Dam SEIA update
Non-Technical Summary

Guinea Alumina Corporation S.A. (GAC)

July 2016

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Guinea Alumina Corporation (GAC)

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Signed by: Camille Maclet

Position: Partner
On behalf of ERM France SAS

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NON-TECHNICAL SUMMARY

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1 FOREWORD

This document presents the Non-Technical Summary (NTS) of the updated social and environmental impact assessment (SEIA) study report for a proposed dam, to be built and operated in the GAC mining concession in Guinea by Emirates Global Aluminium (EGA) / Guinea Alumina Corporation (GAC). This dam project was already covered by SEIA studies in 2004-2006 as part of GAC's initial development of the concession. The updated SEIA brings up to date the dam's proposed configuration (which has been significantly downsized since the original project), and provides an overview of the SEIA findings, focusing on the key social and environmental issues arising from construction, operation and closure of the Dam Project, as well as the approach that GAC proposes to adopt in order to manage these issues, and where possible enhance the Project's positive impacts.

This NTS is structured as follows:

- Section 2 is an introduction on GAC's commitment to health, safety and the environment.
- Section 3 introduces GAC, the proponent of the Project. It also includes a summary of the Guinean regulatory framework and international standards that were considered in developing the SEIA update.
- Section 4 describes the Project and key alternatives considered.
- Section 5 describes how the Project will translate in terms of employment for workers in Guinea and beyond.
- Section 6 outlines the stakeholder engagement program followed by the SEIA.
- Section 7 provides a summary of the evaluation of environmental and social impacts and benefits of the Project, and summarizes the measures that GAC proposes to implement to address them.
- Section 8 explains how the SEMP of the dam Project fits into the SEMP of the wider GAC bauxite export project.

As stated in EGA/ GAC's Code of Business Conduct, "*A key Charter value is our overriding commitment to health and safety and our aspiration for Zero Harm to our people, the environment and the communities in which we operate*".

In application of this commitment, EGA has adopted a Health, Safety and Environment (HSE) policy that states:

"We at EGA are committed to Health, Safety and Environment of our stakeholders and society at large wherein we carry out our business, also committed to continuous improvement and sustainable development".

The GAC Dam Project is being developed by EGA/ GAC in line with these HSSEC commitments. This implies EGA and GAC's continuous attention to proactive and sound management of health, safety and environmental risks and impacts.

3 INTRODUCING GAC, THE PROJECT, AND THE SEIA UPDATE

3.1 GAC

Guinea Alumina Corporation (GAC) is a Guinean registered company owned by Emirates Global Aluminium (EGA), a joint venture of Mubadala, an investment and development company established by the Government of Abu Dhabi, and the Investment Corporation of Dubai (ICD) established by the Government of Dubai. EGA acquired full ownership of GAC in June 2013.

Under previous ownership, in 2004, GAC signed a concession agreement with the Government of the Republic of Guinea to develop a bauxite mining and refining project in the sub-prefecture of Sangarédi, prefecture of Boké, in the north-west of Guinea. The agreement also includes a port concession in the coastal city of Kamsar, to allow for the shipping of product to the international market.

GAC's original project was subject to initial SEIA studies, carried out by GAC in 2004, 2005 and 2006, and subsequently submitted to and approved by the Guinean ministry in charge of environmental affairs. The results of these SEIA studies were compiled in an integrated social and environmental impact assessment (SEIA) in 2008. The original study contemplated mining and refining operations in the northern part of the concession. The original integrated SEIA was disclosed to the International Finance Corporation (IFC) as part of financing discussions.

EGA then proceeded to restructure the project through the implementation of a phased development plan, targeting the export of bauxite for the end of 2017 (with the construction of an alumina refinery being postponed to a subsequent phase of the development). The resource identified is of export grade, and is located within the southern part of the mining concession area.

The Project is expected to generate some significant benefits for Guinea. In summary, the Project will increase the Guinea visibility on the international market and will generate an estimated incremental USD500 million per annum of GDP contribution and USD250-300 million to the Guinean trade balance. In addition, GAC Project will contribute to local and national employment, creating direct and indirect jobs.

Dedicated social and environmental impact assessment studies were undertaken in 2014-2015 to update the original Project SEIA, taking into considerations the new characteristics of the bauxite export project. A SEIA Addendum report was submitted to and approved by the Guinean ministry in charge of environmental affairs in February 2016.

These new studies demonstrated that for this first phase of the global GAC Project, a dam and water reservoir were needed to provide sufficient flexibility of supply to meet the water demand of the Project.

3.2 CONFIGURATION OF THE BAUXITE EXPORT PROJECT

The Bauxite Export Project is described in detail in the 2015 SEIA Addendum report. In summary, GAC's bauxite export project will include:

- Greenfield bauxite mining activities in the southern part of the GAC concession, with capacity to produce up to 17 million tons per annum (Mtpa) of high grade bauxite.
- The development of two rail sidings connected to the existing Sangarédi to Kamsar rail line, at the mine and port locations to load and unload the ore.
- A bauxite ore crushing plant, stockyards and rail loading facility, to be located adjacent to the bauxite mine, within the concession area.
- The development of bauxite storage and export facilities at the GAC port concession in Kamsar.

3.3 CONFIGURATION OF THE PROPOSED DAM PROJECT (SUBJECT OF THIS NTS)

The proposed dam and reservoir were initially studied by GAC and authorized by the Guinean Ministries in 2006.

The location of the proposed dam infrastructure has not changed, that is within the watershed of the Tiouladiwol River. The foreseen size of the associated water reservoir (water height and footprint of the reservoir) has been significantly downsized compared to the previous study.

New proposed associated infrastructure (water pipeline, access road for maintenance) will allow conveying water to the mine plant located close to the national road.

3.4 THE DAM SEIA UPDATE

The dam SEIA update study aims to complement the previous SEIA studies with focus on the proposed dam area, taking into account the new dam characteristics, and providing an updated analysis of current environmental and social baseline conditions within the Project footprint and area of influence.

The dam SEIA update was undertaken by GAC with support from Environmental Resources Management SAS ("ERM") in collaboration with INSUCO and Guinée Ecologie.

3.5 THE GUINEAN REGULATORY FRAMEWORK

A detailed description of the institutional and regulatory framework applicable to GAC's overall project in Guinea can be found in the Social and Environmental Impact Assessment (SEIA) Addendum report, produced by ERM on behalf of GAC, for GAC's bauxite export project in 2015. In this dam SEIA, only the main information on the legal framework applicable to the dam project are reported.

Regulations on environmental impact assessments (EIA) in Guinea are defined by *ordonnance N°045/PRG/87 du 28 Mai 1987, modifiée par l'ordonnance N°022/PRG/89 du 10 Mars 1989, portant Code de la protection et de la mise en valeur de l'environnement (Order N°045/PRG/87 of 28 May 1987 modified by Order N°022/PRG/89 of 10 March 1989 defining the code for protection and valorisation of the environment)*. In addition, the *décret présidentiel 199/PRG/SGG/89 du 8 novembre 1989 codifiant les études d'impact sur l'environnement* (*Presidential decree 199/PRG/SGG/89 of 8 November 1989 defining the rules for environmental impact assessments*) defines projects subject to an EIA and its approval by the ministry in charge of environment. Lastly, *arrêté ministériel 990/ MME/SGG/90, du 31 mars 1990, définissant le contenu, la méthodologie et la procédure de l'étude d'impact sur l'environnement (Ministerial act 990/MME/SGG/90 of 31 March 1990 defining the content, methodology and process for environmental impact assessments)*, establishes the content, methodology, and procedures to be complied with when carrying out an environmental impact assessment.

The General Guide for Impact Studies, published in February 2013 has clarified the approval process of the SEIA. The entire submission and permitting procedure is managed by the *Bureau Guinéen des Etudes et Evaluations Environnementales* (BGEEE – the Guinean environmental directorate). Formal review of the permitting documentation is undertaken by the *Comité Technique d'Approbation Environnementale* (CTAE), an ad-hoc multi-disciplinary team composed of representatives of various ministries relevant to the Project. The final environmental compliance certificate is issued by the Ministry in charge of environment. Final approval is under the responsibility of the ministry in charge of the Project – in the case of GAC, the ministry of mines. The Guidelines for Environmental and Social Impact Assessment for Mining Operations of February 2013 (*Directive de réalisation des études d'impact environnemental et social des opérations minières*) set out specific rules with regards to the procedure and the content of and environmental and social impact assessment for mining projects.

In the absence of Guinean and IFC sector-specific guidelines on dams, applicable good international industry practice include the safety guidelines issued by organizations such as the International Commission on Large Dams

(ICOLD), United States' Interagency Committee on Dam Safety (ICODS), the World Commission on Dams (WCD) framework on dams and development (WCD, 2010), the Overseas Private Investment Corporation (OPIC) environmental guidance on renewable energy and hydro projects (OPIC, 2012), and the Canadian Dam Association (CDA), which provide a set of assessment principles applicable to dams. In particular, CDA's Dam Safety Guidelines published in 2007 will be used as reference document for this report.

3.6 GAC'S APPROACH TO SOCIAL AND ENVIRONMENTAL RESPONSIBILITY

GAC has developed key operating principles that include protecting the health & safety of its employees, contributing to sustainable development and conducting business with integrity. GAC aims to work closely with host countries and communities, respecting their laws and customs and ensuring a fair share of benefits and opportunities. This defines the way GAC manages the economic, social and environmental challenges of its operations and are important to fulfilling the company's commitment to contribute to sustainable development.

The key HSSEC policies developed by GAC will be applicable to the Project. Key GAC policies that will be enforced throughout the Project lifecycle include:

- GAC Code of Business Conduct;
- GAC Environmental Policy;
- GAC Community Policy;
- GAC Health & Safety Policy;
- GAC Drug & Alcohol Policy; and
- GAC Procurement Policy.

3.7 INTERNATIONAL LENDERS REQUIREMENTS

GAC is expecting that the Project will be financed with the participation of different international financial institutions (IFIs). It is expected that such IFIs will require the Project to comply with applicable international environmental and social sustainability standards.

The most widely accepted international standards are the International Finance Corporation's Environmental and Social Performance Standards (2012) or IFC PS and African Development Banks Integrated Safeguards System (Dec. 2013).

The IFC's Sustainability Framework (updated 1 January 2012) and AfDB Integrated Safeguards System (Dec. 2013) are widely considered as the most complete sets of standards for environmental and social management. The Project will therefore seek compliance with the IFC and AfDB's standards.

The Performance Standards (PS) relevant to the Project are:

- PS1: Social and Environmental Assessment and Management Systems.
- PS2: Labor and Working Conditions.
- PS3: Resource Efficiency and Pollution Prevention.
- PS4: Community Health, Safety and Security.
- PS5: Land Acquisition and Involuntary Resettlement.
- PS6: Biodiversity Conservation and Sustainable Management of Living Natural Resources.
- PS8: Cultural Heritage.

The Operational Safeguards (OS) relevant for the Project are:

- OS 1: Environmental and social assessment;
- OS 2: Involuntary resettlement land acquisition, population displacement and compensation;
- OS 3: Biodiversity and ecosystem services;
- OS 4: Pollution prevention and control, hazardous materials and resource efficiency; and
- OS 5: Labor conditions, health and safety.

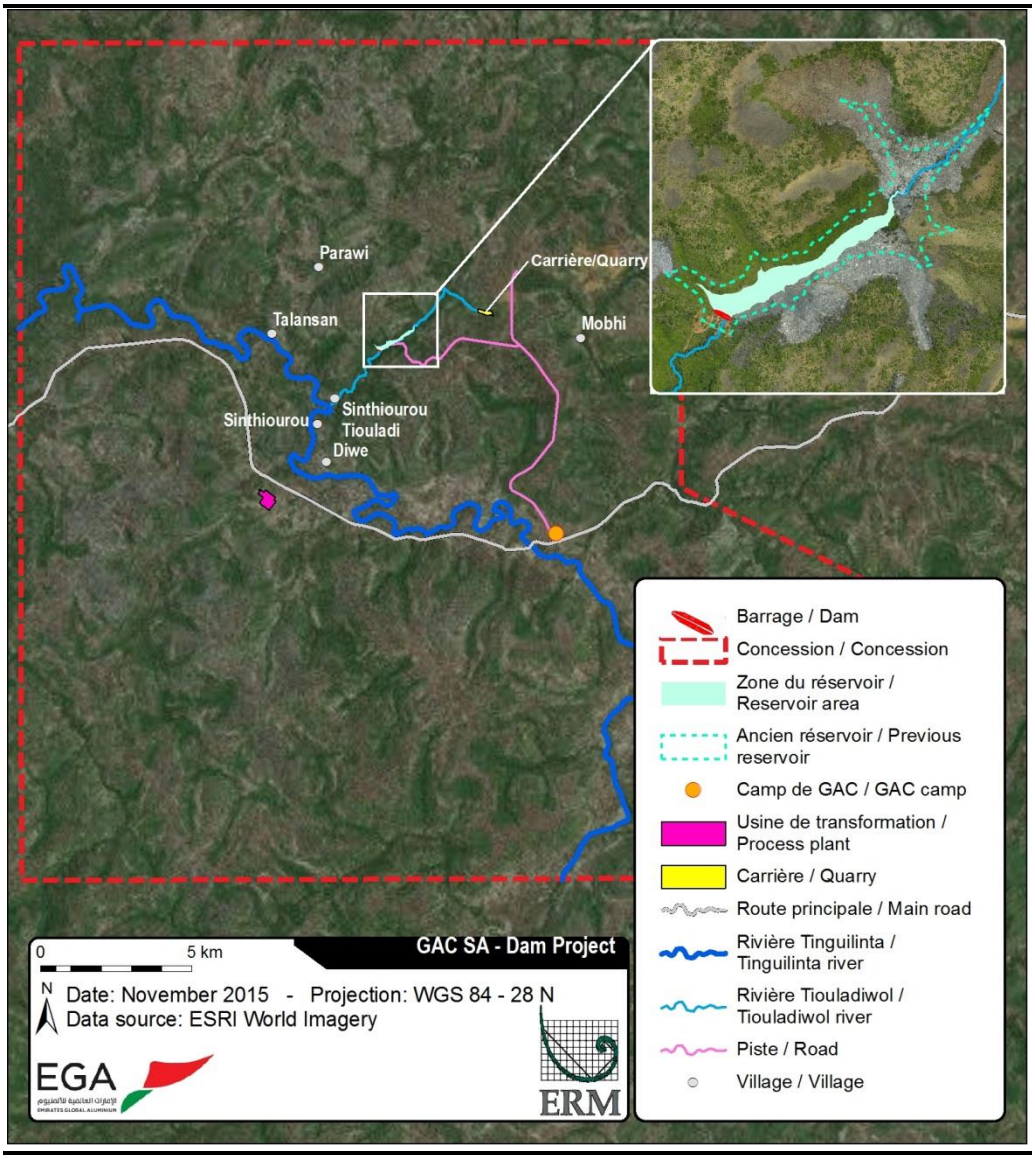
In addition, the World Bank Group / International Finance Corporation (IFC), Environmental, Health and Safety (EHS) Guidelines of April 2007 and AfDB relevant keysheets were used to provide specific guidelines on effluents and wastes management, and supplement Guinean regulatory standards, where the IFC standard or AfDB keysheets were found to be more stringent than the national standard.

GAC is also expecting that the Project will be financed with the participation of international commercial banks, some of which will be signatories of the June 2013 Equator Principles version.

4.1 DAM LOCATION

The dam and associated reservoir is located in the Tiouladiwol river catchment as shown on *Figure 4.1.*

Figure 4.1 Dam location



The size of the associated water reservoir (water height and surface of the reservoir) has been downsized compared to the previous study. The maximum water elevation height should be approximately 73 m above sea level (masl). This is significantly less than the water elevation anticipated in the 2006 study of 90 masl.

4.2 DAM TECHNICAL DATA

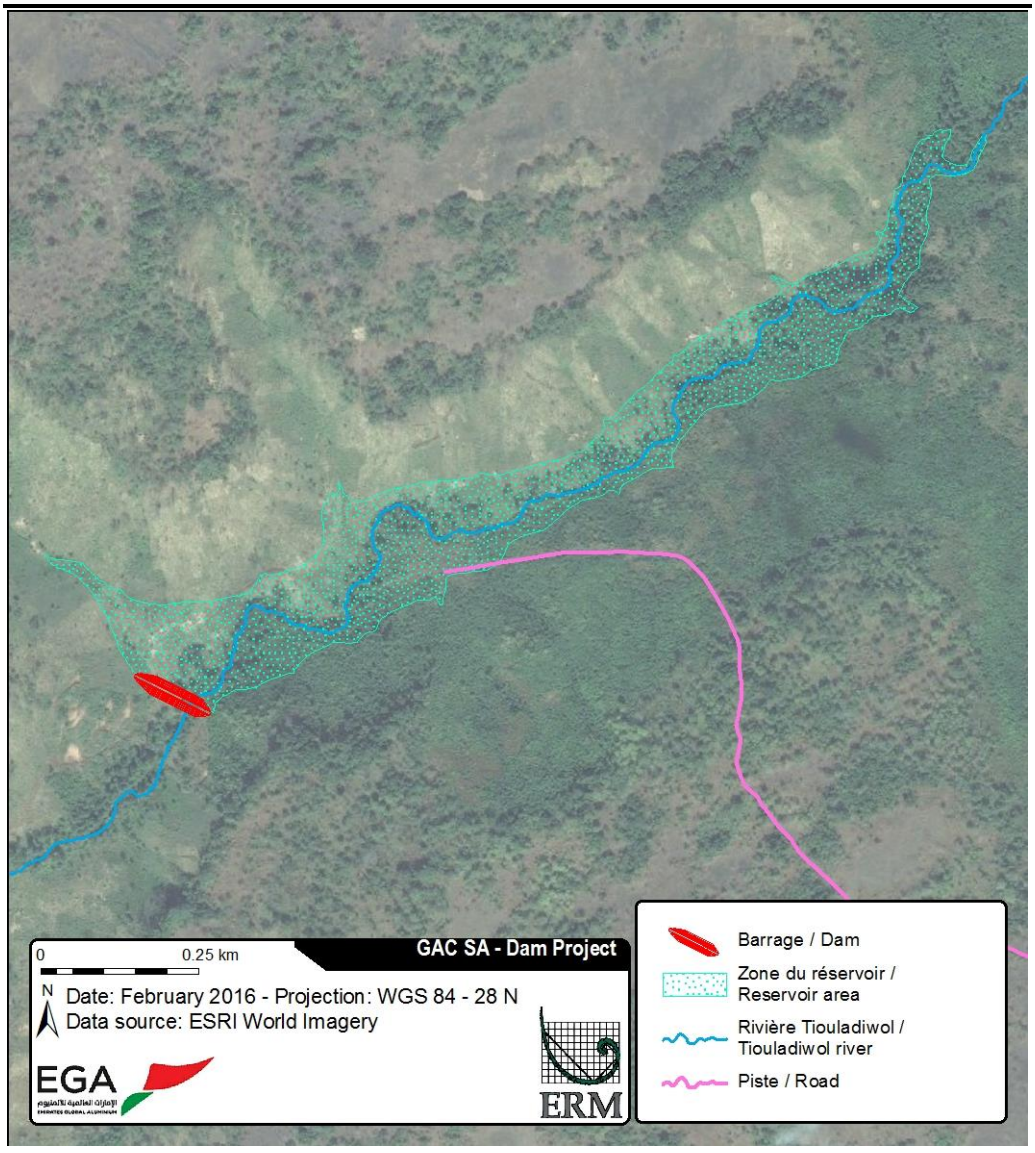
The main technical data related to the dam dimensions are summarized hereinafter:

- crest of Embankment, Elevation (El). 75 masl (approximately., plus camber);
- freeboard, 1 m, El. 74-75 masl (approximately);
- spillway Channel Invert, El. 73 masl (approx. 1 m deep);
- normal operating reservoir level, El. 73 masl (approximately);
- peak reservoir level (during design flood event, with full spillway channel), El. 74 masl; and
- water capacity of the reservoir at operating level: 865,000 m^3 (approximately.)

The dam reservoir will not be fenced. No fish farming, fishing or commercial activities are intended to be organized or implemented in the reservoir area.

The future reservoir area is shown in *Figure 4.2*.

Figure 4.2 Proposed water reservoir footprint



4.3 *DAM ASSOCIATED FACILITIES*

The main associated technical facilities planned to be installed are:

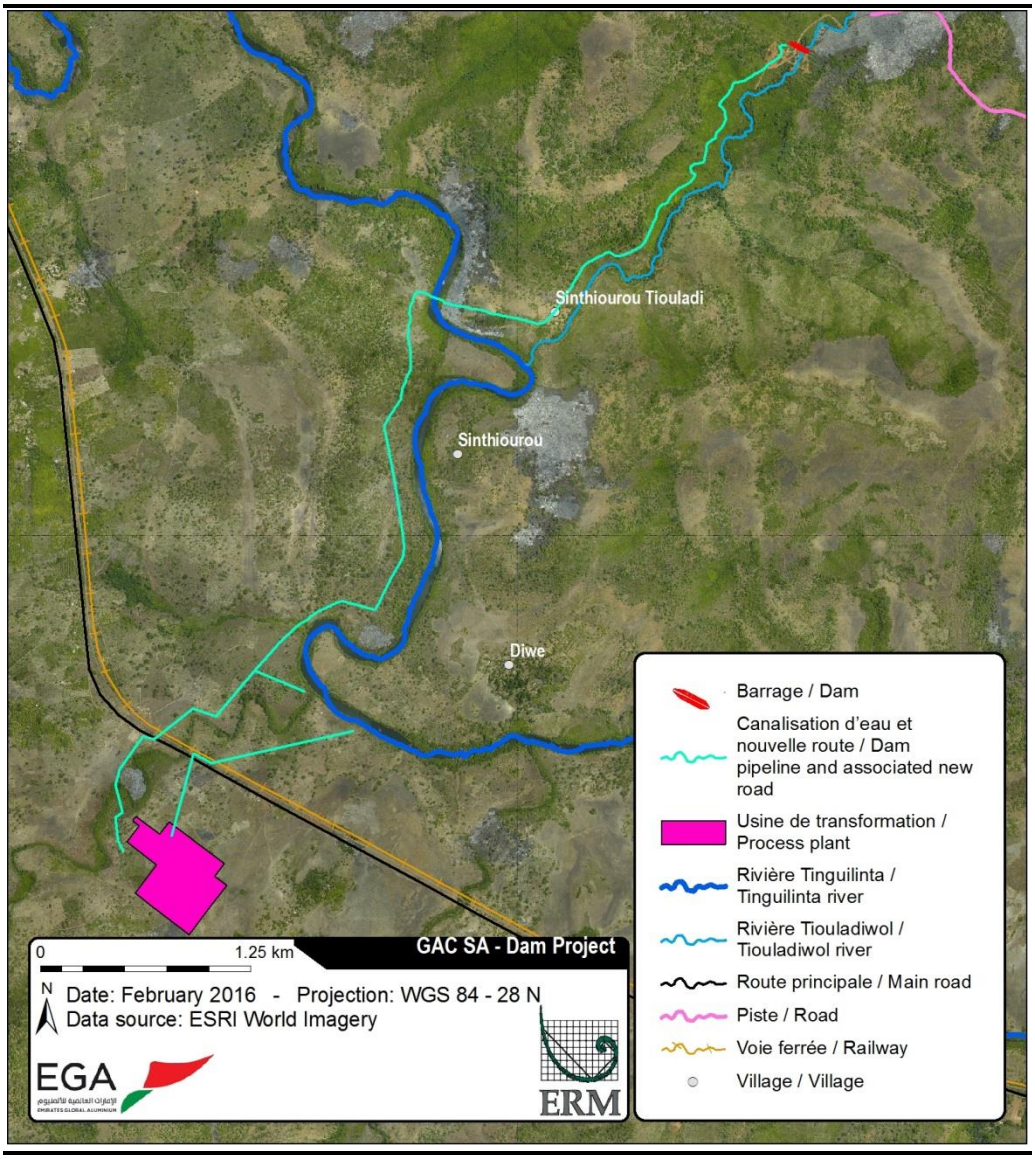
- a containerized pumping station equipped with thermal pumps, diesel storage tank, alarm and fire detection devices, to pump water from the water supply reservoir to the mine plant complex;
- a steel pipeline with a diameter of 250 mm between the pump stations and the raw water storage tank at the mine plant; and
- a new 6m width road constructed along the pipeline route from the dam to the mine plant

Preliminary plans for the layout of the dam access road and the pipeline indicate that it will cross two small tributaries of the Tinguilinta River (the Loppé and another smaller tributary approximately 500 m downstream), as well as the Tinguilinta River itself. The pipeline from the dam to the plant area is proposed to be buried for most of its length. The pipeline will come to

surface to cross the Tinguilinta where it will be supported by four piers. It will also cross the Loppé via the bridge proposed for the mine plant site main road and rail access road (see the SEIA Addendum (2015) report).

Layout of the associated water pipeline and new road is shown in *Figure 4.3.*

Figure 4.3 Layout of proposed water pipeline and associated new road



4.4 *DAM OPERATION*

GAC's strategy to provide water to the mining project all along the year is to store water during wet season when water is abundant, and to use the stored water during dry season, when the Tinguilinta river flow is insufficient to meet water demand from the Project without conflicting with community uses and the environment.

Each year, dam operation will be divided in two main phases. The first phase will consist in filling up the reservoir during the wet season. GAC will source water to meet the demand from mining operations from other sources (e.g.,

pumping within the Tinguilinta River, which will be in period of high flow) and no water from the reservoir will be use then. The second phase will occur during dry season when the Tinguilinta River flow will become insufficient to provide enough water to the mining operations. Water from the reservoir will then be pumped to the raw water storage tank of the mining plant.

The estimated water needs at the mine area is of 4,146 m^3/month during wet season and will reach 101,646 m^3/month during dry season when water is sprayed for dust abatement.

The way the water production will be shared out among the different water sources (dam, river, bore wells) will be detailed in the project Water Management Plan.

4.5 KEY PROJECT ALTERNATIVES CONSIDERED

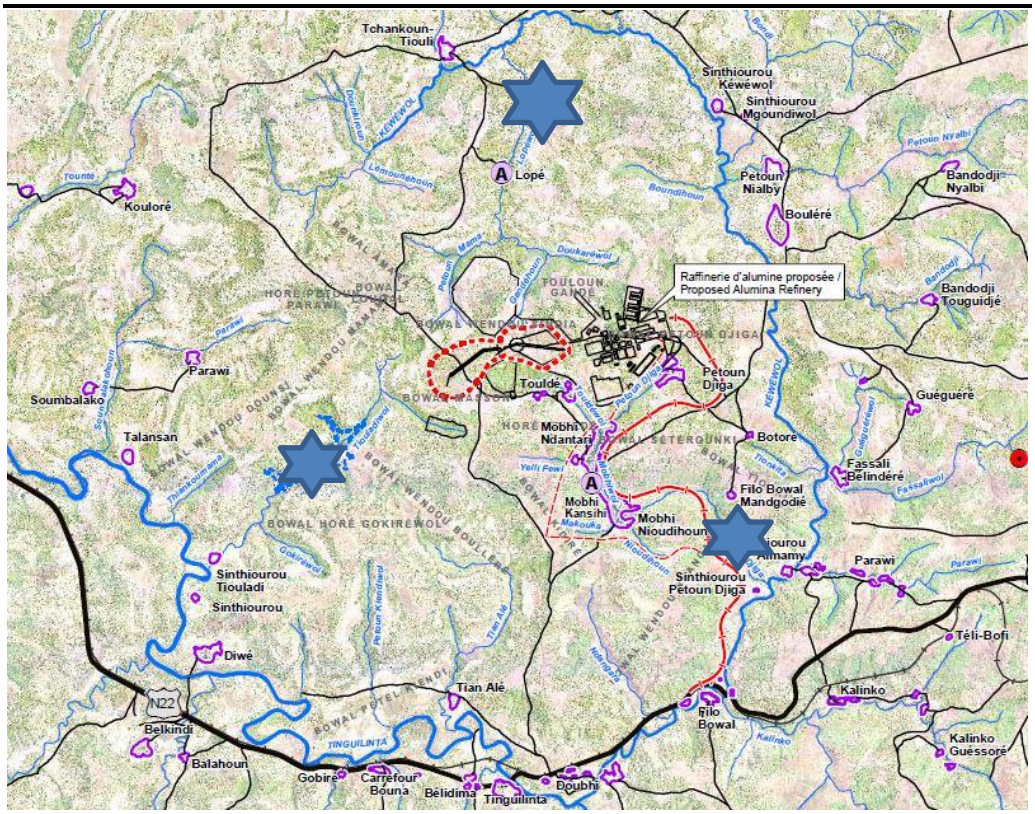
The SEIA presents various alternatives that were considered by GAC as part of the Project definition process, with a view to maintaining an acceptable balance between technical and commercial feasibility and environmental and social impacts and benefits.

To establish a dam, an acceptable valley catchment would require suitable topography and geology for an earthfill dam, and a catchment area sufficient to collect and store the required water volume.

Three options were considered in the general Project area:
- the Lopéwol, a tributary of the Kéwéwol;
- the Petoun Djiga, also a tributary to the Kéwéwol; and
- the Tiouladiwol, a tributary of the Tinguilinta.

The location of the envisaged catchment is indicated in *Figure 4.4.*

Figure 4.4 dam options locations



Dam potential locations envisaged
Villages area
Source: Impact Assessment, Knight Piésold, 2008

The Petoun Djiga valley option was excluded from further consideration as it would have required the physical displacement and resettlement of more than 1,000 people. For each of the two remaining valleys, various options with sufficient catchment necessary to provide a reliable water supply in a dry year were considered and systematically ranked for their potential impacts based on social, environmental, and economic factors.

Three different options were also considered for the Tiouladiwol river (upper, middle, lower). The Lower Tiouladiwol option was selected as the preferred location in the Project's original EIA (SNC-Lavalin, 2005). Further optimization of Project water management and positive results from site investigations into groundwater quality and supply potential (SNC-Lavalin, 2006) led to a re-analysis of two siting alternatives for the water supply reservoir: the Upper and Middle locations on the Tiouladiwol. The Middle location was selected as the new preferred option due to, among other factors, the presence of chimpanzee sightings and nest areas in the Upper reservoir location.

4.6 *PROJECT AREA OF INFLUENCE*

The 2008 ESIA for GAC's (*Knight Piésold, 2008*) included the construction of a dam in the Tiouladiwol valley. The studies undertaken for the 2015 SEIA Addendum led to modifications to the design and the size of the dam which has been downsized. The dam SEIA update studies aim to update socio-economic data to identify, assess and address as well as possible potential specific impacts of the dam project on the local communities.

All mitigation measures defined in the 2015 SEIA Addendum and applicable to the dam project will be implemented by GAC during the dam project development. The dam SEIA update studies focused on specific potential impacts identified for the dam project.

The project's social area of influence includes:

- the Tiouladiwol watershed from the reservoir area to the Tinguilinta river;
- a 30 m wide corridor along the pipeline and the access road from the dam to GAC's plant; and
- villages located in and around the Tiouladiwol watershed, along the Tiouladiwol river and pipeline considered as potentially affected by the Project.

The area hosts a total of 334 households, for 2143 inhabitants. In addition, the area hosts temporary settlements and camps of cattle herders.

The average population density is 31 inhab./km² , which is below the national average (47.9 inhab./km² in 2015). The annual population growth rate is estimated at 12 % since 1996. The population is young (47.4 % under 15 years old).

Gender distribution is balanced between males and females. However, males between 20 and 35 of age are underrepresented, probably because they tend to migrate in search of economic opportunities whilst female are more sedentary. Female have low access to land and power.

More than 97 % of the population is Fula (the remaining 3 % being predominantly Malinké).

Lastly, the territories of Balahoun and Béli Kindy will be temporarily impacted by the project (when the pipeline will be buried). Although they are only partially included in this ESIA, they will be taken into consideration during the Mine RAP.

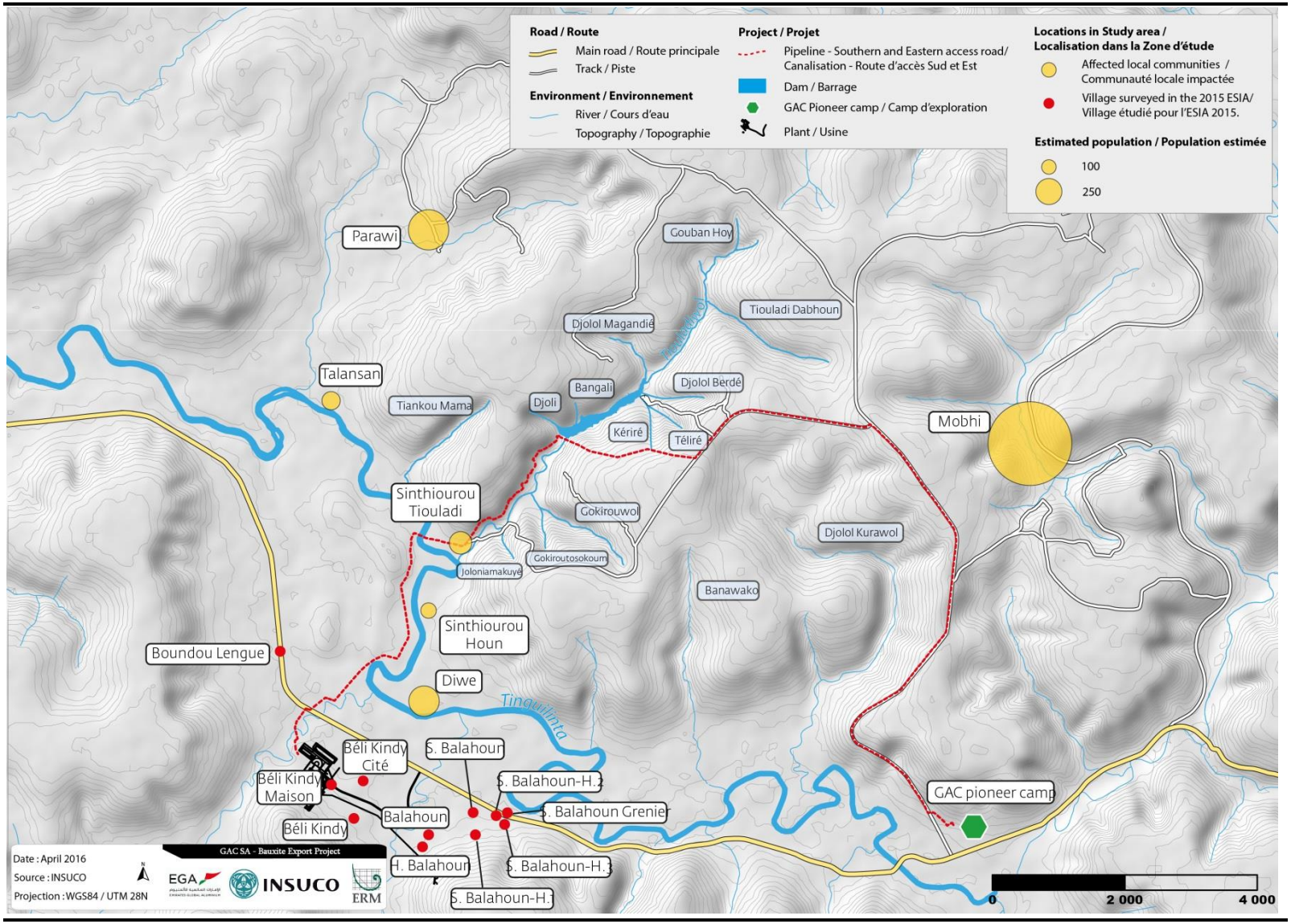
Local communities potentially affected by the dam project are:

- Parawi;
- Talansan;
- Sinthiourou Tiouladi;
- Sinthiourou Houn;
- Diwé;

- Mobhi Gnoudhioun;
- Mobhi Kansihi; and
- Mobhi N'Dantari.

The location of these communities is shown in *Figure 4.5*.

Figure 4.5 Location of communities around the dam



Prospective workforce numbers for the Project (including subcontractors) are as follows:

- Construction: Approximately 60 to 80 workers will be employed during the construction phase. No temporary camp to accommodate workers at construction site is planned to be constructed – workers not already living within the Project area will be housed within GAC's existing Pioneer camp. A shuttle service will be put in place for workers to and from the construction site.

- Operation: Approximately 10 permanent workers will be employed for maintenance and surveillance purposes during the operational phase which should last for 30 to 40 years. During the dry season, a team will access the dam every two to three days to fill in the diesel storage tank fueling the pumps.

The ratio of supervisory to execution and support-level staff is expected to be 10% to 15%.

Workforce will be recruited locally where possible, based on available skills, competence, and professional experience.

Through the EGA/ GAC Code of Business Conduct, GAC is committed to equal opportunity, freedom from harassment, worker security and zero harm to health and safety of its workforce. This is transcribed into GAC's human resources processes and health and safety policy and operational procedures.

Guinean regulations and international good practice in social and environmental assessment and management require developers to identify and engage with stakeholders through pro-active and timely consultation and disclosure about the Project and its impacts. The program of consultations undertaken as part of the SEIA was designed to inform stakeholders about the developing plans and give them an opportunity to express views on the Project and on impacts that should be investigated in the SEIA.

In order to provide reliable and accurate information, the study included a continuous process of consultations with the communities of the Project area. This process was initiated during the scoping study in October 2015, followed with the baseline study in March 2016 and the impact assessment process in April 2016. The consultations involved the main local communities to inform the population on the Project and to understand their concerns and expectations. Respondents residing in the study area of the mine were also interviewed on the level of knowledge of the dam Project and on their sources of information.

The results of the stakeholder engagement were taken into account during the process of completing the SEIA and are discussed in the SEIA Report.

The most recurrent concerns were the loss of livelihood with no appropriate compensations, while the communities depend on the valorization of the space resources that will be flooded. The most recurrent expectation was the employment of the youth for the construction activities.

7 SUMMARY OF SOCIAL AND ENVIRONMENTAL IMPACTS ADDRESSED IN THE DAM SEIA UPDATE

Relevant data collected during the SEIA Addendum studies in 2014 – 2015 to establish the social and environmental baseline were taken into account in this dam SEIA update. Specific data to the dam area was collected from October 2015 to April 2016 by ERM and INSUCO to allow completing the dam impact assessment studies.

7.1 DAM SEIA UPDATE REPORT ORGANIZATION

The Dam SEIA Update report is presented in a single volume covering the environmental and social studies, a Social and Environmental Management Plan and associated Monitoring Plan, and annexes. This volume is divided in chapters addressing the different components of the Project and covering in detail the most significant identified potential impacts. The impact assessment methodology was identical to the methodology implemented in 2015 for the SEIA Addendum studies.

Chapters related to environmental or social aspects 2 follow a similar structure and present information on:

- Baseline conditions, i.e. existing environmental and/or social conditions, prior to Project development.
- The expected significance of potential impacts, both negative and positive: in other words, the importance of environmental and social changes that may result from the Project, across the Project life. This has included a comparison of predicted changes with relevant standards.
- Mitigation or enhancement commitments: the measures the Project proposes to implement in order to avoid, reduce, mitigate and/or compensate for negative impacts, and to enhance the benefits of the Project through design and operation.

7.2 THE NATURAL ENVIRONMENT

7.2.1 Key topics addressed in the Dam SEIA Update

The SEIA Update covers the following topics:

- air quality;
- greenhouse gas emissions;
- noise and vibration;
- soils/geology;

- surface water;
- groundwater;
- topography and visual resources;
- terrestrial biodiversity;
- freshwater ecology; and
- waste and hazardous materials.

Air quality, noise, biodiversity and water issues received additional focus as these are areas where potential impacts were found to be significant – which led to particular focus on the definition of appropriate mitigation throughout the SEIA Update development study.

7.2.2 Air quality

The Dam Project impact on air quality is expected to be maximal during construction activities.

During construction activities the main air emission sources will be:

- emissions of particulate matter PM_{10}, $PM_{2.5}$ as well as combustion gases NOx, NO_2 and SO_2 from diesel-powered vehicles and construction site generators;
- emissions of particulate matter (including PM_{10} and $PM_{2.5}$) from earthworks and from the movement of vehicles over unpaved surfaces;
- windblown dust from exposed areas and stockpiles of dusty materials; and
- potentially, combustion emissions from the burning of vegetation prior to flooding of the reservoir.

Activities of construction equipment and vehicles within work areas will be of small scale and exhaust emissions from these sources will not be sufficient to have any significant impact on air quality in the nearest settlements.

The foreseen impacts on air emissions during operation are limited and essentially associated with emissions from the water pumping generators, as well as vehicle or generator exhaust during occasional maintenance / inspection work. Considering the expected limited power of the pumps, the fact that they will not be used during wet season and the limited sensitivity of the surrounding receptors, this impact is considered of minor significance.

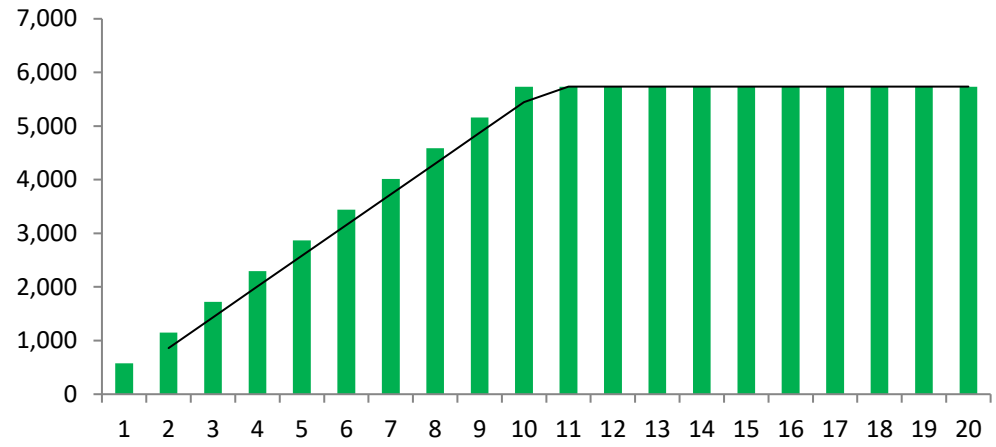
7.2.3 Greenhouse gas emissions

Greenhouse gas (GHG) emissions are of concern globally because of their contribution to global climate change. It is good practice for any major project that results in significant quantities of GHG emissions to calculate these and identify measures that can be taken to minimize the potential contribution to climate change.

The scope the GHG emissions calculations covers the initial flooding and subsequent operation phase of the proposed reservoir. Regarding the estimated area subject to flooding, it is considered in the study that the total reservoir area will be permanently flooded.

The estimated GHG emissions associated with the operation of the proposed reservoir over the project lifetime (20 years) amount to approx. 5,736 tCO_2e. These emissions are limited to the first 10 years after the flooding takes place. The cumulative CO_2 emissions are detailed in *Figure 7.1.*

Figure 7.1 GHG emissions over the estimated project lifetime (cumulated, in tCO_2e)



Due to its limited reach and to the relatively small reservoir area (approximately 865,000 m^3), the reservoir has the potential to only release low amounts of GHG emissions to the atmosphere, largely *de minimis* when considering GHG emissions associated with the overall mine development and exploitation, which are estimated to exceed 3.6 M tCO2e over the expected project lifetime.

7.2.4 Noise

Baseline conditions indicate that this area has typically low noise levels (around 40 dB(A) during day time, around 45 dB(A) during night time).

7.2.4.1 Construction

Construction works are expected to be performed only during daytime hours. Mobile equipment will increase noise and vibration levels in the reservoir area throughout the construction phase. The construction area is relatively far-removed from the nearest permanent human receptors (Sinthiourou Tiouladi – 2.5 km downstream, but local farmers and herders frequently pass by the reservoir area during daytime).

Noise disturbance during construction activities, associated to traffic increase, dam construction, land clearance, machinery and equipment and human presence may cause disturbance to wildlife (avifauna, herpetofauna, mammals) within the immediate vicinity of the construction area. However, the impact will be local (likely to extend less than 1 km) and should significantly reduce if not disappear during operation activities as soon as machineries and human presence will largely leave the reservoir area.

7.2.4.2 Operation

The main source of noise and vibration expected during operation activities are pumps that will run to enable the pumping of water from the reservoir to the process plant. Considered the type, the size of the activity and the fact that water will not be pumped from the reservoir during wet season, this potential impact will remain minor.

Appropriate mitigation measures will be implemented during construction and operation activities to minimize the impact of noise and vibration emissions and ensure the impact significance will be maintained at a minor level:

- schedule high-noise-generating activities during daytime hours to the extent practical;
- verify that construction and operating equipment is fitted with appropriate noise attenuation devices such as silencers and covers and that they are maintained in good condition; and
- monitor noise-related complaints through the Complaints and Grievances Process.

7.2.5 Soils

The impacts of the dam construction on soil are the following:

- loss and/or deterioration of soil resources; and
- contamination, including spills.

The construction of the dam will lead to the loss of soil resources within the permanent footprint of the works, which will have a limited extent and is located in areas that have already undergone limited development.

Soil damage will take place during the dam wall construction, specifically during land clearance where topsoil is to be removed. The irregular topography of the Project area combined with high rainfall intensities and erodible soils means that there is also a high potential for the directly affected areas to also be affected by erosion.

Operations will be duly covered by a Social and Environmental Management Plan (SEMP), defining an appropriate level of mitigation and controls to

support the Project's environmental performance. There could be a possibility that some accidental spills occur during the construction phase. Such spills may vary from very small spills (e.g. a few liters or less) causing only very localized and short-term soil pollution, to larger events, such as for example the failure of containment measures of a fuel storage tank or a tanker truck accident that could release several cubic meters of fuel. The spills likelihood is assessed as probable for very small spills; and unlikely for larger spills if adequate mitigation measures are implemented.

During operation, the only chemical stored at the dam area will be the diesel fueling the water pumps equipped with a thermal engine.

In order to minimize the impact on soils during construction and operation of the dam and reservoir, the area of land to be occupied for the project will be kept to the minimum necessary for the works. A Land Use Management Plan will be drafted and implemented to ensure impacts to soils will remain of a minor importance.

This plan will include mitigation measures related to:

- soil resources preservation;
- erosion control;
- soils contamination prevention;

All hydrocarbon storage facilities will be designed to minimize the risk of escape of any accidental spills including:

- secondary containment for storage of hazardous materials;
- location of all equipment, containers and distribution lines containing hazardous materials above ground and provision of appropriate containment; and
- containment of any transfer points so that any spill during refilling is directed to the containment structure.

7.2.6 Integrated water management

7.2.6.1 Surface water

During dam SEIA update studies, the main surface water features and characteristics of the wider project setting, i.e. the Tinguilinta river valley, have been taken into account with a particular focus of hydrological conditions in the Tiouladiwol River catchment in which the proposed dam site is located. The Tiouladiwol is a small intermittent tributary of the Tinguilinta River with a total catchment area of approximately 23 km^2.

The hydrological model of the Tinguilinta basin that was developed for the mine site SEIA report (SEIA Addendum, 2015) has been used to derive a synthetic 20 year flow record for the Tiouladiwol. In summary, the flow in the Tiouladiwol is markedly seasonal, with a wet season extending from June to

November and a single, pronounced peak (1,300 to 1,400 l/s) in the annual hydrograph that occurs in August/September. The baseflow recession begins in December; then flows recede to a few liters per second (or less) in the lower reaches of the river in the late dry season months of March and April.

Surface water quality characteristics and assessment criteria for the GAC project area have been described in SEIA Addendum (2015) report, where compounds were compared against WHO drinking water standards and guideline. The results of these monitoring periods indicate that water quality within the GAC project area is good, with the ranges in concentration of the majority of parameters measured and reported being generally indicative of unpolluted water. Field parameter surface water quality results for the Tiouladiwol from the freshwater ecology survey carried out by ERM in January 2016 are comparable with the results from the wider studies carried out previously.

For the purposes of the surface water impact assessment, the Project's area of influence has been defined as:

- the inundation area for the reservoir;
- the reach of the Tiouladiwol River from the dam site downstream to its confluence with the Tinguilinta River;
- further downstream in the Tinguilinta River; and
- the area of the new access road and water pipeline

Specific general criteria for determining the sensitivity of water resource and general criteria for determining the magnitude of impacts to surface water have been defined in detail to undertake the impact assessment.

Based upon the results of the social and environmental studies, the Tiouladiwol water has been considered as a sensitive component in the Project area of influence.

Main potential impacts on surface water that were studied during construction and operation phases were:

- impacts on water flow;
- impacts on water quality.

Conclusions of numerical and qualitative studies undertaken to assess potential impacts of the dam projects on water resources are that:

- potential impacts on surface water during construction phase will be minor;
- a 10 l/s compensation flow will be maintained downstream of the dam during the dry season months (and higher compensation release during reservoir first filling) to support downstream ecological habitats and associated fisheries, so that these receptors are not significantly impacted;

- there are unlikely to be any significant water quality issues associated with eutrophication and/or thermal stratification in the reservoir. Vegetation should be cleared before the reservoir inundation. and
- it is very unlikely that there will be any issues with the accumulation of inorganic pollutants in the reservoir.

7.2.6.2 Groundwater

During the wet season in the Tiouladiwol catchment, it is observed that the water table gradually rises to at or near the ground surface. During the dry season, it lowers as the aquifer is drained via springs to surface water streams. The maximum fluctuation observed during the studies is 15 m although it was not regular, indicating inhomogeneities within the aquifer with some parts able to drain faster than others. Groundwater baseflow provides an important source to maintain ecological and social flow in the Tiouladiwol towards the end of the dry season.

Groundwater sampled as part of the baseline study shows similar characteristics to surface water. It is generally acidic; pH values range from 4.5 to 7.3 with an average value of 6.2. It has low concentrations of dissolved solids, low metal concentrations, and low concentrations of anthropomorphic contaminants.

Specific general criteria for determining the sensitivity of groundwater and general criteria for determining the magnitude of impacts to groundwater have been defined in detail to undertake the impact assessment.

The results of the baseline studies led to consider a medium sensitivity to groundwater in the Project area of influence.

The assessment of potential impacts to the groundwater environment associated with the dam has considered the following issues.

- Impacts on groundwater levels around the reservoir and associated spring and baseflow supply to the Tiouladiwol downstream of the dam.

- Impacts on groundwater quality arising from infiltration to groundwater from construction site run-off, erosion, site discharges and unplanned events such as accidental oil and fuel spills, but also potentially from reservoir water quality effects during operation.

The significance of the above impacts has been assessed in terms of the potential effects on groundwater-reliant ecology and community water users.

During construction work, given the expected size and extent of the supporting buildings, depots, and bunds, no significant impacts are predicted, with a negligible reduction in local recharge rates to the groundwater.

Potential impacts on groundwater quality will be largely avoided by the use of standard construction industry best practices for environmental management

In the surrounding area of the reservoir, groundwater levels are likely to rise due to the construction of the dam infrastructure, increased water infiltration into the subsurface, and rise of the hydraulic base level. The raised groundwater levels on valley slopes may lead to pore-pressure-related geotechnical failures and ultimately to landslips. The consequent soil erosion and high sediment run off would impact water quality from the point of the failure downstream.

A separate study is underway regarding groundwater supply as an alternative or additional source for the mine project activities. This study is centered on groundwater hosted in the fractured bedrock aquifer in the Loppé valley close to the proposed mine plant. The construction and operation of the Tiouladiwol dam will be considered holistically with the results of this groundwater supply study.

Groundwater quality during the operation phase of the dam will be determined largely by the quality of the water in the reservoir, the nature of which will impact the quality of groundwater through infiltration. The study results indicate that there is unlikely to be a degradation of surface water quality due to the proposed damming of the Tiouladiwol.

7.2.7 Biodiversity

The biodiversity of the concession area has been surveyed over the past 10 years since the start of SEIA work by GAC. Dedicated field biodiversity surveys were undertaken for this SEIA update, focusing on the dam reservoir and water pipeline corridor.

7.2.7.1 Natural habitats and flora

Based on the habitats identification described in the SEIA Addendum (2015), the following habitat types have been recorded within the environmental study area:

- mosaic of the slopes (fallow land, crops, thickets and patches of tree/shrubby savannah);
- gallery forest along the Tiouladiwol River;
- gallery forests of the headwaters;
- bowals (high grassy plateaus);
- mixed shrub and grass savannah (on the top of plateaus); and
- wooded savannah (at the edge between the slopes and the plateaus).

The habitats were mapped in the study area.

The surface extent of each habitat type within the boundaries of the future reservoir is estimated in *Table 7.1*. The two major habitat types that will be

flooded are gallery forests (about 52%) and agricultural mosaics of the slopes (about 47%).

Table 7.1 Habitat types within the reservoir footprint

Habitat type	Surface (ha)	Percentage
Agricultural Mosaic of the Slopes	9.23	46.58 %
Bowal	0.17	0.84 %
Gallery Forest	10.25	51.72 %
Mixed shrub and grass savannah	0.02	0.09 %
Road	0.15	0.76 %
Reservoir	**19.81**	**100 %**

GAC's full Bauxite Export Project will affect mainly plateaus and will preserve gallery forests throughout the concession (See SEIA Addendum 2015, mitigation measures). Therefore, this is the only portion of gallery forest expected to be cleared as part of the wider GAC Project, with the exception of very small areas where hauling roads will need to be built.

A section of the gallery forest located in central part of the Tiouladiwol, locally known as Aidé Koba, is particularly well preserved. A sacred site, with an important cultural value for local communities, includes a portion of Aidé Koba site. It should be noted that approximately a third of the Aidé Koba gallery forest is located within the boundary of the reservoir that will be flooded at Full Supply Level of 73m. Discussions were held with communities and agreement reached to move the "Djinn" of this sacred area.

One hundred and eight (108) species belonging to 45 plant families were identified in the study area during the field survey campaign (dry season). Three (3) species are considered vulnerable (VU) by the IUCN, all of which were recorded in the gallery forest. Thirteen (13) species are threatened ("*menacées*") and six (6) species are vulnerable ("*vulnérables*") according to the national monography of biodiversity (*Direction Générale de l'Environnement, 1997*).

The construction of the dam will inevitably induce loss of habitats within the reservoir area and no measures can be proposed to avoid this impact as long as the reservoir will be created. The main mitigation measures that can be implemented to diminish the impact on flora and vegetation will be the limitation of land clearance to the direct Project footprint (dam area including construction areas and access, as well as reservoir area);

7.2.7.2 Terrestrial fauna

The additional limited survey missions undertaken in 2016 did not provide an exhaustive description of the biodiversity in the study area. Therefore, the data collected as part of the SEIA Addendum (2015) report and other studies in the wider area are considered in this assessment as well.

New species that have never been observed in the GAC concession during previous survey missions are:

- avifauna: Eurasian wryneck (Jynx torquilla). This species does not present particular conservation concerns;
- reptile : African Dwarf Crocodile (Osteolaemus tetraspis) considered Vulnerable (VU) in the IUCN classification; and
- amphibian: Sierra Leone Grassland Frog *Ptychadena superciliaris*)

The Sierra Leone Grassland Frog is Near Threatened (NT) according to the IUCN and suffers population decline and isolation due to the loss and degradation of forest induced by agricultural development, logging and expanding human settlements.

All mitigation measures that have been defined in the 2015 SEIA Addendum with regards to potential impacts to biodiversity and that would be applicable to the dam project will be implemented by GAC.

Potential impacts, specific to the dam project on terrestrial fauna will be mainly through the loss of habitats that will be flooded and covered by the water reservoir. There may also be some impacts associated to vegetation/topsoil removal for species that breed in the Project area. Limitation of land clearance to the direct Project footprint as described above for habitat protection will also be beneficial to mitigate the potential impact on terrestrial fauna.

The presence of the water reservoir may be beneficial for water-dependent species such as birds, fishes and amphibians since it will create a new and large water body in the area.

7.2.7.3 Freshwater ecology

A freshwater ecology survey was undertaken during the dry season between January 19th and 22nd 2016. No significant differences were noted with regards to water quality and fish species diversity in the Tiouladiwol, compared to the results obtained during the previous surveys concerning Tinguilinta river tributaries.

According to field observations, the Tiouladiwol at the beginning of the early dry season presented good conditions for aquatic life, with good oxygen level, low mineralization and organic matter concentration, and absence of turbidity. The situation would be different in case of severe drought, at the end of the dry season, when the river forms a succession of intermittent ponds. By contrast, the water presumably becomes more turbid during the wet season after heavy rains, due to organic suspended matters.

It can be presumed that these good ecological conditions could be affected by runoff from the quarry (currently only sparsely used), increased erosion due

to slash and burn agriculture on the valley slopes and domestic uses by people from Sinthiourou Tiouladi in the lower river or occasionally by temporary settlements of people from Parawi and Mobhi. Fertilizers and pesticides are not known to be used, and there is currently no bauxite extraction activity on the catchment.

During the sampling campaign, five additional species, compared to the results of the surveys undertaken during the SEIA Addendum studies, were recorded (*Parachanna obscura*, *Mormyrops anguilloides, Paramphilius trichomycteroides, Barbus pobeguini* and an undetermined species of *Aphyosemion).* None of them is of conservation concern.

The potential impacts identified and assessed for the Project are:

- deterioration of freshwater ecosystems related to the construction of the dam and associated access road and water pipeline;
- temporary deterioration of existing ecological conditions in the reservoir after impoundment;
- changes in freshwater biodiversity in the reservoir area;
- modification of the ecological continuity along the Tiouladiwol;
- disturbance of freshwater ecosystems in the lower Tiouladiwol; and
- modification to freshwater ecosystems in the Tinguilinta during the dry season.

Potential impacts on surface water during construction phase will be largely avoided by the use of standard construction industry best practices for environmental management as they are described in the SEIA Addendum SEMP.

All other potential negative impacts during operation phase will be mitigated and maintained at a minor significance by:

- clearing of the reservoir area before impoundment;
- ensuring a minimal environmental flow of 10 l/s to be released during dry season;
- delimitating buffer zones to protect the reservoir in order to preserve it from sedimentation and any alteration of water quality; and
- undertaking freshwater ecology surveys on a regular basis (one year after impoundment and once every 5 years after).

Creating a reservoir, the Project will generate changes in freshwater biodiversity that cannot be mitigated. However, the Project will also ensure the preservation of freshwater ecosystems in the Tinguilinta during the dry season that will be beneficial to the biodiversity and the communities within the area.

7.2.7.4 Critical habitats

As discussed in the SEIA Addendum (2015) report for GAC Bauxite Export Project, the whole GAC concession can be considered a Critical Habitat according to IFC Performance Standard 6 triggering criteria. The study area of this Project is included in the Discrete Management Unit (DMU) identified for the GAC Bauxite Export Project. During the field surveys conducted at the dam, no new species of conservation concern with critical habitat triggering potential have been recorded.

7.2.8 Waste management

No specific kinds of waste are expected to be generated by the dam project compared to those described in the 2015 SEIA Addendum report. All measures and waste disposal dispositions described in this report will be implemented by GAC as far as they are applicable to the dam project.

The dam project waste management will be included within the general Waste Management Plan to be defined by GAC.

7.3 THE HUMAN ENVIRONMENT

7.3.1 Main potential sources of impacts specific to the dam project

Sources of potential social impacts generally associated with construction works, as use of construction equipment, traffic increase, uncontrolled immigration, involuntary resettlement, were described in the 2015 SEIA Addendum report.

All mitigations measures defined in this report and applicable to the dam project will be implemented for the dam development.

The dam SEIA update report focused on specific sources of social impacts and associated mitigations measures that were identified and are described hereinafter.

7.3.1.1 Specific sources of impacts during the construction phase

The main specific sources of social impacts during the construction of the dam will be:

- the land loss generated by clearing of vegetation in the footprint of the future inundated area for the reservoir and associated water pipeline that may lead to impact on communities' livelihood;
- the implementation of temporary water diversion work at the dam level; and
- positive impacts associated with project-related employment (60 to 80 workers during construction).

7.3.1.2 Specific sources of impacts during reservoir filling and operation phase

The key sources of impact during the operation phase will be:

- the filling of the reservoir starting at the beginning of the rainy season, leading to a reduction of base flow downstream of the dam;
- the presence of an inundated area with a level varying throughout the year, leading to a change of use of the area, and loss of access to certain areas previously used for forestry products harvesting;
- the biodegradation of non-evacuated organic residues during the first years that could lead to water quality deterioration;
- the potential risk of dam breach, causing potential flood hazard for certain downstream communities – this will be primarily mitigated by the resettlement of 14 households in Sinthiourou Tiouladi to the other side of the village to avoid potential impacts in the unlikely event of a dam breach (discussed below).

7.3.1.3 Specific sources of impacts during the closure phase

At the end of the project the dam will either be handed over to the government or it will be decommissioned and closed. If the government elects to take control of the water supply reservoir, an agreement will be negotiated based on then-current conditions and the facility will be turned over to government control. If the government does not elect to take control, GAC will develop and implement a plan for emptying of the reservoir. Salvageable equipment and materials will be recovered or recycled. The infrastructure equipment will be dismantled and GAC will develop a plan for the re-vegetation of the reservoir basin as part of the overall Project closure planning.

7.3.2 Specific potential impacts during construction

7.3.2.1 Potential impact on communities' livelihood

During the construction phase which will involve clearing-up the future reservoir footprint, burying the pipeline going from the dam to the mine plant and the construction of a new road, communities will temporarily or definitely loose resource spaces that are used for agriculture or for the exploitation of other natural resources. Even if the population density is low in the area, those activities are important for the livelihood of impacted communities. This could lead to a fall of income and increase the food insecurity.

Measures to support the development of alternative income-generating activities, particularly for women, will be defined in the Local Development Plan that will be defined by GAC (arts and crafts, commerce, services, transformation and selling of farm produces).

Measures to compensate the loss of agricultural land will be defined in the Mine RAP that will prioritize the replacement of this land with high farming potential development land when possible and favor collective compensation programs, such as agricultural development projects.

7.3.2.2 Employment

The situation of some households will improve during the construction activities, thanks to local employment generated by the Project. Around 60 to 80 employment opportunities will be associated by the Project construction phase. However, such employment will be relatively short-term (one dry season).

7.3.2.3 Communities safety

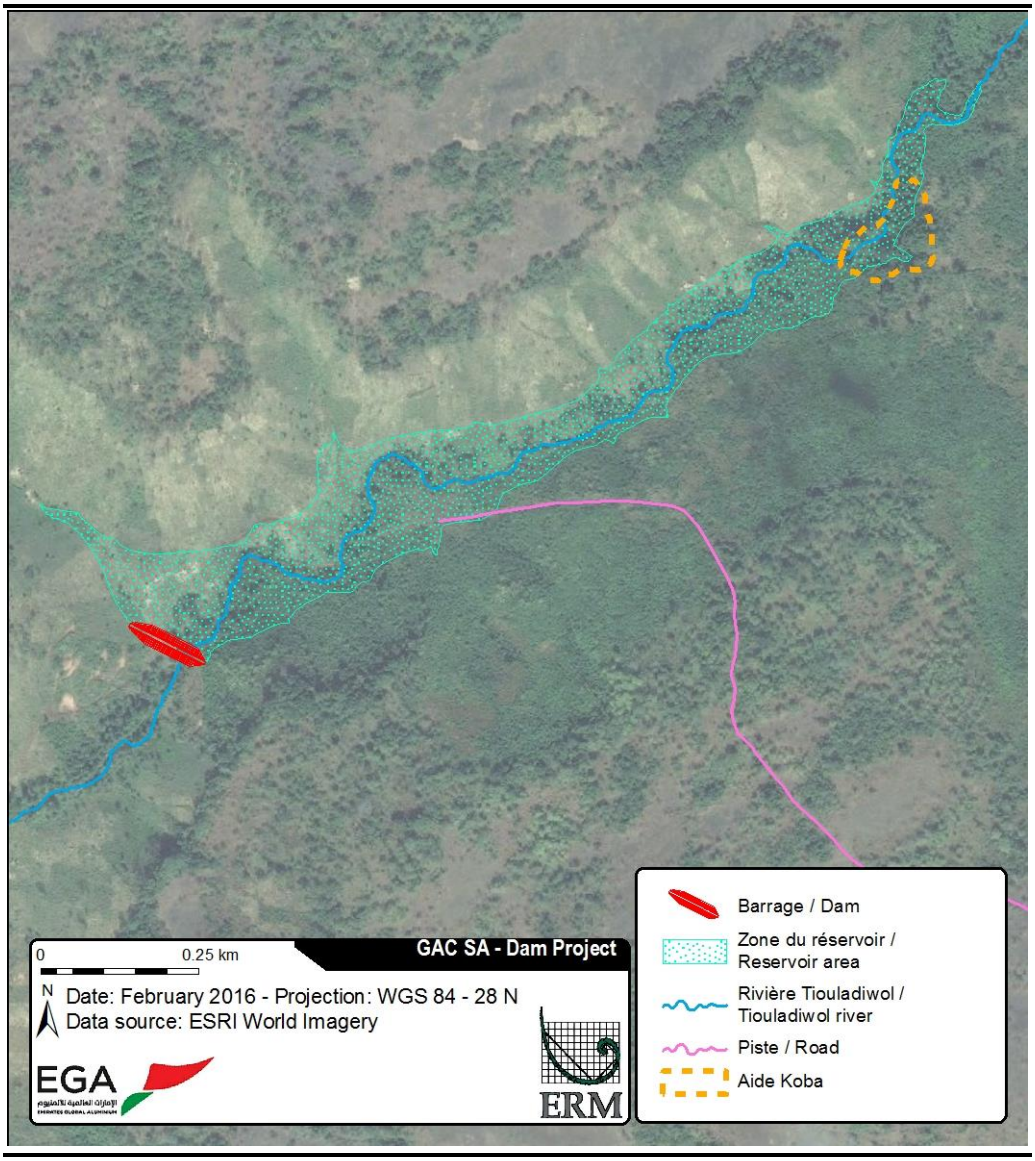
Safety conditions for communities will be carefully taken into consideration. Vehicles circulating in the area could, for example, represent a safety risk. Limiting the access to construction sites, training the Project's drivers and raising awareness among communities will limit this impact. Employees will be trained and well equipped to prevent occupational risk, and all equipment and engines will respect the best safety standards.

7.3.2.4 Sacred site of Aidé Koba

Finally, another impact is the partial removal of a sacred forest in a site called Aidé Koba located to the north of the future reservoir.

Location of Aidé Koba site within the flooded area of the reservoir at normal operating level is shown in *Figure 7.2*.

Figure 7.2 Aidé Koba site location



The forest hosts a spring called Bhoundou Aidé Koba which is home to a local spirit (*djinn)*. This forest will be partially cleared and later partially flooded by the reservoir. A sacrifice has been recommended by the communities and will be updated with the elders before being implemented by the Project when activities will start. In addition, an old cemetery of the valley located out of the reservoir boundary, should also be subject to a sacrifice and be fenced to avoid any disturbance during construction activities.

7.3.3 Specific potential impacts during operation

7.3.3.1 Dam safety

GAC's safety strategy for this dam is to ensure, through appropriate mitigation measures, including eventual resettlement actions, that the embankment classification will be limited to the lower class defined by the

Canadian Dam Association (CDA). A dam breach study has been undertaken to understand the risks and to define the resettlement needs for the Dam Project.

This study was undertaken using the best international practices. The Probable Maximum Flood (PMF) was determined when the reservoir water level was at 75 masl that is the height of the embankment.

The peak discharge through the dam breach was approximately 330 m^3/s when the reservoir water level was at 75 m (PMF scenario). The peak discharge occurs 50 minutes after the initial breach. The floodwave from the dam breach initially reaches Sinthiourou at 66 minutes after the breach, and reaches a maximum flood depth at 84 minutes after the breach. In case of this very unlikely negative event, 14 buildings would be inundated at Sinthiourou.Tiouladi.

Figure 7.3 and *Figure 7.4* detail the water height and risk level for the village of Sinthiourou Tiouladi considering its current situation.

Figure 7.3 PMF maximum depths near Sinthiourou Tiouladi

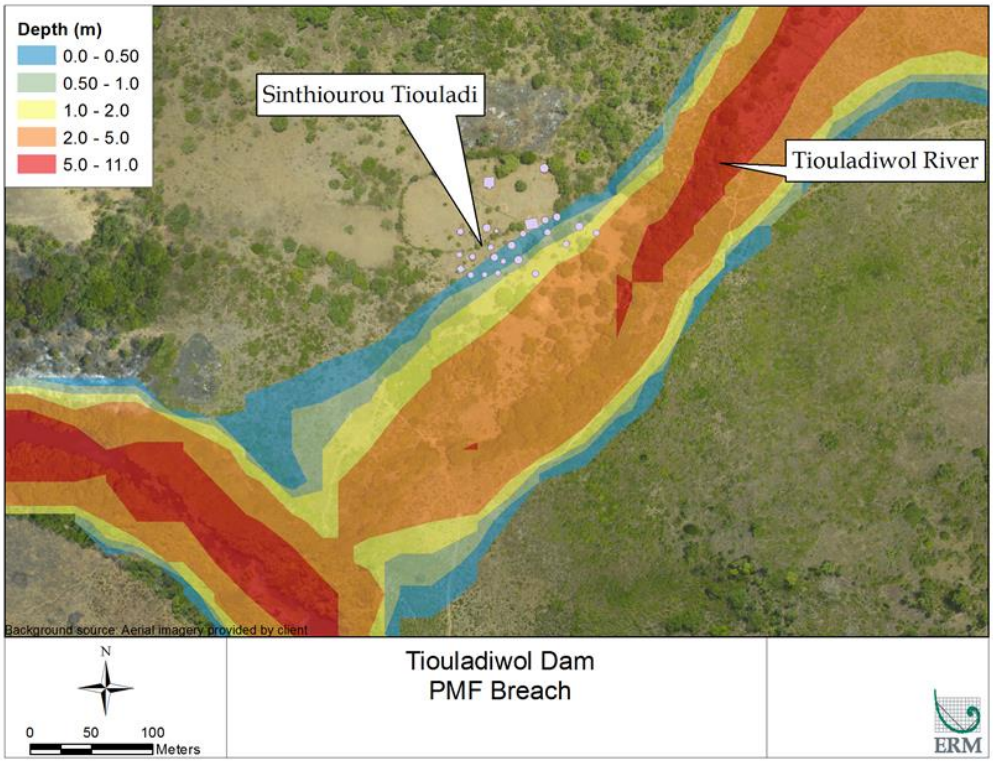
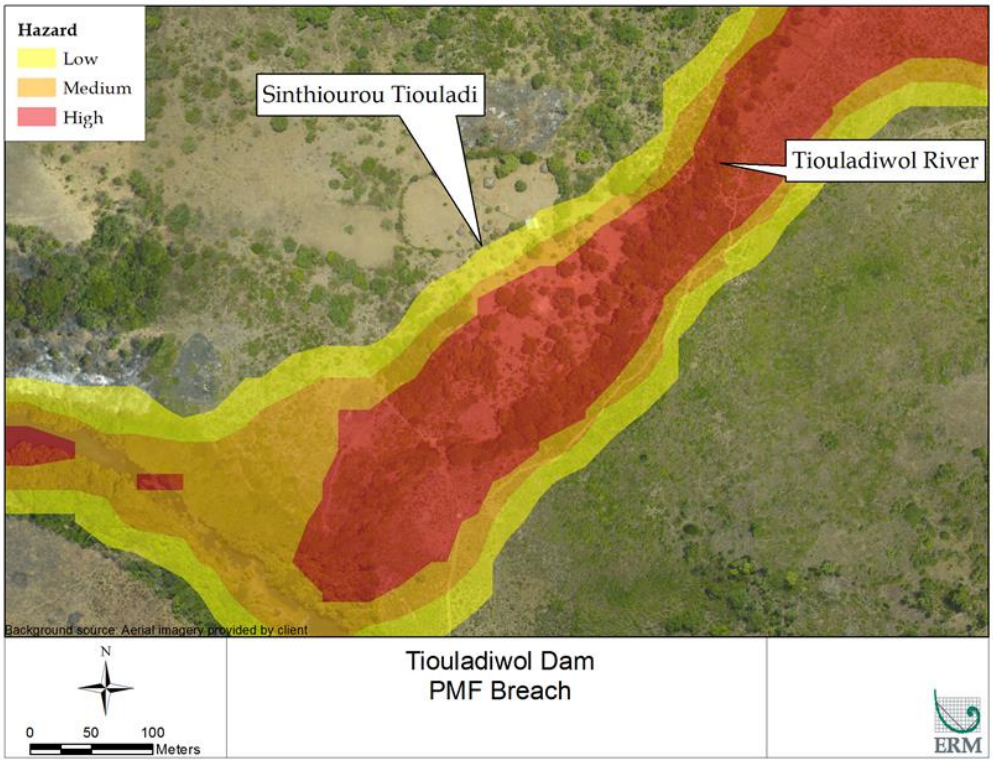


Figure 7.4 PMF hazards near Sinthiourou Tiouladi



7.3.3.2 Resettlement needs

Most resettlements will be economic resettlements. Only few households (around 14) from Sinthiourou Tiouladi, identified through the numerical model used for the dam breach risk assessment (see above), will be physically resettled to avoid any impact on their houses in case of dam breach once the reservoir is full. The other households located within the Project area of influence would endure only minor troubles in case of an unlikely dam breach. The resettlement process will follow the Land Acquisition, Compensation and resettlement Framework defined for the global GAC's mining project.

7.3.3.3 Potential impacts to surface water quality

Water quality in the Tiouladiwol reservoir and downstream is not expected to be significantly impacted by the reservoir, compared to the current water quality. However, because households are highly dependent on the water from the Tiouladiwol upstream of the dam while they temporarily settle in the area to farm the valley slopes or to herd their cattle it can be expected that they will keep drinking water from the reservoir. The water quality is expected to remain conformant with most WHO drinking water limits, however the risk of presence of bacteria remains, independently from the activity of GAC and the presence of the dam infrastructure. Therefore, people may, as it is already the case, become sick from drinking this water. If they

perceive this as being the consequence of the Project dam, this could lead to important conflicts and resentment from local communities.

The address this potential impact, the following mitigation measures will be implemented*:*

- to implement a water quality monitoring;
- to engage with local communities and communicate water quality results;
- to inform local communities on the existence of a grievance mechanism would they have complaints in relation to water quality; and
- depending on results from the water monitoring and grievance management to provide alternative sources of water such as by repairing non-operational wells and developing new wells around the reservoir area and downstream of the dam.

7.3.3.4 Risk of increasing incidence of malaria

The creation of a large perennial water source could favor increased incidence of malaria which incidence is already high in the area (51.8 % of the population in the study considers they had malaria in the past 3 months).

To mitigate this impact and ensure it will remain of a minor significance the Project will ensure:

- to monitor the incidence of water based diseases in villages nearest to the reservoir area;
- to implement malaria and other water-based diseases awareness campaigns;
- to distribute mosquito nets in the nearest villages; and
- if health monitoring results highlight an important increase of water based diseases, GAC will consider increasing people's access to existing healthcare facilities or developing mobile healthcare units.

7.3.4 Cumulative impacts

Sources of cumulative impacts could be the following:

- GAC's quarry on the upper catchment; and
- mining activities in the whole concession and around from other mining companies.

7.3.4.1 Cumulative impact related to GAC's quarry on the upper catchment

The dolerite quarry operated by GAC on the upper Tiouladiwol catchment since 2007 generated changes in flow patterns in the upper Tiouladiwol, potential increase of total suspended solids (TSS) and silting in the reservoir, and increased the risk of oil spills and other pollutants from the quarry facilities and engines. These impacts on freshwater ecosystems are likely to interfere with those of the future reservoir. The extension of the quarry may likely enhance those impacts.

The presence of stagnant and permanent water bodies (ponds at the quarry, plus water supply reservoir) is likely to represent a cumulative impact regarding the ecological conditions in the river (e.g. increased temperature, conductivity and organic matter, change in the fish assemblage) and risk of an increase in water borne diseases.

This cumulative impact could deteriorate the access of communities to natural resources and increase risks of water based diseases. Implementing a monitoring program of reservoir water quality and erosion control measures for the quarry activity not to pollute the downstream river will help reduce the significance of this impact.

7.3.4.2 Cumulative impacts related to the mining activities

Mining activities from GAC and other companies around, as detailed in the 2015 ESIA Addendum of GAC's bauxite export project, will generate losses of lands and related livelihoods in the whole area. The dam area will be exposed to similar potential cumulative impact than for the other areas within the region.

GAC will manage to implement a RAP strategy considering the global area of influence of the different projects in the area and avoiding to increase pressure on the land of a specific area and in particular to the Tiouladiwol catchment.

In the SEMP included in 2015 SEIA Addendum report of the bauxite export project, GAC has identified and committed itself to a large number of social and environmental measures designed to mitigate adverse impacts and ensure benefits are delivered.

All actions included in this SEMP and relevant for the dam project, will be implemented by GAC. In addition, additional specific mitigations measures defined for GAC's dam project will be compiled into a global SEMP and other management plans to ensure all environmental and social aspects related to the dam project will be integrated within the GAC's day to day management all along the global mining project development until its closure.

Necessary specific measures related to the dam project will be added to the surveillance and monitoring plan defined in the 2015 SEIA Addendum report for the Bauxite Export Project.