

## 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/53>). It has also been posted on local on-site notice boards.*

*Date of notification:*

*Tick whichever is appropriate*

<input checked="" type="checkbox"/>	<b>This is a completely new development and stakeholders may submit comments.</b>
<input type="checkbox"/>	This is part of an ongoing planting and is meant for notification only.

Location of proposed new planting:

**Tarjuowon District, Sinoe County, Republic of Liberia**

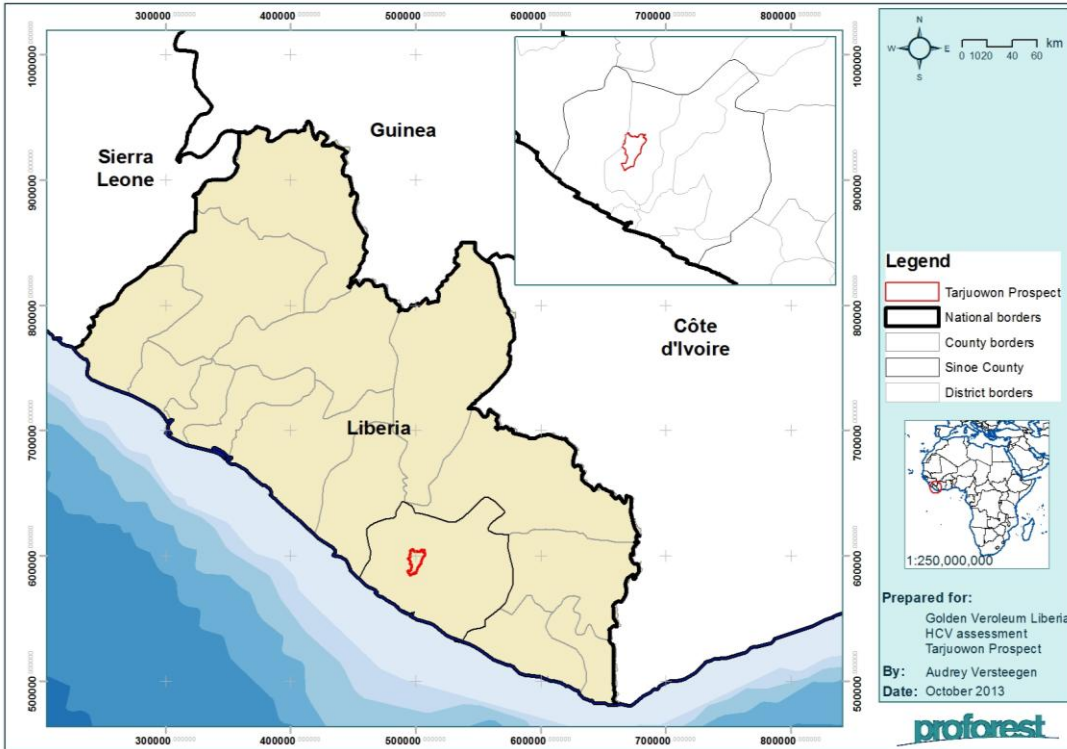
Company Name  
Address

Golden Veroleum (Liberia) Inc.  
17th Street, Villa Samantha ( Beach Side), Sinkor,  
Monrovia, Liberia

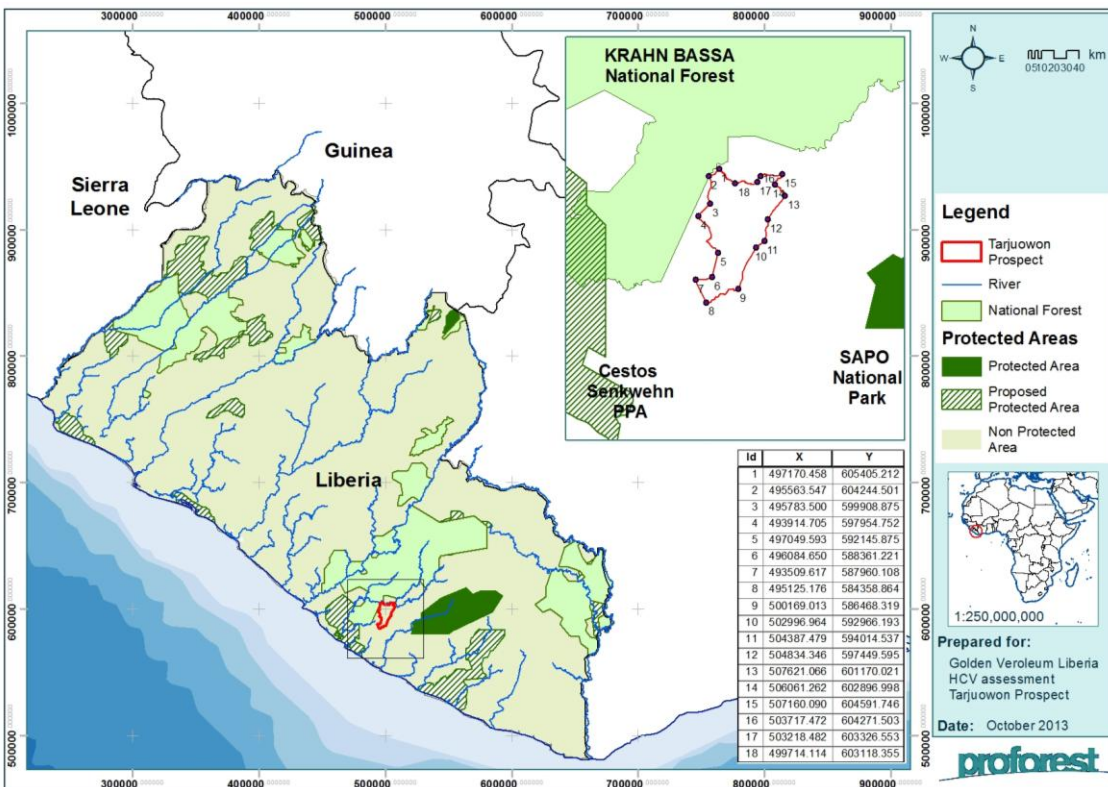
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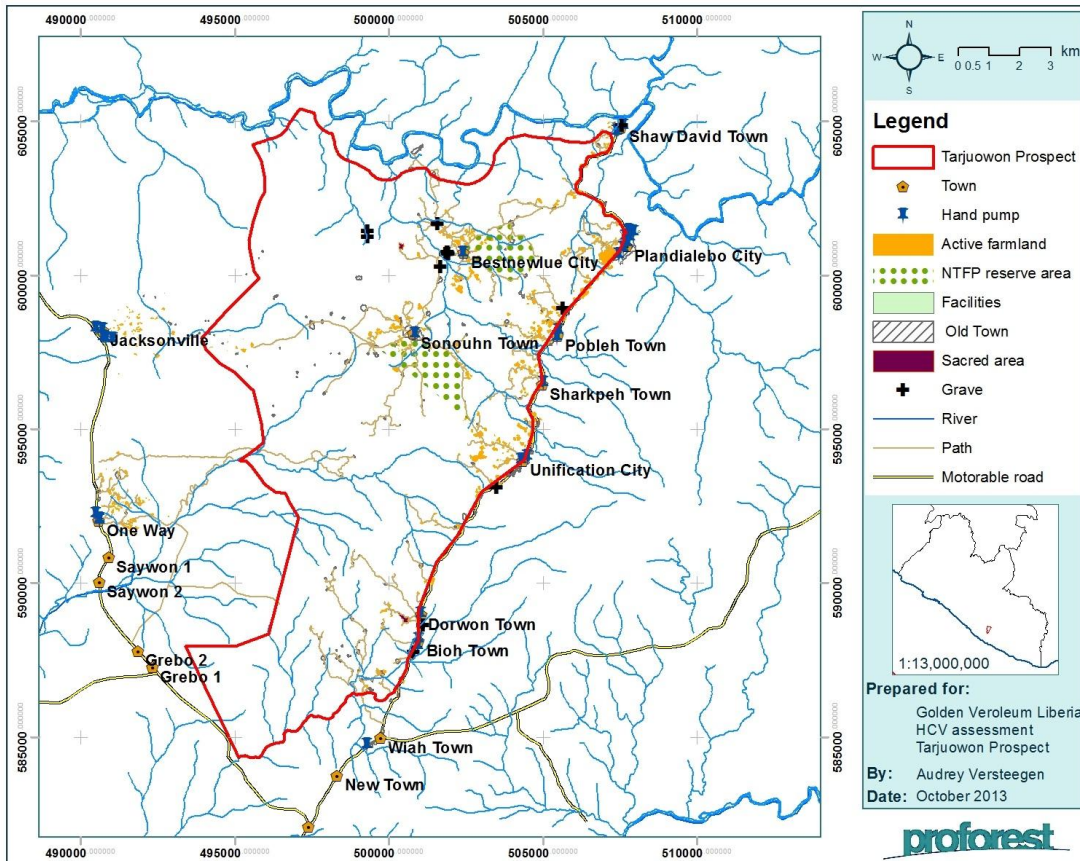
RSPO Membership No.: **1-0102-11-000-00 Ordinary member Approved 29/08/2011,**



**Figure 1:** Location Map of project Area in Tarjuowon District, Sinoe County, Republic of Liberia



**Figure 2:** Location of the proposed Tarjuowon development area and protected areas in Liberia



**Figure 3:** Map of concession showing towns and villages and HCV set-asides in the area

## 1.0 Summary from SEI Assessments

In 2010 an oil palm plantation concession agreement was signed between the Government of Liberia and GOLDEN VEROLEUM (LIBERIA) covering five (5) counties in Liberia: Grand Kru, Sinoe, Maryland, Rivercess and Grand Kru for a period of 65 years with an option for renewal. This agreement covers a total of approximately 500,000 acres (220,000 hectares).

The concession agreement amongst other things provides for the implementation of a social and community development program, which includes the creation of about 35,000 jobs in 5 counties within a 15 year period, construction of employee housing, education, medical care, a Liberian smallholder program and the construction of about 16 mills and 2 sea ports within 15 years.

In regards to global and local environmental priorities with respect to forest resources based services, for example forests role in generating fresh water, in stabilizing climate or in conserving biodiversity, the concession obliges GVL to carefully preserve original forest and areas of high biodiversity, sacred community lands located within its proposed project area; and to adhere to the requirements of the Environmental Protection Agency.

GVL has since commenced the development of oil palm projects within approximately 33,000ha in Butaw and Kpanyan Districts, Sinoe County; and 97,000ha in Garraway, Grandcess-Wedabo and Threnbo Districts, Grand Kru County; which were both subject to environmental reviews and permits as required. As a demonstration of its commitment to environmental sustainability in its operations, GVL obtained membership with the Round Table on Sustainable Palm Oil on September 15, 2011, thereby subscribing to the RSPO Principles and Criteria for Sustainable Palm Oil Production.

As a member of the RSPO GVL is obligated to abide by the New Planting Procedures (NPP); and has since been making efforts to abide by these procedures over the last two years for its new planting areas.

Section 11 of the Environmental Protection and Management Law (EPML) of the Republic of Liberia (2003) and Annex 1(Section 6), requires that all new projects that fall under the Environmental Laws of Liberia EIA mandatory listing, including plantation are subject to an environmental and social impact assessment.

As per the EPML Golden Veroleum (Liberia) applied for Environmental Permit to the Environmental Protection Agency of Liberia in June 2013 for the proposed Tarjuowon project. Following the application and discussions with the EPA it was determined that the Company would be required to conduct an ESIA which must be approved before Environmental Authorization can be granted for the project. GVL has contracted Green Consultancy Inc (GreenCons), to conduct an environmental and social impact assessment for the project in partnership with Proforest, a UK based internationally focused charity registered organization working in sustainable natural resource management to help certification schemes, roundtables and safeguard mechanisms to enhance delivery of positive social and environmental change.

Following the offer of land from the Tarjuowon community, GVL applied for an EPA permit of about 15,400ha to develop in terms of its concession in Tarjuowon District through the district inhabitants who having seen the level of development of the project in nearby Butaw District, job creation due to the project and the need to foster development in Tarjuowon communicated through their district leaders for GVL to extend the project in the Tarjuowon district. Tarjuowon District has a population of approximately eight thousand (8,000) inhabitants (2008 national housing census count). The district was formally part of three districts namely Juahzohn, Plahn and Nyan districts having been combined with Kulu Shaw-Boe thereby creating Tarjuowon in 2001 under the administration of formal president Charles G. Taylor. The

# RSPO

District is mostly remote and occupied by the Kru and Sapo speaking groups. The Sapo make up the minority group but occupy the largest town (Plaindalebo) in the project area. Consistent with the concession agreement, the company shall institute a Corporate Social Responsibility (CSR) program that will implement educational, health, employment and other social obligations which shall positively impact communities surrounding the project site. Infrastructures for housing, with electricity, latrines and water supplies shall also be developed to accommodate the plantation workers and their families.

The study which incorporated the Environmental and socio impact assessment of the immediate project areas and surrounding villages/towns within 1 mile radius of the project terrain covered a period of about one month for the consultations and field studies. An additional one month was use to collect secondary data including desk studies. Communities were also informed and sensitized about the entire NPP process, HCV assessment and the process steps and activities of the high level flow chart of the RSPO Procedure for New Planting. This was done through focus group discussion, broad and local level stakeholders meetings and community town hall consultations.

An assessment of the general landscape features identified the overall habitat type in the area as a secondary rain forest, consisting of patches of closed moist forest, riparian (gallery) forest, freshwater swamp and upland grassland (on loamy outcrops) interspersed within large areas of wetland, woodland and forest re-growth.

## **1.1. Project Area and Location**

The concession area is situated in the easterly section of a 15,400 hectare of land belonging to the Tarjouwon people located in the formally Kulu Shaw Boe and Plahn-Nyam districts now called the Tarjuowon District. The concession area lies immediately within the south western end of the major Sanquehn River.

Currently there are several ways by which the concession area can be assessed. Travelling from the county capital of Greenville, the project area is located north through Nyufuehs Town at approximately 13.6 km to Unification City. The area is located approximately 40.4 km from Greenville and more than 250km from Monrovia. From Unification City the major route entering the heart of the concession is the centrally located road moving toward the town of Sonouh.

## 1.2. Need

The Sinoe County Development Agenda, which is the local expression of the national aspirations in the Poverty Reduction Strategy 2008-2011 recognized poverty as a key challenge to the county development. According to the CDA —Too many people are still food insecure, and investments in the agriculture sector will have huge positive effects for poverty reduction. Sinoe County as part of the South-Eastern region is one of the highly ranked regions on the national poverty index; with a poverty head count of between 67.2-76.7%. Sinoe is noted to be one of the poorest in the country, despite its endowment with land and other natural resources. It is also one of the least populated counties in the country.



**Figure 4: Poverty Head Count**

Sinoe is one of the most deprived counties in Liberia in terms of economic development with lack of industrial activity. The high unemployment levels have pressured youth to migrate to the national capital in search of jobs and better conditions of living. The proposed project is expected to open up the area and create jobs for people in and Tarjuowon district and beyond. From a national perspective, between 1990-2005- civil war and government mismanagement destroyed much of Liberia's economy, especially the infrastructure. Many businesses fled the country, taking capital and expertise with them, but with the conclusion of fighting and the installation of a democratically-elected government in 2006, some have returned. Richly endowed with water, mineral resources, forests, and a climate favorable to agriculture, Liberia had been a producer and exporter of basic products - primarily raw timber and rubber. Local manufacturing, mainly foreign owned, had been small in scope.

The Liberian Government has been encouraging the establishment of oil palm plantation and processing in various parts of the country in order to create jobs and raise the standard of living of the population through access to basic services and infrastructure that the sector could generate.

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. Considering the impact of the current trend of forests removal due to subsistence agricultural and the prevailing social economic conditions in the region, the project has the potential to satisfy the following needs:

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. Sensitive natural forests that are remnant in the area, along with community sacred and reserved forest will be retained during the project operation

### 1.3 Project Activities

The activities earmarked for the project are typical of a conventional oil palm plantation project based on the experience of its proponents from Malaysia, Singapore and other areas. The activities listed below are based on general proposals and information provided by GVL combined with the general experience of the Consultants and team members. The anticipated key activities for the proposed oil palm plantation development are summarized below. The activities are described from an environmental impact point of view. Several issues are therefore not described in full technical details as these are outside the concerns of an ESIA. Understanding these activities in terms of environmental significance is vital in order to ascertain whether they produce any adverse impacts or not.

The pre-development stage of the project involves the conduct of feasibility studies, land acquisition and mapping, preparation of the environmental impact assessment, high conservation value assessment, community engagement and survey works to determine the project boundary and sites for various project components. The Tarjuowon project will not be establishing a separate nursery; hence seedling for the project will be sourced and transported from the Butaw (Whitfield) Nursery, for which an environmental permit has already been issued.

#### Activities of the project include:

##### Land preparation

Secondary vegetation with slopes of 0 – 20° will be cleared. In accordance with the Concession Agreement, timber, including some small sized timber or timber of uncommon commercial species may be used for infrastructural development such as bridges, buildings, etc. In addition to the land clearing activities, the following will also be executed.

- a. Under brushing
- b. Felling
- c. Loping, Stacking and Windrowing
- d. Infrastructural development (i.e. roads – access road, main road, harvesting road and collection/in field road; drains, bridges and culverts);

At the same time as land is being cleared the construction of infrastructure will begin. As per Liberian laws GVL is also allowed to harvest timber from within its permitted area for its infrastructure development program without the need to acquire timber-harvesting certificate. The concession grants GVL the right to harvest timber within the degraded agriculture land for the project use.

The main infrastructure required for development includes

- Roads (access road, main road, harvesting road and collection road)
- Bridges
- Culverts and drains.

Other activities for the project will include:

- Field establishment (i.e. lining, terracing, encourage natural ground cover establishment, holing and field planting);
- Maintenance (i.e. pruning, weed control, pest and diseases control, fertilizer application);



- Harvesting; and
- Rehabilitation to forest and abandonment.

This component of the project is vital from a socio-economic perspective considering the need for road in the project area. Roads will be constructed to serve the entire field in the plantation. The estate roads will be graveled for all weather use. This can be progressively done as planting is being completed. The width is 6 to 12 meters, with a gravel depth of 20 cm.

GVL Block Area (Ha)	Left out of Planting		Net area of cultivation of palm oil (forecast)	Activity	Planning (Ha)			TOTAL
	Description	Ha			2013	2014	2015	
Gross Area: 15,400 hectares	HCV/riparian zone/old town	7,000	Concession area	Land Preparation	0	5,000	1,800	6,800
	Road & other infrastructure	400		Planting	0	4,500	2,300	6,800
	Nursery	-	Out grower area	Land Preparation	0	500	700	1,200
	Others and balance area	-		Planting	0	500	700	1,200
			TOTAL	Land Preparation	0	5,500	2,500	8,000
				Planting	0	5,000	3,000	8000

**Table 1: Proposed Development Plan**

These systematic clearing is one of management strategies to remedy the impact on destroying and trapping wildlife, and better preparation of land area. Within three years, approximately 15% (approximately 1200 Ha) of the planned planting area will be structured for the communities' benefit under the out grower program as per the Concession Agreement. The exact areas will be decided upon further consultations and agreement with the respective communities.

## 1.4. Project Alternatives

With the exception of minor farming activities currently being done in the concession area there are no land use or other activities currently within the concession area. Sunuoh's Town and Bestnewlu are centrally located communal lands within the project area. However, historically, the wider project area including sections of the Concession was used for logging by Vamplar. Vamplar operated in the area prior to the civil crisis (in the 1970s) and has since left the area with traces of its logging activities. Based on the FDA Land use characterization, the area can be considered as areas suitable for commercial agriculture.

The prevailing system of cultivation for both rice and cassava is known as shifting agriculture, or bush fallow. Fields are cultivated for three to four years, after which they are left fallow for periods of up to ten years to restore their fertility. The land preparation prior to farming is marked by slashing the vegetation and felling of large trees followed by burning. After the farm has been burnt the remnants stumps and vegetation is cleared from the farm to make way for planting. The use of chemical/fertilizer has not been reported in the area.

Farm labor is usually manual, without the aid of animals or mechanization. Farmers occasionally form what is locally cooperative groups that rotational partakes in farming basis on a pro rata basis. Nearly all agriculture in the area relies on natural rainfall

## 1.5 The Existing Environment

### 1.5.1. Biological Environment

This section contains findings from the biodiversity survey exercises which took place as part of the study conducted for the ESIA report from 25th June to 15th July, 2013 in which GreenCons team inventory the animals and plants life of the concession identifying species of least concern, endangered, rare or threatened (ERT) at seven transects drawn through the concession. Impact on biodiversity, ERT species, mitigation, effects-monitoring, and recommendations for additional research are presented in other sections of the document. The vegetation communities of the concession occur in four distinct characteristics including Intermediate secondary forest, young secondary forest, young-bush/Low bush (Agriculture degraded areas) and Raphia wetland. The wetlands are categorized into two (2) different types (Complete raphia palm species mixed with Elaise guinensis) and the (Raphia mixed with Xylophia tree species and other shrubby aquatic plants. These wetlands were encountered during the transect surveys and recce assessments as a result of ground trothing methods. Most of these wetlands are home for non-timber species, especially, raphia palm species which are widely used by locals for roofing/thatching hubs, houses, etc.

All of these vegetation types are distinctively located in the concession. The intermediate secondary vegetation comprise of mostly large tree species ranging from 85cm to 150cm. Some of the tree species in this vegetation are considered under the Forestry Development Authority as vulnerable commercial species because of their used for timber and logging purposes. The young secondary forest comprise of patches of broken forest due to slash and burn sustainable farming practice in the area. At all sites sampled, the composition of both large and small mammal species recorded reveals a broken and unstable population ratios due to the increased hunting and trapping activities in various communities. But in some communities it was observed that the fauna population is on the increase as was evidence by high presence of direct and indirect signs. Several transects (4,5,6) were merely the same types of fauna activities due to the vegetation similarities.

Canopy covers were different as the result of vegetation changes which account for less than 25-50% at young secondary forests and young or low bush(Agriculture degraded areas) and 50% canopy covers for intermediate-secondary forests. There were signs of more recent anthropogenic disturbances in the lowland area, but a good recovery fraction of mature secondary forest is evident in some places. The higher number of forest gaps in this lowland area is frequently due to massive anthropogenic activities and small rivers undercutting tree roots in the rainy season most likely accompanied by seasonal flooding of low lying areas. The Western Lowlands were characterized by more secondary forest. The highest number of species was encountered at the middle of the western side lowlands (T5,6 &4) .The lowest number of species was encountered in the Eastern Lowlands due to farming pressure and poaching.

However, sections of the concession area contain larger tree species with stand composition ranging between 10m interval. However, the plants communities suggest that recovery of growth stands for commercial timber species in some communities were assumed to be harvested before the commencement of project activities. Animal species associated to tropical forest are dispersed in the concession but migration made the presence/absence trends to be difficult. It was generally observed that large mammals (buffalos and duikers) were consistently remarkable due to their evidence (direct and indirect signs) on all the sites on most transects. They were mostly observed by their tracks, dungs, foot-prints. Several smaller creeks and streams were found running from north-east towards south-west directions. One of the major creeks in the concession is the Coonie Creek which have so many tributaries in the concession and is found in majority of the study areas. It is the major source of drinking water for affected communities within the concession block. During the studies it was observed that most of the NTFPs for construction were collected from Raphia wetlands and lowland swamps, while others were

found in young secondary and young bush. Examples of some of the large mammals found in the concession block were African giant Buffalo (Lowland/young-bush), African Bongo (Riparian/wetland ecosystem) with fresh dung and foot-prints. Most frequent occurring mammal species were the duikers (Maxwell, Jentink's, and Bay). These are source for protein in affected communities and are widely traded in local markets for sustainable livelihood income thus posing serious pressure on the population of mammals.

## Flora

Research in the area of taxonomy began early in the 1800s in Liberia by German naturalists such as Schwein (1875-1877), J. Buttiker and F. X. Stampfli (1879-1887) and M. Dinkling (1894-1930). Other research work included the Trees of Liberia by Kunkel (1963), Liberian High Forest Trees by H. G. Voorhoeve (1979). During 1960-1967, an inventory conducted found over 2000 plant species including 225 timber species in Liberia. The report accentuated the 225 timber species. Since the inventory there has been no updated account until in 2002 when a team of researchers from the University of Liberia and the University of Wageningen visited the Sapo National Park and its surroundings and the Krahn-Bassa National Forest for 18 days. During the visit, 6 species of flowering plants new to science were found. Out of the 225 timber species recorded in Liberia 15 are noted to be threatened and endangered.

The Concession comprised fragments of secondary, young-bush/Low bush, and *Raphia* wetland situated on undulating, and flat terrain, with few steep slopes and well-drained sandy clay loam. The forest comprises of species such as *Azelia bella* (*Doussie*), *Alstonia boonei* (Emien), *Anthocleista nobilis* (Cabbage tree), *Calpocalyx aubrevillei* (Badio), *Milicia excelsa* (Iroko), *Terminilia ivorensis* (Framire), *Hallea ciliate* (Abura), *Piptadenastrum africanum* (Dahoma), *Tetraberlinia tubmaniana* (Sikon/Tetra), *Lophira alata* (Ekki/Azobe), *Erythrophleum ivorensis* (Tali), and for the young-bush and agriculture degraded areas are shrubby and grassy with young vegetation covering the lowland and flat terrains. They comprised of *Bertiera adamsii*, *Craterispermum caudatum*, *Drypetes* spp. Most plant species found in forest communities were dominated by commercial timber species and non-forest timber species. However, fragments of riparian ecosystem and secondary forests accounts for 85% of emergent forest tree species ranging between 75cm to 150cm (dbh), although these areas are considered to be old logging sites as evidence by old cat roads in most of the study areas.

In terms of evolution the present high forest can be subdivided into three groups young secondary forest, old or Intermediate secondary forest which has reached the climax and old secondary forest which has not yet reached the climax. There is indeed no sharp division between the two last groups, which differ only by species composition, average diameter of the trees of the upper canopy and the development of the strata. The concession areas further northwest and south-west were seen with mixed stands of timber species recovery from old logging activities and only the remaining fragments of broken forests host some of the high forest tree species.

The most common fresh-water swamp forests are the *Mitragyna ciliata* forests in those swamp valleys which are not flooded during the whole year but where the roots have always access to the ground water. In the permanently inundated areas the forest cover is poor and low with few or no large trees, especially, areas on transects (4,5,&6) with *Raphia* palms and, in the western part, gregarious stands of *Loesenera kаланtha* trees, very similar to those of *Tetraberlinia tubmaniana*. River borders are often characterized by typical riparian species such as leguminous trees (*Cathormion altissimum*, *Monopetalanthus* spp., *Plagiosiphon*). These streams/creeks are broken into tributaries forming natural islands in the concession block.

Species of conservation significance include *Lophira alata*, *Heritiera utilis*, *Sacoglottis gabonensis*, *Calpocalyx aubrevillei*, and *Dialium* spp. The only Meliaceae present, though in small numbers, are *Ilova*

(*Lovoa trichilicoides*) and *bossia* (*Guarea cedrata*) whereas species of *Khaya* and *Entandrophragma* are absent. These species are under constant threat from loggers. Based on the IUCN red list species category five (5) vulnerable species (VU) and two (2) near threatened (NT) species were identified out of the 37 species recorded in the area. As the result of commercial logging activities over the past 2-3 decades in the concession areas, it is observed that some of the important timber species were over exploited without any regard for the Liberian code of harvesting procedures.

Some patches of the secondary forests in the concession block (south-west) comprise of a dominance of one single species in one or all storeys; sometimes in the form of almost pure stands. Most of these species are Caesalpiniaceae such as *Cynometra* spp., *Gilbertiodendro preussii*, *Monopetalanthus compactus* and *Tetraberlinia tubmaniana*. *Parinari excelsa*, a Rosaceae, is also found dominant in some forests west of the concession block.

## Fauna

Liberia contains 40% of the Upper Guinea Forest, which is recognized as a global hotspot with high levels of endemism and biodiversity. It also provides habitat to potentially large number of animal species. Wildlife population in Liberia are threatened by large-scale and high hunting rates, habitat lost through slash-and-burn agricultural practices, unsustainable land-use management, the illegal petit trade and extractive industries, such as logging and mining.

The faunal communities of the project area like other frequently use forest area in Liberia is reduced significantly due to the slash and burn agriculture (subsistence agriculture) and logging activities. Two biodiversity hot-zones; Sapo National Park and Sanquahn proposed reserve lie 19km east and 15km west respectively of the project area. These areas are considered conservation areas due to the nature of high concentration of endemic and threatened species.

## Small and large mammals

Following early pioneering work in Liberia (Büttikofer 1890, Johnston 1906, Miller 1900, Pocock 1908) there have been a number of studies and reviews that include small mammals, notably the checklists by Allen and Coolidge (1930) and Kuhn (1965) and studies focusing on the Liberian side of Mount Nimba, frequently triggered by mining exploration (Coe 1975, Coe and Curry Lindahl 1965, Misonne and Verschuren 1976, Verschuren and Meester 1977). Kuhn (1964, 1971) alerted us to the presence of the endemic Pygmy Otter-shrew (*Micropotamogale lamottei*) in the Saniquellie District (Deaple and Kahnple) and at Putu (—Peloken ) Liberia.

Some medium-sized mammals have also been included in more recent surveys at Sapo National Park and other forest areas in Liberia (Waitkuwait (2001, 2003). The most recent small mammal survey in Liberia was conducted at Putu Iron Mining ( PIOM) Concession, Gola and Grebo Forests as part of a Conservation International Rapid Assessment Program (CI-RAP; Monadjem and Fahr 2006, Decher et al 2010). This survey focused mostly on bats (22 species, 182 individuals) and to a lesser degree on terrestrial mammals. Only two shrew species (*Crocidura muricauda* and *C. obscurior*) and one murid rodent species (*Hylomyscus alleni*) were captured. Five squirrel species and one scaly-tailed flying squirrel (*Anomalurus cf. pusillus*) were only observed. From this literature we can assemble a list of about 70 terrestrial small and Large mammal species for Liberia.

The six sites surveyed on and between transect one to six resulted in the observation of 84 random signs and sighting in different location. A total of 16 individuals belonging to at least rodents , mongoose, African palm civet, porcupine, Maxwell duiker, Jentink duiker, African buffalo, red river hog, bush buck, bongo, bay

duiker, tree hyrax, potto, Thomas' dwarf bush baby, red-legged sun squirrels and zebra duiker. All transects were located in raphia forest and farm bush with varying degrees of surface water / drainage. All sites showed signs of moderate past or present anthropogenic impact ranging from previous farming, present farming, plantation, to trail-cutting and mineral prospecting, to hunting pressure indicated by the abundant presence of shotgun shells along trails.

The sites of the study area are identified by transects ID. Transect 1(T1) surveyed between 28<sup>th</sup> June, ran east to west of the concession area in a raphia forest marked by anthropogenic activities. Canopy cover is between 25-50%. T2- covered 29<sup>th</sup> June to 2<sup>nd</sup> July was ran the same direction with present of old logging signs everywhere with intense farming activities in the past. Canopy is 50% with intense pressure of poaching and agriculture actions on going. T4, 5 and 6 are lowland raphia wetland marked by farming and poaching. Canopy is between 25-50% At all sites sampled, the composition of small mammal species recorded reveals a broken and unstable low forest small mammal fauna. Canopy cover was less than 50% at all sites. There were signs of more recent anthropogenic disturbances in the lowland area, but a good recovery fraction of mature secondary forest is evident in some places. The higher number of forest gaps in this lowland area appeared frequently due to massive anthropogenic activities and small rivers undercutting tree roots in the rainy season most likely accompanied by seasonal flooding of low lying areas. The Western Lowlands were characterized by more secondary forest. The highest number of species was encountered at the middle of the East side lowlands (T3&4). The lowest number of species was encountered in the Western Lowlands due to farming pressure and poaching.

Overall species diversity at GVL was characteristically low given the fact that human activities can be found all over the place rather homogeneous forest habitat, with few habitat transitions or ecotone zones. This situation will be rapidly changing in the future with the oil palm plantation and road construction. Fragmentation of the forest by roads has already been recognized as a growing problem for much of Liberia (Christie et al. 2007).

Three (3) species of conservation concern were noted during the survey: Zebra duiker (*Cephalophus zebra*) (Vulnerable) and Bongo (*Tragelaphus euryceros*) (Near threatened). The third species *Syncerus caffer* (African buffalo) is a proposed protected species under the FDA Draft Hunting Regulation, even though the IUCN regard this species as Least Concern. Zebra duiker and bongo are wide spread species found in most part of the upper guinea forest but suffered under habitat lost by anthropogenic activities. IUCN red list 2010 classified as threatened and vulnerable respectively in Liberia.

## **Fish**

The Concession is drained by mainly the Tarsue and Konnie Rivers systems. The upper boundary of the concession is mostly drained by the Sanquenh River. This river is notable due to its length and importance as one of the major rivers in Liberia. Fish are key components of Tropical rain forest ecosystems. The three rivers as well small creeks of these river systems were sampled. Information on the fishery of the area was difficult to collect due to very low fishing activities in the area couple with limitation of the amount of data collection for fish in the area. Nonetheless, the team was able to gather findings of the fishery characteristics of the area from field guide identification by local dwellers. A total of 21 species of fish from 12 families were documented. The dominant fish families in terms of number of species were Guinea Swamp eel (*Ophisternon afromum*), Liberian swamp eel (*Monopterus boueti*), Blackchin tilapia (*Sarotherodon melanotheron*), Redbelly tilapia (*Tilapia zillii*). None of the recorded species were rated as conservation concern.

## **Amphibians and Reptiles**

Surveys of forest and rivers recorded 34 amphibian types, comprising nine species. All were anurans (frogs). Biogeographically, all frogs recorded are widespread throughout Liberia and the wider West African region, including *Amietophrynus Bufo maculatus*, *Bufo superciliaris*, *Astylosternus occidentalis*, *Leptopelis vividis*, *Hyperolius concolor*, *Arthroleptidae*, *Amietophrynus togoensis*, *Conraua alleni*, and *Leptopelis macrotis*. None can be considered as threatened. On one of the transect, it was observed that large reptile (crocodile) was in search of food web and indirect signs were enough to testify the presence of such species in the wetland ecosystem. Other reptiles on which information was collected from the locals include: *Dendroaspis viridis* (Green Mamba), *Naja melanoleuca* (Black Spitting Cobra), *Bitis arietans* (Puff Adder), *Atheris chlorechis* (West African Bush Viper).

## Birds

Liberia is home to 615 species of birds (World bird database), among which 21 are global conservation concern and of which 19 are resident: *Agelastes meleagrides*, *Scotopelia ussheri*, *Ceratogymna cylindricus*, *C. elata*, *Melignomon eisentrauti*, *Campephaga lobata*, *Phyllastrephus baumanni*, *P. leucolepis*, *Bleda eximia*, *Criniger olivaceus*, *Malaconotus lagdeni*, *Illadopsis rufescens*, *Picathartes gymnocephalus*, *Prinia leontica*, *Bathmocercus cerviniventris*, *Melaenornis annamarulae*, *Malimbus ballmanni* and *Lamprotornis cupreocauda*, are all species of forest habitats. Fourteen of these are also species of restricted-range.

Almost the whole of Liberia falls within the Upper Guinea forests Endemic Bird Area (EBA 084) and all of its 15 species occur. Liberia also lies entirely within the Guinea–Congo Forests biome (A05) and 184 species characteristic of the biome have been recorded. Internationally, Liberia has ratified the Convention on Biological Diversity, CITES and the Convention to Combat Desertification. At the regional level, Liberia has ratified the African Convention on the Conservation of Nature and Natural Resources. Moreover, Sinoe is positioned within two of Liberia's importance Bird Area (IBA) coded: LR007 and LR009. All of this underlines the ornithological importance of the baseline survey of the GVL Concession area in Sinoe County, Liberia.

One hundred and sixty seven species were recorded in the proposed project area in all habitats surveyed. This includes randomly identified outside the transect lines but within the Tarjuowon proposed project zone. A complete list of all species recorded in each habit is given in annex 2 together with estimates of relative abundance, forest dependence and conservation status. An overview of the inventory shows that of the 167 species recorded, 10 species are endemic to West Africa and 5 species are conservation concerned. An analysis of the numbers of species recorded in relation to their usual preferred habitat showed that 35 of the species recorded are traditionally regarded as 'Forest Specialists', i.e. 'true' forest birds characteristic of the interior of little-disturbed forest, although they may persist in secondary forest and forest patches if their particular ecological requirements are met. Their breeding is almost invariably within forest. Regardless of conservation status, populations of these species are likely to be adversely affected by the clearing of gallery forest and establishment of the plantation.

Five species of conservation concern were recorded in the GVL area during these surveys. The Yellow-casqued Hornbill, *Ceratogymna elata*, is widespread in West Africa from Senegal (very small range), Mali, Guinea, Guinea-Bissau, Sierra Leone, Liberia, Cote d'Ivoire, Ghana, Togo (very few records), Benin, Nigeria and Cameroon (Burrow and Demey, 2001). A bird of lowland primary forest, it however, also occurs in logged and secondary forest, riverine forest and oilpalm plantations. Destruction of forest throughout its range is thought to be causing a reduction in its population (BirdLife International, 2000; 2004)

In the present survey, Yellow-casqued Hornbills were seen on all consecutive days in all habitats except farm bush. The white breasted guineafowl: *Agelastes meleagrides* (VU). This bird of lowland primary forest is can be found in Liberia, Sierra Leone, Cote d'Ivoire and Ghana. The Rufous-winged Illadopsis *Illadopsis*

*rufescens* (NT) is a West African endemic known from Sierra Leone, Liberia, Cote d'Ivoire and Ghana in the Upper Guinea Forest but also recorded in Senegal and Togo.

It favours dense secondary vegetation along paths and glades, often near forest streams and creeks; usually foraging in pairs close to the ground (Burrow and Demey, 2001; BirdLife International, 2001; 2004). The Black-headed Rufous Warbler was seen in gallery forest on two occasions in the GVL area:). In the present study, the species is classified as a Forest Specialist likely to be severely adversely affected by loss of gallery forest in the GVL area.

The Copper-tailed Glossy Starling, *Lamprotornis cupreocauda* is an Upper Guinea Forest endemic restricted to the southern regions of Guinea, Sierra Leone, Liberia, Cote d'Ivoire and Ghana. In Liberia, it has been recorded from the Nimba Mountains, Putu Range, Sapu Park and Gola Forests. It is a species of forest, forest edge and gallery forest, classified as a Forest Specialist in the present study. Although currently regarded as relatively common throughout its range, destruction of forest resulting from commercial logging and clearance for cultivation is likely to be causing widespread declines. The Copper-tailed Glossy Starling was seen only once in the present study.

Ten species observed in the project area in the present study can be considered endemic to the West African sub-region. Two of these species, the Black-headed Rufous Warbler and Copper-tailed Glossy Starling are effectively restricted to the Upper Guinea Forest Zone from Guinea to Ghana.

### **1.5.2 Climate and Atmospheric Environment**

Liberia is known for its sustained heat and heavy rainfall. Because the republic lies south of the Tropic of Cancer and only a few degrees north of the equator, the days vary little in length. The tropical solar radiation is intense and the radiation is uniform across the country. Temperatures remain warm throughout the country, and there is little change in temperature between seasons. The mean annual temperatures in Fahrenheit range from the 70s to the 80s. The mean monthly maxima decline from the low 90s to the mean 80s during the rainy season. The mean monthly minima range from the low 60s in the highlands of the northwest to the low 70s at Monrovia and along the coast. Temperatures inland are warmer than along the coast, but the diurnal range is also greater inland.

Weather data for the project area is unavailable since there is no weather station within the Concession, or in close proximity. The closest location where some weather data is available relevant to the Concession is at Zwedru. However, data for this area is only available up to 2000. The project area is characterized by the weather pattern experienced by the rainforest area of south east Liberia. This weather pattern is different from that experienced by areas such as Buchanan located to the south west of the project area.

The project area experiences a climate similar to most of southern Liberia, which is strongly influenced by the Coastal zone which gives rise to wet and dry seasons. The long wet season usually runs from April to October and the dry season from October to April. The rainfall data for the southeastern region puts annual rainfall between 120-140 inches. Since it has an evergreen rain forest, which receives an annual rainfall of 80–85 inches. (CDA, 2008) The rainy season extends from April through October, with ±90% of the rainfall occurring between mid-April and mid-October.

### **1.5.3 Water Quality**

Surface water samples were collected from water bodies within and around the Concession. Samples were collected from the Tarsue, Konnie and Sanquehn Rivers and from streams flowing into these rivers from the Concession. A total of ten (10) points were sampled for the surface water and three (3) points for ground water. These locations were chosen since, if there are any impacts on water quality by the project



during operation, the impacts can be detected by testing these locations. As such, it was important to confirm the background quality of water. Also, data from the analysis conducted for these areas provided a better understanding of the water quality within the general project area. The results for the sampling are found in the full ESIA report.

Water sampling and analysis was done only during the survey period (rainy season). Additional sampling is required during the dry season to allow for a good understanding of the water quality in the general project area. Since activities within the area are severely limited, it was observed that the water quality would have characteristics of natural waterways in Tarjuowon.

The samples collected were analyzed for several parameters which are important and generally used to determine the quality of water such as pH, turbidity, total metals, conductivity, total suspended solids, dissolved oxygen, total dissolved solids, sulphates, and nitrates. Comparison was made with the draft water quality standard prepared by the EPA for water as well as internationally acceptable limits. These limits are included in the results table. Some analyses were done in the fields while the remainder done at the Laboratory. Turbidity, pH, temperature, conductivity and total dissolved solids were analyzed in the fields. For the analysis conducted during the study most of the parameters analysed were within the acceptable range.

## 1.5.4 Geology

The Tarjuowon project area lies in the Eburnean age province. The Eburnean age province was metamorphosed around 2,150 million years ago. Rocks of the Eburnean Age are similar to those of the Liberian Age in terms of structural trend but are more biotite rich. A major tectonic feature within rocks of the Eburnean Age province is the Dube shear zone. It is 2 to 3km wide and has been delineated on the basis of outcrops, topography and magnetic data.

## Soil Environment

The main soil-forming parent materials of the inland areas of Sinoe County are Pre-Cambrian metamorphic rocks, comprising gneisses with inclusions of schist, diorite, amphibole, granite and iron formations. The iron formation underlies the Putu Range and is composed of magnetite, quartz and minor iron silicate minerals. The region has been subjected to long periods of intense weathering which have resulted in fairly uniform, deep, soil parent material. The upper layers have usually been subject to substantial colluvial (gravitational) redistribution. This superficial weathered regolith commonly comprises mottled clay which is enriched with iron and aluminium oxides derived from weathering in the surface layers and commonly called laterite.

The soil found throughout the Concession is of typical laterite soils which are porous and claylike, containing mainly metal oxides and possessing varying colours based on the concentration of the various metal oxides present.

In terms of soil characterization, the study site is generally comprised of latosols (ferralsols), Ferralsol is one of the 30 soil groups in the classification system of the Food and Agriculture Organization (FAO). Ferralsols are red and yellow weathered soils whose colors result from an accumulation of metal oxides, particularly iron and aluminium (from which the name of the soil group is derived). They are formed on geologically old parent materials in humid tropical climates, with rainforest vegetation growing in the natural state. Because of the residual metal oxides and the leaching of mineral nutrients, they have low fertility and require additions of lime and fertilizer if they are to be used for agriculture. Tree crops such as oil palm, rubber, or coffee are suitable, but pasture is often their main agricultural use after the original forest is cleared.

Soil erosion and land degradation can be seen in many places covered during the transect surveys, caused mainly by slash and burn agriculture. Activities associated with this farming practice degrades the forest and remove vegetation cover, it can lead to soil erosion by both wind and, in the case of torrential rain, removal of fertile top soil through sheet erosion, often causing the formation of deep gullies. Soil erosion and short fallow cycles of shifting agriculture lead to loss of soil fertility and productivity.

## Hydrology and Drainage

The Concession is drained by 3 major rivers occurring in the area. The Sehnkwehn River located north of the concession flows from west to east above the concession area, with its tributary the Coonie Creek flowing directly into the concession area. The Tarsue River (Buto) flow south of the concession area in similar west to east direction at the bottom of the concession area. Within the concession is the Coonie, Tonnie and Wuon Creeks . The Coonie Creek has several tributaries that flow across the project area. The Tarsue River passes through the bottom at transect 2A toward the Sehnkwehn River of the Concession and drains most of the southern and western portion of this area.

Drainage into the larger rivers is facilitated by a number of minor creeks inside the Concession. These smaller creeks form an intricate drainage pattern that allows for the area to be well drained. However, some of these creeks are seasonal and are slow to fast flowing with meandering channels. The rivers and creeks within and around the concession area are characterized by very wide variation in water levels between the dry season and the wet season. Moreover, some of the smaller water bodies dry out completely during the dry season while during the rainy season there can be significant flooding. None of the smaller water bodies within the Concession are navigable as a result of the presence of vegetation and logs, even during the rainy some sections of the Concession along the main rivers. season. In the dry season, it is sometimes difficult and dangerous to access

### 1.5.5 Land Use

With the exception of minor farming activities currently being done in the concession area there are no land use or other activities currently within the concession area. Sunuoh's Town and Bestnewlu are centrally located communal lands within the project area. However, historically, the wider project area including sections of the Concession was used for logging by Vamplar. Vamplar operated in the area prior to the civil crisis (in the 1970s) and has since left the area with traces of its logging activities. Based on the FDA Land use characterization, the area can be considered as areas suitable for commercial agriculture.

The prevailing system of cultivation for both rice and cassava is known as shifting agriculture, or bush fallow. Fields are cultivated for three to four years, after which they are left fallow for periods of up to ten years to restore their fertility. The land preparation prior to farming is marked by slashing the vegetation and felling of large trees followed by burning. After the farm has been burnt the remnants stumps and vegetation is cleared from the farm to make way for planting. The use of chemical/fertilizer has not been reported in the area.

Farm labor is usually manual, without the aid of animals or mechanization. Farmers occasionally form what is locally cooperative groups that rotational partakes in farming basis on a pro rata basis. Nearly all agriculture in the area relies on natural rainfall. Land is regulated based on customary rules that are administered by tribal authorities. Land is seen as a common/collective resource belonging to the larger clan or district. This ownership status is further divided into sub-units of individual towns or villages. Individual members and families have usufruct rights, dependent upon occupancy or use. The usufruct rights may be short-term (shifting cultivation-farming) or long-term, even passed down several generations (e.g., houses, tree farms), but never mature into full ownership. Strangers, or those in the community who re not of local descent (such as temporary residents, sharecroppers, or a person marrying into a ommunity), are also granted usufruct rights under certain conditions.

During the focus group discussions, this system was confirmed, as land is held under a communal land system, and administered and allocated by local authorities: Paramount chief, Clan Chief and Town Chief. Decisions regarding land are made at the district level. No individual town or clan is able to allocate, lease or sell land to any party which is not a member of the larger community without the consent of the district authority. Conflicts over land matters between towns or clans is usually adjudicated by the council of authorities headed by the Paramount Chief who implicitly is the supreme authority regarding land matter at the local level. Communities view lands are their Rights and Livelihood for survival and their posterity. There is a strong connection between the community and their ancestral spirits.

## 1.5.6 Socio-Economic Environment

### Dynamics and Structures

The project area essentially comprise of two tribes-Krus and Sarpos. The Krus are in the majority while the Sarpos are in the minority. However, the largest community with the largest population (Plaindialebo) happens to be a Sarpo community. The settlements range from tiny hamlets of thatched huts to larger settlements of corrugated roofs and mud-plastered houses (see figure below). Most villages are small; nearly 90 percent have less than 50 houses. Most are nucleated settlements that are aligned along the roads. The houses are built with small lanes for passage of people. Village fields surround the settlement and are generally within easy walking distance (30 minutes).

Viewed from a distance, these communities may appear deceptively simple. A cluster of mudplastered walls shaded by a few trees, set among a stretch of green or dun-colored fields, with a few people slowly coming or going, livestock lowing, and birds singing-all present an image of harmonious simplicity.

In actuality, life in these communities is far from simple. Each village is connected through a variety of crucial linkages with other villages, the clan and the larger district. Almost all of the residents characterize their primary source of livelihood as farming. The district seat is located in Unification City where the District Superintendent has his office building constructed by the government. The District Superintendent runs the day to day affairs of the district. The structure of political leadership is characterized by a vertically linked structure that runs from the District Superintendent to the Town chief.

There are two ways by which local decisions are made. *Firstly, the local* people in the area participate in decision making through general town meetings called by the local town chiefs and elders. However, as part of such process, the purpose of the meeting is usually stated and individual community members are given the chance to ask questions, give their inputs regarding situations unfolding in the area and clarification. The town elders and traditional leaders usually exert a lot of influence during these meetings by providing expert opinion and guidance to the participants. The opinion of the elders and traditional leaders are the basis for which consensus is reached in these meetings. These processes relate to matters concerning local town development, resolving conflicts like family feuds etc.

Another means of decision making process used in the community allows the affected parties or community to participate through their local leaders or representatives including the involvement of all heads of social grouping within the area such as: council of elders, women representatives, youth representatives, quarter chiefs, traditional leaders, and heads of community based organization etc. These representatives are usually summoned and are hereby overseen by the senior chief (i.e. paramount chief) to discuss critical issues regarding the clan, chiefdom or district. As the results of such local representatives gathered, issues such as land matters, conflicts with neighboring towns, sacred matters etc. Decisions in these meetings are reached through consensus and communicated by the representatives to other members of the town as to enhance smooth operation of the project and good community relationship and harmony.

### Main Economic Activities

The dominant economic activities identified by the community members were government services, and farming. Many of the males are reportedly engaged with artisanal mining activities in other parts of the county and have to be away from their homes for long periods. Government services account for a major segment of the population. Employment at the level of the local authorities, schools, clinics and other government services attract close to 50% of the adult population in the project communities. On the

average a household generates approximately LD\$7,200.00 from government service employment and LD\$ 500.00 from farm income monthly.

There is a significant lack of private enterprises in the area. Farming and gathering are undertaken at a subsistence level in these communities. Surplus produce from farming is usually sold within the community or outside.

A greater percentage of families are very poor with very low to subsistence levels of household incomes. The greater proportion of the households is not employed and earns approximately LD\$700.00 or less per month and therefore, have very low spending power. Many of these stakeholders cultivate their farms and small kitchen gardens in which they grow some vegetables thus supplement their household needs. Some residents also keep chickens and small ruminants which provide additional meat or income from sales.

## **Local Socio Economic infrastructures and conditions**

Basic services and infrastructures for transport, communication, healthcare and sanitation are in dire need in many of the communities. The project area is connected by means of a laterite road that runs parallel from south to north through seven (7) of the project host communities. Bestnewlu for its part has no access to motor road, while the motor road leading to Sonuhan Town from Unification is in bad condition with two (2) of the bridges badly damaged. A memorandum of understanding has been signed between the communities and GVL for the rehabilitation of the major road that connects the communities to Greenville.

Unification City, the district headquarter, from all indications is gradually improving which is evidence in the many changes to the types of houses being constructed at present. Most of the houses are covered by metal sheet (zinc) unlike years back. There are few houses constructed with sanitation facilities (pit latrines). The city has one junior high school that runs an adult literacy program at night. There is a newly constructed clinic pending dedication. Meanwhile the only clinic in the city is housed in a dilapidated mud brick house. A new facility has recently been constructed but is yet to be opened to the public.

There is a community electrification scheme supported by a 20 kv generator given to the city by the county superintendent under the district development fund. However the maintenance of this power system is a major issue. In fact this generator was never powered during the days that the team stayed in the city. Most of the community dwellers get drinking water from hand pump constructed by non-governmental organizations some of which are not operating at the moment. There is a football field located in the middle of the city. In order to acquire food stocks and other items most of the city dwellers depend on four shops located in the town. None timber items such as fire wood and sticks for construction are gathered from outside the city within 1km walking distance.

## **Residents cultural comfort zone**

It is expected that with the investments and increases in cash flow to the communities that there will be behavioral changes within the affiliated communities. Competition for employment and the supply of services may disrupt or even change local traditions in the short term. Workers will bring to their communities the practices learnt at the work site. The company must act within its best capacity to ensure that they are not exposed to harmful practices at the site which can be transferred to their homes. Residents want to see a rigid education and awareness program as part of the overall work program to combat negative social behaviors.

## **Security issues**

Currently residents feel very secure in their communities, feeling free to move about at any time of the day and to leave their personal assets—including livestock, farm implements, clothes and storehouses untended without fear of theft or damage. Any other way could be very stressful to residents.

## **Waste generation and disposal**

There are no specialized waste disposal sites within any of the communities. Waste generated are usually buried, burnt or dumped in the open. It is difficult to provide an estimate of the total quantity of non-process solid waste likely currently generated in the study communities. According to the World Bank Technical Paper No. 426 (Rushbrook and Pugh, 1999), the estimated rate of generation of domestic waste in developing countries is 0.5kg per person per day. As such, a population of around 5,404 individuals estimated in the area could generate approximately 2.7 tons of solid domestic waste per day. At an estimated density of 151kg/m<sup>3</sup>, this would equate to 17.8m<sup>3</sup> solid wastes per day.

The waste stream comprise predominantly of non-hazardous waste types including biodegradable food items, plastic and cloth. Communities hope that their environment will remain clean and that they do not suffer from pollutants of any description.

## **Cultural heritage/legacy**

The most revered sacred site name —Tarjuwae is a hill located north east outside of the project area. Residents of the entire district consider this area as their primary cultural and traditional shrine. Three sacred areas have been identified and demarcated within the project area. These areas have been demarcated There is no record of any indigenous assets within the concession area. GVL will however notify the relevant authorities once any such artefacts or indigenous assets are discovered during its operations. If any significant sites are located, GVL will grant access to authorized persons.

## **Health & Safety Concerns**

There will be positive and negative consequences arising out of the development. Residents will benefit from the construction of medical facility with adequately trained staff and equipment in the area. This could help alleviate the difficulty in accessing health care in the area and reduce mortality rate for pregnant women and children.

On the other hand, the opening of the area to different levels of trade and economic activities and the influx of workers into the district has the potential of creating an undesirable situation for the community. There could be an emergence of trade in alcoholic beverages, drugs and prostitution. So far, the current flow of persons traversing the area has not been associated with any major health problems for the communities. GVL expects that any such health impacts will be minimal, especially as the Ministry of Health is quite active in its vaccination initiatives, health education programs, and in developing the local capability to detect Malaria. For example, the current health facilities (clinics) in the area can conduct smears and detect Malaria among residents and visitors. It is anticipated though that as per the concession agreement, GVL will contribute to health care delivery within the concession area and beyond.

Residents also expect that GVL will take measures to restrict inappropriate behavior among its own employees. Information garnered from the existing health facilities in Planidialebo and Unification communities indicate that the major health problem in the area are malaria, respiratory infections, water borne diseases and sexually transmitted infections.

## **Vulnerability**

It has been important to distinguish disadvantage and vulnerable groups in the project area in order to determine how the risks and impacts might potentially differ among these groups. As defined by the World Bank, vulnerable and disadvantaged groups can include children, orphans, refugees, women, the disabled and/or the elderly, and these categories were considered during the focus group discussions.

### **The elderly**

About 6% of the survey population is above the age of 46, a lesser percentage of this number is above the age of 65, this category of citizens should be considered as vulnerable for several reasons. This is so because they normally require additional healthcare services, in the midst of the existing poverty conditions. Any project-related impact should thus consider old-age related aspects, such as when roads are constructed, when traffic increases, water provision and healthcare services. The older generation in these areas normally suffers from joint pains and additional ailments, all which impede their ability to react swiftly in response to project-related impacts. Additionally, elderly people enjoy high status amongst village members, and continue to provide leadership and make key decisions in these villages. Any project-induced impact, therefore, will be directly felt by the elders, who are usually responsible for decision-making and, especially, conflict resolution. Traditionally elderly people are cared for by their families.

Given the strong social fabric in the project area, and a culture of respect for one's elders, most senior citizens rely on family members for assistance throughout old age; hence in the event where these family members are significantly affected by the project, it is likely that the elderly will suffer a multiple effect.

### **Women**

The population of women in the project area based on the 2008 population census is slightly more than the men in almost every village. A number of female headed households were also identified who are likely to bear more burdens than male-headed households because they are required to perform their traditional roles such as child bearing and everyday household chores, (washing clothes, collecting wood, cooking and looking after the children), making them to work harder. They would also be responsible for traditional roles assigned to men such as managing household finances, agriculture, decision-making and construction of shelter. In addition, women are normally the first to have to deal with food insecurity and malnourished children, as children are afraid to confide in their fathers if they are hungry.

### **Children and Youth**

More than 50% of the population is less than 15 years of age who are of school-going age. These findings indicate that the study area has a largely youthful population. Consequently, it is to be expected that such youth would be actively seeking employment opportunities. The majority of children in the study area are exposed to a host of vulnerabilities, both for lack of poor infrastructure and social services. Children are also often called upon to contribute to household incomes, such as to sell agricultural produce. In the region, children, notably young girls, may be vulnerable to sexual exploitation thereby exposing them to STDs, where infection rates may be higher.

### **Food Security**

Based on the field observations and discussions held with the community residents, it can be concluded that food insecurity is a major problem in these communities. Most of the farmers reported that their farm harvest generated in the previous year did not last up to the planting season. They have had to improvise by other means including selling of livestock, wild oil palm, hunting or fishing.

The number of agricultural fields seemed to have increased in the last few years, whilst production levels have also proliferated with the increase in population in post war setting. 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 to meet other social and health needs. 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. The situation of food insecurity could worsen with the planned development as more people would prefer employment with the company. Plans would have to be developed to ensure that communities are motivated to regain their sense of agricultural lifestyles, and have land available for their own agricultural productions. Introduction of modern and sustainable agriculture methods those are much more productive, sedentary and less labor intensive will be required in this direction.

## **Training & Employment**

GVL will need to hire persons for jobs such as plantation field workers, construction workers, machine operators, medics (establishment of medical facilities) and data entry clerks etc. Females would be employed to do jobs such as planting, weeding, harvesting etc. GVL will prioritize the training and employment of its employees from the local communities as much as possible. Many residents of the lack the requisite skills but are interested in acquiring training and skills required by GVL for its operations. The inflow of large volumes of cash within the communities could lead to both negative and positive benefits.



## 1.6. Summary of key Findings from the Socio Economic Impact Assessment

- Stakeholder communities consulted have shown a keen interest and consent for the project. Residents are anxious to see the development come into fruition in the soonest possible time. Communities are anxious that the project will provide them opportunity for employment and livelihood improvement. There is also a high hope that the project will support community infrastructure development such as road rehabilitation.
- The management of community expectation and anxieties is an important aspect of the project success. GVL needs to maintain a direct flow of communication with the communities and ensure that communities' expectations are managed through adequate awareness and information sharing about project activities and support to the communities to avoid dwindling community support from the residents. The Community Affairs and Social Sustainability Team of GVL have a key role to play in this direction. The community affairs team of GVL has so far been constructively engaged with the communities directly through their local town authorities and designated committees.
- Apart from the towns of Bestnewlu and Sonuhan that are in the interior of the proposed project area; all of the communities have indicated that they have sufficient land to farm outside of the area offered to GVL. GVL community affairs team has collaborated with the towns of Bestnewlu and Sonuohn to identify and demarcate farmlands that have been mapped and excluded from the development areas; to ensure that the livelihood of these communities are not significantly undermine by the project. The study team has been able to independently observe and verify the participation of the local communities in the mapping exercises. GVL community affairs team now needs to engage with the authorities of the ENI Mission. It was reported that part of the mission land extends into the proposed project area. The Executive Director of the mission, Mr. Klahn-Gboloh Jarbah has indicated that the mission is willing to allow GVL to develop this parcel of land in support of GVL oil palm development in the area. He however indicated that the area in question needs to be identified and demarcated from the remaining portion of the mission's land which is about 500 acres.
- The project area mainly consists of two tribes, the majority Kru and minority Sarpo. The civil war (1990-2003) had a great effect on these two tribes with each siding with rival rebel groups. There are traded accusations between the tribes of mass killings and destruction of property. Efforts have been made lately to reconcile the parties, which have enabled them to live in harmony once again. GVL needs to demonstrate impartiality in all of its dealings with the two tribes. Transparency in handling employment and community support in the area along with adequate dissemination of information is very important in this regard.
- The total population of the 9 communities associated with the project is estimated at around 5404, comprising of 666 households. More than 50% of this population is below the age of 15 years. The town of Plaindialebo is the largest town in the area with about 33% of the overall population, which is occupied by the Sapo Tribe.

- Land in the project area is seen as a common resource that is administered by the traditional council headed by the Paramount Chief. Land tenure system is based on the concept of communal ownership of land. At the same time, individual families are allowed to cultivate a specific area (which include fallow areas), as long as that area is not under current use by another family. Unused lands are reverted to the community. There are no legal titles to land in the area.
- All of the communities in the area practice shifting cultivation using traditional slash and burn method. It is estimated that around 600 ha of land is cleared in the area within every three year period after which the farmers move to new areas after production levels drop. The fallow period for farmlands in the area range from 5-10 years.
- In terms of sacred areas, there is one sacred site located in the town of Bestnewlu that has already been identified, mapped and demarcated by the community affairs teams of GVL and the local residents. Another one has been reported in the town of Down. Apart from these two there are no other areas of sacred or cultural sensitive areas that have been reported by the communities. The district of Tarjuowon however has a major sacred site located outside of the concession area. This site is noted to be highly reverend amongst the population for sacrifices and communication with their ancestral spirits
- Communities have indicated that they are willing to adapt to new farming practices that are piloted and proven to be more productive and less labor intensive.
- Communities outside of the immediate project area that is located in Tarjuowon district feel that they are a collective part of the project and are therefore interested in benefiting from the project in terms of employment, infrastructure development and smallholders.
- Generally, infrastructures and social services in the study area and the district at large are in dire need. Many of the roads are impassable during the peak of the rainy season. Most of the timber bridges need to be rehabilitated; one of the towns (Bestnewlu) in the middle of the proposed project area is not accessible by vehicle. The bridges leading to the town of Sonuhun are all in a dilapidated state posing serious risks to vehicular passage. Compared to Greenville, the cost of living in terms of basic goods and services in the project area is extremely high due to the bad road condition and the high cost of transportation.
- Most of the youth in the district lack skill for employment. It is important that training programs are organized by GVL to enable youth in the area to acquire skills that are required by the project in the soonest possible time, lest the communities begin to perceive that the project is more favourable to outsiders.
- The livelihood of the communities' area largely bordered around government jobs and agriculture labor. Many of the youth are unemployed.
- Facilities for schools and clinics are in need of structural support and training for the staff. Additionally, there are voluntary staff who are not on government payroll. Most of the teachers in the various schools are not qualify to teach as teacher, therefor a trained and a

qualified teacher should teach or trained those existing once to meet up with the Ministry of Education standard for teachers.

- All of the towns in the district lack public toilet, therefore there is need to construct public toilet in every town in the district to avoid health hazard because the population is increasing due to GVL intervention.
- There is no sanitation system in the various towns in Tarjouwon district, a system need to be put into place to improve their living condition.
- The district has only one high school, which is in Plandiabo, therefore the primary school in Unification City needs to be elevated so that students do not have to travel long distance to acquired high school education.
- There is no Elementary and junior high school building in Bestnewlu, Shaw David, Sharkpeh and Sounohn town to enable the children acquired better education. Schools arelocated in open makeshift structure. These communities need to have school buildings with qualified teaching staff.
- All of the town don't have access to market building, thus making it difficult to purchase commodities from Greenville general market.
- The clinic in Unification city is servicing other villages and towns in the district but lack adequate nurses and man power to operate. The facility needs to be improved with the hiring of qualified Professional Nurses
- There is a feeling of marginalization expressed by the Sapo people who are feeling marginalized by the majority Kru tribe in the district. They mentioned in the focus groups and community meetings that most of the top government jobs in the district are all occupied by the Kru tribe.

## **1.7. 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 and such potential impacts were assessed according to a set of assessment criteria and a significance value was assigned. The No Action Alternative was assigned in consideration to the project and potential impacts were identified and their level of significance was assessed. Mitigation measures were proposed for all the identified potential impacts and are documented in the main ESIA report and the Summary Management and Monitoring Plan. People, organizations/institutions and other stakeholders of the project, including interested parties have been identified at local and national level.

## 2.0 Summary from HCV Assessments:

### Primary forest in the assessment area

There are no primary forests in the proposed Tarjuowon development area, as the area has been previously logged on a commercial scale and contains several active and abandoned farms, as well as extensive areas of fallow lands. The 2004 National Landcover analysis and map for Liberia show that this area is a mosaic of *open dense forest, agriculture degraded land, mixed agricultural and forest area* (Forest Resource Management 2004<sup>1</sup>) – Figure 3. Information obtained from the Forestry Development Authority (FDA) and verified through field investigations suggest that the forests in the proposed development area have been exploited by commercial timber operators which allows the local people from the communities bordering the proposed development area to use the land for slash and burn agriculture. However, some areas towards the western side of the proposed development area contain reasonable forest cover – described by the botanical survey team as intermediate secondary forest. Recommendations from stakeholders during the multi-stakeholder consultative workshop was that GVL, in collaboration with the landowning communities and the FDA, should consider setting aside the remnant secondary forest in the western corridor and excluding it from conversion activities to allow connectivity by a *forest and wildlife* corridor with the adjacent Krahn Bassa National Forest. The area with remnant secondary forest is shown (*forest conservation* in brown) in Figure 5, and the corridor is also highlighted, (as hashed area *forest connectivity zone*).

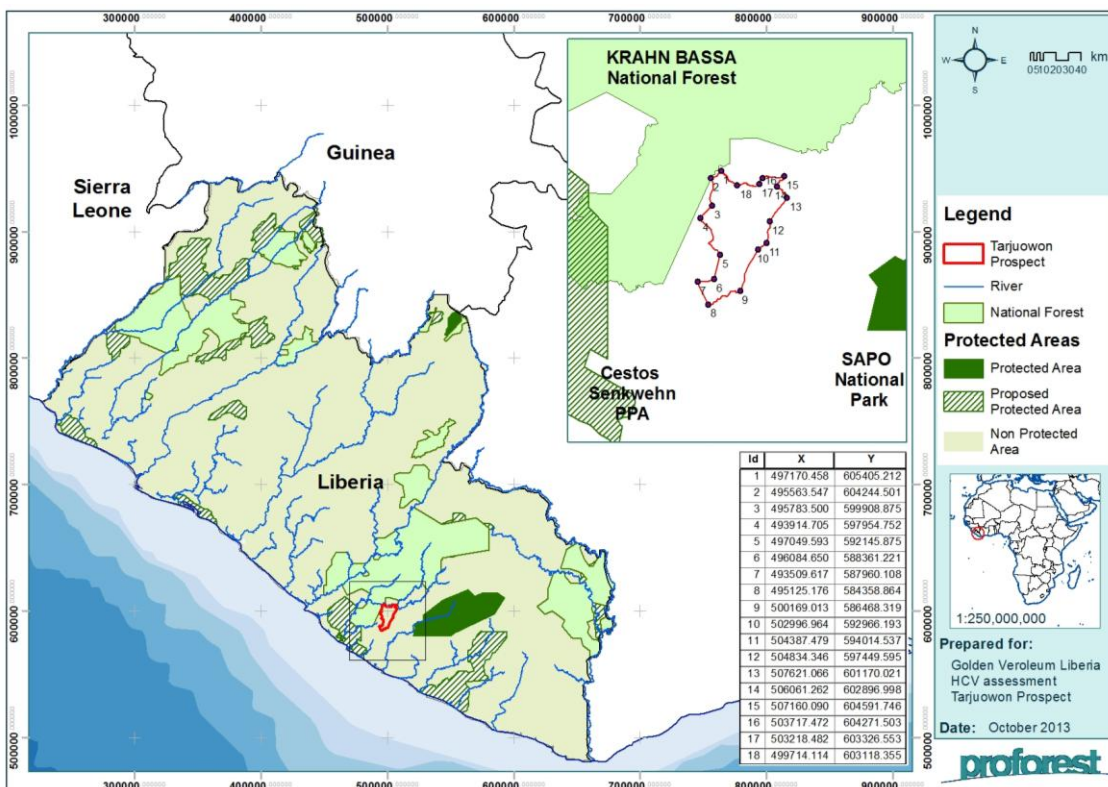
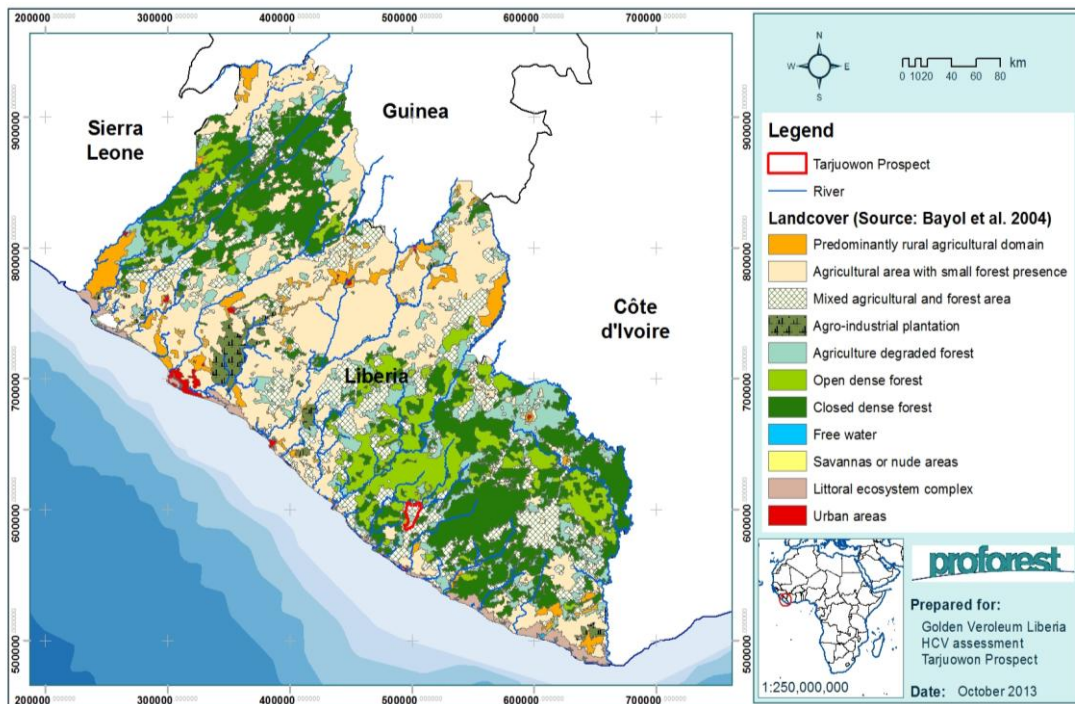


Figure 5: Location of the proposed Tarjuowon development area and protected areas in Liberia

<sup>1</sup> Forest Resources Management. 2004. *Current State of Forest Cover in Liberia*. (A report for the World Bank)

The closest point of the eastern boundary of the proposed development area is approx. 17 km. from the Sapo National Park (dark green in Figure 1). Although the north-western corner is about 1km from the Krahn Bassa National Forest - a production forest (shown in light green Figure 1). The closest point from the western boundary of the proposed development area to the Sestos-Senkwehn proposed protected area (light-green hashed area in Figure 1) is approximately 15 km. The western boundary of the proposed development area and the north-western part of the proposed development area consist of a stretch of a good secondary forest with similar characteristics of the forests found in the Krahn Bassa National Forest. It is therefore recommended in consultation with national stakeholders that the stretch of secondary forest in the western boundary be set aside given its potential to regenerate naturally to become an important matured forest cover and serving as a conservation corridor between the proposed development area and the Krahn Bassa National Forest (Figure 6)



**Figure 6: Landcover map of Liberia showing the location of the proposed development area**

## Areas required to maintain or enhance HCVs

During the extensive assessment process, including wide consultation with relevant stakeholders, several HCVs were identified as being present or potentially present. These were: HCV 1.2; HCV 4.1; HCV 4.2; HCV 5 and HCV 6 (present) and HCV 1.3 and HCV 1.4 (potentially present). In order to ensure that these values are maintained the HCV areas have been identified. In defining areas required to maintain or enhance HCVs, the various types of HCVs identified in the proposed development area and their locations are presented below.

## **HCV 1.2: Concentrations of rare, threatened or endangered species**

The assessment team observed few signs of Jentink's duiker (endangered on IUCN list and protected in Liberia) in and around the forest in the south-west corner of the proposed development area. Also signs of Bongo (near threatened on IUCN list and protected in Liberian) were also observed in the proposed development area. HCV 1.2 is therefore concluded to be present and recommendations made for setting aside the block of secondary forest in the western and south-western areas of the proposed development area. These areas are to be excluded from conversion activities. Although protected, the Bongo is known to be found in almost all forests areas including degraded forests and farmland areas in Liberia. The specific areas where signs of Bongo were observed has not been classified as HCV areas given the presence of the species in almost all areas of Liberia and the fact that only few signs were observed with no observation of special habitats of the species in the proposed development area. It is therefore recommended that GVL plans its operations in a way that allows the few species of Bongos observed in the proposed development area to move through the recommended set-aside areas and potentially into the Krahn Bassa National Forest. The areas required to maintain and enhance HCV 1.2 (*Concentrations of rare, threatened or endangered species*) is shown in Figure 4; the brown area linking the hashed areas labelled "*Forest conservation and forest connectivity zones*". In addition, there may be some remnant populations of wildfire remaining in the site albeit in very low numbers that currently are found outside the forest conservation zone, therefore the assessment has recommended that any site clearing is down in such a manner as to drive any wildlife towards the conservation area and the connectivity zone.

## **HCV 1.3: Concentrations of endemic species**

This assessment did not identify concentration of endemic species of fauna in the proposed development area. However the endemic plant *Tetraberlinia tubmaniana* is found in the proposed development area. This African pine tree, although endemic, is widespread across Liberia and was not in high concentrations in the proposed development area. It was not considered HCV 1.3 in this site. However, at the regional level there are several mammal species which are regionally endemic. They include: Jentink's duiker, Zebra duiker, and King colobus. Although these are found in the proposed development area, the very low frequency in which signs of these species were encountered during the field assessment suggests that they occur in very low numbers. Ten species of bird considered to be endemic in the West African sub-region were also sighted. Two of these species, the Black-headed Rufous Warbler and Copper-tailed Glossy Starling are effectively restricted to the Upper Guinea Forest Zone from Guinea to Ghana. Although the few signs of these species found suggest that they are not in high concentrations in the proposed development area, HCV 1.3 is considered to be potentially present. Specific locations where signs of these species were sighted have been mapped but given the low numbers and the isolated nature of these signs, specific management areas for HCV 1.3 could not be identified. However, recommendations have been made for GVL to ensure those fauna species are able to move to the set aside areas to help contribute to protection of HCV 1.3 species and conservation of biodiversity in the wider landscape has been proposed for adoption and implementation.

## **HCV 1.4: Areas that contain habitats temporarily used by concentration of seasonal species**

This assessment did not find any areas that contain habitats temporary used by concentration of seasonal species. Secondly, there was no information (data, reports, studies, testimonies etc.) that gave a clear indication that the site contains areas temporarily or seasonally used by concentrations of species. There is no information pertaining to migratory routes or seasonal stopovers for birds. There was neither field findings nor data to suggest that the rivers and streams are especially important as spawning grounds for fish. However, appropriate recommendations have been made for protection of these water bodies because of other unique functions they provide.

Adopting the precautionary principal and considering the fact that there is no data readily available on habitats temporarily used by seasonal concentrations of species, the assessment concluded that HCV 1.4 is “potentially” present. It is recommended that further work is carried out and due care taken during land conversion to confirm the presence or absence of habitats temporarily used by concentration of seasonal species.

#### **HCV 4.1: Forest areas critical to water catchment**

As can be observed in Figure 4 below, there are networks of water bodies in the proposed Tarjuowon development area. Most of these water bodies drain either northwards into the Senkwehn River or southwards into the Tarsue River. A significant number of these water bodies have fairly intact riparian vegetation that play crucial roles in protecting the water bodies and maintaining bank stability. The results of the communities’ consultations suggest that most of these water bodies are not only important sources of water for household use but also provide fisheries resources for human populations in the area. For this reason and the need to protect water bodies, all riparian vegetation in the proposed development areas have been identified as HCV 4.1 for this assessment. Specific management recommendations have been made for this including setting aside appropriate size of buffer on each side of a water body depending on the size of the river. This is also in line with the recommended best practice set by the Liberian Environmental Protection Agency. These buffers need to be carefully identified, demarcated and managed as riparian zones for the maintenance of HCV 4.1.

#### **HCV 4.2: Areas critical to erosion control**

The terrain of the proposed development area under the scope of this assessment is low-lying and generally flat. This assessment did not identify any high slope areas in the proposed development area and therefore does propose a specific zone for HCV 4.2. However, the draft Liberian HCV Toolkit identifies wind erosion that could destroy settlements under HCV 4.2. Additionally, all types of erosion that could affect functionality of water bodies have been classified under HCV 4.2. Because there are two cities located in the proposed development area that require adequate buffer to prevent occurrence destructive winds against settlements and the fact that there are a number of water bodies in the proposed development area that could be affected by erosion as a result of land conversion, HCV 4.2 has been identified to be present. Recommendations provided include setting aside buffer for Bestnewlue and Sonouah cities against wind erosion and excluding conversion of all vegetation on slopes above 20 degrees. It has also been recommended that erosion prevention measures (e.g. terracing, cover crops etc.) are implemented in all areas with slopes between 15 and 20 degrees. GVL is expected to set aside buffer zones for the two settlements and also evaluate all areas with gentle to high slopes carefully prior to any conversion operations.



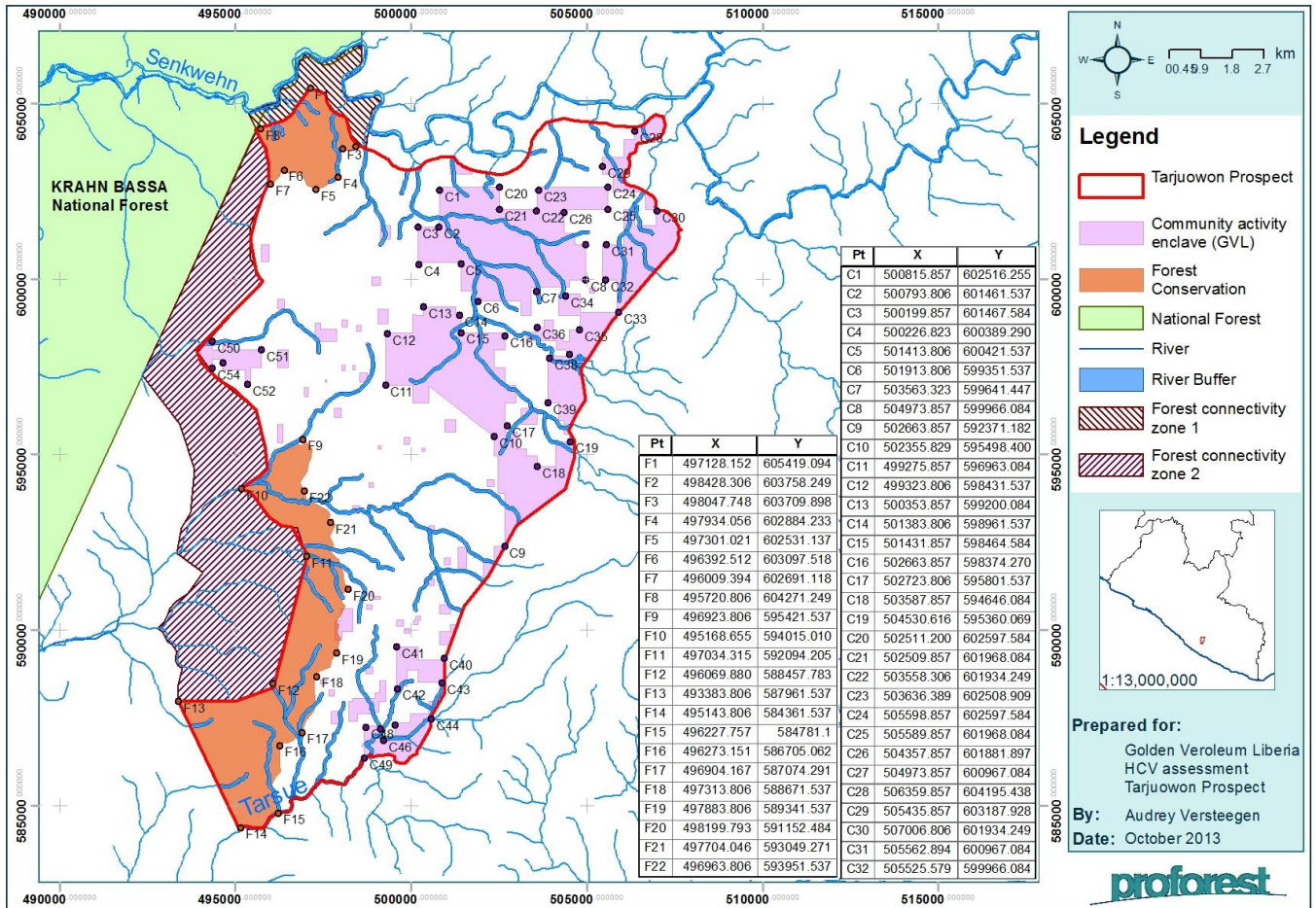
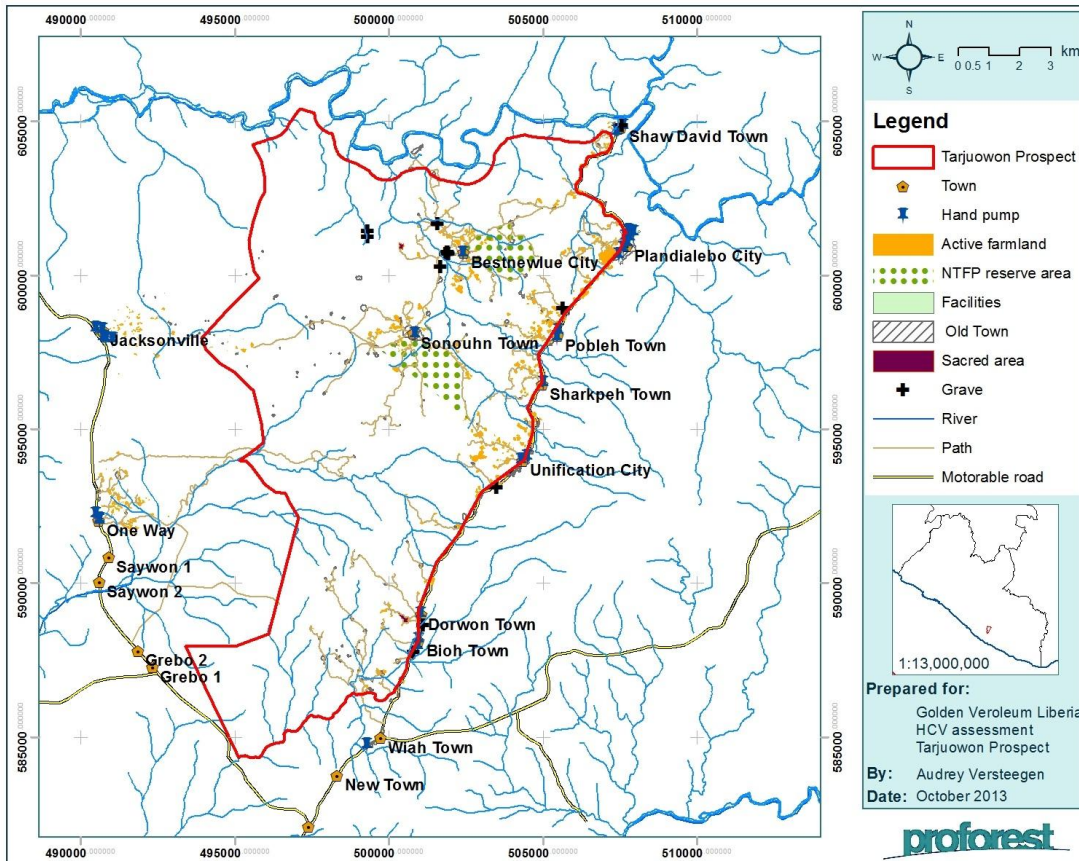


Figure 7: Map of the proposed development area showing set-aside areas, rivers and their buffers

## HCV 5: Areas required to meet basic needs of local communities

As observed under HCV 4.1, the networks of water bodies in the area play a crucial role in the livelihoods of a number of communities in the project catchment area. Additionally, some communities in the areas depend on natural resources of the vegetation in the proposed development area for products such as raphia, poles and monkey vine for house constructions. HCV 5 areas have been identified and mapped (Figure 5). It has been recommended that these areas (pink) are excluded from all forms of conversion activities to enable current and future populations of the two communities to use those areas for farming, fishing, hunting, NTFP collection and other basic needs. Extensive participatory mapping exercises have been carried out in the affected communities with the identification of HCV 5 as a priority objective. Apart from the two communities in the proposed development area, the people of all the other communities outside of the proposed development area indicated that they have suitable alternative areas for meeting their basic needs, such as hunting, fishing, water, NTFP collection etc. In order to ensure an appropriate and large enough land is set aside for the two communities in the proposed development area, a joint GVL and community team have agreed to set-aside reserved areas for future community needs. These two areas are shown in Figure 8 below as *NTFP reserve areas* (in green spots). Besides this, a number of farms were identified in the proposed development areas. Farms encountered were mainly cassava, rice, plantain, and sugarcane, cocoa plantations with some of them being old and abandoned farms. Although farms are not HCV per se, GVL has already mapped out all farms in the proposed development area. The team has therefore recommended that the existing farms should also be excluded from conversion unless there is agreement with the individual farmers concerned that those areas can be converted to oil palm plantations. This agreement must be obtained through a free prior and informed consent (FPIC) process.



**Figure 8:** Map showing locations of Sonouah and Bestnewlue cities and HCV 5 set-aside areas

## HCV 6: Areas critical to cultural identity

It was identified during the assessment and the community consultations that the belief, tradition and culture of most of the villages in the landscape are strongly linked to the land, the vegetation and water bodies in the proposed development area. The population of the communities in the catchment area indicated that they have important sacred sites which they consider as critical to their cultural identity. These sacred sites are usually gravesites (for most of the communities), forests (for the people of Dorwone and Bioh Town), rivers (the Jarnian creek for the people of Plaindelebo), trees, *The Town Crier Rock* (for Sonouah), a cave (Shaw David), hills which include the Tarjuwe Hill for most of the communities and Chlopuah Hill for the people of Wiah Town. All HCV 6 areas have been duly identified in collaboration with the local communities concerned. An example of HCV 6 mapping of sacred sites is shown in Figure 5 – *sacred areas* and *graves*. It has been recommended that GVL works with the local communities as part of the FPIC process in identifying HCV management areas for all of the HCV 6 that have been identified in the proposed development area.

## Areas of peat soils

There are no areas of peat soil in the proposed development area in the Tarjuowon District of the Sinoe County in Liberia.

## **Local people's lands**

The proposed land for the oil palm plantation development is a traditional land owned by the local people. Consultations with the traditional authorities and the general population suggest that the local people offered their land and invited GVL to use the land for agro-industrial oil palm plantation development. GVL accepted the request and currently carrying out an FPIC process with the local population to obtain written consent to cover several areas including HCV management areas and compensations for farms that would be affected by the proposed development. GVL intends to conclude the FPIC process prior to commencing land conversion.

## 3.0 Summary of Plan

### 3.1 Management and Mitigation Plans (SEIA & HCV)

The management of GVL has committed herself to the full implementation of the SEIA and HCV plan as indicated in the identification of all HCV 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 her workers to full will awareness of these HCVs and the objectives of setting these places aside.

Effective monitoring mechanism, which is enhanced by training in HCV management, will be established for the environmental department of the company. The training and essence of these HCVs needs 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 are not the property of GVL but rather valuable assets of the community, especially wherein communities had 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 HCVs it is much more practical to enlist community participation in the management and monitoring of the HCVs. The management and mitigation plans for the HCV and SEIA is considered below:

### 3.2 Monitoring, Evaluation and Responses

Periodic monitoring will have internal and external components.

- Clearly, internal monitoring by the HCV Unit is important for timely management responses.
- A separate agency 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

- Identified the number of known cultural, sacred sites and graves identified, demarcated and marked
- Documented evidence of local participation in HCV management by allowing their input and recording attendance on each HCV assessment.
- Internal and Independent HCV Monitoring and Audit reports should be considered and evidence showing that boundaries of HCVs are known and respected by all.
- Always document complaints regarding HCV abuse and or management and actions taken to correct them, including responsible party assigned.
- 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.*
- Lessons-learned processes involve
  - a) Identification,
  - b) Learning and
  - c) Remembering.

It is expected that at the end of the various monitoring cycles, a quarterly and annually report will be submitted to the Environmental Protection Agency who intend will be able to submit copies to other line ministries such as Agriculture, Water and Sewer, labor, Forestry Development Authority, etc.

### 3.3 Management and Mitigation plan to Enhance or Maintain Conservation Values of identified HCV areas.

Recommendations for the management and mitigation of identified HCV areas are summarized in Table 2. To ensure that the field operations follow the steps provided in this report (and also listed in the table below), GVL will designate responsibility for the monitoring of the field implementation of the measures for protecting and maintaining HCVs in the proposed development area to a person who will be given the authority, time and resources to operate and to train staff properly, prepare robust Standard Operating Procedures (SOPs) including recommendations contained in the detailed HCV report and to organize and to field activities that protect the HCVs before the conversion operations, and to monitor them in the field.

**Table 2: HCV Management and Mitigation Plan Summary**

HCV	Management Objective	Management and monitoring actions	Time period
1.2 1.3	To protect the stretch of secondary forest in the western boundaries of the concession to contribute to ensuring maintenance of habitats and biodiversity values in the area	<ul style="list-style-type: none"> <li>Delineation of the 375.5 ha and the 3,387.6 ha secondary forests to the north-west and western boundaries of the concession for conservation purposes as proposed by the HCV assessors.</li> <li>Regular patrol and assessment of species presence and abundance in the set-aside areas</li> <li>Sensitization local communities to agree on what actions are allowed and forbidden in the set-aside areas</li> <li>Sensitization of workers on what action is allowed and prohibited in set-aside areas</li> <li>Development and erection of signboards in the HCV areas</li> <li>Continual monitoring of the quality of the set-aside areas</li> <li>Land preparation will be started away and towards set-aside areas</li> </ul>	Q1 2014  Continuous
1.4	To confirm or otherwise of habitats used by temporary used by concentration of seasonal species	<ul style="list-style-type: none"> <li>The environmental team to verify during land conversion whether there are any habitats in the proposed area temporary used by concentration of species</li> <li>Areas temporary used by concentration of species if identified will be delineated and excluded from conversion activities</li> <li>Appropriate management and monitoring plans for such areas if identified will be prepared and implemented in consultation with relevant experts and stakeholders</li> </ul>	Prior to development
4.1 4.2	To avoid erosion and pollution and to ensure continuous flow of clean water for the populations of communities by setting aside and maintaining appropriate buffer zones	<ul style="list-style-type: none"> <li>Delineation of all buffer zones as stipulated in the HCV assessment report</li> <li>Integration of management prescriptions of all such areas into the company's standard operating procedures</li> <li>Incorporating all buffer zones and set-aside areas into the company's GIS and standard</li> </ul>	Prior to development

	for all rivers and streams in the concession and to exclude hilly areas and problem soil areas from all plantation activities.	<p>operating procedures (SOPs)</p> <ul style="list-style-type: none"> <li>• Training of land preparation teams to ensure all set-aside areas and buffer zones are not affected during land preparation</li> <li>• Nursery sites will be established at least 100 metres from water bodies</li> <li>• Periodic evaluation of operational compliance with company's SOPs</li> <li>• Periodic interview to assess local peoples' views on water quality</li> <li>• All slopes above 20 degrees will be excluded from planting</li> <li>• Erosion prevention measures will be used in all areas with slopes of 15-20°</li> </ul>	Continuous
5 and 6	To ensure that the oil palm plantation development programme does not threaten communities' access to water and non-timber forest resources as well as communities sacred sites, spiritual and traditional use areas	<ul style="list-style-type: none"> <li>• Appropriate management areas for HCV 5 and 6 agreed with all affected communities</li> <li>• HCV 5 and 6 areas delineated in collaboration with local communities and excluded from plantation activities</li> <li>• Sign-post prepared and erected for all HCV 5 and 6 areas</li> <li>• HCV 5 and 6 areas mapped and incorporated into GIS system and SOPs</li> <li>• Periodic water quality assessment to monitor quality of water bodies in the concession</li> <li>• Interview-based monitoring of HCV 5 and 6 status will be conducted bi-annually with the first taking place at the beginning of the project, as part of broader social engagement programs.</li> <li>• Communities engagement plans will be collaboratively developed with all communities prior to commencement of project</li> <li>• A minimum frequency of one meeting with each community will be implemented to get their feedback on how the operation is affecting HCV 5 and 6 areas</li> </ul>	<p>Prior to development</p> <p>Continuous</p>
Social Responsibility	Develop Corporate Social Responsibility programmes with active participation of local communities to contribute to developmental programme of the host communities	<ul style="list-style-type: none"> <li>• Conduct consultations with local populations and governmental agencies to understand social needs of local peoples and based on that provide support services</li> <li>• Social development plan to be prepared after social intervention support have been identified</li> <li>• Social development plan will be implemented in collaboration with local communities and local government agencies</li> <li>• Definition of conflict communication and resolution procedures with local communities</li> <li>• Interview-based monitoring of impacts of social intervention programmes</li> </ul>	Continuous
Internal policies	Develop internal policies and procedures to guide operations and to ensure high standards of environmental and safety measures for workers and local population	<p>Internal policies and procedures will be prepared implemented and reviewed periodically to ensure they deliver their intended impacts. Polices to be prepared include:</p> <ul style="list-style-type: none"> <li>• Corporate Social Responsibility Policy</li> <li>• Policy on Health and Safety</li> <li>• Training and capacity building</li> </ul>	Continuous

## 3.4 Management and Mitigation Plans (ESIA)

Based on the analysis of the environmental impacts of the proposed Tarjuowon Oil Palm Development project, mitigation measures have been proposed. These mitigation measures are intended to reduce all potentially significant effects of the preferred alternative to less than significant levels. These mitigation measures have been developed in respect to the following general rules:

- a) Avoidance of major potential impacts: major impacts are impacts where an accepted limit or standard may be exceeded, or large magnitude impacts occur to highly valued/sensitive resources/receptors.
- b) Reduction of major and moderate potential impacts: moderate impacts are impacts within accepted limits and standards. Moderate impacts may cover a broad range, from a threshold below which the impact is minor, up to a level that might be just short of breaching an established (legal) limit.
- c) Minor potential impacts occur where effects are experienced, but the impact magnitudes are sufficiently small and well within accepted standards, and/or the receptors are of low sensitivity/value.

**Table 3: ESIA Mitigation and Management Plan Summary**

Potential Impact	Receptors	Proposed Mitigation Measures
Land acquisition and compensation issues	Land owners (Tarjuowon Community)/ farmers	<p>Ensure that appropriate documents are in place with record of community consent (FPIC) to offer land. Participatory map prepared for project land offered by community.</p> <p>Appropriate compensation procedures will be followed to ensure that payments made to Project-Affected-Persons (PAPs) are within legal requirements. The MOA framework to be followed for compensation payment has been presented in Appendix 12 of the ESIA report. Monetary compensations will be paid to people whose farms or crops will be destroyed due to the development. GVL 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.</p> <p>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 has been formed to ensure that fair compensation are paid to the right individuals. The committee comprises farmers and representatives selected from each town.</p> <p>Community Sensitization Program The Company has established a community affairs department to engage with community people on various project 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</p>

Potential Impact	Receptors	Proposed Mitigation Measures
		implementation, resolution of grievances and dissemination of project information.
Land issues	Local communities/ land owners Other resource users	<p>Survey and mapping of all project lands and land set aside for community farms, and HCVs.</p> <p>Privately own plots to be mapped and information documented for future reference.</p> <p>GVL 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.</p> <p>GVL should notify authorities of any emerging issues and work with public agencies to address same.</p> <p>GVL intends to maintain a cordial relationship with communities and frequently engage the NGO on planned activities as it relates to the developmental and operational activities of the Company.</p> <p>The Company will abide by the guidelines.</p> <p>GVL does not intend to prevent Tarjuowonians from accessing the Concession area</p> <p>The communities would be kept abreast of the development plans of the project would also be consulted by GVL for advise based on their experiences within the project environment in the planning and implementation of the project.</p>
<p>Land clearing and development</p> <p>☒☒Limit local access to forest resources including land in the project area</p> <p>☒☒Limit access to available land for farming, collection of NTFP, hunting and fishing</p> <p>☒☒Desecration of sacred sites and graves as well as their loss during operation activities</p>	Local communities	<p>Engage staff/communities/residents in discussion and consultations to address <i>mutual concerns</i>, whether these relate to GVLs operations or not.</p> <p>Monitor any evolving land use in the area and report any illegal activities.</p> <p>Develop smallholders program as soon as possible to give communities a sense of ownership in the project.</p> <p>Work with communities to identify and demarcate reserve areas for community agriculture, NTFP, hunting and fishing purpose.</p> <p>Jointly identify and map all areas of high social conservation values including sacred sites and graves and develop program for jointly managing and monitoring these sites with communities.</p>
Threats to resident crops	Local communities/ Farmers	Crop farms within the concession will not be cleared and the necessary extension services will be provided to ensure an all-year-round food production in the District.
Livelihood issues	Local communities/ farmers	<p>-A compensation action plan to be implemented.</p> <p>-The project will not clear any land which is currently being farmed.</p> <p>-Ensure appropriate compensations are paid to PAPs.</p> <p>-People living on the concession will not need to be relocated. They will also be allowed to farm on their own plots of land within the acquired concession.</p>
Community structure and security issues	Local communities	<p>-Ensure close collaboration with the local police personnel to reduce the incidence of crime in the project area and its immediate environs.</p> <p>-Ensure close collaboration with traditional authorities on</p>



Potential Impact	Receptors	Proposed Mitigation Measures
		the issue of community security.
Employment issues	Local communities	Members of the communities to be given priority for employment by GVL as much as possible. GVL to consider the hiring of women in its operation. Adequate medical and insurance coverage to be made available to all employees GVL 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 (Bestnewlu/Sonuohn)	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	GVL will respect the legal, social and ecological integrity of all Tarjuowonians lands. The communities would be kept abreast of the development plans of the project GVL to ensure that personnel are properly informed on the correct protocol for interaction with the local communities GVL to ensure workers interference with the communities is minimal. Drugs and alcohol use by workers within the Concession during work hours would be prohibited.
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. Damaged 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 possess certificate _A driving license and license weight requirement of at least 160kg respectively. 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 site to discourage free-range defecation. In addition, field

Potential Impact	Receptors	Proposed Mitigation Measures
		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
water quality deterioration and change in local hydrology	Aquatic flora and fauna	<p><b>Buffer Zone</b> 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.</p> <p><b>Fertiliser Application at the Plantation</b> Judicious use of both organic and inorganic fertilisers will be ensured as much as possible. The fertilisers will be applied around each oil palm tree in shallow rings. This is to ensure that the fertiliser is available to the young transplanted oil palm trees. No broadcasting of fertilisers will be undertaken. The use of herbicides will not be encouraged on the plantation. Control of weeds will be done manually. Labour-intensive approach using simple farm tools like hoes and cutlasses will be employed. Organic farming practices will help eliminate the use of inorganic fertilisers and herbicides that are major contributors to surface water quality deterioration. The use of pesticides on the plantation will be minimised. The main control methods for pests and diseases will involve the use of resistant hybrids, trapping/scaring of animals, protecting young plants with collar wire and destroying nestling/breeding areas of pests. A constant phyto-sanitary observation will be maintained to help prevent the outbreak and spread of any potential disease/pest into the whole plantation.</p>
Air quality deterioration	Workers/ Local communities	<p>Burning of biomass will not be allowed. Most biomass generated will be made available to the local people as fire wood. Remaining trees and cleared under brushes will be chipped and formed into windrows. Windrowing will involve arranging the vegetative wastes in rows following the dominant local wind direction, to facilitate natural decomposition of stacked wastes.</p>
Noise nuisance	Workers/ Local communities	<p>Earthworks and other construction activities will be phased out or controlled to reduce noise generation during construction.</p> <ul style="list-style-type: none"> <li>• All construction and earthworks will be done during daytime to avoid disturbing the serene nights of the local communities.</li> <li>• Ear muffs will be provided for workers where necessary</li> </ul>

Potential Impact	Receptors	Proposed Mitigation Measures
Solid waste management issues	Workers	<ul style="list-style-type: none"> <li>The proposal to phase the development will generate biomass which could be manageable at a given time.</li> <li>Salvaging of useable biomass can significantly reduce the volumes of waste that has to be disposed of.</li> <li>Felled trees and cleared under- brushes will be chipped and formed into windrows and allowed to decompose.</li> <li>Other solid waste like food wrappers, containers and food waste to be disposed of at the District Assembly's designated dump site.</li> </ul>
Loss of biodiversity	Terrestrial flora and fauna	<p>Phasing of Oil Palm Development Clearance of vegetation will be phased to reduce the impacts of vegetation removal on terrestrial flora and fauna. The clearance of the 3,716ha land area will not be carried out all at a go but will be developed in phases.</p> <p>Directional clearing Directional clearing or felling of trees towards the riparian forested areas along the Coonie, Toonie and Wuon Creeks to allow mobile fauna to seek refuge and migrate to densely forested areas such as the sehnkwehn forest and the forest located central east and west of the project area.</p> <p>Biodiversity Plots Biodiversity plots will be established within the oil palm plantation. Biodiversity plots will also be provided along the waterways and streams within the concession. This will include the Tarsue River and the Coonie, Tonnie and Wuon Creeks. The plots will consist of a 10-40m width on both sides of the River/Streams. It is recommended that an additional 2km buffer zone be created away from the Sehnkwehn River. The project will ensure that no installation or works are carried out within the plots.</p> <p>Alternative Fauna Habitats The Biodiversity plots as well as the nearby Sehnkwehn River forest will serve as alternative habitats for fauna at the proposed site. Phasing of development activities will allow some time for mobile fauna to seek refuge in adjacent and similar habitats or establish new ones nearby.</p> <p>According to Payne (1997), biological control of rats may be achieved by leaving about 5% of plantation land under forest in the form of riparian and hill/steep land reserves.</p>
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 hill-tops and very steep slopes having gradient of 25% 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 fertiliser will be ensured throughout the life of the project to help conserve the environment. Application will be carried out in August and October of the transplanting year. The

Potential Impact	Receptors	Proposed Mitigation Measures
		fertilisers will be applied around each oil palm tree in shallow rings. This is to ensure that the fertiliser is available to the young transplanted oil palm trees. No broadcasting of fertilisers will be undertaken.
Biomass generation and CO2 balance	Air	The phasing of the project will reduce the impact to the barest minimum.
Pest Infestation	Terrestrial flora	The main control methods for pests and diseases will involve the use of resistant hybrids, trapping/scaring of animals, protecting young plants with collar wire and destroying nestling/breeding areas of pests. 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	<p>Domestic/Office Waste</p> <p>Adequate litter bins will be placed at vantage-points to minimise littering of the site by workers. The contents of these bins would be emptied at an appropriate central point and sent to a designated waste dump site.</p> <p>Biomass</p> <p>Salvaging of useable biomass can significantly reduce the volumes of waste that has to be disposed of.</p>
Food security	Local communities	The local people living on the concession will not be resettled. They will be allowed to farm on their own plots of land within the acquired concession. GVL will engage with communities to provide support for improved farming methods and practices including lowland farming and other forms of sedentary farming practices that maximizes landuse.
Presence of workforce- Loss of wildlife from hunting and conflicts with human	Terrestrial flora and faun/workers	<ul style="list-style-type: none"> <li>Employee education and notification will be implemented to reduce vehicle-wildlife collisions and conflicts</li> <li>Workers of GVL would be prohibited from hunting, trapping, killing, harming or capturing of any wildlife</li> <li>Employee education and notification to be implemented to ensure workers are aware of the need to preserve wildlife and to reduce wildlife/roadway conflicts</li> <li>Warning signs indicating hunting/capturing of wildlife is prohibited would be placed at strategic HCV areas</li> <li>Any occurrences of wildlife trapping and trading observed will be reported to the EPA and FDA</li> </ul>
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	<p>Adoption of Health and Safety Policies</p> <p>GVL 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/minimise the possibility of accidents and reduce health risks.</p> <p>Ensure workers are properly oriented to the safety and</p>

Potential Impact	Receptors	Proposed Mitigation Measures
		<p>health rules and guidelines</p> <ul style="list-style-type: none"> <li>• Well-equipped first aid kits would be provided at all work sites</li> <li>• Employ a medical personnel to be stationed at the Base Camp and workers trained in first aid should be present at all campsites</li> <li>• Adequate signage should be erected, especially in hazardous areas</li> <li>• 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.</li> <li>• The Emergency Response Plan would be made aware to all relevant personnel and the necessary training and resources required should be provided;</li> <li>• Protective gears and clothes must be provided to employees and should be worn at all times during operation.</li> <li>• Provide potable water for employees</li> <li>• Conduct periodic fogging to prevent mosquito breeding</li> <li>• Educate workers on relevant diseases and preventable and treatment measures</li> <li>• Providing medical supplies and personnel at Base Camp</li> </ul>

## 3.4 Management regulations

GVL management will ensure that the all her senior staff including unskilled workers is 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 area 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 area or unmarked graves that might be in the area to be cleared;
- The company needs to ensure that clear explanations concerning HCV is made to the host communities in order to guarantee their full participation and involvement in the demarcation process;
- Identification of any area related to this HCV 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 sites not identified by community members in advance;
- Monitoring of all sites demarcated to be periodically carried out by the company and the host communities' representative 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 by GVL 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 following will be done to enhance monitoring and management of HCV:

- The area destined firstly for the HCV 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 establish and their participation 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 coverts 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.

# RSPO

- 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.

## 4.0 VERIFICATION STATEMENT:

GVL opted for desktop audit against relevant documents, two (2) BSI auditors conducted desk review and discussion with GVL management to verify and review the relevant New Planting Procedure documents from 22<sup>nd</sup> – 23<sup>rd</sup> November 2013. Subsequently, GVL prepared and submitted the correction of documents through email for verification purposes until completed by BSI on 01<sup>st</sup> December 2013. The desktop review was carried out by BSI lead auditor Haeruddin accompanied with Aryo Gustomo as team member.

Audit team conclude that the social and environmental assessment were comprehensive, detailed and professionally carried out. The management plan has incorporated the findings from Social and Environmental Impact Assessment conducted by government-approved consultants as well as the High Conservation Value assessment findings by qualified consultants, approved by RSPO. Golden Veroleum (Liberia) Inc. has adhered to the RSPO New Planting Procedures and has documented the assessment and plans according to RSPO templates issued in May, 2010.

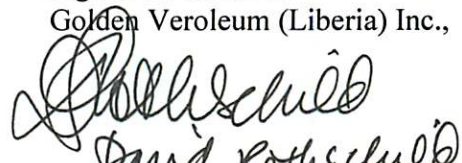
It is the opinion of BSI audit team through desk review that Golden Veroleum (Liberia) Inc has complied with the RSPO New Planting Procedures comes into effect 1<sup>st</sup> January 2010 and confirmed that the documented assessment reports and plans are comprehensive and in compliance to RSPO New Planting Procedures.

Signed on behalf of BSI Group,



Haeruddin  
Lead Auditor

Signed on behalf of  
Golden Veroleum (Liberia) Inc.,

  
~~Matt Karinen~~  
Director