The Bel Air Bauxite Mining Project
Environmental & Social Impact Assessment (ESIA)
Non-Technical Summary
April 2016
This document is a Non-Technical Summary (NTS) of the Environmental and Social Impact Assessment (ESIA) for the Bel Air Mining Project. It provides a summary of the Project and its related ESIA process and provides information on the systems developed to manage the predicted environmental and social impacts of the Project’s activities during all phases from construction to closure. This document and the complete ESIA report are publicly available on the Bel Air Mining Project websites at:


Local stakeholders can access more detailed information in a variety of different ways, including through the Bel Air Information Centre (BAIC) located in the Bel Air Hotel (Boffa Prefecture, Guinea). A printed copy of the ESIA in English and French is available for reference in the BAIC and at the Alufer-Bel Air Mining office in Conakry. Digital copies are also available at these locations. The Bel Air Mining’s Stakeholder Engagement Plan (SEP), which outlines the company’s approach to involving interested parties as the Project proceeds, is also available.

For more information on the issues outlined in this report, to ask questions or provide feedback, please contact moreinfo@alufermining.com in English or French.
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1 Overview of the Bel Air Mining Project

The Project is located in central north-west Guinea approximately 210 km from Conakry, in an area with elevated plateaux and undulating hills, river valleys and more gently sloping land at lower elevations, sloping down towards the coastline (see Figure 1). Access to the Project is off the RN3 Highway coming from Conakry to Boke, with the main access route to the site via the 25 km long Bel Air Road that splits off south to the coast from the RN3. Near Khoundinde, a turn-off to the east will allow access to the mine haul road to the main quarry. Continuing south past the Bel Air hotel to the east, a new access road will connect to the future port location in Cap Verga where the Export Facility is located. This access, using initially a new gravel road, will become the main access during mine operations. The Project is in the Prefecture of Boffa and strives over the Commune Rurale (CR or Sub-Prefecture) of Douprou, Tougnifily, and Mankountan.

Figure 1: Location of Bel Air Mining in Guinea

The Project area is located south of the RN3 Highway except Pit 6 area which lies to the north of the road. The communities closest to the Project using the Bel Air Mine Camp as the centre location are:

- Khoundindé (central village), located 1.6 km to NE;
- Koukoudé (fishing harbour), located 5.6 km to NW;
- Douprou (CR), located 15 km on the western edge of the Project;
- Tougnifily (CR), 25 km to the northern edge of the Project; and
- Boffa (Prefecture), located 70 km to the east of the Project.
Alufer SA, an Alufer Mining Limited subsidiary, is a private company focused on extracting bauxite in Guinea. On 3 May 2010, it obtained an exploration permit in the Bel Air area of the Prefecture of Boffa. The Permit "Bel Air-Sud" extends over an area of 417 km². The bauxite deposits cover an area of 147 km².

Alufer’s proposed Bel Air Mining comprises the extraction of ore from six open pits 15km from the planned export facility at Cap Verga on the Atlantic coast of NW Guinea. Most of the mine infrastructure required for the export of ore by sea is to be located at sea level elevation close to the coast. The pits will be mined sequentially, utilizing Wirtgen surface mining technology, followed by the haulage of bauxite to the Export Facility (EF), where barges are loaded to transfer the Direct Shipping Ore (DSO) to the Transhipment Zone (TSZ) located 25km off the coast. The transfer of DSO into ships will take place at the TSZ for export. The Project will have a life of approximately 15 years, including less than two years of construction. Project related infrastructure and facilities include the Mine Support Area (MSA) for mining, the screen ROM tip, stockpiles, a conveyor leading to the 1km jetty at the EF which includes a berth, the mine camp for workers’ accommodation, and water supply, solid waste and sanitation sites.

The project will be designed for steady state production capacity of 5.5Mtpa and deliver a total life of mine (LOM) of approximately 15 years. It will handle this nominal capacity from Years 3 - 4, with lower capacities in Years 1 and 2, and Years 13 – 15.

The physical footprint of the Project’s facilities will cover 824 ha, and a further estimated 300-400 ha is likely to be disturbed by construction activities, subject to reclamation before mining operations start, and restricted access. Mainly based on community health, safety and security reasons, further buffer zones will experience effects of noise and dust deposition as well as requirements for biodiversity conservation and limits to access resulting from fencing, or proximity to Project infrastructure. These buffer zones will be quantified pending additional studies and consultation with local stakeholders, local authorities and regulators.

Approximately 610 people will be employed at peak during mine construction, and 485 during operation. The Project will prioritise local recruitment and will aim for at least 30% of operations jobs to go to residents of the local and nearby settlements. A strategy, including training programme, is being developed to support local residents in becoming “employment ready” for the operations phase. Non skilled workers will be hired for construction, and they will be provided with adequate training.
Figure 2: Plan Schematic of Bel Air Mining Project
2 ESIA Report

The ESIA, which was written by Insuco and SustainRisk and other expert consultants, was published in April 2016 and contains the following:

- A review of the policies, laws and regulations that the Project must comply with as it is developed and operated. These include both Guinean legal requirements and international standards which Alufer has committed to apply, such as the Equator Principles, International Finance Corporation Performance Standards (IFC PS), the International Council on Mining and Metals (ICMM) 10 Principles and Good International Best Practice (GIIP);
- A detailed description of the mining and industrial processes that will be employed;
- An assessment of alternative mining and processing methods that were considered, and an account of how the proposed locations of major items of Project infrastructure were selected, including illustrations of how environmental sensitivities and stakeholder considerations informed these choices;
- A description of the environmental and social 'baseline' conditions in the Project area, including physical, biological, social, economic and cultural elements;
- The impact assessment, which predicts the potential impacts the Project may have on baseline conditions, taking account of feedback from stakeholders including those residing in affected communities, local government, businesses, and other interested organisations;
- Identification of mitigation measures required to avoid, minimise and manage negative impacts (or enhance positive impacts), and which may apply to the engineering design, construction, operation or closure phases of the Project;
- An assessment of cumulative impacts associated with the Project; and
- The Environmental and Social Management Plan (ESMP) for the Project, which provides for implementing and monitoring the effectiveness of the identified mitigation measures during the life of the Project.

The Bel Air South Exploration Permit was converted to an Exploitation Permit in 2013, after two successful field campaigns and the completion of the initial Feasibility Study and grant of the Environmental Certification. The Project was initially screened against applicable Republic of Guinea (RoG) environmental laws, regulations and standards to determine the requirements for obtaining an EIA (named in French EIES) approved by the
Government of Guinea. Subsequently, an EIES meeting RoG permitting requirements was completed in September 2013 and approved by the Ministry of Environment through a Certificate of Conformity obtained in 2013. The need to carry out additional work for compliance with the IFC and Equator Principles became apparent in mid-2015 in order to secure funding for the project from, inter alia, Equator Principles Financial Institutions (EPFIs). The preparation of the ESIA took place alongside a Definitive Feasibility Study (DFS) which looked at the engineering options and costs around developing the project. The international ESIA which this NTS summaries is consistent with both the approved EIES and the 2016 Definitive Feasibility Study.

How the ESIA has been summarised in this NTS?

The main focus of this document is to clearly communicate to all stakeholders the planned Project activities and how potential environmental and social risks and impacts will be managed. Chapter 1 presents a comprehensive introduction to the Project, including the assessment process.

Chapter 2 summarises the regulatory framework (Guinea and international) applicable for the Project. Chapter 3 provides a Project description. Chapter 4 summarises the results of the environmental and social baseline studies. The potential alternatives considered in the Project design process are summarised in Chapter 5. The approach to assess impacts and present mitigation measures is described in Chapter 6, reviewing each impact for each environmental and social component, using questions as sub-headings:

- What is the present state of the environmental or social baseline component?
- What are the potential impacts from the Project activities?
- What will be done to manage or control the impacts?
- What risks and impacts will remain?

Chapter 7 assess the cumulative impacts of the Project, taking account of other potential developments or background trends in the locality. Chapter 8 describes the Environmental and Social Management Plan (ESMP) and will be a continuing aspect of Alufer’s SHEC management of the Bel Air Bauxite Project.
3 Project Description

The Project will include the following phases:

- **Design**: Continuation of the design process, with further detail and refinement;
- **Construction**: Stripping of vegetation, soil and overburden (with stockpiling of soil for use during restoration) and construction of all facilities and infrastructure required for mine operations;
- **Operations**: Sequential mining of DSO from six pits, phased over the life of the Project; placement of overburden and topsoil nearby, hauling to the Export Facility (EF) and shipment of the ore for export using the Transhipment Zone (TSZ);
- **Closure**: Removal of all mining and processing infrastructure and reclamation of affected land, aiming to restore existing vegetation types and habitats; and
- **Post-closure Monitoring**: To continue for a minimum of two years.

Table 1 gives a summary of the timing of each phase of the Project.

<table>
<thead>
<tr>
<th>Project Phase</th>
<th>Year and Time Period</th>
<th>Key Project Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Design</td>
<td>Year 0</td>
<td>Final design, detail engineering and refinement</td>
</tr>
</tbody>
</table>
| Construction  | Years 1-2 (1.5 years)| Early Works (6 months) - Construction to include quarry development, mine camp construction and establishing of services  
Main Works - Construction to include the Export Facility. All infrastructure will be developed up to Pit 5 pit access  
Mining Early Works to include work by the mining contractor 4 months prior to start of mining with the pit access road construction and establish structures and infrastructure at the Mine Support Area |
<p>| Operations    | Phase 1 Years 2-3 (2 years) | Mining operations will commence and focus on Pit 2 and Pit 5 |
|               | Phase 2 Years 4-9 (6 years) | Mining operations will commence in Pit 3, Pit 4 and Pit 6 |
|               | Phase 3 Years 10-15 (4 years) | Mining operations will commence in Pit 1 |</p>
<table>
<thead>
<tr>
<th>Project Phase</th>
<th>Year and Time Period</th>
<th>Key Project Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Closure</td>
<td>Years 14-15 (2 years)</td>
<td>Dismantling of infrastructure, reclamation and revegetation of land</td>
</tr>
<tr>
<td>Post-Closure Monitoring</td>
<td>Years 16-20 (2 years)</td>
<td>Monitoring after rehabilitation</td>
</tr>
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The major Project components that will be developed during the construction and operations phases are the following (see also Figure 3):

- Bauxite Pits (6);
- Topsoil Stockpiles for initial mining terraces and roads;
- Initial mining terraces and stockpiling overburden in dumps;
- Haul and Access Roads, including 17 river crossings (16 Armco culverts and 1 bridge);
- Run of Mine (ROM) Tip;
- Export Facility (EF) with Causeway, Conveyor, Berth and Barge Loader;
- Quarries and Aggregates;
- Sediment control ponds;
- Mine Support Area (MSA) - Platform for fuel storage, power generation, re-fuelling, truck parking, wash bays, maintenance workshops, change room, administration offices and warehouse;
- Transhipment Zone (TSZ) for transferring bulk ore to the OGVs, including barges and tugs;
- Utilities such as well fields for water supply, water distribution, sewerage, electrical network, lighting and internet;
- Domestic waste-water treatment facilities (bio-digestors, septic tanks and leach fields);
- Landfill for non-hazardous waste and other waste management facilities including an incinerator;
- Temporary Storage for hazardous waste; and
- Mine Camp – Accommodation for Bel Air Mining staff and contractor staff located next to the Bel Air hotel.
Figure 3: Major projects components of Bel Air Mining Project
The current Project Development Schedule is outlined in table 2. Construction is expected to start between Q3 and Q4 2016.

<table>
<thead>
<tr>
<th></th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
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<tbody>
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<td>Construction Early Works</td>
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<td>Construction</td>
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<td>Mining Early Works</td>
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<tr>
<td>Mining</td>
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Table 1: Proposed Project Development Schedule

Figures 5 to 8 show equipment planned for the Project.

Figure 6: CAT 747 Benne Truck

Figure 7: Surface Miner Wirtgen 2200

Figure 5: Typical coaster arrangement (above)

Figure 4: Transhipper in operation loading Panamax vessels (on the right)
Permitting status

The mining sector in Guinea is mainly regulated by the Mining Code, which was adopted in September 2011. Various regulations on environmental protection and social development provide RoG requirements for the construction and operation of a mining project.

The Environmental Approval process in Guinea requires the mining title holder to carry out an Environmental Impact Assessment and Social Assessment (ESIA or Etude d'Impact Environnemental et Social - EIES) followed by an Environmental Management Plan and Social (ESMP or Plan de Gestion Environnemental et Social - PGES), a Health and Safety Management (HSP or PGSS), an Industrial Hazard Risk Assessment (Etude de Danger) and a Land Access and Resettlement Action Plan (LARAP or PAR) as separate reports depending upon specific procedures, methods and approaches to public consultation.

The initial Certificate of Environmental Conformity was received in mid-2013, renewed twice in 2014 and 2015. The current one is valid until December 2016. Following the completion of the ESIA a revised PGES (ESMP) will be sent to the government in 2016, with annual revisions of the Certificate of Conformity (Certificat de Conformité) required to comply with environmental and social regulations in Guinea.

Alufer was granted the Bel Air Projet d'Interêt National (PIN) valid for 2 years through presidential decree that enables the development of infrastructure required for the export of ore from the mining areas contained within the Exploitation Permit. The Mining Convention (MC) with the Government of Guinea was signed on 1st February 2016, and ratified by the National Assembly, 1 June 2016 provides the investment and construction timelines, the operational regime and the fiscal/tax incentives for the development of the Project.

Land access and Resettlement

The land required for construction and operation of the Project is located within areas traditionally owned by residents of surrounding villages. Some land required for infrastructure will only be needed for the 15-year construction and operational period and will then be restored and transferred to community ownership. However, some land located in the pits footprint and the export facility might not be usable post-mining.

The Project components occupy roughly 824 ha over the LoM. The total area to be disturbed over the LoM amounts is yet to be determined during detailed engineering before mid-2016. It is estimated that approximately 300 to 400 ha of land around the main infrastructure will be subject to access restrictions for safety purposes, or will otherwise be affected by operations, during the Project life.

Of this overall total footprint, approximately 850-900 ha comprises approximately 200 traditionally held plots that Alufer will gain access to through a land access and resettlement process. There is minimal need for physical resettlement, but some
cultivated land will be lost resulting in economic displacement. The land will be acquired through a negotiated settlement with each land user and/or owner. Landowners will be offered either land-for-land replacement or other livelihood alternatives; land users will be compensated for lost crops and trees. Care will be taken to identify and provide additional assistance to vulnerable households.

The Project has been designed to avoid physical displacement as much as possible. However, there will be minimal physical displacement as well as economic displacement, with resulting impacts on people’s livelihoods. The summary of this is provided below:

Land access is required for an estimated total of 830ha; of which socio-economic and assets surveys completed to date cover 54.73 ha with 62 Project Affected Persons (PAP) in the Commune Rurale of Khoundinde. Full completion of the above surveys including consultation of PAP is expected by mid-2017; and

Physical resettlement is anticipated for some households to include 14 households in Kinkon village and Moriadai impacted by the corridor construction, one household in Drameya and 2 in Gbakon (quartier of Khoundinde, close to the dolerite quarry).

The numbers above reflect the situation at the time of the planning for the land access. They may be subject to revision. The land access process will comply with both Guinean laws and regulations, and the requirements of IFC PS5, which represent international good practice in the process of land acquisition. The process is based on negotiated settlements, with expropriation used only as a last resort if all avenues for amicable settlement have been exhausted. The identification of affected plots and owners/users is based on official cadastral information, complemented by field surveys.

An information booklet for villagers will be prepared. A Land Access and Resettlement Framework (LARF) has been completed in March 2016, to be publicly disclosed locally in French as well as in English on the Alufer website. To align with the project schedule 4 different Land Access and Resettlement Action Plans (LARAPs) will be prepared.
4 Projects Impacts and Environmental and Social Management

This chapter provides a brief summary of the baseline conditions and impact assessment presented in the ESIA for various environmental and social elements. Each subsection includes the following:

- The state of the environmental or social element prior to Project implementation;
- The impacts that may result from Project activities;
- Measures to be implemented to avoid, reduce or manage the impacts; and
- Predicted impacts that may remain after the management measures are applied (known as residual impacts).

The geographical area studied varies slightly for each environmental or social element, but the general areas affected by the Project are shown in Figure 6.
Figure 8: Global baseline study boundaries
4.1 Overview

Located along the shore of the Atlantic Ocean, the Bel Air area has an average rainfall of just over 2,300mm per year. The annual average temperature is around 26°C, with a maximum of between 36°C and 38°C in March, and the humidity fluctuates between 70 and 78%. The climate is subject to the influences of sea breezes, which reduce temperatures, particularly in the afternoon.

There are 62 villages in the Mining Concession and surrounding area, people living in these villages are considered to be people impacted by the project at different levels. Based on the last national census, these villages are home to about 25,000 inhabitants. Population density is above the average throughout Guinea. Although this key Project for Guinea will provide employment expected to benefit the communities, it will also represent a transition away from traditional lifestyles. Access to areas which are used for agriculture, grazing animals and fishing will be partly restricted by the presence of Project infrastructure.

During operations, the project may generate impacts such as air and water pollution, noise, vibration, dust generation, modification of biodiversity, land use and livelihoods. Based on the assessment work to date, it will not significantly affect local people.

Alufer will work with local communities and government to minimise and manage the potential negative environmental and social impacts of the Project, through regular monitoring, information dissemination and awareness training, stakeholder engagement, and the administration of a community grievance mechanism.

The following sections present aspects of the physical environment, air quality and noise, and biodiversity, both terrestrial and marine and it also covers socio-economic topics including demography and livelihoods, community health safety and security, ecosystem services and cultural heritage.

4.2 Physical aspects

Impacts on climate and Greenhouse Gas Emissions will be assessed when the detailed engineering is completed.

Landscape and visual amenity

Landscape character is considered to be important in its own right; it has intrinsic value regardless of whether it is seen by people. Impacts on visual amenity as perceived by people are a related potential impact.

The Project area lies within a 'natural' landscape characterised by rolling hills rising above smoother, grassed or forested lowlands. Towards the Atlantic Ocean, the landscape is relatively flat with vegetation cover with dunes or swamps closer to the coastline.
The Project will result in changes to the landscape that will not be fully restored to its pre-existing condition when mining is finished. All infrastructure and facilities will be removed, and sites will be rehabilitated and returned to community use when possible, after consultation with the central and local government. However, restrictions may apply to future use of the rehabilitated mine pits based on requirements for long term monitoring. These elements will change the local landscape permanently, though not to an extent that is significant within the wider region.

Various measures will be implemented to reduce impacts during construction and operation. Buildings and structures will be located to be screened by existing topography or vegetated earth berms where possible; external lighting will be kept to the minimum required for safety purposes; and if required, buildings will be painted to blend in and reduce their perceptibility within the landscape. Throughout construction and operations, areas that have been disturbed by previous exploration or construction activities, and which no longer form part of Project operations, will be restored and revegetated. This applies in particular for the sequential rehabilitation of each pit when mining is complete.

Water resources

Water resources include surface water in rivers, springs, streams, wetlands, and groundwater, which exists beneath the land surface.

The catchment is the area within which surface water and rainfall drain to the ocean. The main river catchments in the Project area are those of the Tansofa, Kinkon and Khissiling. Groundwater exists beneath the surface in the spaces between soil particles, in sand and gravel deposits, and within small pores or fractures in underlying rock formations. A formation that is capable of producing significant quantities of groundwater is known as an aquifer. Water flow through an aquifer is slower than surface water drainage. Water from an aquifer can reach the surface through springs, rivers, and wetlands, or where the water table rises to the ground surface during heavy precipitation. Groundwater within the Project area feeds springs, wetlands and recharges the 3 main rivers. Groundwater and river water is used variously for household requirements, drinking supply and sanitation, agriculture, animal husbandry, fishing and by other users such as herders.

Surface water quality is potentially at risk from leaks or spills of oils and chemicals used during construction and Project operations, and from sediment run-off. However, the Project will employ best international industry practice in water management methods, in terms of design, construction and operation. Most importantly, water used during ore processing operations will be in a closed system: no water that has come into contact with mining operations (‘contact water’) will be discharged directly to the environment. During construction and operation, water will be abstracted from the shallow aquifer which is not primarily used by villages. It is anticipated that aquifers are not going to be significantly impacted by mining operations. A fundamental principal of Project design is that water – which includes water used for mining and hauling, contact water and seepage from
overburden – will not enter the outside environment; i.e. it will be a closed system. All run-off and non-contact water will be discharged after appropriate treatment.

A priority of Project design has been to ensure that the Project does not significantly impact water resources. An extensive programme of water monitoring will be continued throughout all phases of the mine life. This will include monitoring at groundwater observation wells installed specifically to detect water quality impacts down-gradient of the pits. The monitoring programme will be designed to verify the mitigation measures outlined below, and will also identify any unforeseen impacts, allowing additional actions to be taken, if required.

4.3 Air quality

The Project has been designed to incorporate several techniques to manage fugitive dust emissions from the site.

Haul roads and other access roads that have the potential to generate dust emissions will be sprayed with water or treated with non-hazardous chemicals to limit dust generation. Other dust suppression measures include controlling vehicle speeds on mine roads, keeping the stockpiles moist, and the construction of vegetative barriers.

To control gas emissions from vehicles and other combustion sources, equipment will be regularly maintained, and built-in emission control equipment will be kept in good working order.

What risks and impacts will remain?

After applying all management and control measures, no negative impacts on air quality are expected to remain in both the short and long term.

4.4 Noise and vibration

Noise and vibration are measures of what can be heard and felt from quarry blasting, hauling and loading processes. The assessment considers how local communities will experience these impacts.

Construction activities that will generate noise include clearing soil and preparing foundations, operation of the quarry and construction of the jetty, concrete and aggregate batching plants, and heavy vehicle operation. During operation of the mine, noise will result from mining, drilling, movement of haul trucks transporting ore and overburden along the haul roads, the action of the ROM tip, and operation of the conveyor and loaders.

Noise from vehicle movements and processing plant equipment is expected 24 hours per day during the operational phase, except during planned shutdowns for maintenance.
Noise and vibrations as a result of blasting at the quarry will occur around once a month for the 6 – 8 months that the quarry will be operational for. There will be instantaneous noise from blasting combined with vibrations transmitted through the air and ground. Impact on local infrastructure will be minimal, three households will need to be physically moved.

What risks and impacts will remain?

Communities will potentially be affected by noise from the Project. People carrying out agricultural activities, seasonal herders and animals grazing near the mine may also be disturbed by noise emissions.

Although construction and mining equipment result in loud noise close to them, it is the distance from the source of noise that determines whether a person or community is adversely affected. Noise sound levels reduce exponentially with increasing distance from the source of the noise. Generally, a person placed 1km or more away from a noise source will not be adversely affected by noise, although operations may still be heard.

To manage the quarry development, the project will prepare a Blasting Procedure which will include a pre-blasting survey, and evacuation of Khoundinde village during blasting. In addition, the project will develop a Community Project with Khoundinde to compensate for the quarry disturbance that will occur during 6-8 months.

4.5 Biodiversity

Alufer conducted a preliminary assessment of biodiversity between Feb to April 2016, additional baseline studies are currently underway to determine the presence of critical habitat, as per IFC definition. The results of these studies will be incorporated into an overall assessment of biodiversity impacts and mitigation measures after applying the mitigation hierarchy, to produce a final Natural and Critical Habitat Assessment, a Biodiversity Action Plan and a Biodiversity Management Plan.

Potential impacts could be the result of habitat degradation, noise and dust deposition, and by blocking animal movement. Any impact identified will be reduced, to the extent possible, by the implementation of management measures and by post-mining restoration.

Alufer is committed to comply with the IFC, and Equator Principles and should the Project result in the loss of natural vegetation and habitat for both marine and/or terrestrial species, Alufer could contribute to a Biodiversity Offset Project to compensate for the loss of natural habitat.

4.6 Community demographics, economics, and livelihoods

Employment
The Project will employ approximately 610 people during the peak of construction and 485 during the operations phase. A commitment has been made by Alufer to prioritise local employment; however, due to project requirements, it is anticipated that skilled jobs will go to people from outside the local area if they are not found locally. Based on targets which the company has set, it is estimated that about 30 percent of the operational roles will be filled by residents of the local and nearby settlements. The company is committed to operating as a Guinean operation, with no more than five percent of the operational workforce being expatriates.

The income earned by mine workers will be considerably higher than current average salaries in the local communities. People producing agricultural products may find it easier to market their goods, and will be able to use more regular links to Conakry to reach larger markets. Tourism facilities will probably be used more because of the increased number of wage earners.

However, there will be drawbacks to increased employment in the area, including a potential shift from traditional ways of earning a living toward mining and industrial work, including a loss of social traditions, wage inflation and increases in some living costs. Additionally, the transition from construction to operations will see a major retrenchment of workers, and this will occur again upon mine closure.

People migrating into the area

The development of a project of this scale will be seen as an economic opportunity by many people, potentially attracting people from outside the immediate area in search of work. Given the tradition of young people (males in particular) leaving for work, the development of the Project may encourage these family members to stay in the area, or to return. If new migrants come into the area they will increase the resident population in the towns, and could change the nature of the communities and existing social structures. In-migrants might include families moving into the area if the breadwinner has gained a job with the Project. Traders and small- to medium-sized enterprise owners are likely to arrive, hoping to capture the increased disposable income that people in the area will have as a result of mining-related employment.

The introduction of new people, both workers and in-migrants, to an area can bring with it social challenges. The sudden increase in salaried employment available locally, combined with potential differences between local customs and the customs of people moving into the area, can also cause social impacts. Social issues that have been experienced by similar projects in Guinea and elsewhere in the world include an increase in alcohol consumption, prostitution and related sexually transmitted diseases, and increased crime and violent behaviour.

Economics

This revenue generation is generally considered positive. As there are concerns in many countries about the importance of tracking revenues paid by mining and oil & gas
projects to government, and given the public desire for transparency around how non-renewable resource revenues are made, Alufer intends to publish details of its payments to government entities at least annually and will support any government decision to participate in the Extractive Industries Transparency Initiative (EITI).

The development of the Project is likely to have an impact on local inflation. This is driven through increased spending power within the local economy, driving up demand and prices over time. Inflationary pressures may influence purchased items within the communities as well as the local housing market. Inflationary effects are likely to particularly impact households who are reliant upon a cash-based economy either through renting or purchasing property or purchasing food items.

Livelihoods

Development of the Project will require access to land. Approximately 220 plots of land are expected to be required by the Project. The Project has a dedicated social management team which is responsible for managing and mitigating potential social impacts and which engages regularly with affected stakeholders. Affected community members can raise any concerns they may have with the Project and its potential impacts through the community grievance mechanism, as well as during regular various committee meetings, as described in detail in the Stakeholder Engagement Plan (SEP).

Alufer is committed to prioritising local employment, other factors being equal. In order to boost local skills levels and better prepare local communities to be eligible for employment opportunities, a training programme for workers will be rolled out as soon as possible, offering access to technical training over a fixed period of time. This training programme is being designed to respond to known skills or training gaps of relevance to the Project within the local communities. The goal of the training programme will be to improve the employability of the local community residents, targeting operational roles on the Project. A successful training programme for workers will help to reduce the risk from in-migration associated with job opportunities, but it will not eliminate the risk entirely.

The social effect of the retrenchment associated with the transitions from construction to operations and from operations to mine closure will be managed through effective, early consultation and planning. Retrenchment planning will also be required by Alufer’s contractors.

All employees and contractors will be required to agree to the Alufer Code of Conduct which stipulates expectations for behaviour. Failure to comply with the Code would lead to disciplinary measures for employees and contractors. Given the under-use of most services within the local communities at present, it is anticipated that additional population growth will not overwhelm service delivery. This will be closely monitored by the company in co-operation with local government authorities.
Other steps that Alufer will take include promotion of the local SMEs. This initiative requires identifying the needs for products and services by contractors and identifying the businesses available in the area, priority will be given to local businesses for equal quality of products and services. Alufer will continue to publish the amount of royalties and taxes it pays, in addition to reporting on the amount of land tax paid to communities each year. Inflationary pressures will be monitored by the Project and are being managed through efforts to keep salaries in line with industry norms in Guinea.

What risks and impacts will remain?

Even with mitigation measures in place as described above, significant in-migration could still occur. Alufer will work with local administrators to assist in planning for community expansion. The introduction of non-residential workers and the potential for job-related in-migration could affect the level and type of social problems experienced within the community. This will be monitored and additional mitigations put in place as necessary.

The income from the Local Development Fund should provide positive contribution to local development. The contribution from the Project to the Guinean budget through taxes and royalties is likely to have a positive impact, as will the induced employment impacts across the economy.

The effects of directly employing people at the Project are expected to last longer than the life of the Project, as during the Project individuals will develop new skills and the economy will grow larger. These positive effects will be moderated, however, by the negative effects of major retrenchments at transition points in the Project. Efforts to track and monitor purchasing by the mine, and training initiatives, will help with the overall improvement of the economy.

Not all sectors of the economy will benefit from the development of the mine. It is likely that the agricultural sector will be significantly impacted, through a combination of reduced land availability, agricultural workers seeking employment in the mining project, and changes within society which move away from the traditions of agricultural practices.

4.7 Community health, safety and security

The communities in the Project area currently do not have sufficient medical services and hospitals for the number of people resident in the area. Medication availability is limited in public health facilities, and the supply problem is made more challenging because there are lack of qualified medical practitioners, lack of proper diagnosis and treatment.

Sewerage systems in rural communities are usually not present, neither is domestic waste collection.

The Project is expected to bring about a number of community health improvements. These include reductions in the incidence of water, sanitation and waste-related diseases through structural improvements made to waste management and improved wellness education related to non-communicable diseases.
It is also expected that the Project could result in some community health, safety and security drawbacks. The most significant of these are an increased risk of sexually transmitted diseases, increased number of road traffic accidents, and a new risk of security conflict between the mining company and communities affected by the Project. Accommodation of workers in a closed camp environment can also present risks associated with communicable diseases, including Sexually Transmitted Diseases (STDs).

The wages and salaries the mine pays will increase the wealth of mine workers. Some of these workers may engage in risky sexual behaviour.

The amount of road traffic travelling to and from the mine site will significantly increase, leading to a potential increased risk of road traffic accidents with herders and the local populations, and noise. The road infrastructure has sufficient spare capacity to accommodate the increased traffic flow. The jetty and related infrastructure could also lead to potential accidents with fishermen. Awareness raising with the local population, herders and fisherment and traffic management is planned for construction and operations.

A security presence, either using private or public security guards, could create conflict were security services to use force inappropriately. This could occur if tensions between the neighbouring communities and the Project arise, and guards are not properly trained to deal with such a situation.

Health system impacts

The Project will monitor demographic changes in the communities studied and work with local health authorities to determine if available health facilities remain adequate for the needs of the community.

The Project will ensure that its health services can adequately cater for the needs of the workforce in terms of occupational health and emergency care. The Project will also look for opportunities to partner with the government, donor agencies or NGOs to improve health care services in the broader area.

Sexual health and communicable diseases

The Project will manage sexual health issues in a number of ways. There will be direct engagement with the workforce, through policies, codes of conduct, and education programmes that encourage responsible and respectful behaviour in the host communities, and prohibit sexual harassment. An HIV policy will also be developed for the Project. The sexual health and sexually transmitted infection programmes will extend to the security personnel, long-haul truck drivers, and all Bel Air Mining personal and contractors. All accommodation constructed for workers will meet international standards per GIIP.

Accidents and injuries
To deal with the risk of an increased rate of accidents because of mining and associated activities, the Project will develop a community health, security and safety management plan based on a risk assessment of planned activities. This will include emergency preparedness and response plans for both communities related accidents and also for the workplace. Alufer is publishing an Occupational Health and Safety Policy for the Project and an associated management plan covers all aspects of the health and safety requirements that will be maintained during the construction, operational and closure phases.

Measures such as setting and policing speed limits for heavy goods vehicles making deliveries to the site, enforcing roadworthiness standards, and enforcing a drug and alcohol policy, are some of the things the Project will do to help prevent accidents.

Security conflict

To deal with the potential for conflict between the communities and the company (including its security officers), Alufer intends to implement the Voluntary Principles on Security and Human Rights (VPSHR), and will report upon this. Additionally, Alufer will provide adequate training of security personnel on core human-rights issues. As part of this commitment, a risk assessment is being undertaken to minimise the security and human rights effects that are created by the Project.

Security contracts will be awarded to local companies, where possible, to minimise the risk of creating tension between host communities and security guards. Security guards will all be given effective training and their performance will be carefully monitored.

Water/sewerage

The company will construct septic toilet and water treatment facilities across its workplaces and will manage its own domestic waste.

What risks and impacts will remain?

Health care benefits achieved during the life of the Project are likely to continue after the Project ends. It is likely that the moderately negative effects of sexual health issues will persist after the Project ends.

Despite management measures, traffic accidents remain a possibility as the behaviour of third parties on public roads is beyond Alufer’s control.

Alufer’s adherence to the VPSHR should minimise risks related to security conflicts. It is acknowledged that this is an issue that will need careful monitoring.

4.8 Cultural Heritage

Surveys have identified 15 potential cultural heritage sites that are likely to be impacted by Project development, although none of these is considered by Guinean and international cultural heritage experts to be of high importance. A “chance finds
procedure” will be in place at all times to ensure that any significant new site or artefact discovered during Project implementation can be recorded, investigated and removed or excavated as appropriate.

Proper management of construction activities is necessary due to the presence of sacred forests, initiation sites, graves and other traditional values.

4.9 Ecosystems Services

A complete assessment of ecosystem services as the benefits that people, including businesses, derive from ecosystems was undertaken. Ecosystem services are organized into four types: (i) provisioning services, which are the products people obtain from ecosystems; (ii) regulating services, which are the benefits people obtain from the regulation of ecosystem processes; (iii) cultural services, which are the nonmaterial benefits people obtain from ecosystems; and (iv) supporting services, which are the natural processes that maintain the other services.

There are relatively high levels of dependence on water quality and water supply services. The need for terrestrial provisioning services, such as wood and charcoal used as fuel, plants foraged for food and medicine, is important for local households as a source of nutrition, income and energy. Cultural heritage is key in all villages. Due to the presence of two important fishing villages, conservation of marine fish species is for nutrition as well as for livelihoods. There is a small level of dependence on terrestrial fauna largely because people in the area do not depend on hunting as their main source of livelihood. Wetlands are used for agriculture, and mangroves are used for fishing and wood.
5 Cumulative impacts

Cumulative impacts are defined as impacts that result from the effects of the Project in combination with effects from other sources, which can be natural processes, projects, or other activities, and may be existing, planned, or reasonably foreseeable. International good practice requires that ESIs should include an evaluation of cumulative impacts.

The potential cumulative impacts that have been identified include:

- Global climate change: the regional effects of climate change are predicted to be an increase in temperature and decrease in precipitation. Such changes can cause changes in the ranges of habitats and species. In the Project area, climate change may threaten the viability of wetlands and coastal vegetation types, which is also impacted by the Project.

- Urbanisation and the abandonment of agriculture in rural Guinea: consultation in local communities suggests that the shortage of formal employment opportunities and a general trend towards internal migration to Conakry and other population centres is causing a noticeable abandonment of rural lifestyles within the Project area. This movement away from traditional lifestyles may be exacerbated by the Project.

- Biodiversity conservation of NW Guinea coast as well as protection of endangered species. This includes marine and terrestrial threatened species – turtles, fishes, plants, birds, primates and mammals. There are two protected areas at Rio Kapatchez & Rio Pongo named International Bird Areas (IBAs) and Ramsar sites which have very similar footprints. Ramsar sites are important wetlands.

- Rivers and stream flow and water quality is important to maintain livelihoods. Flow regime within the Tansofa, Kissilin and Kinkon watersheds is controlled mainly by rainfall, base flow from aquifers and the absorptive capacity of wetlands and bas fonds. Streams flow towards the ocean and are usually short in length. Groundwater conditions relate to shallow groundwater or baseflow into streams.

- Existing and future industrial zones nearby Bel Air: bauxite mines and mining projects, alumina refineries, ports and hydro-electricity plants. It includes the Kamsar Port 53km north of Bel Air and the Sangaredi deposits about 110km to the east. Smaller projects closer to Alufer’s may also come into construction and operations in a few years but few details are known about these.
What will be done to manage or control the cumulative impacts?

Although the potential for cumulative impacts has been identified, the extent to which these will occur is difficult to predict, due to the uncertainties involved. In most cases it is likely that the Project will in fact be the primary driver of change in the area, and therefore the Project-specific mitigation measures as identified by the ESIA are also key to controlling cumulative impacts.

The Project will attempt to minimise its contribution to climate change. Alufer is committed to supporting traditional lifestyles where possible. The approach to land acquisition favours a land-for-land compensation scheme, and the Project’s effects on both farmers, fishermen and herders are to be monitored throughout Project implementation, with a commitment to implement any additional mitigation necessary to ensure there is no reduction in the quality of livelihoods. Alufer will continue to support small and medium enterprise programmes, with a focus on agricultural activities in particular.

New mining projects anticipated close to Alufer will have additional impacts on noise, greenhouse gases, air quality, water resources, biodiversity, traffic, land use and land access. The ESIA initial findings show that it is not necessary to extend the analysis of cumulative impacts beyond 20-30 km from the Bel Air site. The bauxite deposit area is considered large enough to account for potential cumulative impacts resulting from other mining projects surrounding the Alufer Project. It is not Alufer’s responsibility to identify impacts from other projects as each operation should be doing this themselves then convey through an appropriate institutional vehicle to carry out a review of the potential cumulative impacts of projects located in the same region. Alufer is willing to work together on measuring impacts and if necessary design and implement likely biodiversity offsets on an aggregated basis.
6 Project Alternatives

Potential alternatives for the Bel Air Project have been considered in detail in terms of their predicted environmental and social impacts. The options considered included different types of mining and processing technologies, and alternative locations for elements of mine infrastructure.

Open-pit mining was selected because the alternatives are not suitable for the Bel Air deposit. In particular, underground mining is not a commercially viable approach, given the widely disseminated, low grade nature of the ore and the fact that it is very close to the surface.

The locations of the pits are dictated by the location of the ore body. This also presents constraints for the positioning of haul roads and other infrastructure, but options have been assessed where possible. Nevertheless, a site alternatives assessment process was undertaken for various options for export and shipping of the DSO, accounting for such considerations as ore transportation, haulage distances; presence of communities; and presence of sensitive hydrological or biodiversity receptors. The sites that best balanced the different considerations were chosen as the preferred locations, as indicated in Figure 2.

7 Social and Environmental Management Plan (SEMP)

The Project is implementing an Environmental and Social Management Plan (ESMP) covering all design requirements, mitigation and management measures, and monitoring activities defined in the ESIA. The ESMP outlines the organizational requirements and includes the detailed discipline-specific management plans and environmental and social monitoring required to ensure that the necessary measures are taken to avoid potentially adverse effects on the environment and local communities. The management responsibilities for the ESMP have been defined in an organogram to ensure clear lines of communications and management at all times. Mitigation measures have been identified in a Commitments Register that forms part of the ESMP, which will continue to evolve in both scope and context as the Project moves forward to the construction, operational and closure phases.

Alufer has overall responsibility for the ESMP for all project phases, which commenced during Project design and will continue through the construction, operation, and closure of the mine. Alufer will ensure that the commitments are adhered to by all contractors involved in the Project. Contractors will be evaluated in terms of their environmental and social capability and performance prior to contract award, and bid packages will include the Project commitments. All contractors will be supervised by Alufer’s environmental and social specialists to ensure that compliance with the ESMP is maintained at all times.
An overall schedule for work consistent with all the management plans, will be developed to inform the contractor selection process. In the bidding process, prospective contractors will need to demonstrate explicitly how they would meet the needs of the Project in terms of managing environmental and social issues.

A number of management plans are being developed as initial documentation for the ESMP. A comprehensive Environmental and Social Management System is being developed to properly implement the commitments made in the ESIA, during construction as well as during operations. It will ultimately include the full suite of management plans, procedures and work instructions.

For the duration of the Project, Alufer will publish an annual monitoring report that will assess the effectiveness of the management plans and their implementation and, where necessary, advise on changes to the ESMP. These annual reports will be made available to affected communities, other relevant authorities, and the financial lenders/investors, with a summary report released for public disclosure. The ESMP requires Alufer to continuously develop the mine closure plan and progressively restore areas of the mine that are no longer in use. During the operational phase, further research, including the revegetation programme, will inform closure and rehabilitation planning, so that the detailed plan will be finalised, published and agreed at least two years before mine closure.

During the exploration, pre-feasibility and feasibility phases, the main aim of stakeholder engagement has been to establish two-way communication between Bel Air Mining and stakeholders at national, regional and local levels to ensure stakeholder views are incorporated into the EIES, ESIA and Project design. Good relationships with local communities have supported the development of exploration activities.