism (EPA, 2010). Liberia boasts 1.4% of the world's mammal species, 1.5% of the world's amphibian species and 1.2% of the world's freshwater fish species, all endemic to the Upper Guinean Hotspot. The primate diversity is of significant importance with five species listed as Critically Endangered and twenty-one as Endangered, by the International Union for Conservation of Nature (IUCN).
The following sections describe the different faunal groups:

Large and small mammals

There were approximately 29 signs of mammal species including human activities identified along the surveyed area. No observation or identification was made of species of special concern during the entire work. The assessment encountered 12-foot prints, 9 dung piles, 1 carcass, 1 feeding sign, and a hollow in the ground. There were also 4 snares and 2 mining sites along the line. *Tragelaphus scriptus* and *Cephalophus maxwelli* were the most common species observed along the line and these species are rated Least Concerns and not protected on both the IUCN red list and species under protection by Liberian wildlife law. Like the poor state of the flora vegetation within the rehabilitated and replanted areas, including west of the proposed NPB, the fauna concentration and integrity appears very poor, mainly dominated by small mammals such as the Greater Cane Rat, porcupines, squirrels etc. However, there were few protected species and species of high conservation statues which were also identified mainly in the late secondary forest and riparian areas along the surface waters within the project area.

Invertebrates
Invertebrates are not discussed in detail but should be mentioned. There is very little known about Liberian invertebrates, however new species are constantly being described (Lebbie, 2011). A dedicated and extensive invertebrate survey would be required to produce a baseline record of the diversity of invertebrates in the area. It is assumed that many years of research,

surveying and monitoring would be required to determine the importance of the invertebrate biodiversity around the Palm Bay area.

Fish

The Kpoi River and streams are teemed with a number of native fresh water species including *Claria laevicep* (catfish) and *Tilapia zillii* (red belly tilapia), *Heterobranchus longifilis*(Black catfish*), Chrysichthwys auratus*(Catfish). A fresh water fish field guide was used to determine species diversity within these streams and river; however, fishermen and women who set fishing baskets on these waters indicated variety of fish species within surface water bodies were also interviewed.

Herpetofauna (amphibians and reptiles)

Amphibians in the Upper Guinea region are particularly diverse with some 13 endemic amphibians and several near-endemics (Lebbie, 2011). Important endemics include the Tai River Frog (*Phrynobatrachus taiensis*), Liberian Long-fingered Frog (*Cardioglossa liberiensis*) and Ivory Coast toad (*Bufo danielae*). There are fewer endemic reptile species with three endemics: Los Archipelago Worm Lizard (*Cynisca leonine*), Benson's Mabuya (*Mabuya bensonii*) and the Liberian Worm Snake (*Typhlops leucosticus*). There are also 13 near-endemic reptile species that occur in the region.

Reports from the project area and from locals confirmed that both the Nile crocodile (*Crocodylus niloticus*) inhabit tributaries of the New Cess River. Additionally, the survey recorded at least 16 amphibian and 3 reptile species; of these amphibian species, there were two species of *Cadioglossa occidentalis*, five least concern species, Phrynobatrachus *plicatus,, Phrynobatrachus liberiensis, Phrynabatrachus guieinsis, ,Amietophrynus regularis, ,Amietophrynus macalatus,* seven near threatened species of *Amietophrynus togoensis* and two vulnerable species of *Conraus alleni)* The grass snake (Natrix natrix) a Least concern species, (Gabon viper) Near Threatened and one specie Agama agama, not yet on the IUCN listing were also recorded .At least all of the recorded species occurred in the Upper Guinea forest block while most species were connected to secondary forest, savannah or farm bush habitats and have a distribution area that exceeds the Upper Guinean forest block or even West Africa.

Avifauna

Bird Life International has mapped every bird species with a restricted range of less than 50,000 km^2, using many thousands of geo-referenced locality records. The areas where these ranges overlap define avian centers of endemism that are termed EBAs. Many other animals and plants have evolved into unique species in these same areas of endemism. EBAs are also, therefore, excellent indicators of general biodiversity. Upper Guinea Forest EBA (UGF) is one of the 25 global hotspots for biodiversity and coincides with a Bird Life International Endemic Bird Area. Among the 240-250 forest-dependent species in the region, over 25 are threatened, of restricted range or rare. The remaining forest is highly fragmented and spread across national borders. Only 3% of forest in the high-biodiversity areas is protected. The need to reduce the current high rate of forest biodiversity loss in the sub-region is clearly recognized in the National Environment Action Plans and by recent actions of governments.

Only one bird species of concern was recorded during the surveys of the Palm Bay project area, namely the Brown Checked Hornbill (*Bycanistes cylindricus*) that was observed in the

high vegetation in near Debbeh Village. Other bird species commonly seen were White-Face Whistling Duck, Laughing Dove, Northern Grey-Headed Sparrow, Chestnut-breasted Negrofinch, Grey Parrot, Copper-tailed Glossy Starling, Fraser's Forest Flycatcher, and Brown-eared Woodpecker. Among the many bird species discovered during the transect walks and reconnaissance assessment, there were only one near threatened species and one vulnerable species seen and these were seen around the late secondary forest in the north of the project area.

1.6.6 Soil Environment

The soil in the project area is generally a mixture of lithosols and some laterite, which is reddish brown in color containing aluminum iron, oxide and low in nitrogen concentration; swamp soil occurring in swampy areas, high concentration of humus with layers consisting of biodegradable materials; and alluvial soil with a high nutrient concentration which is suitable for agriculture. There is no peat soil found in the project area.

In the process of clearing and removal of the protective vegetation cover and disturbance to soil surface will inevitably bring about soil erosion. Eroded soil as a result of oil palm development will be deposited in the waterways. The washing of surface runoff concentrated with soil particles will increase the total suspended solids and turbidity (SST) of the receiving bodies, which affect the aquatic lives therein. This could also reduce stream clarity, inhibit respiration and feeding of stream biota, diminish light needed for photosynthesis and promote infections. Socially and economically, high sediment concentration can also add considerable cost to the water treatment and storage for human consumption. There is evidence from many studies on this that soil loss is minimal from young oil palm areas once soil covers are established. This should be noted and encouraged.

1.6.7 Land Use

About 53% of the population lives in rural areas, and 70% of the active population is engaged in agricultural activities; agriculture is the dominant contributor to export trade and earnings and a source of livelihood for the greatest number of people than any other sector. The sector is dominated by traditional subsistence farming systems. The use of modern technology is limited. Slash-and-burn farming, where forestlands are cleared, burned and upland rice cropped together with other crops is the primary production system.

Agriculture contributed 42% of the national Gross Domestic Product (GDP) in 2008 (CBL, 2009). The food crops sub-sector dominates agriculture’s contribution to the national GDP. Rice is the main staple food grown by over 74% of the population on uplands (CFSNS, 2008). Cassava is the second most important food crop grown by about 62% of the population (CAAS-Lib, 2007). Paddy rice and cassava production and area harvested increased by more than 3% per annum during the period 2001-2009 (Table 2). Rice and cassava contributed 22% and 23% of the agricultural GDP respectively (CBL, 2009).

The practice of rotational slash and burn agriculture is extensive throughout the survey area. The practice involves individual farmers manually felling all the trees in small areas of land.

The vegetation is then burnt towards the end of the dry season in January – February in order to clear the area and fertilize the soil. As a result of increase in slash and burn agriculture activities within the area, soil erosion and land degradation can be seen in many places along some transects lines. As a result of slash and burn there has been prominent pressure to native forest biodiversity. The short term decreasing fallow period of five to seven years has had deep impact on vegetation sustainability especially where population of towns and villages has increased. It has altered and reduced the quality of soil and thereby reducing the possibility of vegetative restoration at the locality. These slash and burn activities and practices degrade the forest and remove vegetation cover leading to soil erosion by both wind and water from rain. The result is infertility loss of topsoil and fertility. Most households engage in slash-and-burn agricultural farming (more than 50% of household have agricultural fields, although households assist each other with their farms). More than 60% of all these lands are under cultivation. Most field sizes range between 200 and 300m^2, although some fields of around seven to ten hectares have been recorded. As a baseline, it is assumed that the average farmland is around 0.3ha. The fallow period for such land is normally between 10 to 15 years). Although this percentage seems small, households support each other with farming activities (referred to as share-cropping), which mean that, although not every household has a farm, many practice agriculture even if they provide their labor for other farms.

1.7 Project Area

A majority of the vegetation in the project site has been disturbed by anthropogenic activity in the form of logging, plantation planting, agricultural practices and utilization of the forests for other natural resources. However, within the project site there are still areas of vegetation with high ecological sensitivity and with high conservation value in the form of late Secondary Forest as well as riparian forests area. As a result of the current land use practices these ecologically sensitive areas are dispersed across the project site.

Apart from the traditional and sacred usage of the forest by local communities, animal hunting, local materials for building, sourcing medicinal crops, wood for cooking, timber harvesting, etc. are major among activities generated from the land. Agricultural land around the study area is primarily obtained by the traditional authority, which includes town chiefs and elders. An outsider, it is said, can obtain agricultural land by purchasing this from town chiefs and elders. In recent years, many claim that the agricultural sector has grown in the study area and, at present, continues to provide an array of self-employment opportunities.

1.8 Social Economic Status

The methodologies employed in the identification of the social economic issue involved the use of focus group discussion where primary data were collected. The discussion were meant to ascertain information from the communities about their history, community profile, livelihoods activities, resources accessibility, constraints and problems, local institutions, relation with other forest users and existing conflicts; key informants interviews were used including informal interviews and discussions with the village chief and elders, some government officers, and other resource persons in the area were conducted and finally field assessment. This method involved the gathering of additional information from field

observations in each of the study communities such as availability and quality of infrastructure such as roads, schools, health care and community projects, traditional use of resources, illegal activities, poaching etc. were taken into consideration. Meetings were held with towns and villages within and surrounding the project site.

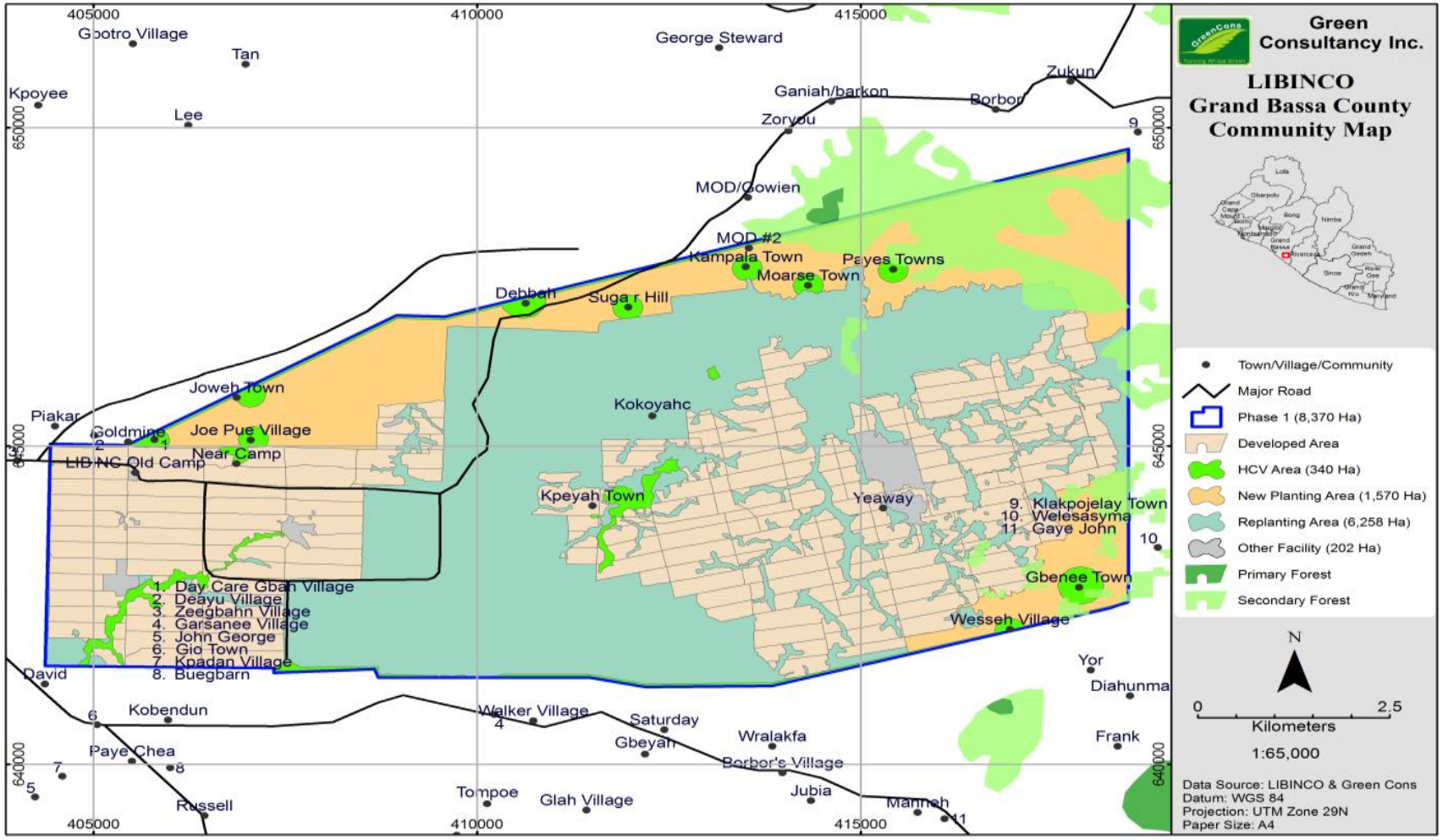


Figure 4: Map showing towns of the current estate area

Villages, House Structures and Social Amenities

Most villages are permanent and were established around the 1940/1950s, whilst some even date back to the 1920s. Apart from the civil war, which disrupted most of the villages and residents' lifestyles, very little social conflict has been noted during the focus groups discussions. Although the villages vary greatly in sizes, the average number of house structures per village is approximated as 13.

Migrancy Patterns and Social Conflict

According to a number of residents, many of the original village founders are from the Bassa ethnic group, and hail from areas such as (present) River Cess County and Bassa County. Some villagers also explained that many villages were established when ethnic groups migrated to this region around the 1900s from (present) Bong and Nimba counties. The bulk of the residents also seemed to have been born here. For example, according to the social and environmental baseline study conducted (*cf.* Hough and Hardly, 2012), most households indicated that they were born in their village, whilst it can be assumed that around 30% of village households relocated to this area after 2000.

A tendency experienced in many rural areas is village out-migration, where especially youth members flee to larger towns in search of employment opportunities. As secondary schools and tertiary educational facilities are restricted to larger towns such as Buchanan, youngsters are sometimes forced to abandon their families for long periods of time, staying with family members in Buchanan whilst completing their education. Another contributing factor to village out-migration is the issue of resettlement. For example, some village members nearby the Liberia Agriculture Company plantation recall that their villages had, in the past, been relocated by LAC to their current location. Some recall that this resettlement had left many villages scattered, which eventually led to a decline in their village population, as people preferred to move to other areas in search of livelihood opportunities.

Still, some discussions did reveal social conflict between various villages related to land disputes.

Household Dynamics

The average household size consists of approximately 10.1 members. This is an indication of the poverty of the area, as in large households' economic dependency ratios are normally high, especially in the absence of formal employment opportunities. It is fair to assume that some women in the study area might be marginalized and vulnerable, especially since they often perform heavy duties. Most of the indigenous groups in Liberia are also patrilineal, and have ideologies and cultural practices that reinforce male dominance. In addition, women are also normally responsible for child rearing, and are the first to be confronted and forced to deal with their households' food insecurity or inadequate nutrition.

The female population is slightly more at around 54.4%. The largest section of household members comprises school going or children under the age of 18 years (just below 40%).

Religion, Culture and Recreation

Christianity is practiced by most of the households in the study area, whilst men are also engaged in polygamy and inter-marriages. Most villagers are also engaged in secret societies

to which many members are affiliated. In the study area, men belong to the *Poro* society, whilst women are affiliated to *Sande*. Some of the larger villages have footballs fields (24% have fields), which attract many talented youth members who eagerly enjoy the sport. Village members involved in local dance ceremonies and masquerades support recreational activities.

About 12 villages have formalized primary schools (one primary school generally serves over 10 villages). The educational status is poor, with around 50% of the adult population having no schooling. Only an estimated 5-10% of residents in the area have completed primary education, whilst a significant 55.7% have no schooling. Most households' children do not attend school, as many explain that the nearest school is simply too far. As a result, opening of the Palm Bay school did not only benefit the employees and their dependents, but the communities as well. Ninety-nine (99) students from non-employees and (346) students from employees were enrolled for the 2013/2014 academic years in the plantation school.

In terms of water access, the vast majority of villages (about 60%) draw water from a stream or river, a finding supported by the fact that only an estimated 16 villages have wells, most of which have been provided by NGOs. In order to ease the situation and to continue its corporate social responsibility to the communities, LIBINCO has provided the towns of Kampala, Willehsama, Debbah and Gbanee Town with one well each; but for the town of Blayah Town, two wells were provided due to increased population of the town. Many raised fears that land clearing and preparation might pollute their water sources. The use of chemicals and fertilizers from the estate is also perceived to be a potential contaminant to rivers and creeks and general water supply. Lastly, approximately seven villages appear to have pit latrines, with a rough estimated latrine-to-household ratio of 1:315. Some of these latrines were either built or rehabilitated by LIBINCO. No village has access to electricity.
Cell phone network coverage in the study area is severely limited, and much of the village-level communication is orally communicated through authority structures such as town chiefs or the local radio station.
Some villages have weekly markets where residents from various villagers either sell their agricultural produce locally, or buy food. Men and women regularly attend markets. Apart from such markets, many regularly travel to Buchanan for larger markets, sometimes several times during the month. Transport is an expense which many villagers cannot afford. It is estimated that a car ride from the study area to Buchanan, for example, is between 500-700 LD/person (6.8-9.5US$). For a motorbike ride to Buchanan, this is anything between 700-1,000 LD/person (9.5-13.5US$).

Agriculture and Food Security

Slash-and-burn agricultural farming is practiced by most households (more than 50% of household have agricultural fields, although households assist each other with their farms). More than 60% of all these lands are under cultivation. As a baseline, it is assumed that the average field is around 0.3ha. The fallow period for such land is normally between 10 to 15 years). Although this percentage seems small, households support each other with their farming (referred to as share-cropping), which means that, although not every household has a farm, many practice agricultural even if they provide their labor for other farms. Stated differently, a type of shared-cropping system is practiced, which means that households assist each other in their agricultural production in exchange for yields and produce. From field observations and discussions, the number of agricultural fields seemed to have increased in

the last few years, whilst production levels also proliferated. Still, although households in the area produce insufficient food for self-consumption, selling agricultural produce is an attractive and often tempting means to obtain needed income. This means that food insecurity remains a challenge for most households; a situation which is most prevalent during the rainy season when fields are not ready for harvesting. There is a real concern that the expansion of the estate might result in agricultural land-loss, forcing many to abandon their agricultural lifestyle for off-farm employment opportunities. The proposed out-growers' scheme might have a significant role to play here, as this should ensure that villagers regain a sense of their agricultural lifestyles, and have land available for their own agricultural productions.

In many cases, poverty and hunger are coupled with villages' yearly agricultural calendars, which means that one year's agricultural harvest can determine poverty and hunger cycles. In illustration, during the wet season (this normally lasts between April and September), households have to plant their produce and wait for the fields, which can only be harvested during the dry season. These wet months, juxtaposed with a spike in waterborne diseases, are often those during which households suffer extreme poverty and hunger.

Agricultural land around the study area is primarily obtained by the traditional authority, which includes town chiefs and elders. An outsider, it is said, can obtain agricultural land by purchasing this from town chiefs and elders. In recent years, many claim that the agricultural sector has grown in the study area and, at present, continues to provide an array of self-employment opportunities.

Those who are engaged in agriculture primarily farm with cassava, rice, maize, plantain, pineapple, sugarcane, peanuts, cocoa, corn and beans. Rice, for example, is stored and dried inside the thatched roofs of kitchen structures. In addition, vegetables and potatoes are also planted. However, wild and cultivated Oil Palm trees are extensively used from which to make palm oil. These crops are for subsistence and commercial purposes.

Apart from palm oil production, which is the largest income source in the study area, cassava accounts for the second largest income. This crop is widely cultivated in Western Africa as it requires few production skills or inputs, is drought tolerant and produces reasonable yields (Prudencio and Ai-Hassan, 1994). In areas known for their high population densities, poor soil fertility and unstable rainfall, this crop is a significant contributor to food security. Moreover, many rural villages tend to plant cassava to bridge the food gap during the hungry season (normally the wet season). In this way, producing cassava is a way to supplement or even replace other food sources as a way to obtain food security. Apart from cassava and oil palm harvesting which account for the main stay of economic and agricultural activities, rubber plantations are also fairly common in the study area. Diversification strategies might include husbandry, a practice which needs to be encouraged. The focus groups affirmed that many households have livestock. Livestock kept include goats, sheep, pigs, chicken and ducks.

Farming is dependent on manual labor, using tools such as hoes. All the members of the household practice agriculture. A communal labor hiring system is often used; where farm-working groups are sourced from surrounding villages to assist with agricultural activities on the basis that agricultural produce is equally shared and distributed.

Specific agricultural activities are performed during each month of the year. Information of this 'agricultural calendar' is important for the client to take note of, as any new plantings will foremost have to be sensitive to the villages' agricultural practices and daily work schedules. Consequently, during the focus group discussions, attendees were asked to elaborate on their agricultural calendar.

Education

School enrolment; primary (% gross) in Liberia was last measured at 102.38 in 2011, according to the World Bank. The impact of the war in Liberia affected the various fibre of the society including education. There is high dropout rate largely due to teenage pregnancy, early marriage and harmful traditional practices. The majority of teachers are unqualified, and only 19 per cent of all teachers are women. Education in Liberia was declared free and compulsory in 2011 at the primary and secondary levels from the ages of six to 16, but did not continue up to 2013.

Inadequate schools and supplies, as well as a lack of qualified teachers hamper the country's education sector. The standard of education in the project-affected communities is very low. Within the project area, there is one elementary school in Gbar Town that hosts most of the children going to school in that area. Compound #4 runs the only junior high school in the project-affected communities (PAC). In order to improve the educational need of the communities, a primary school was established in 2008. The Palm Bay Primary School provides elementary education up to Grade 6. The school is located next to New Camp, and its school enrolment includes approximately 519 scholars, of whom 241 or 46.4% are girls. The school is open to all members of the communities as well .The premise is furnished with pit latrines and a generator, whilst an adjacent well from Winston Tubman Farm is used.

The average school going child's age is 6 years. Most females at the ages of 13 and above are either with child, married or co-habilitating. Most of the youth have not completed primary or secondary school due to lack of money and availability of one in their community.

Ethnicity

Bassa is the dominant language spoken in the study area. Nevertheless, there are other ethnic groups in the PACs, which include Gio, Kpelle, Mano, and Kru among others. In the wake of these languages, English is widely spoken throughout by many persons.

Health

The health situation is a major concern in these communities. Though the GOL is making fervent effort in improving the health sector around the country with support also from Christian Aid Ministries (CAM) and other INGOs, the issue of accessibility to health facilities and adequate health treatment in most parts of the PACs is still a major challenge. Many will have to walk 2kms to 4kms to get to the nearby health center for treatment. The closest health centers for most people include Compound #4 and LIBINCO health center. The current estate area has one staff clinic, which is free to all employees and their dependents, a requirement of the concession agreement. The clinic also has an ambulance service, and provides services to the surrounding villages by means of a mobile clinic. Males and females are treated in nearly equal numbers.

Emergency issues are critical to handle as referrers are delayed because of lack of transportation and unreliable means of communication. Most emergency cases are referred to Buchanan; the capital of Grand Bassa County through the use of LIBINCO ambulance.

Social Services

Most communities within and surrounding the LIBINCO project areas are lacking of social services. Communities continue to fetch drinking water from streams and creeks, which poses serious health hazard. As a result of the desperate needs of communities, within and surrounding the project area, the LIBINCO has committed herself to providing these community initiatives which include an Adult Literacy Program for the estate's employees; clinic and extension services to the surrounding villages; housing scheme; clean water supply to its surrounding villages (such as the provision of wells); erection of communication towers; general road repairs and upgrades in the area; and the construction of culverts and bridges. Some of these initiatives have already been completed while negotiations are on the way with other communities to have some of these services performed in their communities.

Economic Activities

Some villages have weekly markets where residents from various villagers either sell their agricultural produce locally, or buy food. Men and women regularly attend markets. Commodities mostly sold include pineapple, corn, rice, cassava, banana, pepper and plantain. Most of the crops from the farms are sold on the market to get other household supplies.

Wild palm oil production is also a major means of income earnings for villages around the plantation. Oil is produce from these wild palms and sold.

Land Ownership

There are two different categories for tribal land. These are tribal reserves and communal holdings (SDI, 2007). Lands are collectively owned by customary means. Land owned on a communal basis has been surveyed and certificated. Individuals or families may own land due to a long period of holding either by farming or settlement. Despite land being owned primarily by customary means or the issuance of tribal certificate, statutory method of land acquisition through the issuance of titled deed is becoming a major consideration. Accordingly, the allocation of land is based on request to the town chief for farming or building purposes. The town chief in return meets with the leadership of the town for consensus. This is done at a town level. In most cases, a larger agricultural project will have to meet the approval of the tribal leadership.

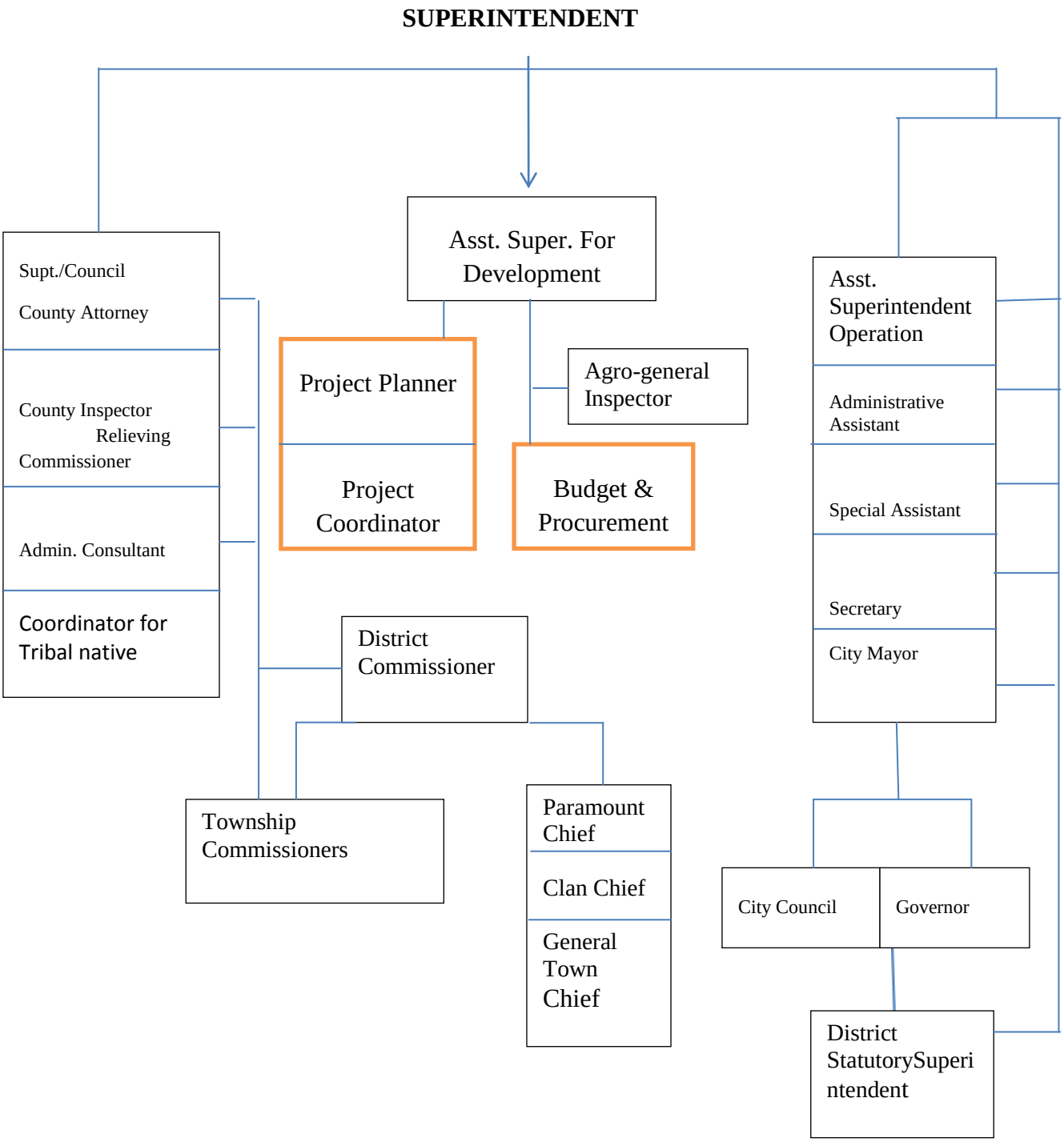
Decision Making Pattern

All communities in the study areas fall into clans and decisions are handled from two dynamics; the political and the traditional. Political decisions take into account the district leadership with representation of the various traditional leaders from the various communities. Traditional decisions are made with the gathering of the elders and town members. In most cases, traditional decisions sometimes originate from a traditional high priest in relation to the wellbeing of the entire clan.

Administration

Though Paramount Chief, Clan Chief and General Town Chief are viewed as political positions, community dwellers still perceive them as traditional leaders as well. The town chief, being a member of the community works along with other community auxiliary groups in making decision for the wellbeing of the community. Some communities with settlement status are headed by a City Major with zone heads and city council. The traditional leadership and political leadership complement one another in addressing the common wellbeing of the community. Major issues relating to land, development, conflicts and concessions are handled at chiefdom or district levels with communities been represented by community chiefs and other traditional leaders. These traditional leaders meet with the members of their communities in establishing their will and opinion on various issues of concerns.

Grand Bassa County Administrative Structure



1.9 Environmental & Social Assessment, Mitigation and Monitoring

The procedures that have been used to identify potential impacts included standard identification tools as well as discussions with stakeholders, community leaders, community residents as well as other experts. All the activities have been analyzed for potential impacts and such potential impacts were assessed according to a set of assessment criteria and a

significance value was assigned. Mitigation measures were proposed for all the identified potential impacts. People, organizations/ institutions and other stakeholders of the project, including interested parties have been identified at local and national levels.

2.0 SUMMARY FROM HCV ASSESSMENT(S)

The draft National Interpretation HCV toolkit for Liberia, the Proforest HCV Toolkit and that of the HCV RN Common Guidance 2013 are all instruments used for the identification of the six HCVs under this section. The HCVs determinations were also considered through post-field assessment data and information obtained through a second phase discussions with local experts, environmental NGOs organizations, stakeholders, and other interested parties.

The findings of this assessment is summarized below :

HCV	Description	Potentially Present	Present	Absent
1.1	Protected areas			✓
1.2	Concentrations of rare, threatened or endangered species	✓		
1.3	Concentration of endemic species	✓		
1.4	Critical temporal concentrations of species	✓		
2	Landscape - level ecosystems and mosaics			✓
3	Ecosystems and habitats			✓
4.1	Areas critical to water catchments		✓	
4.2	Areas critical for erosion control	✓		
4.3	Areas critical for fire prevention			✓
5	Areas fundamental to meeting basic needs of local communities		✓	
6	Areas critical to cultural identity (values)		✓	

These HCVs were identified, demarcated and mapped out. All of the processes leading to the mapping of these HCVs were carried out with the consent and involvement of the local communities representatives to ensure that all areas of conservation importance to the community, which include forest areas that provide significant livelihood support for the communities sacred area and shrine identified and demarcated. The HCV assessment did not identify any presence of peat soil or primary forest within the concession area. However, the presence of the late secondary forest in the north of the project area was earmarked as conservation sensitive areas as they border a primary forest outside the project area. The area was identified as important conservation area as a result of the closed dense vegetation directly bordering the boundary of the LIBINCO new planting block It is essential that a great portion of this late secondary fragmented forest is excluded from the new planting block to protect the conservation importance of the closed dense vegetation. The tendency of such fragmented late secondary forest regaining its conservation relevance was found to be high.

HCV 1: Concentrations of biodiversity values

HCV 1.1: Protected Areas

In relationship to HCV 1.1 which refers to protected areas, neither the proposed new planting block (NPB) nor the rest of the replanting and rehabilitating areas is found near or adjacent to any protected or proposed protected area. The nearest area recognized as an important habitat for conservation of bird population is the important bird area (IBA) in Cestos-Senkwen While this may be considered the nearest, the boundary of the nearest tips of the proposed NPB to the site is approximately 55.63km east of the project site, The Cestos-Senkwen is an area of 146800ha within an unprotected National Forest (Robertson, 2001). The site lies between the cities of Buchanan and Greenville and includes the lower reaches of the Cestos and Senkwen rivers, as well as the coast, and a large area of mangrove forests. This area was proposed as a National Park in 1983, but has since been logged extensively resulting in major habitat loss (Robertson, 2001). The next nearest in terms of large landscape area is the Margibi Mangrove, which is 47.8km west of the NPB. As a result of this identification of the areas in reference to protected areas, it can be concluded that HCV 1.1 is not found within, near or adjacent to the proposed NPB and therefore HCV 1.1 is absent

Figure 5: Large landscape map showing the project area in reference to protected areas in Liberia

HCV 1.2: Concentrations of rare, threatened or endangered species

The northern boundary of the project area has a late secondary forest. The potential to have this vegetation serving as habitat to rare, threaten or endangered species is more likely. As a definition of HCV 1.2 , the assessment into the area identified the vegetation along the Yana, Bo, Kpayekoni and Zeohn Creeks and Kpoi rivers to contain rare, threatened or endangered species since other protected mammal species like the Lesser Spot-nosed Monkey (*Cercopithecus(cephus)petaurista*) and Maxwell's Duiker (*Philantomba maxwellii)* were found around such area. The presence of the herpetofauna like the Nile crocodile (*Crocodylus niloticus*) along such vegetation as mentioned by locals are indications of habitat characteristic of rare, threatened or endangered species. Seven near threatened species of *Amietophrynus togoensis* and two vulnerable species of *Conraus alleni)* The grass snake (Natrix natrix) a Least concern species, (Gabon viper) Near Threatened was also found along these riparian areas. LIBINCO management has already conserved the vegetation along the coordinate 407502/643618. The discovery of two species of birds respectively, the Gray Parrot (*Psittacus erithacus*) and the Copper-tailed Glossy Starling (*Lamprotornis cupreocauda*), within the late secondary forest of the new planting block is indicative of such HCV characteristics. It is certain that, should an adequate faunal sampling take place in both wet and dry seasons around these sites, many more mammal species would be recorded, especially along the rivers and swamps.

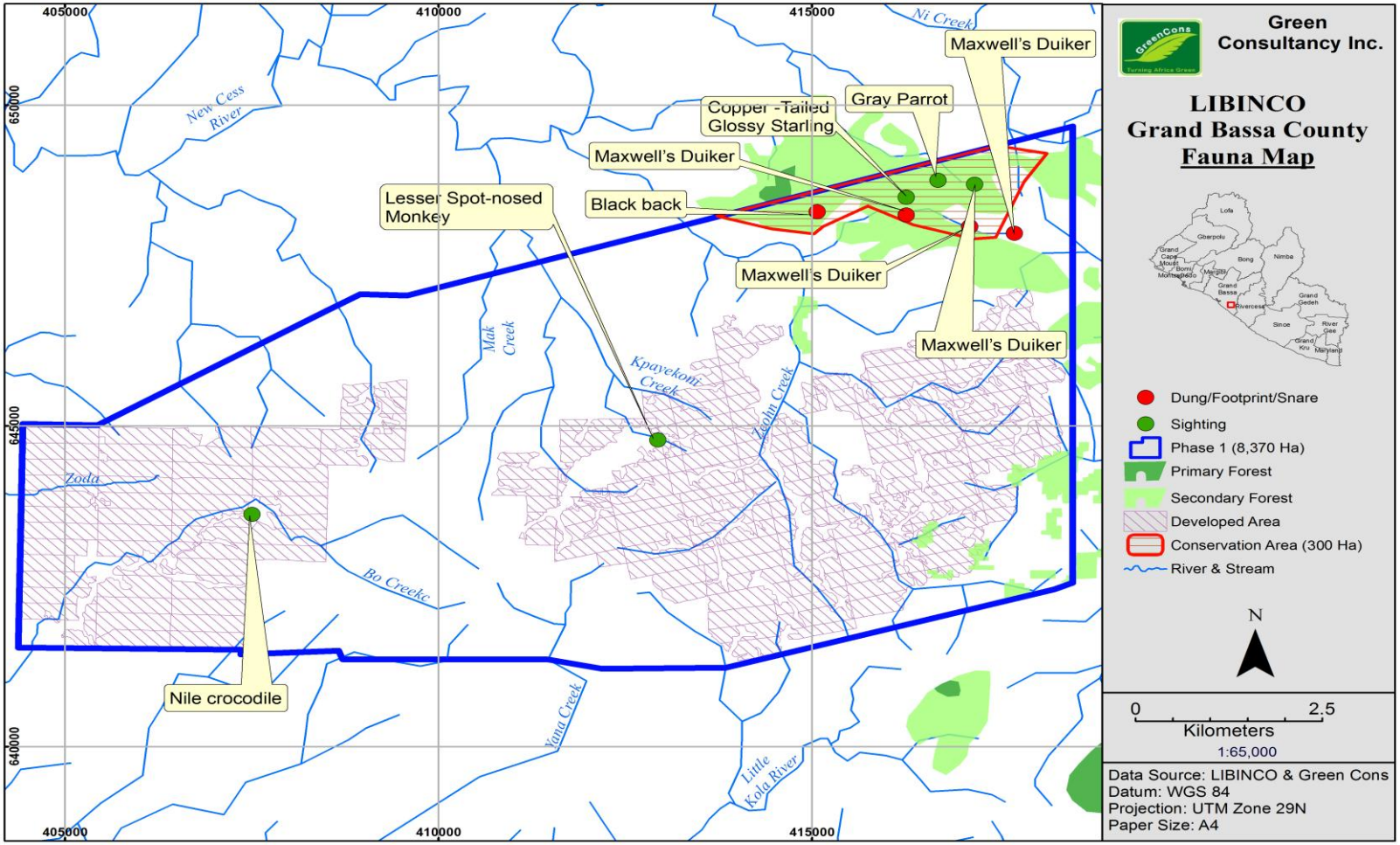


Figure 6: Map showing fauna species distribution within the LIBINCO project area

HCV 1.3 : Concentrations of endemic species

One endemic mammal species, the Lesser Spot-nosed Monkey, *Cercopithecus petaurista buettikoferi*) was recorded during the site visit to the LIBINCO concession. Reports from locals confirmed of the sighting of the Nile crocodile (*Crocodylus niloticus*) along major river and creeks and theirsurrounding tributaries of the project area. The endemic fauna species *(tetraberlina tubmaniana) was also identified in the project area.*

Of the 167 species of freshwater fish and 464 saltwater fish that are known for Liberia, six of these species are endemic to Liberia, and include *Barbus boboi, Barbus carcharhinoides, Barbus melanotaenia, Barbus trispiloides, Scriptaphyosemion schmitti* and *Tilapia coffea* are endermic to Liberia. While none of these endemic fish species were seen, interview with the local communities confirmed and were certain of the presence of the *Tilapia coffea* in most of the streams and rivers within the concession area.

The Liberian Draft HCV Toolkit refers to three level of endemism: National endemic species; regionally endemic species and species endemic to the continent of Africa:

The toolkit refers to nationally endemic species as those species that can be found only in Liberia. The presence of a breeding pair of any such fauna species or reproductive individuals of a nationally endemic fauna species will warrant designation as HCV 1.3.

In Liberia, at least one bird species, the Liberian Greenbul (Phylastrephus liberiensis) is known to be endemic. Other endemic species include the following:

- Amphibians: The African True Toad(Amietophrynus taiensis), the Nimba toad (Nimbaphrynoides liberiensi), and the Gbanga forest treefrog(Leptopelis bequaert,)
- Reptile, for instance the Liberian Worm Snake(Typhlops leucostictus)
- Crustaceans, for instance the Grand Bassa River Crab (Liberonautes grandbassa, etc.
- Mollusc, for instance Bellamya liberiana

Assessment in the project area identified a fauna species, the endangered African Pine (tetraberlina tubmaniana) also endemic to Liberia. Also as a result of the above protected mammals and birds species listed within the National Interpretation, and owning to the precautionary principle, it is likely that some endemic species could be found mostly around riparian areas. Thus HCV 1.3 can be considered potentially present.

HCV 1.4: Critical temporal concentrations of species

The proposed NPB and replanting areas do not fall within the important bird area of Liberia which includes Cape Mount, Cestos Senkwen, Grebo National Forest, Lofa-Gola-Manu Complex, Nimba Mountains, Sapo National Park, Wologizi Mountains, Wonegizi Mountains, and Zwedru. The vegetation along the Timbo and Kpoi Rivers is evident of suitable habitat for most bird species, some of which could be migratory birds. The presence of the Lesser

Spot-nosed Monkey is evident of the presence of fruiting trees. One of the major foods most monkeys depend on is wild fruit. There are different types of important features that are also assigned sensitivities. Wetlands, creeks and rivers constitute features of conservation concern, as they are important ecological process areas. They are essential for ecosystem functioning and process and provide niche habitats for a variety of plants and animals. However, since the forest canopies cover many of the wetlands and small creeks, many of them are not shown as separate entities on the land cover map.
High sensitivity is also given to areas that have high species richness and are not hugely impacted by current land-use and consequently are not degraded, for instance the vegetation along the Yana Creek, Bo Creek, Kpayekoni Creek and Zeohn Creek, including those found outside of the project area along the Timbo River.

In the absence of extensive ground truthing along the swamps, streams and river banks, the precautionary principles can be invoked to classify these areas habitats for temporary and seasonal use. thus HCV 1.4 can be considered potentially present.

HCV 2 : Landscape-- - level ecosystems and mosaics

In reference to the characteristics of HCV 2 as forest area being sufficiently large and relatively undisturbed enough to support viable populations of the great majority of the naturally occurring species, it is certain that the LIBINCO proposed NPB does not fall within such consideration and therefore HCV 2 is absent from the new planting block and the rest of the replanting areas. From the map below, there is no connectivity of any large landscape areas within the new planting block or forming a connection to the block. The nearest large landscape forest although massively disturbed, the Cestor-Senkwen is 55.63km from the new planting block, while the other, the Margibi Mangroves is 47.8km away from the phase 1 LIBINCO project area.

HCV3 : Ecosystems and habitats

The list of mountains in which their ecosystem could be considered naturally rare does not fall within the project area. The mountains include: Nimba Mountain, Wologisi Mountain, Bong Range, Putu Mountain, Wenegissi. Additionally, there are no mangroves swamps within the rehabilitated area or the proposed NPB neither are there any wetlands of international significance especially those of the RAMSAR sites. These are the characteristics of the presence of HCV 3. In view of the absence of these characteristics, it is certain that HCV 3 is ABSENT from the project area.

HCV 4 : Critical ecosystem services

HCV 4.1 : Areas critical to water catchments

There are no fragile or rare aquatic ecosystems within the project area, even though there are other areas within the project areas, which are essential for the regulation of the flow of rivers or streams, preventing severe floods, or maintaining water quality. Most communities still depend on river and creek waters for drinking, bathing, washing, fishing and means of transport using the canoe or raft. These streams and creeks are protected from the sunlight

due to the surrounding vegetation along it. The vegetation are untouched by the local inhabitants also protects the streams from severe sunlight, runoff most especially at the peak of the rains in June to August and provide shed for resting among others. The assessment finds out significant usage of some non-timber wetland species by inhabitants in the area, for instance, species such as The Liberia hut McBride roof thatch, *Musanga cecropiodes, Elaies guineesis, Raphia hookeri, Laccosperma opacum, Eremospatha macrocarpa* and *Bambusa vulgaris* are used for construction and furniture activities in the area. The buffering of the streams, rivers and creeks of the project area and the riparian and catchment vegetation protecting these water bodies from continuous runoff indicate the presence of HCV 4.1. The buffering of these waters is indicative of the width of the water body.

Additionally, more than forty different swamps and marshy areas were recorded along the different transects. These areas serve as flood prevention site by holding water within its surface. These natural buffers around the rivers and streams and its protection of the water bodies is indicative that HCV 4.1 is present. Additionally, the EPA permit calls for buffering of all surface water bodies to avoid runoff and pollution. These measures are also in consideration of the presence of this HCV.

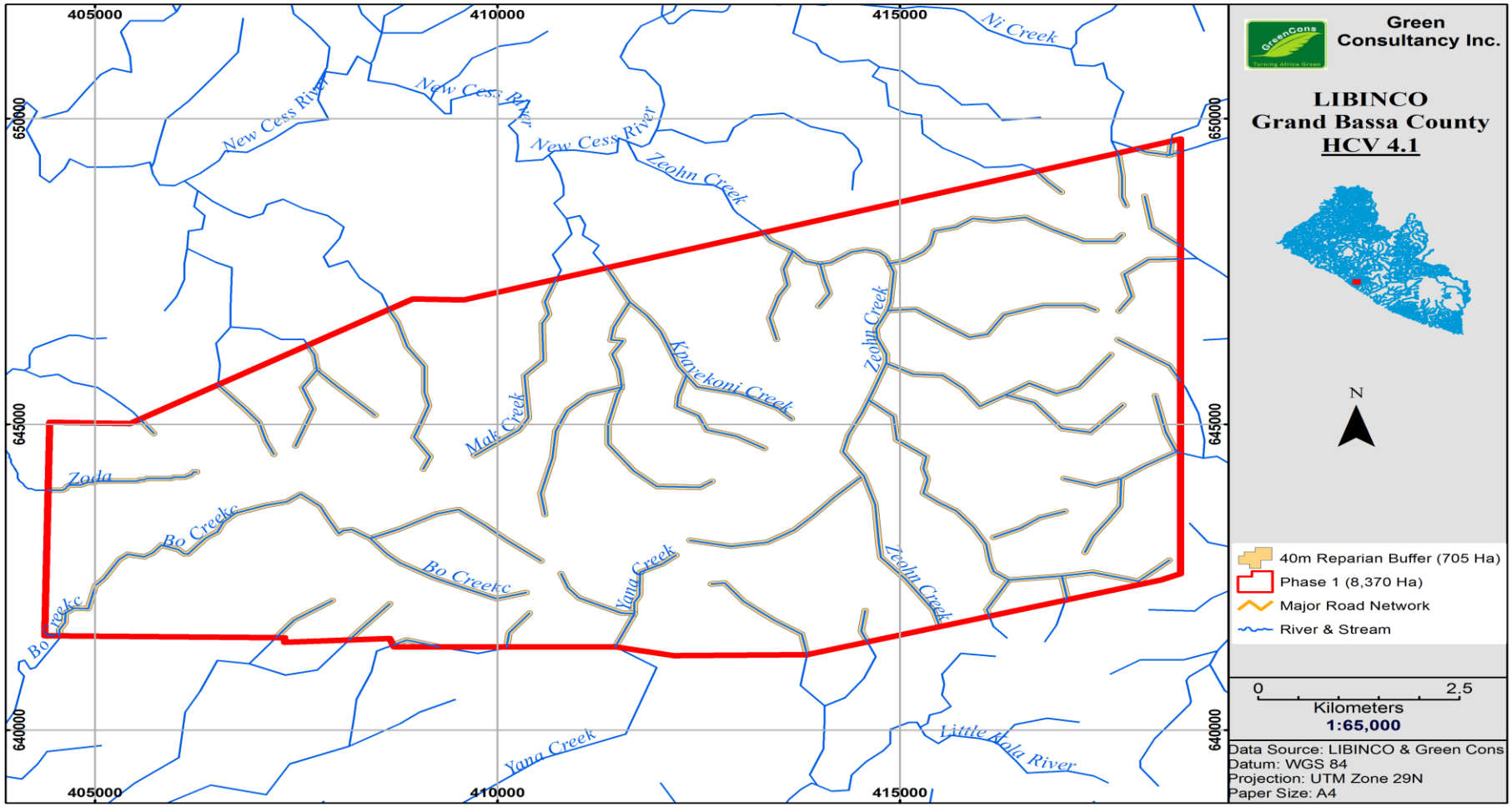


Figure 7: Hydrology map

HCV 4.1: Area critical to water catchment

HCV 4.2 : Areas -critical for erosion control

The forests, woodlands, grasslands and other vegetated landscapes of the proposed area are important for a healthy environment and society. Native vegetation controls erosion, land degradation and discharge of sediments into rivers. Vegetation around and along these waterways has been critical in erosional control, terrain stability, landslides, avalanches and downstream sedimentation. Most of the late secondary forest in the area is situated on a steep hill with partially close canopies; while agriculturally degraded forest is mainly found on flat plain and clear area. The flat plain has been mainly disturbed by human activities. Most of the smaller streams and creeks overflow their banks during heavy rains. The steep hills vegetation has been strategic in avoiding massive erosion to the lowland especially during the heavy rain between June-August

The role that the vegetation along the streams, creeks and rivers and those on steep hills have contributed to controlling erosion is a sign that HCV 4.2 may exist within the proposed new planting block and therefore it is potentially present within the project area.

HCV 4.3 : Areas critical for fire prevention

In the identification of critical places in Liberia, which are prone to fire, the Liberia National Interpretation indicated that high rainfall and lush vegetation in most parts of Liberia are significant mechanism, which has led to the reduction of wild fire.

Grand Bassa County has a tropical, hot and humid climate. Bassa is among the wettest counties of Liberia with an annual average rainfall of about 4000 mm per year. Based on the prevailing precipitation, two seasons are differentiated – rainy and dry. Grand Bassa has a flat coastline. A narrow coastal plain extends inland from the seashore, and the land gradually rises to the hilly hinterland of the County. High elevation regions have forest of evergreen and deciduous trees. As a result of such vegetation and climatic conditions the area has not been prone to fire and therefore HCV 4.3 is absent.

HCV 5 : Areas fundamental to meeting the basic needs of local communities.

Towns within the project area of the phase 1 development area do depend on the forest for their livelihood. Farming, fishing, hunting, collection of building materials and also several non-forest timber products (NFTP) for commercial purposes are gathered within the surrounding forest. Apart from NTFP collected from along creeks and rivers and the swamps within the project area, almost all the farming activities are done within the town limit, which is already surrounded by forest. The vicinities of these towns have already been mapped out as HCV as they do possess farmlands, NTFP areas and sacred area. Nevertheless; some communities have farms outside of the project area. During the survey there were some significant impacts with regard to the usage of some non-timber wetland species by inhabitants in the area. Species such as the Liberia hut McBride roof thatch, *Musanga cecropiodes, Elaies guineesis, Raphia hookeri ,Laccosperma opacum,Eremospatha*

macrocarpa and *Bambusa vulgaris* are used for construction and furniture activities in the area. These determinations and mapping of the HCV were done in consultation with the local communities and with inputs from stakeholders. No old towns were discovered during the assessment. Old towns are significant as they are considered sacred to the local and do form part of HCV 5. Old towns hold graves of founding fathers and ancestors of most new towns.

As a result of communities dependence on these forest, wetlands, rivers and streams for continuous livelihood HCV 5 is PRESENT.

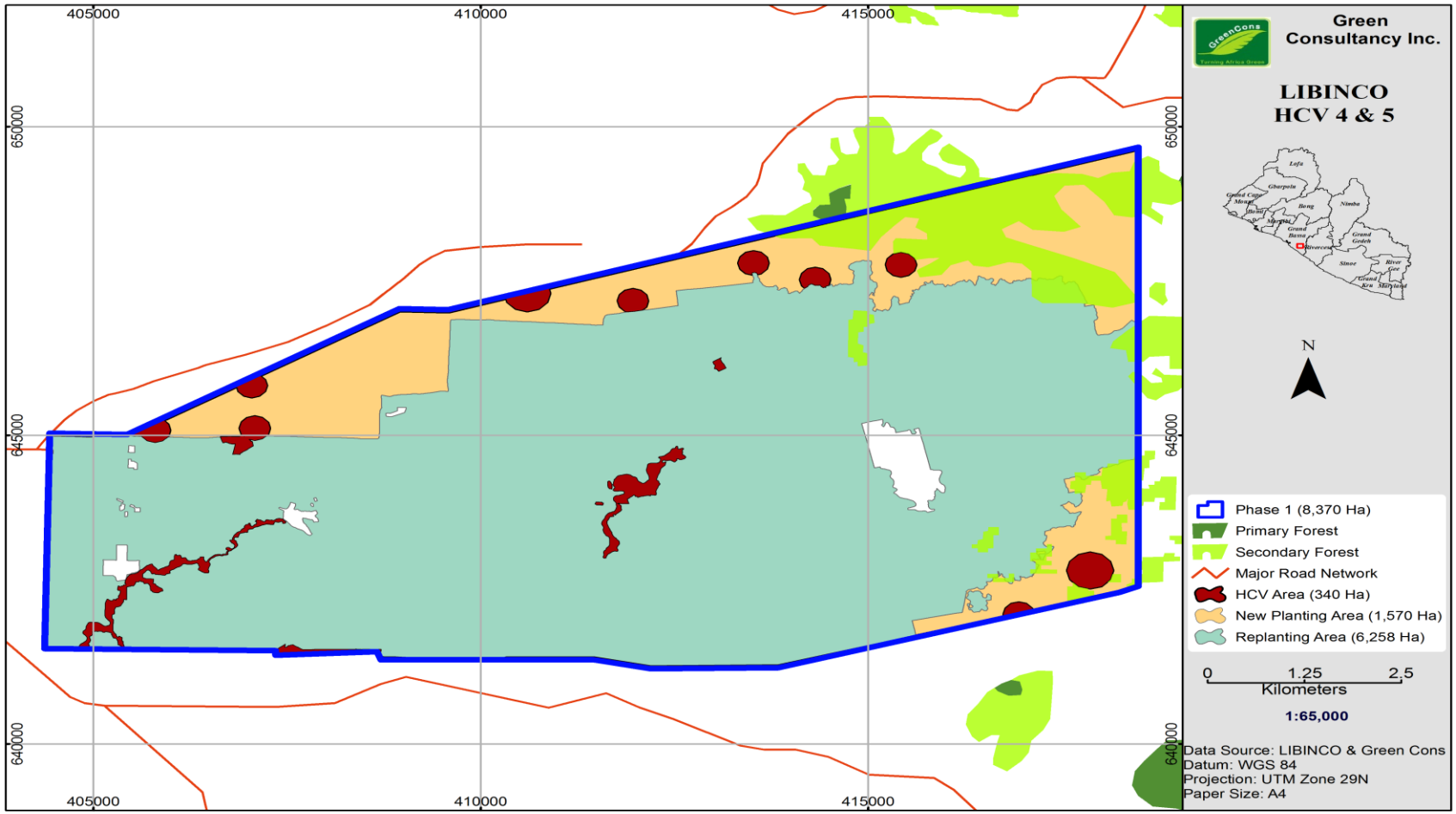


Figure 8: Map showing the vicinity of towns mapped out as HCV as they do possess farmlands, NTFP areas and sacred area.

HCV 6 : Areas critical to cultural identity (values)

Several burial ground have been identified and demarcated within the rehabilitated area and the ten towns of which fall within proposed new planting block. This was done by the management of LIBINCO in consultation with the local communities. Nevertheless, as the clearing commences, it is expected that all forested areas of conservation importance will be demarcated and avoided. Sande and Poro Societies and sacred sites were all acknowledged by the communities to exist. However, these areas are found within town limit. Complete mapping and demarcation of specific Poro and Sande sites including sacred sites were not done but was mapped along with the perimeter of the town since all of these falls within the town parameter. As a result of identification of burial grounds and sacred areas used and value by communities, it can be concluded that HCV 6 is PRESENT.

3.0 SUMMARY OF PLAN

3.1 Management and Mitigation Plans (SEIA & HCV)

The management of LIBINCO has committed itself to the full implementation of the HCV plan as indicated in the identification of all HCV areas within the entire new planting block and the management procedure to be followed in the management plan of the SEIA. The company has also committed its workers to full awareness of these HCVs and the objectives of setting these areas aside. Effective monitoring mechanism, which is enhanced by training in HCV management, will be established by the company. The training and essence of these HCVs will be directly communicated to other managers and supervisors of the plantation who are mostly and directly working in the field. Training will also be done in the implementation of the plan within the ESIA.

The participatory identification and delineation of HCVs by community representatives is a significant benchmark for HCV management in the study area. This concept provides an understanding that the HCVs areas are not the property of LIBINCO but rather valuable assets of the community, especially wherein communities have a vital stake in identifying and marking these HCVs and having the different HCVs named after the communities where they are located. In the wake of such understanding of ownership of the HCV areas it is much more practical to enlist community participation in the management and monitoring of the HCV areas. The management and mitigation plan for the HCV areas and SEIA is considered below:

3.1.2 Monitoring, Evaluation and Responses

Periodic monitoring will have internal and external components.

- Clearly, internal monitoring by the sustainability department is important for timely management responses.
- The sustainability department within the company should evaluate progress annually before the arrival of any independent auditors.
- The company should set up accessible information system that shows key monitoring parameters such as natural forest cover and HCV boundaries.
- The emphasis on monitoring should be outcome-based, rather than an administrative exercise of checking on reporting and documentary procedures.
- Monitoring should be able to track the indicators of success and similarly capture failure.

Monitoring Indicators

A number of indicators will be used during the monitoring period. The identifications of these indicators will ensure adequate monitoring is established.

I. Identified the number of known cultural, sacred sites and graves identified, demarcated and marked

II. Documented evidence of local participation in HCV management by allowing their input and recording attendance on each HCV assessment.

III. Internal and Independent HCV Monitoring and Audit reports should be considered and evidence showing that boundaries of HCVs are known and respected by all.

IV. Always document complaints regarding HCV abuse and or management and actions taken to correct them, including responsible party assigned.

V. Protocols for management responses need to be developed. Annually, a lessons-learned exercise should be conducted. Lessons means, what *we thought we knew but experience proved otherwise*. The processes will involve identification, learning and remembering

3.1.3 Management and mitigation plans to enhance or maintain conservation values of identified HCV areas.

The LIBINCO management plan should include and implement specific measures that ensure the maintenance and/or enhancement of the applicable conservation attributes consistent with the precautionary approach. It is recommended that annual monitoring shall be conducted to assess the effectiveness of the measures employed to maintain or enhance the applicable conservation attributes.

Management strategies for HCV areas vary, from total protection of a species or area, to special strategies undertaken that allow harvesting, road building and silviculture operations but with conditions.

.In order to determine the effectiveness of the management strategies, in many cases LIBINCO should rely on institutions with which it has “agreements” related to the High Conservation Values apart from her internal HCV unit. This will ensure LIBINCO is transparent to protection of all identified HCV.

Recommendations for the managements and mitigation of identified HCV areas are summarized below in Table 1.

HCV	Management Objective	Management and monitoring plans
1.2	The management of LIBINCO shall : – ensure that habitat in which rare, threatened or endangered species are found are part of its conservation priorities. – buffers to conservation value and to ensure adequate water resources must be considered during clearing – sensitize surrounding communities of the importance of conserving areas such as these. – avoid all areas of steep hills and deep valleys	– Identify, demarcate and map all HCV areas with clear documentation – Raise and increase awareness of the essence of setting aside HCVs to avoid communities misunderstanding and misinterpretation of such activities and thus considering it as a means of preventing development and employment in their area. – Enforce strictly a no hunting policy into the plantation and the buying, selling and eating of bush meat on the premises of the concession. Also discourage the selling of live fauna species on the concession by workers and ensure harsh punishment for violators. – Protect and maintain all buffer zones; ensure adequate erosion control practices for all areas with slopes especially areas near any surface water with the involvement of the local community. Conduct regular meeting with local communities on the management of designated HCVs and acknowledge their participation in the management of the HCVs. – Ensure visible signs are posted around the HCV. Provide HCV maps to land preparation team prior to clearing of any block and ensure that the team understand and knows how to read and interprets the map. – Monitor periodically all land clearing activities and ensure that all area of avoidance recommended in the HCV report are adhered to. – Encourage the protection of HCV areas by rewarding communities, team and persons responsible for ensuring such areas are maintained and protected through certification, community project, such hand pump, bridges, football field, etc. and ensure that persons directly working with LIBINCO who are found in violation of abusing the sanity of designated HCV areas are penalized. – Evaluation and monitoring of the existing HCV needs to be periodically done with the involvement of representatives of host communities, other stakeholders and LIBINCO. Monitoring should include the maintenance and presence of HCV sign posts at designated areas.
1.3	The management of LIBINCO shall : – ensure buffers to the habitat of these endemic and protected species are in place – ensure steps are taken and mechanism is in place to reduce threats to species conservation – to avoid all marshy area and steep hills during clearing activities – sensitize surrounding communities of the importance of conserving areas such as these	
1.4	The management of LIBINCO shall : – Avoid all conservation value areas and ensure adequate water resources – avoid clearing beside mangrove swamps – sensitize surrounding communities of the importance of conserving areas such as these	

<table>
<tr>
<td>4.1</td>
<td>The management of LIBINCO shall :
– identify all areas of illegal mining
– ensure vegetation along streams or swamps is not destroyed. Buffers to rivers and streams or other marshy areas must be considered during clearing
– ensure that communities understand their actions of conservation of these areas
– ensure perpetual flow of clean water through the forest and for the host communities on gradual level plains and those downstream by ensuring continuous buffering of surface water flowing through project areas especially during clearing
– conserve different type of vegetation found within this forest, i.e. wetlands, swamps, mangroves, etc. setting aside and maintaining appropriate buffer zones for all major rivers and streams in the new planting area to ensure the water resources and access to it is not threatened</td>
<td rowspan="2">– setting aside riparian reserve along rivers/large streams
<table>
<tr><th>Stream/River Width</th><th>Min. Width</th></tr>
<tr><td>>40m</td><td>50m</td></tr>
<tr><td>20m – 40m</td><td>40m</td></tr>
<tr><td>10m – 20m</td><td>20m</td></tr>
<tr><td>5m – 10m</td><td>10m</td></tr>
<tr><td>3m – 5m</td><td>5m</td></tr>
<tr><td><3m</td><td>-</td></tr>
</table>
– Water catchment areas should be protected to ensure that communities have unhindered access to quality water for their livelihood purposes and riparian forests are reserved to ensure that they maintain their function in controlling erosion
– All the specified HCVs, riparian reserves to be identified, established, mapped out, documented and respected.
– Regular meeting with local communities to establish communities' participation in the discussion and management of the HCV based on information sharing and awareness.
– Protection and maintenance of buffer zones, erosion control practices for all areas with slopes especially near any surface water.
– Visible signs are posted around the HCVs and maps provided to land preparation team prior to clearing of any block. The team is to adhere to the map provided and avoid any impact to "NO GO" area. Land clearing activities need to be monitored and accounted for periodically. Penalties to be established for violators abusing the sanctity of designated "no go" areas.
– Monitoring of the HCVs to be periodically done with the involvement of representatives of host communities, other stakeholders and the company.
– Avoid heavy equipment crossing through major river tributaries by placing culverts at all points of crossing, in the event where it seems almost impossible within the immediate time period, minimum crossing should then only be allowed with clear documentation on the time of the crossing, the number of crossing and measure to avoid and remedy the situation in the shortest possible time. This action has to be communicated with the local communities, especially with those towns using the water for other domestic usages.
– Ensure quarterly surface water testing of the major rivers and records of all testing kept to show any change in water quality.</td>
</tr>
<tr>
<td>4.2</td>
<td>The management of LIBINCO shall :
– avoid any and all areas on steep hills
– make aware communities in around hilly areas adjacent the land clearing of the danger posed in clearing over or steep hill.
– ensure buffer around every steep hill is available</td>
</tr>
</table>

5	The management of LIBINCO shall ensure: – areas that are of dependability by the communities should be considered during land clearing – ensure extreme caution is taken during LIBINCO operation especially when it comes to communities living near or adjacent to forested vegetation.	– All clearing blocks and HCV 5 and 6 areas are surveyed, demarcated and mapped in coordination with the local community representatives and other relevant stakeholders : – To facilitate the establishment of a company community HCV team along with the host communities and to provide them clear explanations concerning HCV identification and mapping process in order to guarantee their full participation and involvement. – Record all meetings, attendance, minutes and approval documentation commencing and ending the process; – Notice boards / signboards representing and indicating each category of HCV must be demarcated along with the host community and posted around the given area. They shall be made visible and explained to the local communities to facilitate clear understanding. – Maps provided to land preparation team prior to clearing of any block. The team is to adhere to the map provided and avoid any impact to "NO GO" area. – Photo and other records relating to the lack of any identified area or the presence of identified areas needs to be taken and recorded; – Any negotiations entered into between the host communities and the company over the removal and subsequent relocation of any area relating to this HCV needs to be documented and recorded with photos and attendance of all present including other stakeholders; – Quickly find alternative to creeks use by the community for major domestic needs like drinking and cooking when it becomes imperative and unavoidable to use the surface water for plantation operations. – Ensure proper mechanism for the management of water provided to the community by setting along with the community a water sanitation committee. – While some of the creeks used by communities may be some distance away from them, always have a noticeable HCV board identifying the actual usages of the water body; – To engage the community periodically in understanding the concerns about these HCV areas. – Monitoring of all sites demarcated needs to be

		periodically carried out by the company and the host communities' representative in order to ensure appreciation of the site. – Periodic monitoring of water level and quality

3.1.4 Management regulations

LIBINCO management will ensure that all her senior staff including all workers are committed to the following:

- The culture and rights of the local communities as well as their assets are respected and maintained;
- Participatory mapping of the considered areas with communities having interests and access;
- The immediate host communities need to be fully aware of the proposed development area in order to identify any sacred areas or unmarked graves that might be in the area to be cleared;
- The company needs to ensure that clear explanations concerning HCV are made to the host communities in order to guarantee their full participation and involvement in the demarcation process;
- Identification of any areas related to this HCV study to be demarcated and signs posted naming the owning community;
- Photo and other records relating to the lack of any identified area or the presence of identified areas needs to be taken and recorded;
- Any proposals to relocate traditional significant areas should be approached very cautiously and preferably avoided. Any negotiations entered into between the host communities and the company over the removal and subsequent relocation of any area relating to this HCV to be documented and recorded with photos and attendance of all present including other stakeholders;
- Advisory to the operational surveyors and operators to recognize and avoid potential HCV sites identified by community members in advance;
- Monitoring of all sites demarcated to be periodically carried out by the company and the host communities' representatives in order to ensure appreciation of the site. The success of these initiatives is heavily reliant on training and awareness to provide the knowledge and skills required to train LIBINCO personnel and local people. The allocation of funding in this direction is also critical to the enhancement and maintenance of the conservation values of HCVs.

- The area destined firstly for the HCV area will have to be clearly established by the agreement of the community and the Company, mapped, documented and respected by all parties.

Management plans include protection and maintenance of buffer zones; erosion control practices for all areas with slopes especially near any surface water will be implemented with the periodic involvement of the local community.
Regular meeting with local communities on the management of a designated HCV will need to be established and their involvement in the management of the HCV encouraged based on information sharing and awareness.

- All the specified HCVs will be mapped out; visible signs are to be posted around the

HCV and maps provided to land preparation team prior to clearing of any block.

- Land clearing activities need to be monitored and accounted for periodically. The team is to adhere to the map provided and avoid any impact to "NO GO" area.
- Penalties need to be established for violators abusing the sanity of designated "NO GO "areas.
- Heavy equipment crossing through major river tributaries need to be avoided by placing culverts to all points of crossing, in the event where it seems almost impossible within the immediate time period, minimum crossing should then only be allowed with cleared documentation on the time of the crossing, the number of crossing and measure to avoid and remedy the situation in the shortest possible time. This action has to be communicated with the local communities, especially with those towns using the water for other domestic usages.
- There should be quarterly surface water testing of the major rivers within the concession are to be done and records of all testing kept to show any change in water quality due to the presence of fertilizer or other palm waste during the different phase of the plantation operation.
- Monitoring of the existing HCV needs to be periodically done with the involvement of representatives of host communities, other stakeholders and the environmental team of the company. Monitoring should include measuring fluctuation activity of water level during rainy season and dry season as *baseline* in rivers, which has the important function as the catchment areas. Monitoring should also consider the measurement of river and creek width during the heavy rain and the peak of the dry weather to modify riparian management zone in reference to earlier ones taken.

The following will be done to enhance monitoring and management of HCV areas:

1. The area destine firstly for the HCV area will have to be clearly established by the agreement of the community and the Company, mapped, documented and respected by all parties.
2. Management plans include protection and maintenance of buffer zones; erosion control practices for all areas with slopes especially near any surface water will be implemented with the periodic involvement of the local community. . Regular meeting with local communities on the management of a designated HCV will need to establish and their participation in the management of the HCV encouraged based on information sharing and awareness.

3. All the specified HCVs will be mapped out; visible signs are to be posted around the HCV and maps provided to land preparation team prior to clearing of any block.
4. Land clearing activities need to be monitored and accounted for periodically. The team is to adhere to the map provided and avoid any impact to "NO GO" area.
5. Penalties need to be established for violators abusing the sanity of designated "NO GO" areas.
6. Heavy equipment crossing through major river tributaries need to be avoided by placing culverts to all points of crossing, in the event where it seems almost impossible within the immediate time period, minimum crossing should then only be allowed with cleared documentation on the time of the crossing, the number of crossing and measure to avoid and remedy the situation in the shortest possible time. This action has to be communicated with the local communities, especially with those towns using the water for other domestic usages.
7. There should be quarterly surface water testing of the major rivers within the concession are to be done and records of all testing kept to show any change in water quality due to the presence of fertilizer or other palm waste during the different phase of the plantation operation.
8. Monitoring of the existing HCV needs to be periodically done with the involvement of representatives of host communities, other stakeholders and the environmental team of the company. Monitoring should include measuring fluctuation activity of water level during rainy season and dry season as *baseline* in rivers, which has the important function as the catchment areas. Monitoring should also consider the measurement of river and creek width during the heavy rain and the peak of the dry weather to modify riparian management zone in reference to earlier ones taken.

3.1.5 Management and Mitigation Plans Summary (ESIA)

3.5.1.1 Mitigation Plans for Negative Environmental Effects

The management and operation of the plantation should consider the mitigation for the below environmental conditions, which are outlined in the HCV & ESIA Planning & Management Report. The summary outlines those environmental and social conditions which will arise as a result of the oil palm operation. The summary also looks at the operation phase of the plantation.

The table below outlines the potential impacts, receptors and proposed mitigation measures which will occur during LIBINCO operation.

Potential Impact	Receptor(s)	Proposed Mitigation Measure(s)
Environmental Impact		
water quality deterioration and change in local hydrology	Aquatic flora and fauna	Buffer Zone Ensure appropriate buffers are set aside along rivers and streams to ensure its integrity and other aquatic life forms. The buffer reserves will serve as natural filters for surface runoff from the plantation areas. The reserves will also play a major role in protecting the banks of the waterways from channel erosion. In addition the reserves will create aesthetic scenes along the watercourse. Fertilizer Application at the Plantation Judicious use of both organic and inorganic fertilizers will be ensured as much as possible. The fertilizers will be broadcasted around each oil palm at immaturity and over this area and/or inter-palm spaces as per best practice for fertilizer type used at maturity. The use of pesticides on the plantation will be minimized. The most effective environmentally friendly techniques including Integrated Pest Management (IPM) will be used. A constant phyto-sanitary observation will be maintained to help prevent the outbreak and spread of any potential disease/pest into the whole plantation.
Air quality deterioration	Workers/ Local communities	Burning of biomass will not be allowed. Stacked biomass generated will be made available to the local people as firewood for domestic use. Remaining trees and cleared under brushes will be stacked and formed into windrows. Windrowing will involve stacking in alternate rows or if low biomass stacking to be done in every 4 rows.
Potential Impact	Receptor(s)	Proposed Mitigation Measure(s)

Noise nuisance	Workers/ Local communities	Earthworks and other construction activities will be phased out or controlled to reduce noise generation during construction. -All construction and earthworks will be done during daytime to avoid disturbing the serene nights of the local communities. -Ear muffs will be provided for workers where necessary
Solid waste management issues	Workers	-The proposal to phase the development will generate biomass which could be manageable at a given time. -Felled trees and cleared under- brushes will be stacked and formed into windrows and allowed to decompose. -Other solid waste like food wrappers, used containers and food waste to be disposed of at the designated dump site.
Loss of biodiversity	Terrestrial flora and fauna	Phasing of Oil Palm Development Clearance of vegetation will be phased to reduce the impacts of vegetation removal on terrestrial flora and fauna. Directional clearing The company will execute directional clearing or felling of trees strategically to allow the free movement of any fauna species. Biodiversity corridor will be established to provide biodiversity along the waterways and streams within the concession.

		Alternative Fauna Habitats(late secondary forest) The 300 ha conservation area will serve as alternative habitats for fauna in the LIBINCO project area.
Potential Impact	Receptor(s)	Proposed Mitigation Measure(s)
Soil stability and erosion	Soil/ water courses	Sensitive sites with high erosion risk will be identified. Such areas shall not be cultivated and will include steep hill-tops and very steep slopes having gradient of 25^{0} or more. Vegetation of such areas shall be maintained to help control erosion as well as ensuring soil stability.
Impact on soil fertility and acidification	Soil/water courses	Judicious use of especially inorganic fertilizer will be ensured throughout the life of the project to help conserve the environment. The fertilizers will be broadcasted around each oil palm and in the inter-palm areas as per best practices for age and type of fertilizers used.
Biomass generation and CO2 balance	Air	The phasing of the project will reduce the impact.
Pest Infestation	Terrestrial flora	The most efficient environmentally friendly techniques including Integrated Pest Management (IPM) will be used. A constant phyto-sanitary observation will be maintained to help prevent the outbreak and spread of any potential disease/pest into the entire plantation
Solid waste management issues	Workers/ Local communities	Domestic/Office Waste Adequate litter bins will be placed at vantage-points to minimize littering of the site by workers. The contents of these bins would be emptied at appropriate central points and sent to a designated waste dump site. Biomass: Salvaging of useable biomass can significantly reduce the volumes of waste that has to be

		disposed of.
Food security	Local communities	The local people living on the concession will not be resettled. LIBINCO will leave a buffer zone around each village where the communities can farm.

POTENTIAL IMPACT	RECEPTORS	PROPOSED MITIGATION MEASURES
SOCIAL IMPACT		
Land acquisition and compensation issues	Land owners/ farmers	Ensure that appropriate documents are in place with record of community consent (FPIC) to offer land. Appropriate compensation procedures will be followed to ensure that payments made to Project-Affected-Persons (PAPs) are within legal requirements. This is in line with the Ministry of Agriculture price listing for compensation of crop. Monetary compensations will be paid to people whose farms or crops will be destroyed due to the development. LIBINCO will assess the farms and crops to be affected and evaluate these properties accordingly with the assistance and guidance of local MOA assigned personnel. Appropriate budgetary allocations have been considered to take care of this issue. Compensation payment will be made directly to affected farmers and individuals to avoid future problems from other people purporting to be family members. To facilitate this therefore, a committee made of town and company representatives have been formed to ensure that fair compensation are paid to the right individuals. The committee comprises of farmers and representatives selected from each town by town members. Community Sensitization Program The Company is to to engage with community people on various projects related activities and undertake

		community sensitization programs which are ongoing. Working groups have also been established comprising of community selected representatives who will liaise with the company on an ongoing basis for peaceful coexistence, community relations for project implementation, resolution of grievances and dissemination of project information
Potential Impact	Receptor(s)	Proposed Mitigation Measure(s)
Land issues	Local communities/ land owners Other resource users	Survey and mapping of all project lands and land set aside for community farms, and HCVs Privately own plots to be mapped and information documented for future reference. LIBINCO to conduct regular monitoring of Concession to determine if there are any illegal activities, including mining and logging, and any evidence of such activities observed will be communicated to the relevant regulatory agencies LIBINCO should notify authorities of any emerging issues and work with public agencies to address same

		LIBINCO intends to maintain a cordial relationship with communities and frequently engage community representatives on planned activities as it relates to the developmental and operational activities of the Company The Company will abide by the guidelines put in place by them and the town representative Communities will have access to the concession areas The communities would be kept abreast of the development plans of the project would also be consulted by LIBINCO for advise based on their experiences within the project environment in the planning and implementation of the project

Potential Impact	Receptor(s)	Proposed Mitigation Measure(s)
Employment issues	Local communities	Members of the communities to be given priority for employment by LIBINCO as much as possible LIBINCO to continue the hiring of women in its operation

		Adequate medical and insurance coverage to be made available to all employees LIBINCO to work with local education authorities to identify persons who can be sponsored by the Company to pursue further training in the field of Agriculture.
Cultural sites	Local communities	The sacred sites including graves and cemeteries on the concession will, with the agreement of the community be well demarcated and the area not cleared for development.
Influx resulting to inappropriate interaction with communities, crime, use of alcohol and disagreeable behavior	Local communities	LIBINCO will respect the legal, social and ecological integrity of communities lands The communities would be kept abreast of the development plans of the project LIBINCO to ensure that personnel are properly informed on the correct protocol for interaction with the local communities LIBINCO to ensure workers interference with the communities is minimal

		Drugs and alcohol use by workers within the Concession during work hours would be prohibited

Potential Impact	Receptor(s)	Proposed Mitigation Measure(s)
Occupational health and safety issues	Workers	Provision of Personal Protective Equipment (PPE) Personal protective equipment/apparels such as Wellington boots/safety boots, respirators/nose masks, gloves, overalls and raincoats will be supplied to field workers in suitable and adequate proportions. Supervisors will be charged to enforce the use of these gears. Personnel in charge of pesticide application will wear all the PPE specified on the product labeling for "pesticide applicators and other handlers." All PPE will be inspected each day of use for leaks, holes, tears, or worn places. Worn out PPE will either be repaired or discarded. Use of Experienced Personnel in handling Machinery Only experienced personnel will be engaged to operate any machine or equipment. The project will ensure that drivers and earth-moving equipment handlers driving license.

		Initial training in machinery handling and safe working procedures will be given to all new drivers, operators and other field workers to help minimize the occurrence of accidents on site. Safety Training for Agro-chemical Handling The Company will conduct safety training for pesticide handlers and all agricultural workers. The training program will include handling of agro-chemicals, use of PPE and what to do in the case of pesticide exposure.
Sanitation problems	Workers	A place of convenience will be provided at the work place and office and the palm oil mill discourage free-range defecation. In addition, field workers will be encouraged to use places of convenience available at nearby communities. Waste bins will be provided at appropriate and convenient places to minimize littering of the site. Wash rooms and changing rooms will also be provided for workers
Aesthetics and visual intrusion	Workers/ Local communities	Phasing of the clearing of the site will help reduce this impact
Potential Impact	Receptor(s)	Proposed Mitigation Measure(s)
Plantation Operation		
Presence of workforce-Loss of wildlife from hunting and conflicts with human	Terrestrial flora and fauna/workers	• Employee education and notification will be implemented to reduce vehicle-wildlife collisions and conflicts • Workers of LIBINCO would be prohibited from hunting, trapping, killing, harming or capturing of any wildlife which are not pests.

		• Warning signs indicating hunting/capturing of wildlife is prohibited would be placed at strategic HCV areas • Any occurrences of wildlife trapping and trading observed will be reported to the EPA and FDA
Biodiversity management	Terrestrial flora and fauna/Workers	Management of riparian zones and other HCVs, wildlife conservation awareness for employees and surrounding communities, enforcement of no hunting policy for employees
Occupational health and safety	Workers	Adoption of Health and Safety Policies LIBINCO will educate workers on its health and safety policy. The adoption of a health and safety policy at site will serve as a precautionary measure to prevent/minimize the possibility of accidents and reduce health risks. Ensure workers are properly oriented to the safety and health rules Well-equipped first aid kits would be provided at the work place, offices, clinic and POM . Employ a medical personnel to be stationed at the Base Camp and workers trained in first aid should be present at all campsites • Adequate signage should be erected, especially in hazardous areas • Machines are to be operated by competent, licensed and authorized personnel only and in a manner that does not endanger other employees or the Company‘s property • The Emergency Response Plan would be made aware to all relevant personnel and the necessary training and resources required should be provided; • Protective gears and clothes must be provided to employees and should be worn at all times during operation. • Provide potable water for employees

		• Conduct periodic fogging to prevent mosquito breeding

4.0 VERIFICATION STATEMENT:

The company opted for a document audit. SGS auditors conducted desk study, pre-assessment check, discussions with the RSPO team before the main document audit. During the main document audit, one SGS's auditors- Haye Semail had conducted desk review in SGS office in Malaysia and held further discussions with the Libinco's management to verify and review the relevant NPP documents on 7 October 2014 without field verification.

Libinco has adhered to the RSPO New Planting Procedures and has documented the assessments and plans according to the RSPO templates issued in May, 2010. The SEIA was conducted by the RSPO-approved assessors. At the time of this verification, it is the opinion of the SGS's auditor that Libinco has complied with the RSPO New Planting Procedures enforced on 1st January, 2010.

Submission of new planting area Libinco is covering 1,570 hectares (phase 1) and there is no activity was commenced are identified. Documents of the assessments process and the content of the plan are in compliance with relevant RSPO Principles, Criteria and Indicators. In relation with the process and action steps for inclusion of Criterion 7.8, carbon assessment (including identification, calculation and estimation) of Libinco is being progress and will be submitted to ERWG via RSPO Secretariat after the NPP Notification along the phase 2 development.

Signed on behalf of SGS Malaysia	Signed on behalf of LIBINCO
 Haye Semail Lead Auditor	 Sasi Kumar GM. LIBINCO