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Environmental and Social Impact Assessment of the CBG Mine Expansion Project

Addendum – Phase 1 - 18.5 MTPA

Chapter 1 – Background

MARCH 30, 2018

PROJECT NO.: 15EAO055

PREPARED FOR:

Compagnie des Bauxites de Guinée

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ABBREVIATIONS AND ACRONYMS

(Note: Text in square brackets [] is a translation of a French term for which there is no official English version.)

°C:	Degrees Celsius
AFD	Agence Française de Développement [French development agency]
AIDS:	Acquired immune deficiency syndrome
AIP:	Annual investment plan
AMC:	Alliance Mining Commodities Ltd.
ANAÏM:	Agence Nationale d'Aménagement des Infrastructures Minières [national agency for mining infrastructure development]
APA:	Laboratoire Archéologie et Peuplement de l'Afrique [African archeology and settlement laboratory]
APAÉ:	Association des parents et amis d'élèves [parents and friends of students]
ARV:	Antiretroviral
BAP:	Biodiversity action plan
BEPC:	<i>Brevet d'études du premier cycle du second degré</i> [middle-school leaving certificate]
BGÉE:	Bureau Guinéen d'Études et d'Évaluation Environnementale [Guinean bureau of environmental studies and assessment]
BM:	Banque Mondiale / World Bank (WB)
BPII:	<i>Bonnes pratiques industrielles internationales</i> / Industrial international best practices
C/P:	Frontline fishing camps and ports

- CA:** *Chiffre d'affaires* [revenues]
- CBG:** Compagnie des Bauxites de Guinée
- CCME:** Canadian Council of Ministers of the Environment
- CCNUCC:** *Convention-cadre des Nations Unies sur le changement climatique* / World Bank United Nations Framework Convention on Climate Change (UNFCCC)
- CDD:** *Contrat de durée déterminée* [contract of defined length]
- CDI:** *Contrat de durée indéterminée* [contract of indefinite length]
- CÉCI:** *Centre d'études et de coopération internationale* / Centre for international Studies and Cooperation
- CECIDE:** Centre du Commerce International pour le Développement [international trade center for development]
- CEDEAO:** Communauté économique des États de l'Afrique de l'Ouest / United Nations Economic Commission for Africa (UNECA)
- CFB:** Chemin de Fer de Boké [Boké railroad]
- CITES:** Convention on International Trade in Endangered Species
- CMG:** Chambre des Mines de Guinée [Guinean chamber of mines]
- COBAD:** Compagnie de Bauxite et d'Alumine Dian-Dian [Dian-Dian Bauxite and Alumina Company]
- COD:** Chemical oxygen demand
- COPC:** Contaminant of potential concern
- CoPSAM:** Comité Préfectoral de Suivi des Activités des Miniers [prefectoral mining activity monitoring committee]
- CPC:** *Contaminant potentiellement préoccupant* / contaminant of potential concern (COPC)

CPD:	Comité Préfectoral de Développement [prefectoral development committee]
CPÉ:	<i>Consultation et participation éclairées</i> / informed prior consent (IPC)
CR:	<i>Commune rurale</i> [rural commune]
CRD:	<i>Commune rurale de développement</i> [rural development commune]
CSA:	Centre de santé amélioré [improved health center]
CSO:	Civil society organizations
CSR:	Corporate social responsibility
CU:	<i>Commune urbaine</i> [urban commune]
CVÉ:	<i>Composante valorisée de l'écosystème</i> / valued ecosystem component (VEC)
dB:	Decibel
dB(A):	A-weighted decibel
dBZ:	Decibel relative to Z
DEP	Direction Préfectorale de l'Éducation [prefectoral directorate for education]
DPUHC:	Direction préfectorale de l'urbanisme de l'habitat et de la construction [prefectoral directorate for housing and construction]
DUDH:	<i>Déclaration universelle des droits de l'homme</i> / Universal Declaration of Human Rights (UDHR)
ÉDG:	Électricité de Guinée
EIA:	Environmental impact assessment
ÉIE:	<i>Étude d'impact environnemental</i> / environmental impact assessment
ÉIS:	<i>Étude d'impact social</i> / social impact assessment
EITI:	Extractive Industries Transparency Initiative

EPA:	Environmental Protection Agency (United States)
EPI:	Extended Program on Immunization
EPT:	Ephemeroptera, Plecoptera and Trichoptera (types of aquatic insects)
ESCOMB:	<i>Enquête de surveillance comportementale et biologique sur le VIH/SIDA</i> [HIV/AIDS behavioral and biological surveillance survey]
ESIA:	Environmental and social impact assessment
ESMP:	Environmental and social management plan
ETAE:	<i>Eaux tropicales de l'Atlantique Est</i> [tropical waters of the Eastern Atlantic]
FEL 1:	Front-end loading – preliminary economic assessment
FEL 2:	Front-end loading – prefeasibility study
FEL 3:	Front-end loading – detailed engineering study
FPIC:	Free prior and informed consent
GAC:	Guinea Alumina Corporation
GdG:	<i>Gouvernement de la Guinée</i> / Government of Guinea (GoG)
GDP:	Gross domestic product
GES:	<i>Gaz à effet de serre</i> / greenhouse gas (GHG)
GHG:	Greenhouse gas
GIEC:	Groupe d'experts intergouvernemental sur l'évolution du climat / Intergovernmental Panel on Climate Change (IPCC)
GIS:	Geographic information system
GNF:	Guinean franc
GoG:	Government of Guinea
GPS:	Global positioning system

GRI:	Global Reporting Initiative
GTP:	Ground truth point methodology
Ha:	Hectare
HAP:	<i>Hydrocarbure aromatique polycyclique</i> / polycyclic aromatic hydrocarbon (PAH)
HFO:	Heavy fuel oil
HP:	Horsepower
HSE:	Health, safety and environment
IBA:	Important bird area
ICCPR:	International Covenant on Civil and Political Rights
ICESCR:	International Covenant on Economic, Social and Cultural Rights
ICMM:	International Council on Mining and Metals / Conseil International des Mines et des Métaux
IFC:	International Finance Corporation / <i>Société Financière Internationale</i> (SFI)
IFI:	International finance institutions / <i>institutions financières internationales</i>
ILO:	International Labor Organization
IPCC:	Intergovernmental Panel on Climate Change
ISQG:	CCME Interim Sediment Quality Guideline
IST:	<i>Infections sexuellement transmissibles</i> / sexually transmitted infections (STIs)
ITIE:	Initiative pour la Transparence des Industries Extractives / Extractive Industries Transparency Initiative (EITI)
IUCN:	International Union for Conservation of Nature / Union internationale pour la conservation de la nature (UICN)

km:	Kilometer
km²:	Square kilometer
LA_{eq}:	Equivalent sound level (dBA)
LDIQS:	CCME Interim Sediment Quality Guideline
L_{eq}:	Equivalent sound level (dB)
m:	Meter
m²:	Square meter
m³:	Cubic meter
m³/h:	Cubic meters per hour
MDDEP:	Ministère du Développement durable, de l'Environnement et des Parcs du Québec, now called the Ministère du Développement durable, de l'Environnement et de la Lutte contre les changements climatiques [Quebec ministry of sustainable development, environment and parks, now called the ministry of sustainable development, environment and the fight against climate change]
MDT:	<i>Matières dissoutes totales</i> / total dissolved solids (TDS)
ml:	Milliliter
mm:	Millimeter
MME:	Ministère des Mines et de l'Énergie / Ministry of Mines and Energy
MTPA:	Million tonnes per annum
MW:	Megawatt
N/A:	Not applicable
NEP:	<i>Niveau d'effet probable du CCME</i> / CCME probable effects level (PEL)
NGO:	Nongovernmental organization
NP:	<i>Norme de performance de la SFI</i> / IFC Performance Standard (PS)

NSP:	<i>Ne s'applique pas</i> / not applicable (N/A)
OAU:	Organization of African Unity
OCDE:	Organisation de Coopération et de Développement Économique / Organization for Economic Cooperation and Development (OECD)
OECD:	Organization for Economic Cooperation and Development
OIT:	Organisation internationale du Travail / International Labor Organization (ILO)
OMS:	Organisation mondiale de la Santé / World Health Organization
ONG:	<i>Organisme non-gouvernemental</i> / nongovernmental organization
ONU:	Organisation des Nations-Unies / United Nations
OSC:	<i>Organisations de la société civile</i> / civil society organizations
OUA:	Organisation de l'unité africaine / Organization of African Unity
OWINFS:	Our World Is Not for Sale
PACV:	<i>Programme d'appui aux organisations villageoises</i> [village support program]
PAH	Polycyclic aromatic hydrocarbon
PAI:	<i>Plan annuel d'investissement</i> / annual investment plan
PARC:	<i>Plan d'action de réinstallation et de compensation</i> / resettlement and compensation action plan (RAP)
PCB:	<i>Plan de conservation de la biodiversité</i> / biodiversity action plan (BAP)
PCS:	<i>Partenaires contre le SIDA</i> [AIDS prevention group]
PDL:	<i>Plan de développement local</i> [local development plan]
PEL:	CCME probable effects level
PEPP:	<i>Plan d'engagement des parties prenantes</i> / stakeholder engagement plan (SEP)

- PÉV:** *Programme élargi de vaccination / Expanded Programme on Immunization (EPI)*
- PGES:** *Plan de gestion environnementale et sociale / environmental and social management plan (ESMP)*
- PIB:** *Produit intérieur brut / gross domestic product (GDP)*
- PIDCP:** *Pacte international relatif aux droits civils et politiques / International Covenant on Civil and Political Rights (ICCPR)*
- PIDESC:** *Pacte international relatif aux droits économiques, sociaux et culturels / International Covenant on Economic, Social and Cultural Rights (ICESCR)*
- PK:** Point kilométrique / kilometer point
- PM₁₀:** Particulate matter in air up to 10 micrometers in size
- PM_{2.5}:** Particulate matter in air up to 2.5 micrometers in size
- PMH:** *Pompe à motricité humaine / manually operated pump*
- PNUD:** Programme des Nations-Unies pour le Développement / United Nations Development Program (UNDP)
- PP:** *Parties prenantes / stakeholders*
- PPV:** Peak particle velocity
- PRCB:** Projet de renforcement des capacités de Boké [Boké rural community development project]
- PS:** IFC Performance Standard
- QSE:** Quality, safety and environment
- RAP:** Resettlement and compensation action plan
- RAP:** Rapid assessment program / rapid biological assessment
- RSE:** *Responsabilité sociale des entreprises / corporate social responsibility (CSR)*

RTA:	Rio Tinto Alcan
SAG:	Société Aurifère de Guinée [Guinea gold corporation]
SDT:	<i>Solides dissous totaux</i> / total dissolved solids (TDS)
SEG:	Société des Eaux de Guinée [Guinea water corporation]
SEP:	Stakeholder engagement plan
SFI:	Société Financière Internationale / International Finance Corporation (IFC)
SIA:	Social impact assessment
SIDA:	<i>Syndrome d'immunodéficience acquise</i> / acquired immune deficiency syndrome (AIDS)
SIG:	<i>Système d'information géographique</i> / geographic information system (GIS)
SNAPE:	Service national des points d'eau [national water supply points service]
SO_x:	Sulphur oxides
SP:	<i>Sous-préfecture</i> [subprefecture]
SSC:	Species Survival Commission
SSE:	<i>Santé, sécurité, environnement</i> / health, safety and environment (HSE)
SST:	<i>Solides en suspension totaux</i> / total suspended solids (TSS)
STI:	Sexually transmitted infections
TDR:	<i>Termes de référence</i> / terms of reference (TOR)
TDS:	Total dissolved solids
TOR:	Terms of reference
TPE:	<i>Très petite entreprise</i> / very small business
TPH:	Tonnes per hour

TSP:	Total suspended particulates
TSS:	Total suspended solids
UDHR:	Universal Declaration of Human Rights
UICN:	<u>Union internationale pour la conservation de la nature</u> / International Union for Conservation of Nature (IUCN)
UN:	United Nations
UNDP:	United Nations Development Program
UNECA:	United Nations Economic Commission for Africa
UNESCO:	United Nations Organization for Education, Science and Culture / Organisation des Nations unies pour l'éducation, la science et la culture
UNFCC:	United Nations Framework Convention on Climate Change
UniGE:	Université de Genève / University of Geneva
UTM:	Universal Transverse Mercator
VEC:	Valued ecosystem component
VIH:	<i>Virus de l'immunodéficience humaine</i> / human immunodeficiency virus (HIV)
WB:	World Bank / Banque Mondiale (BM)
WHO:	World Health Organization / Organisation mondiale de la Santé (OMS)
ZÉE:	<i>Zone économique exclusive de la Guinée</i> [Guinea economic exclusive zone]
ZICO:	<i>Zone importante pour la conservation des oiseaux</i> / important bird area (IBA)

CHAPTER 1 - BACKGROUND

1.1 Introduction

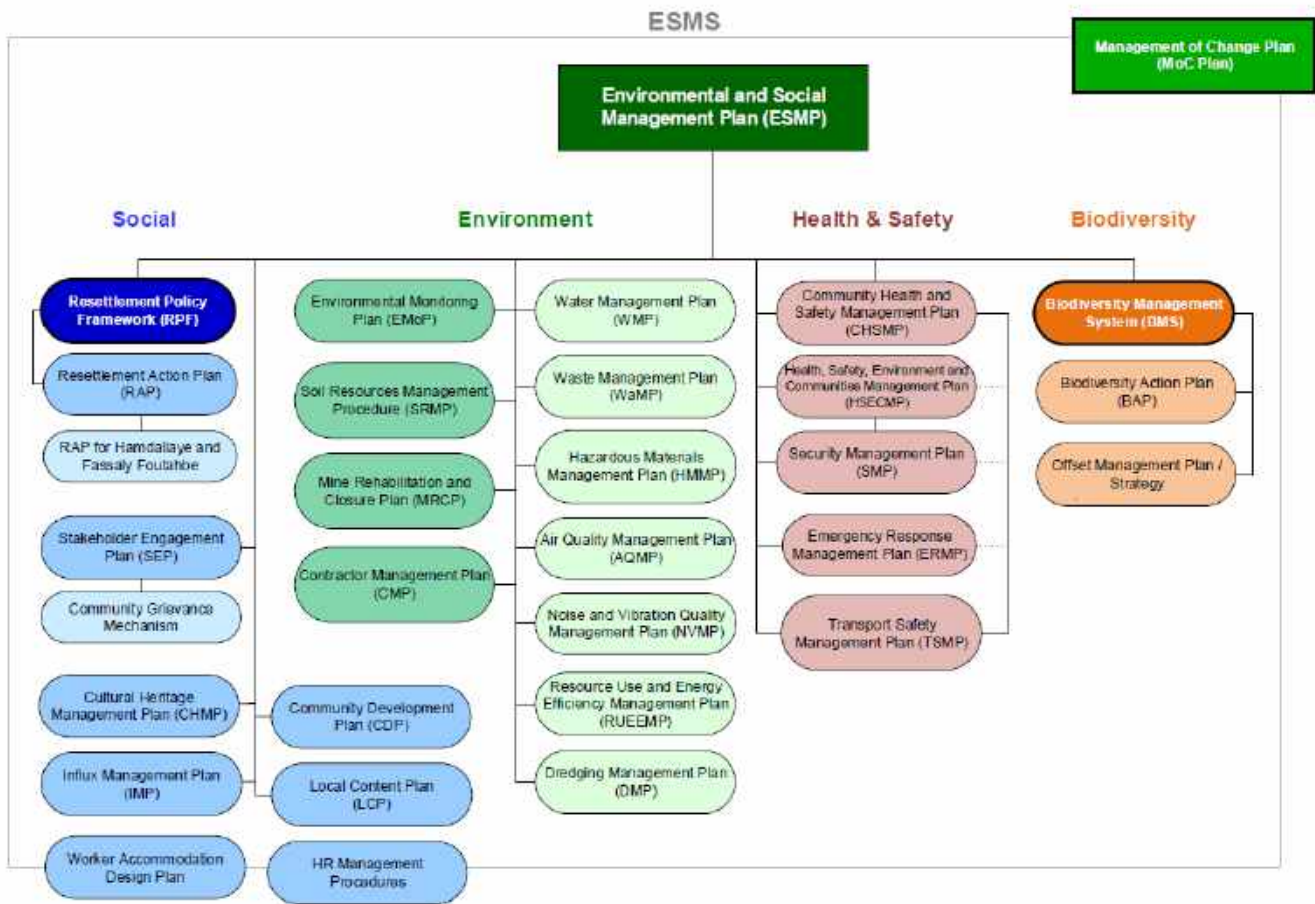
This study is an Addendum to the Environmental and Social Impact Assessment (ESIA) completed and submitted in 2014 for the CBG Expansion Project (hereinafter the 'Project'), which included the assessment of the 18.5 million tons per annum (MTPA) production scenario as well as additional production scenarios (Phase 2 - 22.5 MTPA and Phase 3 - 27.5 MTPA).

The Addendum for the 18.5 MTPA scenario is required for the following reasons:

- The current 18.5 MTPA scenario involves the installation of equipment at the processing plant in Kamsar that was not previously assessed in 2014 (including in the 22.5 or 27.5 MTPA scenarios);
- There have been significant modifications to the location, duration and intensity of mining activities across CBG's mining concession as well as further refinement to the siting and use of related infrastructure including sorting yards and mining haul roads (not available for 2014 ESIA); and
- An ESIA for the COBAD haul road and rail yard on CBG's concession has been completed and cumulative impacts must be taken into account particularly in relation to public health impacts (air quality, noise and vibrations).

The study identifies the Project's potential incremental impacts on the environment (physical and biological) and the communities in the Study Area. As such, this report will not include an exhaustive overview of all impacts covered in the original ESIA. It will instead focus on identifying material changes to the scope and degree of impacts identified in the 2014 ESIA as well as any additional impacts. Given all mitigation measures addressing new or modified impacts have been integrated within the overall CBG Environmental and Social Management System (ESMS) plans and procedures developed for Expansion Project activities and overall CBG operations as presented in Figure 1 below, no revised Environmental and Social Management Plan (ESMP) has been issued for this Addendum study.

Figure 1 - CBG Environmental and Social Management System



1.1.1 Report Structure

This Addendum report covers the following updates and changes:

Chapter 1 - Background: provides a description of the material changes to the Project since it was initially assessed in 2014. Other previous sections of the 2014 ESIA’s Chapter 1 remain unchanged (legal/regulatory framework, scope of study, alternatives, etc.)

Chapter 2 - Physical Environment Study: presents the 2018 IEC Air Quality Impact Assessment and the 2018 Noise and Vibration Impact Assessment for the 18.5 MTPA scenario based on the latest 2017 JORC mine plan and other additional/new Project information.

Chapter 3 - Biological Baseline Study: provides updates the 2014 ESIA baseline chapter and takes into account surveys conducted from 2015 to 2018.

Chapter 4 - Biological Impact Assessment: focuses on identifying material changes (improvements or deteriorations) to impacts identified in the 2014 ESIA as well as any additional impacts.

Chapter 5 - Socioeconomic Baseline Study: provides an updated version of the 2014 ESIA baseline chapter that takes into account surveys conducted in the new Southeast Study Area in March 2017.

Chapter 6 - Stakeholder Consultation: provides an updated version of the ESIA 2014 chapter that takes into account consultations conducted in the new South-East Study Area in March 2017.

Chapter 7 - Social Impact Assessment: focuses on identifying material changes to impacts identified in the 2014 ESIA as well as any additional impacts. The focus has been on public health and safety impacts, as well as land take and displacement.

The following chapters have not been reissued as part of this Addendum study:

- **Chapter 8 - Potential Impacts on Human Rights**
- **Chapter 9 - Cumulative Impact Assessment**
- **Chapter 10 - Environmental and Social Management Plan (ESMP)**

1.2 CBG Expansion Project

1.2.1 Changes to the Project

Since the 2014 ESIA was prepared, the engineering design for the Kamsar plant has progressed from a pre-feasibility study (FEL2) to a feasibility study (FEL3) (Fluor 2014, 2015). The FEL3 study includes details on the proposed changes to the existing infrastructure in Kamsar, updated layout drawings and updated equipment operating specifications. In addition, a series of full and partial mine plan revisions and updates have been prepared (June 2016, March 2017, June/July 2017 and September 2017) for operations in the concession area. These plans include more relevant and detailed information than what was available during the preparation of

the 2014 ESIA (in regards to mobile mining equipment, proposed haul road layouts, bauxite deposit locations and extraction staging, proposed future stockpile and rail loading).

Since the 2014 ESIA, CBG has also come to an agreement with the *Compagnie des bauxites et d'alumine Dian* (COBAD) that allows the use of land on the CBG mining concession to build and operate a portion of their haul road and a stockpile and rail loading facility. In 2013, COBAD proposed a mining haul route option crossing through the centre of the CBG-Halco concession, which CBG deemed to be incompatible with its own mining operations. The solution ultimately accepted by CBG and COBAD in 2014 was a north-south route along the western limits of the CBG concession, which COBAD partially built at the end of 2015 and beginning of 2016. The alignment of the road has since been modified with the intention of avoiding the Boulléré Key Biodiversity Area and sensitive land uses in the area. As a condition for financing for the Expansion Project, CBG is currently subject to compliance with applicable International Finance Corporation (IFC) Performance Standards and other Lender requirements for all activities within the CBG concession. As such, the COBAD Project is subject to CBG Lender requirements. In 2016 and 2017, EEM produced an ESIA covering the COBAD road and stock yard project. Consideration of cumulative impacts from COBAD operations within the CBG concession is particularly significant from an air quality impact perspective since certain villages within the CBG concession will also be affected by nearby COBAD activities. As such, the results of the updated COBAD air quality impact assessment have been incorporated into this study to ensure that potential cumulative impacts are comprehensively assessed for these locations.

Further, since the completion of the 2014 ESIA, CBG and two other regional mining companies (GAC - Guinea Alumina Project, and COBAD) have been completing a separate ESIA for the expansion of the Boké railway. Through a Multi-Rail User Agreement, this project will allow the railway to accommodate the additional shipments of bauxite expected from CBG's expansion in Sangarédi and the initiation of production at the two other mines. The recent ESIA results for the Multi-User Railway have not been fully considered in this Addendum.

As described in the sections below, this ESIA Addendum study focuses on the South Cogon area and the Kamsar Plant Area, which correspond to Zone 1 and Zone 2 respectively as described in the 2014 ESIA.

The description of CBG Rail line (Zone 3) activities and specifications provided in the 2014 ESIA remain unchanged within the scope of the Project. Impacts from increased train traffic on the rail corridor and the installation of new rail sidings at PK 14 and Pk 118, as well as the lengthening of the Tanéné (PK 72.7) and Boké (PK 54.7) sidings have already been fully assessed.

1.2.1.1 South Cogon Area

Previously, it was understood that the Project's mining activities in the Sangarédi area (i.e., the South Cogon area) would progress sequentially through the mining plan and that bauxite extraction areas would be decommissioned and rehabilitated in each subsequent year. As a result, the 2014 ESIA's assessment of air quality impacts considered only one representative year of mine operations (2017) at the 18.5 MTPA extraction rate. For example, it was assumed that extraction areas accessed in 2017 would be fully mined-out in that year and that decommissioning and final rehabilitation of those areas would begin immediately in 2018.

The most recent version of the 18.5 MTPA mine plan, presented in Map 1-1, differs from the previous plans considered in the 2014 ESIA in several key aspects:

- CBG's mining activities in the Sangarédi area are now expected to last until 2035 and will consist of three time periods with differing annual extraction rates:
 - 2017: existing mining operations at the annual target extraction rate of 15 MTPA;
 - 2018-2020: Phase 1 of expanded mining operations at an annual rate of 18.5 MTPA; and
 - 2021-2035: Phase 2 of expanded mining operations at 23.5 MTPA.
- Compared with the previous plans, the new plans change the amount of bauxite expected to be extracted per year and extend the duration of mining activities in the South Cogon area (previously expected to end in 2027).
- In terms of the overall footprint of mining activities planned under the new 18.5 MTPA mine plan, several changes have been noted including new extraction zone in the South-East section of the South Cogon area (Plateau 29 - Yaladane and Plateau 30 - Limbiko). This area was not yet identified for extraction activities under the 18.5 MPTA scenario when the 2014 ESIA was

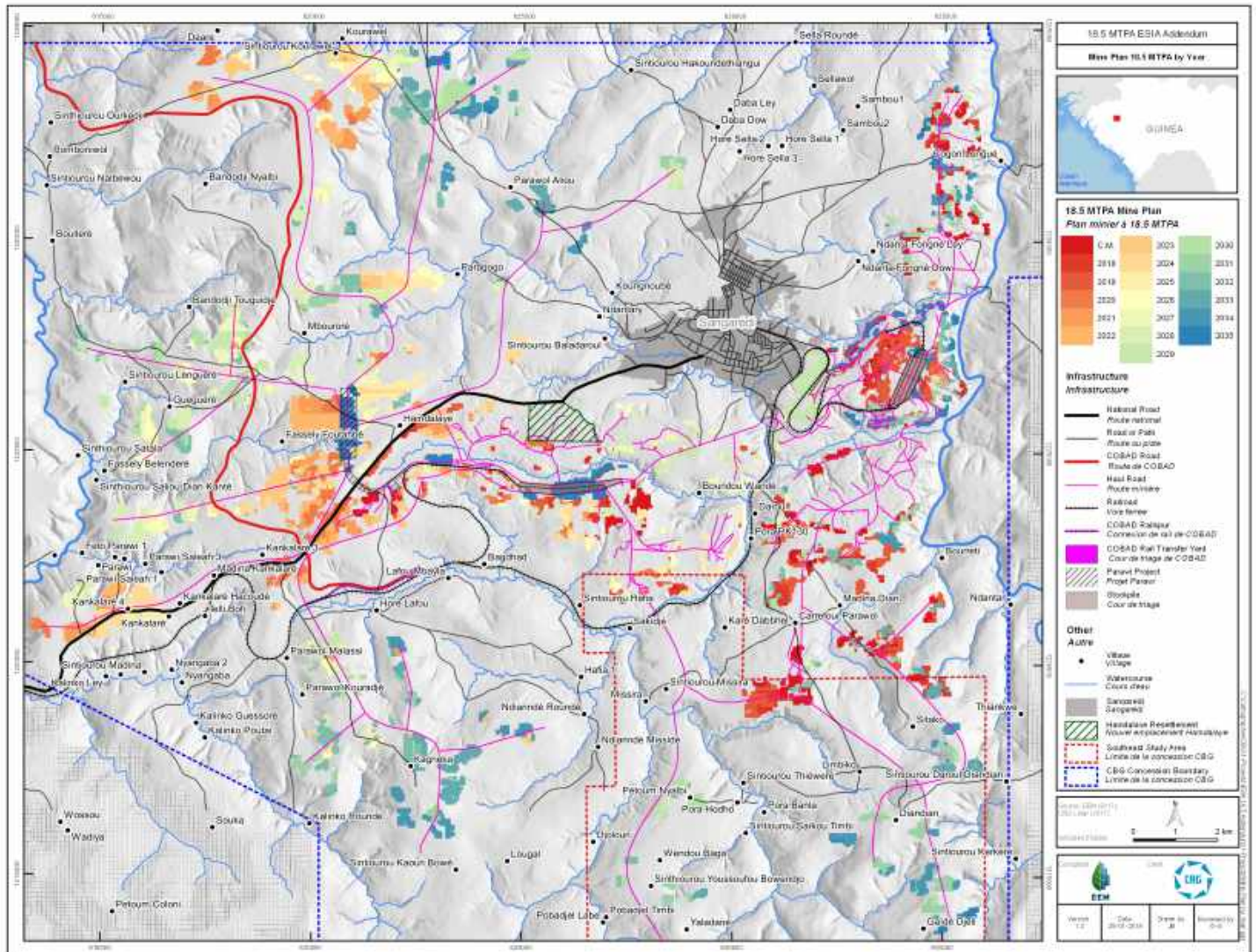
completed. The change in overall footprint for the 18.5 MTPA scenario as assessed in 2014 compared to the 2017 JORC mine plan produced and shared with EEM in September 2017 is illustrated in Map 1-2.

- 18.5 MTPA mining activities will not progress sequentially, as previously described. Instead, ore deposits accessed in one year will be revisited in future years, as the mine operators seek to blend bauxite ore of differing qualities sourced from various deposits.
- Several inactive mine areas (which were previously understood to be decommissioned) were identified as active. These areas are near residential settlements within the town of Sangarédi itself, which will bring CBG's mining activities into close proximity with a large number of potential sensitive human receptors.
- A more detailed list of mining equipment was provided to EEM, which expanded the type and number of pieces of equipment inputted into impact modelling and assessment.
- To facilitate increased production and the need to access mining areas throughout the concession, CBG is also planning to maintain three active ore stockpiles and train loading areas: N'Dangara, Sangarédi and Hamdallaye. Previously, it was understood that the N'Dangara and Sangarédi would be decommissioned as mining activities progressed out of these areas.
- CBG has significantly refined and revised the planned haul road network that will connect the new mining areas to the stockpiles. The coarse road network that was available for the 2014 ESIA has been replaced by the new haul road network, which brings haul trucks and loading areas much closer to some villages while keeping the trucks and activities further away from others (see Haul Roads Constraints Mapping Exercise section below).
- The construction of the COBAD road will bring additional haul truck traffic and train loading activities into the Sangarédi area. Although not directly tied to the Project and CBG's mine operations, these additional sources will also contribute to predicted air quality impacts at village receptors within the South Cogon area.

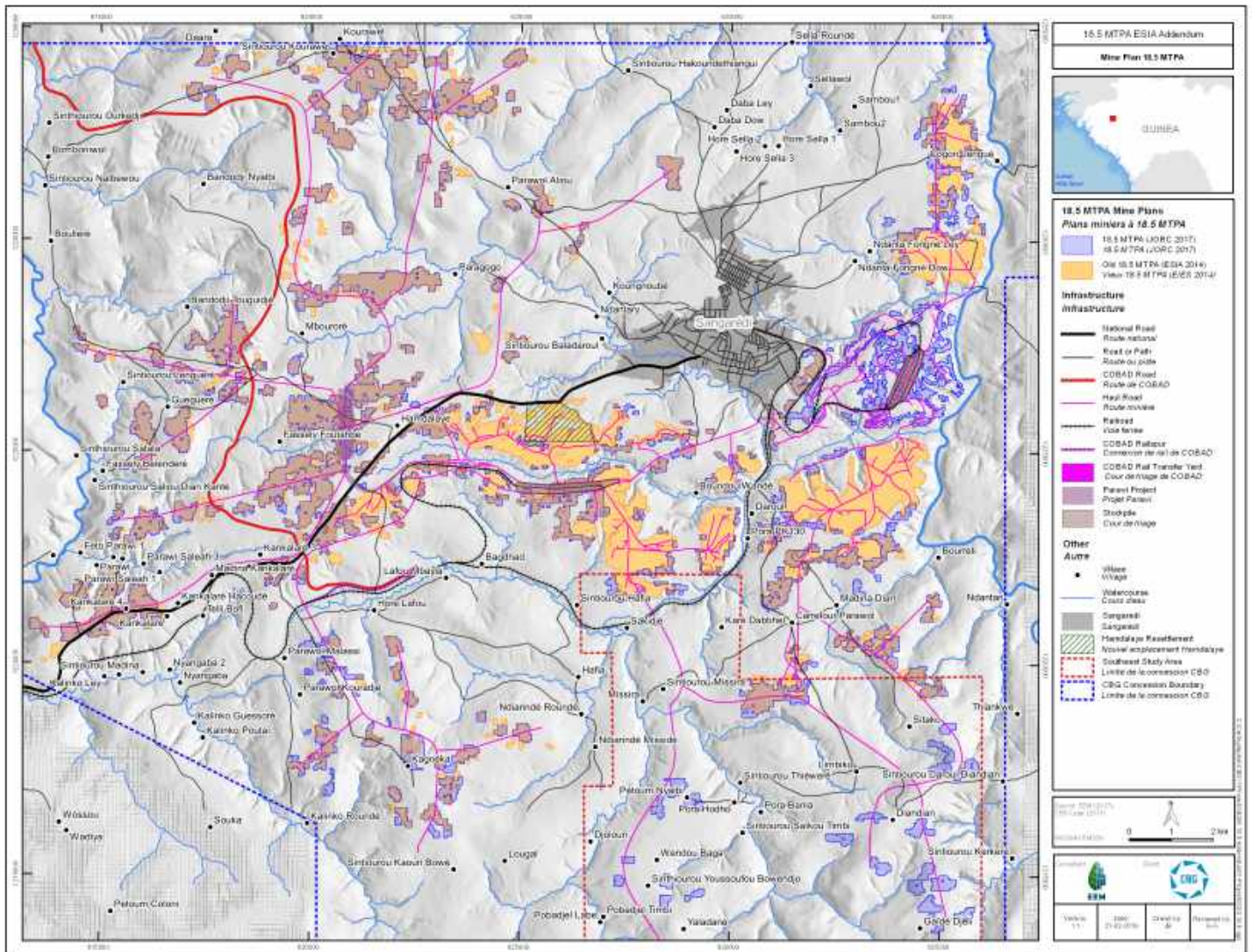
In addition to the changes to CBG's operational plans, several other refinements were incorporated:

- New high-resolution satellite imagery of the Sangarédi area (collected in July 2017 for CBG) was obtained by ÉEM, which enabled a more detailed review of land use changes in the South Cogon area.
- Based on a review of this satellite imagery and the mine plan changes noted above, ÉEM was able to generate a more detailed list of potential receptor locations. This list included refinements to locations of several receptors previously identified in the 2014 ESIA, as well as the addition of new receptor locations associated with newly identified villages/hamlets/settlements, urban sprawl around Sangarédi and specific ecological receptors, for a total of over 300 receptor plots. Several of the smaller human settlements identified in the satellite imagery will require ground-truthing to verify the presence of villagers and the nature of their activities in the area.

Map 1-1 18.5 MTPA Mine Plan for the South Cogon Area



Map 1-2 2014 18.5 MTPA versus 2017 18.5 MTPA Mine Plan Footprint



1.2.1.2 Kamsar Plant

The plans for the Kamsar plant outlined in FEL3 (Fluor, 2015) are broadly consistent with the previous plans outlined in FEL2 (Fluor, 2014). However, there are some minor refinements to locations of several production activities. For example, the configuration of transfer towers near the secondary crushers has been refined and CBG will accelerate its planned expansion of the Kamsar central utilities plant (known as “Centrale Kamsar”). As part of the Project’s 18.5 MTPA expansion of the Kamsar plant, CBG is planning to complete the following upgrades:

- Fully decommission eight (8) of the existing electric generators (combined 20 MW of generating capacity) located in the existing “Centrale Diesel” powerhouse;
- Decommission the two (2) existing boilers (combined 0.7 MW of heating capacity) and remove the old boiler hanger;
- Add another six (6) higher efficiency electric generators (combined 44 MW of generating capacity) in a newly constructed powerhouse located between the existing “Centrale Diesel” and “Nouvelle Centrale” powerhouses; and
- Add two (2) new higher efficiency boilers (combined 8 MW of heating capacity) in a newly constructed boiler hanger.

In addition, CBG has committed to switching the fuel used in the new bauxite dryer (dryer #4) from Bunker “C” fuel oil (3% sulphur content) to marine fuel oil (0.1% sulphur content) in an effort to reduce emissions of sulphur dioxide (SO₂) from the new bauxite dryer. However, the three (3) other bauxite dryers and the boilers and generators at Centrale Kamsar are expected to continue to use Bunker “C” fuel oil.

1.2.2 Haul Roads Constraints Mapping Exercise

Haul roads were not available for consideration in the 2014 ESIA.

In June 2017, CBG provided ÉEM with an initial haul road network. A mapping analysis for environmental and social constraints was then conducted by ÉEM to minimize encroachment and other social and environmental impacts on high-risk areas. The mapping constraints exercise took into consideration the following basic constraints:

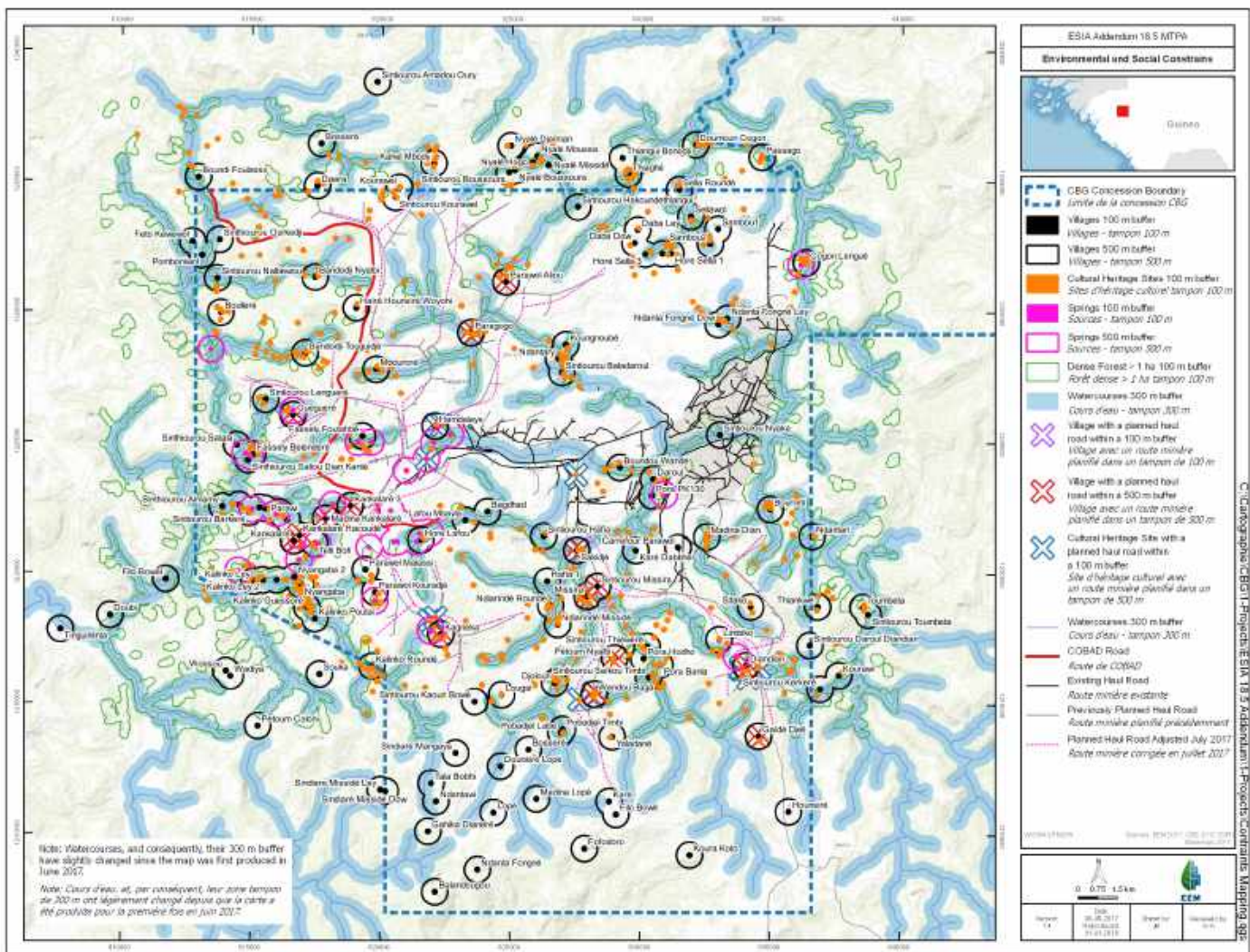
- 100 m buffer from gallery forests;
- 300 m buffer from water courses;
- 100 m and 500 m buffers from built areas;
- 100 m buffer from cultural heritage areas; and
- 100 m and 500 m buffer from springs.

Map 1-3 and Map 1-4 below present the results of the haul road optimization process. Ultimately, the haul road network for the 18.5 mine plan was revised in order to avoid any intersections with the 100 m buffers around critical elements listed above as well as a 300 m initial buffer around water courses.

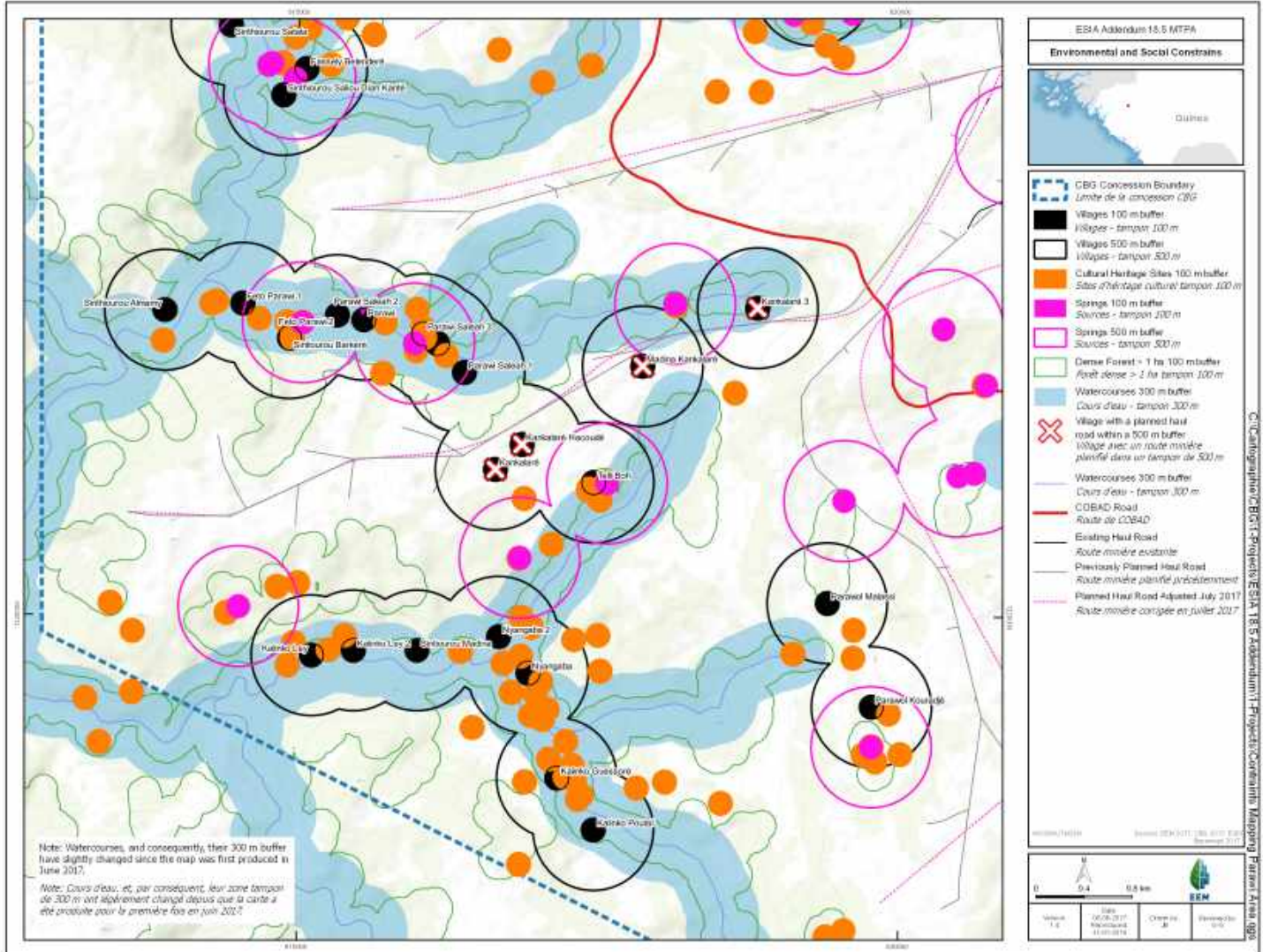
In January 2018, a constraints mapping methodology and HTML tool was developed for CBG in order to better integrate social and environmental constraints in mine planning and operations. No-go zones were re-evaluated and areas that triggered further analysis were also further defined. The HTML GIS mapping tool is made up of multiple layers which can be viewed together or separately, enabling the CBG teams to better understand decision making factors, and allowing the teams to update the map as new data becomes available.

See Appendix A for the full methodology.

Map 1-3 - Environmental and Social Constraints



Map 1-4 - Environmental and Social Constraints Zoom



1.3 Overview of Cumulative Impacts

A new cumulative impacts chapter has not been reissued as part of this Addendum. As mentioned previously, results from the 2017 ESIA for the COBAD Road Project (commissioned by CBG) have been considered throughout this Addendum study.

Because of the lack of data about nearby projects, cumulative impacts can only be stated in fairly general terms. A central conclusion can nevertheless be put forth: namely that, at a practical level, the management of the effects of numerous mining operations in the region must devolve to the local and national governments.

The government of Guinea with financing from the World Bank has launched the initiative known as PAGSEM¹: *Projet d'appui à la gouvernance dans le secteur minier* (Project to Support Governance in the Mining Sector). This project aims to develop capacity in order to improve institutions involved in the management of the mining sector in the Republic of Guinea and focuses 4 key objectives:

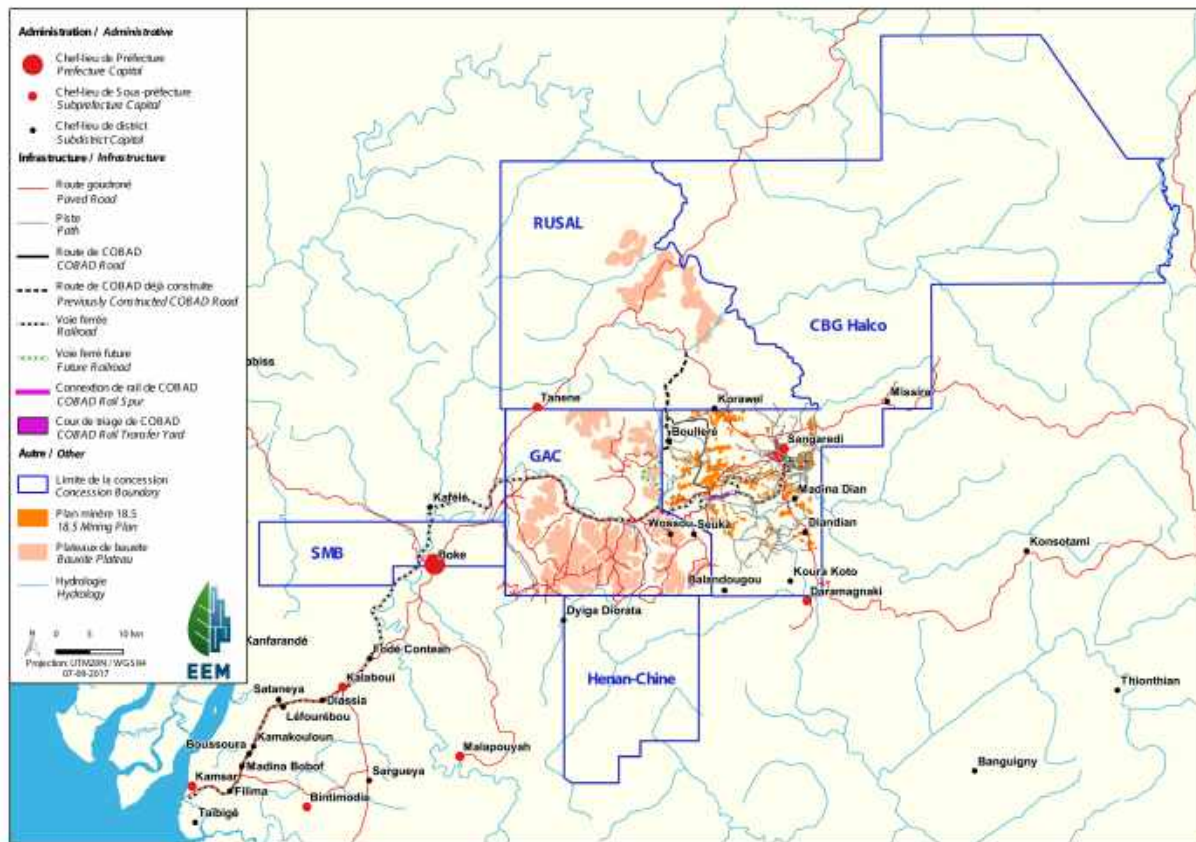
- 1) Reforming the regulatory regime governing mining and reinforcing the institutions charged with managing the mining sector.
- 2) Facilitating access to mineral resources in order to allowing the development of at least one new major mining project.
- 3) Developing a strategic framework for regional development in mining zones.
- 4) Ensuring sound governance of the mining sector.

As part of this initiative, PAGSEM has launched a Terms of Reference for a Strategic Impact Assessment of the mining sector in the Boké region (encompassing the CBG project area). While a timeline for the initiation and completion of this study is not available at time of writing, this initiative will have a significant impact on the overall management of the mining sector and its environmental and social impacts in the Boké region.

Map 1-5 below present an overall picture of mining projects in the region that will exert cumulative impacts in the context of CBG project operations.

¹ <http://www.pagsem.org/index.php/en/>

Map 1-5 – Regional Projects



1.4 List of References

ÉEM, 2014. Environmental and Social Impact Assessment for CBG Expansion Project, December 2014.

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