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BIODIVERSITY ACTION PLAN

DOCUMENT APPROVAL

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Acknowledgements: Thanks are extended to the CBG biodiversity team and all stakeholders who collaborated on the development of this report.

Table of contents

Acronym table

Acronym	Definition
AMC	Alliance Mining Commodities
AMR	Alliance Minière Responsable
AoA	Area of Analysis
BAP	Biodiversity Action Plan
BGACE	Bureau Guinéen d'Audit et de Conformité Environnementale
BGEEE	Bureau Guinéen d'Études et d'Evaluation Environnementale
BMEP	Biodiversity Monitoring and Evaluation Plan
BMR	Biodiversity Management Register
BMS	Biodiversity Management System
CBG	Compagnie des Bauxites de Guinée
CFB	Chemin de Fer de Boké
CH	Critical Habitat
CHA	Critical Habitat Assessment
CMG	Chambre des Mines de Guinée
COBAD	Compagnie de Bauxite de Dian-Dian
CR	Critically Endangered (IUCN Red List)
DD	Data Deficient (IUCN Red List)
DMU	Discrete Management Unit
EBF	Environmental Buffer Zones
EMoP	Environmental Monitoring Plan
EN	Endangered (IUCN Red List)
ESAP	Environmental and Social Action Plan
ESIA	Environmental and Social Impact Assessment
ESMP	Environmental and Social Management Plan
E&S	Environmental and Social
FLCMP	Forest Landscape Community Management Programme
GAC	Guinea Alumina Corporation
GAP	General Action Plan
GN6	IFC's Guidance Note 6 (for Performance Standard 6)
HAP	Habitat Action Plan
HSECQ	Health, Safety, Environment, Communities and Quality
IBAT	Integrated Biodiversity Assessment Tool
IESC	Independent Environmental and Social Consultant
IFC	International Finance Corporation
ITP	Interim Technical Panel
IBA	Important Bird Area
IUCN	International Union for Conservation of Nature

KBA	Key Biodiversity Area
LDP	Land Disturbance Permit
MEEF	Ministère de l'Environnement, des Eaux et Forêt
MH	Modified Habitat
MRCCP	Mine Rehabilitation and Conceptual Closure Plan
MTPA	Million tonnes per annum
NG	Net Gain
NH	Natural Habitat
NNL	No Net Loss
NGO	Non-government Organisations
NT	Near Threatened (IUCN Red List)
OGPR	Office Guinéen des Parcs et Réserves
QH	Quality-Hectare
PS6	IFC's Performance Standard 6
PSR	Pressure-State-Response
Ramboll	Ramboll Environment and Health UK Limited
REB	Réseau Environnement Bauxite
RR	Restricted range
SAP	Species Action Plan
SEP	Stakeholder Engagement Plan
SMB	Société Minière de Boké
TBC	The Biodiversity Consultancy
UCOMB	Unité de Coopération pour l'Offset Moyen-Bafing
VU	Vulnerable (IUCN Red List)
WCF	Wild Chimpanzee Foundation

Executive Summary

This Biodiversity Action Plan (BAP) sets out **CBG's biodiversity strategy** and mitigation approach for its South Cogon operations, in line with IFC Performance Standard 6 (PS6). It replaces CBG's 2016 Biodiversity Management System (BMS).

CBG operates in an area of **Critical and Natural Habitat** which supports a set of Critical-Habitat qualifying biodiversity features which together with species of stakeholder concern, comprise a suite of priority biodiversity, including terrestrial, freshwater and marine species and habitats. CBG is committed to achieve No Net Loss (NNL) on Natural Habitat and Net Gain (NG) target for Critical Habitat-qualifying biodiversity by 2040, corresponding to the end of decommissioning for the South Cogon concession operations. Post closure monitoring will be conducted on a routine basis until CBG can demonstrate that closure objectives have been met, completion criteria achieved, and the site / domain may be relinquished (duration expected to be a minimum of five years).

CBG has been operational since the 1970s. The ongoing operations has a **structured biodiversity team** in place implementing a set of existing operational mitigation actions to manage biodiversity impacts following the principles of the mitigation hierarchy, summarised in this BAP. This BAP provides a framework for the **Biodiversity Management Register** (BMR) which serves as CBG's updated operational biodiversity management tool on the ground.

This BAP also frames the **NNL/NG tracker** which allows the progress towards NNL/NG targets and losses/gains to be monitored over time for each priority biodiversity feature. For the BAP to be fully operational, CBG will undertake several priority actions, including the update of the existing biodiversity monitoring programme (EMoP) by creating a PS6-aligned **Biodiversity Monitoring and Evaluation Plan** (BMEP), and the development of the **forest landscape community management programme** (FLCMP) to achieve a NNL/NG for identified priority biodiversity.

The BAP is a living document and will be reviewed and updated within the next three years (by the end of 2023).

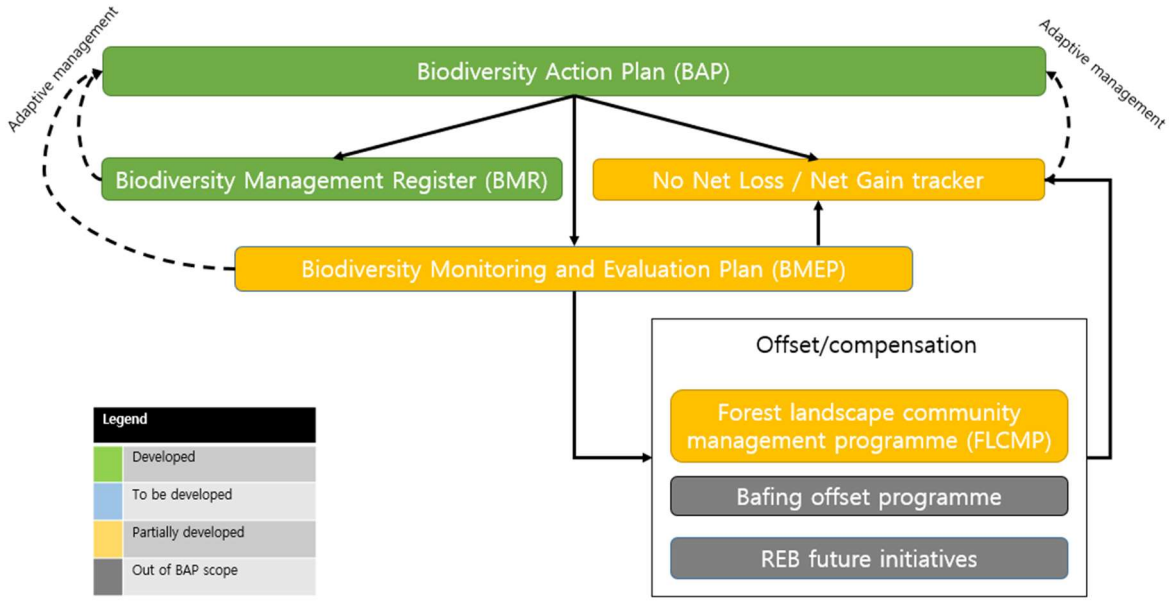


Diagram showing the links between the BAP and key associated documents

1 Introduction

1.1 Overview

Compagnie des Bauxites de Guinée (CBG or the Company) is a bauxite mining company operating in the Boke region of Guinea since 1973. CBG exploits the bauxite in the plateaux of the Sangaredi area, transports it by railway to Kamsar's treatment plant, and then ships it overseas from the marine port (Figure 1).

This Biodiversity Action Plan (BAP) forms part of CBG's Environmental and Social Management System (ESMS, see Section 1.4), and sets out the company's biodiversity strategy in line with International Finance Corporation (IFC) Performance Standards on Environmental and Social Sustainability (IFC, 2012c), in particular Performance Standard 6 (PS6) on biodiversity conservation and management (IFC, 2012b).

The BAP outlines how to achieve targeted objectives for priority biodiversity impacted by CBG's operations in the South Cogon concession. The BAP has been developed to address Lender requirements relating to two CBG projects within the South Cogon concession, both of which have completed environmental and social impact assessments (ESIA) (EEM, 2014; ERM, 2017):

- Expansion Project - CBG is increasing its bauxite production to reach a full production target of 27.5 million tonnes per annum (MTPA). The current production capacity is estimated at 18.5 MTPA. The Expansion Project includes the construction and modification of CBG's infrastructure at the mine, railway, treatment plant and port areas. End of mining operations are planned for 2038, plus two years for decommissioning (2040).

- Multi-User Project – Joint investment by CBG, Guinea Alumina Corporation (GAC) and Compagnie de Bauxite de Dian-Dian (COBAD) consisting in the extension of the Sangaredi-Kamsar railway infrastructure to increase ore transport capacity from mine sites to the port areas. The project includes the doubling of some sections of the existing rail track to enable a higher train traffic frequency. The project is promoted by Chemin de Fer de Boké (CFB), which currently manages the railway infrastructures.

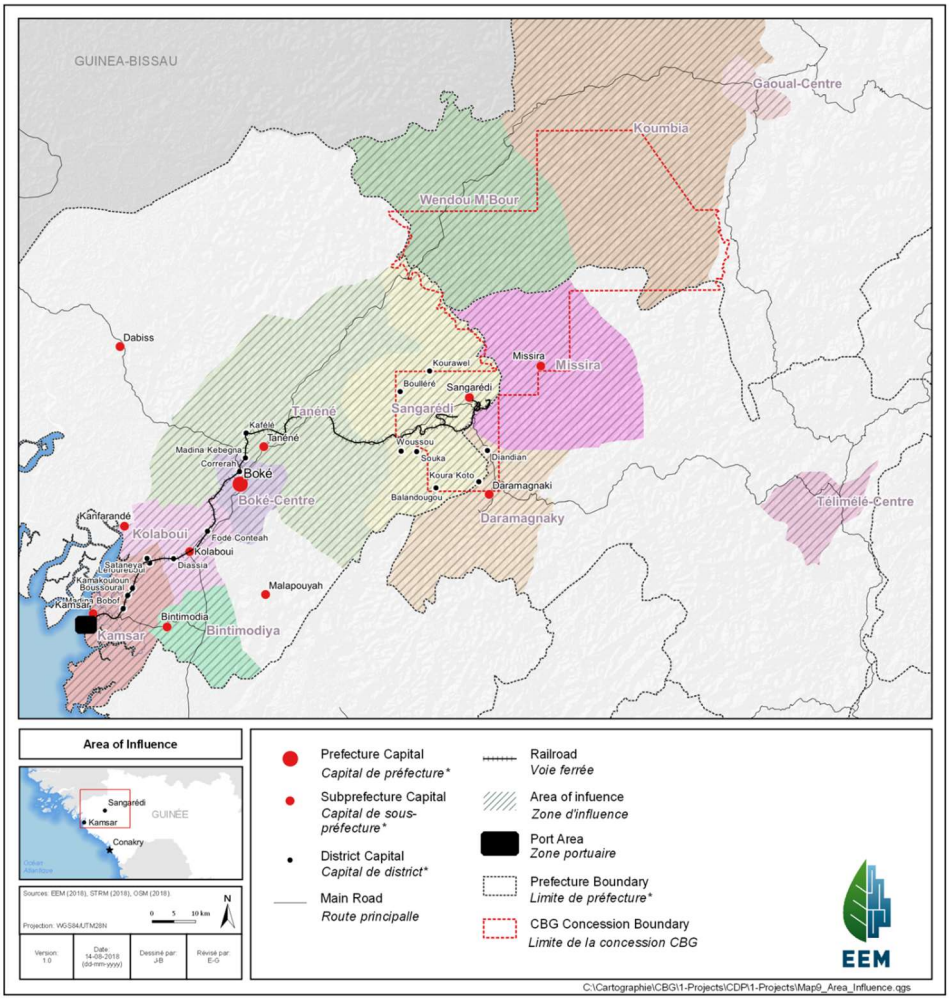


Figure 1 - CBG's area of influence

1.2 Context

Under IFC PS6, a project located in an area of Critical Habitat (CH) is required to prepare a Biodiversity Action Plan (BAP) that sets outs the overarching strategy to manage biodiversity impacts and risks, and to achieve desired biodiversity outcomes. As CBG's operations are located in Critical and Natural Habitat (TBC, 2015b), CBG is committed to develop and implement a PS6-aligned BAP.

CBG developed a Biodiversity Management System (BMS) in 2016, which described CBG's biodiversity commitments and strategy in alignment with applicable standards (EEM, 2016). CBG appointed Ramboll Environment and Health UK Limited (Ramboll) as the independent environmental and social consultant (IESC) in charge of auditing the implementation of the

Expansion Project's environmental and social action plan (ESAP). As part of this due diligence process, CBG was requested to review its BMS and replace it with a PS6-aligned BAP.

1.3 Purpose and scope

The purpose of this BAP is to set out a strategy to mitigate and manage biodiversity impacts for CBG operations associated with its South Cogon concession, and to set out the actions required to achieve it's No Net Loss / Net Gain (NNL/NG) targets prior to 2040 (i.e. end of decommissioning for South Cogon operations), in compliance with PS6 requirements. The key objectives of this BAP are to:

- Confirm priority biodiversity features for CBG and their associated NNL/NG targets, through an updated Critical Habitat Assessment (CHA);
- Present CBG's overarching biodiversity management approach and key mitigation actions; and
- Define the approach to assess and track losses/gains, and progress towards NNL/NG targets;

This BAP is a living document subject to adaptive management as CBG better understands the status and ecology of priority biodiversity features, Company's impacts on these features and the effectiveness of mitigation actions.

CBG will review this BAP within the next three years (by the end of 2023), or sooner if CBG develops any new projects or if any major biodiversity issues are identified. The review will determine if the existing mitigation approach and efforts enable CBG to be on track towards achieving the desired NNL/NG objectives, or if any alterations are necessary.

This BAP focuses on the areas where CBG has a level of management control over land use and biodiversity outcomes. It applies to CBG operations and impacts (direct, indirect and cumulative) in the South Cogon concession, including mining activities, the multi-user railway, and CBG's treatment plant and port areas. North Cogon exploration phase is not included in the scope of this BAP.

Two mining companies operating in the adjacent areas, Société Minière de Boké (SMB) and COBAD, have recently built mining infrastructures (i.e. road and railway) within the CBG concession (see their location in Figure 2). SMB and COBAD operations are not formally covered by this BAP, but CBG will aim to mitigate impacts from these operations within the CBG concession, as feasible.

CBG is co-investing with GAC, in close collaboration with Guinean authorities and the IFC, in the creation and management of the new Moyen Bafing National Park (*Parc National du Moyen Bafing*, PNMB) as an offset for combined residual impacts on the population of Western

Chimpanzees that will be impacted by mining activities across the landscape (see Section 6.4.2). The management and implementation of the Bafing offset is out of scope for this BAP and is managed through a separate process[1]. However, the biodiversity gains from activities in the Bafing offset will be integrated into the no net loss/net gain tracker.

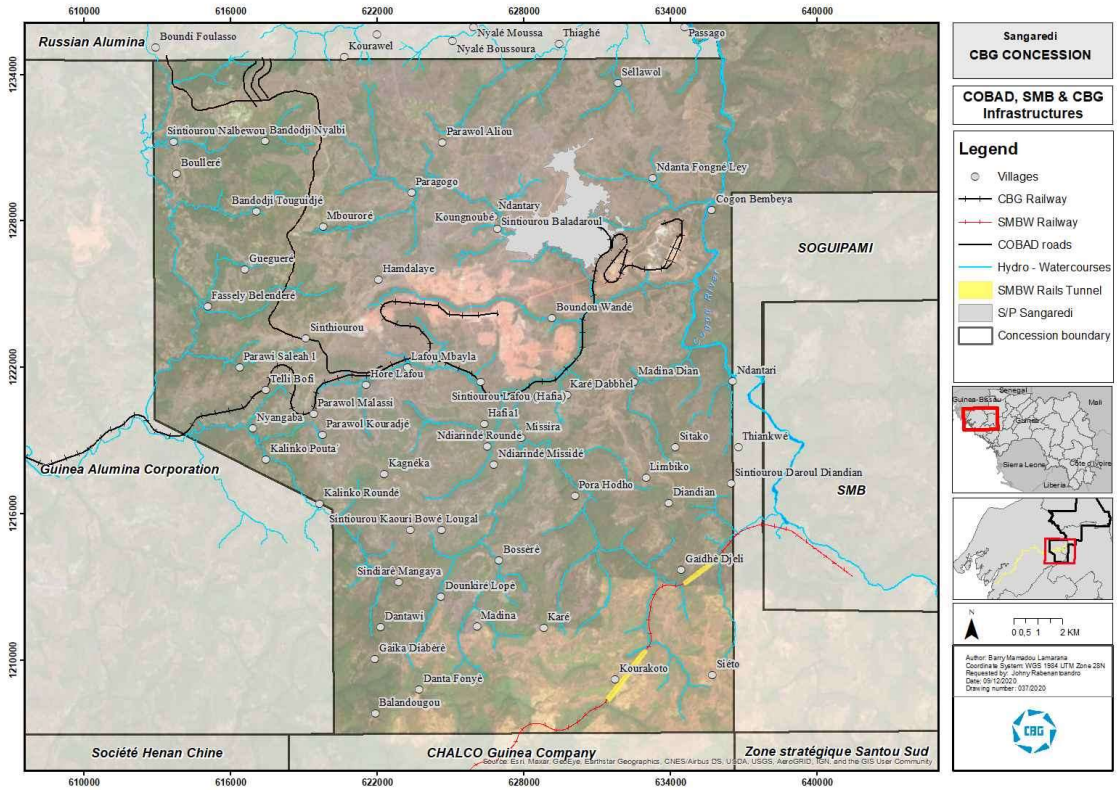


Figure 2 - Location of COBAD and SMB infrastructure within the CBG South Cogon concession

1.4 BAP within the ESMS

CBG has an integrated Environmental and Social Management System (ESMS) which defines the process through which environmental, social, health and safety issues are managed by the Company.

[1] The development of the offset strategy, that guides CBG engagement in PNMB, is the responsibility of the CBG Offset Company and technical support is provided by the Biodiversity Manager.

The BAP (previously known as BMS) is fully integrated within the ESMS (Figure *3*). CBG's biodiversity manager is responsible for the implementation and review of this BAP (see Section 3.1).

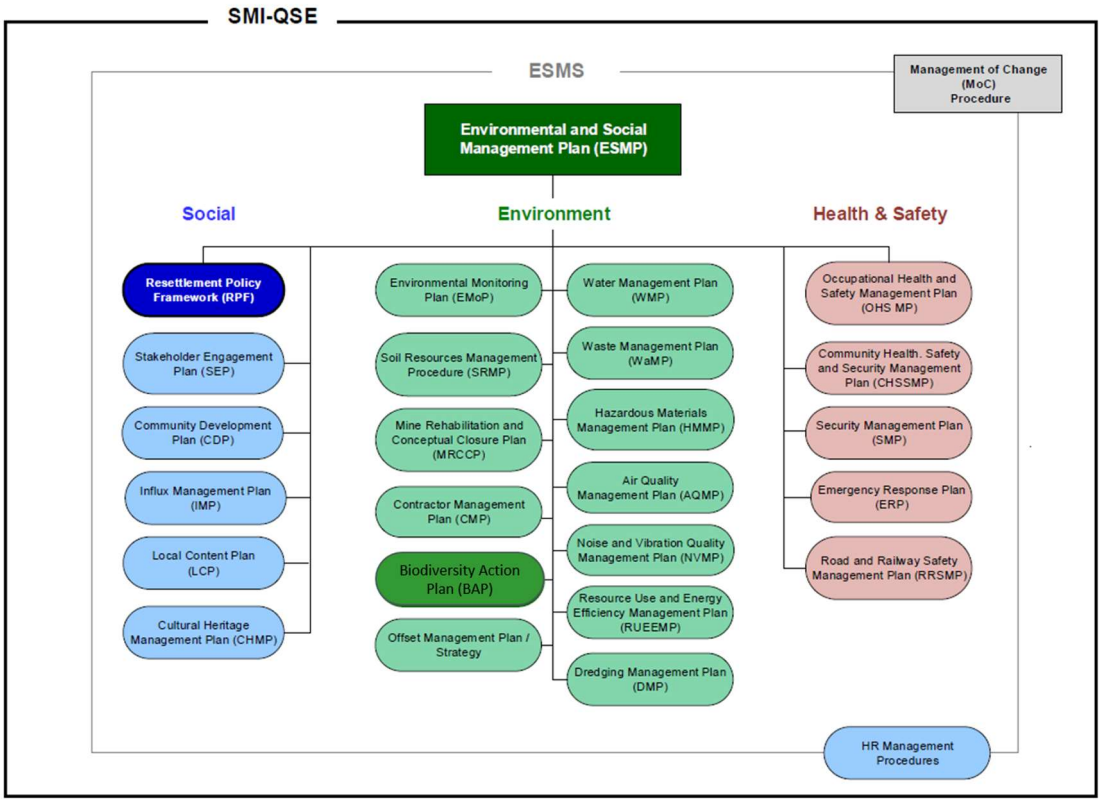


Figure 3 - CBG's Environmental and Social Management System (ESMS)

1.5 Structure of this BAP

This BAP has the following structure:

- Section 2: Applicable standards and commitments
- Section 3: Engagement with stakeholders
- Section 4: Priority biodiversity
- Section 5: Impacts to biodiversity
- Section 6: Mitigation approach
- Section 7: Biodiversity management on the ground
- Section 8: Biodiversity monitoring
- Section 9: Tracking progress towards NNL/NG targets
- Section 10: Roadmap for BAP completion and implementation

The report includes a References chapter (Section 11) and five annexes:

- Annex 1: Applicable GN6 criteria for CH identification (IFC 2019)
- Annex 2: Critical Habitat Assessment update
- Annex 3: Biodiversity Management Register (BMR)
- Annex 4: NNL/NG tracker
- Annex 5: Methodological framework to assess losses/gains for priority biodiversity

Annexes 3 & 4 are standalone documents.

2 Applicable standards and commitments

2.1 Institutional framework

CBG aims to comply with the applicable Guinean regulatory framework with regards to biodiversity management throughout all Project phases (design, construction, operations and closure), in particular:

- The Mining Code, Act L/95/036/CTRN updated by Act L/2011/006/CNT and consolidated by Act L/2013/No053/CNT, which regulates mining in Guinea.
- The Environment Code, Order 045/PRG/87 (amended by Order 022/PRG/89), which establishes the fundamental legal principles for environmental protection in Guinea.
- Presidential Decree 199/PRG/SGG/89 on the codification of environmental impact assessments and Decree 990/MME/SGG/90 defining the content, methodology and the environmental impact study procedure.
- The Wildlife Protection and Hunting Code (Act L/97/038/AN) which determines the legal framework for the protection, conservation, and management of flora and fauna, and their habitats, as well as hunting. The Code specifies what species of flora and fauna are fully or partially protected in Guinea.
- The Forestry Code (Act L/99/013/AN) which sets the legal framework for the protection of forests in Guinea, including commercial and community usage, and the conservation of forest resources.

2.2 Lender requirements

CBG receives funding from several development financial institutions (the Lenders) and signed a Common Terms Agreement[2] (CTA) with them for the Expansion Project, which requires the Project

[2] Most recent CTA signed in November 2020.

to comply with IFC's Environmental and Social Performance Standards (including Performance Standard 6 (PS6) Biodiversity Conservation and Sustainable Management of Living Natural Resources). As part of these requirements, biodiversity offsets are required to compensate for residual impacts on identified priority biodiversity in order to achieve no net loss/net gain.

CBG has committed to align with IFC PS6 (IFC, 2012c) with regards to biodiversity management. Specific PS6 requirements applicable to this BAP are highlighted in the relevant sections of this document.

2.3 Corporate framework & policies

CBG's environmental management policy is defined in the 2017's Management Policy for Quality, Health, Safety and Environment (*Politique de management – Qualité-Santé-Sécurité-Environnement*). As part of this policy, CBG has committed to:

- comply with applicable regulatory frameworks; and
- preserve the environment by protecting biodiversity and ecosystems, and prevent soil, water, air and sea pollution.

As CBG is owned at 49% by the Guinean State at 51% by the Halco Mining consortium (Alcoa, Rio Tinto Group and Dadco Investments Limited), CBG must also comply with the biodiversity policies of these companies. In particular, Rio Tinto requires all business units and operations to mitigate impacts on important biodiversity features and maximise collaborations with stakeholders to achieve long-term conservation outcomes, as detailed in their 2019 biodiversity protection and natural resource management standard[3].

3 Engagement with stakeholders

3.1 CBG biodiversity management team

CBG's day-to-day biodiversity management is primarily handled by CBG's biodiversity team, which is under the Health, Safety, Environment, Community and Quality (HSECQ) department. CBG's biodiversity team is currently composed of six staff: a Biodiversity Manager (*Responsable Biodiversité*), who is responsible for the overall implementation of the BAP and its associated management actions. A team of five technicians are in charge of:

- Flora and vegetation;

[3] https://www.riotinto.com/en/sustainability/environment/biodiversity

- Fauna and habitats;
- Rehabilitation and restoration;
- Inspection and surveillance[4]; and
- GIS and database

The biodiversity team closely works with other CBG departments (Section 3.2) and with external stakeholders (Section 3.3).

3.2 Internal stakeholders

CBG's biodiversity team regularly collaborates with other CBG departments to align management actions and mitigation efforts, in particular:

- the Community Relations Team to align the Stakeholder Engagement Plan (SEP) with biodiversity-focused engagement with communities and local authorities. Examples of community led engagement activities include:
    - Complaint Management System;
    - Compensation Procedure;
    - Employment and Training;
    - Community Development;
    - Monitoring (Pollution);
    - Community-focused biodiversity conservation and natural resource management, including offset actions;
    - Community Health and Safety.
- The Resettlement team, any kind of displacement resulting from offsets or other actions to achieve biodiversity objectives[5] is part of the scope of CBG's revised Compensation and Resettlement Policy Framework.

[4] Refers to ensuring the compliance of CBG operation, as well as SMB and COBAD activities within the CBG concession, with the ESAP and the BAP.

[5]The CBG Compensation and Resettlement Policy Framework (aligning with IFC's Performance Standard (PS) #5 (Land Acquisition and Involuntary Resettlement), contains a commitment which applies to situations where populations are physically or economically displaced as a result of biodiversity offset programs. Therefore, all proposed offset actions or other action to be implemented to achieve biodiversity objectives will be discussed with the both the Community Relations Manager and Resettlement Specialist to determine if i) physical or economic displacement or both will occur if the offset or other biodiversity-focused action is implemented and ii) CBG (HSECQ Director and Biodiversity Manager as responsible personnel) will amend the offset or other biodiversity-focused action or propose an alternative to try to avoid any kind of displacement. However, if displacement, of any kind, is unavoidable, then appropriate

- The Mining Team, to align mining activities with biodiversity imperatives and commitments (e.g. through the "Plateau by Plateau" committee that involves both the Environmental and Mining Directors – see Section 6.1.1).

- As per the ESAP, CBG will develop a landscape level plan for the concession, building on the existing Plateau by Plateau approach, that integrates community development and biodiversity objectives. The intent is to provide strategic guidance on the location and focus of rehabilitation, community development, and on-site conservation activities. This plan will require collaboration with stakeholders in the landscape including local governments, representatives of communities/civil society organisations and neighbouring mining companies. ~~The plan will be built on the assessment of loss of customary land in all the concession in order to provide access to these lands back to the communities on a rolling basis.~~

3.3 External stakeholders

CBG has engaged with many external stakeholders since operations started in 1973 and is recognised as a leading mining actor for international best practice in biodiversity management in Guinea. CBG has engaged with numerous biodiversity-related stakeholders as part of the Expansion Project and the Multi-user Railway Project, as part of the ESIA processes and the follow up studies that were undertaken.

The main ongoing engagements with stakeholders are summarised below.

3.3.1 Local authorities and communities

CBG's engagement with Guinean biodiversity-related authorities is undertaken at multiple levels:

- National level – through the Ministry of Environment (*Ministère de l'Environnement, des Eaux et Forêts*, MEEF) and the Guinea Bureau for Environmental Studies (*Bureau Guinéen d'Études et d'Evaluation Environnementale, BGEEE*)[6] for the environmental permitting process (e.g. ESIAs).

- Regional level – through the Regional Directorate of the MEEF. The Regional Director is a member of the *Réseau Environnement Bauxite* (REB) (see Section 3.3.2).

measures in line with the Compensation and Resettlement Policy Framework, will be implemented to minimize the extent and impact of such displacement.

[6] Currently known as BGACE (*Bureau Guinéen d'Audit et de Conformité Environnementale*)

- Cantonal level – through cantonal representatives of the MEEF, to facilitate the engagement with local representatives and communities.
- Local level – with mayors, local representatives (*Chefs de District*, *Chefs de Secteur*) and villagers at a community level.

3.3.2 Réseau Environnement Bauxite (REB)

In February 2018, CBG and GAC organised the first Biodiversity and Ecosystem round table, with COBAD, SMB, non-government organisations (NGOs) and biodiversity experts. During this meeting, the creation of an environmental bauxite platform was agreed.

The same year, under the aegis of the Chamber of Mines of Guinea (*Chambre des Mines de Guinée*, CMG), CBG and five other mining companies operating in the Boké region (GAC, SMB, Alufer, Alliance Mining Commodities (AMC) and Alliance Minière Responsible (AMR)), created the Bauxite Environment Network platform (*Réseau Environnement Bauxite, REB*). The objective of REB is to address cumulative impact management and agree on future joint compensation actions in the Boke region (see Section 6.4.3).

CBG led the implementation of the REB during 2018 and has co-managed the REB alongside GAC since 2019. In 2020 a CBG representative was appointed President of the REB.

REB meetings are subdivided into several categories with varying frequencies of meetings:

- Planned General Assembly meetings: Involving all REB members occur twice per year;
- Non-planned General Assembly Meetings: Involve all REB members and occur as and when the need arises for the REB to meet;
- Thematic working group meetings: There is no set schedule for working group meetings, the main working group themes are marine impacts, landscape approaches, rehabilitation, conformity and communication.

3.3.3 Other stakeholders

CBG regularly collaborates with biodiversity specialists and organisations for specific studies, baseline and monitoring surveys, and advisory support. The CBG biodiversity team regularly hires external consultants and experts - either ad-hoc or through rolling contracts - for specific services related to biodiversity management and monitoring (see Section 8).

Engagement with the Key Biodiversity Area (KBA) partnership has occurred relating to issues regarding the Multi-User Rail Agreement and KBAs. Engagement with the IUCN Primate Specialist Group (PSG) Section on Great Apes (SGA) ARRC Task Force (Avoid, Reduce, Restore negative impacts from energy, extractive and associated infrastructure projects on apes and

contribute to their Conservation) on chimpanzee impact mitigation and management is also in motion, to ensure alignment with PS6.

CBG specifically engages with SMB and COBAD with regards to their operations within the CBG concession (see Section 1.1). CBG also owns a radio station in Kamsar (Radio CBG), broadcasted in Sangarédi, Kolaboui, Boké and many other areas around Kamsar. This radio station is used for communication purposes, including awareness campaigns with communities.

4 Priority biodiversity

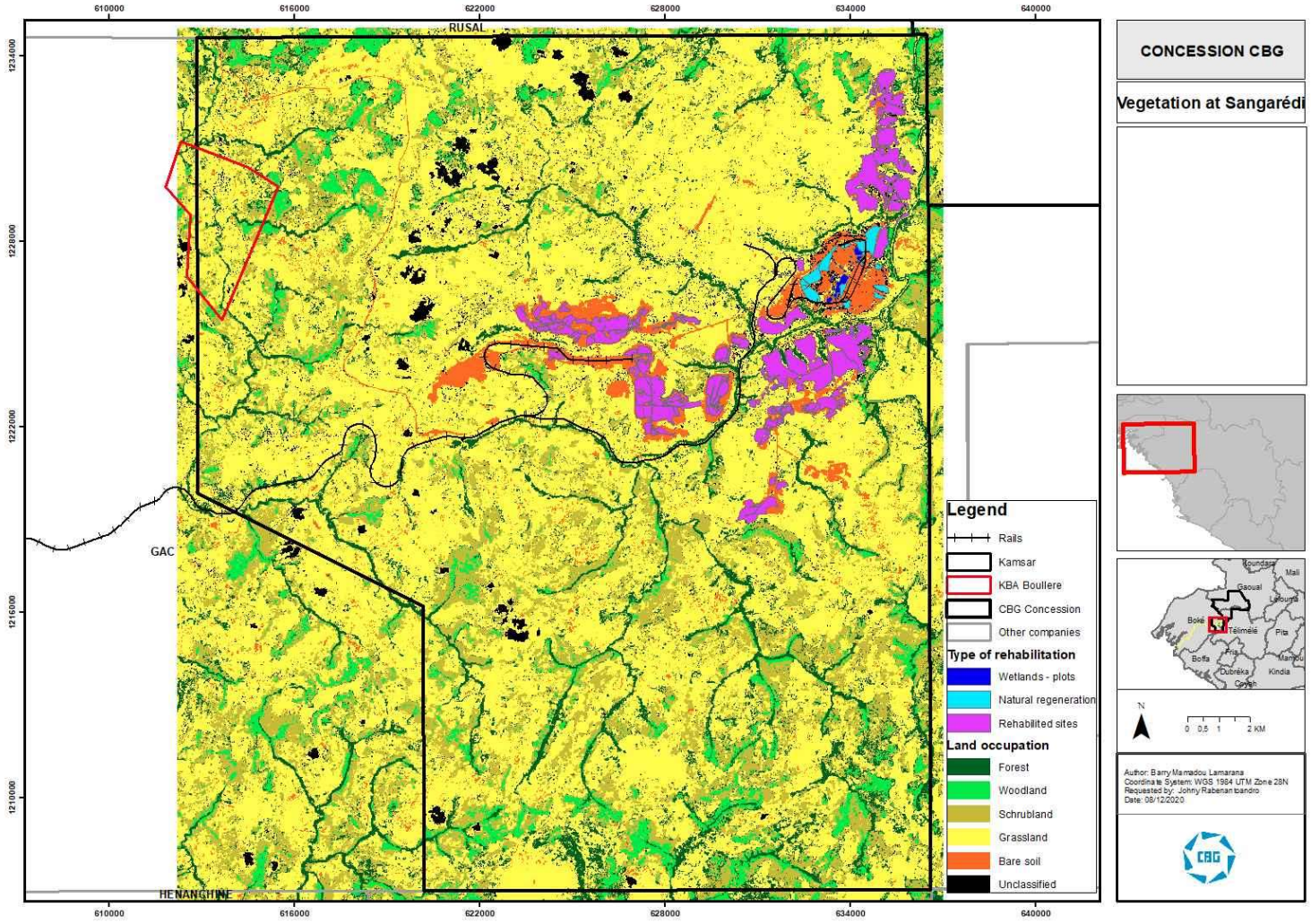
4.1 Ecological setting

The mine area in the South Cogon concession is in the Guinean Forest Savanna mosaic ecoregion. It is characterised by bauxitic plateaux covered with scattered wooded savanna, grasslands (*bowal*), rare patches of dry forests, interspersed by remnants of gallery forests along water courses (Figure 4). The area is degraded due to small-scale agriculture and farming, including bush fires. Between plateaux, water streams of variable size flow. These streams are bordered by gallery forests with variable degradation levels. The valley slopes bordering these water courses are mostly used for farming purposes by local communities (EEM, 2014). The South Cogon concession is bordered by the Cogon River and is crossed by several of its tributaries.

Overall, while the concession area is heavily used for grazing by livestock and small-scale agriculture by local communities, some areas still maintain good levels of ecosystem functionality. Due to its location at the foothills of the Fouta Djallon mountain range, the area presents a noticeable level of endemism, especially for small-bodied herpetofauna and freshwater species. This part of Guinea is also one of the last strongholds of Western Chimpanzees (*Pan troglodytes verus*) in West Africa (IUCN SSC Primate Specialist Group, 2020).

The port area is in a low coastal plain, which was originally covered with mangroves, sand banks, mud flats and tidal inlets. The expansion of Kamsar city has had a significant impact on natural ecosystems, both in coastal areas and in the Rio Nuñez Estuary where the city is located (Figure 5). The areas of higher ecological value are found in the Rio Kapatchez and Îles Tristao Ramsar sites and Important Bird Area (IBAs) and the Île Alcatraz and Île du Naufrage candidate marine IBAs (Figure 6).

The railway located between Sangaredi and Kamsar mostly crosses agricultural land (e.g. market gardening, cashew plantations, rice paddies, palm proves). It crosses some patches of dry forests and gallery forests along water courses (ERM, 2017). The railway goes through one of the three sites that compose the Kamsar Key Biodiversity Area (KBA), but this KBA has now mostly been converted into vast rice fields by local communities (not associated with the CBG project) (Figure 6).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CBG Concession
Other companies
Type of rehabilitation
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Natural regeneration
Rehabilited sites
Land occupation
Forest
Woodland
Schrubland
Grassland
Bare soil
Unclassified
CONCESSION CBG
Vegetation at Sangarédi
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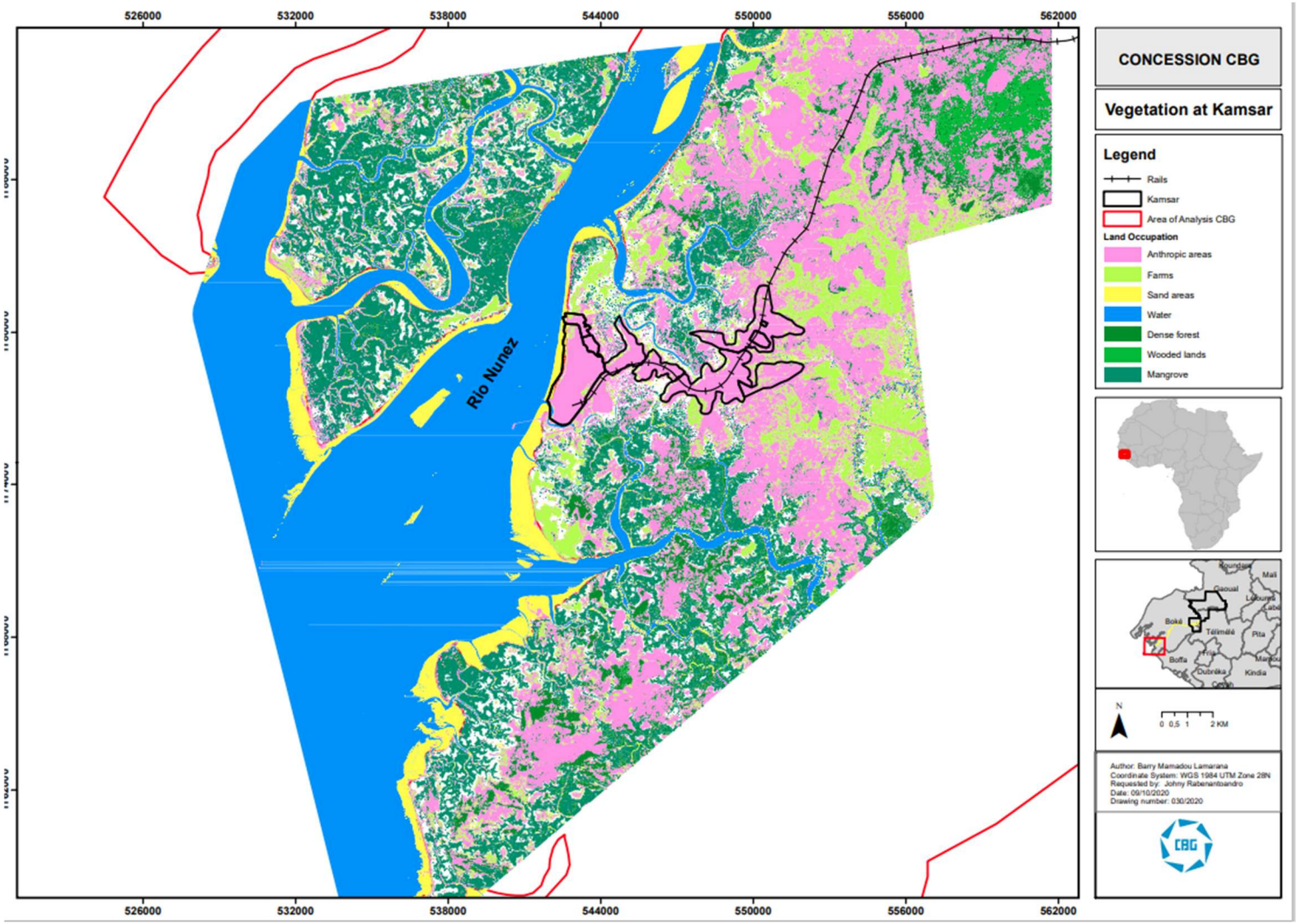
Figure 4 - Vegetation units within the CBG South Concession (Source: CBG)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Wooded lands
Mangrove
Mali
Gaoual
Koundara
Labe
Boke
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Figure 5 - Vegetation units at the Kamsar area (Source: CBG)

4.2 Updated Critical Habitat Assessment

4.2.1 Approach

A Critical Habitat Assessment (CHA) was undertaken in 2015 to identify priority biodiversity features, in relation to the Expansion Project (TBC, 2015b). An update was subsequently completed as part of CBG's BMS (EEM, 2016). No specific CHA was undertaken for the Multi-user Railway Project, which used the findings of the Expansion Project CHA (ERM, 2017).

CBG's 2015 CHA analysis aligned with the IFC's Guidance Note 6 (GN6) initial version. In the intervening period a new guidance note (GN) was published (IFC, 2019). The updated GN6 criteria/thresholds and main updates to the process are provided in Annex 1.

This BAP updates the 2015 CHA based on the new criteria set out in IFC's updated 2019 GN6, and integrates new biodiversity information from Project monitoring, published papers and updated IUCN Red List assessments. The approach for updating the CHA is presented in Annex 2. The location of the Area of Analysis (AoA) used in the CHA is shown in Figure 6 (unchanged from the 2015 AoA).

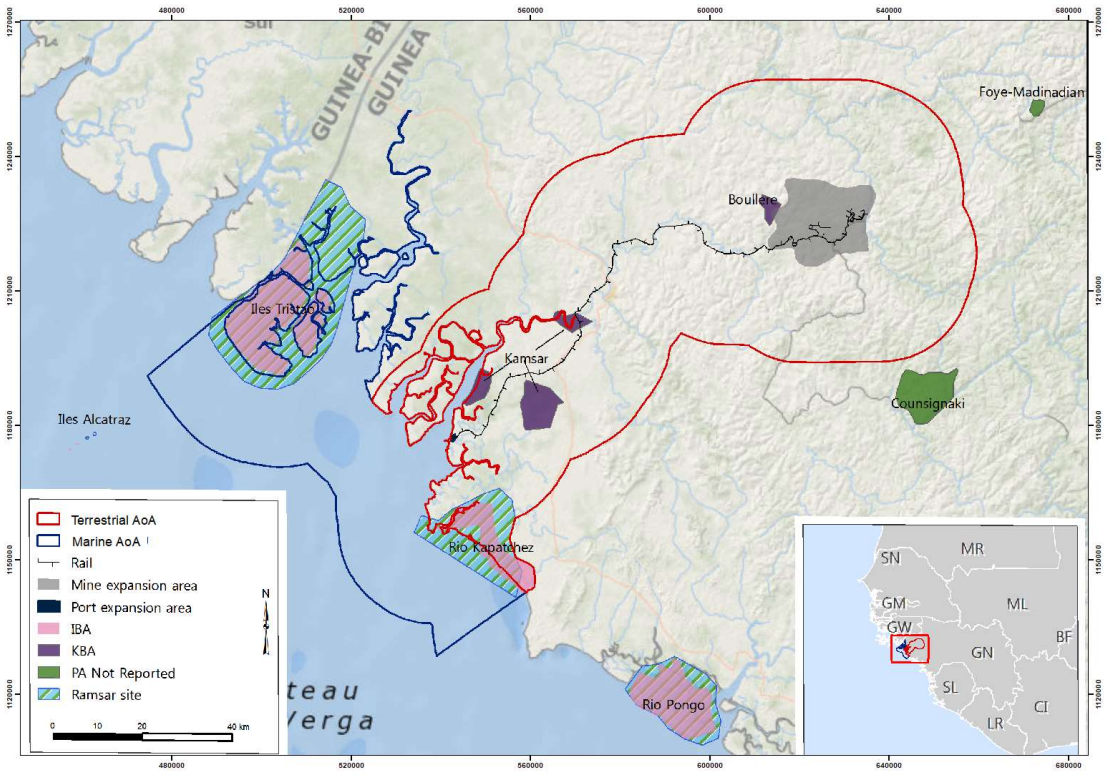


Figure 6 – Location of the AoA used for the CHA update.

4.2.2 Results

The detailed results of the CHA update are provided in Annex 2; a summary is provided below.

4.2.2.1 Critical Habitat-qualifying features

Results from the updated CHA confirm that the **Company operates in an area of Critical and Natural Habitat** due to the presence (either confirmed or potential) of CH-qualifying features (detailed assessment in Annex 2).

Priority biodiversity for the Project is defined as:

1. Species that qualify for Critical Habitat;

2. Habitat types that support Critical Habitat-qualifying species;

3. Habitat types that are Natural Habitats; and

4. Protected Areas (PAs) or Internationally-Recognized Areas that overlap the broad Project area (within the AoA).

4.2.2.2 Changes from the 2015 CHA

Some CH-qualifying features are new compared to the 2015 CHA version, and others were removed from the list. This is due to multiple factors, including that the GN6 thresholds have changed between 2015 and 2019, the IUCN threat status of some species have changed and more information on species presence within the area of analysis have been obtained by CBG. Five marine and five terrestrial priority features were classified as CH in the 2015 CHA but now are no longer considered to qualify for CH under new GN6 requirements. These features are:

- Scalloped Hammerhead (*Sphyrna lewini*) - The AoA overlaps with 0.01% of the species range, therefore it is unlikely to support 0.5% of the global population (threshold for criterion 1). Still considered a species of stakeholder concern.
- Blackchin Guitarfish (*Glaucostegus cemiculus*) - The AoA overlaps with 0.19% of the species range, therefore it is unlikely to support 0.5% of the global population (threshold for criterion 1). Still considered a species of stakeholder concern.
- Daisy Stingray (*Dasyatis margarita*) - the AoA overlaps with 0.19% of the species range, therefore it is unlikely to support 0.5% of the global population (threshold for criterion 1). Still considered a species of stakeholder concern.
- Dusky Grouper (*Epinephelus marginatus*) - Species has been downlisted from EN to VU by the IUCN since the original CHA. Due to its large range the loss of this area is unlikely to result in a change of the IUCN Red List status to EN or CR.
- Sanderling (*Calidris alba*) - A population of c.620,000 - 700,000 has been estimated in the updated RL Assessment meaning that a population of at least 3,100 individuals would be

required for the species to qualify as CH under criterion 3 (areas known to sustain, on a cyclical or otherwise regular basis, ≥ 1 percent of the global population of a migratory or congregatory species). The last population count for the species suggested a population of 1,630 individuals.

- White-backed Vulture (*Gyps africanus*) - Global population is estimated to be 270,000 (IUCN Red List 2018). Nine individuals (but no nesting sites) were recorded during the Guinee Ecologie 2018 monitoring survey. Therefore, it is very unlikely that the AoA supports 1,350 individuals (0.5% of global population). Still considered a species of stakeholder concern.
- Hooded Vulture (*Necrosyrtes monachus*) - Global population is estimated to be 197,000 (IUCN Red List, 2017). During the 2018 monitoring survey (Guinee Ecologie), 10 nesting sites and 31 observation sites estimating a total population of 333 individuals (228 in Sangaredi area, 105 in Kamsar area) were recorded, with higher concentrations in modified habitats. Individuals of this species were observed in all sampling points, highlighting the importance of the area for the species. Unlikely that AoA supports 985 individuals (0.5% of pop). Still considered a species of stakeholder concern.
- West African Red Colobus (*Piliocolobus badius*) - Only 0.02% of global range in AoA so unlikely to support >0.5% of the global population and significant populations have been found elsewhere. Species has not been recorded as present in any surveys performed in the concession. Still considered a species of stakeholder concern.
- Kamsar KBA - Information from CBG suggests that the coastal portion of the Kamsar KBA has been completely destroyed and is now the COBAD port. The terrestrial portion of the KBA is now a palm plantation and a village.
- Boullere KBA - Information from CBG suggests that the habitat in this area is still of good quality but that the majority of the area falls within the GAC concession rather than CBG's.

Two terrestrial species which were not considered CH in the 2015 CHA now qualify for CH: the Beautiful Squeaker Frog (*Arthroleptis formosus*) and a freshwater fish species *Synodontis kogonensis* (full rationale for inclusion provided in Appendix 2).

4.2.2.3 Other biodiversity features of stakeholder concern

An additional 24 biodiversity features do not qualify for CH but are considered important nationally/regionally according to stakeholders, or, because they play a valuable ecosystem functioning role. They include 18 species, 5 internationally recognised areas and a habitat mosaic labelled here as “terrestrial mosaic”.

The terrestrial mosaic represents the intertwined vegetation units with variable degradation levels in which CBG is operating (Section 4.1). From a PS6 perspective, this landscape mosaic can be considered a mix of Natural Habitat (NH) and Modified Habitat (MH) which are difficult to delimitate and map.

While CBG does not need to demonstrate a NG for the biodiversity features of stakeholder concern to be aligned with PS6, they are included in this BAP as priority biodiversity and CBG will aim to demonstrate a NNL whenever possible.

4.2.2.4 Summary of priority features

The list of priority biodiversity features and their respective NNL/NG targets are summarised in Table 1.

Table 1 - CBG's priority biodiversity features and NNL/NG targets

Biome	Type	Priority biodiversity features*	English name	IUCN status	Level of priority**	Target
CH-qualifying features						
Terrestrial	Reptile	*Cynisca leonina*	Los Archipelago Worm Lizard	VU	Critical Habitat (2)	Net Gain
Terrestrial	Reptile	*Cynisca cf oligopholis*	Cassine River Worm Lizard	EN	Critical Habitat (1,2)	Net Gain
Terrestrial	Reptile	*Hemidactylus kundaensis*	Kunda Half-toed Gecko	CR	Critical Habitat (1,2)	Net Gain
Terrestrial	Amphibian	*Phrynobatrachus pintoi*	-	EN	Critical Habitat (1,2)	Net Gain
Terrestrial	Amphibian	*Arthtroleptis sp.****	-	NE	Critical Habitat (2)	Net Gain
Terrestrial	Amphibian	*Arthroleptis formosus**	Beautiful Squeaker Frog	DD	Critical Habitat (2)	Net Gain
Terrestrial	Amphibian	*Odontobatrachus smithi**	Smith's Torrent Frog	-	Critical Habitat (2)	Net Gain
Terrestrial	Mammal	*Pan troglodytes verus*	Western Chimpanzee	CR	Critical Habitat (1)	Net Gain
Terrestrial	Plant	*Fleurydora felicis*	-	EN	Critical Habitat (1,2)	Net Gain
Freshwater	Fish	*Malapterurus teugelsi*	Teugel's Electric Catfish	NT	Critical Habitat (2)	Net Gain
Freshwater	Fish	*Archiaphyosemion jeanpoli*	-	EN	Critical Habitat (1,2)	Net Gain
Freshwater	Fish	*Epiplatys njalaensis*	Njala Panchax	EN	Critical Habitat (1,2)	Net Gain
Freshwater	Fish	*Epiplatys hildegardae*	Hildegarde Panchax	VU	Critical Habitat (2)	Net Gain
Freshwater	Fish	*Synodontis kogonensis**	-	DD	Critical Habitat (2)	Net Gain
Freshwater	Crab	Afrithelphusa monodosa	Purple Marsh Crab	EN	Critical Habitat (1,2)	Net Gain
Freshwater	Plant	*Inversodicraea abbayesii*	-	CR	Critical Habitat (1,2)	Net Gain
Marine	Mammal	*Sousa teuszii*	Atlantic Humpback Dolphin	CR	Critical Habitat (1)	Net Gain
Marine	Reptile	*Eretmochelys imbricata*	Hawksbill Turtle	CR	Critical Habitat (1)	Net Gain
Marine	Reptile	*Chelonia mydas*	Green Turtle	EN	Critical Habitat (1)	Net Gain
Other biodiversity features of stakeholder concern						
Terrestrial	Bird	*Gyps africanus*	White-backed Vulture	CR	Stakeholder concern	No Net Loss

Biome	Type	Priority biodiversity features*	English name	IUCN status	Level of priority**	Target
Terrestrial	Bird	*Necrosyrtes monachus*	Hooded Vulture	CR	Stakeholder concern	No Net Loss
Terrestrial	Mammal	*Piliocolobus badius*	West African Red Colobus	EN	Stakeholder concern	No Net Loss
Terrestrial	Mammal	*Colobus polykomos*	Western Black and White Colobus	EN	Stakeholder concern	No Net Loss
Terrestrial	Mammal	*Cercocebus atys*	Sooty Mangabey	VU	Stakeholder concern	No Net Loss
Terrestrial	Mammal	*Smutsia gigantea*	Giant Ground Pangolin	EN	Stakeholder concern	No Net Loss
Terrestrial	Mammal	*Phataginus tricuspis*	White-bellied Pangolin	CR	Stakeholder concern	No Net Loss
Terrestrial	Mammal	*Caracal aurata*	African Golden Cat, Golden Cat	VU	Stakeholder concern	No Net Loss
Terrestrial	Reptile	*Hemidactylus albivertebralis*	White-lined Half-toed Gecko	DD	Stakeholder concern	No Net Loss
Terrestrial	Habitat	Terrestrial mosaic	-	-	Stakeholder concern	No Net Loss
Terrestrial	KBA	Boullere KBA	-	-	Stakeholder concern	No Net Loss
Terrestrial	KBA	Kamsar KBA	-	-	Stakeholder concern	No Net Loss
Freshwater	Fish	*Epiplatys guineensis*	-	VU	Stakeholder concern	No Net Loss
Freshwater	Mammal	*Hippopotamus amphibius*	Hippopotamus	VU	Stakeholder concern	No Net Loss
Freshwater	Reptile	*Osteolaemus cf tetraspis*	African Dwarf Crocodile	VU	Stakeholder concern	No Net Loss
Freshwater	Reptile	*Mecistops cataphractus*	Slender-snouted Crocodile	CR	Stakeholder concern	No Net Loss
Marine	Fish	*Sphyrna lewini*	Scalloped Hammerhead	CR	Stakeholder concern	No Net Loss
Marine	Fish	*Glaucostegus cemiculus*	Blackchin Guitarfish	CR	Stakeholder concern	No Net Loss
Marine	Fish	*Dasyatis margarita*	Daisy Stingray	EN	Stakeholder concern	No Net Loss
Marine	Bird	*Calidris alba*	Sanderling	LC	Stakeholder concern	No Net Loss
Marine	Mammal	*Trichechus senegalensis*	West African Manatee	VU	Stakeholder concern	No Net Loss
Marine	KBA / Ramsar	Rio Kapatchez	-	-	Stakeholder concern	No Net Loss
Marine	KBA / Ramsar	Îles Tristao	-	-	Stakeholder concern	No Net Loss
Marine	IBA	Île Alcatraz and Île du Naufrage	-	-	Stakeholder concern	No Net Loss

**Indicates new CH-qualifying features compared to the 2015 CHA.*

***The numbers in bracket indicate the criteria under which the features qualify for CH.*

****Likely unnamed new species.*

Cell colors refer to the type of ecosystem: terrestrial (green), freshwater (light blue), marine (dark blue).

5 Impacts to biodiversity

Within the suite of identified priority biodiversity (37 species, four habitats, and five Protected Areas & Internationally Recognized Areas), there is variation in terms of the conservation status, ecology, level of scientific understanding, Project and non-project influences, and cumulative impacts. Therefore, to highlight biodiversity that is a focus for BAP actions and monitoring, a prioritisation process was undertaken based on the likelihood of a Project impact and the potential consequence of any such impact. This type of risk-based approach enables a Project to appropriately focus effort and resources on biodiversity at highest risk and has been applied to other projects aligning with best practice.

The results of the risk-based prioritisation are summarised in Table 2. The biodiversity classed as highest priority for BAP actions (Action Category 1) comprises one subspecies of great ape (Western Chimpanzee) and a suite of amphibians, freshwater fish, crustaceans and reptiles, plus two habitat types that support these species (as well as other priority species). The suite of priority biodiversity also acts as a proxy for biodiversity in other Action Categories, and wider biodiversity.

Table 2 - Results of the prioritisation exercise to support BAP planning: priority biodiversity for BAP actions

Action Priority	Group	Priority biodiversity	Mitigation and monitoring approach
High priority for habitat mitigation and/or species-specific measures	Mammals	Western Chimpanzee (*Pan troglodytes verus*)	Highest priority for both species-specific and/or habitat focused mitigation and offset actions in order to achieve net gain (offset targets)
	Reptiles	Los Archipelago Worm Lizard (*Cynisca leonina*), Cassine River Worm Lizard (*Cynisca cf oligopholis*), Kunda Half-toed Gecko (*Hemidactylus kundaensis*)	
	Amphibians	*Phrynobatrachus pintoi*, *Arthtroleptis* sp., Beautiful Squeaker Frog (*Arthroleptis formosus*), Smith's Torrent Frog (*Odontobatrachus smithi*)	
	Freshwater fish	Teugel's Electric Catfish (*Malapterurus teugelsi*), *Archiaphyosemion jeanpoli*, *Njala panchax* (*Epiplatys njalaensis*), *Hildegarde panchax* (*Epiplatys hildegardae*), *Synodontis kogonensis*	
	Crustaceans	Purple Marsh Crab (*Afrithelphusa monodosa*)	
	Critical Habitats	Gallery forest, Freshwater habitats	
Contingency planning	Marine mammals	Atlantic Humpback Dolphin (*Sousa teuszii*)	No significant impacts likely but would be significant if they occur. Implement good-practice mitigation at a broad level. If impacts are detected, elevate to Category 1 and develop species-specific measures.
	Marine reptiles	Hawksbill Turtle (*Eretmochelys imbricata*), Green Turtle (*Chelonia mydas*)	
	Protected Areas & Internationally Recognized Areas	Rio Kapatchez KBA, Îles Tristao KBA, Île Alcatraz and Île du Naufrage	
General habitat mitigation measures	Birds	White-backed Vulture (*Gyps africanus*), Hooded Vulture (*Necrosyrtes monachus*), Sanderling (*Calidris alba*)	Non-significant impacts anticipated. Implement good practice, tailored habitat mitigation. Use habitat or, if necessary, species-specific monitoring to check scale of impact. If monitoring
	Mammals	West African Red Colobus (*Piliocolobus badius*), Western Black and White Colobus (*Colobus polykomos*), Sooty Mangabey (*Cercocebus atys*), Giant Ground Pangolin (*Smutsia gigantea*), White-bellied Pangolin (*Phataginus tricuspis*), African Golden Cat (*Caracal aurata*), Hippopotamus (*Hippopotamus amphibius*)	

	Reptiles	White-lined Half-toed Gecko (*Hemidactylus albivertebralis*), African Dwarf Crocodile (*Osteolaemus cf tetraspis*), Slender-snouted Crocodile (*Mecistops cataphractus*)	suggests significant impacts are likely, elevate to Category 1.
	Freshwater fish	*Epiplatys guineensis*	
	Marine fish	Scalloped Hammerhead (*Sphyrna lewini*), Blackchin Guitarfish (*Glaucostegus cemiculus*), Daisy Stingray (*Dasyatis margarita*)	
	Marine mammals	West African Manatee (*Trichechus senegalensis*)	
	Natural Habitats	Mangroves, terrestrial mosaic	
	Protected Areas & Internationally Recognized Areas	Boullere KBA, Kamsar KBA	
Remain aware	Plants	*Inversodicraea abbayesii*	No significant impacts likely. Implement good-practice mitigation at a broad level. Use habitat monitoring as a proxy to check scale of impact.

CBG impacts on biodiversity were thoroughly assessed in the ESIAs undertaken for the Expansion and Multi-User Projects (EEM, 2014; ERM, 2017). They include direct, indirect and cumulative impacts, both at the mine and port areas, as well as along the rail corridor. A summary of CBG's main impacts to biodiversity are outlined in Table 3.

Some preliminary residual impact estimates were conducted for some of the priority biodiversity features (see Annex 5). A full quantified residual impact assessment (RIA) of CBG's operations in the South Cogon Concession has not been developed yet and will be done by CBG as an immediate follow up task, as presented in Section 9.3.

Table 3 - Main CBG impacts to biodiversity

Impact	Mine expansion	Rail Corridor	Port
Habitat loss and degradation	Construction of mining infrastructure generates a significant impact to terrestrial habitats. Many of the CH-qualifying species are restricted to freshwater and gallery forest habitats (which are avoided entirely – see Section 6.1), but chimpanzees are known to range over broader areas. The presence of species of stakeholder concern including mammals, reptiles and amphibians may also be impacted by the construction of infrastructure. Mining operations will generate a significant impact to terrestrial habitats and will impact a similar set of species to the construction of mining infrastructure. Gallery forest and freshwater habitats will also be avoided during mining operations. It was estimated that the Expansion Project mine footprint overlapped with 3,200 ha of grassland habitat (1,800 ha of which is bowal), 297 ha of woodland and 244 ha of wooded grassland. It was also estimated that the construction of new mining roads would overlap with 240 ha of mainly grassland habitat (EEM 2016). Based on the 25 Year Mine Plan assumptions, a total of 3,995 ha of habitat will need to be rehabilitated (2,758 ha for mine pits exploited from 2017 – 2038 and 1,197 ha of pre 2017 mine pits. The CBG catch-up rehabilitation plan aims to	Habitat loss associated to the Multi-user Railway Project is considered to be of low significance for this project as the areas that are cleared as part of the railway upgrade works are currently highly degraded along the existing rail line. Some minimal habitat loss for species not restricted to freshwater or gallery forest habitats may occur.	Much of the port infrastructure was constructed more than 40 years ago, therefore impacts to habitats such as mangroves are considered to be limited. Dredging of the turning basin for the quay causes habitat loss and could impact benthic fish species such as the Blackchin Guitarfish and Daisy Stingray.

	increase the surface to be rehabilitated per year from 100 ha to 250 Ha. The objective of the CBG is to achieve total rehabilitation area of around 3000 ha by 2025.		
Killing or disturbance of fauna	Mining operations generate noise light and pollution. Water pollution can generate a significant risk to freshwater fish and amphibian species. Light pollution generates a risk to nocturnal species. Increased traffic on road networks also elevates the risk of collisions with vehicles.	An increase in rail traffic can lead to an increase in collisions with trains. Species most at risk from collisions would include all mammal, reptile and amphibian species which are not restricted to gallery forest habitats.	An increase in boat traffic in the estuary can increase the risks of collisions with CH-qualifying marine species. The impacts mainly come from the cumulative effects of multiple mining operations in the area (see below).
Indirect impacts	Induced anthropic pressure from increased mining activities increases risks to habitats surrounding the mining zones. This can lead to an increase in grazing of livestock, increased wood collection for fuelwood and an increase in hunting for bushmeat.	Induced anthropic pressure from the rail corridor is thought to be limited.	Induced anthropic pressure from port activities is thought to be limited.
Cumulative impacts	The CBG concession is surrounded by other existing and planned bauxite mining projects. In some cases (SMB and COBAD) some of their mining infrastructure cross the CBG concession. This can lead to habitat loss becoming severe, rather than localized, leading to many of the bowal habitats in the region disappearing. Habitat fragmentation would be affected by the development of road networks in adjacent concessions. The multiplication of water pollution levels can potentially increase the impacts on freshwater fish and amphibian species. The effect of localized noise and vibration levels although not compounding, could result in regional losses of species.	While CBG, GAC and COBAD have agreed to mutualise part of the railway infrastructure through the Multi-user Project, many new facilities were/will be developed separately by each mining company. More frequent use and expansion of the rail can increase the barrier effect of the rail network and habitat fragmentation. Higher levels of use of the rail network increases noise and vibration levels and impacts on noise sensitive species.	Other mining companies are developing facilities in Kamsar for exporting bauxite. This expansion is causing – and will cause - increased impacts to water quality in the Rio Nuñez estuary. Mangrove habitats are also likely to be impacted by construction of facilities and increased dredging would have impacts on marine species. An increase in marine traffic will also increase the likelihood of collisions with marine species and increased noise levels could affect species such as the Atlantic Humpback Dolphin. The Boke region has become a Special Economic Zone (*Zone Economique Spéciale*), so a number of new companies in different

			sectors (e.g. fishing, oil and gas) are expected to move to the Kamsar area which is likely to lead to additional significant traffic increase in the Rio Nuñez.

6 Mitigation approach

CBG has been operational for over 40 years and has implemented mitigation actions throughout its lifecycle to align with Guinean regulations and internal policies. The Company's approach to biodiversity mitigation was significantly updated in 2016 following the initiation of the Expansion Project and the development of the BMS, to seek alignment with PS6 (EEM, 2016).

CBG applies the widely used **Mitigation Hierarchy** framework to avoid, minimise, restore and where needed, offset impacts to biodiversity (Figure 7). Where residual impacts remain for priority biodiversity after the application of all feasible avoidance, minimisation and restoration measures, CBG is developing offset actions to achieve its No Net Loss / Net Gain (NNL/NG) targets for priority biodiversity, as per IFC PS6 requirements (IFC, 2012c).

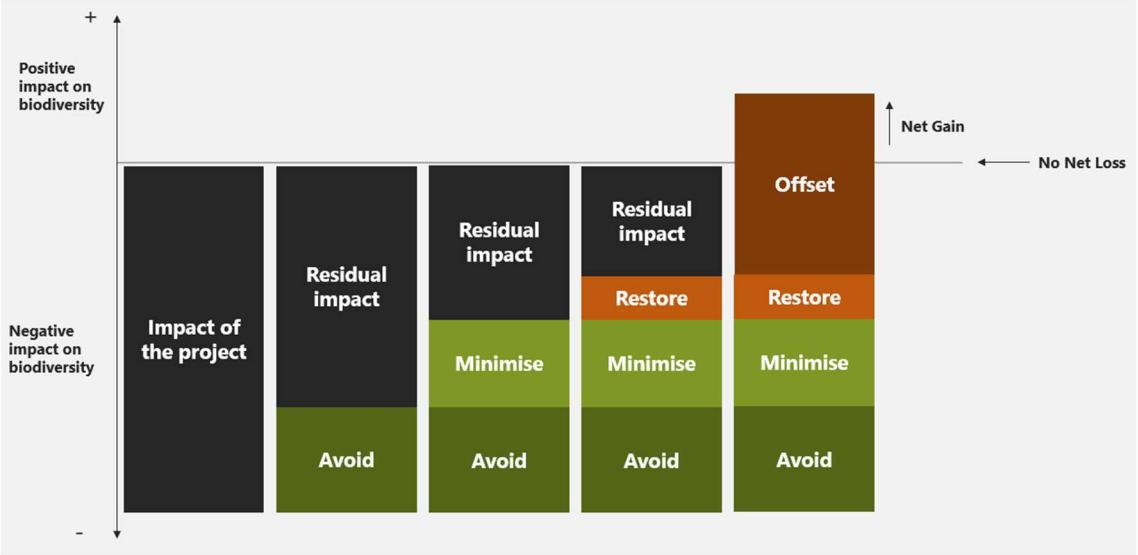


Figure 7 - The Mitigation Hierarchy framework

The overarching framework underpinning CBG's application of the Mitigation Hierarchy is the "Plateau by Plateau" approach, operationalised through the issuing of Land Disturbance Permits (LDPs). This internal license-to-operate process takes into account both mining operation priorities and E&S risks, as in presented in Section 6.1.1.

CBG's main biodiversity mitigation actions are summarised in Table 4 and further explained in Sections 6.1 to 6.4. From an operational perspective, these mitigation actions are captured in the newly created Biodiversity Management Register (BMR), presented in Section 7 and provided as a standalone document (Annex 3).

Table 4- CBG mitigation approach

Mitigation step	Action	Targeted biodiversity	Objective	Area	Responsibilities	Status
Avoidance	Identification of Environmental Buffers Zones (EBZ) around sensitive sites (e.g. gallery forest) + issuing of a Land Disturbance Permit (LDP) before any new activity + dredging	Gallery forest / headwater springs / other sensitive sites +associated CH-qualifying species	Protection of sensitive sites within the south concession	South Concession	CBG	Ongoing
Minimisation	Construction and operational good practice procedures detailed in the ESMP + environmental awareness	General biodiversity	Apply industry good practice procedures to reduce impacts on biodiversity to the greatest extent possible	South Concession / Railway / Port	CBG / Contractors	Ongoing
Restoration	Mining and Rehabilitation Plan, including community nurseries, ecological restoration of plateaus and borrow pits, rehabilitation of community land, erosion control, mangrove restoration and borrow-pit restoration	Natural Habitats (terrestrial and mangroves)	Rehabilitate habitats degraded by CBG activities and aim a 1:1 restoration ratio to retrieve ecosystem functionalities	South Concession / Railway / Port	CBG	Ongoing
Offset	2 areas: 1) forest landscape community management program, 2) Bafing offset	Gallery and other forest habitats, freshwater habitats and associated species, Chimpanzees	Compensate for direct, indirect and cumulative residual impacts on priority biodiversity features	South Concession / / Offsite / Boke region	CBG / Bafing taskforce	Early steps / Pilot studies

6.1 Avoidance

Avoidance is CBG's first and preferred approach to reducing impacts using early planning decisions that take biodiversity aspects into account. As the company has been operational for decades, the opportunity for avoidance actions is reduced as many key infrastructures have already been built (e.g. railway route, Kamsar's process plant). Mine areas are also challenging from an avoidance perspective due to the fixed location of the good-quality ore underground. However, there are a number of avoidance actions in place.

6.1.1 Land Disturbance Permit (LDP)

Any new activity such as vegetation clearance or topsoil stripping requires a Land Disturbance Permit (LDP) to be issued by the HSECQ team. The protocol is that at least six months before mining any non-permitted area, the mining team issues a LDP request to the HSECQ team. The HSECQ team undertakes specific field surveys to identify any sensitive sites in the area (see Section 6.1.2). When sensitive sites are identified, EBZ are applied and mapped. The new disturbance area is communicated to the mining team which will have to consider it (see examples in Figure 8 and Figure 9). The LDP will not be delivered until the mining team confirms in the mining plan that all EBZ and associated buffers will be avoided.

The biodiversity team is then in charge of monitoring operational activities and record any non-compliances to the LDP, which are treated as environmental incidents and can lead to the suspension of operational activities. It should be noted that dredging operations at the port are also covered by LDP's and must follow the same process.

6.1.2 Environmental Buffer Zones (EBZ)

To avoid unnecessary impacts whenever possible, a plateau-by-plateau management tool was developed to ensure early avoidance through inputs from the HSECQ team[7]. This tool enables CBG to identify Environmental Buffer Zones (EBZ), or "*Zones de contraintes*," around identified environmentally and socially sensitive areas which are protected from all activities. From a biodiversity perspective these no-go areas include gallery forest, headwater springs, sites where CH-qualifying species are recorded etc. A buffer of at least 100 metres is placed around each EBZ, and up to 200 metres for headwater springs. The size of the buffer is determined by the CBG specialists (biodiversity, environment and social) depending on the sensitivity of the area. Protocols for determining the size of the buffer are outlined in the process for obtaining a Land Disturbance Permit (LDP).

[7] CBG agreed to develop the plateau-by-plateau management tool during the 2016 Paris stakeholders meeting.

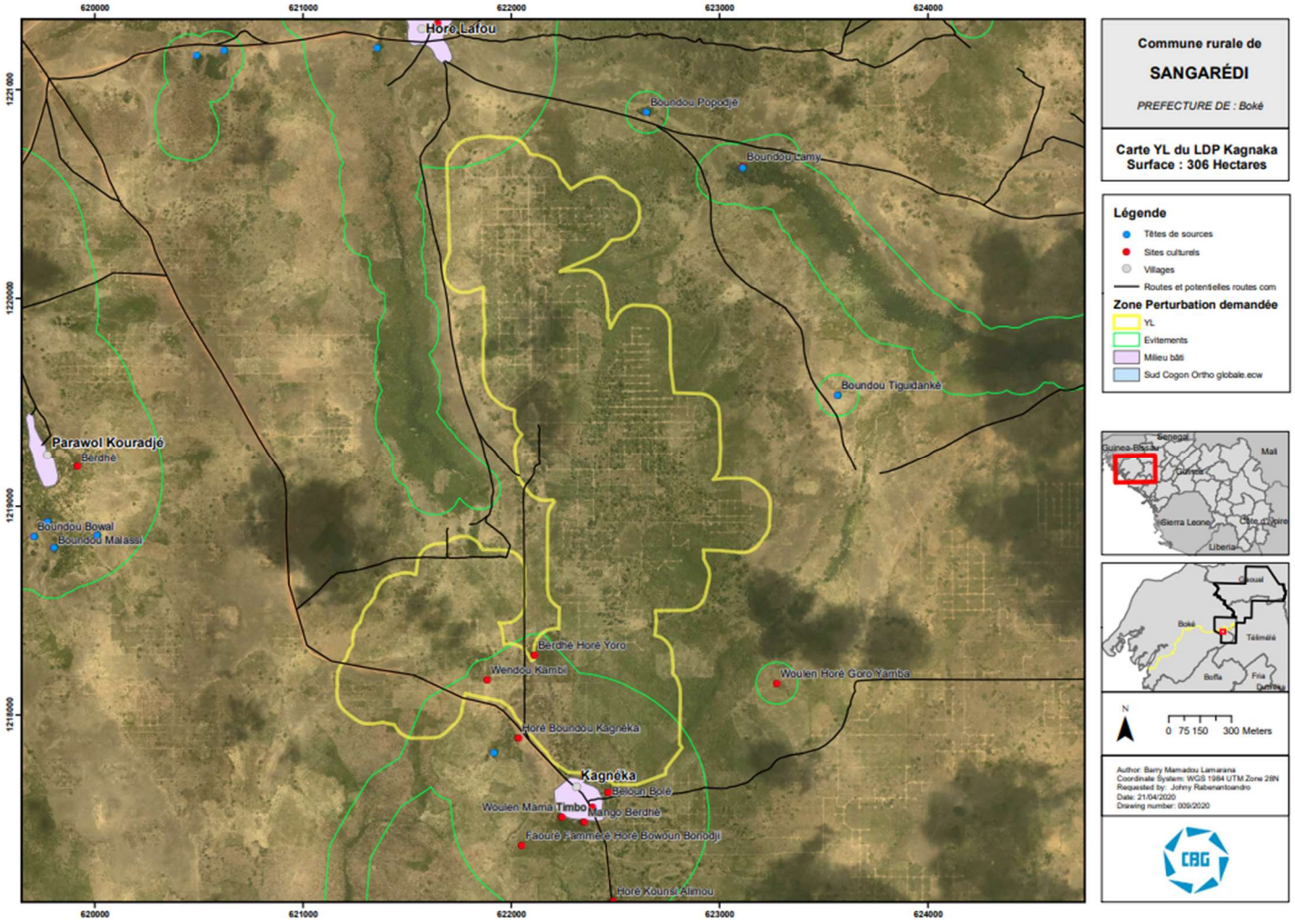
6.1.3 Set-aside areas

CBG is in the process of developing a forest landscape community management programme (FLCMP – see Section 6.4.1). The program is not implemented yet but is likely to include provisions to set aside two areas within the South Cogon concession where operations will not be permitted: the Boullere KBA and the southern part of the concession, which are considered to have overall better ecological conditions that other areas within the concession owing to lower level of habitat degradation.

6.1.4 Port area

Key avoidance actions undertaken by CBG to mitigate impacts at the port area include:

- Using existing port facilities whenever possible;
- Minimising the extent of dredging for the expanded quay and avoiding any channel dredging;
- Choosing a dredged material disposal site outside the Rio Nuñez estuary;
- Temporal avoidance, such as avoiding dredging at key spawning times between August and September.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Wendou Kambi
Woulen Horé Goro Yamba
Horé Boundou Kagnéka
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Beloun Bolé
Woulen Mama Timbo
Mango Berdhé
Faouré Fammèré Horé Bowoun Bonodji
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Commune rurale de
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PREFECTURE DE : Boké
Carte YL du LDP Kagnaka
Surface : 306 Hectares
Légende
Têtes de sources
Sites culturels
Villages
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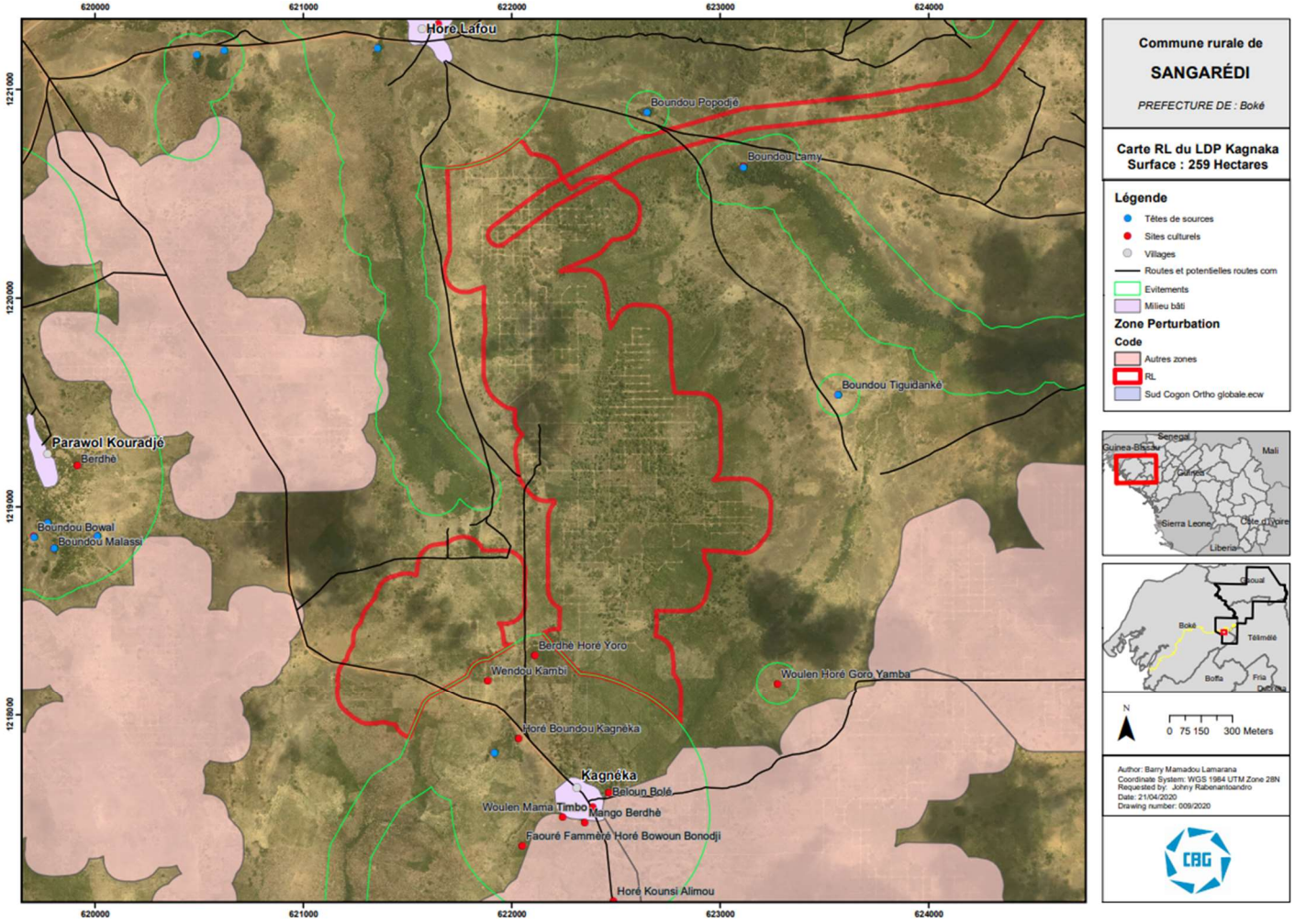
Figure 8 – Example of LDP process – the yellow line shows the initial request from the mining team to the HSECQ team for mining activities. The polygon does not consider E&S constraints.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Belloun Bolé
Woulen Mama Timbo
Mango Berdhé
Faouré Fammeré Horé Bowoun Bonodji
Horé Kounsi Alimou
Commune rurale de
SANGARÉDI
PREFECTURE DE : Boké
Carte RL du LDP Kagnaka
Surface : 259 Hectares
Légende
Têtes de sources
Sites culturels
Villages
Routes et potentielles routes com
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Autres zones
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Figure 9 - Example of LDP process (2) – The red polygon shows the area that has been communicated by the HSECQ team to the mining team which avoids EBZ around sensitive sites (in green)

6.2 Minimisation

Minimisation is another key preventive approach and includes actions that reduce potential impacts on biodiversity by modifying the duration, intensity, or extent/significance of impacts where these cannot be totally avoided.

Minimisation actions include all construction and operational good practice measures and procedures which are implemented as part of the Environmental and Social Management Plan (ESMP). These measures include air quality / noise / vibration control measures, vehicle speed limits, lighting reduction, blasting procedures, erosion control measures, invasive species control, dredging management, waste management, influx management, environmental awareness raising with staff and contractors, etc.

CBG is also involved in numerous research and environmental awareness activities, both with its staff and to external stakeholders. This includes educational activities with local communities with regards to the importance of preserving most sensitive habitats and species, collaboration with research institutes and experts, the organisation of public events such as the World Environment Day or the World Migratory Bird Day, etc.

Minimisation measures that are directly linked to biodiversity management are listed in the BMR (Annex 3), other measures are included in the appropriate E&S management plans.

6.3 Restoration

Restoration efforts are covered by the CBG's Mine Rehabilitation and Conceptual Closure Plan (MRCCP – see Figure *3*) and include:

- Establishment of community nurseries to grow native plants for restoration purposes;
- Ecological restoration of plateaux post-exploitation with the objective of enhancing vegetation cover compared to pre-exploitation conditions;
- Restoration of borrow pits for the Expansion Project and the Multi-user Project;
- Rehabilitation of community land;
- Erosion control through rapid revegetation; and
- Rehabilitation of 20 hectares of mangroves to compensate for the loss of c. 1ha of mangroves adjacent to Torabora waste facility which were destroyed during the construction of the new rail line in Kamsar (see Figure 10).

Mine pit rehabilitation dates back to 1991. The main objective of mines and quarries rehabilitation is to transform the landscapes that have been disturbed into a combination of (i) natural habitats with enhanced ecological values and (ii) agricultural / pastoral landscapes which will improve food security for local communities' subsistence.

Between 1991 and 2016, CBG has rehabilitated an average of 56.8 ha per year, for a total of c. 1,476 ha (see Figure 4). It is estimated that an additional 1,197 ha of pre-2017 impact area will have to be rehabilitated to reach the 3,955 ha target of cumulative rehabilitated land over the next five years. Approximately 321 ha of dismantled infrastructure will also need to be rehabilitated during decommissioning / closure of the South Cogon operations, bringing the total rehabilitated target up to 4,276 ha.

CBG is currently developing its next detailed five-year rehabilitation plan. The plan will specify what the rehabilitation targets and methodologies will be. It can be anticipated that i) the average annual rehabilitation rate target will be 250 ha and ii) native flora species will be prioritised to enhance the biodiversity value of rehabilitated areas (CBG biodiversity manager, pers. comm.)[8].

It should also be noted that some natural regeneration is happening on the plateaus at the mine site, which occur without any human intervention beyond topsoil spreading. At some mine pits, permanent water ponds have appeared which serve as new wetland habitats for many water-dependent species (see Figure 4). Whenever possible, CBG endeavours to maintain these wetlands habitats given their ecological value.

[8] Note that previous plans prioritised fast-growing cash crops (e.g. Cashew, non-native *Acacia spp.*) and erosion control species (e.g. Vetiver grass). Since 2017, CBG only uses native plant species for rehabilitation.

Figure 10 - CBG's mangrove restoration sites in Kamsar

6.4 Offsets

CBG's offset / compensation approach focuses around three areas:

- Forest landscape community management programme (Section 6.4.1)
- Moyen Bafing National Park offset (Section 6.4.2)
- Future actions to be developed as part of the REB initiative (Section 6.4.3)

6.4.1 Forest landscape community management programme (FLCMP)

To enhance forest protection within the South Concession, CBG is developing a forest landscape community management programme (*gestion communautaire des paysages forestiers*, FLCMP), as an onsite offset. The objective of the FLCMP is to enhance the quality of gallery forests at selected sites, to be able to justify a NG of this habitat and its associated CH-qualifying species over time.

The full programme and the concrete actions that will be implemented to justify a NG for gallery forests are not yet defined. A pilot project (2018-2020) led by Sylvatrop Consulting (Dufour et al., 2019) focuses on an area of c. 30,000 ha split into two locations, the southern area and the

north-western Boullere KBA area (i.e. the two set-aside areas, see Section 6.1.3). The aims of this pilot project were to define intervention areas, engage with affected communities to gather their feedback and understand the feasibility of setting up this community-driven forest management system within the South Cogon concession. Public consultations have involved local authorities at the regional, prefecture and sub-prefecture levels and have also involved visits to communities in the study area. Five village associations have also been formed to formalise community management for the conservation of forest landscapes. All concerned village associations have signed a commitment charter with CBG and the Forest Department for Sustainable Forest Conservation (cantonal authority), which defines the engagement protocols and main activities to be undertaken as part of the charter. The FLCMP setup phase report was validated by the Lenders during the Virtual site visit in July 2020 (CBG biodiversity manager, pers. comm.).

CBG will develop and implement a full FLCMP in alignment with NNL/NG targets defined in this BAP (see Section 8.3). The FLCMP will include concrete actions to achieve a NG for gallery forests, according to the methodological framework presented in this BAP (Section 8.3 and Annex 5).

Note: Item 28 of the 2020 ESAP stipulates that CBG has to develop a landscape-level plan for the concession, building on the existing Plateau by Plateau approach, that integrates community development and biodiversity objectives. The intent of this plan is to provide strategic guidance to location and focus of rehabilitation, community development, and on-site conservation activities. The plan will require collaboration with affected stakeholders including local governments, representatives of communities/civil society organisations and neighbouring mining companies. the FLCMP will be integrated within this landscape-level plan and will become the tool by which CBG will demonstrate it can achieve its NNL/NG objectives.

6.4.2 Moyen Bafing National Park (MBNP)

CBG and GAC co-invest in the creation and management of the Moyen Bafing National Park (MBNP) as an offset for their impacts on Chimpanzees. For MBNP to serve as an offset for CBG, its design and implementation must meet certain key offset principles and requirements, particularly as regards governance, respect for local community rights, assurance for effective conservation outcomes, net gain forecast / progress and monitoring / evaluation, and alignment with IFC Performance Standards.

The MBNP offset is currently in the set-up phase of implementation (2018-2020), which is being led by CBG's implementing partner, the Wild Chimpanzee Foundation (WCF) in close collaboration with the Office Guinéen des Parcs et Réserves (OGPR). CBG and GAC have also established a coordination mechanism to oversee the administration and compliance of the offset program and an Interim Technical Panel (ITP) has been formed to provide technical advice and recommendations on the technical, environmental and social issues associated with the establishment of the MBNP during its set-up phase.

The Presidential Decree mandating the creation of the park is expected to be signed in 2021, at which point the offset will enter the implementation phase where regular monitoring of chimpanzee populations will provide data on losses and gains.

The Bafing offset needs to demonstrate a net gain for chimpanzees and their habitat through clear targets, using the same metric used for assessing losses within the CBG concession (see Section 8.3 and Annex 5). Close collaboration with GAC will be necessary to estimate impacts and gains both at the concession and offset site.

6.4.3 Future CBG initiatives

Pilot projects are expected to be developed soon (CBG biodiversity manager, pers. comms.). Examples of potential initiative could be the protection of the Guilde Island located along the Cogon River (see Figure 11 and more explanations in Annex 5) or some of the marine IBA/KBA around the Rio Nuñez Estuary.

CBG will also try to identify potential concrete conservation actions for the estuary beyond the REB initiatives, as feasible.

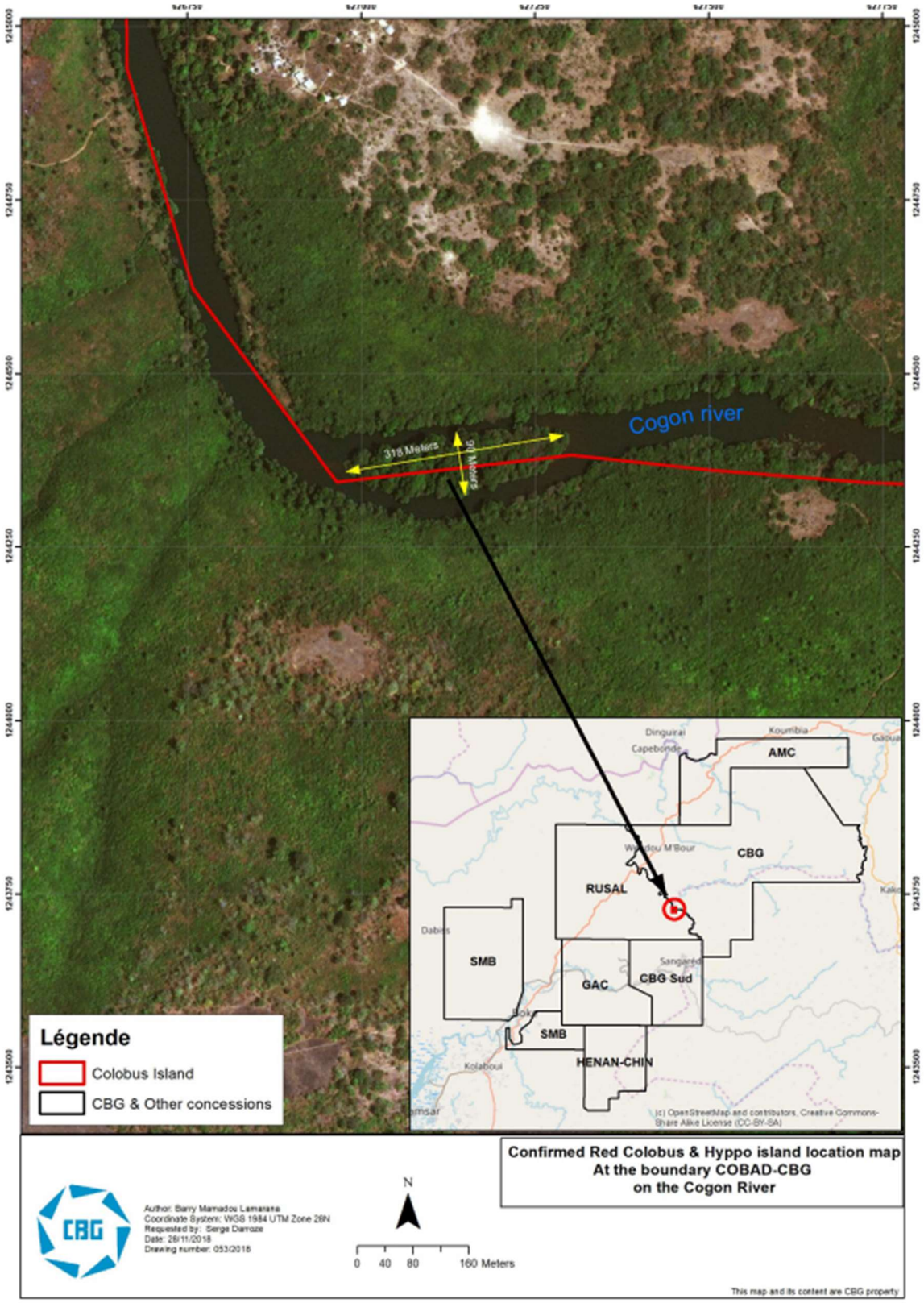
Cogon river
318 Meters
91 Meters
AMC
CBG
RUSAL
SMB
GAC
CBG Sud
SMB
HENAN-CHIN
Légende
Colobus Island
CBG & Other concessions
Confirmed Red Colobus & Hyppo island location map
At the boundary COBAD-CBG
on the Cogon River
Author: Barry Mamadou Lamarana
Coordinate System: WGS 1984 UTM Zone 28N
Requested by: Serge Diarroze
Date: 26/11/2018
Drawing number: 053/2018
N
0 40 80 160 Meters
This map and its content are CBG property

Figure 11 – Location of the Guilde island between CBG North Cogon and COBAD concession – a potential site for future compensation actions (planned for collaboration through the REB).

7 Biodiversity management on the ground

7.1 Context

The BMS identified a long list of actions for day-to-day biodiversity management and was in use between 2016 and 2020. All the actions were included in a BMS action plan register, which the CBG biodiversity team used to monitor the implementation of each action. The BMS action plan register was established at the early stage of the Expansion Project and did not fully align with the needs of CBG operations on the ground (CBG biodiversity manager, pers. comm.).

This BAP creates a **Biodiversity Management Register** (BMR), which replaces CBG's BMS action plan register, and is fully aligned with the needs of CBG on the ground.

The BMR is presented below and provided in Annex 3 as a standalone document.

7.2 Purpose

The BMR will serve as CBG's updated operational biodiversity management tool. The objective of this tool is twofold:

- Prioritise and consolidate biodiversity management actions, and
- Improve the efficiency and resourcing of biodiversity management actions on the ground.

7.3 Links with the BMS

Each BMS action was categorised as either[9]:

- Cancelled, when considered to be no longer relevant;
- Closed, when the action had already been implemented and no follow up was needed; or

[9] Note that the BMS action plan register was separated into three components - a Habitat Action Plan (HAP), a Species Action Plan (SAP) and a General Action Plan (GAP). This classification no longer exists in the new BMR and all actions are now merged into one list.

- Retained and updated within the BMR.

Retained actions were simplified, merged where possible, and translated into French to facilitate the implementation by the biodiversity team on the ground[10].

7.4 How the BMR works

Each action in the BMR has the associated information:

- Responsible party,
- Link to existing activities/programmes[11],
- Frequency and timing of implementation, and
- Implementation status.

The BMR differentiates between actions under the direct responsibility of the CBG biodiversity team, and actions for which the implementation falls under another CBG department, but for which CBG biodiversity team retains the oversight responsibility.

CBG's biodiversity manager is responsible for the overall implementation of the BMR.

7.5 Review of the BMR

The CBG biodiversity team will do an overarching review of all actions in the BMR at least once a year. During the review process, the implementation status of each action will be evaluated. As necessary, actions will be updated, or closed if completed. Additional actions may also be added to the BMR when required. Results of any review will be reported to Lenders as part of the AMR template.

[10] BMR actions have been translated into English to facilitate external reviews of the document, but the BMR will be kept updated in French only to facilitate its use by the CBG team on the ground.

[11] Note that CBG developed in 2017 an internal biodiversity and ecosystem services management programme (*Programme de gestion de la biodiversité des écosystèmes*) which set out the main operational programmes on the ground through a set of mitigation, monitoring, management and awareness raising actions for biodiversity (CBG, 2017). This programme focuses on three thematic areas: Flora and vegetation, through the « *Programme flore* », Fauna and habitats, through the « *Programme faune et habitats* », and Rehabilitation and restoration, through the « *Programme réhabilitation* ». With the development of the future BMEP (discussed in Section 9.1), the programme will no longer exist, but will be kept for reference until the full implementation of the BMEP.

8 Biodiversity monitoring

8.1 Existing biodiversity monitoring

As part of its ESMP, CBG developed an environmental monitoring programme (EMoP, *Programme de suivi environnemental*) which highlights CBG's approach to physical and biological environmental monitoring (see Figure *3*). The biodiversity and ecosystem components of the EMoP are described in a CBG document developed in 2016 and named *Programme de suivi biodiversité* (*Biodiversity monitoring programme*) (CBG, 2016). The high-level objectives of this existing biodiversity monitoring programme are summarised below:

- Monitor ecosystem, habitat and species dynamics within the CBG operation area through the State-Pressure-Response framework;
- Evaluate CBG's biodiversity mitigation performance; and
- Identify negative and positive biodiversity trends through appropriate indicators.

Having commenced in 2017, this monitoring programme focuses on three components of the Projects operations (mine, railway and port – see Figure 12) and includes the following monitoring focus:

- Flora, habitat, and vegetation – flora permanent plots set up at different locations within the South Concession (Figure 13);
- Fauna, habitats and ecosystems – various approaches and protocols for different taxonomic groups (see Table 5); and
- Rehabilitation and restoration monitoring – covered under CBG's Mine Rehabilitation and Conceptual Closure Plan (see Section 6.3).

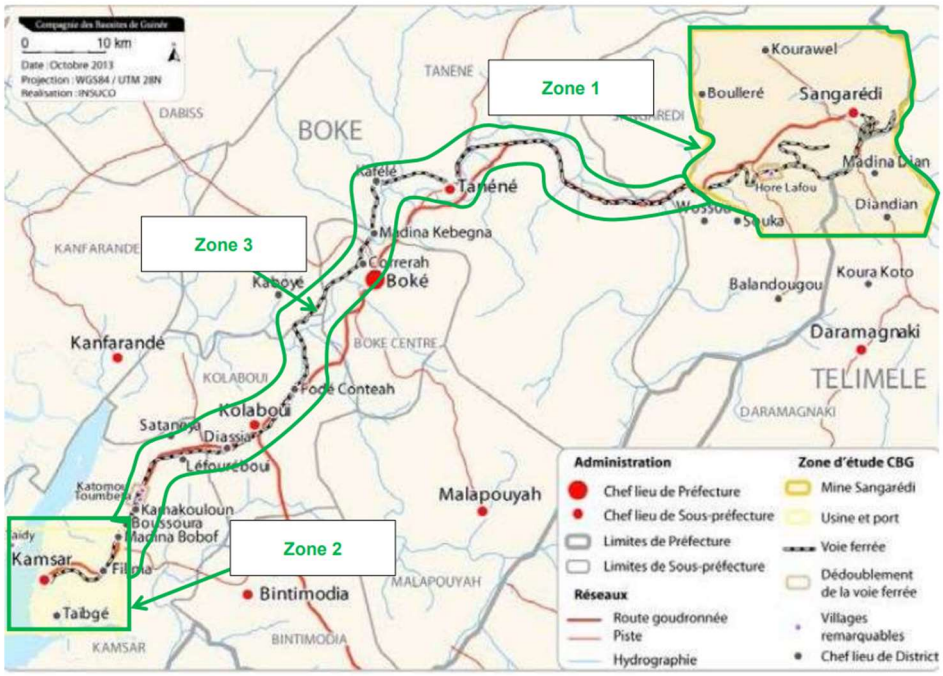

Figure 12 - the three focus areas (in green) of the existing monitoring programme

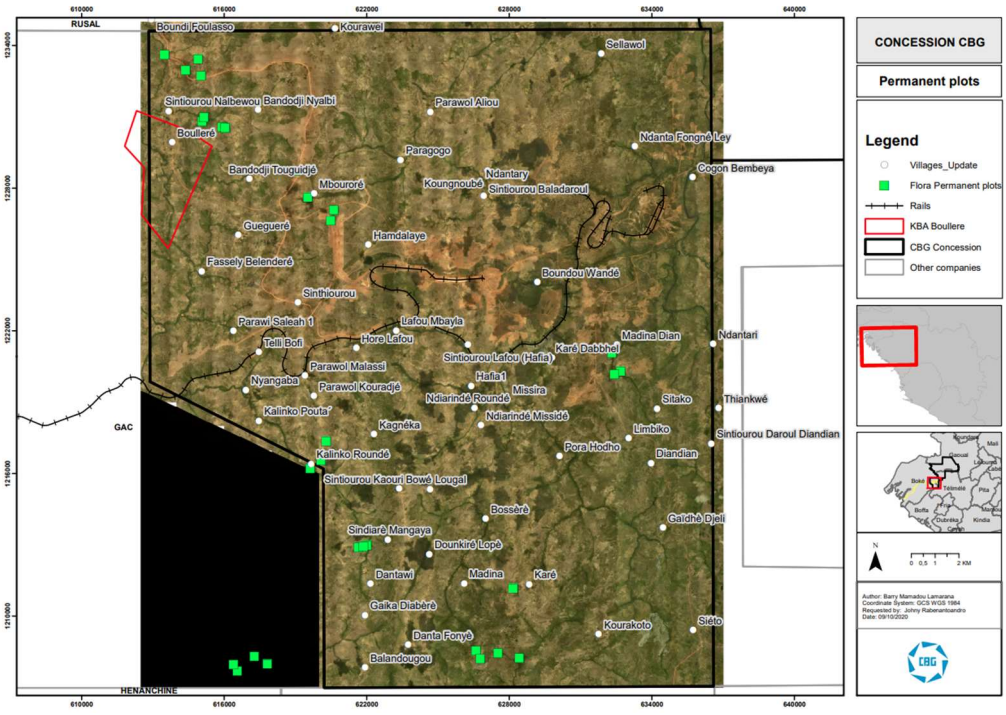

Figure 13 - Flora permanent plots set up for monitoring within the South Cogon concession

CBG has ongoing biodiversity monitoring in place for a number of taxonomic groups. Monitoring activities for other taxa / components identified as priority will start in 2021. Ongoing and planned monitoring activities, their objective, status, frequency and responsibility are summarised in Table 5.

Table 5 - CBG existing biodiversity monitoring activities

Existing monitoring	Objective	Status	Frequency	Responsibility
Mine rehabilitation	Monitor the status of rehabilitated mine areas	Ongoing	As per MRCCP	SEROMINE, SEROGENE, ECI
Mangrove restoration	Monitor the status of restored mangrove areas	Ongoing (early phase)	As per MRCCP	SEROMINE
Vultures and other sensitive birds	Monitor status within the operation area and assess impacts through time	Ongoing	Bi-annually (wet and dry seasons)	Guinée Ecologie
Reptiles	Monitor status within the operation area and assess impacts through time	Ongoing	Bi-annually	Guinée Ecologie
Amphibians	Monitor status within the operation area and assess impacts through time	Ongoing	Bi-annually	Guinée Ecologie
Chimpanzees and other primates	Monitoring status within the operation area and assess impacts through time	Ongoing	Annually (every 5y for pop. estimates)	CEMED
Freshwater biodiversity	Monitoring status within the operation area and assess impacts through time (including eDNA pilot study)	Ongoing (first results in 2021)	Bi-annually	CEMED
Hippopotamus	Monitoring status within the operation area and assess impacts through time	Ongoing (first year 2020)	Annually	Sylvatrop Consulting
Forest landscape	Monitor the status of forests within FLCMP onsite offset area	Pilot phase	As per FLCMP	Sylvatrop Consulting
Marine biodiversity	Monitor marine ecosystems	Start in 2021	Annually	To be confirmed

8.2 Align existing monitoring with BAP objectives

The existing monitoring programme presented in the previous section was defined before the preparation of this BAP and as such it is not yet aligned with the NNL/NG objectives outlined in this BAP. CBG will update the existing biodiversity monitoring programme (EMoP) and this will result in the development of a PS6-aligned **Biodiversity Monitoring and Evaluation Plan** (**BMEP**) that will set out the Company's overarching biodiversity monitoring strategy and protocols in alignment with the NNL/NG objectives see Section 9.1). It will be specifically designed to track priority biodiversity for which it is understood will be significantly impacted by the Project (as per the prioritisation presented in Table 2), and therefore will direct effort and resources to where it is needed most.

The BMEP will be aligned with the NNL/NG tracker approach presented in Section 8.3.

8.3 Tracking progress towards NNL/NG targets

8.3.1 NNL/NG tracker

As part of the preparation of this BAP, CBG has developed a **NNL/NG tracker tool**, provided as a separate document in Annex 4.

Once the BMEP has been re-developed, and metrics and measurement protocols are decided upon (see Section 9.1), the NNL/NG tracker will serve as CBG's operational tool to track progress towards NNL/NG targets for impacted priority biodiversity. CBG will update the tracker as and when relevant data from monitoring are available. A full annual update will be available in Q4 every year (see Section 9.5).

The way the NNL/NG tracker links to the BAP and the other key documents presented in this report is shown in Figure 14.

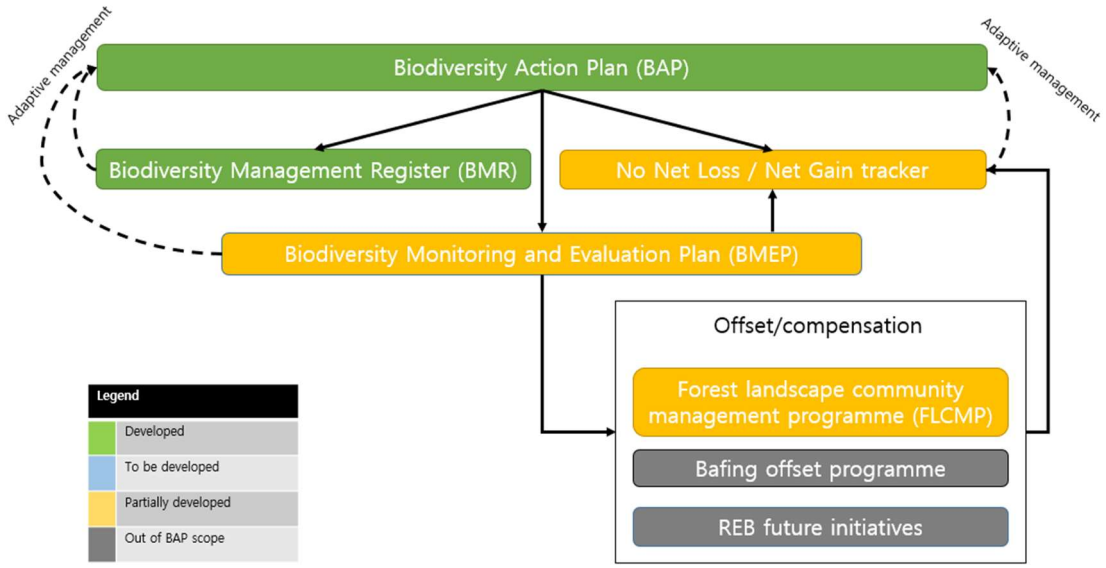

Figure 14 - Links between the BAP and key associated documents

8.3.2 Approach to measure losses and gains for priority biodiversity

The NNL/NG tracker is based on a methodological framework for loss/gain accounting for priority biodiversity based on the following approach:

- **Habitat-based metrics** will be used for species for which habitat loss/degradation is a good proxy for their status; and

- **Species-specific metrics** will be used for species for which habitat-based metrics are not appropriate.

The specific metrics and their associated indicators will be defined as part of the BMEP preparation. The proposed loss/gain accounting methodology for priority biodiversity is summarised in Table 6. The correlation between each priority biodiversity features and their associated approaches is provided in Table 7. The full methodological framework is detailed in Annex 5.

Table 6 - Proposed loss/gain accounting methodology for priority biodiversity

Focus	Priority biodiversity	NNL / NG	Potential metric*
Habitat-based metric			
Gallery forests	*Phrynobatrachus pintoi, Arthroleptis formosus, Arthtroleptis sp., Cynisca leonina, Cynisca cf oligopholis, Hemidactylus kundaensis, Hemidactylus albivertebralis, Fleurydora felicis, Colobus polykomos, Cercocebus atys, Caracal aurata, Pan troglodytes verus**, Piliocolobus badius***	NG	Extent x Condition
Freshwater habitats	*Malapterurus teugelsi, Archiaphyosemion jeanpoli, Epiplatys njalaensis, Epiplatys hildegardae, Synodontis kogonensis, Epiplatys guineensis, Hippopotamus amphibious*, Afrithelphusa monodosa, Inversodicraea abbayesii, Osteolaemus cf tetraspis, Mecistops cataphractus*	NG	Condition
Terrestrial habitats	*Terrestrial mosaic, Boullere KBA, Kamsar KBA, Smutsia gigantea, Phataginus tricuspis, Pan troglodytes verus*, Gyps africanus*, Necrosyrtes monachus**	NNL	Extent x Condition
Species-specific metric			
Chimpanzee	*Pan troglodytes verus*	NG	Number of individuals***
Red Colobus	*Piliocolobus badius*	NG	Number of individuals
Birds	*Gyps africanus*	NNL	to be decided
	Necrosyrtes monachus,	NNL	to be decided
	Calidris alba	NNL	to be decided
Hippopotamus	*Hippopotamus amphibious*	NNL	to be decided
Freshwater fish	*Malapterurus teugelsi*	NG	to be decided
	Archiaphyosemion jeanpoli	NG	
	Epiplatys njalaensis	NG	
	Epiplatys hildegardae	NG	
	Synodontis kogonensis	NG	
	Epiplatys guineensis	NNL	
Marine species and areas	*Sousa teuszii*	NG	to be decided
	Trichechus senegalensis	NNL	
	Eretmochelys imbricata	NG	
	Chelonia mydas	NG	
	Glaucostegus cemiculus	NNL	
	Dasyatis margarita	NNL	
	Sphyrna lewini	NNL	
	Rio Kapatchez KBA	NNL	
	Îles Tristao KBA	NNL	
	Île Alcatraz / du Naufrage IBA (Candidate)	NNL	
Mangroves	Mangroves	NG	Extent x Condition

*Will be confirmed as part of the BMEP development

** Will be monitored by species-specific metrics

***Will be discussed with the IUCN / SSC Primate Specialist Group

Table 7 - Correlation between priority biodiversity features and approaches to assess losses/gains

Taxa	Priority biodiversity feature*	Monitoring approach
CH-qualifying features		
Reptile	*Cynisca leonina*	Habitat-based
Reptile	*Cynisca cf oligopholis*	Habitat-based
Reptile	*Hemidactylus kundaensis*	Habitat-based
Amphibian	*Phrynobatrachus pintoi*	Habitat-based
Amphibian	*Arthtroleptis sp.***	Habitat-based
Amphibian	*Arthroleptis formosus**	Habitat-based
Amphibian	*Odontobatrachus smithi*	Habitat-based
Mammal	*Pan troglodytes verus*	Species-specific + habitat based
Plant	*Fleurydora felicis*	Habitat-based
Fish	*Malapterurus teugelsi*	Species-specific + habitat based
Fish	*Archiaphyosemion jeanpoli*	Species-specific + habitat based
Fish	*Epiplatys njalaensis*	Species-specific + habitat based
Fish	*Epiplatys hildegardae*	Species-specific + habitat based
Fish	*Synodontis kogonensis*	Species-specific + habitat based
Crab	Afrithelphusa monodosa	Species-specific + habitat based
Plant	*Inversodicraea abbayesii*	Species-specific + habitat based
Mammal	*Sousa teuszii*	*To be decided*
Reptile	*Eretmochelys imbricata*	*To be decided*
Reptile	*Chelonia mydas*	*To be decided*
Habitat	Mangroves	Habitat-based
Bird	*Gyps africanus*	*To be decided*
Bird	*Necrosyrtes monachus*	*To be decided*
Mammal	*Piliocolobus badius*	Species-specific
Mammal	*Colobus polykomos*	Habitat-based
Mammal	*Cercocebus atys*	Habitat-based
Mammal	*Smutsia gigantea*	Habitat-based
Mammal	*Phataginus tricuspis*	Habitat-based
Mammal	*Caracal aurata*	Habitat-based
Reptile	*Hemidactylus albivertebralis*	Habitat-based
Habitat	Terrestrial mosaics	Habitat-based
KBA	Boullere KBA	Habitat-based
KBA	Kamsar KBA	Habitat-based

Taxa	Priority biodiversity feature*	Monitoring approach
Fish	*Epiplatys guineensis*	Species-specific + habitat based
Mammal	*Hippopotamus amphibius*	Species-specific
Reptile	*Osteolaemus cf tetraspis*	Habitat-based
Reptile	*Mecistops cataphractus*	Habitat-based
Fish	*Sphyrna lewini*	*To be decided*
Fish	*Glaucostegus cemiculus*	*To be decided*
Fish	*Dasyatis margarita*	*To be decided*
Bird	*Calidris alba*	*To be decided*
Mammal	*Trichechus senegalensis*	*To be decided*
KBA	Rio Kapatchez KBA	*To be decided*
KBA	Îles Tristao KBA	*To be decided*
IBA	Île Alcatraz / du Naufrage	*To be decided*

9 Roadmap for BAP completion & implementation

This section highlights the actions that CBG will undertake to be able to implement the BAP. All these actions are included in the Biodiversity Management Register (BMR) as "**priority actions**".

The roadmap for BAP implementation is summarised in Table 8 - ; details for each action are provided in Section 9.1 to Section 9.5.

Table 8 - Roadmap to implement the BAP

#	BAP section	Action	Targeted timeline
1	Section 9.1	Update the existing biodiversity monitoring programme by re-developing the current monitoring regime into a prioritised PS6-aligned BMEP based on suitable indicators and monitoring protocols	By Q3 of 2021
2	Section 9.2	Define biodiversity baseline conditions for priority biodiversity features as per the selected metrics/indicators, and populate the NNL/NG tracker	By Q3 of 2021
3	Section 9.3	Estimate residual impacts on priority biodiversity features as per the selected metrics/indicators, and populate the NNL/NG tracker	By Q4 of 2021
4	Section 9.4	Define NNL/NG targets for priority biodiversity, and populate the NNL/NG tracker	By Q4 of 2021
5	Section 9.5	Implement the BMEP	From Q4 2021
6	Section 9.6	Develop and implement the FLCMP in alignment with NNL/NG targets and methodologies defined in this BAP	From Q1 2022

Once these priority actions have been completed (planned to be completed by end of 2021), CBG's biodiversity team will be in the position to fully implement this BAP and its associated tools (BMR, BMEP and NNL/NG tracker) in order to achieve its targeted NNL/NG objectives.

9.1 Develop the BMEP

CBG will update the existing biodiversity monitoring programme (EMOP) into a full PS6-aligned Biodiversity Monitoring and Evaluation Plan (BMEP) that will set out the Company's overarching biodiversity monitoring strategy in alignment with the NNL/NG objectives outlined in this BAP.

The BMEP will:

- Consolidate all biodiversity monitoring efforts – including existing monitoring activities presented in Section 8 - into an overarching biodiversity monitoring programme aligned with the NNL/NG objectives outlined in this BAP;
- Be specifically designed to track priority biodiversity for which it is understood will be significantly impacted by the Project (as per the prioritisation presented in Table 2), and therefore will direct effort and resources to where it is needed most;
- Align monitoring protocols and techniques with the methodological framework presented in the NNL/NG tracker (Section 8.3 and Annex 5);
- Identify appropriate and measurable indicators for tracking losses/gains for priority biodiversity, based on the Pressure-State-Response (PSR) framework; and
- Enable a direct link between monitoring results and the NNL/NG tracker.

9.2 Define baseline conditions

CBG will define the baseline conditions upon which losses/gains will be assessed. As CBG has been in operation for a long time, it will be important to agree on a timeframe for when to assess impacts to biodiversity from. This will be agreed internally and with Lenders prior to calculating any losses/gains.

9.3 Estimate residual impacts

Some preliminary residual impact estimates have been performed for some species and habitats (see Annex 5), which have informed the offset requirements for the Bafing offset activities (TBC, 2017). A refinement of these estimates is needed to incorporate new data and understanding of CBG impacts over the range of all impacted priority biodiversity features. To estimate residual impacts on priority biodiversity, CBG will use the indicators and metrics as per the outline described in Section 8.3 and in Annex 5, and as will be fully defined in the BMEP (Section 9.1). CBG will determine whether existing available data is sufficient or if additional targeted studies/surveys are needed to estimate losses.

Once all required information is available, CBG will estimate residual impacts on priority biodiversity features and populate the NNL/NG tracker accordingly.

For priority biodiversity features for which no impact is estimated[12], the BMEP will determine whether a NNL/NG target will still be needed and if monitoring will be necessary.

9.4 Define NNL/NG targets

Once residual impacts have been re-evaluated, CBG will refine the NNL/NG targets for priority biodiversity features at risk of impact, as per the NNL/NG tracker methodology.

CBG will define an appropriate multiplier to convert the impact quantum to a NG target value to increase the likelihood of achieving NG for priority biodiversity features[13]. Well justified multipliers can be readjusted as uncertainties and risks become clear and CBG tracks progresses towards the targets.

When a habitat-based proxy includes both CH and non-CH features, CBG will precautionarily aim to achieve the NG target for the habitat (e.g. for gallery forests).

9.5 Implement and review the BMEP

Under the responsibility of the CBG biodiversity manager, CBG aims to start implementing the BMEP in early Q4 2021 and will undertake monitoring activities as per the defined protocols and methodologies. The findings of monitoring activities will feed into the NNL/NG tracker to reflect progresses towards the NNL/NG objectives.

CBG will review the BMEP once a year (Q4 of each year). Metrics / indicators could be readjusted once CBG has a better understanding of the efficiency of monitoring protocols and rehabilitation/offset actions to achieve desired NNL/NG objectives.

[12] This may be the case for the hippo or the priority birds (the two vulture species and Sanderling) for instance

[13] Multipliers are used to increase the likelihood of achieving the NG target by taking into account factors such as uncertainty about outcome or to compensate for temporal loss of biodiversity when there is a time lag between the losses and the expected gains (BBOP, 2012). There is not a fixed rule as of what a good multiplier should be, but 25% is a commonly used multiplier to start with.

CBG will commission an external independent assessor (or panel of assessors[14]) who will review the progresses of CBG towards achieving its NNL/NG objectives and provide recommendations on potential additional mitigation and monitoring actions necessary to achieve these targets.

9.6 Develop and implement the FLCMP

CBG has started the process of developing a Forest Landscape Community Management Programme (FLCMP) through an initial pilot project (2018-2020) (see Section 6.4.1). As part of this integrated approach, CBG will fully develop and implement the FLCMP in alignment with NNL/NG targets and methodologies defined in this BAP. The FLCMP will include specific actions/initiatives aiming at attaining a tangible gain for those priority features for which a NNL/NG target is required. The tentative timeline for developing the FLCMP is early 2022, once the residual impact assessment has been completed, NNL/NG targets are known, the BMEP is fully developed, and metrics/indicators for measuring losses and gains of impacted priority biodiversity have been defined.

As mentioned in Section 6.4.1, item 28 of the 2020 ESAP stipulates that CBG has to develop a landscape-level plan for the concession that integrates community development and biodiversity objectives. CBG will validate with the Project Lenders whether the FLCMP will be integrated within this landscape-level plan or whether the landscape-level plan will replace the FLCMP and will become one of the actions by which CBG will achieve their NNL/NG objectives. In either case, the newly created plan will have to demonstrate how CBG can achieve its NNL/NG objectives in the socio-ecological context of the area, and as per the methodological framework presented in this BAP.

[14] Note that CBG's 2015 BMS suggested the creation of a Net Positive Impact Verification Panel to review yearly the effectiveness of all mitigation and compensation measures, both onsite and off-site. This panel has not been created yet. As an interim situation, this verification role is currently played by the IESC.

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Annex 1 – Applicable GN6 criteria for CH identification (IFC, 2019)

Please refer to the updated IFC guidance note (link here) for applicable criteria for CH identification.

Key changes of the GN6 2019 version compared to the 2012 version:

- Projects should not be in World Heritage Sites or Alliance for Zero Extinction Sites
- Concepts are streamlined and clarified:
    - Discrete Management Unit (DMU) is now called 'Area of Analysis' (AoA)
    - No separation between Tier 1 and Tier 2
    - Clearer guidance on sub-species/sub-populations (restricted to those on the IUCN Red List and for Criterion 1)
- Projects located in great ape habitat require more in-depth consideration, and extensive stakeholder consultation, specifically with the IUCN Primate Specialist Group (PSG) Section on Great Apes (SGA) Avoid, Reduce, Restore negative impacts from energy, extractive and associated infrastructure projects on apes and contribute to their Conservation (ARRC) Task Force
- Revised thresholds for Criteria 1-3:
    - In some cases, the presence of VU species can trigger the identification of CH
    - The presence of a single individual of an EN or CR species no longer automatically triggers CH
    - The assessment process for restricted-range, freshwater and coastal species has been modified
- Quantitative thresholds for Criterion 4:
- Criterion 4 can now be used to quantitively assess the presence of Critical Habitat-qualifying ecosystems

Annex 2 – Critical Habitat Assessment update

The full Critical Habitat Assessment (CHA) was conducted in 2015 (TBC, 2015b).

The CHA update reassessed biodiversity features against new GN6 criteria, and used more up-to-date information on global species database (e.g. updated IUCN Red List status, when a change has occurred) and new information on the species presence and distribution in the project area (e.g. recent surveys).

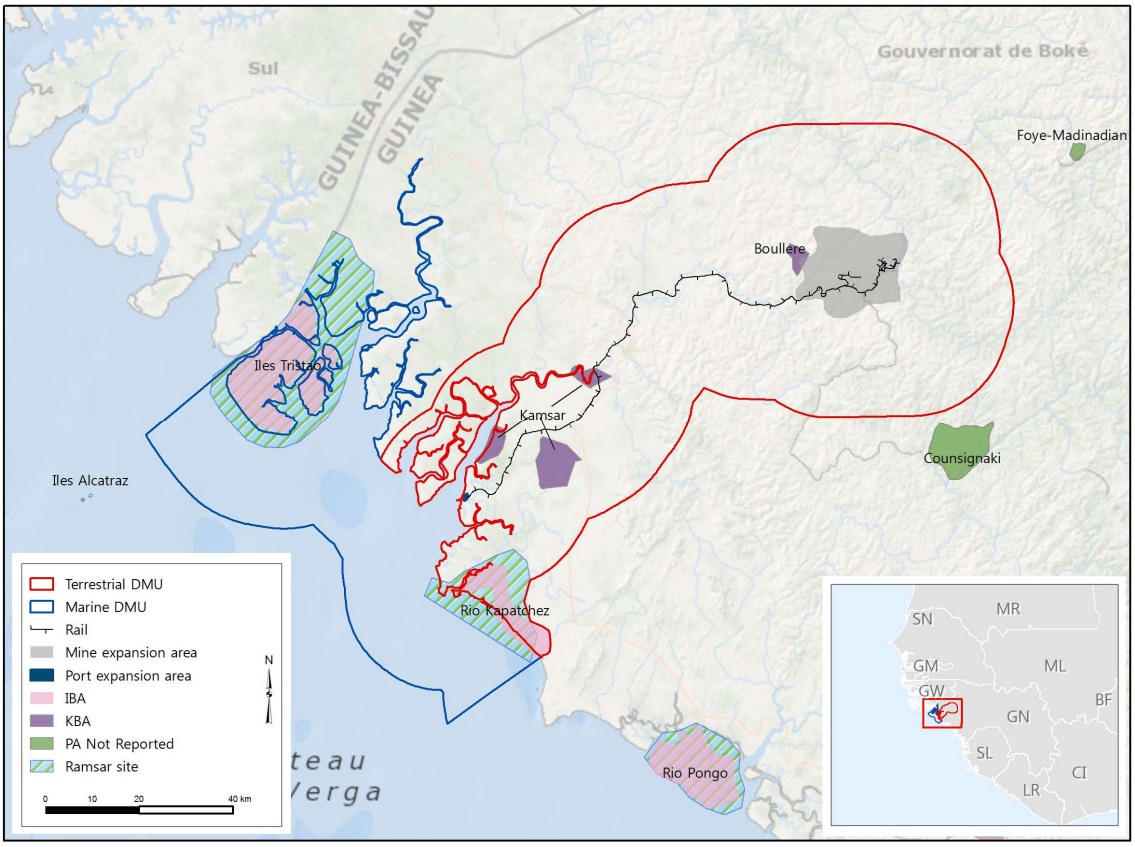
The objective of the updated CHA was to update the list of priority biodiversity features to be considered as part of this BAP and to determine which ones i) qualify for CH according to PS6 criteria and ii) do not qualify for CH but should be considered as biodiversity features of stakeholder concern.

The updated CHA did not include the full CHA process and steps as these were already covered by the 2015 version. Potential CH-qualifying biodiversity features known or believed to occur within CBG's area of operations were reviewed through the use of global dataset via the Integrated Biodiversity Assessment Tool (BAT), baseline field survey reports, discussions with the CBG team and additional literature review.

Some key reports consulted were:

- EEM's ESIA for the CBG Mine Expansion Project (2014), in particular Chapters 3 (biological baseline), 4 (impact assessment), 9 (cumulative impacts), 10 (ESMP) and the relevant annexes on species surveys (EEM, 2016)
- ERM's multi-user railway project ESIA (ERM, 2017)
- CBG mine expansion project: Critical and Natural Habitat Assessment (TBC, 2015b)
- Biodiversity Management System for the CBG Expansion Project Main Report – Version 2 (EEM, 2016)
- Complementary Primate Study CBG Extension Project Part 1 - Summary Report (WCF, 2015).
- Development of an optimized monitoring and evaluation plan and updated baseline for Western Chimpanzees (Sylvatrop Consulting, 2019)
- Bird monitoring report « *Observation annuelle des espèces d'oiseaux en danger et à distribution restreinte, notamment les vautours dans la zone d'activité de la Compagnie des Bauxites de Guinée (CBG)* » (Guinee Ecologie, 2018b)
- Herpetofauna survey « *Inventaire des reptiles et amphibiens au sud du Cogon dans la concession minière de la CBG à Sangarédi* » (Guinee Ecologie, 2018a).

The area of analysis (AoA, previously known as Discrete Management Unit, DMU) remained consistent for both the marine and terrestrial areas between 2015 and this CHA update (Figure 6 and below). Since 2015, there had been several changes in the status of species published on the IUCN Red List that were accounted for in the updated assessment.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GUINEA-BISSAU
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KBA
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List of CH-qualifying features and justification

Feature	IUCN RL	Justification
Cynisca leonina	VU	Restricted to a few locations in northwest Guinea and Conakry. Lives in gallery forest. Unlikely that 10% of the global population is found in the AoA but not impossible. Would qualify as restricted range (Criterion 2) as estimated EOO is 5,732km^2 (< the threshold of 50,000km^2). Not detected in either CBG or GAC reptile surveys (GAC 2016 and CBG 2018). If confirmed as present would qualify for CH. Precautionarily it is considered to qualify for CH under Criterion 2.
Cynisca cf oligopholis	EN	Restricted to northwest Guinea. Lives in gallery forests. Found in study area. Likely that 0.5% of global population found in the AoA. Not found in either GAC or CBG reptile surveys (GAC 2016 and CBG 2018). Five observations made during CBG survey at three different localities (GE 2018). Also qualifies for CH under criterion 2 as EOO is <50,000km^2 (actual EOO is 3,572 km^2).
Hemidactylus kundaensis	CR	Known from different locations at the AoA. It was recently observed along with other priority species along a small stream in Korakoto, south of the South concession (CBG biodiversity manager, pers. comm.). Identification is difficult. Highly likely that 0.5% of global population is found in theAoA. Seems to be associated to dry forests but was found in savanna habitats and building walls (close to forests). Also qualifies for CH under criterion 2 as EOO is <50,000km^2 (actual EOO is 408 km^2). Would qualify for CH under both criterion 1 and criterion 2.
Phrynobatrachus pintoi	EN	Restricted to the Sangaredi subprefecture. Believed to live in dry gallery forests surrounded by savanna. Eight individuals of this species were found in Kouarewel and N'Dounssy in gallery forest during the ESIA studies (EEM 2014). Last IUCN update in 2014. Not recorded in any of the herpetological surveys performed since the ESIA, until it was recently observed along with other priority species along a small stream in Korakoto, south of the South concession (CBG biodiversity manager, pers. comm.). Qualifies as CH under Criterion 1 (100% of the known range is in the AoA) and Criterion 2 (known range is 386 km^2).
*Arthtroleptis sp.***	NE	Recorded in 2015 field surveys and thought to be a new species. No Red List Assessment performed. If confirmed as a new species, would qualify for CH under Criterion 2. Further information is needed, but precautionarily listed as CH.
*Arthroleptis formosus**	DD	Recorded in 2015 (mentioned in the BMS). Restricted to Telimele area. Believed to live in gallery forest, unclear if tolerates degraded habitats. Confirmed in AoA with four observations at two different locations (GE 2018). It was recently observed along with other priority species along a small stream in Korakoto, south of the South concession (CBG biodiversity manager, pers. comm.). No update of Red List assessment but qualifies as CH under Criterion 1 (100% of the known range is in the AoA) and Criterion 2 (known range is 183 km^2). Thought to be resilient to habitat degradation as all locations where it has been recorded have been subject to logging activities.
*Odontobatrachus smithi**	-	Recorded during herpetological surveys in the CBG concession in 2018 with three observations made at one site. The species was only described in 2015 and thus has no Red List Assessment. The paper which describes the species suggests that it has an EOO of less than 50,000 km^2 which qualifies this species as CH under Criterion 2.

Feature	IUCN RL	Justification
Pan troglodytes verus	CR	Population estimated using transects totaling 154 individuals, with a minimum confirmed number of individuals totaling 54 from genetic survey (Sylvatrop 2018). Great apes are treated as CH as per GN6 due to their anthropological significance.
Fleurydora felicis	EN	Red List assessment upgraded to EN since original CHA in 2015 (where it was assessed as DD). Recorded in 2012 in the AoA, but BMS says it is not found. Lives in gallery forest / riverbanks. Would qualify for CH under criterion 2 as max EOO is 19,500 km^2 which is less than the required threshold of 50,000km^2.
Malapterurus teugelsi	NT	No available surveys performed recently for freshwater species; single individual was captured in the Cogon watershed during the ESIA study (EEM 2014). There has been no update to the IUCN RL. Linear span of range is 162.1 km which is less than the RR criteria threshold of 500km so therefore qualifies as CH under Criterion 2.
Archiaphyosemion jeanpoli	EN	Species was originally discovered in small streams during the ESIA (EEM2014). It is non-migratory and one of the more abundant freshwater fish species discovered during the ESIA. IUCN RL assessment has not been updated and it is still not listed as present within the AoA (RL assessment lists range as southern Guinea and northern Liberia), no further studies have been performed by CBG. Would likely qualify for CH under Criterion 2, even though the distance between the AoA and the rest of the current known range is >500km it cannot be assumed that the area between is populated with this species.
Epiplatys njalaensis	EN	Was present during the ESIA in small rivers under forest cover. In the study area, it was captured in both the watersheds (Kogon 3 sites and Tinguilinta 1 site) (EEM 2014). On the Kougnoubhè, a tributary of the Thiapikouré in the Kogon watershed, 80 individuals were captured (EEM 2014). IUCN RL assessment has not been updated and it is still not listed as present within the AoA (RL assessment lists range as Sierra Leone), no further studies have been performed by CBG. Would likely qualify for CH under criterion 2, even though the distance between the AoA and the rest of the current known range is >500km it cannot be assumed that the area between is populated with this species.
Epiplatys hildegardae	VU	*Epiplatys hildegardae* was found during the ESIA in the two watersheds: Kogon, six sites and Tinguilinta, three sites (EEM 2014). IUCN RL assessment has not been updated and it is still not listed as present within the AoA (RL assessment lists range as southern Guinea). Would likely qualify for CH under criterion 2, even though the distance between the AoA and the rest of the current known range is >500km it cannot be assumed that the area between is populated with this species.
*Synodontis kogonensis**	DD	Species presence was not recorded during the ESIA and no further studies have been performed. There has been no update to the Red List Assessment, so no new information. If confirmed as present the species would qualify for CH as linear span of range is 195 km which is less than the RR criterion threshold of 500km.
Afrithelphusa monodosa	EN	A small number of individuals were found during surveys in 2006 in freshwater near Sarabaya south-west of Boké (EEM 2014). These are the first observations since it was described in 1947. Qualifies as CH under criterion 1 as it is Endangered and 69% of its global range is found within the AoA which includes the only known population. Additionally, it qualifies as CH under Criterion 2 as it's known range is restricted to Boké region.

Feature	IUCN RL	Justification
Inversodicraea abbayesii	CR	Ex *Lemermanniella abbayesii* (DD). 19% of range overlaps with AoA. Known to be found in rocky rivers and streams in forest (Missouri Botanical Garden, 2015). Limited information on this group of aquatic plants. Specimens have been collected from the AoA according to MBG. If present would qualify under both criterion 1 (as only 0-49 individuals estimated for population) and criterion 2 (EOO estimated at 4km^2). Updated Red List assessment states that species could possibly be extinct.
Sousa teuszii	CR	A minimum of 47 individuals were recorded in the ESIA study area in the coastal waters around Kamsar. However, the population is likely to be greater as the individual discovery curve has not reached its asymptote (EEM 2014, Weir 2015). No further studies have been performed by the Project since the ESIA. Updated RL assessment assesses the species as CR with a population estimate of 1,500 individuals. Likely species qualifies for CH under criterion 1 as >0.5% of the population are found within the AoA (>7.5 individuals).
Eretmochelys imbricata	CR	One individual was observed off the south-west tip of Binari Island within the Study Area (EEM 2014). Nesting sites are suspected to be present in the study area (EEM 2014) but have not yet been confirmed. No further studies have been performed by the Project since the ESIA. Species would likely qualify for CH under criterion 3 (Areas known to sustain, on a cyclical or otherwise regular basis, ≥ 1 percent of the global population of a migratory or congregatory species at any point of the species' lifecycle). Further studies required to confirm presence of nesting sites. Being precautionary, this species qualifies for CH.
Chelonia mydas	EN	One carapace was found in a fishing camp in the north-west of Binari Island (EEM 2014) while not certain, the likelihood is that it was captured within the AoA as it was captured by artisanal fishers who do not travel long distances. This species also feeds in shallow waters such as those found in the AoA. No further studies have been performed by the Project since the ESIA. Species would likely qualify for CH under criterion 3 (Areas known to sustain, on a cyclical or otherwise regular basis, ≥ 1 percent of the global population of a migratory or congregatory species at any point of the species' lifecycle). Further studies required to confirm presence of nesting sites, but being precautionary, this species qualifies for CH

**Indicates new CH-qualifying features compared to the 2015 CHA*

***Likely unnamed new species*

List of species of stakeholder concern and justification

Feature	IUCN RL	Justification
Gyps africanus	CR	Global population is 270,000 (IUCN RL 2018). 9 individuals (but no nesting sites) were recorded during the Guinee Ecologie 2018 monitoring survey. Unlikely that AoA supports 1,350 individuals (0.5% of global population). Species considered of stakeholder concern.
Necrosyrtes monachus	CR	Global population is 197,000 (IUCN RL 2017). During the 2018 monitoring survey (Guinee Ecologie), 10 nesting sites and 31 observation sites for a total of 333 individuals (228 in Sangaredi area, 105 in Kamsar area) were recorded, with higher concentrations in modified/anthropized habitats. Species observed in all sampling points, highlighting the importance of the area for the species. Unlikely that AoA supports 985 individuals (0.5% of pop). Species considered of stakeholder concern.
Piliocolobus badius	EN	Not confirmed as present from camera trapping or transect surveys. Community interviews state that the species is present and rare, but community responses should be treated with caution (Sylvatrop 2018). *Procolobus badius temminckii* (former subspecies) was encountered along the Cogon river about 10 km from the expansion area to the north (Baarman et al. 2014). No global population estimate for the species, but a few individuals were reported in Boulléré/Sangarédi sub-prefecture during a rapid survey in 2006 (IUCN RL 2020). Only 0.02% of global range in AoA so unlikely to support >0.5% of the global population and significant populations have been found elsewhere (Gola and Sapo). A potential population is located on the Guilde island, 7km north of the South Cogon concession, between the North Cogon and COBAD concessions. Studies are ongoing to confirm the species presence. If confirmed, the species would qualify for CH. Species considered of stakeholder concern.
Colobus polykomos	EN	Not confirmed as present from camera trapping or transect surveys. Community interviews state that the species is present and rare, but community responses should be treated with caution (Sylvatrop 2018). No overall population estimate for the species, two surveys in the Boke region (in 2006 and 2015) failed to find evidence of this species and it is thought to be locally extirpated (IUCN RL 2020). Unlikely that the AoA supports 0.5% of the global population. Precautionarily considered as species of stakeholder concern.
Cercocebus atys	VU	Presence confirmed from 10 captures during camera trapping and one transect observation but should be noted that other primates had higher levels of observation (Sylvatop 2018). It was also observed in gallery forest near Boulléré (EEM 2014). However, it was rarely encountered during a rapid assessment of the primate fauna conducted in 2005 in Sangaredi sub-prefecture in northwestern Boké Préfecture (IUCN RL 2020). Although 1.59% of the global range falls in the AoA, limited signs of the species during surveys suggest that a loss of this area is unlikely to result in a change of the IUCN Red List status to EN or CR. Species considered of stakeholder concern.

Feature	IUCN RL	Justification
Smutsia gigantea	EN	No pangolin signs observed during camera trapping, transects or recces from the chimpanzee survey (which also looked at all other signs of mammals) (Sylvatrop 2018). Only 0.2% of range in AoA, unlikely to support more than 0.5% of global population. Precautionarily considered a species of stakeholder concern.
Phataginus tricuspis	CR	No pangolin signs observed during camera trapping, transects or recces from the chimpanzee survey (which also looked at all other signs of mammals) (Sylvatrop 2018). Only 0.12% of range in AoA, unlikely to support more than 0.5% of global population. Precautionarily considered a species of stakeholder concern.
Caracal aurata	VU	No signs of Golden Cat observed during transect, recce or camera trap surveys in 2018 (Sylvatrop 2018). It was recorded on a camera trap in gallery forest near Sangarédi, the first time the species had been recorded in Boké prefecture (EEM 2014). Only 0.17% of the global range is found within the AoA so a loss of this area is unlikely to result in the change of the IUCN Red List status to EN or CR. Species considered of stakeholder concern.
Hemidactylus albivertebralis	DD	Known to occur on the walls of houses and in plantations. Not recorded in any of the reptile surveys and IUCN RL states that it has only ever been found in the area surrounding Conakry. Unlikely to occur in the AoA and therefore does not qualify as CH Considered rare and restricted range and precautionarily considered a species of stakeholder concern.
Terrestrial mosaic	-	This represent the mosaic of vegetation units with variable degradation levels in which CBG is operating. They play a key ecological role for many species of flora and fauna. From a PS6 perspective this landscape mosaic can be considered a mix of Natural Habitat (NH) and Modified Habitat (MH) which are difficult to delimitate and map.
Boullere KBA	-	Information from CBG suggests that the habitat in this area is still of good quality but that most of the area falls within the GAC concession rather than CBG. The Boullere KBA is now considered a set aside zone, therefore impacts on this area are not anticipated. Unlikely to meet the threshold of CH.
Kamsar KBA	-	Information from CBG suggests that the coastal portion of the Kamsar KBA has been destroyed and is now the COBAD port. The terrestrial portion of the KBA is now a palm plantation and a village and is in fact now unlikely to considered as a KBA. It should be noted that the multi-user railway project avoided any construction within the Kamsar KBA.
Epiplatys guineensis	VU	Listed in the initial table in the CHA, but not explained further in the document, was recorded during the ESIA (EEM 2014) and until the ESIA was not known from this region of Guinea. IUCN RL has not been updated since the 2015 CHA Unlikely to qualify for CH. Species considered of stakeholder concern.
Hippopotamus amphibius	VU	Presence confirmed during transect surveys for chimpanzees with a total of six signs observed, giving an encounter rate 0.04 signs/km (Sylvatrop 2018). Not listed as overlapping with the AoA on the IUCN Red List but current population estimate is 115,000-130,000. AoA is unlikely to support a population of 575 individuals (5% of the lower end of the population estimate). Also, it's unlikely that the loss of this small population would trigger an uplisting of the species. Considered of stakeholder concern.

Feature	IUCN RL	Justification
Osteolaemus cf tetraspis	VU	Unlikely that loss of project area would upgrade species to EN but systematics to be reviewed (likely there is a West African subspecies/species). Seven observations at two different localities during reptile surveys (GE 2018). Would not qualify for CH as loss of project area would not upgrade species to EN/CR but considered as species of stakeholder concern.
Mecistops cataphractus	CR	Not recorded in any reptile surveys and unlikely to be present in the area. Precautionarily listed as a species of stakeholder concern.
Sphyrna lewini	CR	One individual was observed in the fish market at Port Nene near Kamsar but it is not known where it was captured. However, the likelihood is that it was captured within the AoA as it was captured by artisanal fishers who do not travel long distances (EEM 2014). No further studies have been performed by the Project since the ESIA. No population data are available for this species on the IUCN RL and the AoA only overlaps with 0.01% of the species range, therefore it is unlikely to support 0.5% of the global population (threshold for criterion 1). It is thought that females migrate inshore to pup so it is possible that the species could qualify under Criterion 3, but further research would be required. Species considered of stakeholder concern.
Glaucostegus cemiculus	CR	Eight individuals were caught by tracked artisanal fishing boats in coastal waters in the AoA (EEM 2014). No further studies have been performed by the Project since the ESIA. IUCN RL uplisted the species to CR in 2019. Species is not range restricted (Criterion 2) and is unlikely to qualify under criterion 1 as it is unlikely to support 0.5% of the global population (0.19% range overlap with AoA). Pregnant females and reproductively active males move inshore for parturition, as mating immediately follows birth. Therefore, the species could qualify under Criterion 3, but it is unlikely that >1% of the population congregates in the AoA at any point in the species lifecycle. Further research required. Species considered of stakeholder concern.
Dasyatis margarita	EN	One individual was observed in the fish market at Yongosal near Kamsar but it is not known where it was captured. However, the likelihood is that it was captured within the AoA as it was captured by artisanal fishers who do not travel long distances (EEM 2014). No further studies have been performed by the Project since the ESIA. Species could possibly qualify for CH under criterion 1, but it is unlikely as the AoA only overlaps with 0.36% of the species range and it is unlikely to hold >0.5% of the global population. Does not qualify under criterion 2 and not enough is known about the species migratory habits to assess against criterion 3. Species considered of stakeholder concern.
Calidris alba	LC	Counts during the 2013 surveys in the Study Area found 1,630 individuals (compared to the 1% biogeographic population of 1,200) (EEM 2014). It prefers estuarine habitat including sandy shores. Justification from the 2015 CHA states "The Sanderling Calidris alba qualifies the AoA as Tier 2 Critical Habitat Criterion 3 because it is a congregatory species and the AoA supports at least 1.35% of the biogeographical population (BirdLife International 2015)." A population of c.620,000 - 700,000 has been estimated in the update RL Assessment meaning that a population of at least 3,100 individuals would be required for the species to qualify as CH under criterion 3 (Areas known to sustain, on a cyclical or otherwise regular basis, ≥ 1 percent of the global population of a migratory or congregatory species). Species considered of stakeholder concern.

Feature	IUCN RL	Justification
Trichechus senegalensis	VU	A single adult West African manatee was observed in the waters between Binari Island and the Banc de Dapiar during baseline surveys (EEM 2014). Many fishermen interviewed confirmed the presence of manatees within the study area (EEM 2014), indicating that the AoA still contains significant populations of this species vulnerable to disturbance. No further studies have been performed by the Project since the ESIA. According to the IUCN RL this species is highly threatened in West Africa and fewer than 10,000 individuals are thought to remain globally (IUCN 2015). It is possible that the area supports globally important concentrations of the species, but further studies are required to validate this. It is possible that a loss of the area would lead to an upgrading of the species to EN or CR but given that only 0.54% of the species range falls within the AoA, this is unlikely. Species considered of stakeholder concern.
Rio Kapatchez KBA / Ramsar site	-	This KBA and Ramsar site (18/11/1992) encompasses coastal plains, mangrove forests, mud and sand flats. These habitats support various different water birds. site includes a large expanse of mudflats as well as mangroves, sand-dunes, freshwater marsh and rice-fields. Mangroves are well-developed along the Kaliki river and, at its mouth, c.3 km east of Pointe Gonzalez, is a sandy islet known as Khôni Benki. The mudflats are used by both *Phoenicopterus minor* (counts of 5,000–10,000) and *P. ruber*. Several waterbird species nest in the mangroves including *Scopus umbretta*, *Ciconia episcopus* and, perhaps, *Mycteria ibis*. In addition, large numbers of wintering waders use the mudflats, including several hundred *Recurvirostra avosetta*. Khôni Benki is an important high-tide roost for waders. The freshwater marshes and rice-fields are used by numerous nesting *Phalacrocorax africanus*, *Anhinga rufa*, *Casmerodius albus*, *Dendrocygna viduata* and, probably, *Ardeola ralloides*. Although there have been no complete counts, available data suggest that the site is regularly used by more than 20,000 waterbirds and it is likely that further counts would reveal that some species exceed 1% thresholds. The dolphin *Sousa teuszii* (CR) has been recorded near Khôni Benki.
Îles Tristao KBA / Ramsar site	-	It consists of an estuarine complex comprising two main islands, Ile Katarak (the largest) and Ile Kapken, and two smaller ones, Niémé Souri and Foré Souri, at the mouth of the River Kogon. Much of the area is covered in mangroves as well as fresh and brackish water marshes, rice-fields and extensive intertidal mudflats (2,300 ha). Secondary forest and wooded savanna occurs on the highest points (5 m) of the islands. To the south-west of Ile Katarak lies a sandy islet known as Pani Bankhi, which is covered with halophytic vegetation. The mudflats surrounding the islands, particularly those adjacent to the village of Katchek on Ile Katarak, hold more than 20,000 wintering waders and it is likely that further counts would reveal that more species exceed 1% thresholds. Among mammals, *Trichechus senegalensis* (VU) is found in the mangroves, and the dolphin *Sousa teuszii* (CR) has been recorded from the channel between Ile Katarak and Pani Bankhi
Île Alcatraz and Île du Naufrage	-	Ile Alcatraz is a lateritic rock islet on the continental shelf of the Atlantic Ocean, Ile de Naufrage is a sandbank 2 km south-west of Ile Alcatraz. Ile Alcatraz is unvegetated and covered with guano to a depth of about 3 m and Ile de Naufrage is also unvegetated and reaches a maximum height of c.3 m above high water. Among mammals, the dolphin Sousa teuszi (CR) and the sirenian Trichechus senegalensis (VU) are reported from the area; sea-turtles also occur. They are a candidate IBA.

Annex 3 – Biodiversity Management Register (BMR)

See standalone Excel spreadsheet

Annex 4 – NNL/NG tracker

See standalone Excel spreadsheet

Annex 5 – Methodological framework to assess losses/gains for priority biodiversity

1) Habitat-based monitoring

Many priority biodiversity features are small-bodied species which are poorly known, both in terms of population size and distribution. Many are also hard to survey in a quantitative manner.

A habitat-based loss/gain monitoring approach is proposed for

- gallery forests,
- freshwater habitats,
- terrestrial mosaic, and
- mangroves.

a. Gallery forests

Gallery forests are considered an appropriate proxy for species that are dependent on gallery forests, in particular small species of reptiles and amphibians known – or believed – to be found within the South Concession but which are challenging to sample. This list of priority species covered by the gallery forest proxy is shown in the table below.

An 'extent x condition' metric (e.g. Quality-Hectare, QH) is suitable for sites of gallery forests to monitor losses/gains and track progress towards targets. CBG will define the metric and indicators to assess condition (i.e. quality) at selected monitoring sites. The methodology could be readjusted at a later stage once CBG has a better understanding of the efficiency of monitoring protocols.

Limited direct impacts are predicted on gallery habitats due to the EBZ action implemented by CBG (see Section 6.1). If the destruction of gallery forest cannot be avoided (e.g. construction of a road crossing a water course), this will be captured in the RIA loss, which will be measured as per the agreed methodology. CBG will monitor any impacts from communities on gallery forests within the South Concession. CBG will define the criteria to determine whether these community-induced losses should be attributed to CBG (i.e. indirect impact) and therefore accounted for in the loss/gain accounting (i.e. in the NNL/NG tracker).

Gains are expected to be achieved through the forest landscape community management programme (FLCMP) onsite offset component and the actions that will be developed to enhance the quality of gallery forests at selected sites. The actions required to achieve these forest habitat gains had yet to be defined in the FLCMP.

Proxy	Priority biodiversity features
Gallery forest	• Amphibians: *Phrynobatrachus pintoi, Arthroleptis formosus, Arthtroleptis sp. Odontobatrachus smithi* • Reptiles: *Cynisca leonine, Cynisca cf oligopholis, Hemidactylus kundaensis, Hemidactylus albivertebralis,* • Plants*: Fleurydora felicis,* • Mammals*: Colobus polykomos, Cercocebus atys, Caracal aurata* Other priority biodiversity features that are associated to gallery forests, but which will be monitored through a different metric: • Mammals: *Pan troglodytes verus, Piliocolobus badius*

b. Freshwater habitats

Freshwater habitats are considered a good proxy for freshwater-dependent species, in particular priority fish species as well as aquatic plants, crocodiles, and crabs. This list of priority species covered by the freshwater habitat proxy is shown in the table below.

A condition metric is considered suitable to monitor the status of freshwater habitats and track progress towards targets. Based on the results of the first freshwater ecosystem monitoring undertaken in 2020-2021 by CEMED and NatureMetrics, CBG will define the metric and indicators to assess condition (i.e. quality) of freshwater habitats at selected monitoring sites, based on parameters that are considered appropriate for the targeted priority species and for the type of impacts expected on these species. The methodology could be readjusted at a later stage once CBG has a better understanding of the efficiency of monitoring protocols.

Limited direct impacts are foreseen on freshwater habitats due to the EBZ action implemented by CBG (see Section 6.1). The main potential impact from mining activities stems from erosion-induced water run-off and increased turbidity/sedimentation on water streams. CBG will monitor changes in condition and populate the NNL/NG tracker accordingly.

No specific actions are currently considered to achieve a gain for freshwater habitats. The FLCMP is expected to enhance condition of gallery forests, and indirectly of freshwater habitats. Additional actions may need to be considered as part of the FLCMP if existing efforts are considered not sufficient to achieve a gain for freshwater habitats.

Proxy	Priority biodiversity features
Freshwater habitats	• Fish: *Malapterurus teugelsi, Archiaphyosemion jeanpoli, Epiplatys njalaensis, Epiplatys hildegardae, Synodontis kogonensis, Epiplatys guineensis* • Crab: *Afrithelphusa monodosa* • Plants: *Inversodicraea abbayesii* • Reptiles: *Osteolaemus cf tetraspis Mecistops cataphractus*

c. Terrestrial mosaic

The mix of Natural and Modified Habitats that compose most of areas within the South Concession is here called "terrestrial mosaic". This mosaic of habitats has a variable level of human degradation (e.g. charcoal production, bush fires, use of timber). Terrestrial mosaics are considered a priority biodiversity feature of stakeholder concern under this BAP, therefore a NNL target is required. CBG has committed to restore mine areas and borrow pits through the Mining and Rehabilitation Plan. The terrestrial mosaic is used as a proxy for a few priority species (see table below).

An 'extent x condition' metric (e.g., QH) is suitable to monitor losses/gains of the terrestrial mosaic. CBG will define the metric and indicators to assess condition (i.e. quality) at the rehabilitated sites, pre- and post-clearance and all through the rehabilitation process. Some assumptions may need to be made for areas already cleared. The methodology could be readjusted at a later stage once CBG has a better understanding of the efficiency of rehabilitation protocols.

No significant impacts are foreseen in the Boullere KBA (see Section 6.1.3). The Kamsar KBA is already highly degraded due to rice farming and is unlikely to be significantly impacted by the Multi-user railway project (see Annex 2). Nonetheless the BMEP will include provisions to monitor changes in these two KBAs as part of the terrestrial mosaic monitoring to track any impacts induced by CBG operations on these two KBAs and aim to follow the mitigation hierarchy principles to deliver a NNL in these areas.

Note: The old BMS estimated direct impacts on terrestrial habitats by calculating the overlap of the mine footprint with available land use mapping. It was estimated that the Expansion Project mine footprint overlapped with 3,200 ha of grassland habitat (1,800 ha of which is bowal), 297 ha of woodland and 244 ha of wooded grassland. It was also estimated that the construction of new mining roads would overlap with 240 ha of mainly grassland habitat (EEM, 2016). This gives an indication of what the direct impacts for the mine area are; however, the quality of these terrestrial habitats had not been assessed.

Proxy	Priority biodiversity features
Terrestrial mosaic	• Habitats : Terrestrial mosaic • Mammals : *Smutsia gigantea, Phataginus tricuspis* • KBA : Kamsar KBA, Boullere KBA Other species that are associated to terrestrial habitats, but which will be monitored through a different metric: • Mammals: *Pan troglodytes verus* • Birds: *Gyps africanus, Necrosyrtes monachus*

d. Mangroves

An 'extent x condition' metric (e.g., QH) is suitable to monitor losses/gains of mangroves. CBG will define the metric and indicators to track progresses in terms of condition (i.e. quality) at the mangrove restoration site (see Section 6.3).

If necessary, some assumptions will be made to determine the condition of mangroves that were lost as part of the Multi-user Railway Project.

The methodology could be readjusted at a later stage once CBG has a better understanding of the efficiency of the mangrove restoration protocols.

2) Species-specific metrics

For the following species, a species-specific metric based on either number of individuals or relative abundance is considered more appropriate than a habitat metric to track loss/gains through time, in relation to both direct, indirect and cumulative impacts:

a. Western Chimpanzees

The Chimpanzee is one of the priority features of highest concern for CBG.

The metric to monitor losses/gains of Chimpanzees will be based on number of individuals. The pre-feasibility study for CBG's Bafing offset implementation estimated that residual impacts on chimpanzees were in the range of 25-70% of the population present in the CBG South Concession. The most likely scenario was considered to be a loss of 59 individuals (50% of the population of 118). This estimate was used for offset planning (TBC, 2015a)[15]. This estimate was based on the following caveat "*This can then be scaled down as and when monitoring confirms that impacts are less than expected or scaled up if impacts turn out to be worse than expected*".

Subsequently, CBG commissioned a chimpanzee and large mammal survey which used several methodologies to assess chimpanzee distribution and population size within the concession area including recce and transect surveys, camera trapping and non-invasive genetic surveys. Chimpanzee densities were found to be higher within two areas of the concession: the Boullere area and the southern part of the South Cogon concession (both areas are identified as set-aside areas by CBG, see Section 6.1.3). The study reports several figures for population estimates from the different methodologies used: nest count analysis provided an estimate of 154

[15] This estimate considered an improved understanding of chimpanzee response to mining noise and confirmation of population stability in close proximity to mining activities. It was stated in the report that further understanding of chimpanzee movement patterns and resource use on the concession would allow the range of loss estimates to be narrowed.

individuals and the genetic survey suggested 54 individuals. 19 individual chimpanzees were identified from the camera trapping. (Sylvatrop Consulting, 2019).

CBG will review these numbers and will re-define a baseline number of individuals (see Section 9.2), including information group sizes and distribution of the population within the South Concession. The status of the population within the South Concession and at the offset site (Bafing) will be monitored as to track losses/gains, through the NNL/NG tracker. As a starting point CBG will consider the preliminary 2015 estimate of 59 individual as an initial offset target for chimpanzees but this estimate will be confirmed during the RIA.

CBG will try to collaborate with near-by mining operators to endeavour a joint loss/gain calculation, given the high mobility of Chimpanzee populations and the overarching cumulative effects of multiple projects in the Boke region on this species.

The Bafing offset is the main action aimed at achieving gains on Chimpanzees. CBG will make sure that the same metric and indicators are used to monitor chimpanzee populations at the Bafing offset site, to allow a full loss/gain comparison across sites in the NNL/NG tracker and track progress towards the NG target for this species.

b. West African Red Colobus

This species is very rare in the region and was not recorded within the South Cogon concession. It does not qualify as CH but is considered a species of stakeholder concern.

The Guilde island, located along the Cogon River 7 km north of the South Cogon concession at the boundary between CBG's North Cogon and COBAD concessions potentially supports a healthy population. Further research is ongoing to confirm this preliminary finding.

If the presence of this population of Red Colobus is confirmed on Guilde island, CBG will estimate the size, status and dynamics of this population through an appropriate methodology. CBG will the monitor the status of the population (i.e. number of individuals) through time to calculate losses/gains. If any direct, indirect or cumulative impacts are foreseen or monitored, CBG will develop specific mitigation/compensation measures to protect the population and/or the whole Guilde island in agreement with relevant stakeholders, including joint mitigation actions with COBAD if considered appropriate.

c. Hippopotamus

The species does not qualify as CH but is considered a species of stakeholder concern.

The species is believed to occur at some locations along the Cogon River. CBG will estimate the number of populations and their size along the Cogon River around the South Concession (e.g. Guilde area) through an appropriate methodology.

If the RIA suggests that any impacts on hippos from CBG operations are confirmed or foreseen, the BMEP will detailed the monitoring protocols to track population changes through time. CBG will develop specific mitigation/compensation measures if any direct/indirect/cumulative impact from the Project are identified on this species.

d. Birds

At least 2 CR species of vultures (*Necrosyrtes monachus* and *Gyps africanus*) are known to occur in the CBG operation area. CBG is currently undertaking population monitoring surveys to estimate the distribution and population sizes of these two species both within the concession and port areas (Dore, 2018). The Sanderling *Calidris alba* located in coastal areas is also a priority biodiversity feature for CBG. Both the vulture species and the Sanderling do not qualify as CH but are considered priority species given their importance for stakeholders.

If the RIA suggests that any impacts on these priority birds from CBG operations are confirmed or foreseen, the BMEP will detailed the monitoring protocols to track population changes through time. If any direct, indirect or cumulative impacts are foreseen or monitored, CBG will develop specific mitigation/compensation measures for the species, in agreement with relevant stakeholders if necessary.

e. Freshwater fish

In addition to the habitat-based freshwater habitat metric, CBG will monitor individual priority freshwater fish species in water courses within the South Concession. CBG will define a monitoring methodology to assess which sites are of particular importance for each of these species and evaluate changes through time. If any direct, indirect or cumulative impacts are foreseen or monitored, CBG will implement specific mitigation/compensation actions as necessary.

In addition to standard freshwater monitoring techniques, CBG plans to use eDNA analysis to assess the relative abundance of priority species through time and track progress towards the NNL/NG targets. A pilot study has been launched later in 2020 and CBG is still waiting for the results. Once these arrive and can be reviewed, CBG will determine if and how eDNA sampling will be included in the BMEP[16].

[16] It should be noted that eDNA can potentially be used for species other than fish that are dependent on freshwater habitats (fully or partially) as part of their lifecycle and for which DNA sequences have the potential to be found in water. For these species it is usually possible to estimate presence/absence only,

f. Marine species and areas

The Rio Nuñez estuary supports two priority mammals (Atlantic Humpback Dolphin, West African Manatee), two priority sea turtles (Hawksbill Turtle and Green Turtle), potentially three other priority fish species (Scalloped Hammerhead, Blackchin Guitarfish, Daisy Stingray) and the Sanderling (*Calidris alba*). There is a risk of cumulative impact on the estuary – and therefore on those species – generated by the overall increasing industrial activities in the port.

CBG's individual footprint is limited (CBG Expansion Project mostly uses existing infrastructure) and hard to quantify. CBG will push so that a residual impact assessment and joint mitigation/compensation actions are developed as part of the REB platform to achieve an overall NG of biodiversity in the estuary area. The metrics, indicators and targets will have to be designed by the REB.

In addition to any specific NG actions to be developed by the REB, CBG plans to undertake marine biodiversity monitoring at selected sampling sites within coastal/marine areas to assess presence/absence of priority marine species through time. This may include the use of eDNA analysis. The monitoring protocols will be defined as part of the BMEP.

and no reliable relative abundance data can be obtained. This is because their presence in water samples is too stochastic and there is currently little evidence on the efficiency of estimating relative abundance through eDNA for species other than fishes. The use of eDNA for species other than fish will be decided as part of the BMEP development as it may be a useful additional indicator of species distribution change; but no NNL/NG would be considered for this type of monitoring, as all priority species are already covered by other metrics in terms of NNL/NG requirements. Nonetheless, a prolongated absence of a species from the records may trigger the need for specific mitigation actions on this species.