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High Conservation Value assessment for RSPO NPP compliance

Public summary for OLAM Palm Gabon at Bindo Bifoun (Makouké)

October 2018




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Cover page

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- **Organisation commissioning HCV assessment:**
  Olam Palm Gabon
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- **Location of assessment:** Bindo-Bifoun concession, Moyen-Ogooué Province, Gabon
- **Dates of assessment:** May-Dec 2017
- **Size of assessment area:** 5,488 ha
- **Total number of hectares allocated as HCV management areas:** 2,795ha (plus additional 941 ha of HCV5/6 areas pending negotiation)
- **Current or planned land use(s) for assessment area:** Industrial oil palm plantation
- **Certification scheme:** RSPO

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List of acronyms and abbreviations

ALS	Assessor Licensing Scheme (of the HCVRN)
AoI	Area of Interest
BB	Bindo Bifoun concession
CENAREST	Centre national de la recherche scientifique et technologique
CITES	Convention on International Trade in Endangered Species
DBH	Diameter at breast height
ESIA	Environmental and Social Impact Assessment
FPIC	Free Prior and Informed Consent
Ha	Hectare
HCV	High Conservation Value
HCVA	HCV area
HCVMA	HCV management area
HCVNI	HCV National interpretation
HCV RN	High Conservation Value Resources Network
IRET	Institut de Recherche en Ecologie Tropicale
IUCN	International Union for Conservation of Nature
KBA	Key Biodiversity Areas
LDF	Low Density Forest
MDF	Medium Density Forest
NPP	New Planting Procedure
OPG	Olam Palm Gabon
RSPO	Roundtable on Sustainable Palm Oil
SIAT	Société d'Investissement pour l'Agriculture Tropicale
YRF	Young Regenerating Forest

1 Introduction and background

This is a public summary report of the HCV assessment for the 5,488 ha Bindo-Bifoun (BB) concession leased by Olam Palm Gabon (OPG). As Olam International is a member of the Roundtable for Sustainable Palm Oil (RSPO), the planned development will have to follow the best practices set for the palm oil sector, in particular the RSPO New Planting Procedure (RSPO 2015). The assessment was carried out from March 2017 to January 2018. The contact person at OPG for this assessment is Quentin Meunier (quentin.meunier@olamnet.com).

This is one of three concessions acquired in 2016 during OPG's acquisition of Societé d'Investissement pour l'Agriculture Tropicale (SIAT)'s palm operations in Gabon. The BB concession is undeveloped, except for approximately 600 ha in the southeast part of the concession that was cleared by SIAT between 2007 and 2013 and is now either under palm (347 ha) or is scrub or young regrowth vegetation.[1] The concession is located in the Province of Moyen Ogooué, approximately 140 km from Libreville and 35 km north of the provincial capital of Lambaréné.

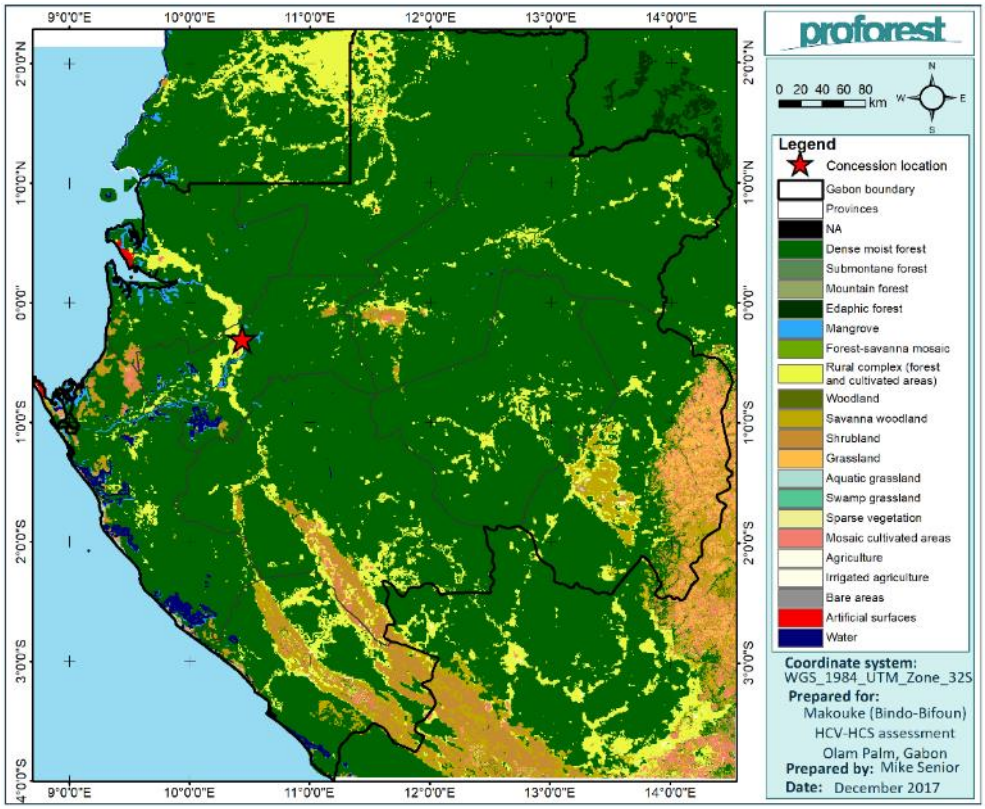


Figure 1: Location of the BB concession in Gabon, overlaid with 2012 land cover map for Gabon (Verhegghen et al 2012)[2].

Bindo Bifoun concession in a nutshell

- ✓ 5,488ha
- ✓ Undeveloped area except for 600ha in SE part
- ✓ Province of Moyen Ogooué
- ✓ Between the main highway to the W, and the Ogooué River to the E

[1] Olam Palm Gabon has taken on SIAT's liability under the RSPO's Remediation And Compensation Procedure (RACP) and will undertake the necessary RACP requirements.

[2] Verhegghen et al 2012. Mapping Congo Basin vegetation types from 300m and 1km multi-sensor time series for carbon stocks and forest areas estimation. Biogeosciences, 9, 5061–5079, 2012

Purposes of the HCV assessment

- ✓ Identify HCV areas
- ✓ Provide HCV management and monitoring plan
- ✓ Comply with RSPO NPP
- ✓ Comply with Olam's new forest policy

New planting for commercial oil palm plantation development is planned for early 2018 in the concession, following completion of necessary due diligence assessments. Following the RSPO NPP requirements, Olam must make available for public consultation a summary of the ESIA and HCV assessment prior to any land conversion. Additionally, from 1st January 2015, RSPO requires that all HCV assessments within the scope of NPP are carried out by a licensed HCV Lead Assessor under the HCV Resource Network's new Assessor Licensing Scheme (ALS) (HCVRN 2017).

Olam is abiding by a moratorium on land clearance until January 2019 and will furthermore continue its protection of HCV and HCS forests according to the HCV Network guidance and HCS Approach, or an agreed 'adapted' Gabon-relevant HCS approach endorsed by national stakeholders and RSPO (as per the Olam Living Landscape Policy commitments, 2018). Therefore, this assessment was conducted as an integrated HCV-HCSA assessment to identify both HCV and HCS areas. This report follows the HCV-only reporting template, because the assessment was completed before the HCVRN and HCSA had developed HCV-HCSA report quality review procedures.

The ESIA and HCV-HCSA assessments were conducted simultaneously. This HCV assessment used the HCVRN's Common Guidance on HCV Identification as a primary reference, with the Gabon draft HCVNI as a supporting guide to identify HCVs. The Gabon NI was used only as a supporting document as it is now quite outdated and was developed for forestry operations.

1.1 Description of the assessment area

Name: Bindo-Bifoun concession

Location: the Province of Moyen Ogooué, approximately 140 km from Libreville and 35 km north of the provincial town of Lambaréné, Gabon

Size: 5,488 ha

Development: Industrial oil palm plantation

Scale and intensity: The majority of the concession is undeveloped, except for approximately 600 ha in the southeast part of the concession that was cleared by SIAT between 2007 and 2013 and is now under palm in various states of management or scrub/young regrowth (*Musanga spp.*). Olam anticipate developing as much of the concession area as possible as industrial oil palm plantation, based on the outcomes of the HCV assessment, HCSA assessment (including potential revision in the near future based on potential agreement of a Gabon 'adapted' HCS approach) and concession Land Use Plan. Therefore, the management scale is large, with a high management intensity as this entails habitat conversion.

Social context: There are 27 villages and settlements surrounding the concession on all sides, and a couple of non-permanent and now abandoned camps located within the concession, that will potentially be impacted by the development.

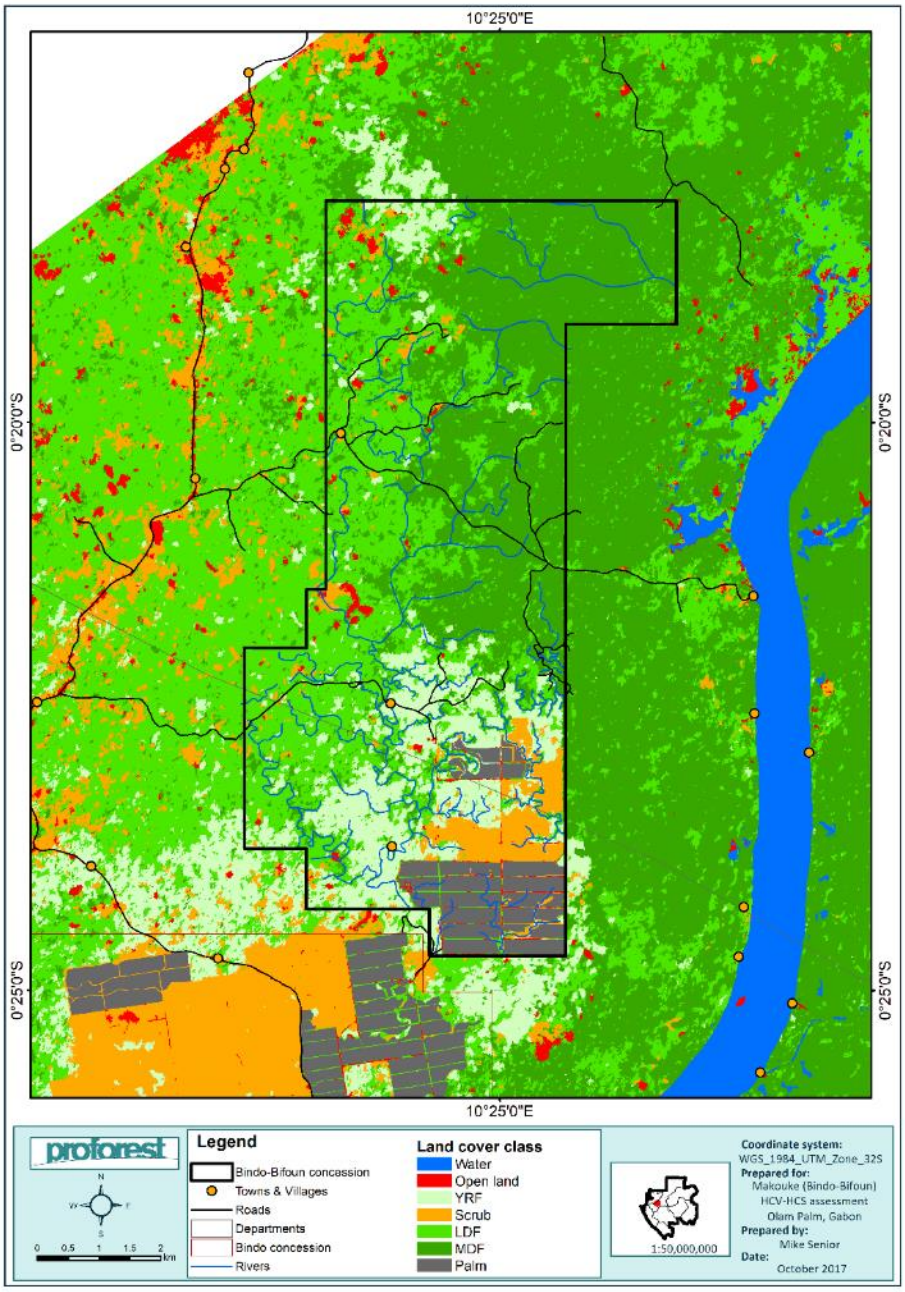


Figure 2. Land cover classification derived from 3m resolution PlanetScope imagery. YRF = Young Regenerating Forest, LDF= Low Density Forest and MDF = Medium Density Forest.

2 HCV assessment team

Table 1 gives an overview of the HCV assessment team.

Table 1. HCV team members

Name and contact	Institution	Role	Expertise
Dr. Mike Senior mike@proforest.net. **ALS license:** ALS17002MS	Proforest	Lead assessor	Conservation, Landscape ecology, GIS
Dr. Sebastiaan De Smedt	Proforest	Assessor	Conservation,

			GIS
Louis Defo	Proforest	Assessor	Social, community engagement
Ellen Brown	Proforest	Assessor & internal quality review	Conservation, Quality review
Dr. Olivia Scholtz	Consultant (Independent)	Assessor	Conservation, Mammals
Aubin Mboumba	Consultant (TEREA)	Assessor and ESIA lead	Environment, Social issues
Laura Bachellerie	Proforest	Assessor	GIS

This HCV assessment was carried out by Proforest in collaboration with teams of Gabonese experts both from TEREA and other expert institutions (Table 2).

Table 2. Team of experts involved in the BB HCV and ESIA assessment

Name and contact	Institution	Expertise
ESIA		
Aubin Mboumba	TEREA	ESIA coordination
Botanical inventory		
Pr. Alfred Ngomanda	IRET/CENAREST	Lead and quality control
Pr. Judicaël Lebamba	IRET	Field coordinator
Yves Issembe	Herbier National du Gabon	Botanist, para taxonomist
Fauna studies		
Pr. Alfred Ngomanda mailto:ngomanda@yahoo.fr	IRET/CENAREST	Lead and quality control
Dr. Etienne François Akomo Ookoue	IRET/CENAREST	Field coordinator, Mammals
Dr Fred Loïc Nguelet	IRET/CENAREST	Mammals
Blaise Mboye	IRET/CENAREST	Fish, Aquatic fauna
Social studies		
Eyang Effa Edwige	Research affiliate of IRET	Lead, Social, participatory mapping, community engagement
Owono Mbeng Ophélie	IRET	Social, participatory mapping
Guy-Roger Mbatouila	TEREA	Socio-economic studies

3 Methods

This HCV assessment was conducted between March 2017 and January 2018, consisting of the pre-assessment (scoping) and full assessment phases. HCV assessments were previously commissioned for the BB concession by SIAT in 2007 and 2009, but Olam have commissioned a new HCV assessment to update the original assessments done before 2010 as required by the ALS. Extensive participatory mapping has also been conducted previously for villages in the zone both by SIAT and for the government's GRAINE programme. This assessment built on the existing assessments, incorporating new secondary and primary data where relevant in order to fill any gaps.

3.1 Timeline

Phase		Task	Date
Pre-assessment		Information gathering	Mar-Apr 2017
		Scoping visit	May 2017
		Preparation and planning	Jun-Sept 2017
Full assessment	HCV identification	Botanical study	Aug-Sept 2017
		Mammal study	Aug-Nov 2017
		Aquatic study	Oct-Dec 2017
		Participatory mapping study	Aug-Dec 2017
		Socio-economic study	Oct-Dec 2017
		Physical environmental assessment (inc soil, water quality etc)	Nov-Dec 2017
	HCV findings and recommendations	Analysis and recommendations	Nov-Dec 2017
		Final national and community stakeholder consultations	Dec 2017
	Reporting	Reporting	Jan-Mar 2018

3.2 Information gathering

The assessment team carried out a desk-based review of existing reports and materials provided by Olam, remote sensing data, and other relevant studies about the environmental and social context (including the Bas Ogooué Ramsar site).

A preliminary land cover mapping of the proposed expansion site was produced using 3m resolution imagery. This was updated after the full assessment (Figure 2) and was developed using the vegetation classes from the High Carbon Stock

Approach[3]: Open land (OL), Scrub, Young Regenerating Forest (YRF), Low Density Forest (LDF), Medium Density Forest (MDF), plantations and water. The HCSA classification system is not widely used in Gabon and so was also aligned with locally relevant classes (see Table 3).

3.3 Scoping study

The scoping study was conducted in May 2017, with the field visit conducted by Dr. Olivia Scholtz and Aubin Mboumba, and Dr Mike Senior leading the reporting. The field scoping visit to the proposed oil palm development site at Makouké Bindo-Bifoun was conducted from 22-26th May.

3.4 Full assessment

3.4.1 Botanical survey

The botanical inventory was carried out by IRET in the field from 23th of August to 6th of September 2017, consisting of two main survey methodologies: 1) systematic forest inventory plots, and 2) ad hoc habitat observations taken during fieldwork. The forest inventory of 99 plots followed the HCSA methodology and plot locations were stratified based on the land cover classification to cover forest of a range of quality. [4] Every sample plot was georeferenced, tree species identity and DBH were recorded as well as habitat data on forest type and structure.

[3] http://highcarbonstock.org/the-hcs-approach-toolkit/

[4] (High Carbon Stock Approach Steering Group 2017)

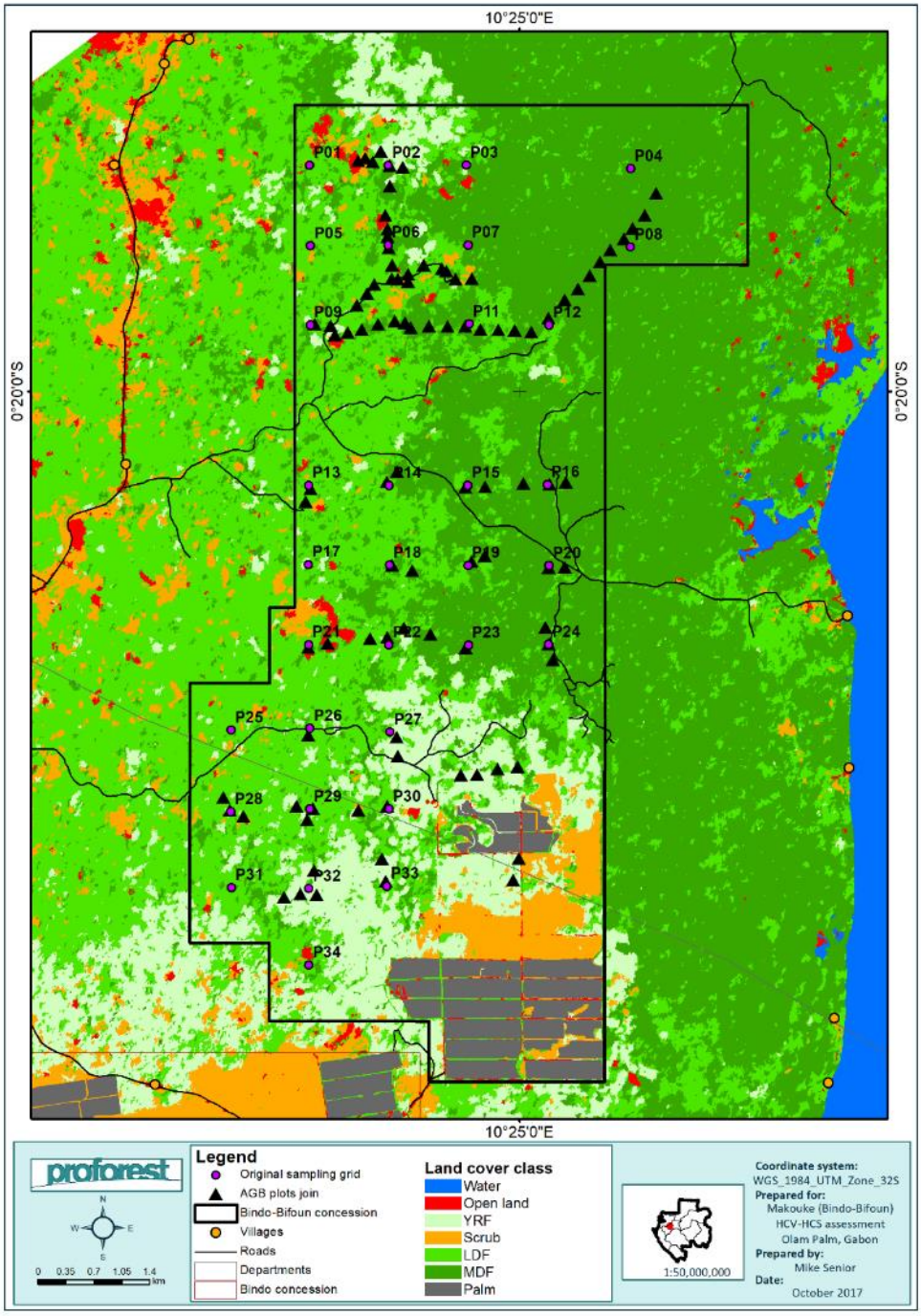


Figure 3. Final land cover classification for the BB concession, overlaid with the location of originally proposed sampling grid points (purple circles), and final locations of forest inventory plots (black triangles).

Table 3. Sampling plots per land cover class (based on final classification)

Land cover class (HCSA classification)	Land cover class (Gabonese forest classification system)	Number of forest inventory plots
MDF	Old secondary forest	39
LDF	Young secondary forest	34
YRF	Parasolier formation (regrowth 5-15 years)	21
Scrub	Fallow/ 'Jachere' (<5 years)	3
Open land	Open land	2

Analyses of botanical data calculated species richness, specific and familial dominance using the Importance Value Index (IVI) and vegetation structure parameter. The presence and approximate distribution of Rare, Threatened and Endangered (RTE) and endemic species was also assessed.

3.4.2 Mammal survey

A mammal survey was carried out from August to November 2017, spanning the end of the dry and start of the wet seasons to capture seasonal variation. Two data collection methodologies were implemented to survey wildlife fauna: in-situ observation along recce transects and camera-traps. A total of 59 km was walked along recces-transects and 27 camera-traps were set-up. Data were analysed to calculate capture rates and relative abundance indices.

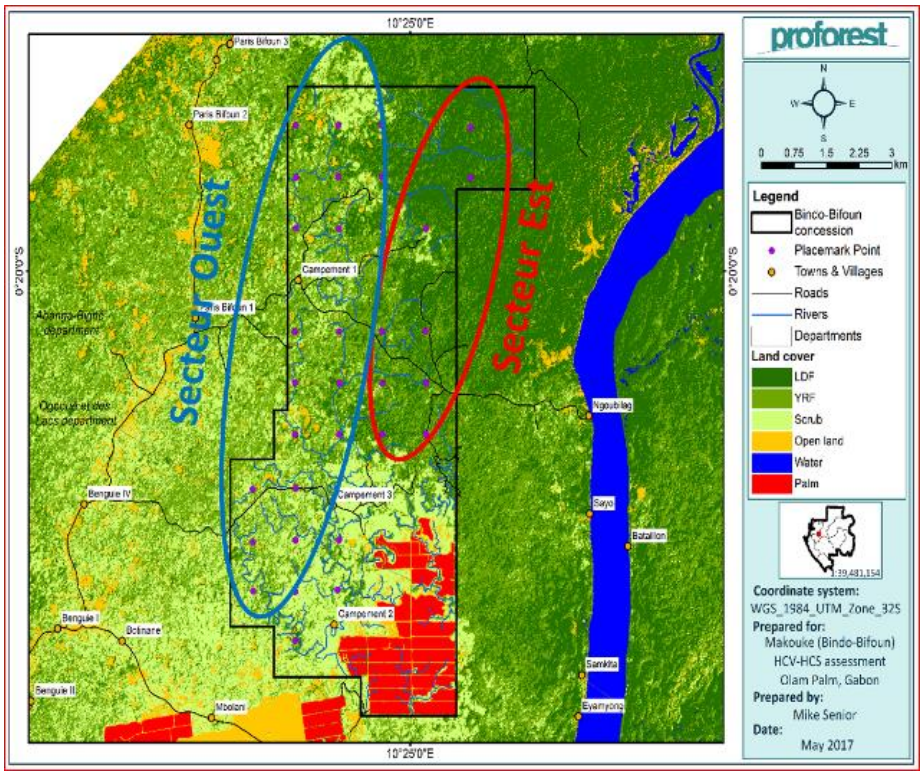


Figure 4: Location of the 2 main sectors and placemark points (camera-traps)

3.4.3 Fish and aquatic invertebrate survey

Fish and aquatic macroinvertebrates were sampled between 29th October and 12th November 2017, during the wet season. Fish and aquatic macroinvertebrates were sampled at 15 sampling stations using trammel and seine nets, at locations designed to cover the main hydrological sub-basins across the site including sample locations downstream of the concession towards the Ogooué River (Figure 5). Aquatic macroinvertebrates were sampled as key bioindicators, using Surber and D-nets.

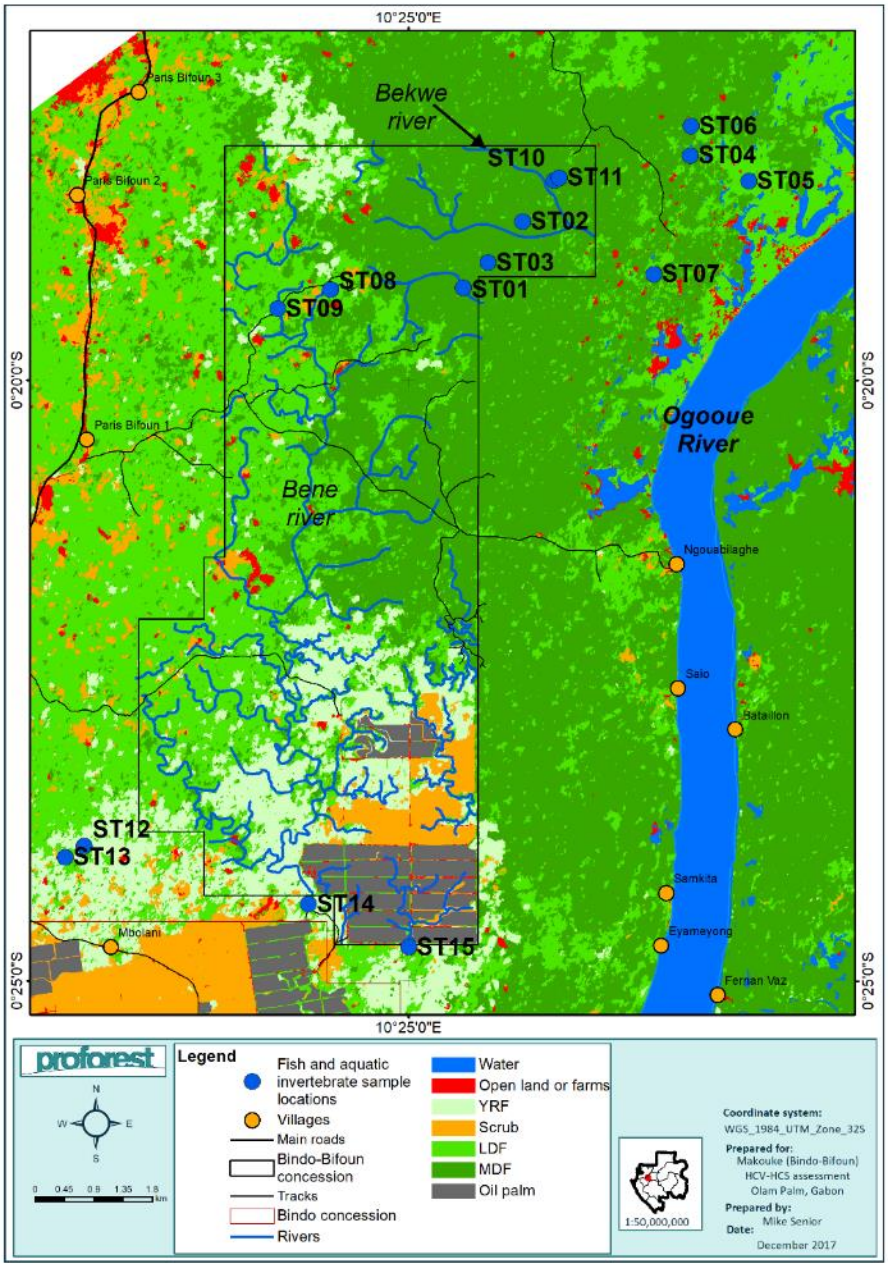


Figure 5. Location of fish and aquatic macroinvertebrate sampling stations, with main rivers in and near the concession labelled. Unfortunately, an accurate shapefile was not available for the rivers outside the concession.

3.4.4 Socio-economic survey

As part of the ESIA, socio-economic surveys were conducted by TEREA, the results of which were used for this HCV assessment to understand natural resource use and dependence of the villages around the BB concession. As explained above, a large number of participatory mapping and impact assessments had already been conducted for the villages around the concession that could be used for the study. To be precautionary the assessors and company agreed that additional updates or improved data were required for some but not all villages (e.g. for villages very far from the concession or known not to be using land inside or near the concession). A summary of villages in the landscape and their inclusion in the socio-economic and participatory mapping studies is provided in Table 4. Note that Olam has also been updating SEIA and FPIC processes for all three Makouke concessions – meaning that some of the villages included in the socio-economic survey are those near to Bindo and Makouke concessions (not BB).

In total 21 villages (or 22 depending on how they are grouped) were included in the socio-economic survey and 14 in the participatory mapping study. More villages were included in the socio-economic survey than the participatory mapping study because no SIA or socio-economic baseline data was available for these villages, but these villages had been covered by previous participatory mapping exercises.

Table 4. List of villages in the wider landscape, their inclusion in social studies and summary of whether impacted by BB concession. P mapping = participatory mapping

Villages	Included in socio-economic study?	Included in p mapping study?	Status
Afock Bidzi	Y		**Not impacted.** Previous p mapping study showed not using concession area. Reaffirmed during socio-economic baseline study
Akok	Y		**Not impacted**. Previous p mapping study showed not using concession area. Reaffirmed during socio-economic baseline study
Amanegone	Y	Y	**HCV 5 present**
Bataillon (Edjé djéne)	Y	Y	**Not impacted.** Included in new p mapping study on precautionary basis. P mapping and socio-economic study showed not using concession area.
Benguie 1			**Not impacted**. Previous participatory mapping showed that Benguie 1 has no activities or use areas northeast of the Makouke/Bindo junction
Benguie 2			**Not impacted**. Previous participatory mapping showed that Benguie 2 has no activities or use areas north of the Makouke/Bindo junction. Therefore, use areas close to Bindo concession, not Bindo Bifoun

Benguie 3			**Not impacted**. Previous participatory mapping showed that Benguie 3 has no activities or use areas north of the Makouke/Bindo junction. Therefore, use areas close to Bindo concession, not Bindo Bifoun
Benguié 4 a & b	Y	Y	**HCV 5 & 6 present**
Bifoun	Y		**Not impacted.** Previous p mapping study showed not using concession area. Reaffirmed during socio-economic baseline study
Bifoun Zangwal	Y	Y	**Not impacted.** Included in new p mapping study on precautionary basis due to proximity to concession. But p mapping and socio-economic study showed not using concession area.
Bindo	Y	Y	**HCV 5 & 6 present**
Ebel Abanga, (rive droite et gauche)	Y		**Not impacted.** Included in new p mapping study on precautionary basis. P mapping and socio-economic study showed not using concession area.
Eyameyong (& Samkita)	Y	Y	**Not impacted.** Included in new p mapping study on precautionary basis. P mapping and socio-economic study showed not using concession area.
Fernan Vaz (Abo Okam)	Y	Y	**Not impacted.** Included in new p mapping study on precautionary basis. P mapping and socio-economic study showed not using concession area.
Ledouma			**Not impacted.** >5 km away from concession and on east of Ogooue river. Previous p mapping showed not using land west of river. Closer to Makouke concession.
Maguiéla	Y	Y	**Not impacted.** Included in new p mapping study on precautionary basis. P mapping and socio-economic study showed not using concession area.
Makouké	Y		**Not impacted**. >5 km away from concession and on east of Ogooue river. Previous p mapping study showed not using concession area. Closer to Makouke concession. Reaffirmed during socio-economic baseline study
Massoui-Eyen Assi	Y		**Not impacted**. Previous p mapping study showed not using concession area. Status reaffirmed during socio-economic baseline study
Mbilanten			**Not impacted**. >5 km away from concession, east of Ogooue river and further north - not using land in concession area
Mbolani	Y	Y	**Not impacted.** Included in new p mapping study on precautionary basis due to proximity to concession. P mapping and socio-economic study showed not using concession area.
Ngosso	Y		**Not impacted.** >5 km away from concession (not shown on map) and on east of Ogooue river. South of Bindo concession and activities close to Bindo not BB concession. Status reaffirmed during socio-economic baseline study
Ngouabilaghe	Y	Y	**HCV 6 present**
Paris Bifoun 1	Y	Y	**HCV 5 & 6 present**

Paris Bifoun 2	Y	Y	**HCV 5 present**
Bifoun 3	Y	Y	**HCV 5 present**
Saio	Y	Y	**Not impacted.** Included in new p mapping study on precautionary basis. P mapping and socio-economic study showed not using concession area.
Samkita			Part of Eyameyong village/regroupement

The socio-economic study involved collection of both qualitative and quantitative primary data based on group discussions at village/canton level (Focus Group Discussions: FGDs), village-level questionnaires, social transects and semi-structured interviews. Primary data was supplemented with secondary research such as official data from the local council (prefecture), government offices for health, police, fisheries and water and forest. This was all conducted with the objective of establishing a socio-economic baseline for the villages. A summary of the socio-economic survey timelines is provided in Table 5.

Table 5. Summary of surveys, consultation and methods applied during socio-economic survey. Note that some villages are listed more than once in cases where several visits were conducted

Activities	Summary	Dates
Notification of local authorities about the assessment and surveys (Préfet, Commandant de brigade, …).	Briefing: presentation of the survey team, of the study context, of expected results (based on secondary information) and of the roles/inputs needed from the préfecture during the study	23/10/2017
Data collection with local authorities	DRSC, DPAC, Conseil départemental, DPPA (centre de pêche), DPEF	24/10/2017
Initial meetings and planning	Initial meetings to explain the mission and arranging dates for FGDs and interviews	25 to 27/10/2017
Data collection and consultation	FGDs, interviews and socio-economic data collection (Infrastructure and social conditions/activities)	27/10 to 4/11/2017

3.4.5 Participatory mapping

Participatory mapping studies were carried out for all 27 villages around the concession in 2011 by SIAT and again in 2015 under the GRAINE programme. Despite this wealth of existing participatory mapping data, the maps were updated in 2017 for the 14 villages deemed most likely to be impacted by the development of the BB concession along the north-south Libreville-Lambaréné

road and along the Ogooué River (Figure 6).[5] The methodology involved initial meetings to request village permission to proceed with participatory mapping, data collection using GPS participatory walks with community representatives and in village meetings with large maps, and validation meetings.

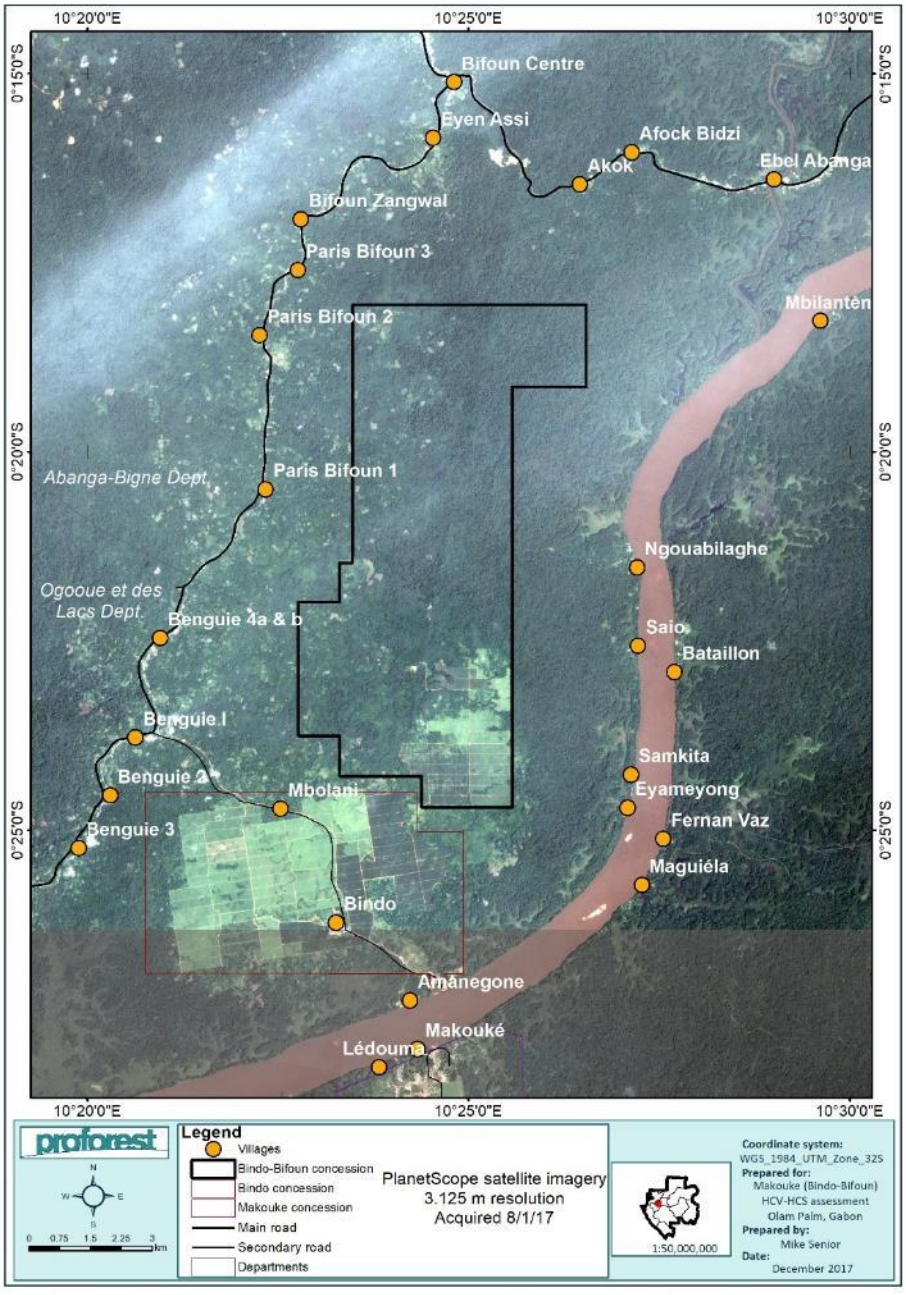


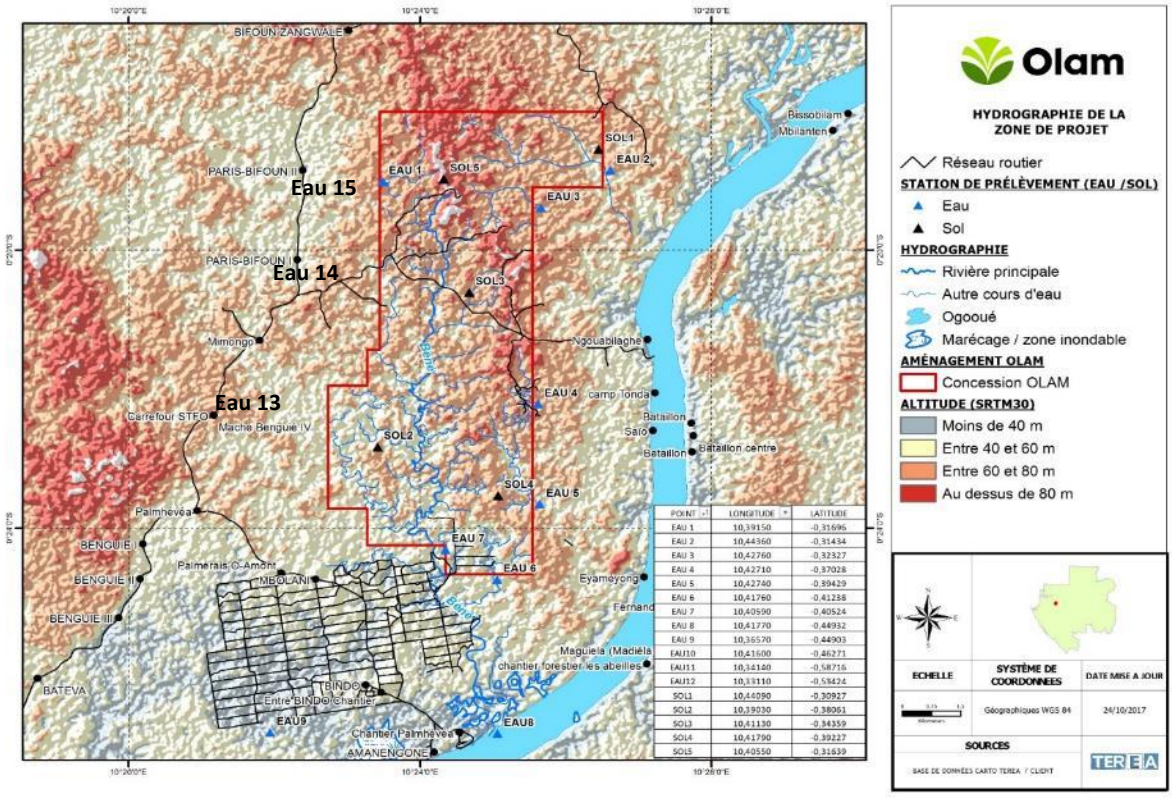
Figure 6. Location of villages around the BB concession. Villages in the vicinity of the BB concession overlaid with PlanetScope satellite imagery.

3.4.6 Physical environmental survey

This study included surveys of water quality and quantity sampling at 12 surface and 3 subterranean (at boreholes) sampling points to measure water flow using

[5] Ngouabilaghe, Saio, Bataillon, Eyameyong, Fernan Vaz, Maguiéla, Amanegone, Bindo, Mbolani, Bifoun Zangwal, Paris Bifoun 1, Bifoun 3, Paris Bifoun 2 and Benguie 4a & b.

floats and take quality measurements. Soil sampling was also conducted at five sampling points to determine soil structure/type and estimate infiltration rates.



POINT	LONGITUDE	LATITUDE
EAU 1	10,39150	-0,31696
EAU 2	10,44360	-0,31434
EAU 3	10,42760	-0,32327
EAU 4	10,42710	-0,37028
EAU 5	10,42740	-0,39429
EAU 6	10,41760	-0,41288
EAU 7	10,40590	-0,40524
EAU 8	10,41770	-0,44932
EAU 9	10,36570	-0,44903
EAU10	10,41600	-0,46271
EAU11	10,34140	-0,58716
EAU12	10,33110	-0,53424
SOL1	10,44090	-0,30927
SOL2	10,39030	-0,38061
SOL3	10,41130	-0,34359
SOL4	10,41790	-0,39227
SOL5	10,40550	-0,31639

Figure 7. Soil and water sampling points. Eau = water sampling points and Sol = soil sampling points. 'Eau 13-15' are the points where subterranean water sampling was done at boreholes.

4 Assessment findings

4.1 National and regional context

Gabon is one of the most forested countries in Central Africa with an estimated 88% forest cover[6], and a low deforestation rate of 0.5-1% per year[7]. Deforestation is mostly limited to small-scale clearance of subsistence farming around towns and cities, in the vicinity of villages, and more recently for commercial agricultural plantations. The country is in the process of developing and diversifying the economy away from oil to other sectors such as agriculture – as outlined in the government's "Gabon Vision" (Gabon Vision 2025).

In comparison to neighbouring countries in the Congo Basin, human threats to fauna and flora in Gabon are low. Deforestation is minimal (see above), forest cover remains high and the very low rural population densities mean that lowland gorillas, chimpanzees, elephants and other high-profile conservation species are widespread, with large populations in more remote areas, but small numbers found even in the vicinity of large towns. In terms of threatened species, Gabon is home to 20 mammal, 5 bird, 7 reptile, 72 fish and over 165 plant species on the IUCN Red List (CR, EN, VU categories)[8].

Despite its small size and population, Gabon is widely considered to be a regional leader in terms of its governmental capacity on conservation, research and satellite monitoring. As such, ANPN alongside other government departments are developing national policies and strategies for effective conservation at a national level, including a national land-use plan that integrates HCVs and areas of high carbon stock (Plan National d'Affectation du Terre; http://www.pnatgabon.ga/).

4.2 Landscape context

The BB concession is located at the intersection of the National Highway (N1) and the Ogooué river, both of which have been the major transport routes throughout Gabon's recent history. This means that the concession's immediate landscape is essentially fragmented and poorly connected from an ecological perspective, with both the national roads and the Ogooué river representing major dispersal barriers to wildlife. This lack of ecological connectivity at a macro-scale is also coupled with the effects of being entirely surrounded by 27 villages that rely upon the forest resources and their subsistence plantations. Whilst the forest quality improves as you move away from the road, it is clear that the landscape is of negligible importance for ecological connectivity at the scale of Gabon.

[6] http://www.poulsenlabduke.com/uploads/1/9/3/6/19363955/poulsen_fl_1208_english_r7_0u.pdf

[7] http://www.globalforestwatch.org/country/GAB

[8] IUCN Threatened species per country by taxonomic group. http://cmsdocs.s3.amazonaws.com/summarystats/2014_3_Summary_Stats_Page_Documents/2014_3_RL_Stats_Table_5.pdf

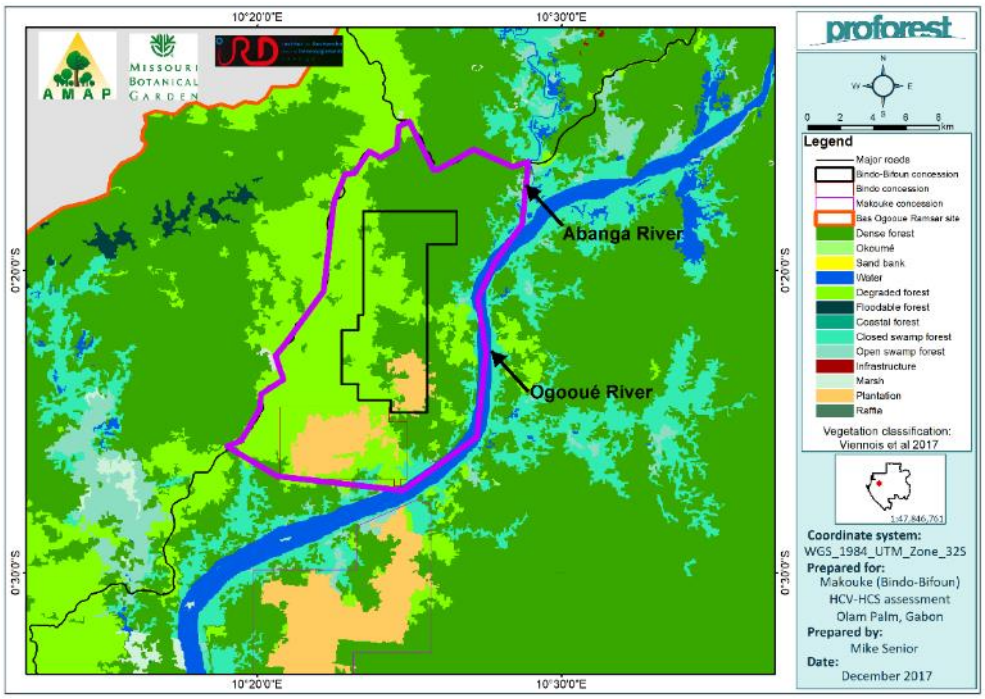


Figure 8. Wider landscape or AoI for the assessment. Indicative AoI is shown as a purple polygon

The degree of degradation is well indicated in the indicative national HCV and carbon maps developed for Gabon (Austin 2017). For example, Figure 9 clearly shows the orange corridor (in red circle) along the national road from Libreville to Lambarene as 'suitable' for palm development, indicating a low likelihood of HCV and a forest carbon stock of less than 118tC/ha.

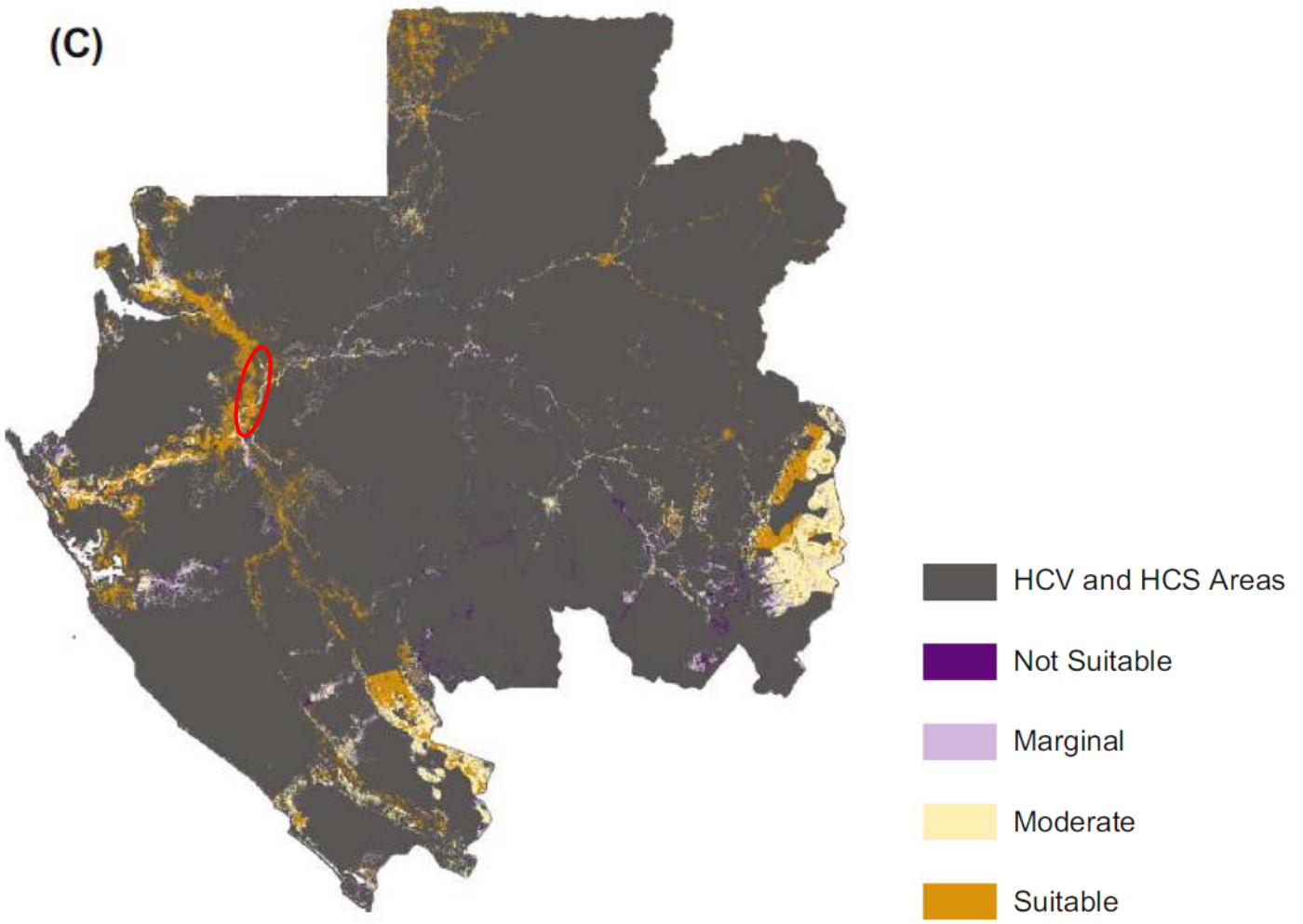


Figure 9. Oil palm suitabiliity maps for Gabon, based on crop suitability, indicative HCV and high carbon stock areas (Austin et al. 2017).

The BB concession is 45 km away from the nearest national park (Wonga Wongue Presidential Reserve) in the east. However, it is located is within the Bas Ogooué Ramsar site, towards the upstream side of the site, near its north-eastern boundary (Figure 10). The Bas Ogooué Ramsar site is Gabon's most recently created Ramsar site, having been gazetted in 2008. This is well after the allocation of the three Olam concessions at Makouke that were originally allocated to PalmHevea for palm/rubber as early as the 1960s.

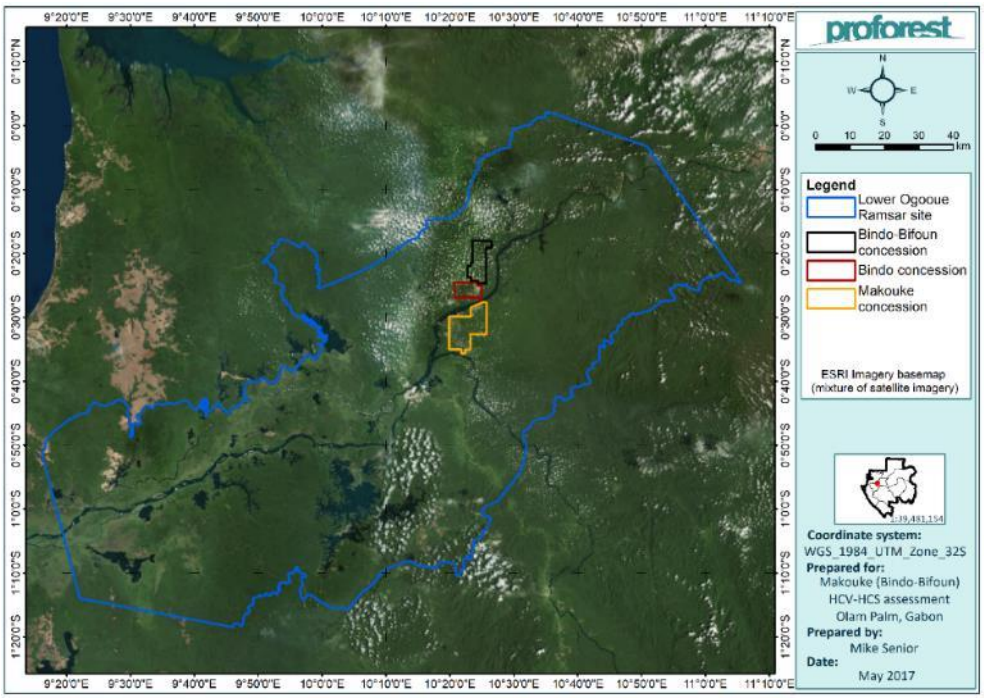


Figure 10. Location of the BB concession within the Bas Ogooué Ramsar site

The concession does not contain any of the specific wetland vegetation types that are part of the Ramsar site's criteria, notably marshes, swamp forests, mangroves and flooded natural savannas – which are primarily located in the downstream reaches of the Ramsar site.

There are a number of priority species and habitats associated with the Bas Ogooué Ramsar site. This includes the western manatee, hippopotamus, Nile crocodile, fish communities, and critical habitat for aquatic bird species. Through stakeholder consultations and data analysis, we evaluated whether development of this concession could impact directly or indirectly the values and priority conservation features associated with this Ramsar site.

4.3 HCV findings and justification

Table 6 summarizes the HCVs in Bindo-Bifoun concession that were identified in this assessment.

Table 6: Summary of the HCVs identified in Bindo-Bifoun concession

		Assessment identification		
HCV	Definition	Present	Potential	Absent
1	Concentrations of biological diversity including endemic species, and rare, threatened or endangered (RTE) species that are significant at global, regional or national levels			

2	Intact forest landscape and large landscape-level ecosystems and ecosystem mosaics that are significant at global, regional and national levels, and landscape functions such as connectivity			
3	Rare, threatened, or endangered ecosystems, habitats or refugia			
4	Basic ecosystem services in critical situations including protection of water catchments and control of erosion of vulnerable soils and slopes			
5	Sites and resources fundamental for satisfying the basic necessities of local communities or indigenous peoples…			
6	Sites, resources, habitats and landscapes of global or national cultural, archaeological or historical significance, and/or of critical cultural, ecological, economic or religious/sacred importance for the traditional cultures of local communities or indigenous peoples…			

4.3.1 HCV 1 – Species diversity

HCV 1	Finding
Concentrations of biological diversity including endemic species and rare, threatened or endangered species, that are significant at global, regional or national levels.	**PRESENT**

Faunal: birds

A total of 216 bird species have been recorded in the concession. These represent species widespread in Gabon, without no species rare or threatened at the scale of Gabon. The only endemic or RTE species recorded in the concession was the IUCN Endangered African grey parrot (*Psittacus erithacus*). Gabon remains a stronghold for AGPs (as for many RTE species), and without doubt the national population is of global significance given rapid declines elsewhere. However, the presence of AGP individuals in the AoI is not considered HCV 1 for the following reasons:

1. The species was not present in large flocks or aggregations (significant concentrations) in the concession. The only potential areas that may

support such aggregations in the wider landscape are raffia palm stands along the downstream stretches of the Ogooue River,

2. AGPs are not reported to have declined significantly in Gabon. [9] They remain abundant in Gabon and are found throughout, even in and around the capital Libreville,
3. Evidence suggests that the level of export from Gabon is low with trapping/trade largely limited to fairly small pockets (e.g. Minkebe NP according to WWF Gabon) near the Cameroon border, [10]
4. There was no evidence of AGP trapping or trade in the villages surveyed in the AoI, and
5. AGPs are generally wide-ranging and mobile – able to travel long distances for food and nest sites. Oil palm fruits are also a preferred food source, therefore, some oil palm development if adequate forest cover remains in the landscape may actually benefit the species (P. Christy Avifauna report 2009; Tamungang, et al. 2016; Kougoum Piebeng, et al. 2017).

Although the concession overlaps the Bas Ogooué Ramsar site it does not lie in or near any of the priority bird areas that have been identified by experts for the Bas Ogooué Ramsar site, which are all downstream or along the Ogooué river.[11] Similarly, no seasonally important bird areas were found in the concession.

Faunal: mammals

The mammal survey revealed a very low abundance and diversity of mammals at the scale of Gabon, with only 15 mammalian species recorded during the survey and capture rates much lower than a well-studied lowland National Park (Table 7). The relatively depauperate mammal community appears to be the result of a high hunting pressure in the zone, with only the more resilient species persisting in the degraded eastern half of the concession.

Table 7. Encounter rate of some of the more abundantly encountered species in the concession

Species	Encounter rate/km Bindo Bifoun concession	Encounter rate from recce-transect study in Ivindo National Park[12]

[9] http://datazone.birdlife.org/species/factsheet/grey-parrot-psittacus-erithacus/text

[10] CITES COP17 24 Sept – 5 Oct 2016. Proposal 19: https://cites.org/sites/default/files/eng/cop/17/prop/060216/E-CoP17-Prop-19.pdf

[11] (J. e. Vande weghe 2015). Le Duc Yéno S., 2015. Atlas cartographique du site Ramsar du Bas Ogooué. WWF Gabon – MBG – WCS – IRD. Inventaire multi-ressources du massif forestier d'Evaro. Projet d'appui à la gestion.

[12] Motsaba, A., Tezi, J-P, Aba'a, R & F. Maisels. 2009. Recensement des grands mammifères et des impacts humains au Parc National d'Ivindo, Gabon, WCS Gabon

White-nosed monkey *Cercopithecus nictitans*	0.136	0.54
Medium-sized duikers	0.051	1.61
Small-sized duiker	0.442	0.13
Red river hog *Potamocherus porcus*	0.017	0.31

Flagship species of the Bas Ogooué Ramsar site, such as the African manatee and hippopotamus do not occur in the site, both restricted to the downstream delta and main river.

Despite the overall low density of mammals, IUCN CR western lowland gorilla, EN chimpanzees and VU elephants were all recorded either in the eastern part of the concession or in the forest belt between the east of the concession and the Ogooue River (Figure 11; Figure 12). Nationally protected water chevrotain, sitatunga and red river hog were also recorded in the eastern part of the concession.

Figure 11. Gorilla footprint observed in the southeastern corner of the concession and elephant dung to the east of the concession.

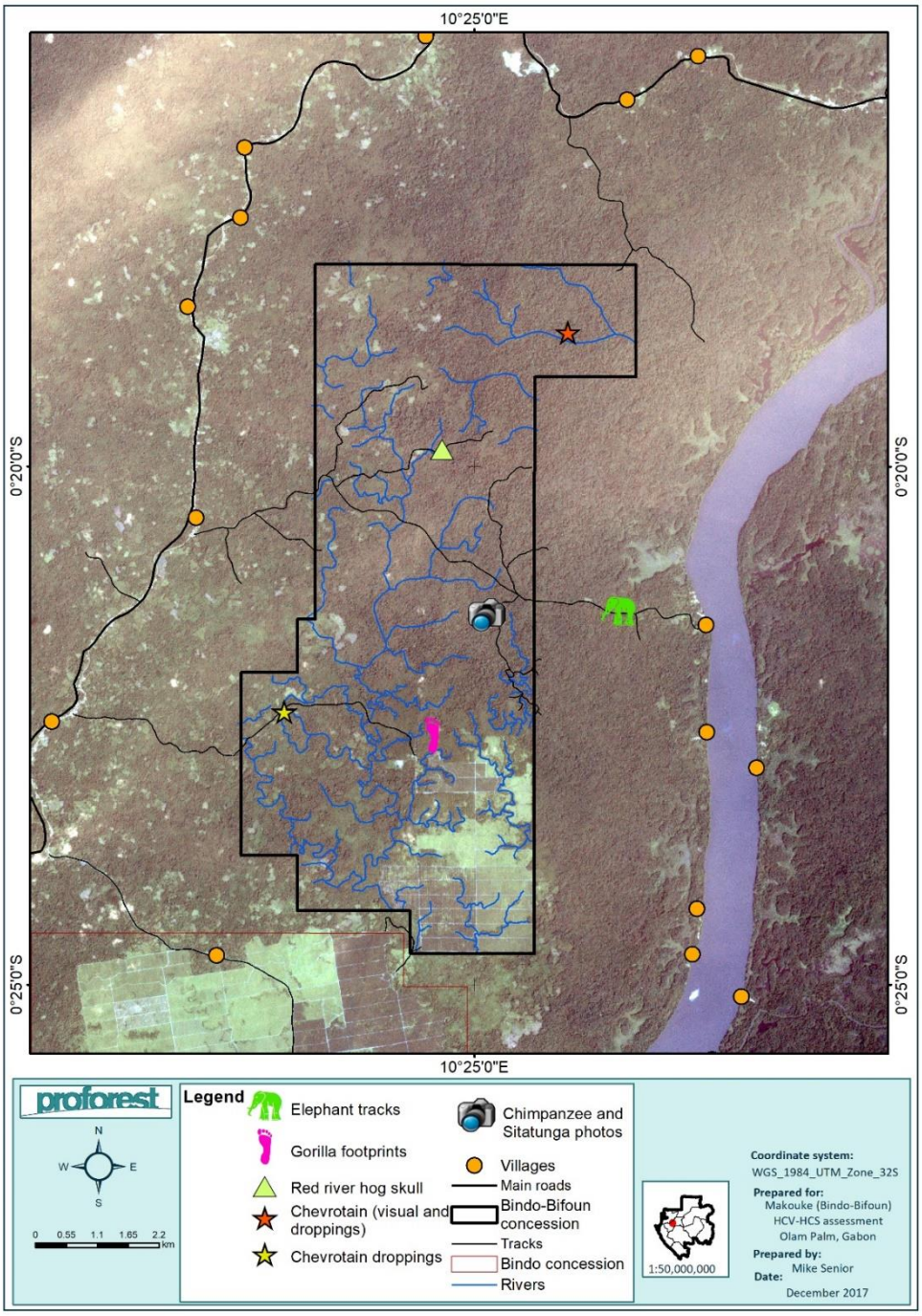


Figure 12. Location of RTE and protected species observations

The co-occurrence of chimpanzees, gorillas and elephants is not at all unusual for Gabon, but is of conservation interest at a regional and global scale. The eastern forest block forms a contiguous block of approximately 7,000 ha of MDF across the landscape. This is only a small forest block by Gabonese standards, but is of some importance for maintaining biodiversity and quality habitat adjacent to the Ogooué River as: a) one of the more intact blocks of forest along the degraded axis of the Libreville-Lambaréné road, b) it supports three of the flagship mammal species of the Bas Ogooué Ramsar site that meet Ramsar criterion 4, and c) it connects to wetland and swamp forest ecosystems near Ogooué River that are broadly representative of the Bas Ogooué Ramsar site's ecosystem mosaic.

Therefore, this forest block with its population of chimpanzee, gorillas and elephants is considered as HCV1.

Faunal: aquatic biodiversity

Despite the concession's location within the Bas Ogooué Ramsar site, the fish and aquatic macroinvertebrate surveys revealed low species richness and diversity of these taxonomic groups in the concession, with the species composition comprised of widespread species indicative of relatively degraded habitats. 22 fish species from 12 families were sampled in the concession. Two cichlid species (*Chromidotilapia regani* and *C. kingslayae*) endemic to the Ogooué river basin were recorded in rivers in the northeast of the concession, but these species occur throughout the Ogooué basin. *The aquatic fauna in the concession does not appear to represent any of the significant concentrations of freshwater species found downstream in the Ramsar site, and so it cannot be considered HCV1.* To be precautionary, TNC requested that Olam conduct additional fish sampling during the dry season in the near future to understand seasonality of populations.

Scoping consultations and ANPN HCV risk maps suggested that Nile crocodile may occur in the concession, however, additional consultation with a crocodile expert (Dr Matt Shirley) and village consultations indicate that they are highly unlikely to be present. No swamp forest nor sand banks (important Nile crocodile habitats) are present in the concession. Nonetheless, any Nile crocodiles in the concession would have to be inhabiting rivers, that will regardless be protected with riparian buffer zones.

Flora

During the botanical inventory carried out by IRET, 1466 trees were sampled, representing 128 species in 38 different families. The forests in the BB concession are mainly made up of disturbant-tolerant species belonging to Urticaceae, Burseraceae and Euphorbiaceae families. The three most abundant species recorded were the pioneers *Musanga cecropioides*, *Aucoumea klaineana* and *Macaranga barteri*.[13] The absence of species in the Caesalpiniaceae family, indicators of intact Gabonese forests, in the top 10 of the most recorded species indicates the degraded nature of the forest in most of the concession. The only exception is relatively mature secondary forest in the northeast of the concession, with a structure approaching that of climax vegetation in some small pockets between streams/rivers (Figure 13). There is no swamp forest in the concession.

[13] (TEREA, Evaluation de l'etat initial de la biodiversite pour la concession d'Olam Bifoun 2017)

Figure 13. MDF forest in the northeast of the BB concession

Although 16 protected, endemic or IUCN Red Listed species were recorded, the botanical team indicated that this represents a low diversity and density by Gabonese standards. For example, the endemism rate in the concession of 2.3%, is significantly lower than the average for the Bas Ogooué landscape (7.5%) and national average (13%).[14] *Overall, the floristic assemblages and RTE species recorded cannot be considered HCV1.*

[14] (TEREA, Evaluation de l'etat initial de la biodiversite pour la concession d'Olam Bifoun 2017)

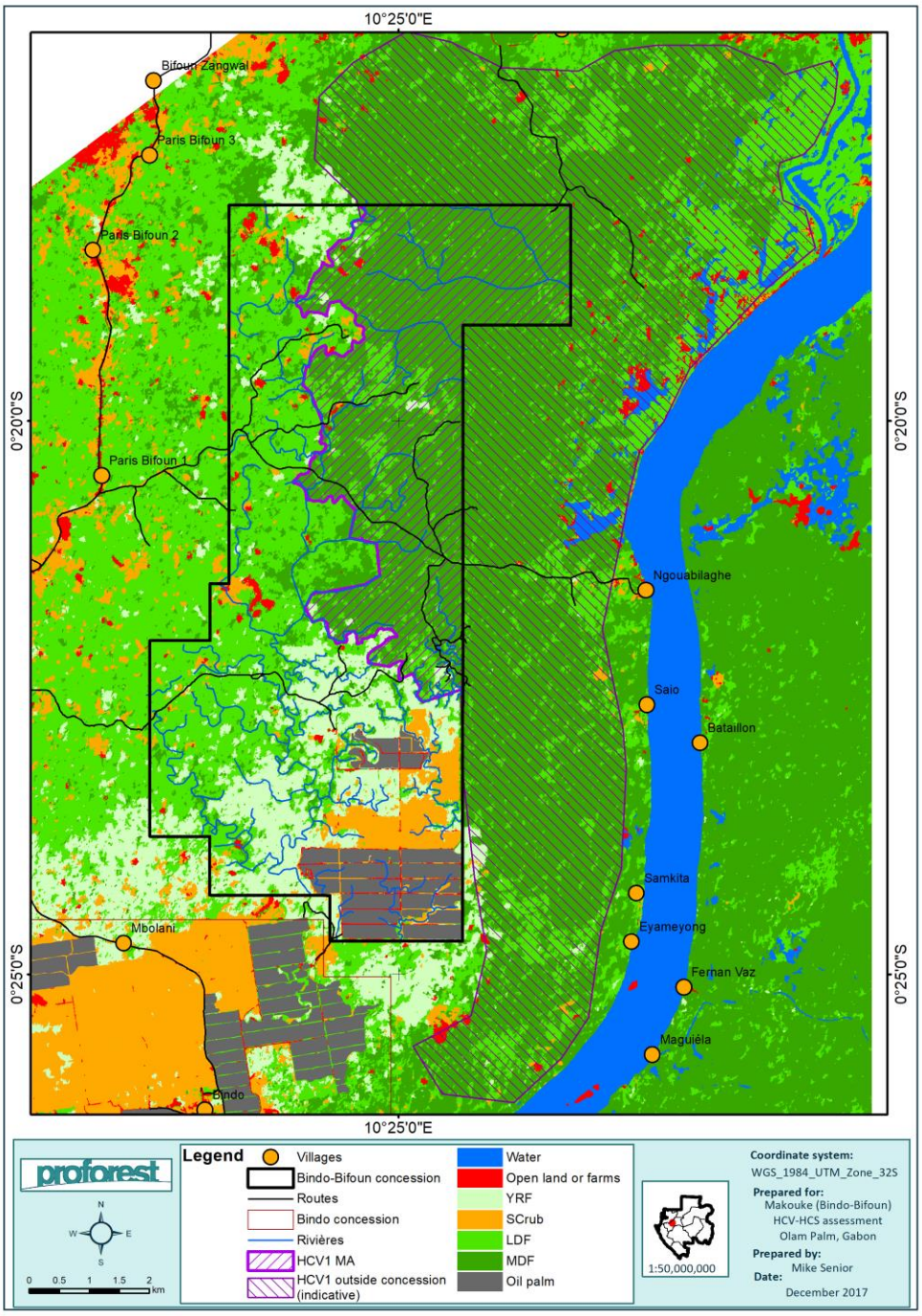


Figure 14. HCV1 management area (final) for co-occurring IUCN red listed mammals in significant forest block for the landscape due to its buffering role for the river and representative mammals of the Ramsar Site. Indicative HCV1 area outside the concession is also shown.

4.3.2 HCV 2 – Landscape-level ecosystems and mosaics

HCV 2	Finding
Intact Forest landscapes and large landscape-level ecosystems and ecosystem mosaics that are significant at global, regional and national levels,	**ABSENT**

and that contain viable populations of the great majority of the naturally occurring species in natural patterns of distribution and abundance.	

The concession is not located in either an Intact Forest Landscape or a CARPE landscape (Figure 15), which would be the typical indicators for HCV 2 in the Gabonese and central African context. Also, due to the intersection of the national highway and Ogooué river, and a high human density for Gabon standards, this region (Lambaréné region) represents a fragmentation zone of Gabon's vast forest blocks. The concession itself is further disconnected from any major forest block, as it is nestled in between national roads to the north and west and lower stretches of the impassable Ogooué River. The faunal and floral studies demonstrate that the concession does not contain populations of the great majority of naturally occurring species. *For these reasons we conclude that HCV 2 is not present within or near the BB concession.*

This Ramsar site is recognised for its large, complex mosaic of interconnected aquatic and terrestrial ecosystems (mangroves, lakes, wetlands, riparian and *terra firma* forests), but this mosaic is more typical of the lower stretches of the Ogooue river and is absent from the concession.

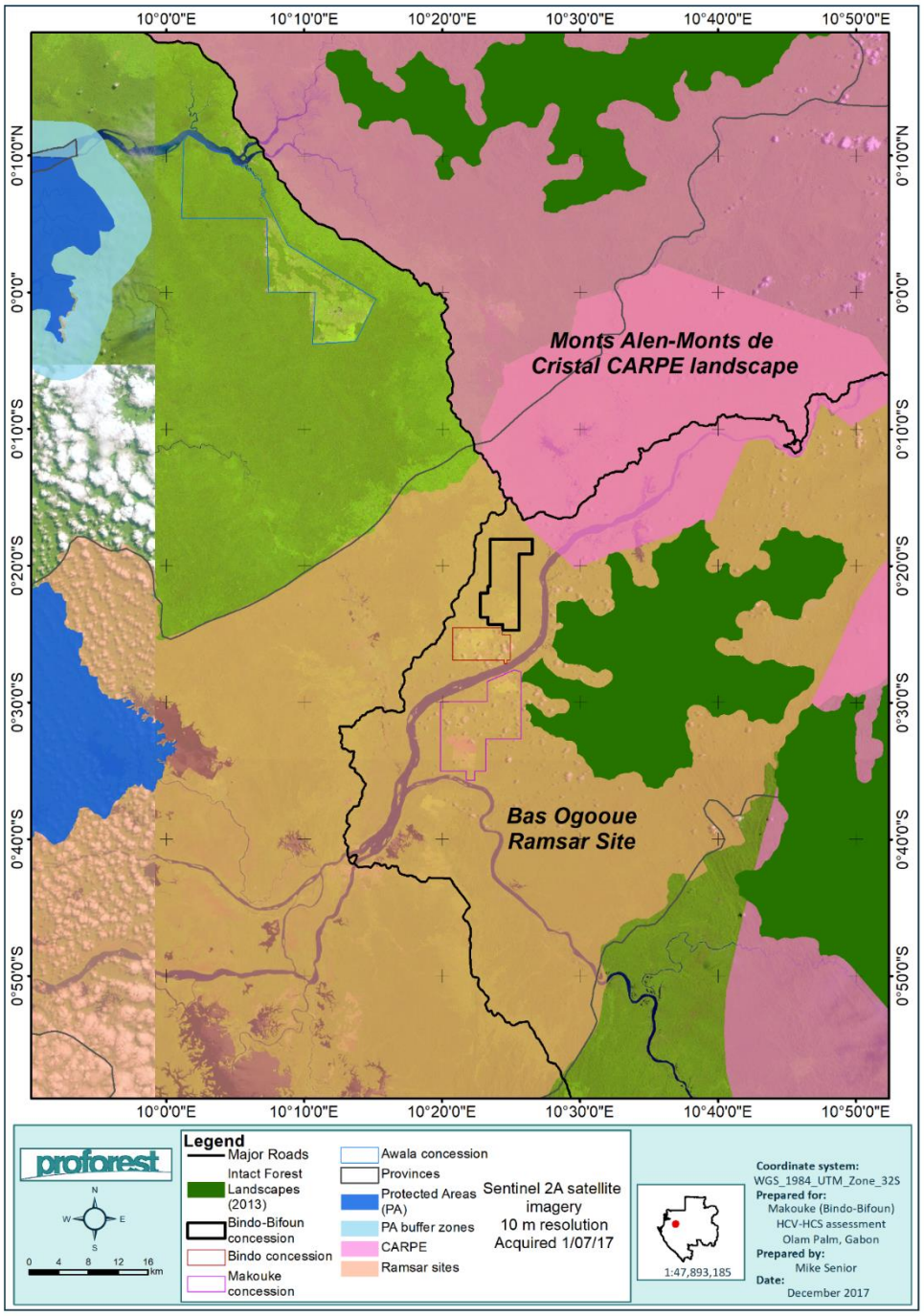


Figure 15. Intact Forest Landscapes and other conservation landscapes in the Makouke landscape.

4.3.3 HCV 3 - Ecosystems and habitats

HCV 3	Finding
Rare, threatened and endangered ecosystems, habitats or refugia.	**ABSENT**

The major vegetation types of the Bas Ogooué Ramsar site have recently been characterised (Viennois, *et al*. 2017). The BB concession falls within an area of

dense and secondary forest and plantations, with none of the rarer vegetation types e.g. flooded forest, swamp forests, marshes etc. occurring within the concession. During the field surveys, there was no evidence of smaller patches of closed swamp forest within the concession. None of the remaining rare or endangered ecosystems in the Gabon National Interpretation occur in the concession.

The forests in the concession are closely aligned with the coastal forest form of Central Africa, which, when intact, can be considered threatened due to heavy historic logging (Figure 16). However, even the less degraded eastern forests of the concession would not qualify as HCV 3 for this forest type, due to the high level of degradation shown by the low species diversity and endemism level compared with Gabon's intact forests. *We conclude that HCV 3 is absent from the concession, but potentially present in swamp forest to the east of the concession adjacent to the Ogooué river.*

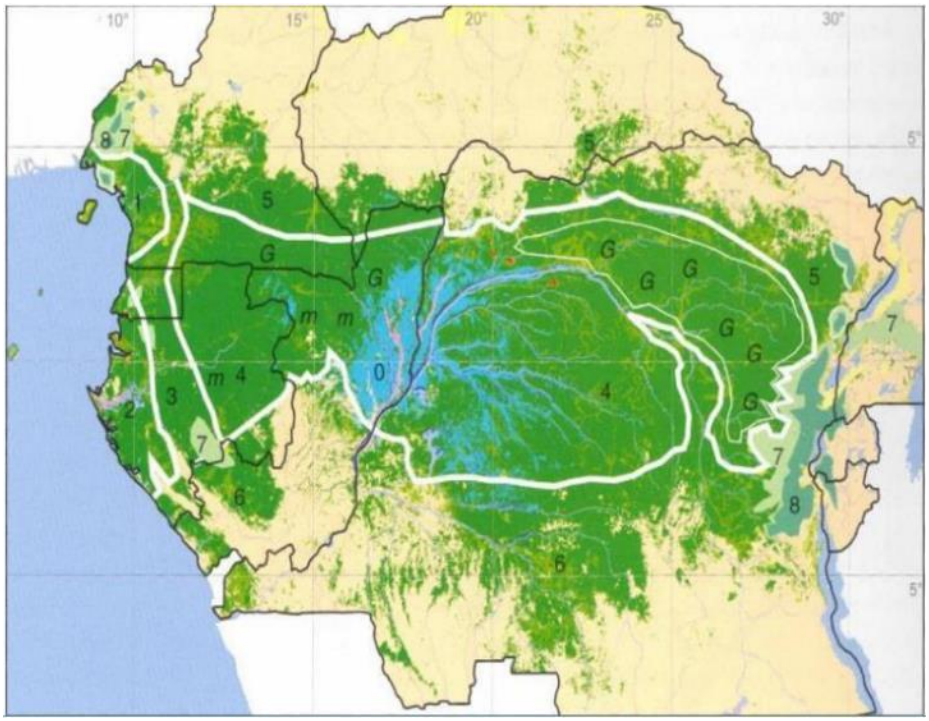


Figure 16. Main forest formations in Central Africa. Key: (1) Biafrean forests of the Cameroon coast, (2) Biafrean forests of the Gabonese and Equatorial Guinea coasts, (3) Caesalpiniaceae forests, (4) lowland Congolese forests, (5) Cameroonese-Congolese semi-deciduous forests, (6) Gabonese-Congolese semideciduous forests, (7) sub-montane forests, (8) mountain forests, (m) Maranthaceae forests and (G) forests with dominance of *Gilbertiodendron dewevri* (Vande weghe, 2004).

4.3.4 HCV 4 Ecosystem services

HCV 4	Finding
Basic ecosystem services in critical situations including protection of water catchments and control of erosion of vulnerable soils and slopes.	**PRESENT**

The topography of the BB concession is mostly very flat, with only a few gentle hills no higher than 90 metres in the concession.

The villages in the AoI either grow or collect forest plant products that rely on wild pollinators, e.g. plantains, tomatoes, chilis, andok, etc. Whilst research on the importance of wild pollinators is lacking, all of the cultivated crops are known to be pollinated by a range of pollinators and these crops are widely cultivated across West and Central Africa, including in areas with significantly less forest cover, and there is no reason to believe that conversion of some natural scrub or even degraded forest would negatively impact pollination of these species. For forest species used by communities and HCV 1 tree species, evidence on pollinators is even scarcer, however, these species and any pollinators are expected to be well protected in HCV 1 management areas, HCS forest, HCV 5 community use areas and forest in the wider landscape.

In the humid forest belt of Gabon, where the AoI is located, fire may be used occasionally on a small scale for shifting agricultural land clearance but typically land is cleared without fire. Virtually all of the AoI is covered with moist forest cover (in varying degrees of degradation), therefore, given the high humidity in the landscape and rarity of the use of fire, forests are not considered to provide critical functions of fire prevention and protection in the AoI. Wind protection is not a concern in the AoI nor in the landscape, which is all in the lowlands and far from the coast with significant natural shelter from wind.

The main HCV4 consideration for the concession relates to impacts on water quality and quantity. There are two main reasons why all rivers and streams in the concession are considered HCV4: 1) all rivers drain directly into the ecologically sensitive, downstream Ramsar site, and 2) the concession is upstream of numerous settlements that rely for part of the year on river water for drinking, fishing and other livelihood activities.

Villages along the Ogooué are more reliant on fishing as a livelihood and are less affected by seasonality, whereas the villages away from the Ogooue, and especially along the main road, only fish and collect river water seasonally – relying on pumps for ground water during the dry season.

Due to the sensitive location of the concession, within a Ramsar site, we propose doubling the width of the buffer zones compared to the Gabon RSPO NI to 100m (on each bank) for the Bene and 40m (on each bank) for all other tributaries (Figure 17).[15]

Permeability of the soils in the south of the concession means there is a moderately high vulnerability of the watershed to pollution due to risk of agrochemicals polluting groundwater if improperly managed. Olam should apply a minimised fertilisation regime to avoid any pollution of the water table.

[15] It was observed during the field studies that the shapefile of rivers provided by Olam was incorrect in places. As explained in section 6, Olam must re-do the mapping of all rivers before any land clearance starts and establish buffer zones based on the correct river locations.

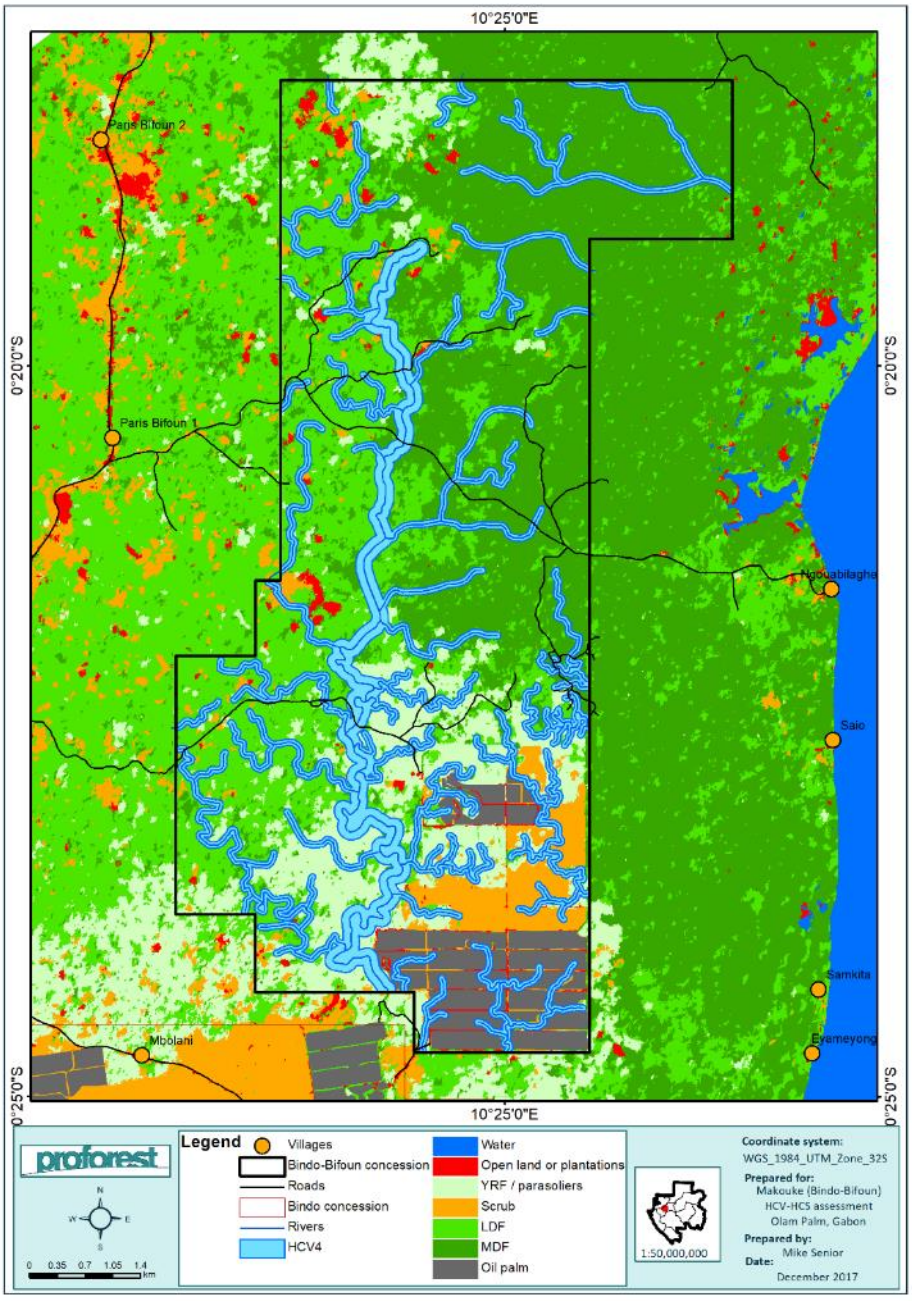


Figure 17. HCV4 management areas (provisional). Note that HCV4 areas also include riparian buffers and rivers downstream of the BB concession but are not shown here to ensure the map is legible.

4.3.5 HCV 5 – Community needs

HCV 5	Finding
Sites and resources fundamental for satisfying the basic necessities of local communities or indigenous peoples (for example for livelihoods, health, nutrition, water), identified through	**PRESENT**

engagement with these communities or indigenous peoples.	

Participatory mapping studies revealed that six of the 27 villages in the AoI conduct livelihoods activities (fishing, farming, hunting, fuelwood collection, NTFP collection, timber extraction or gathering) inside the BB concession. These villages are Paris Bifoun 1, Paris Bifoun 2, Bifoun 3, Benguie 4a & b, Bindo and Amanegone.

Villages in the area are using rivers in the concession to meet some of their basic needs for fishing at certain times of year. HCV4 management areas are expected to provide adequate protection of these water resources, but these riparian buffer zones should also be considered as HCV5 management areas to ensure continued community access and maintenance of safe water resources for fishing.

The majority of village members still make their livelihoods or subsistence needs through farming or use of natural resources. Food crops are grown for subsistence needs and also sold along the road or at the nearby Makouke market. Although produce is sold, farming cannot be considered a commercial activity as income received is used primarily to meet basic needs.

Currently, the majority of village plantations are located outside the concession in the belt near the road. However, reliance of the communities in the zone on agriculture for their livelihoods, and a relative scarcity of viable farmland means that farming should be considered HCV5 and Olam must ensure that communities continue to have adequate access to land for farming (either inside or outside of the concession) to meet basic needs during and after negotiations.

Villagers hunt, collect nuts, fuelwood, medicinal plants, fruits and leaves, harvest timber and to a lesser extent fish inside the BB concession. Bushmeat is the primary source of protein for villages in the zone, with fish of more importance along the Ogooue. Villages reported eating all bushmeat species based on availability with red river hog (Sanglier), porcupine (Porc-épic) and cane rat (Hérisson) the most commonly caught. Only a small number of villages keep small numbers of livestock primarily for cultural purposes, and fodder was not mentioned as critical basic resource. Of particular importance amongst NTFPs collected are Marantaceae leaves (Figure 18), which was observed to be widespread and the forest understorey in much of the concession was dominated by Marantaceae.

Figure 18. Collection of Marantaceae leaves in the BB concession by a lady from Paris Bifoun 1

Use zones for the six villages that overlap the BB concession are considered HCV5 areas and are shown in Figure 19. There has been a comprehensive validation of these maps in the villages, firstly of the use points during the participatory mapping and secondly of the use zone boundaries during final village consultation on the HCV results. Note that these maps of HCV5 areas are subject to negotiation between Olam and each village after this HCV report has been finalised.

Two final points to note are that: 1) Benguie 4a and 4b rejected the project during the validation meeting and so there land will be excluded from the development area, and 2) For Bindo village it was noted that satellite imagery showed farms outside the concession but in the village's use area that appeared not to have been picked up during the participatory mapping. Although the maps were validated by the villages it is suggested that Olam verify the maps with satellite imagery prior to negotiations.

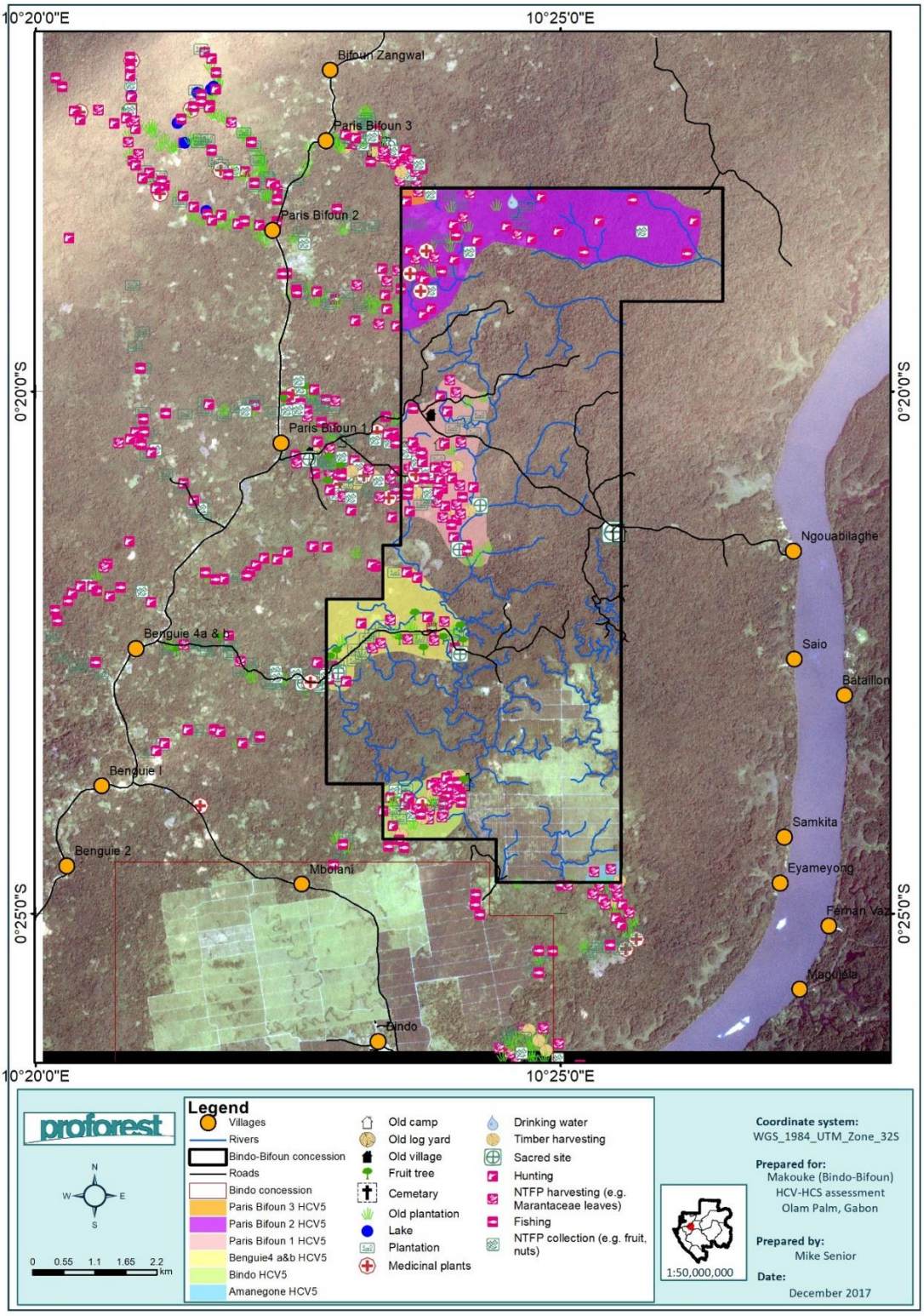


Figure 19. HCV5 areas (final) subject to negotiation between villages and Olam. Note that HCV5 areas outside of the BB concession are indicated by points and polygon boundaries are only shown inside the concession.

4.3.6 HCV 6 – Cultural values

HCV 6	Finding

Sites, resources, habitats and landscapes of global or national cultural, archaeological or historical significance, and/or of critical cultural, ecological, economic or religious/sacred importance for the traditional cultures of local communities or indigenous peoples, identified through engagement with these local communities or indigenous peoples.	**PRESENT**

Four villages around the concession were found to have physical sacred or culturally important sites in the concession: Paris Bifoun 1, Benguie 4a & b, Bindo and Ngouabilaghe[16]. These sites are old villages and other sacred sites, such as initiation sites or sacred groves, and are all considered HCV6. It should be noted that initiation sites (in comparison to other sacred sites such as burial sites) often change location over time through ritual processes so may be subject to negotiation with communities. The sacred sites are either for religious or cultural rituals or initiation rites (not cemeteries which were mapped separately). The precise significance of the sites depends on the villages and is somewhat guarded within the villages, and access to the sites is forbidden to members of the public and permitted only to initiated village members. The only details shared about the sacred sites is as follows:

- Paris Bifoun 1, which consisted mainly of sites nearby to the petit Béné and grand Béné rivers and adjacent to old camps,
- Benguie 4a & b, which were also on the banks of the grand Béné river,
- Bindo: the sacred site inside the BB concession is associated with a former camp, and
- Ngouabilaghe: sacred site Ndoume which is also adjacent to a former camp.

The location of these sites was validated during the initial participatory mapping and again during the final HCV village consultations. As a precautionary measure we have proposed 50m buffer zones, as minimum HCV management areas, for each HCV6 site. However, we recommend that Olam verifies and validates a final set of HCV6 sites with each village prior to any clearance and after negotiations are completed. This will ensure HCV5 and 6 management areas are integrated and avoid enclaving HCV6 sites within future plantations.

[16] Note that Ngouabilaghe has cultural sites but did not have HCV5 activities inside the concession

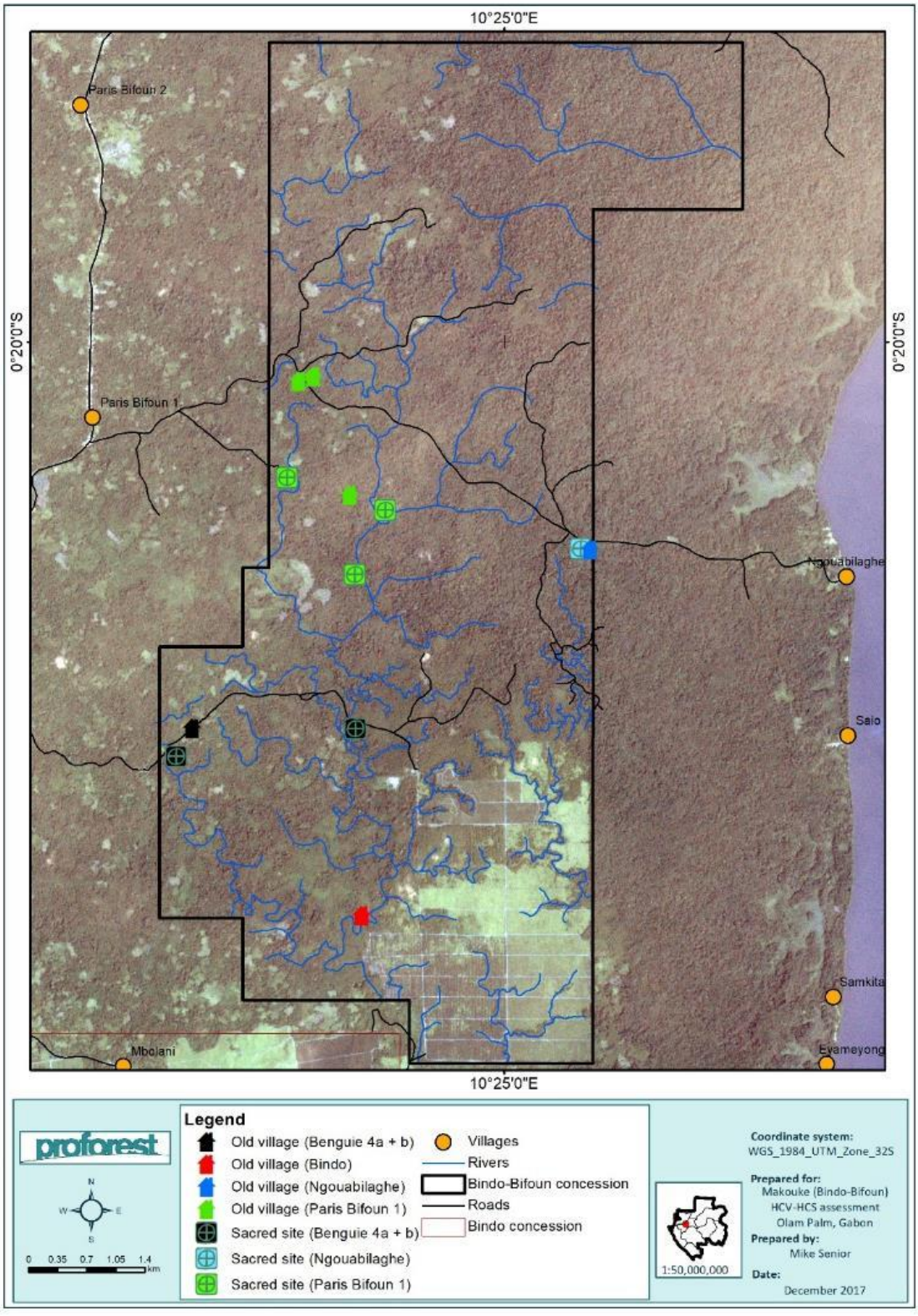


Figure 20. HCV 6 points (final)

4.4 Stakeholder consultation

The assessment team carried out stakeholder consultations throughout the assessment process with stakeholders in Gabon, during the scoping visit in May 2017, during the full assessment from July to September and during final consultations in December 2017. Exact dates of consultations are included in the full assessment report, and a summary of main concerns is given here:

Organisation & date	Main concerns raised	Inclusion in final assessment
Faustin Ondamba, Ramsar Focal Point, Ministère de la Forêt, de la Mer et de l'Environnement[17] 25/8/17 ; 6/12/17	Essential to consider impacts on water quality and quantity, avoid any degradation of water quality in the Bas Ogooue. Ensure regular monitoring of water quality Olam must follow management and monitoring recommendations after reporting completed Olam should join management committee for the Bas Ogooue Ramsar site	Doubling of riparian buffer zones to avoid negative downstream impacts. Recommend high frequency monitoring of water quality Explained that RSPO audit process should cover this Recommendation passed on to Olam, who joined committee launch meeting
Dr Ludovic Ngok Banak, Conseil Climat 24/8/17 ; 8/12/17	The proposed precautionary riparian buffer zones seem too conservative, could be smaller Compensation for communities should focus on securing their farmland and improving productivity, not on cash payments A complete ban on hunting is unlikely to work – suggests employing main hunters to anti-poaching team	Contradict feedback from other stakeholders. Larger, precautionary buffers to be kept Included as management recommendation Included as management recommendation
Lee WHITE, Petronie MABIALA, Solange NGOUESSONO, Guy-Roger AZIZET, Michelle LEE, ANPN 1/6/17 ; 24/8/17 ; 6/12/17	Screening against indicative national HCV maps suggests Nile crocodile may occur. Should be investigated further Need for a more robust water monitoring system than usual Use national protocol for botanical inventory during full assessment	Further consultation with Dr Shirley conducted and community consultation. Nile crocodiles highly unlikely to be present Included as monitoring recommendation Botanical inventory followed HCSA methodology which could not

[17] Ramsar focal point was housed in DGEPN at the start of this assessment but he then switched government department whilst remaining the focal point

	Makes sense to retain a larger contiguous block further north rather to include the YRF where gorilla prints observed – gorillas would be moving around this wider area. Estimate required conservation area for gorillas and chimps based on approx. territory of 25km^2. Protection of the watershed draining from the east of the concession is important for the Ramsar site	readily be aligned with national protocol HCV1 management area (MA) boundary revised to increase extent in north, and exclude YRF in south. MA is 20 km^2 but part of a larger 70 km^2 forest block that is considered adequate to support the great ape populations HCV1 MA will protect virtually all of this watershed
Steeve Pwaty, Augnes Stephan DBA MEYE, Krystel ONDO HORTYLIAH, Julie BOUSSENGUI, Martial AGONDOGO, Direction Generale des Ecosystèmes Aquatiques (DGEA) **1/6/17 ;** **6/12/17**	Minimise leaching into the groundwater Critical to have adequate riparian buffer zones Olam should help manage human-wildlife conflict Construction of roads, bridges in dry season must take into account river width & height in wet season	Recommend Olam monitor borehole water quality regularly & develop SOP for minimised fertiliser application Precautionary buffer zones recommended Included as recommendation related to HCV5 Included as management recommendation
Ngoyi Emmanual BAYANI, DG Environnement et Protection de la Nature (DGEPN) 6/6/17	Reports should be made available in French with larger maps	Public summary will be available in french
Marie-Clare Paiz (TNC), Eugène Ndong Ndoutoume (WWF), Daniel Mbega (IRAF) **2/6/17 ;** **8/12/17**	Small seasonal streams not documented but often ecologically important and should be protected by buffer zones Should also sample fish in dry season in case species of interest using pockets of water that remain. This could be done after development if adequate buffer zones established to protect water bodies	All streams & rivers in the concession are small and seasonal. Recommend Olam to verify/remap all water bodies due to some inaccuracies found during field visit Included in management recommendations

	Minimise roading across rivers and streams Logical for both conservation and Olam's operations to follow "give and take" for the HCV1 MA to increase size in the north to reduce YRF in the south Olam should monitor: • Water quality (inc. suspended matter and agrochemicals) • Water quantity, and • Groundwater plus percolation rates Olam should be more transparent about their use & application rates for agrochemicals	Included in management recommendations HCV1 MA boundary adjusted following this principle Included in management recommendations Include as management recommendation suggestion to publish or share agrochemical use policy
Martial Djinang, Brainforest 9/6/17	Olam must ensure genuine community consultation and participation, focusing on practical solutions for communities and not just on legal requirements Olam's social team are responsible for informing communities of the development project and key stages involved i.e. impact and HCV assessments	Will include in management recommendations suggestions to develop genuinely participatory community engagement methods that exceed legal requirements Recommendation passed on to Olam
Herve Ovono, IRDC Africa 25/8/17 ; 6/12/17	Felt that the experts used are not independent as they work for government research institutions and Olam is a PPP Said that assessment process was not transparent Olam's social team on the ground does not have the expertise to manage community relations –	Explained that the experts used were chosen as best available in-country experts, and that their methods and results are reviewed throughout by Proforest to ensure their adequacy. Was consulted twice during the assessment process and specific methods and results explained, but had no specific comments on the methods or results when presented Included in management recommendations

	require capacity building by a Gabonese organisation	
Rose Ondo, Fensed 4/9/17 ; 8/12/17	Olam or a 3rd party should honestly explain the pros and cons (not simply short-term pros) of oil palm development/ceding their land so they can make an informed decision Ensure villagers can pass through the plantation to any HCV5 areas at any time of day (fitting with their daily calendar) Should train village representatives that can be focal points of engagement to explain processes and rights to other village members Capacity building required of Olam social teams in the field Compensation for villages should not be in cash terms	Recommendations included in management recommendations
Dr Matt Shirley (Crocodile expert) 2/8/17	Unlikely that they occur in the concession as Nile crocodile numbers on the Ogooué river near Lambarene were devastated by the crocodile leather trade in the 1900s, but there is a slim chance that they persist in some wet refuges (lakes or small rivers) away from the Ogooué. Suggested to interview fishermen to find out if they had encountered either Nile crocodiles or the other two species occurring in Gabon.	Village members interviewed during socio-economic surveys and informal discussions with villagers had not encountered Nile crocodiles, mentioning only dwarf crocodiles. Precautionary riparian buffers will nonetheless protect all waterways that would be Nile crocodile habitat
Patrice Christy (Ornithologist) 4/9/17 ; 7/12/17	Confirmed the absence of Nile crocodile de Nile in the area. Olam should create platforms for eagle nesting as part of IPM Hunting should be banned completely	Not an HCV recommendation, but will be passed on to Olam Olam has a policy of banning all hunting in their concessions, but may need co-develop a strategy for the eventual HCV5 areas that recognises the traditionally high rate of hunting in the zone

Ngouabilaghe	Request that Olam employs young from the village and opens the road to the village that cross the concession.	Issues for Olam to decide during negotiations with the village members.
Amanegone	*Participatory maps were validated with the village, but the final HCV consultation meeting was not conducted due to absence of the chef and representative village members*	*The area used by the village is an area planted with palm by SIAT, and so the community's use is not expected to be affected by Olam's ongoing operation in the area.* *As part of the ongoing FPIC process led by Olam, TEREA will return to conduct the final validation meeting before any social contract is developed*
Benguie 4a & b	The village members completely refused to give consent to the project during the validation meeting.	Olam will not develop any land mapped as used by Benguie 4a or 4b.
Bindo	Raised concerns that they would not be allowed to develop or use their farms in the concession. Request that Olam provides healthcare and improves the road.	The village's entire use area was mapped during the participatory mapping and will be subject to negotiation between Olam and the villages. Issues for Olam to decide during negotiations with the village members.
Paris Bifoun 1	Asked why the 5km "green band" was not being used. It was stated that without this band the population might need to move elsewhere.	It was explained that this is no longer a legal requirement for concessions, but that the village's entire use area was mapped during the participatory mapping. Olam will need to engage with the villages to ensure that they have enough farm land to meet their needs.
Paris Bifoun 2	They fear that they will be deprived of agricultural land, particularly for the production of plantains.	It was explained that farms were mapped during the participatory mapping and that they will not be converted by Olam unless agreed during negotiations with the villages.
Bifoun 3	Asked that the boundary of the concession is moved to be 5km from the village (in line with former legal	It was explained that this is no longer a legal requirement for concessions, but that the village's

	requirement of “green bands” of 5km). Asked that young from the village are employed by Olam and that Olam constructs a school.	entire use area was mapped during the participatory mapping. Olam has said that local populations will be considered based on their competency for each job.

5 HCV management and monitoring

5.1 Total number of hectares allocated as HCV management areas (ha)

Overall, 3,736 ha of HCV areas have been identified out of the BB concession of 5,488 ha. This includes 2,795 ha of final HCV1 and HCV4 management areas and an additional 941 ha of provisional HCV5 and HCV6 areas that are yet to undergo negotiation. These are shown in Figure 21.

Table 8. Summary table of HCVA and HCVMAs identified for the concesion

Type of HCV	Status	Size (ha)
HCV1	Final MA	2,031.9
HCV4	Final MA	1,032.6
HCV5 Benguie 4a & b	Provisional (Pre-negotiation)	316.0
HCV5 Paris Bifoun 1	Provisional (Pre-negotiation)	381.2
HCV5 Paris Bifoun 2	Provisional (Pre-negotiation)	733.3
HCV5 Bifoun 3	Provisional (Pre-negotiation)	17.9
HCV5 Bindo	Provisional (Pre-negotiation)	149.0
HCV5 Amanegone	Provisional (Pre-negotiation)	18.1
HCV6 old village buffer (Bindo)	Precautionary buffer zone	0.8
HCV6 old village buffer (Benguie 4ab)	Precautionary buffer zone	0.8
HCV6 old village buffer (Paris Bifoun 1)	Precautionary buffer zone	0.8
HCV6 sacred site buffer (Paris Bifoun 1)	Precautionary buffer zone	0.8
HCV6 sacred site buffer (Paris Bifoun 1)	Precautionary buffer zone	0.8
HCV6 sacred site buffer (Paris Bifoun 1)	Precautionary buffer zone	0.8
HCV6 sacred site buffer (Benguie 4ab)	Precautionary buffer zone	0.8
HCV6 sacred site buffer (Benguie 4ab)	Precautionary buffer zone	0.8
HCV6 sacred site buffer (Ngouabilaghe)	Precautionary buffer zone	0.8
HCV6 old village buffer (Ngouabilaghe)	Precautionary buffer zone	0.8
HCV6 old village buffer (Paris Bifoun 1)	Precautionary buffer zone	0.8
HCV6 old village buffer (Paris Bifoun 1)	Precautionary buffer zone	0.8
Total (all HCVs – no overlap)		**3,736.4**
Total (Final HCV 1 & 4 only – no overlap)		**2,794.8**

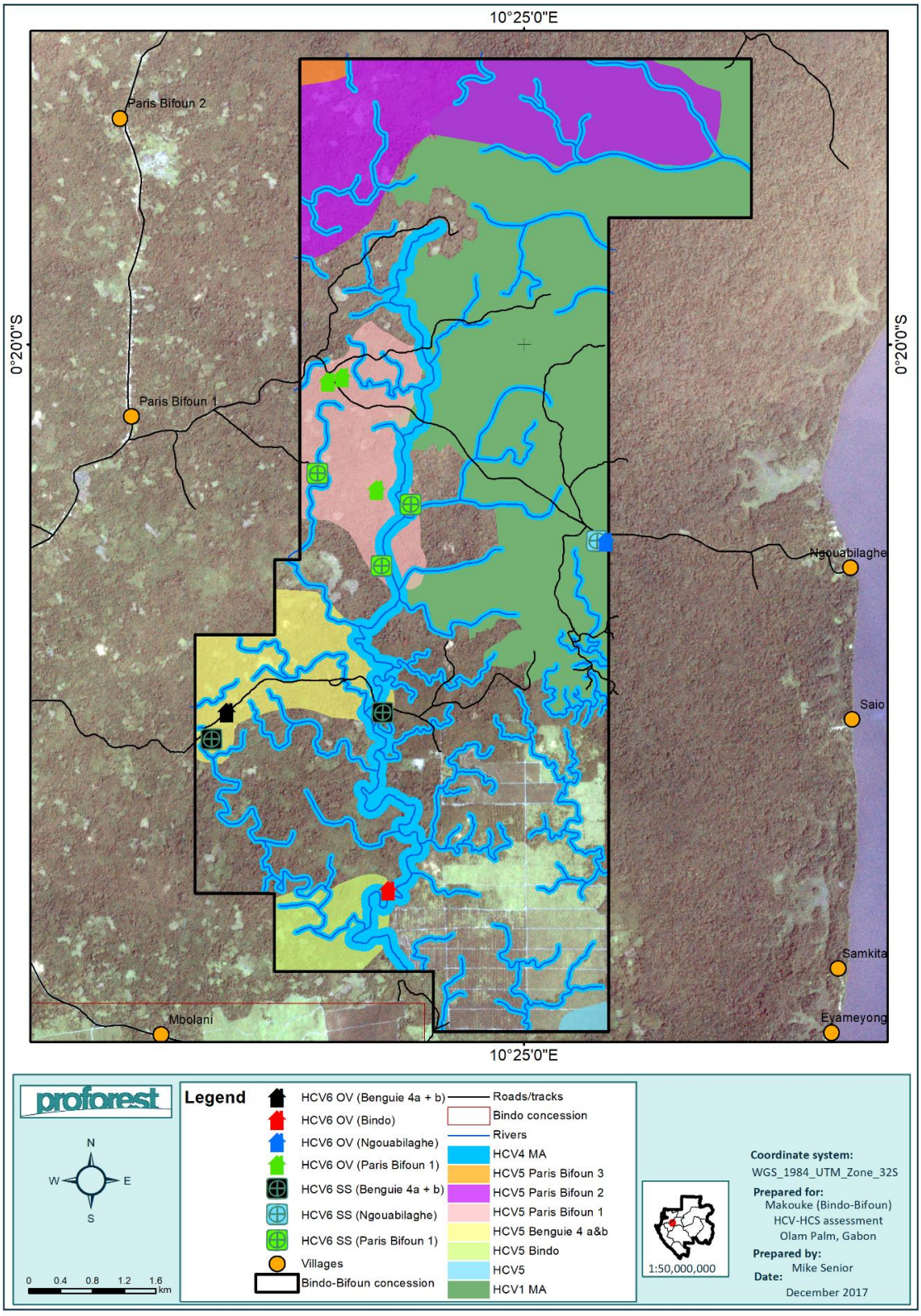


Figure 21. Map of final HCV1 MA and HCV4 MAs and provisional HCV5 and HCV6 areas. Note that HCV1, HCV4 and HCV5 areas extend beyond the boundaries of the concession as illustrated in sections 4.3.1, 4.3.4 and 4.3.5. OV=Old village, SS=sacred site. Source: The HCV areas and HCV Management areas were defined by the assessment team during the expert workshop.

5.2 Provisional High Carbon Stock assessment results

As this assessment was started before the HCV-HCS manual was published and associated new quality review procedures came into effect, separate HCV and HCSA reports have been written and will pass through the established ALS review (HCV) and HCSA quality review procedures.

Olam is abiding by a moratorium on clearing any areas that are either HCV or High Carbon Stock (according to the HCSA) until either January 2019 OR until the development of an agreed 'adapted' Gabon-relevant HCS approach. ***Therefore, at present Olam will only provisionally develop non-HCSA and non-HCV areas – in line with the map shown in*** Figure 22***. This may be subject to change in the next year if an 'adapted' Gabon-relevant HCS approach is agreed.***

Given the numerous times that the BB concession has changed hands over the past decades (AgroGabon, PalmHevea, SIAT, Olam), there is high degree of frustration amongst the villages regarding changing social agreements and development plans. For this reason, and the fact that the 'final' developable area may change based on discussions about an 'adapted' Gabon-relevant HCS approach, it was decided that:

1. The HCV assessment team would only present the results of the HCV assessment to villages for the final consultation meetings, and
2. Olam's social team will communicate to each of the villages, as part of ongoing FPIC discussions and during the pre-development negotiation of social contracts, that Olam will initially only be developing a subset of non-HCSA and non-HCV areas but that other areas *may* be developed in the future pending agreement of an 'adapted' Gabon-relevant HCS approach endorsed by national stakeholders and RSPO. Olam should regularly update villages on the status of discussions.

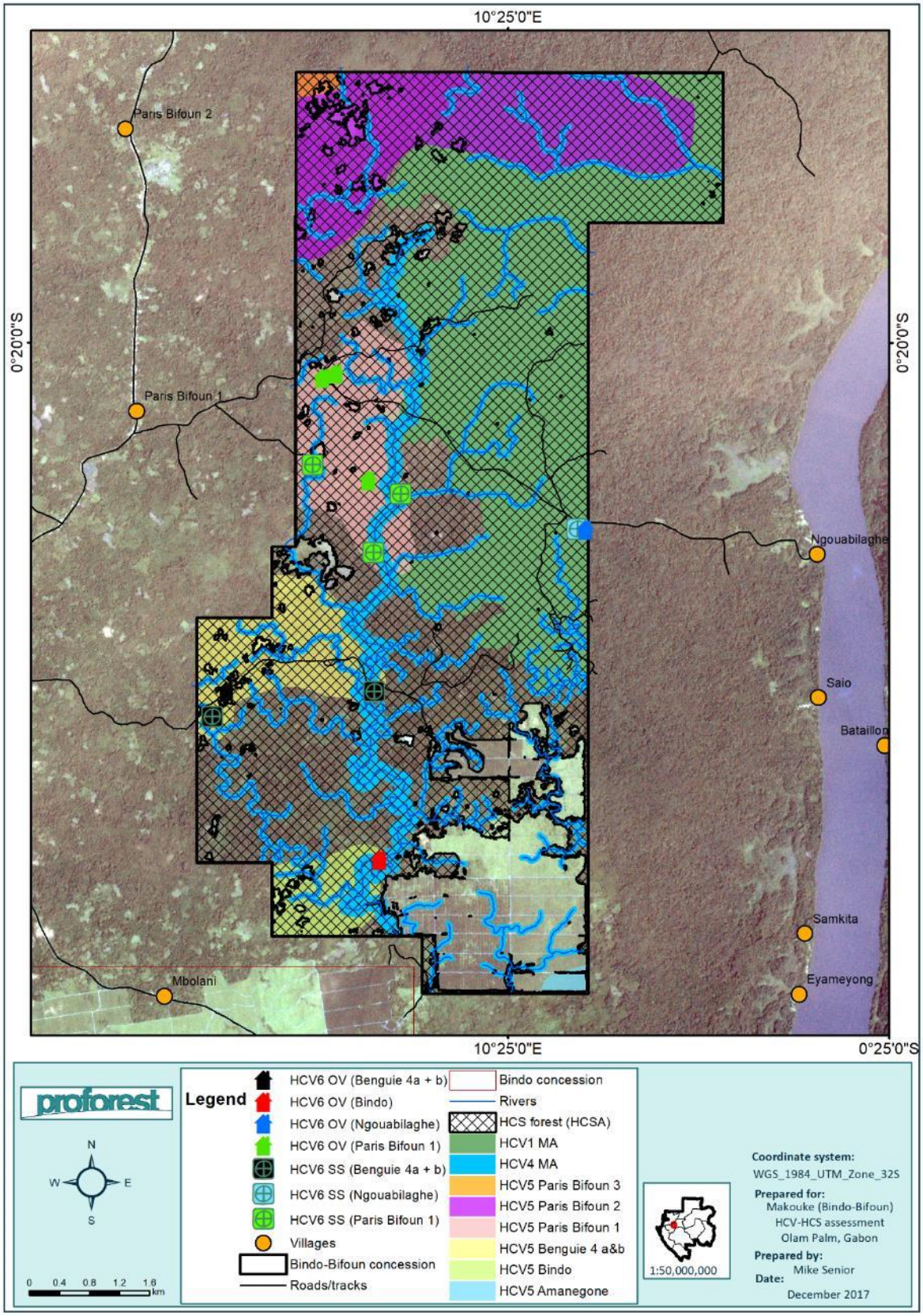


Figure 22. Map of final HCV1 MA, provisional HCV4 MAs, HCV5, HCV6 areas, and HCS forest. OV=Old village, SS=sacred site. Source: The HCV areas and HCV Management areas were defined by the assessment team during the expert workshop.

5.3 Threat assessment

The approach used by the HCV assessment team for threat assessment was in-depth consultation with the technical experts during the restitution workshop. This approach used expert knowledge combined with information collected in the field and during stakeholder consultation. Each HCV was examined and both the current and potential threats (should the proposed oil palm project go ahead), as well as direct and indirect causes of threats.

HCV	Brief description of value present	Main threats
1	Species diversity • Chimpanzees, gorillas and elephants in MDF forest, that are representative species of the Bas Ogooué Ramsar site. This forest is also HCV1 as a landscape buffer for the Ogooué river	**Current** • Loss of forest to village plantations • Hunting by the nearby communities • Timber harvesting by communities **Potential** • Increased hunting pressure in the HCVMA due to loss of hunting areas to palm plantations • Increased hunting pressure on remaining forest blocks outside the concession (especially east of the concession) that do not fall within Olam's management • Loss of forest from conversion to oil palm • Loss of forest in the HCVMA from conversion for village plantations • Loss of forest in the contiguous forest block to the east and north of the HCVMA from conversion for village plantations, due to scarcity of farmland • Fragmentation of the HCV1 MA and increased access to communities from opening of road/track to Ngouabilaghe • Disturbance from mechanical operations during land preparation, road building etc.
4	Basic ecosystem services	**Current**

	• Hydrological functions to maintain water quality and quantity for community uses and ecological functions of the Ramsar site	• Low level forest loss due to clearing for subsistence agriculture and small-scale logging/ timber extraction • Loss of water quality due to fishing using poisons/chemicals • Inadequate riparian buffer zones in planted area of concession **Potential** • Loss of water quality and quantity due to clearance of riparian forest for palm oil plantation (high level threat) • Loss of water quality due to clearance of riparian forest for village plantations • Loss of potable water supply in concession and downstream • Loss of water quality in and immediately downstream of the concession due to nutrient leaching / fertiliser runoff or other pollution, sedimentation caused by river crossings and roads • Loss of water quality downstream along the Ogooué river and in the downstream Ramsar site due to leaching, pollution or sedimentation caused by river crossings and roads • Loss of water quality in and immediately downstream of the concession due to nutrient leaching / fertiliser runoff, pesticides or other pollution, sedimentation caused by increased use of poisons/chemicals for fishing • Pollution of groundwater used for drinking by leaching of agrochemical
5	Basic Community Needs • Provision of food from farming, hunting, timber harvesting, fishing and NTFP gathering in the forest zone • Water supply to communities	**Current** • Bushmeat supply is already dwindling as hunted species numbers appear to be in low numbers from overhunting • (Alleged) pollution of river water downstream of the planted area by SIAT/Olam's operations • Loss of water quality and declining fish stocks due to fishing using poisons/chemicals **Potential** • Loss of fertile forest land for farming if riparian areas are replaced by oil palm or reserved as conservation buffer zones

		• Reduced availability of viable farmland east of the national road due to establishment of HCV1 MA and conversion for oil palm • Loss of access to traditional hunting, fuelwood collection, medicinal plant collection, fishing and NTFP grounds during hours of traditional use • Hunting ban causes loss of access to primary hunting area in the east of the concession (HCV1 MA) • Overharvesting of timber, fuelwood, medicinal plants and NTFPs (esp Marantaceae leaves) in HCV5 areas and remaining forest due to reduction in available harvesting areas caused by conversion of palm and establishment of HCV1 MA • Reduction of fish stocks and loss of fish habitat due to impacts on water quality and quantity • Loss of potable surface and river water due to pollution • Pollution of groundwater used for drinking by leaching of agrochemical
6	Cultural values • Old villages • Sacred sites	**Current** none **Potential** • Loss of access • Damage to sites or resource from land clearance • Perceived degradation of the value of HCV6 sites caused by enclaving within plantations • Taboo access of sacred sites by unauthorised persons, e.g. plantation workers, possibly leading to community conflict or discontent

5.4 Management and monitoring recommendations

HCV	Threats	Management recommendations	Monitoring recommendations
1	**Current** • Loss of forest to village plantations • Overhunting by the nearby communities • Timber harvesting by communities **Potential** • Increased hunting pressure in the HCVMA due to loss of hunting areas to palm plantations • Increased hunting pressure on remaining forest blocks outside the concession (especially east of the concession) that do not fall within Olam's management • Loss of forest from conversion to oil palm • Loss of forest in the HCVMA from conversion for village plantations • Loss of forest in the contiguous forest block to the east and north of the HCVMA from conversion for village	• Establish and demarcate clearly with signs the boundaries of the 2,919 ha HCV1MA • Ensure clearance teams are fully aware of and respect the HCV1 MA boundaries before and during clearance • Develop management restrictions for the HCVMA, including: ○ Ban on all illegal hunting and hunting of HCV1 species (as minimum) and consider a complete hunting ban for all species if enforceable. ○ Ban on conversion for farming and logging in the HCVMA ○ Explore options for allowing sustainable, low-intensity collection of fruit and nuts and subsistence fishing (no use of poison) in the HCVMA ○ Explore options to allow harvesting of Marantaceae leaves in the HCVMA based on discussion with communities about key harvesting areas – can needs be met elsewhere • Extensive and regular sensitisation of HCV1 MA boundary and restrictions with all surrounding communities, including	• Conduct monitoring of great ape and elephant populations every 1-2 years, for instance using targeted recce surveys. • Conduct regular anti-poaching patrols (weekly or twice a month) e.g. using SMART or similar platform. • Conduct hunter surveys annually to understand main hunting areas and assess trends in bushmeat availability. • Establish protocol for monitoring performance of HCV team including anti-poaching patrol, e.g. using SMART • Bi-annual monitoring of set-aside areas to show zero conversion of forest, using satellite imagery or similar (e.g. GFW alerts) • Establish a co-management committee to develop and monitor permitted community activities (harvesting, fishing, collection) in the HCV1 MA

	plantations, due to scarcity of farmland • Fragmentation of the HCV1 MA and increased access to communities from opening of road/track to Ngouabilaghe	provision of maps and posters listing restrictions, regular awareness raising activities including of children at local schools • Extensive and regular sensitisation of HCV1 MA boundary and interdictions with staff and workers, including provision of maps and posters listing restrictions and empowerment of staff to support HCV teams by sharing any observations of HCV species and threats • Establish an anti-poaching/hunting team. Explore hiring to the team as a priority the main hunters from the area • Engage with the appropriate local authorities to reduce illegal hunting inside and outside the concession, and put in place effective law enforcement procedures. • Engage with ANPN or Ministère de la Forêt, de la Mer et de l'Environnementand the Ramsar management committee to explore more formal protection for the forest block northeast of the concession towards the Ogooue • During the FPIC process: ○ Discuss alternative options to commercial bushmeat hunting, such as provision of livestock, fish farming or subsidised and improved access to bought protein	

		○ To reduce pressure on the HCV1 MA, support communities to understand future farmland needs and availability (future land use projections), and to secure and improve productivity of land • During negotiations with Ngouabilaghe village discuss their demands versus potential threat to the HCV1 MA of opening a larger road across the concession. Guarantee access across the route but prioritise not opening a (larger) road in exchange for other compensation • Conduct fish sampling during the dry season to verify if unique species or assemblages are present in perennial refuges.	
4	**Current** • Low level forest loss due to clearing for subsistence agriculture and small-scale logging/ timber extraction • Loss of water quality due to fishing using poisons/chemicals • Inadequate riparian buffer zones in planted area of concession **Potential** • Loss of water quality and quantity due to clearance of riparian forest for palm oil plantation (high level threat)	• Re-map river and stream locations to correct inaccuracies of current map • Establish, demarcate with signs and protect riparian buffer zones forests (these should be identified by following streams and tributaries to their source). Buffer zones must be 100 m on each side of the Béné and 40 m on each side of other tributaries • Increase the size of buffer zones in the planted area to 100 m for the Béné and 40 m for smaller streams. If buffer zones are already planted it is recommended to leave palms standing for	• Monitor activities of roading teams to ensure buffer zones are respected and roading across rivers is minimised • Establish network of independent surface/river water monitoring points in the concession and downstream; • Establish an enhanced, higher frequency water quality and quantity monitoring protocol using the monitoring station network, to include as minimum agrichemical, suspended matter,

	• Loss of water quality due to clearance of riparian forest for village plantations • Loss of potable water supply in concession and downstream • Loss of water quality in and immediately downstream of the concession due to nutrient leaching / fertiliser runoff or other pollution, sedimentation caused by river crossings and roads • Loss of water quality downstream along the Ogooué river and in the downstream Ramsar site due to leaching, pollution or sedimentation caused by river crossings and roads • Loss of water quality in and immediately downstream of the concession due to nutrient leaching / fertiliser runoff or other pollution, sedimentation caused by increased use of poisons/chemicals for fishing • Pollution of groundwater used for drinking by leaching of agrochemical	soil stabilisation and ground cover, but all management activities and agrochemical/fertiliser application should cease to allow regeneration of natural vegetation. Explore assisted regeneration if climbers/cover crops suppress natural regeneration • Ban logging and farming in HCV4 MAs based on discussions with communities to ensure sufficient farmland and timber needs are met elsewhere, in line with the FPIC process • Allow fishing in rivers but ban use of poisons/chemicals • Minimise roading across HCV4 MAs by communicating with operations/clearance teams – roading should not follow the usual blocking pattern • Establish roads and bridges following BMPs, including building during the dry season but based on anticipated maximum height and width during the wet season • Extensive and regular sensitisation of HCV4 MA boundaries and restrictions with all surrounding communities, including provision of maps and posters listing restrictions, • Extensive and regular sensitisation of HCV4 MA boundary and interdictions with staff and workers, including provision of maps and posters listing restrictions	sediment load. Monitoring frequency should be increased in the wet season. Results should be shared with Ramsar management committee and appropriate government departments • Establish regular groundwater monitoring protocol focused on boreholes along the Lambarene-Libreville road, with increased frequency of monitoring in the dry season • Regular monitoring of forest set-aside zones shows no encroachment by communities and operations; • Bi-annual monitoring of set-aside zone shows at least no decrease in canopy cover; • Set restoration goal (natural regrowth) for riparian zone with annual milestones; • Regular review and monitoring of implementation of relevant Olam's SOPs, including HCV and operations teams. Particular focus should be given to ensure fertiliser teams and chemical sprayers respect increased buffer zones in the planted area

		• Development and implementation of dedicated SOPs regarding chemical use for HCV4 MAs • Conduct further surveys on soil type and percolation rates in the proposed development area to better understand the risk of polluting groundwater used by communities • Develop a tailored and preferably reduced fertilisation regime that minimises the risk of polluting groundwater. Fertilisation and chemical SOPs should be made public or at least shared with TNC for feedback	
5	**Current** • Bushmeat supply is already dwindling as hunted species numbers appear to be in low numbers from overhunting • (Alleged) pollution of river water downstream of the planted area by SIAT/Olam's operations • Loss of water quality and declining fish stocks due to fishing using poisons/chemicals **Potential** • Loss of fertile forest land for farming if riparian areas are replaced by oil	• During the FPIC process and negotiations: ○ Clarify with Bindo village members whether there are any use areas (especially farms) outside the BB concession that were not captured during the participatory mapping ○ Avoid cash compensation and focus on rural development activities (e.g. securing farmland and increasing productivity) ○ Ensure communities have full understanding of pros and cons of oil palm development, particularly in terms of future farmland needs and hunting restrictions	• Establish and implement a participatory monitoring system to regularly track provision of basic needs to the community. There should be a clear mechanism for the findings of this participatory monitoring to be fed back into management measures in place (adaptive management). • Cross-check participatory monitoring of fishing, hunting and farming with findings from water monitoring and anti-poaching

	palm or reserved as conservation buffer zones • Reduced availability of viable farmland east of the national road due to establishment of HCV1 MA and conversion for oil palm • Loss of access to traditional hunting, fuelwood collection, medicinal plants, fishing and NTFP grounds during hours of traditional use • Hunting ban causes loss of access to primary hunting area in the east of the concession (HCV1 MA) • Overharvesting of timber. fuelwood, medicinal plants, and NTFPs (esp Marantaceae leaves) in HCV5 areas and remaining forest due to reduction in available harvesting areas caused by conversion of palm and establishment of HCV1 MA • Reduction of fish stocks and loss of fish habitat due to impacts on water quality and quantity • Loss of potable surface and river water due to pollution	○ Discuss alternative options to commercial bushmeat hunting, such as provision of livestock, fish farming or subsidised and improved access to bought protein ○ To reduce pressure on the HCV1 MA, support communities to understand future farmland needs and availability (future land use projections), and to secure and improve productivity of land ○ With Ngouabilaghe village discuss their demands versus potential threat to the HCV1 MA of opening a larger road across the concession. Guarantee access across the route but prioritise not opening a (larger) road in exchange for other compensation • Ensure community access to all HCV5 and HCV6 areas or other community use areas outside the concession at all times • Ensure sufficient alternative land available for farming or compensation if there are no alternatives; • Establish a community development programme to provide alternative food sources, with emphasis on availability of suitable protein, and ensure adequate access to medicines and healthcare; ensure controlled access for fishing and prohibition of poisons/chemicals for fishing;	

	• Pollution of groundwater used for drinking by leaching of agrochemical	• Strict hunting SOP for all Olam and contracted staff and all local communities applicable inside the permit and appropriate buffer zones (i.e. to protect great apes and elephants)- including zero tolerance to any form of illegal hunting (hunting methods and protected species); sensitisation and suitable training of all local communities inside the permit. • Establish co-management committees with community representatives to: ○ Secure and improve productivity of farmland ○ Control all hunting in forest zones coupled with provision of protein sources in the zone ○ Agree and monitor areas for fishing, fuelwood, medicinal plant, timber harvest and NTFP collection and harvesting, and set sustainable extraction rates ○ Ensure a continuous social engagement process to find mutually agreeable solutions to HCV 5 threats and formalise in codes of conduct and community engagement policies • Explore supporting the training (via 3rd parties) of village representatives	

		• Conduct capacity building of Olam social team in Makouke to ensure they have the capacity to effectively lead community engagement activities	
6	**Potential** • Loss of access • Damage to sites or resource from land clearance • Perceived degradation of the value of HCV6 sites caused by enclaving within plantations • Taboo access of sacred sites by unauthorised persons, e.g. plantation workers, possibly leading to community conflict or discontent	• Review precautionary HCV6 buffer zones during negotiations to enable all communities to have access to their HCV 6 sites and to avoid enclaving sites • Sensitise all communities that have identified any HCV 6 sites that are not on the validated HCV 5 & 6 maps • Develop robust SOP for the identification, demarcation and enclavement and protection of all HCV 6 sites with the communities • Ensure community member present when clearing operations occurring in any HCV 6 sensitive zones • Conduct training for workers on SOPs for all HCV 6 sites to ensure no trespassing into HCV 6 sites and buffer zones	• Develop a simple HCV 6 monitoring system and ensure annual internal reporting against it

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7 Signed statement of responsibility

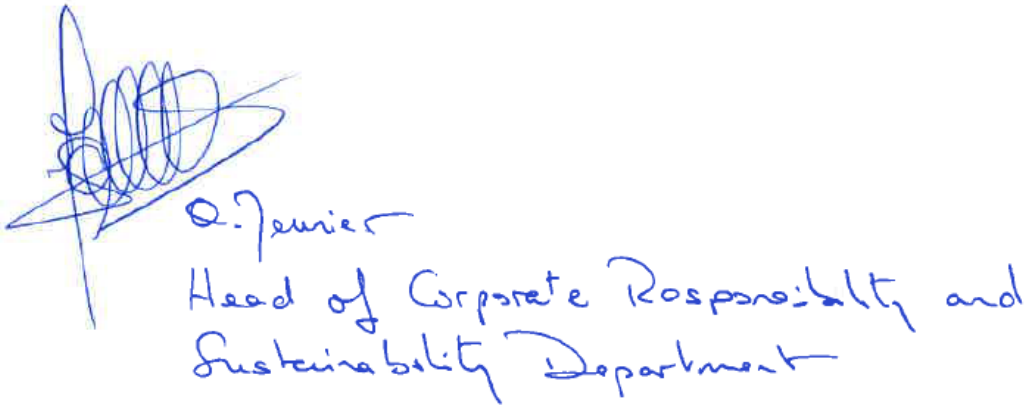
This document is the summary of a full High Conservation Value assessment for Olam Palm Gabon's proposed 5,488 ha Bindo-Bifoun concession located in the Moyen-Ogooué Province, Gabon. The concession is intended to be used for sustainable oil palm development by OPG. The full assessment and the summary reports have been accepted by the Management of OPG.

I, the undersigned lead assessor accepts responsibility for the assessment and endorses this summary report as a true reflection of the summary of the full assessment report.

Signed on behalf of the HCV assessment team:

Dr Mike Senior, Lead assessor; Deputy Director – Conservation & Land Use, Proforest

Signed on behalf of Olam Palm Gabon:



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