REPORT

Kribi-Ebolowa Road Project, Cameroon
Environmental and Social Impact Assessment (ESIA)

ESIA Non-Technical Summary

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GLOSSARY OF TECHNICAL TERMS AND LIST OF ACRONYMS

AoI	Area of Influence
AQMP	Air Quality management Plan
EHS	Environmental, Health and Safety
EHSS	Environmental, Health and Safety and Social
EIA	Environmental Impact Assessment
EPRP	Emergency Preparedness and Response Plan
ES	Environment & Social
ESIA	Environmental & Social Impact Assessment
ESMP	Environmental Social Management Plan
ESMPs	Environmental Social Management Plans
ESMS	ES Management System
GN	Guidance Note
ICMC	Impresa Costruzioni Maltauro
IFC	International Finance Corporation
km	Kilometers
MINTP	Ministry of Transports of Cameroun
MP	Management Plan
OHS	Occupational Health & Safety
PAP	Project Affected People
PS	Performance Standard
QAoI	Quarry and Site installations Area of Influence
RAP	Resettlement Action Plan
ROW	Right Of Way

1.0 INTRODUCTION

The following document provides a comprehensive overview of the Environmental and Social Impact Assessment (ESIA) report prepared for the upgrade of the Ebolowa - Akom II – Kribi (EAK) road in Cameroon (the Project). This Project is presented by ICM Construction Limited (ICMC or “the Company”), the UK company of ICM Group, an Italian company specialized in the construction sector. ICMC was awarded a contract by the Government of the Republic of Cameroon to construct the Project. Once completed, the Ebolowa - Akom II - Kribi road N17 will be operated by the Ministry of Public Works (MINTP).

The governmental bodies responsible (hereafter referred to as “the Administration”) for the development of the Project are:

- The Promoter: The Minister of Public Works.
- The Head of the Market Department: The Director of Road Investments of the Ministry of Public Works.
- The Market Engineer: The Regional Delegate of Public Works of the Southern Region.

According to both National Regulations and applicable International Standards, developers need to produce an Environmental Impact Assessment (“EIA”) report for projects that might have a significant impact on the environment. Also, effective stakeholder engagement is also required to avoid and minimize the Project social risks and to ensure the Project long-term social license to operate. The Public authorities of Cameroun and ICMC have engaged with Project’s stakeholders since the beginning of the ESIA process.

1.1 Background and rationality of the ESIA

ICMC has approached the Commercial Banks and ECAs in order to provide finance for the Project. To access financing, the Project needs to fulfill a series of requirements (in specific IFC Performance Standards, Equator Principles and OECD Common Approaches). That for, several actions and documents have been developed between 2022 and 2025. The following sequence describes the most important actions from 2022 up to date regarding the ESIA approval process:

- An Initial ESIA was prepared in April 2022 by Golder Associates Italia (today WSP Italia) and issued to the Lenders and its independent consultant (Ramboll).
- Some gaps were detected for IFC PS compliance in the 2022 ESIA and feedback was provided to ICMC and WSP in a ESDD report dated September 2022.
- In response to Ramboll’s review, WSP and ICMC started developing a series of additional studies and data collection in the field to upgrade the ESIA
- Among the studies for ESIA upgrade, additional biodiversity and social studies were requested as well as an extended Stakeholder Engagement where the 2022 ESIA results were presented. This Stakeholder Engagement was developed in April and May 2024 along the road in the 62 communities within the Area of Influence of the Project.
- The upgraded ESIA has been finalised in April 2025 and reviewed by Ramboll. Lenders approved the ESIA document for public disclosure.

This 2025 ESIA report, that significantly expands and deepens the baseline information and impact assessment provided in the Initial 2022 ESIA. The 2025 ESIA provides a solid foundation for impact and risk management planning and for establishing the full Environmental and Social Management System that will stablish before Project construction and, later, for the Project operation.

The ESIA report encompasses other important documents which came along with it and are equally needed to fulfil Lender's requirements and to ensure a correct management of all the environmental and social issues that the Project could encounter. These are mainly:

- The Environmental and Social Management System ("ESMS"). Describes the structure and organization that is proposed by the contractor and the proponent to manage environmental and social risks while the Project is constructed and operated.
- The Environmental and Social Management Plans ("ESMPs"). These are a series of documents (management plans and procedures) including specific mitigation measures and actions to address the identified Project's environmental and social risks and impacts.
- Stakeholder Engagement Plan ("SEP"), which is a document ed description of how the stakeholders will be involved throughout the project, including the timing and methods of engagement, the information to be disclosed, the disclosure language(s), and the type of information asked to the stakeholders.

1.2 Scope and Composition of the ESIA Report

The overall objectives for the ESIA, as defined by the relevant International Standards (IFC PS1), are:

- Identify potential impacts, both positive and negative, associated with the planned activities.
- Confirm the status of regulatory compliance and assess the client's existing management systems and overall performance against International Standards and Good Industry Practice.
- Examine technically and financially feasible alternatives to the source of such impacts, including the non-Project alternative.
- Identify potential improvement opportunities and recommend any measures needed to avoid, or where avoidance is not possible, minimize and mitigate adverse impacts.
- Assess cumulative impacts, intended as successive, incremental, and/or combined effects of an action, project, or activity (development) when added to other existing, planned, and or reasonably foreseeable future ones.
- Establish and maintain an Environmental and Social Management Plan appropriate for the nature and scale of the Project and commensurate to the level of environmental and social risks and impacts.

The ESIA document finalized in April 2025 is composed of the following Sections:

- Section 01: Introduction
- Section 02: Project Description
- Section 03: Alternative Analysis
- Section 04: Legal Requirements
- Section 05: Stakeholder Engagement Process
- Section 06: Baseline Conditions Physical Environment
- Section 07: Baseline Conditions Biological and Ecological Resources
- Section 08: Baseline Conditions Socioeconomics

- Section 08by: Baseline Conditions Bypasses
- Section 08q: Baseline Conditions for the Quarry
- Section 09: Impact Assessment Methodology
- Section 10: Impact Assessment and Mitigations Physical Components
- Section 10q: Impact Assessment and Mitigations for the Quarry
- Section 11: Impact Assessment and Mitigations for the Biological Components
- Section 12: Impact Assessment and Mitigations for the Social Components
- Section 13: Human Rights Screening
- Section 14: Climate Change Risk Assessment
- Section 15: Cumulative Impact Assessment
- Section 16: Unplanned Events
- Section 17: Environmental and Social Management System (ESMS)
- Section 18: Challenges and Uncertainties
- Section 19: Overall Project Assessment

1.3 Scope and Composition of the Non-Technical Summary

The purpose of the present documents, which represent the Non-Technical Summary (“NTS”), is to provide the reader with the most comprehensive and clear information about the Project itself, the expected potential impacts on the environmental and socio-economic settings, and the mitigation measures which will be taken to avoid or to reduce these impacts.

The document is structured into a series of sections forming the following paragraphs (in addition to this one):

- **Glossary of Technical Terms and List of Acronyms**. This section provides a list of terminology and acronyms used in the NTS text along with their descriptions and meanings. It serves as a reference to help readers understand a few technical language and acronyms used throughout the document.
- **Introduction**. This is the present section which includes the introduction of the Project and the ESIA, a review of the steps developed up to date and explanations of the scope of the ESIA and of the NTS.
- **Project Overview.** This section outlines the Project context, including its geographical location, the specific site of the Ebolowa - Akom II – Kribi (“EAK”) road, and the surrounding environment. The Project justification, so which are the existing conditions that led to presenting the need of the Project. The main Project facilities, where Project elements are listed and briefly described. The description of the functional characteristics of the Project, such as construction and operation phases and main activities, the implementation strategy and the Project timeline. Finally, the alternative analysis where the different alternatives studied for key Project elements and the main selection criteria adopted in the decision process are presented.
- **Impact Assessment.** This section presents the main findings regarding environmental and social impacts from the Project construction and operation activities and an estimation of such impacts including effects on all the physical, biological and social components (geomorphology and topography,

soil and land use, landscape, water resources, air quality, ambient noise, waste and wastewater, climate and greenhouse gases, biodiversity and ecosystems, socio-economic aspects and cultural heritage). The section outlines the mitigation measures to be implemented to minimize negative impacts and maximize positive aspects, such as habitat restoration, and community engagement initiatives. The section also describes the compensation strategies for any unavoidable impacts and the monitoring methods to ensure compliance with environmental standards and regulations throughout the Project's lifecycle.

- **Impact Management.** This section outlines how the management system will work and the management plans that will be used during the construction and operation of the Project to mitigate negative impacts, enhance positive aspects and manage community grievances. This section explains the framework as well considered for compensating habitat loss regarding biodiversity through offset management.
- **Stakeholder Engagement.** This section defines stakeholder engagement and information disclosure activities for the Project and presents the specific engagement activities that will be undertaken throughout the Project's lifecycle.

1.4 Applicable Standards

The ESIA study is prepared in accordance with the following Applicable Standards.

- Host country laws, rules and regulations applicable to all Project phases and activities.
- International conventions and treaties adopted by the host country and applicable to the Project (including but not limited to International Labour Organisation).
- Equator Principles IV (EPIV, 2020).
- Recommendation of the Council on Common Approaches for Officially Supported Export Credits and Environmental and Social Due Diligence (2016).
- International Finance Corporation Performance Standards (2012).
- World Bank Group Environmental, Health and Safety (EHS) General guidelines and any other sector guidelines (as applicable).
- UN Guiding Principles on Business and Human Rights.

2.0 PROJECT OVERVIEW

2.1 Project Context

The national network Ebolowa-Akom II-Kribi road N17 is located in the Southern Region of the Republic of Cameroon, crossing the departments of Mvila and Ocean (Figure 1). The districts directly affected by the Project are the Ebolowa 1st and Ebolowa 2nd (within the Mvila Department) and Akom II, Nieté, and Kribi 1st (within the Ocean Department). Based on the information provided by ICMC, about 85% of the construction works will follow the existing N17 road, which is an unpaved (dirt track) road that connects Ebolowa to Kribi. The remaining 15% will be located outside the N17 footprint, in greenfield areas.

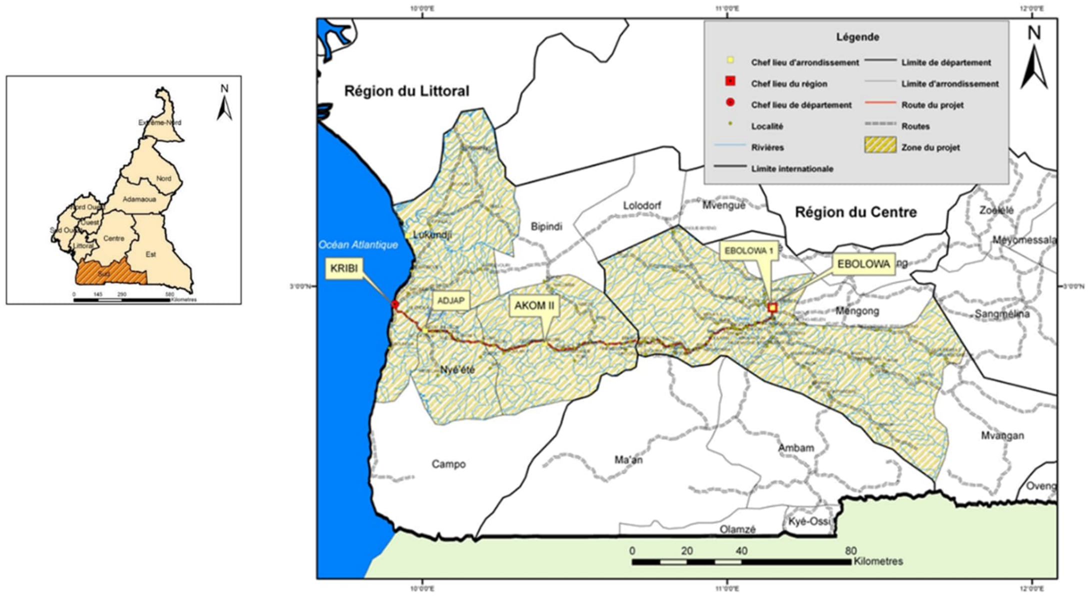


Figure 1: Project Overview (Source: Geospatial Informatics Services Consulting (GISC) 2011).

The Kribi – Ebolowa road is located in an area where large infrastructure projects have been recently completed, such as the Kribi deep-water port construction project and the planned Kribi – Edea and Kribi – Mintom railway projects. The Southern region is also marked by the presence of mining activities in south-east Cameroon. The Project will bring about benefits over the entire southern administrative region of Cameroon, that will extend to the east of Cameroon and to the neighboring countries to the south.

The Project is located in a region characterized by a favorable natural environment with predominant forest vegetation, an important maritime coast, a hilly relief, and an equatorial climate punctuated by two rainy seasons and two dry seasons. The Project intersects two main river basins, Ntem and Kienké (Kribi), which extend for 40,767 km^2. Economic activities are dominated by agriculture and forestry, but also by fishing and hunting. These activities are mainly small, for own family consumption or local trading. Industrial activities are limited and mainly represented by two agro-industrial companies of national importance located about 30 km to the east of Kribi: HEVECAM, producing and processing rubber, and SOCAPALM, producing palm oil. Energy and water supply in the area have low reliability which makes economic activity and business difficult.

2.2 Project Justification

The existing road network of the area is limited and predominantly made of dirt roads generally in poor conditions that hamper the development of trade in the region. In general, the profile of the existing road is relatively straight with a low gradient. However, its width is limited (ranging between 4 and 6m), putting constraints on heavy vehicles and the traffic that this section supports. Moreover, the road becomes flooded and impracticable in low areas frequently during the rainy season. The road was built in the colonial era and does not have a solid base capable of withstanding weather conditions, despite regular maintenance by the Ministry of Public Works.

One of the main issues with the current road is bridges (Figure 2): many of the small and medium sized bridges are made of wood, which does not provide good support for heavy traffic and must be repaired frequently. Larger bridges made of reinforced concrete are also in bad condition, as they are periodically overtopped by floodwater and are not maintained

Figure 2. Existent bridges presenting structural damages.

The upgrade of the Kribi-Ebolowa road will increase transport security along the road, will provide a considerable improvement of access to public facilities, business opportunities and communication in general for the local communities along the road. The upgrade of the road from dirt road to asphalt road will reduce vehicle operating costs. This reduction in cost will bring benefits to all types of existing and future traffic.

2.3 Project's main Facilities

The Project consists of the following main elements:

- Upgrade of the national road RN 17, and the construction of a bypass in Ebolowa, another in Kribi Airport and a new diversion in Akom II.

  Relocation of existent services (light and electricity posts, water supply systems, etc.) along the Project right-of-way.

- Construction or installation of new bridges (54) and construction or reinforcement of drainage concrete structures (around 250 gutters and nozzles).

- Construction of drainage works along the road (ditches).

- Installation of road signage and safety.
- Installation of lighting along the road.
- Construction and operation of two toll, counting and weighing stations.
- Construction and operation of control checkpoints.
- Operation of the road.

In addition, the Project facilities will also include:

- At least 25 borrow pits along the road, close to the ROW, which will be used only during the road construction as a source of materials.
- The Construction Camp area in Akom II, including the accommodation for a maximum of 70 people and offices. This camp area will be permanent and constructed to be left (most of it) for the use and benefit of the local community once construction is completed and ICMC will leave the area.
- The Quarry and Site installations area, which is located approximate 1,5 Km Northeast from Akom II; this area will concentrate most of the Project temporary facilities for constructing the road (the several plants and yards, the workshop, the warehouse, the fuel station, other minor facilities, and the quarry) and will include access to the site, offices and storage areas.
- Landfill. ICMC will habilitate an abandoned dumpsite in Akom II for managing the non-recyclable and non-hazardous construction waste. The landfill size is estimated to be 20 meters in length by 12 meters in width, with a depth of 2,50 meters. Will have capacity for a volume expected of 600 m^3. To prevent flooding during rainfall, appropriate drainage ditches will be excavated along the landfill outer perimeter and the bottom will be impermeabilized.
- Medical facilities. ICMC plans to improve the small hospital in Akom II, referred to as a "health outpost” to be used as medical facility during construction. Improvements will consist of building rehabilitation, new equipment and furnishings as well as making available an additional doctor and nurse to the hospital.

Key Project facilities and locations are summarized in the following table:

Table 1: Summary of Project facilities.

<table>
<tr><th colspan="2">Facility</th><th>Location</th></tr>
<tr><td rowspan="3">Construction Camp</td><td>Camp Offices and laboratory</td><td rowspan="3">Construction Camp (Akom II-PK 80)</td></tr>
<tr><td>Camp Housing areas (Administrator and Contractor)</td></tr>
<tr><td>Camp services and utilities (for energy, water and waste)</td></tr>
<tr><td colspan="2">Medical facility</td><td>Akom II (PK-80)</td></tr>
<tr><td rowspan="2">Quarry</td><td>Quarry extraction area</td><td rowspan="6"></td></tr>
<tr><td>Crushing Plant</td></tr>
<tr><td rowspan="4">Site Installations</td><td>Asphalt Plant</td></tr>
<tr><td>Batching Plant</td></tr>
<tr><td>Precast Yard</td></tr>
<tr><td>Steel Yard</td></tr>
</table>

Facility		Location
	Workshop	Quarry and site Installations area (near Akom II – PK 78+950)
	Warehouse	
	Fuel Station	
	Site installation facilities for energy and water supply	
	Other minor facilities (sector offices, a canteen area, common sanitary zones, and guardhouses)	
Landfill		Akom II (PK 81+900)
Borrow Pits		Along the road (repeated in several locations)
	Roadway	
	Drainage	
	Bridges	
	Drainage System (including pipe culverts, box culverts and longitudinal drains)	
	Road Signage and safety	
	Road lighting	
Stations	Toll stations	
	Weighing stations	
	Counting stations	
	Control Checkpoints	

2.3.1 Ebolowa-Akom II-Kribi road

The RN 17 Ebolowa-Akom II-Kribi (Figure 3), is composed specifically by different sections as follows:

Section / Characteristic	Length / Width
Ebolowa-Akom II	80,550 m (length)
Akom II-Kribi	85,550 m (length)
Akom II diversion	5,200 m (length)
Ebolowa bypass	1,600 m (length)
Kribi airport bypass	4,500 m (length)
Two Traffic lanes	7 meters (total asphalt carriageway width)
Two Shoulder straps	1.5 meters (width)

Figure 3: Final design of the N 17 road.

2.3.2 Quarry

A new quarry and a site installations area will be opened in an area near Akom II to extract the rock, gravel and sand that will be used as raw materials for the construction of the roadway and other structures such as bridges and culverts.

The area is located northeast of Akom II as shown in Figure 4 below. The nearest village is called Nkong Mejap. Road access will be built to reach the quarry and site installations area.

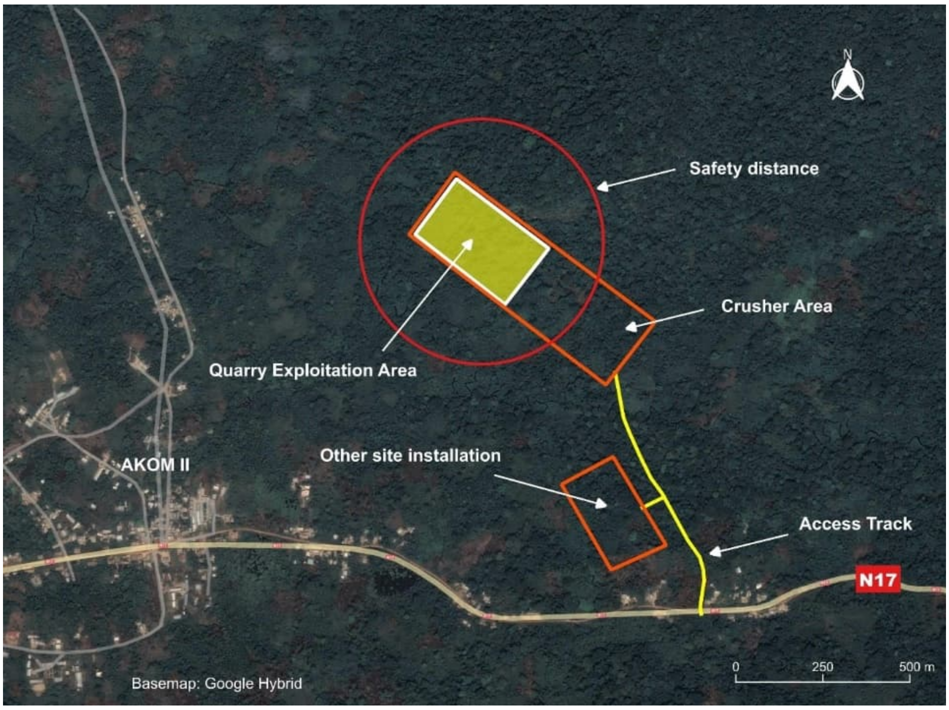


Figure 4: Quarry exploitation area and site installation areas.

The quarry exploitation area refers solely to the area of exploitation of the rock mass that will be extracted and crushed to produce all the stone aggregates necessary for the construction.

Close to the quarry exploitation area, several plants and facilities will need to be constructed to produce gravel and sand, concrete, asphalt, and reinforced concrete precast elements. The complete list of facilities for the quarry and site installations area is:

- The Quarry.
- The crushing plant.
- The asphalt plant.
- The batching plant.
- The precast yard.
- The steel yard.
- Facilities for energy and water production.
- The mechanical workshop: facilities for the equipment maintenance.
- Warehouse for storage of materials.
- Fuel station.
- Energy and Water facilities.
- Other related minor facilities (offices, canteen, sanitary zones, guardhouse).
- The access road.

2.4 Functional Characteristics of the Project

2.4.1 Construction phase

The construction of the Project includes several pre-construction and construction steps and is structured to start from Akom II and advance simultaneously towards Ebolowa and towards Kribi.

The Project will utilize centralized services in Akom II (quarry and site installations, camps, offices, laboratory, medical services, and landfill) The quarry, aggregate production plant, asphalt plant, concrete plant and pre-casting, workshop, warehouses and other minor facilities are located approximately at the road mid-point, which is around the Akom II area. This approach optimizes resource allocation and ensures systematic progression (Figure 5).

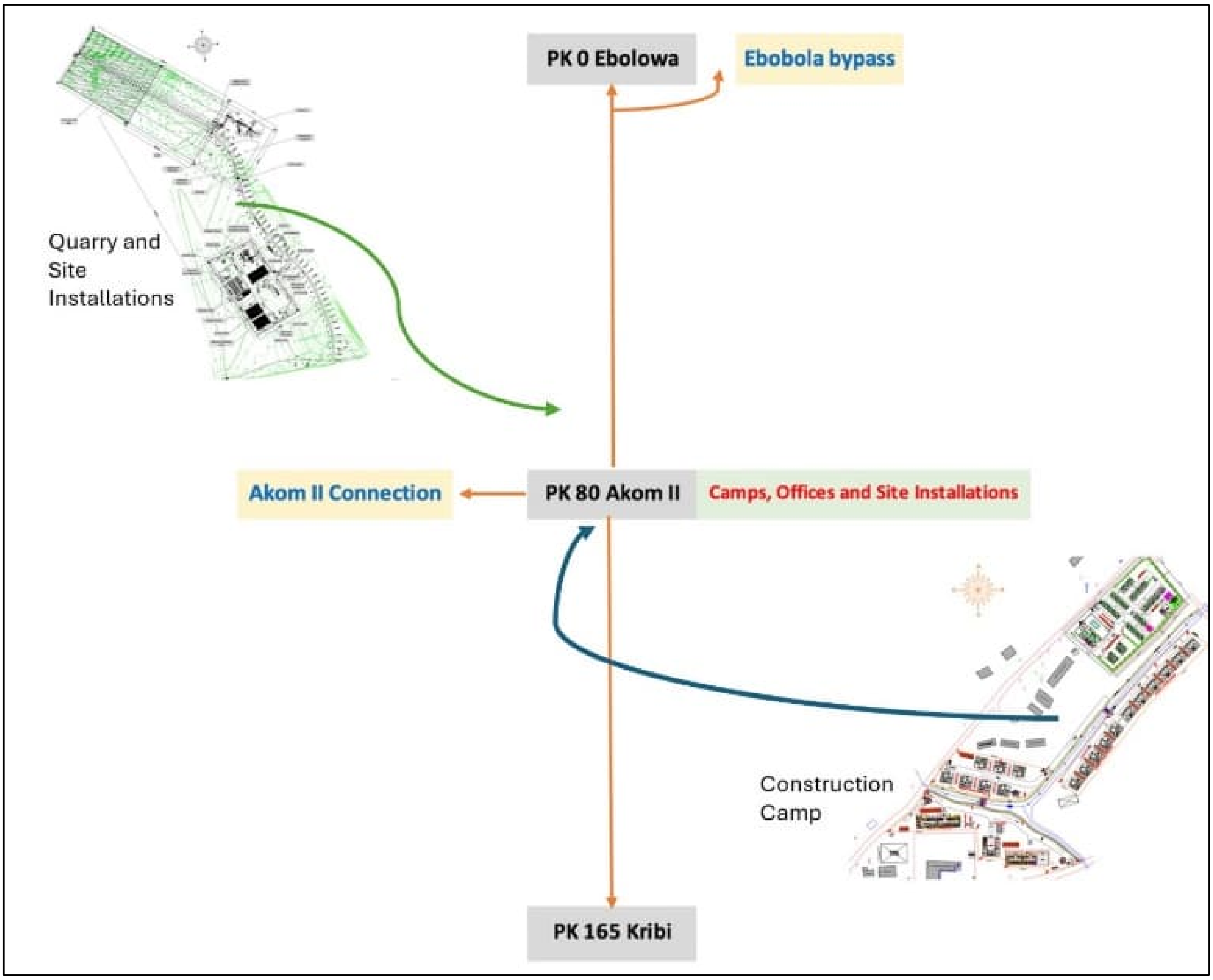


Figure 5: Diagram showing the schematic progression of Construction Works (orange line); Blue line: location of Camps; green line: the location of quarry and site installations.

The construction phase will include several steps, as listed below:

- **Preconstruction Site Surveys and investigations**: these included a series of surveys needed for the Project on several aspects, including the materials provision, the design and logistics. At the moment of writing this NTS these are almost completed.
- **Relocation of services**, which includes the initial identification of such services (based on information from the local community during stakeholder engagement, and with local services providers) and the relocation itself before the works start (e.g. electricity poles, water supply pipes, water deposits, etc.).
- **Mobilization activities**, which include equipment procurement and import for the construction of the construction camp, quarry and site installations, the installation of plants, equipment and offices in the quarry and the site installations area.
- **Workforce management**, including contracting, the housing, transport, security issues and procedures general for all workers.
- **Construction camp activities,** including the preparation of the area and building construction, equipment, supplies and landscaping. Includes also the energy, water, waste and wastewater management as well as the workers management (for the camp).

- **Quarry operations**. This includes the preparation of the quarry area, the opening of the access road, extraction of materials (drilling and fragmentation including the use of explosives) and the transport of rock blocks to the crusher.
- **Site installations activities**, including the preparation of the area, the opening of the access road and erecting site installations, the crushing of the rock, the production of aggregates, the production of asphalt, the workshop and pre-casting, the materials storage and site facilities management, the transport and distribution of materials to the road construction sites, the energy, water, waste management and workers management (for quarry and site installations).
- **Earthwork activities**, which include clearing and grubbing the right of way, stripping of topsoil, excavation works (cut-to-fill or cut-to-disposal), reclamation of swamp areas (by means of replacing the mud with dry materials), embankment construction with the exploitation of laterite borrow pits.
- **Concrete works**, for the production of pipe culverts, box culverts, and other miscellaneous concrete works. It is understood that most of the concrete used in the project will be precast concrete and a minimal amount will be produced on-site.
- **Bridges construction and installation,** including the preparation of work areas, the transport and installation of the pre-constructed structures for the new bridges and other materials.
- **Drainage activities**, including the preparation of work areas and the installation of the pipe culverts, box culverts, and ditches.
- **Superstructure activities**, including the preparation of final bearing layers: subgrade, aggregate base course and asphalt.
- **Finishing activities**, such as the installation of horizontal and vertical signage, railings and guardrails, toll stations, counting stations, weighing stations, and lighting.
- **Material sourcing and management**, including the transport, storage and management of materials, including the hazardous materials.
- **Energy and Water supply management**, including the energy and water needs, source and supply management for the construction of the road.
- **Waste management** describes the general waste management for road construction and the landfill management.
- **Site reclamation activities**, including all the areas that will be restored once the construction is finished.

2.4.2 Operation phase

The Project operation activities will consist of:

- **Operation of the Road;** includes the normal operation of the road, estimated for a determined type and number of vehicles which have been deducted from a specific traffic study developed in 2024.
- **Operation of the Toll, Weighing and Counting Stations**; includes how these stations shall operate.
- **Operation of the Control Checkpoints**; includes how the checkpoints shall operate.
- **Maintenance of the drainage systems, bridges and roadway** (e.g. vegetation clearance, road paving, waste disposal, etc.); includes regular inspections of the system, identification of maintenance needs and their delivery.

The road superstructure will have a life of 15 years from its completion before it will need revamping. The overall lifespan of the Project, including facilities, is over 50 years.

2.4.3 Timeline for the Project implementation

Figure 6 shows the main construction activities' schedule. Each axis of the diagram represents both the spatial progression along the Project route and the timeline of activities. The first 6 months of the Project will be dedicated to mobilization, Camp construction and the Site installations. The diagram shows the simultaneous advancement of work fronts towards Ebolowa and Kribi in parallel that will last for the following 30 months.

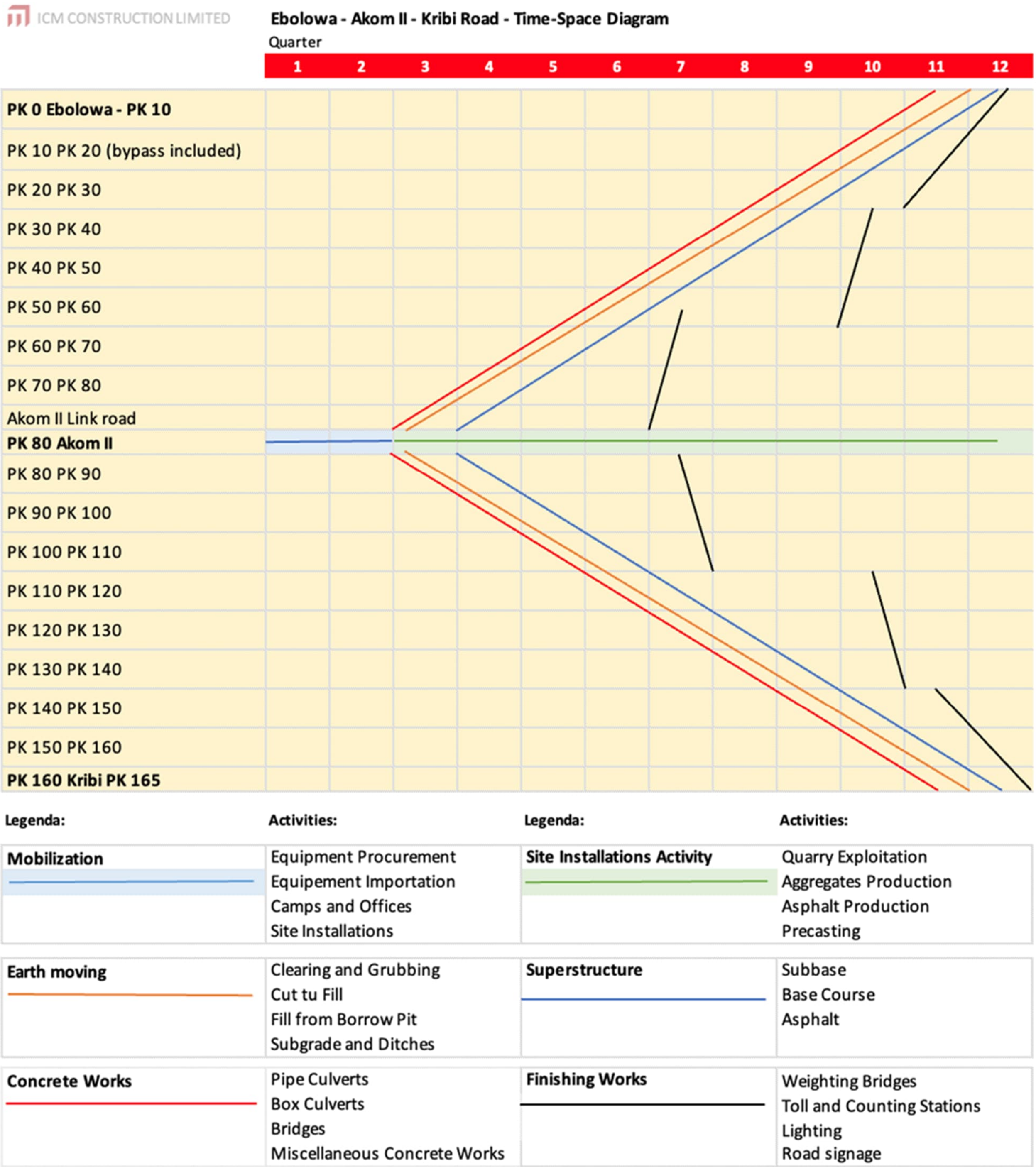
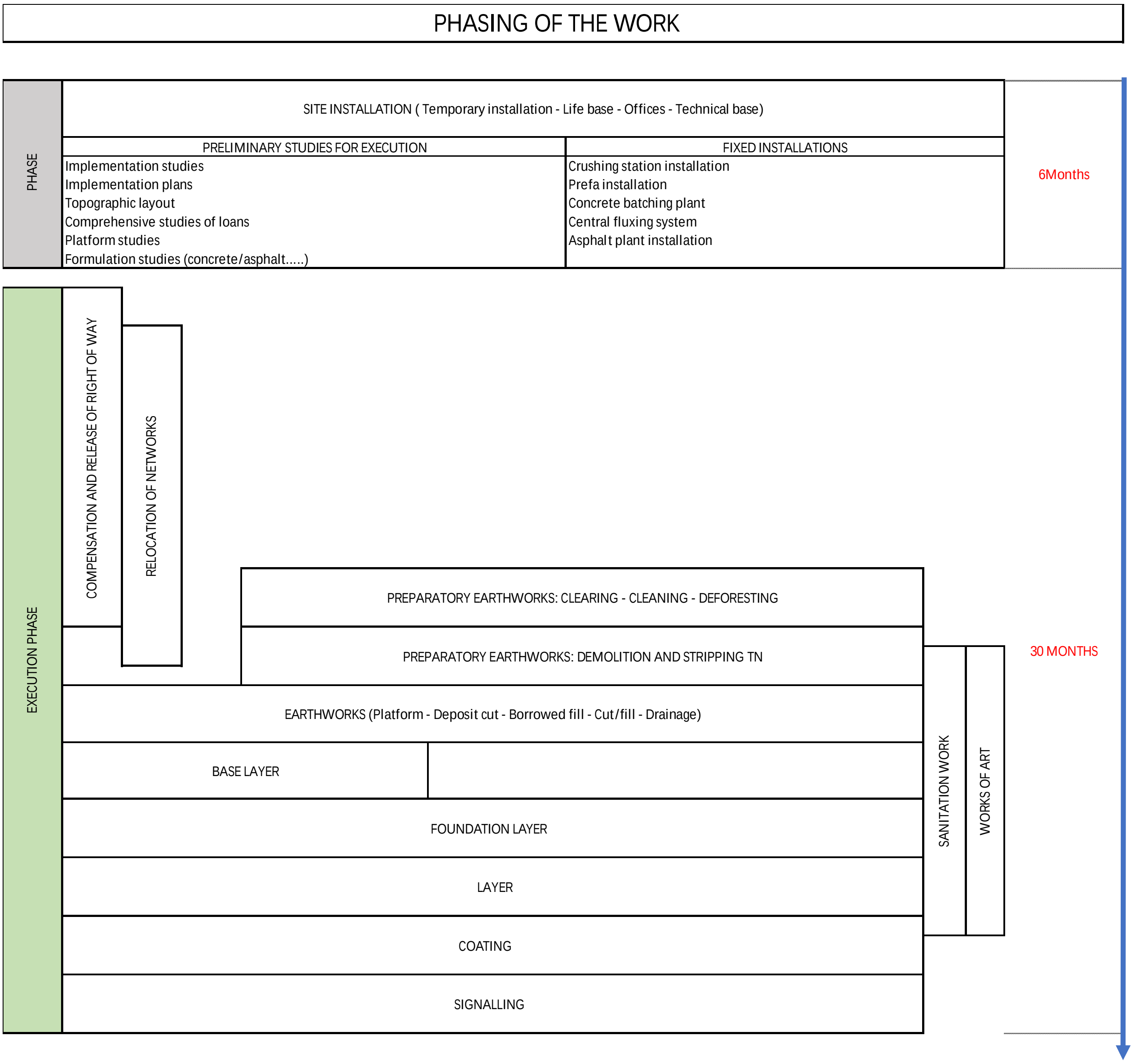


Figure 6: Project schedule showing the two simultaneous work fronts.

The Project will be constructed in the following phases:



2.5 Alternatives Analysis

The assessment of alternatives for this Project considered the following guiding principles for a series of Project key aspects:

- Avoid and minimise impacts on physical assets and households that imply physical resettlement.
- Avoid as much as possible the very populated areas and agricultural land to be exploited to limit expropriations and economic displacement.
- Avoid and minimise impacts on habitats, such as swamps and mountain areas.
- Avoid and minimise the destruction of dense forest areas to limit impacts on habitats and species.
- Project the shortest route and, in general, adopt technical solutions that limit construction costs.

2.5.1 Zero alternative

The Zero alternative assumes that the current state of the road is an alternative to the implementation of the Project. The following considerations apply to this option:

- The Zero alternative would imply that no construction activities occur. While this would avoid the short-term adverse impacts related to construction and the long-term ones due to operations, there would also be no positive effects on the local and national economy which is a priority for State and Regional authorities.
- The existing roadway would continue to work with the same capacity in the same conditions as done so far; this would perpetuate the inefficiency and infrastructure flaws present now and would not allow for an expansion of traffic and of goods imported and exported in support of the local market and economy.
- Maintaining the current roadway would not improve traffic and safety conditions that are currently extremely poor and cause accidents and damage to vehicles and users.
- Poor hydraulic conditions would remain as the drainage system along the road would not be upgraded.

The long-term adverse regional socio-economic and traffic impacts of the Zero Alternative will be of such magnitude that not improving the NR17 is not considered a viable alternative. Therefore, the Zero alternative has been rejected and not assessed further.

2.5.2 Road design alternatives

Option A for the Road: Construction of a new greenfield road

The option consists of constructing a new roadway parallel (a few hundred meters away) to the existing roadway. Even if the Project would have had the advantage allowing for higher commercial speed and more traffic capacity, this option was screened for high level environmental and social constraints. This option would present larger footprint on forests, wetlands and agricultural land, and significant indirect impacts due to the higher demand of raw material and transportation. The negative impacts of this option were considered to outweigh the positive impacts; therefore, this option was not considered viable.

Option B for the Road: Upgrade of the existing road

This option consists of rehabilitation of the existing roadway with an expansion of two lanes (i.e. one on each side of the roadway) within the existing Project footprint. This option has several clear advantages from an environmental, social (ES) and cost perspective with respect to Option A as it would reduce impacts on forest and wetland habitats and would maximise the use of the existing road infrastructure. There would be drawbacks with respect to impacts on physical assets and physical displacement, however these would be to some extend outweighed by more limited impacts on livelihood as agricultural land would be less impacted. Still, there would remain clear technical issues that this option would not resolve in terms of needs for commercial speed, increased traffic capacity and safety along certain sections. Therefore, as this option does not meet the ultimate purpose of the Project, it was not considered viable, and it was not explored further.

Option B.2 for the road: Mix of upgrades to the existing road and minor greenfield modifications (preferred option)

This option consists of 85% brownfield (upgrade of the old road) and 15% greenfield development (new road sections). This would maximise avoidance of ES impacts and financial benefits, while meeting the technical requirements in terms of traffic flow and road capacity. Taking into account the above considerations, option B.2 was considered the most viable as it meets the requirements and purpose of the Project while limiting environmental and social impacts.

2.5.3 Quarry alternatives

Considering the geographical position of the Project and the lack of existing industrial structures at accessible distances to produce aggregates (gravel and sand), ICMC needs to organize one or more self-standing production units able to meet the Project needs. In the selection of the quarry (site, number and characteristics) several aspects were evaluated, between those:

- The quantity of natural habitats disturbed
- The quality of the habitats and biodiversity disturbed (e.g. presence of protected species such as great apes)
- The environmental and social disturbance
- The construction costs
- The logistics and permitting issues
- The technical constrains

With that in mind, there were several approaches where the final decision had these characteristics:

- A single quarry in the central area of Akom II instead of multiple quarries along the road
- The Quarry would be in the northern part of the road instead of south to avoid interactions with Campo Maan National Park
- Site surveys in the surroundings of Akom II revealed a location (northeast from Akom II) where:
    - The habitats are mostly modified
    - There is easiness of access
    - Existence of already deforested areas and hunted areas

2.5.4 Bridges alternatives

The analysis of alternatives for bridges considered the following options:

- Option 1: Upgrade of existent Bridges.
- Option 2A: New bridges constructed onsite. Demolition of existent bridges.
- Option 2B: New bridges constructed offsite and assembled onsite. No demolition of existent bridges.

For the analysis, the following criteria were considered:

- Minimize socioeconomic impact of construction activities on the surrounding areas.
- Minimize environmental impacts.
- Minimize traffic disruption during the construction.

The option selected was 2B. The construction of new bridges beside the old ones allows traffic to continue in these sections and at the same time will minimise disturbances to socioeconomic activities. The minimisation of constructing activities on site will reduce considerably the pollution sources to freshwater habitats and disturbance to fauna and people (noise, dust, emissions, ect). The construction will be carried out in the Site Installations area (Akom II) with only the final assemblage and installation of the bridge pieces on the site.

2.5.5 Borrow pits alternatives

The following strategic alternatives were considered:

- Option 1: few, large borrow pits located throughout the Southern Cameroun.

- Option 2: multiple, small borrow pits located within 250 m from the road.

For the analysis, the following aspects were considered in detail:

- Minimize socioeconomic impact of construction activities on the surrounding areas.
- Minimize environmental impact.
- Minimize the transport from borrow pits to construction sites.

The option 2 was assessed better and on top of that, for final site selection it has been prioritised the proximity to the existent road and the already existence of an opened borrow pit.

3.0 ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT

3.1 Methodology

The potential impacts generated by the Project have been assessed using a methodology designed to meet both the National and International standards and requirements, to be analytical and transparent and to allow for a semi-quantitative analysis of the impacts on the various environmental and social components. This methodology is based on the premise that the Project can generate both negative and positive impacts, whose magnitude can be evaluated considering the characteristics of the Project activities and of the environmental and social context. During the assessment the social and environmental consequences of the Project, the so-called impact factors, are quantified following a pre-stablished score that includes the following parameters:

- Duration
- Frequency
- Geographic extent
- Intensity

For all the impact factors a worst-case scenario was adopted that considers the likelihood of impact occurrence equal to 100%.

The methodology considers also the different **Sensitivities** of the environmental and social components present in the area affected by the Project activities. The sensitivity of a component represents the vulnerability of the component against changes, so higher sensitivity leads to higher impact levels. Other parameter considered is the **Reversibility** of the impact factor.

The next step consists in assessing the effectiveness of the mitigation measures in reducing or eliminating the negative impact (or to maximize the positive one). The mitigation hierarchy is applied in descending order of effectiveness:

- Avoid.
- Minimize.
- Restore.
- Compensate.

Finally, residual impact is calculated considering the effectiveness of the mitigation measures defined for negative impacts or the enhancement measures for positive impacts.

The methodology expressed above has been applied separately for the activities developed along the road sections, including the road diversions and bypasses and for the activities developed in the quarry and the site installations area. This separation considers that the activities along the road are repeated in each road section while the activities in the quarry and site installations are quite specific for this area only.

A summary of the main results in both cases, for the activities along the road and for the quarry and site installations, are presented below.

3.2 Physical components

Impacts on the physical environment **along the road and bypasses** will be different during the construction phase and the operation phase.

During **construction along the road and bypasses**, impacts generated will generally be short term, reversible, localised and of low intensity. The changes derived from the enlargement of the Right of Way (ROW), vegetation removal, earthworks and swamp reclamation, construction water discharges and abstraction (from construction camps and abstractions from rivers), the transport of materials and personnel to the construction sites, construction vehicle and equipment noise and gaseous emissions, dust generation, soil and topsoil removal have been addressed through the assessment and numerous mitigations identified. The majority of those are good practice measures that would be implemented for any other road construction project, while several other measures have been identified that are specific to this Project and to the nature and characteristics of the receiving environment.

Crossings of sensitive areas for soil, water resources and aquatic biodiversity which cannot be avoided, including river and minor stream crossings, have also been addressed. Their design has been accurate and best industry practices have been followed to determine and adopt the most suitable crossing methods in consideration of seasonal and social constraints as well, so to maximise avoidance of impacts while maintaining the viability of the road during construction.

It is well known that the Ebolowa-Akom-Kribi road is every year affected by heavy rains and floods in many road sections and river crossings. The upgrade of the road considers this risk from the design following a conservative approach and taking into account as well the climate change risks. All the road drainage design is based on detailed hydrological and hydraulic studies. The flood risk has been evaluated for each end every water crossing along the road, providing specific design solution that uses appropriate current data and projections to consider future scenarios (return periods of 100 years, 50 years and 20 years depending on the risk level). On top of that, a series of mitigation measures have been added to minimise other associated impacts as for example to avoid pollution with hazardous materials, soil erosion or transportation of stockpiled soils.

During the **operations along the road and bypasses**, impacts will mainly affect ambient air and noise. An air dispersion and a noise model have been used to estimate Project effects in 2042 when road traffic is expected to have a peak and at the quarry during the three years of its operational life. Overall, ground concentrations resulting from Project operations at the nearest sensitive receptors along the road and in the vicinity of the quarry have been found to increase ambient air concentrations and noise to a level that in most cases remains within the Project Standards. For those sensitive receptors along the road where the model shows exceedances of Project standards, mitigations have been included in the ESIA that are considered sufficient to reduce the Project effects and comply with the standards. Where there are no exceedances, good industry practice will be implemented to reduce effects on ambient noise and air and on sensitive receptors to a minimum.

During the **construction of the quarry and site installations** area (including mobilisation) Impacts on the physical environment are quite similar to those produced along the road for construction sites preparation. The **operation of the quarry and site installations** encloses the worst-case scenarios for the impact factors in almost all cases of emissions (noise, air quality, waste, wastewater). These are specifically addressed with best industrial practise and adequate mitigations resulting on low or negligible impact levels. The operation of the quarry will produce evident changes on the local topography and geomorphology, with associated visual impacts. Both quarry site and site installations will be reinstated once the construction of the road will be completed, but while for the site installations changes can be considered reversible, for the quarry landscape alterations will not be fully reversible. In any case, mitigations for attenuation will be included to minimise impacts.

3.2.1 Geomorphology and Topography

Regarding the geomorphology and topography, the baseline conditions identified three different sensitivities in along the road and two on the quarry and site installations.

- **Low sensitivity**, occurs in area with low slope gradients (slope between 0% and 6%), in absence of landslides or other land mass movements and in areas with low risk of slope erosion. The low sensitivity is the general situation found along the main road, ebolowa bypass, kribi airport bypass, akom II diversion and in the site installations area.
- **Medium sensitivity** occurs in areas with steep slopes (slope of about 8%), with potential presence of landslides or other land mass movements, in areas with medium risk of slope erosion and with rocky outcrops or rocks underground close to the surface. This is found in the quarry-crusher site and in the main road between Ebemvok village (PK 75 km, 591 m asl) and Ndjabilobe (PK 105 km), where slopes are very steep, varying between 7.8% and 10%, sometimes marked by rocky outcrops along the way.
- **High sensitivity** occurs in areas with very steep slopes (slope of about 15% or more), with presence of known landslides or other land mass movements, active or not, and in areas with high risk of slope erosion. This is very punctual, only associated to the riverbanks and river shores at bridge construction locations between PK 75 Km and PK105 Km (steep slopes).

During the **Construction Phase along the road and bypasses**, the Project's impacts are associated to the changes in the topography and geomorphology due to excavation, levelling, filling up, rock cuttings and earth movements. These changes may lead to instability (erosion and landslides), being the effects higher in areas of medium and high sensitivity (especially during hard rock excavations). Road Construction activities will mostly occur on the existing road footprint and will affect a few additional meters on both sides affecting an anthropized surface with limited impacts. Conversely, some construction activities will occur on greenfield areas and will have an enhanced potential to affect the local morphology and topography, that will likely be in more pristine conditions. New rainwater runoff pathways may be also generated, increasing the erosion of the already instable areas.

To mitigate and contain surface runoff, mitigation measures are presented in the Water and Energy Management Plan (W&EMP). In addition to these the contractor is expected to implement temporary ditches, sedimentation basin and controlled drainage points to effectively manage water flow and drainage. These measures are gradually integrated with the permanent drainage system as construction progresses.

In summary, morphologic and topographic changes associated with the construction phase will be relatively limited, in most cases requiring some levelling of the proposed route, with more significant works to be carried out along specific steeper road sections or where rock may be present.

The Project's overall residual impact during construction have been assessed negative and at maximum **low** (in high sensitivity areas)

During the **Operation phase along the road and bypasses**, changes to the geomorphology and topography are not expected to occur.

In **the Quarry and site installations** the worst-case scenario occurs during the operation of the quarry (medium sensitivity), where explosives are used to excavate the rock, leading to potential instability and to deep changes in the local geomorphology. The project mitigation measures ensure the stabilisation and rehabilitation of the steep walls resulting from the quarry activities, once the quarry will be closed after construction of the road.

3.2.2 Soil and Land Use

Regarding the Soil and Land Use baseline, the baseline conditions identified three different sensitivities in along the road and two on the quarry and site installations.

- **Low sensitivity** occurs in presence of modified land, mainly represented by residential buildings, transport networks and other hard-surfaced areas.
- **Medium sensitivity** occurs in presence of semi-natural land, mainly represented by a mosaic of croplands and forest and tree crops.
- **High sensitivity** occurs in presence of Natural land represented by swamp forests, closed evergreen lowland forests and natural waterbodies.

During the **Construction Phase along the road and bypasses**, the Project's main impacts on soil follow in relation to those already presented for geomorphology and topography. The main impacts on soils derivate from the change in the local morphology and topography, the removal/degradation of soil and vegetation and the changes in land use.

The Project's overall residual impact during construction of the road for the mentioned impacts have been assessed negative and reaching at maximum a **medium** level (in areas of high sensitivity). Some of these impacts are permanent. The mitigations proposed in the Project are focalised on reducing to the minimum possible the disturbances in high sensitivity areas, based on accurate preconstruction surveys and minimising deforestations, the preservation of topsoil characteristics and revegetation of temporary construction sites within a short period after construction.

During the **Operation phase of the road and bypasses**, the impacts on soil derivate from removal of vegetation and pollution of soil during maintenance, and the emission dust, particulate matter and other gaseous pollutants from the vehicles on the road.

The Project's overall residual impact during operation of the road for such impact factors have been assessed negative and reaching at maximum a **low** level (in areas of high sensitivity).

In **the Quarry and site installations** the worst-case scenarios occur:

During the construction of the quarry, site installations and access road for impacts related to "Change in the local morphology and topography", "Removal/degradation of soil and vegetation" and "Change in land use". Residual impact is of **negative** direction and has been assessed to be of **medium** level.

During the operation of the quarry and site installations for impact factors "Emission of dust and particulate matter", "Emission of gaseous pollutants" and "Soil occupancy". Residual impact is negative and has been assessed with **low** level.

3.2.3 Landscape and Visual Quality

The definition of Landscape and Visual Quality sensitivity requires considering factors related to the topography, land use, hydrology, vegetation and habitat, human activities, cultural heritage, and the perception human receptors have thereof. The area is recognized as having in general high landscape and biodiversity value itself. In the other hand, the Kribi -Akom II- Ebolowa road is not a touristic destination and does not attract visitors from outside for leisure or people that visit the area or go there to take advantage of the landscape features. The sensitivity for local people about landscape quality is in general medium to low and visual changes that the construction of the road will bring are in general perceived as positive changes. The sensitivity to changes in Landscape has been assessed **Medium-high Sensitivity** all along the road and in the quarry/site installations area and has been assessed **Medium-Low Sensitivity** for Visual Quality along the road and for the quarry and site installations area.

During the **Construction Phase along the road and bypasses**, the Project's impacts on landscape and visual quality are mainly due to vegetation clearance and excavations along the ROW. 85% of the ROW as said follows the existent road and will be just enlarged, while the 15% will open new sections in greenfield areas. The Project's overall residual impact is assessed **negative** with **low** level**.**

During the **Operation Phase along the road and bypasses**, the Project's impacts on landscape and visual quality are due to traffic lighting and spot lighting along the road and to introduction of alien species. The Project's overall residual impact is **negative** with **negligible** level for "Emission of lights", and **low** level for "Introduction and spreading of alien species".

In **the Quarry and site installations** the worst-case scenario for Landscape occurs at the end of the quarry operation due to the removal of soil and vegetation and specially for the deep changes in the local morphology and topography. Project's overall residual impact is assessed **negative** with **medium** level for Landscape and **low** level for visual quality residual impact.

3.2.4 Hydrology and surface water

Regarding the Hydrology and Surface water, the baseline conditions identified two different sensitivities to change, considering the surface water quantity and quality along the road and in specific:

- The natural characteristics of surface water regarding quantity through the year.
- The current characteristics of surface water regarding quality.
- The exposition of the surface water receptors to pollution sources (erosion zones, existent road, etc.).

Sensitivity to changes on surface water quantity is assessed very low, instead two different Sensitivities to changes on surface water quality have been described:

- **Medium-high sensitivity**, occurs in cities, towns and villages like Kribi, Akom II, Avelezok, Mvila, Adjiap and Ebolowa, where surface water quality in river and streams is poor due to the presence of high values of Turbidity, Chromium (Cr), Arsenic (As), Mercury (Hg) and Cadmium (Cd).
- **High sensitivity** occurs in water courses and waterbodies within the AoI. Watercourses are needed for habitat maintenance and species conservation. Surface water is known to be used in many communities along the road for domestic purposes and in some cases for human consumption. There is a general lack of water sources and water distribution systems; the population relies on natural water sources, including surface water from watercourses. This sensitivity occurs also in presence of erosion and flood zones.

During the **Construction Phase along the road and bypasses**, the Project's impacts on hydrology and water resources are due to the possibility of water pollution from the construction activities and temporary changes on the hydrological regime. There will be water abstraction from some big rivers for the construction activities, but the quantities are insignificant compared to the river normal flows. The Project proposes a long list of measures to avoid or mitigate impacts on freshwater. These measures will be implemented through specific management plans which will be implemented during the construction of the Project.

The Project's overall residual impact is **negative** and has been assessed to be **negligible** for the impact factor "Water demand"; **low** for the impact factor "Emission of pollutants in freshwater", and **medium** for impact factor "Chage in the hydrological regime" in the areas of high sensitivity.

During the **Operation Phase along the road and bypasses**, the impacts on surface water are expected much lower than during the construction and mostly derived from the possibility of water pollution from activities along the road, such as the periodical maintenance, the operation in toll stations and normal traffic. The Project's overall residual impact is of **negative** direction and has been assessed to be **negligible** for impact factor "Chage in the hydrological regime", and **low** for the impact factor "Emission of pollutants in freshwater".

Regarding **the Quarry and site installations** the worst-case scenario for impacts on surface water is during quarry and site installations operations and in specific for the emission of pollutants that could reach the river during transportation or through runoff from the construction sites. The Project provides a pack of mitigation measures to avoid pollutants affecting surface water, among those suitable drainage network and sedimentation ponds in the perimeter of each construction site. On top of the plans mentioned above, the Quarry Management Plan includes mitigations specific for the activities developed at the quarry and site installations. Same as for the rest of the road, the Project's overall residual impact is **negative** and of **negligible** level for impact factor "Chage in the hydrological regime", and **low** level for the impact factor "Emission of pollutants in freshwater".

3.2.5 Hydrogeology and Groundwater

Regarding the Hydrogeology and Groundwater, the baseline conditions identified one sensitivity to change, considering the groundwater quantity and quality along the road. Same as for surface water, the groundwater sensitivity considered:

- The natural characteristics of groundwater quantity.
- The groundwater quality.
- The exposition of groundwater receptor to pollution.

Sensitivity to changes on groundwater quantity (for example in front of a moderated increase on water demand) is assessed low. Regarding sensitivities to changes on surface water quality, for the whole road and also for the quarry and site installations area, the following was assessed:

- **Medium sensitivity**, occurs where groundwater is subject to human pressure due to the large use of the resource by the rural population for their water supply via springs, traditional wells, and boreholes equipped with hand pumps; and when groundwater quality is poor, with one or more parameters not meeting the water quality standards.

During the **Construction Phase along the road and bypasses**, the Project's impacts on hydrogeology and groundwater resources are derived from the emission of pollutants during construction and for the increase of water demand in Akom II from the construction of a borehole in the construction camp. In both cases the Project's overall residual impact is **negative** and of **negligible** level.

During the **Operation Phase along the road and bypasses**, the Project's impacts on hydrogeology and groundwater resources are mainly from emission of pollutants during normal road operation and maintenance. Project's overall residual impact is **negative** and of **low** level.

Regarding **the Quarry and site installations** the worst-case scenario for impacts on groundwater is during quarry and site installations operations for the more intensive use of hazardous materials which can interact with groundwater as pollutants. The construction of one borehole in the site installations area is also a key activity where pollutants could have interaction with the aquifer. Careful procedures using industrial best practice should be enough to limit the potential impacts of groundwater pollution as well as a correct design of the borehole screens and casing during its construction. The impact for increase in water demand from the borehole that will be constructed is deemed negligible. At the moment no groundwater users were found close to the site installations area.

Project's overall residual impact is **negative** and of **low** level for the "emission of pollutants in groundwater" and of **negligible** level for the "water demand".

3.2.6 Air Quality

Regarding the Air Quality, the baseline conditions identified one sensitivity to changes in the Project Area of Influence, including road and quarry-site installations:

- **Medium-high sensitivity**, occurs in high PM_{10} and $PM_{2,5}$ concentrations in the areas affected by the Project, in presence of settlements and population potentially exposed to Project air emissions, and in presence of sensitive ecological components like protected or classified areas, protected or endangered habitats and species.

During the **Construction Phase along the road and bypasses**, the Project's impacts on air quality are mainly due to emission of dust and gaseous pollutants associated with the construction activities, equipment and vehicles. These will be potentially significant but very localized and short term. The Project's overall residual impact is of **negative** direction and has been assessed to be **low**.

During the **Construction Phase along the road and bypasses**, the Project's impacts on air quality will be an increase of ambient air pollutants due to the increase in traffic. Dust emission will instead be reduced because of the road asphalting. The Project's overall residual impact is of **negative** direction and **low** level.

Regarding **the Quarry and site installations** the worst-case scenario for impacts on air quality will be during the quarry and site installations operations. Dust emission will be produced specially during the operation of the quarry and crusher and from materials transportation. Several gaseous emissions are expected from the plants (crusher, asphalt plant, batching plant and powerhouse). Also from trucks, machinery and other vehicles working on site; however, they will be very limited, short term and not considered significant. Mitigation measures are provided for the Project and together with Standard best industrial practise and accurate maintenance of equipment and vehicles will limit negative impacts. The Project's overall residual impact is of **negative** direction and **low** level for both dust emission and gaseous pollutants emission**.**

3.2.7 Noise and Vibrations

Regarding the Noise and Vibrations baseline conditions, one sensitivity to changes was identified for the Project Area of Influence, including road and quarry-site installations:

- **Medium-high sensitivity**, occurs in high ambient noise levels in the areas affected by the Project, in presence of settlements and population potentially exposed to noise emissions from the Project, and in presence of sensitive ecological components like protected or classified areas, protected or endangered habitats and species.

During the **Construction Phase along the road and bypasses**, the Project's impacts on noise and vibrations will be from the equipment and vehicles used for construction as well as from the power generators at the camp. These impacts are potentially significant but very localized and short term. The impacts during construction will be managed with mainly standard best practice measures included into a specific Air Quality Management Plan. The Project's overall residual impact during construction is of **negative** direction and has been assessed to be **low**.

During the **Operation Phase along the road and bypasses**, the Project's impacts on noise and vibrations will increase in consideration of the more intense traffic that the new infrastructure will generate. It is expected that for some receptors the ambient noise will exceed Project Standards after some time and noise level monitoring will be required in the initial stages of road operations, to confirm it. In this case, the mitigations typically foresee the installation of acoustic barriers. The Project's overall residual impact during operation is **negative** direction and **low** level.

Regarding **the Quarry and site installations** the worst-case scenario for impacts on noise ambient and vibrations will be during the quarry and site installations operations from machinery and equipment, especially the crushing plant, asphalt plant and rock drill. Quarry activities include blasting, which has high intensity but is limited in the time. Vibrations are not considered relevant. All together the noise models show that the noise levels in the quarry and site installations area will remain within the limits for all Project Standards adopted. The Project's overall residual impact during quarry and site installations operation is **negative** direction and of **negligible** level.

3.2.8 Waste and Wastewater

Regarding the Waste and Wastewater baseline conditions, two sensitivities to changes were identified for the Project Area of Influence, including road and quarry-site installations:

- **Medium-high sensitivity**. As the general situation all along the Project AoI.
  - For waste, occurs in presence of population without access to the public solid waste management system, in absence of an efficient waste collection system and of adequate disposal or treatment plants, with irregular solid waste collection frequency.
  - For wastewater, this sensitivity occurs in areas with low or no access of sanitation. Iin urban centres affects about 50% of the population, being the situation more dramatic in low-income rural areas where populations have generally no access to any sanitation. The whole Project AoI has poorly maintained, organised or absent wastewater management. Around 85% of the population pour their wastewater into the yard or into traditional, poorly equipped open-air latrines and the other 15% uses cesspools.
- **High sensitivity:** Applicable to those areas where the physical component receiving waste have been described as having high sensitivity (rivers, streams and swamp areas, swamp forests and closed evergreen lowland forest). This sensitivity occurs also in the quarry and site installations area.

During the **Construction Phase along the road and bypasses**, the Project's impacts related to waste and wastewater generation are both expected from the camp and very few waste streams will come from the construction activities along the road. Given the limited dimensions of the camp (for a maximum of 70 people) the solid waste and wastewater will be produced in limited quantities. Solid domestic wastes and non-hazardous wastes will be managed onsite (separated, reused, recycled) and then, as needed, transported to the landfill that will be prepared for the Project in Akom II. Along the road, as said, generation of waste and wastewater will be very limited because almost all materials are prepared offsite and installed (pre-cast materials, asphalt, signals, etc.). For the few wastes produced, the management will be centralised in the site installations area and after separating, reusing and recycling, the needed will be transported to Akom II landfill (non-hazardous wastes) and to Ebolowa (to HYSACAM's facility) the hazardous wastes. The soil that will be not used for the embankment construction or other construction site will be as well deposited in the Akom II landfill. The Project's overall residual impact during construction is **negative** and **low** level.

During the **Operation Phase along the road and bypasses**, the Project's impacts related to waste and wastewater generation are expected much lower than during the construction. The Project's overall residual impact during operation is **negative** and **negligible** level.

Regarding **the Quarry and site installations** the worst-case scenario for impacts regarding waste and wastewater generation will be during the quarry and site installations operation.

Regarding **solid waste generation.** The site installations area will be the location for handling and storage of all the construction materials that will be used during the Project. The different facilities in the quarry and site installations area will generate solid wastes that will be managed (separated, reused, recycled) and as needed transported for deposit of.

The following hazardous wastes will be deposited in HYSACAM facility of Ebolowa (hazardous):

- Few miscellaneous hazardous materials from the mobilization and construction (chemicals, oils, paintings, steel various metals).
- Small spare quantities of explosive mix elaboration, including packaging and containers.
- Packages and containers for the asphalt preparation (additives, bitumen) and small quantities of soil polluted by accidental spills.
- Packages and small spare quantities of materials used in the batching plant (cement, additives).
- Oils, grease, tires and wear parts from the vehicles and equipment maintenance at the workshop.
- Materials stored in the warehouse (chemicals, other hazardous materials, packages and containers).
- Metallic pieces, screws and tools from the operation of the steel yard.
- Small quantities of soil polluted from leakages (if any).

The following non-hazardous wastes will be deposited in Akom II landfill prepared for the project:

- Soil from the preparation of the quarry, site installations and access road areas that is not used in other construction sites or will not be stored for further restoration.
- Packages and miscellaneous materials from the mobilization and installation of equipment on site.
- Non-hazardous wastes from materials and containers used at the warehouse, the offices, and other site facilities.
- Domestic wastes from the worker's presence, including the worker's canteen.
- Generic construction wastes and containers in few quantities from the decommissioning and rehabilitation activities.

The Project's overall residual impact during quarry and site installations operation is **negative** direction and of **low** level for the impact factor "waste generation".

Regarding **wastewater generation.** Not all facilities in the quarry and site installations will generate wastewater during operation. Wastewater will come from:

- The water used in the batching plant, where wastewater generation will be absent or minimal.
- The use of water during the curing process in the precast yard, with potential for wastewater generation.
- The water used for vehicles washing, that may contain hazardous pollutants.
- The water used at the refectory and sanitary facilities for workers.

The Project's overall residual impact during quarry and site installations operation is **negative** direction and of **low** level for the impact factor "wastewater generation".

3.2.9 Climate and Greenhouse Gases

2021 GHG inventories show that GHG emissions in the Sub-Saharian Africa region mainly originate from Land Use Change and Forestry (LUCF), energy, and agriculture. Together, regional emissions from these three sectors are responsible for 91% of total regional GHG emissions

In Cameroon the most emitting sector is industrial processes (48%), while the LUCF sector is responsible for 27% of total GHG emissions, followed by energy (11%), agriculture (11%), and waste (3.4%). Greenhouse gas emissions from the transport sector, to which the Project will contribute, are part of the energy sector. The energy sector accounts for 14.29 $MtCO_2e$ in 2021, a lower value compared to the 2018-2020 average of 15.24 $MtCO_2e$. The sensitivity of the component has been defined as **Medium-high.**

During the **Construction Phase along the road and bypasses**, GHG emissions will happen during diesel combustion process in the engines of vehicles and machinery and direct GHG emissions from the soil during clearing and excavation. When compared to Cameroon last available yearly GHG emissions, the results correspond to:

- 0.03 % of National GHG emissions.
- 0.16 % of the energy sector GHG emissions.

Given the short-medium duration and the sporadic nature of the GHG construction emissions, the emissions expected during the construction phase are not considered significant in terms of contribution to the Cameroon yearly GHG emissions over next years.

Regarding the **Quarry and site installations**, these will be constructed and operated during the construction of the road, therefore, there is need of assess both emissions simultaneously. For calculations, the worst-case scenario was considered (meaning the peak of construction activities + peak of quarry and site installations activities). The results in the quarry and site operations show that the facilities that represent the largest contribution to GHG emissions are the asphalt plant and electricity generation and supply. Considering the emissions from the road construction activities and the quarry altogether during all construction phases, the IFC annual threshold of 25,000 tCO_2e is exceeded, and it is therefore necessary to provide quantifications of GHG emissions and report them in a self-monitoring report during the construction of the Road.

For the **Construction Phase of the road and bypasses**, the Project's overall residual impact due to GHG emissions is of **negative** direction and has been assessed to be **low**.

For the **Operation of the quarry and site installations**, the Project's overall residual impact due to GHG emissions is of **negative** direction and has been assessed to be **low**.

During the **Operation Phase along the road and bypasses**. Adverse Project impacts on climate are associated with the release of CO_2 and other GHGs from vehicles during operations which include also occasionally Project maintenance activities. Traffic GHG emissions have been estimated for a conservative representative year, 2042, and include emissions from passenger vehicles, freight vehicles, and motorbikes. The figures obtained does not present the need of further requirement for lower GHG alternatives or for annual quantification and disclosure of information. When compared to Cameroon last available yearly GHG emissions, these results correspond to:

- < 0.01 % of National GHG emissions.
- < 0.01 % of the energy sector GHG emissions.

For the **operation Phase of the road**, the Project's overall residual impact due to GHG emissions is of **negative** direction and has been assessed to be **low**.

3.3 Biological component

The Project AoI supports a wide range of endemism, the Cameroon and Gabon lowlands endemic birds' areas[1] and globally important populations of large forest mammals. In addition, this area is located within the "Southern Gulf of Guinea Drainages - Bioko (533)" freshwater ecoregion which is characterized by a dense network of tributary streams. Project AoI is situated between the river basins of Ntem and Kienké (Kribi), reaching an extension of 40,767 km^2. During heavy rainfall, rivers flowing through rainforests on their way to the Gulf of Guinea and the Atlantic Ocean overspill their banks and flood the forest, creating several flooded swamps; during the dry season, the flooded forest remains quite wet with many freshwater pools.

Preliminary desktop analysis and several field surveys confirmed the presence of Critical Habitats (CHs) according to IFC (2019) Performance Standard 6 (PS6). As a result of the revised CH determination in 2024

[1] https://datazone.birdlife.org/eba/factsheet/82

155 species of flora ande fauna are identified as triggering CHs in the Project AoI, of which 38 species have been observed during field surveys, 99 species have been assessed as as highly likely to be found if a suitable habitat is present to support its population and 18 species have been assessed potentially present. Among the natural and modified habitats identified in the Project study area, all natural habitats and 1 modified habitat (specifically the secondary forest) are suitable to support populations of CH-qualifying species and hold significant biodiversity values. Habitats not suitable for those species and biodiversity values are defined as “non-CH”. As a result, the 82% of the study area is triggering CH.

Impacts on habitats and species, including on Great Apes, have been assessed in accordance with relevant Project standards. Potential impacts on habitats and species have been identified for locations where these receptors have been observed along the road corridor or at the quarry and site installations, and where they are considered likely to be present based on habitat suitability. However, the Project will not have adverse impacts on the integrity of any protected area, as the nearest is Campo Ma’an, 10 km to the south of the Project AoI.

The mitigation measures that will be implemented during the *construction and operation phase* for the biological component have been assigned according to the mitigation hierarchy. These measures will be implemented in addition to other mitigation measures that are embedded in the design or represent standard procedures applied for compliance with legal requirements and regulations and for alignment with good industry practice, and are considered applicable for biological components during the construction and operation phase. In addition, mitigation measures have been identified in specific cases where habitats or species populations are exposed to potentially significant impacts and are considered unlikely to show short-term recovery without intervention. Mitigation measures have been identified to ensure avoidance of impacts and their mitigation whenever avoidance will not be feasible, considering potential impacts of the road during construction and operation and during quarry operations. Several mitigation measures presented to mitigate impacts on physical components will have also indirect mitigating effects on biodiversity.

Regarding the Biological components, Sensitivity value assigned to biological components according to the baseline results.

- **Medium-Low sensitivity** assigned to Non-Critical Habitats, mainly represented by all flora and fauna species (excluding triggering critical habitats, and species of conservation concern[2]), and by Modified habitat (Artificial land).
- **High sensitivity** designated to all confirmed and high likelihood CH trigger species, to all species of conservation concern, and to all Natural and Modified (Secondary forests) habitats and Protected Areas.

The Project impacts on biological components may have effect on a smaller or wider AoI which takes into consideration the nature of the impact factor or the mobility of the receptors; it and adopts a conservative approach and is based on professional judgement. The impact assessment of biological components affected by this Project is qualitative and quantitative.

Practically all the Project activities have an impact on the biological components. During construction, the impacts may be direct (e.g. habitat destruction, fauna killings or direct damage to fauna and flora species or habitats during construction activities) and indirects (e.g. induced damage to species and habitats due to air, noise, light emissions and environmental pollution). During operation one of the main impacts of the road will be the loss or decrease in habitat connectivity in both sides of the road due to the barrier effect created for the increase of traffic and continuous disturbance along the road (light, noise, human presence). Quantification of impacts and calculation of the habitat loss and habitat disturbance is very important in order to determine which

[2] Species considered of conservation concern based on their endemicity and/or threatened status and legally protected by national laws.

amount of those impacts can not be avioded, and will not be recovered. The quantity of habitat lost shall be considered as to be compensated further through offset areas, that is the last step in the mitigation hyerarchy.

Habitat loss is the result of the footprint established by the Project, while habitat disturbance results from Project's effects that extend beyond that footprint. These effects, and the disturbance resulting thereof extend up to a certain distance that varies depending on the impact factor.

3.3.1 Medium-Low sensitivity. Non-Critical Habitats

All impact factors will generate habitat loss for a total area of **406.22 ha** along the main road and bypasses and a total area of **0.04 ha** corresponding to quarry, site installations and acess road. In addition, some impact factors will have effects that extend beyond the Project footprint and will cause habitat disturbance, as follows:

- The impact factors "Changes in local morphology and topography" and "Emission of light " are expected to generate potential habitat disturbance for a total of **1,363.63 ha** in the Project AoI in the main road and bypasses and **0.98 ha** in the quarry, site installations and acess road (QAoI).
- The impact factors "Emission of greenhouse gases", "Emission of gaseous pollutants", "Emission of dust and particulate matter", "Emission of noise and vibrations", "Improvement of infrastructures" and "Introduction and spreading of alien species" are expected to potentially generate habitat disturbance on **1,699.07 ha** of the Project AoI in the main road and bypasses
- The impact factors "Emission of dust and particulate matter", "Change in land use" and "Introduction and spreading of alien species "are expected to potentially generate habitat disturbance on **4.19 ha** of the quarry, site installations and acess road (QAoI).
- The impact factors "Emission of greenhouse gases", "Emission of gaseous pollutants", "Emission of noise and vibrations", are expected to potentially generate habitat disturbance on **13.26 ha** within the quarry, site installations and acess road (QAoI).
- Lastly, the impact factor "Influx of workers" is expected to potentially generate habitat disturbance on **7,488.66 ha** of the overall Project AoI, including the main road and bypasses and the quarry, site installations and acess road (QAoI).

During the **Construction Phase along the road and bypasses**, the negative residual impact factors have been assessed with a residual impact **Low** for the impact factors "Removal/degradation of topsoil and vegetation-Change in land use", "Emission of noise and vibrations", "Waste generation", "influx of workers", "increase of vehicular traffic", and "Introduction and spreading of alien species"; **negligible** for the impact factors "Changes in local morphology and topography", "Changes in hydrological regime-Water demand", "Emission of greenhouse gases-Emission of gaseous pollutants", "Emission of dust and particulate matter", and "Emission of light"; while the impact factor "improvement of infrastructures" have been asseseds as **medium** level.

During the **Operation Phase along the road and bypasses**, the negative residual impact factors have been assessed with a residual impact **low** for the impact factors "Emission of greenhouse gases-Emission of gaseous pollutants-Emission of dust and particulate matter", "Emission of noise and vibrations", "Emission of light", "Soil occupancy-Increase of vehicular traffic" and "Introduction and spreading of alien species"; while the impact factors "Discharge or introduction of pollutants in freshwater and groundwater" have been assessed as **negligible** level.

Regarding **the Quarry and site installations** activities, the worst-case scenario for impacts regarding biological components of medium-low sensitivity is expected during the quarry and site installations operations. Most of the impact factors have been assessed with a residual impact between **Low** and **Negligible** level.

3.3.2 High sensitivity. Critical Habitats

All impact factors will generate habitat loss for a total area of **382.45 ha** along the main road and bypasses and a total area of **21.46 ha** corresponding to quarry, site installations and acess road. In addition, some impact factors will have effects that extend beyond the Project footprint and will cause habitat disturbance, as follows:

- The impact factors “Changes in local morphology and topography” and “Emission of light“ are expected to generate potential habitat disturbance for a total of **2,757.25 ha** in the Project AoI of the main road and bypasses and **60.31 ha** in the quarry, site installations and acess road (QAoI).
- The impact factors “Emission of greenhouse gases”, “Emission of gaseous pollutants”, “Emission of dust and particulate matter”, “Emission of noise and vibrations”, “Improvement of infrastructures” and “Introduction and spreading of alien species“ are expected generate potential effects on **7,079.33 ha** of the in the Project AoI of the main road and bypasses.
- The impact factors “Emission of greenhouse gases”, “Emission of gaseous pollutants”, “Emission of noise and vibrations”, are expected to potentially generate habitat disturbance on **241.72 ha** within the quarry, site installations and access road (QAoI).
- The impact factors “Emission of dust and particulate matter”, “Change in land use” and “Introduction and spreading of alien species” are expected to potentially generate habitat disturbance on **118.10 ha** within the quarry, site installations and access road QAoI.
- The impact factors “Influx of workers” is expected to have a potential habitat disturbance for a total of **243,524.7** ha in the overall Project AoI, including the main road and bypasses and the quarry, site installations and acess road (QAoI).
- The impact factors “Discharge or introduction of pollutants in freshwater and groundwater”, “Changes in hydrological regime – Water demand” and “Introduction and spreading of alien species “ will potentially generate habitat disturbance within the Kienkè river basin, the nearest tributaries of Lokundje river, and the river Mvila and Biwoume (Ntem river basin). The first two impact factors are expected to have effects downstream, while alien species could also have effects upstream.

During the **Construction Phase along the road and bypasses**, the negative residual impact factors have been assessed with a residual impact **low** for the impact factors “Changes in local morphology and topography”, “Emission of greenhouse gases-Emission of gaseous pollutants”, “Emission of dust and particulate matter”, “Discharge or introduction of pollutants in freshwater and groundwater”, and “Emission of light”; **medium** for the impact factors “Removal/degradation of topsoil and vegetation-Change in land use”,“Changes in hydrological regime-water demand”, “Emission of noise and vibrations”, “Waste and waste water generation”, “increase of vehicular traffic”, and “Introduction and spreading of alien species”; while the impact factors “Influx of workers” and “improvement of infrastructures” have been assessed as **high.**

During the **Operation Phase along the road and bypasses,** the impact factors “Emission of light” and “Discharge or introduction of pollutants in freshwater and groundwater” have been asessesed with a l**ow** residual impact value; the impact factors “Emission of greenhouse gases-Emission of gaseous pollutants-Emission of dust and particulate matter”, “Emission of noise and vibrations” and “Introduction and spreading of alien species” have been assessed with a residual impact of **medium** value, meanwhile the impact factor “Soil occupancy and increase of road traffic” has been assessed with a residual impact of **high** value.

Regarding **the Quarry and site installations** activities, the worst-case scenario for impacts regarding biological components of high sensitivity is expected during the quarry and site installations operations. Most of the impact factors have been assessed with a residual impact of **Medium** or **Low** values, while two impact factors, such as “influx of workers” and “change in land use” have been assess with a residual impact of **High** values.

With specific mitigation measures recommended both for the main road-bypasses and the quarry-site installations, the impact assessment studies delivered indicate that there remain residual impacts on biodiversity features, with effects on Natural and Critical Habitats. An Offset Strategy has therefore been designed for compliance with the International Standards on the matter (IFC-PS6). The described in the Biodiversity Action Plan that will ensure that No Net Loss/Net Gain will be achieved as a result of the Project.

3.4 Socio-economic component

The social impact assessments undertaken for the Project have determined the potential for minor to moderate impacts on individuals, communities and socio-economic assets at local levels prior to mitigation measures being implemented. Most of socio-economic impacts are anticipated to occur during the road construction phase, with the Project affecting the communities in close proximity to the road and temporary construction facilities, and to vulnerable groups and indigenous people.

The Project is expected to bring about positive socio-economic impacts to local communities, including employment, business development and improved transport infrastructure. At the macroeconomic level, the implementation of the Project will attract important resources from regional and national companies that may act as suppliers for the Project.

Thus, the sensitivity of these components is defined based on several socioeconomic characteristics such as demographic conditions, education level, economy and employment and several more. Different levels of sensitivity are assigned to the components based on their socioeconomic characteristics, according to the information gathered during the baseline study.

3.4.1 Demography

Regarding the demography, the baseline conditions identified two different sensitivities along the overall Project AoI (including main road, bypasses, quarry and site installations).

- **Medium-Low sensitivity**, occurs in urban areas where the mobility is easier, and the population is hence more diverse and subject to migrations. This happens in villages closer to Ebolowa and Kribi.
- **Medium sensitivity** occurs in rural areas where the mobility is limited due to the conditions of the infrastructures and the economic opportunities available. The population is more ethnically uniform and migration from other areas is limited. This happens mainly along the Project, including quarry and site installations (QAoI).

During the **Construction Phase along the road and bypasses**, and also during the **Quarry and site installations** construction and operation, the Project’s impacts are associated to the affluence of workers from out of the area. Road construction will require hundreds of workers and will generate an influx of population in the AoI. At peak, of activities approximately 630 people will be employed by the Project (including the quarry and camps), for a period of approximately 21 months; for the remaining 15 months of construction, the number of workers required will be lower. It is expected that approximately 40% of workers (250 persons at peak of activities) will come from the AoI (so-called resident workers), while the remaining 60% will come from other parts of Cameroon or from abroad (so-called non-resident workers). Informal immigration towards the AoI may occur due to people looking for employment opportunities in the Project and connected activities. This kind of influx can increase pressure on the local housing situation and on access to infrastructures, and it can create tensions with the local population. Vulnerable groups such as households with limited income or with housing difficulties may be more affected by the additional pressure generated by workers coming to the villages. Based on the stakeholder engagement activities performed, in most villages participants indicated that communities are willing to host workers and see this as an opportunity, even though some concerns were expressed due to the arrival of external male workers. The Project's overall residual impact is of **negative** direction and has been assessed to be **low** level (for the highest sensitivity: Medium sensitivity).

During the **Operation Phase along the road and bypasses**, the improvement of the road will allow easier travelling within the AoI, with potential consequences on the demographics in the villages along the road. Changes to the village structure once the road will be operational were discussed during the stakeholder engagement activities performed. In many cases participants indicated that they expect that more people will move to the area rather than people moving out. Many participants indicated that they believe that the AoI offers opportunities in terms of natural resources to be exploited and for this reason it will attract external persons. In some cases, this was seen as an opportunity for communities to emancipate, but also a risk of losing traditional habits and customs. The Project's overall residual impact is of **negative** direction and has been assessed to be **low** level for the medium sensitivity**.**

3.4.2 Land tenure and livelihood

Regarding the land tenure and livelihood, the baseline conditions identified two different sensitivities along the overall Project AoI (including main road, bypasses, quarry and site installations).

- **Medium sensitivity** occurs in urban areas where agriculture plays a less relevant role for the livelihood of households, as members are often employed in activities such as public services and commerce. This happens in villages closer to Ebolowa and Kribi.
- **Medium-high sensitivity** occurs in rural areas where subsistence agriculture plays an important role for the livelihood of households. In these villages properties are often not registered or well defined, agriculture is practiced by different households in common fields, and the produce is then divided according to needs. This sensitivity is also found in Bagyeli camps, as Bagyeli population generally has more uncertain tenure and ownership status. This happens mainly along the Project, including quarry and site installations (QAoI).

During the **Construction Phase along the road and bypasses**, the Project's impacts derive from the land acquisition and resettlement process. The Project passes through a total of 60 villages with more than 44,000 inhabitants. Many houses and other structures located along the corridor and within the ROW will need to be demolished.

In general land acquisition for the Project will generate both physical and economic displacement for households, properties and assets located within the ROW (maximum 40 m) As mentioned, all losses will be compensated in compliance with IFC PS5 and support will be provided to PAPs based on an eligibility matrix. Impacts will be more significant for households whose income is based on agricultural activities, which constitute the majority of households in the rural areas of the AoI and QAoI. Compensation and support will be provided for all losses faced by PAPs, including for example structures such as water wells and elements with cultural and personal value such as tombs. The resettlement process will be accompanied by a strong focus on stakeholder engagement, to ensure that PAPs and local communities are duly informed about what they are entitled to, about the steps and about the timeline.

In line with the requirements of IFC PS5, the RAP will have to identify PAPs that due to their conditions or due to the impacts generated by resettlement can be considered vulnerable; specific mitigation measures will have to be defined within the RAP to ensure that they are not disproportionately affected by the resettlement and compensation process. In addition, provisions will be included to address and minimise the potential for cases of GBVH to occur during the land acquisition and resettlement process.

Land acquisition will also impact public or community facilities such as schools, health centres and other communal spaces located within the ROW. In these cases, replacement facilities will be built, in accordance with local authorities and users, ensuring that these facilities are left in better conditions than before.

It is expected that the need of land necessary for temporary activities out of the ROW (e.g. the construction of /installation of new bridges, opening borrow pits, areas for the deposit of equipment, machinery and material) The losses generated due to need of land will have to be compensated in compliance with Cameroon regulations and IFC PS5. The land will be returned to the original PAPs at the end of construction, temporary losses will be compensated, and land will have to be restored and returned in its original state to the extent possible.

Regarding the **Quarry and site installations**. In general, it is expected that the land acquisition for the quarry and site installations will generate economic displacement only.

The Project's overall residual impact along the road, bypasses, quarry and site installations is of **negative** direction and has been assessed to be **low** level for the highest sensitivity of the component (medium-high sensitivity).

No impacts on land tenure and livelihood are expected during the **Operation Phase along the road and bypasses**. Monitoring and livelihood restoration activities will continue during the operation phase, as a prosecution of activities started during construction, as indicated in the Project's RAP.

3.4.3 Economy and Employment

Regarding the economy and employment, the baseline conditions identified two different sensitivities along the overall Project AoI (including main road, bypasses, quarry and site installations).

- **Medium sensitivity** is found in the urban areas of the AoI (Kribi, Ebolowa and surroundings). The population is employed in a wider range of sectors and has good access to employment opportunities, due to the different economic activities present there. In these areas it will be easier to find skilled personnel with qualifications necessary to be employed in the Project.
- **Medium-high sensitivity** occurs in rural areas of the AoI and QAoI (surroundings of quarry and site installations) where most of the population's occupation is in subsistence agriculture and in other informal commercial activities. Formal employment is uncommon, and it mainly derives from the large agro-industry businesses present. The skills necessary to work on the Project will generally be missing in these areas and hence local population will have fewer opportunities and will in most cases be employed in unqualified positions. Rural areas will benefit the most from the improvement of the road, as it will allow faster and easier connections, allowing an overall development of economic sectors. This sensitivity is assigned also to the Bagyeli camps.

During the **Construction Phase along the road and bypasses**, the Project's impacts on economy and employment will be due to the demand of workers and the demand of goods and services for the Project.

Construction activities will generate both a direct and an indirect demand of workforce. Direct workforce includes workers that are directly hired by the Project contractors and subcontractors. Workers will be required to carry out the construction activities planned; in addition, a number of workers will be necessary for associated activities, such as the catering of workers, cleaning services in the construction camp and security services.

Approximately 630 people will be employed by the Project (including the quarry and camps). A 40% of workers will come from the AoI (resident workers), while the 60% will come from other parts of Cameroon or from abroad (non-resident workers). Resident workers will be mainly employed for unskilled jobs, for housekeeping and kitchen and for security. Non-resident workers will mainly be employed for technical and administrative positions, for skilled jobs and as drivers.

Both direct and indirect working opportunities will generate positive effects on the income of the workers and on the overall livelihood conditions of the household. It should be noted that most of these work opportunities will be of temporary nature, therefore specific mitigation measures will have to be taken by the Proponent to avoid negative consequences on the livelihood of workers once the construction activities are over. The Project will also generate an improvement of the skills of workers, which can then be useful to find future employment opportunities.

Employment opportunities generated by the Project will be more significant in the rural villages along the road, indicated as having a medium-high sensitivity, due to the general lack of other employment opportunities other than agriculture and informal commerce. Vulnerable groups, such as the elderly, persons with disabilities and women in general will have fewer opportunities than other groups to be directly employed in construction activities. ICMC will set up a fair and equitable recruitment process, to ensure that no discriminations occur during the selection of candidates.

The demand of workers can also lead to negative impacts in terms of labour and working conditions if the management of human resources is not carried out suitably. In addition, cases of GBVH may occur within the workforce due to contextual aspects linked both to the type of project and the cultural setting. The majority of the workforce will be made of men, while women will represent a minority and will likely cover unskilled positions, leading to increased risks of being subject to GBVH from male colleagues. Specific mitigation measures will therefore be enforced within the management of workforce to minimise and address situations of this type that may occur.

The procurement of goods, materials and services provides an economic benefit to the companies involved and employment opportunities. The local procurement of good, materials and services will increase the overall economic benefits generated by the Project within the local community.

Accommodation services and food for meals will be necessary for workers coming from other parts of the country, as ICMC is not planning on building accommodation and canteen facilities for all workers, but rather on providing an allowance that workers will use to rent their own accommodation and buy their own food. This approach will generate benefits at a local scale in a fairly widespread manner, as local communities will obtain an additional income thanks to the provision of accommodation and meals, even if will be temporary (few months) and only some households will be able to provide accommodation and meal services.

The Project's overall residual impact is both **positive** direction and **negative** direction: **Positive** impacts have been assessed to be **high** level (for medium-high sensitivity), and **negative** impacts, have been assessed to be **medium** level (for medium-high sensitivity).

Regarding the **Quarry and site installations**. The more impactant scenario is during the quarry and site installations operation. It is expected that the Project will bring employment opportunities and demand of goods and services in the QAoI and specially in Akom II and surroundings. Being the quarry and site installations the logistical centre during the whole Project, positive and negative impacts will be concentrated, more intense and more extended in the time. Therefore, the Project's overall residual **positive** impacts have been assessed to be **very high** level in the QAoI and the **negative** impacts, have been assessed to be **medium** level in the QAoI.

During the **Operation Phase along the road and bypasses**, the Project's impacts on economy and employment will be due to the increase of traffic and the improvement of the road network rather than for the demand of workers and the demand of goods and services for the Project.

During the operation phase it is expected that traffic in the road will increase compared to the current situation, due to better road conditions. in operation on average 2,233 vehicles and motorcycles will be using the road section Ebolowa – Akom II every day (increase of approximately 119% compared to current situation) while an average of 2,588 vehicles and motorcycles will be using the road section Akom II – Kribi (increase of approximately 84% compared to the current situation). More people and vehicles along the road represent a positive benefit from an economic standpoint, as it will increase opportunities for commercial activities This can generate direct positive benefits to commercial activities and to the income of people running and working in these activities as well as increased employment opportunities.

A stronger road network means better and faster conditions for people to move, reach services and facilities more easily, and to take advantage of working opportunities that currently are inaccessible to remote villages along the road. It also allows a quicker and easier transport of goods and services, increasing the opportunities for companies to sell their products and decreasing costs. This is particularly relevant considering that the road will allow better connection to the Kribi harbour, increasing the possibility to export abroad products produced in the AoI. This will unlock potentials for existing companies like SOCAPALM and HEVECAM and will allow the creation of other companies.

The demand of workforce during the operation phase will be limited and will consist essentially in workforce operating facilities (automatic weighing counting and toll station and the control checkpoints).

The demand of goods, materials and services during the operation phase will be limited and will consist essentially in what is needed for periodic maintenance activities that will be necessary for the smooth running of the road and of the facilities.

The Project's overall residual impact during operation of the road is **positive** and has been assessed to be **high** for the impact factors "Demand for workforce" and "Demand for goods", and **very high** for the impact factors "Increase of traffic" and "Improvement of infrastructure".

3.4.4 Education

Regarding the education, the baseline conditions identified two different sensitivities along the overall Project AoI (including main road, bypasses, quarry and site installations).

- **Medium sensitivity** occurs where most of the population has attended primary school, however there is a difference in education levels obtained according to age and to gender. Few secondary and higher education schools are present in the rural villages, hence persons with higher education are less present in these areas. This situation occurs in many rural and urban areas along the Project AoI, including the QAoI.
- **Medium-high sensitivity** occurs where communities do not have school facilities and students therefore have to travel to neighbouring villages to attend primary school and schools at other levels. This happens mainly in small, isolated villages of the centre of the AoI. Attendance to public schools among children of Bagyeli communities appears to be low.

During the **Construction Phase along the road and bypasses**, the Project's impacts on education will be derived from the affection to traffic, leading to longer distances and longer time needed to move within villages along the road and difficulty in reaching certain facilities (e.g. school facilities). This impact will be more relevant in villages that do not have school facilities, identified with medium-high sensitivity, as students from these villages will have more difficulties in reaching schools in other villages during the main road construction activities. Construction activities may create some difficulties in accessing the schools, especially when they are located in close proximity to the construction sites, therefore a case-by-case approach will be needed in a way that always guarantees a safe access to schools for students and staff. If necessary additional stakeholder engagement activities will be performed with affected schools to identify suitable mitigation measures in relation to certain specific activities (e.g. bridges construction).

After application of mitigation measures, the Project's overall residual impact is of **negative** direction and has been assessed to be **negligible** in the worst case (medium-high sensitivity).

Regarding the **Quarry and site installations** activities, no special impacts are expected for this component.

During the **Operation Phase along the road and bypasses** , the presence of an improved road will make it easier for local communities to travel and hence will also make it easier for students to attend school, potentially improving the overall literacy and education levels of the population in villages along the road. This will be particularly relevant for villages that currently do not have schools. The Project's overall residual impact is of **positive** direction and has been assessed to be **high.**

3.4.5 Community health, safety and security

Regarding the community health, safety and security, the baseline conditions identified two different sensitivities along the overall Project AoI (including main road, bypasses, quarry and site installations).

- **Medium sensitivity**, as several forms of disability and chronic diseases are present among members of households. Approximately 20% of households include members with some form of disability or chronic disease. Support is provided by the government to people with disabilities, however in rural area of the AoI this support is difficult to obtain. Care of people with disabilities and with chronic diseases is usually provided by family members. The quality of medical treatments found in health centres in the rural areas of the Area of Influence is often not very high, and hence people often prefer travelling long distances to reach better facilities. This situation occurs in many rural and urban areas along the Project AoI, including the QAoI.
- **Medium-high sensitivity** occurs because many villages along the road do not have any form of health facility and therefore patients have to travel long distances to be visited or to receive treatment. This happens mainly in small, isolated villages of the centre of the AoI.

During the **Construction Phase along the road and bypasses**, the Project's impacts on health, safety and security may come from several aspects: The influx of workers brings to the AoI the possibility of spread of communicable diseases, and particularly relevant with regards to sexually transmitted diseases, also considering that most of the workers will be single males. There is possibility of additional pressure on local health facilities. ICMC has identified the healthcare centre in Akom II as the facility that will be used for the medical treatment of workers that will be upgraded to ensure that it is able to accommodate the needs of the workforce. This health facility will remain as an improvement to the community once construction is finished. In terms of safety, the presence of workers can generate tensions and disturbance with local communities. Disturbances and impacts may affect women and vulnerable groups more than others. Cases of GBVH may occur in the context of relations between workers and community members, due to contextual aspects linked to both the type of project and the cultural setting.

The increase of traffic can increase the risk of accidents with other vehicles and with people, with potentially significant effects on the health and safety of people, including fatal incidents. This will be more relevant in villages that do not have health facilities. In addition, vulnerable groups such as children, the elderly and people with disabilities are at higher risk of being involved in accidents with vehicles. Mitigation measures will focus on the road sections in proximity of villages and of facilities used by communities, such as schools, healthcare centres and community spaces. Special attention will be needed in the proximity of some construction activities whenever these are in the proximity to villages or to community facilities such as schools and healthcare centres. If necessary, additional stakeholder engagement activities will be performed with these schools to identify suitable mitigation measures.

Construction activities will be organized so to always allow traffic flow along the road, by working on half road section at a time. However, in some cases temporary closures or diversions may be necessary. In general construction activities will affect normal traffic flows along the road. This can lead to longer distances and longer time needed to move within villages along the road and difficulty in reaching certain facilities (e.g. health centres). Due to safety reasons, interruptions to circulation along the road may also occur when the use of explosives will be required for very hard rock excavations. The use of explosives is expected in particular in proximity to Ebemvok village (PK75 km) and Ndjabilobe village (PK 105 km). All precautionary measures will be implemented during the storage, transport and use of explosives to avoid any safety risk for workers and for local community members.

The Project's overall residual impact is of **negative** direction and has been assessed to be **negligible** for the impact factors "Increase of traffic" and "Interruption/limitation of roads and infrastructure" and **low** for the impact factor "Influx of workers"**.**

Regarding the **Quarry and site installations** no additional impacts on top of the already mentioned are detected. The quarry exploitation area and site installation areas will be entirely fenced and provided with clear signage to avoid or reduce the risks on members of local communities as a result of intentional or unintentional trespass onto the access road, quarry and site installation sites. Security personnel will be present at the site entrance, hence there should not be risks of trespass. Children may be particularly at risk in case of trespassing therefore awareness campaigns will be targeted to them. The Project's overall residual impact is of **negative** direction and has been assessed to be **negligible** for the impact factors "Increase of traffic" and "Interruption/limitation of roads and infrastructure" and **low** for the impact factor "Influx of workers"**.**

During the **Operation Phase along the road and bypasses**, the Project's impacts on health, safety and security. The increase of traffic during operation may also cause indirect impacts on population health, with lower intensity than for the construction but continuatively along the time.

Vehicles will be travelling at higher speeds compared to the current situation. The increase of traffic and the increase of vehicles' speed can increase the risk of accidents with potentially significant effects on the health and safety of people, including fatal incidents. Vulnerable groups such as children, the elderly and people with disabilities are at higher risk of being involved in accidents with vehicles. Awareness campaigns will therefore be performed within villages along the road, targeting especially the vulnerable groups. In the other hand the improvement of the road leads to faster and better access to health facilities. Improved mobility can potentially lead to an overall improvement of the health facilities, in terms of maintenance of the structures and presence of staff. The Project can therefore potentially lead to overall improved health conditions among the population of the communities along the road.

The Project will generate both **positive** residual impact on the component, assessed to be **high,** and **negative** impacts, assessed to be **negligible.**

3.4.6 Mobility and infrastructures

Regarding the mobility and infrastructures, the baseline conditions identified two different sensitivities along the overall Project AoI (including main road, bypasses, quarry and site installations).

- **Medium-low sensitivity**, occurs in urban areas where mobility along the road is easier and services are closer, and in villages closer to the cities of Kribi and Ebolowa that generally have access to electricity.
- **Medium-high sensitivity** occurs in rural areas where mobility is guaranteed only by the existing road, which presents numerous critical conditions due to its state, and particularly in certain periods of the year, like rain seasons. Access to infrastructures is very limited in these areas, which are in most cases non connected to the electric grid and do not have water distribution systems. This sensitivity occurs in most of the AoI and in the QAoI (Akom II and surroundings).

During the **Construction Phase along the road and bypasses**, the Project's impacts on mobility and infrastructures are due to several impact factors, such as water demand, waste generation, traffic increase, interruption of roads and infrastructures and the improvement of infrastructures.

Regarding the water demand. The need of water for road construction activities can create interferences on water uses with other community activities, particularly where it is not particularly developed, as in the rural areas of the AoI. This can create interferences with the normal distribution of water and limit access to water resources. This impact can be more relevant in rural villages of the AoI, due to the lack of water distribution systems and the reliance on local water sources (rivers) which may also be used by the Project. Specific engagement activities will be necessary with the communities to agree on the locations where the water for the Project will be taken from, so to avoid interferences with the water needs of the communities.

A new well equipped with a 12.5 m^3/hour pump and a new elevated tank with a capacity of 20 m^3 will be installed. The camp is expected to require approximately 14 m^3 of water per day, which is a limited daily water demand. The construction camp is expected to be self-sufficient in terms of water needs and should therefore not create interferences with other water sources in Akom II.

Regarding waste generation, it will be very limited for the construction activities along the road and bypasses. Non-resident workers that will find accommodation in the villages along the road will produce daily waste. The villages generally do not have a well-developed waste management system, and waste may accumulate if not properly collected and managed.

The camp is expected to generate different types of waste both during its construction and later while in use. It is estimated that approximately 220 m^3 of waste will be produced in the camp during the entire construction phase.

Regarding the increase of traffic. The road represents the only transport infrastructure for many villages in the AoI, therefore impacts on traffic may be significant for the livelihood and quality of life of people in these villages.. Critical points may be the proximity to the bridges and may therefore affect in particular villages and other community facilities that are located close to the specific bridge. During stakeholder engagement participants confirmed their concerns on the effects that increased traffic can have on daily life in the villages, as the road is the only infrastructure that allows the transport of people and goods such as food.

Regarding interferences to other services / infrastructures. Before the start of construction activities, the Project will relocate the existing services and utilities along the ROW, either those buried under the roadway or those that will be affected due to the expansion of the ROW in both sides. During Stakeholder Engagement, existing community voiced their concerns on possible impacts on local water supply systems (pipelines, water points, deposits, boreholes, shallow wells equipped with handpumps). Some electricity and telephone poles may need to be relocated too.

The relocation and replacement or reparation of water services will help communities to reestablish a reliable water supply systems and will give an opportunity to the communities along the road to meet their water demand. At the end of the construction phase, the overall access to water, electricity and communication networks should therefore be improved compared to the current situation.

In the **Quarry and site installations** area, regarding water demand. A new well equipped with a 16,5 m^3/hour pump and a ground level tank with a capacity of 30 m^3 will be installed. The quarry and the site installations are expected to require approx. 28 m^3 of water per day. These water amounts are relatively limited and is not expected impact on local resources. Specific engagement activities will be carried out with the communities within the QAoI to avoid any interferences.

The Quarry and site installation activities will entail the production of waste of various nature, which will have to be disposed of. Waste will be managed in line with Cameroon regulations. Garbage bins will be placed in the production sites as well as near the facilities (office and construction camp). A dedicated waste management area, to temporarily store construction waste and recyclable materials, will be placed outside the warehouse. For secondary waste, plastic bins of various sizes will be available for all workers, distributed in various collection points. The collection of secondary waste will be carried out daily and handled directly by the company own personnel, in the same way as for the camp and at other Project areas. No hazardous wastes will be transported and deposited of in Akom II landfill, that will be improved by the company for the Project use. The hazardous waste will instead be sent to Ebolowa HYSACAM.

Activities in the QAoI will have limited effects on the existing infrastructures (no relocations needed).

the Project's overall residual impact is both **positive,** assessed to be **very high,** and **negative,** assessed to be **negligible** for the impact factors "Water demand", "waste generation", and "Increase of traffic", and **low** for the impact factor "Interruption/limitation of roads and infrastructure"**.**

During the **Operation Phase along the road and bypasses**. The overall objective of the Project is to improve the conditions of the road and of the network it belongs to. This will generate a wide range of positive impacts for the overall mobility at a local and regional level. An improved road will allow easier and faster mobility both for people and for the transport of goods and products, representing a positive asset in the overall transport system of the South Region. A new and paved asphalt will guarantee good travelling conditions, especially during rain periods and will ensure a better management of aspects such as stormwater, which can currently be problematic in certain villages. A new road will also require less frequent maintenance activities.

Impacts will be particularly beneficial for the rural villages in the AoI, whose mobility is currently strongly constrained by the conditions of the existing road.

The improvement of the road will lead to a negative impact during operation due to the presence of a tolling system. It is expected the installation of two tolling stations, being one tolling station located in the road section between Kribi and Akom II and one tolling station in the section between Akom II and Ebolowa. Compared to the current situation, the use of the road will no longer be free, even though payments will occur only when passing through the tolling stations and not along the entire road. The cost for travelling along the road will be more relevant for vulnerable groups, especially for people with low income and for persons with disabilities or illnesses that have to reach healthcare centres periodically.

For the Operation Phase, the Project's overall residual impact is both **positive,** assessed to be **very high,** and **negative,** assessed to be **medium.**

3.4.7 Ecosystem services

Regarding the Ecosystem services, the baseline conditions identified two different sensitivities along the overall Project AoI (including main road, bypasses, quarry and site installations).

- **Low-medium sensitivity**, occurs urban areas where the reliance of households on ecosystem services is limited, as there is an easier opportunity to buy products from the market.
- **Medium-high sensitivity** occurs in rural areas where it is fairly common relying on ecosystem services for the livelihood of households, especially in terms of wood collection for cooking and heating. Occurs in most of the rural communities along the AoI.

During the **Construction Phase along the road and bypasses** and also for **the Quarry and site installations** area, the Project's impacts on ecosystem services will be mainly generated by road construction activities, as this is the Project activity that will require the most significant vegetation removal and will entail influx of population. The impacts will be more significant in rural communities, identified with a medium-high sensitivity, as they are more reliant on ecosystem services, as mentioned in the baseline section. Communities in urban areas have better access to energy sources and food, hence they make a more limited use of ecosystem services. Vulnerable groups, such as families that are more dependent on ecosystem services for their daily diet, may be more significantly impacted.

The Project's overall residual impact is of **negative** direction and has been assessed to be **low** for medium high sensitivity.

During the **Operation Phase along the road and bypasses**, the functioning of the road will generate a series of impact factors that will have effects on the biodiversity components, therefore interference with the use done by local communities. An additional impact factor that can influence the availability of ecosystem services is the influx of population. Newcomers may also make use of ecosystem services, such as wood collection and hunting, thus increasing the pressure on these resources and making them harder to obtain also for local communities. A potential increase of population in the rural areas, will likely generate impacts on the availability of ecosystem services.

The Project's overall residual impact is of **negative** direction and has been assessed to be **low** for medium high sensitivity.

3.4.8 Cultural heritage

Regarding the cultural heritage, the baseline conditions identified two different sensitivities along the overall Project AoI (including main road, bypasses, quarry and site installations).

- **Medium-low sensitivity**, because in the study area few cultural heritage elements, both of tangible and intangible nature, as well as no legally protected cultural heritage sites, Critical sites and non-replicable sites, have been identified.
- **Medium sensitivity** occurs in some villages where tangible cultural heritage elements such as monuments and religious buildings have been identified within the Right of Way.

During the **Construction Phase along the road and bypasses** a number of tangible and intangible cultural elements that have been identified in the AoI, mainly including monuments, religious buildings, tombs, cemeteries and gathering spaces where communities meet, could be impacted by Project activities. Specific measures will be applied to manage tangible cultural elements both inside and outside of the ROW. In particular if the relocation or replacement of cultural heritage elements is necessary, it will be agreed with local authorities and local communities. The relocation of tombs will be performed as part of the Resettlement Action Plan, in accordance with affected families.

The Project could also impact elements of intangible cultural heritage, such as folk dances, celebrations and rites, present in villages and among Bagyeli communities. Engagement activities will be performed with local communities to find agreements to reduce to the extent possible disruptions caused by Project activities, for example by rescheduling construction activities or interrupting them during the festivities.

Regarding the **Quarry and site installations**, stakeholder engagement in the QAoI have not revealed the presence of known or known intangible Cultural Heritage on the footprint of both quarry and site installations.

The Project's overall residual impact is of **negative** direction and has been assessed to be **negligible.**

During the **Operation Phase along the road and bypasses**, considering the nature of the Project no impacts are expected on any components.

3.4.9 Indigenous People

Indigenous communities (Bagyeli) are present within the Area of Influence, and this has triggered the application of IFC PS7 and the performance of an FPIC process.

The impacts of the Project will affect specially the indigenous people, namely Bagyeli communities, existent along the AoI.

During the **Construction Phase along the road and bypasses** and for **the quarry and site installations,**

Bagyeli communities are likely to be more affected by the influx of population. There is possibility to increase vulnerating the rights of Bagyeli as Indigenous Peoples, for example regarding their rights on the land use because of the risk of giving priority to the use of land to welcome the externals coming to work on the Project.

Bagyeli communities tend to access public health services less than the Bantu population and hence can be considered more vulnerable to the general health impacts caused by communicable diseases.

In terms of safety, the presence of workers can generate tensions and disturbance with local communities. These disturbances may affect women and vulnerable groups like the Bagyeli communities more than others.

Bagyeli communities have a close interaction with the surrounding forest which is strongly linked to their way of life and culture. The Project will acquire forested land along the ROW, which may affect Bagyeli communities land use and therefore have implications on their rights as Indigenous Peoples if fair compensations to them are not considered.

Bagyeli community members often have difficulties in accessing employment opportunities, because they are often not registered in the official Cameroon registry system. The recruitment process will also have to make special provisions to support Bagyeli community members in obtaining all the documents necessary to be officially employed.

Large infrastructure projects often generate expectations of employment opportunities in local communities that cannot be always met due to the lack of specific skills in local workers; this may create situations of tensions and resentment between the Proponent, local communities and local authorities. It is important to clearly engage Bagyeli communities and Bagyeli community leaders on these issues, ensuring a transparent and clear communication on the actual Project needs.

Considering the type of economic activities performed by Bagyeli communities, it is expected that they will have limited opportunities to supply good, materials and services for Project purposes. A special focus should therefore be placed on identifying specific elements of the Project supply chain the Bagyeli communities could potentially provide, so to maximize the Project benefits also for these communities

The increase of traffic can increase the risk of accidents with other vehicles and with people, with potentially significant effects on the health and safety of people, including fatal incidents. This impact will be more relevant in villages that do not have health facilities, like the ones where most of Bagyeli communities live, as it will imply longer distances to travel to obtain first aid and support to persons victims of Project-related incidents.

Impacts on the availability of ecosystem services for local communities may derive also from the influx of population, as newcomers may also make use of ecosystem services, such as wood collection and hunting, thus increasing the pressure on these resources and making them harder to obtain for Bagyeli communities. This is considered a potential impact on the rights of Bagyeli as Indigenous Peoples, because affecting their life style and culture.

Specific measures will be implemeted to manage tangible cultural elements both inside and outside of the ROW. In particular if the relocation or replacement of Bagyeli cultural heritage elements is necessary, it will be agreed with Bagyeli leaders and community members.

During the **Operation Phase along the road and bypasses** the same kind of impacts factors than for other communities are observed for indigenous people with increased vulnerability on these:

Influx of population implies more social mobility, with possible change in the ethnical composition of the population. If a significant in-migration to the area occurs, Bagyeli communities may face an increased pressure due to their minority status and the fact that their land tenure is not always formalized.

The demand of workforce, goods and services will be limited and will consist essentially in workforce needed for the operation facilities and road maintenance. Special provisions should be made during the recruitment process, and for provision of goods and services, to ensure that Bagyeli community members are given equal opportunities.

Benefits from the improvement of the road network will be particularly relevant for villages in the rural areas of the AoI, which are currently difficult to reach due to road conditions and this heavily affects employment and economic opportunities for these communities. Measures will be needed during the operation phase to ensure that positive impacts are available equally to all communities along the road. Bagyeli communities do not have the same opportunities as other Bantu communities along the road, because of their vulnerable status and lack of official recognition.

The increase of traffic can increase the risk of accidents with people, and this can be more significant in proximity to specific facilities that are more used by local communities, such as schools, commercial areas and Bagyeli community gathering spaces. Mitigation measures should therefore be targeted to these areas in particular.

The presence of the new road will cause a loss of habitat, that will directly affect flora and fauna species. This can change the availability of ecosystem services and the areas where local communities can obtain them. Interferences with ecosystem services will have direct impacts on Bagyeli communities, as their livelihood and culture are centered on hunting, fishing and gathering activities. Bagyeli community members tend to perform these activities in forest areas far from the road, therefore these areas are less likely to be impacted by the operation phase. This will require ongoing monitoring during the operation phase.

4.0 IMPACTS MANAGEMENT

4.1.1 Environmental and Social Management System (ESMS)

ICMC has prepared an Environmental and Social Management System (ESMS) to implement all mitigation measures identified in this ESIA Report and manage the ES performance of the Project. The ESMS has been developed in accordance with the Project ES policies, with the commitments in the ESIA and, more broadly, with the Cameroon regulatory framework and with the ES Standards that apply to the Project.

The ESMS includes a set of associated Environmental and Social Management Plans (ESMPs) that have been prepared for addressing specific ES issues. The ESMPs provide details of the actions that will be taken by ICMC during the construction phase to mitigate and manage Project’s ES impacts and risks. Moreover, the ESMPs includes tools for auditing and monitoring the Project’s performance and for communicating monitoring outcomes to stakeholders. The ESMP will be expanded in due time to include Management Plans (MPs) that will be implemented by the Ministry of Public Works (MINTP) during the operational phase.

The ESMS aims at avoiding the generation of environmental and social impacts from the outset of construction activities and, where this is not considered possible, it proposes additional measures to minimise, mitigate and, as a last resort, offset and/or compensate any potential residual adverse impacts.

Overall, the objectives of the ESMS are to:

- Adopt a mitigation hierarchy to anticipate and avoid, or where avoidance is not possible, minimise, mitigate, compensate or offset impacts on ES receptors.
- Develop and implement policies, plans and procedures to integrate ES aspects within the overall Project management framework throughout the Project lifecycle.

- Establish a monitoring program to assess the effectiveness of mitigation measures and the effects of residual impacts on ES receptors.
- Report the results of periodic audits and provide for corrective actions as necessary, in order to achieve the planned objectives; and
- Disclose information to stakeholders (including to lenders) and engage with them.

The ESMS and associated ESMPs will be subject to a systematic review process to ensure their effectiveness and modified as necessary to best fit the evolving Project needs. Specifically, ESMPs will be updated and refined through the life of the Project, notably during construction and operations, as will other operational ESMS documents.

The ESMS applies to normal operating conditions during road construction and operations. Emergency situations resulting from unplanned events are addressed in a specific Emergency Preparedness and Response Plan (EPRP), also an element of the ESMS.

The Project ESMS incorporates the following elements:

- An Environmental, Social, Health and Safety Policy.
- An ESIA report and other documents presenting the results of the process of identification of Project risks and impacts.
- Several Environmental and Social Management Plans.
- An Organisational structure including skilled and competent staff that will manage the Project's risks and impacts during construction and operations.
- A process of Stakeholder Engagement guided by a Stakeholder Engagement Plan (SEP).
- Measures and plans for Emergency Preparedness and Response.
- A Management of Change procedure.
- Procedures for ESMS performance monitoring, review and performance reporting.

Contractors and subcontractors are required to develop their own ESMSs including plans and procedures they will have to follow while working for the Project. In order to confirm their alignment with the Project ESMS, such plans and procedures will be reviewed and approved by ICMC for construction and by the Ministry of Public Works for operations.

4.1.2 Environmental and Social Management Plan (ESMP)

The construction ESMPs and management procedures prepared for fulfilling the ESIA commitments undertaken by ICMC and by the Ministry of Public Works includes the following:

- Contractor Management and Monitoring Plan.
- Quarry Management Plan.
- Training and awareness procedures.
- Construction Cumulative Effects Management Plan.
- Human Resources and Labour Management Plan.
- Occupational Health and Safety (OHS) Management Plan.

- Contractor, Supply Chain Management and Procurement Plan.
- Emergency Preparedness and Response Plan.
- Accommodation Management Plan.
- Waste Management Plan.
- Wastewater Management Plan.
- Water and Energy Sources Management Plan.
- Hazardous Materials Management Plan.
- Soil Management Plan.
- Habitat Restoration and Biodiversity Long-term Monitoring.
- Air Quality Management Plan.
- Noise Management Plan.
- Community Health and Safety Management Plan.
- Influx Management Plan.
- Traffic Management Plan.
- Biodiversity Management Plan.
- Biodiversity Action Plan.
- Indigenous Peoples Management Plan.
- Cultural Heritage Management Plan.
- Chance finds procedure.
- Gender Inclusion Strategy.
- Code of Conduct.
- Security Management Plan.
- Worker's Grievance Redress Mechanism.
- Cumulative Impact Assessment Management Plan.

The specific management plans for the operational phase of the Project will be developed and approved by the Ministry of Public Works.

5.0 STAKEHOLDER ENGAGEMENT PLAN

A Stakeholder Engagement Plan has been prepared and updated several times since the onset of the ESIA process in 2021. Regular consultations have been carried out with all relevant stakeholders, and a full systematic information disclosure and consultation campaign delivered in April and March 2024 when all communities living in the Areas of Influence of the Project. Their feedback has been a valuable input to the ESIA finalisation process that had delivered this final report. A grievance mechanism has been designed and included in the SEP to collect and address comments and requests of all affected and interested stakeholders and to maintain a two-way dialogue with them. Best industry practices will be implemented to minimise community and occupational health and safety issues. Awareness campaigns will be conducted as needed during the Project lifetime. Mitigations identified include consultations with local authorities in establishing the common grounds for reducing risks and taking action in emergency situations.