Intended for
Bugesera Airport Company Limited

On behalf of
Bugesera Airport Company Limited

Date
October, 2017

Project Number
UK11-24483

NEW BUGESERA INTERNATIONAL AIRPORT ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT REPORT – NON-TECHNICAL SUMMARY

RAMBOLL ENVIRON

NEW BUGESERA INTERNATIONAL AIRPORT
ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT
REPORT – NON-TECHNICAL SUMMARY

Project No.	**UK11-24483**
Issue No.	**Non-Technical Summary**
Date	**October, 2017**
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1. INTRODUCTION: WHAT IS THE NEW BUGESERA AIRPORT PROJECT, WHO IS INVOLVED AND WHY IS IT NEEDED?

1.1 What is the New Bugesera International Airport Project?

The New Bugesera International Airport ('the Proposed Project') will involve the construction of a new airport approximately 23 km to the southeast of Kigali City. When completed, it will be Rwanda's third and largest international airport and the country's eighth airport overall. It will serve commercial flights destined to and from the greater Kigali metropolitan area and the wider country. It will replace the existing civilian passenger capacity at Kigali International Airport (KGL), which will remain operational for military purposes.

The airport will be situated within the Rilima and Juru sectors of the Bugesera District in the Eastern Province of Rwanda, as shown in Figure 1-1. A new Expressway will be constructed to connect the airport to the Kicukiro-Nyamata-Nemba KK-15 Road, which links to Kigali and connects Rwanda to Burundi.

1.2 Who is involved in the new airport development?

The new airport will be developed by the Bugesera Airport Company Limited (BAC), which is a joint venture between the Government of Rwanda (GOR) and Mota-Engil Engenharia e Construcão (Mota-Engil).

Mota-Engil is a majority shareholder in BAC and has had previous experience of constructing new infrastructure developments across Africa. Mota-Engil has wide experience in upgrading existing airport infrastructure and constructing new greenfield airports internationally and within Africa, and has been involved in upgrading and expanding KGL in the past.

Contact details of the Proponent is provided in Table 1-1.

Table 1-1: Project Proponent Information

Project Proponent Information	Details
Project Proponent	Bugesera Airport Company Limited
Company Registration Number	106575464
Contact Person	Mr Maciej Michalek
Contact Details	+250 781 447 482 Maciej.Michalek@mota-engil.rw
Postal Address	KG 415 Avenue, Gate No. 6, Gacuriro PO Box 2179 Kigali, Rwanda

The Proposed Project is seeking financial support from financial lending organisations that apply international financial institution standards. These include the International Finance Corporation (IFC) Performance Standards, the Equator Principles and the standards of specific banks, such as the African Development Bank Integrated Safeguards System. To demonstrate that the Proposed Project complies with the relevant standards of those organisations and follows the principles of good international industry practice (GIIP), an Environmental and Social Impact Assessment (ESIA) was required to ensure that impacts on the environment and people are carefully examined and avoided or controlled.

The ESIA has been prepared on behalf of BAC by Ramboll Environment UK Limited (Ramboll Environ), an environmental and social consultancy specialising in international ESIAs. It presents the potential environmental, social and community health impacts associated with the Airport and includes control and management measures for those identified impacts.

1.3 What will be constructed at the new airport and how long will it take?

The Proposed Project will include the development, construction and operation of the following structures and infrastructure:

- Airport and associated structures and infrastructure;
- Temporary 5 km Water Pipeline for the construction phase;
- Upgrades to the road linking an existing quarry northeast of the Proposed Project to the Airport Area for the supply of aggregates during construction; and
- A 14.5 km Expressway to link the airport to the national KK-15 Road.

Permanent power and water supplies will be provided in the operation phase. These will be constructed and managed by the Rwanda Energy Group (REG) and the Rwanda Water and Sanitation Corporation (WASAC) respectively. The construction of these utilities and infrastructure have not been considered as part of the NBIA ESIA but they will be subject to separate ESIAs in accordance with the relevant legislative and regulatory standards.

The airport is proposed to be constructed in five phases, the first of which is due to be finalised by 2020 to allow the airport to become operational. The final phase is due to be completed in 2045.

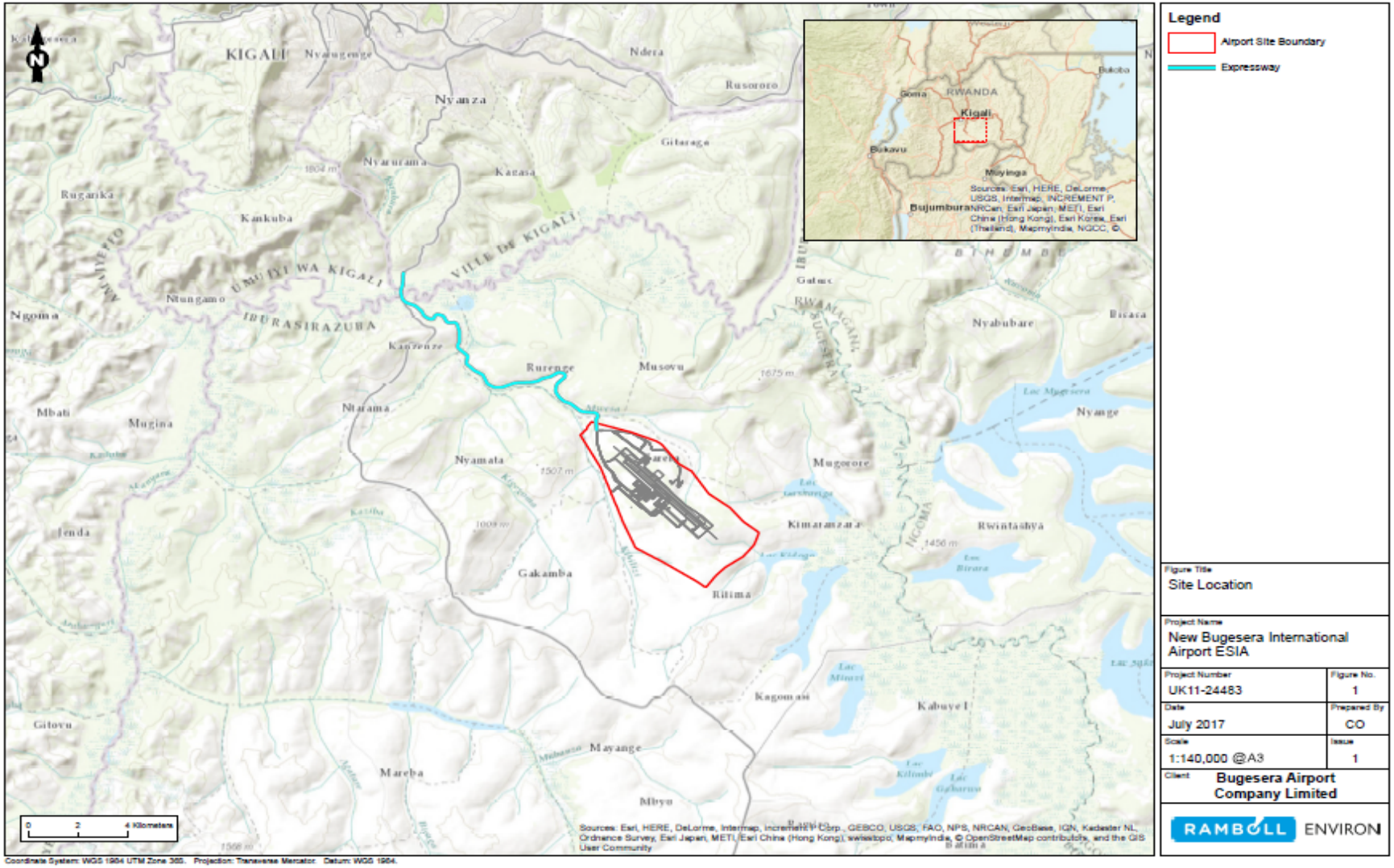

Figure 1-1: Locality of the Proposed Project

1.4 Why is the New Bugesera International Airport needed?

The development of the new airport is required because the existing KGL is unable to support the air travel needs of Rwanda due to rapid development within Rwanda and the country's ongoing economic growth. Passenger traffic at KGL has been growing rapidly. In 2004, the airport served 135,189 passengers but this had increased to 710,000 in 2016. KGL was designed to handle only 400,000 passengers per year and it does not have space for expansion. Therefore, proposals for a new airport were put forward to replace KGL to accommodate the additional passenger traffic. KGL will remain operational for military purposes.

2. WHAT IS THE ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT PROCESS?

2.1 ESIA Process

An ESIA must be carried out for large scale infrastructure projects, such as the Proposed Project, and must examine potential impacts of the project on the physical and biological environment, as well as upon people, communities and their social structures and livelihoods. It must identify the key impacts, how these may be avoided, mitigated or managed and describe management plans to address the impacts and issues identified.

The ESIA has been developed in compliance with Rwandan requirements, specifically Organic Law N° 04/2005 of 08/04/2005 and associated laws, as well as in terms of the International Finance Corporation (IFC) Performance Standards and the African Development Bank Integrated Safeguards System. The ESIA Report was submitted to the Rwanda Development Board (RDB) for review and approval. The RDB will be responsible for granting environmental authorisation for the Proposed Project. The ESIA was also submitted to potential international Lenders for their review to establish whether the proposed Project meets their standards for project financing.

The impacts of the Proposed Project have been assessed for the construction and operation phases from 2017 to 2045. The methodology adopted for the ESIA is described in Section 5.

2.2 Has any consultation about the New Bugesera International Airport Project already taken place?

A number of consultations have been undertaken with:

- National Government: Regulatory and Executive Institutions;
- Local Governments;
- Affected Communities; and
- International, and National and Local Non-Governmental Government Organisations (NGOs).

A Stakeholder Engagement Plan (SEP) was prepared to identify stakeholders and their interests, describe the consultation and establish a framework for stakeholder engagement to ensure the management of impacts takes stakeholder concerns into account.

The SEP includes commitments for providing timely, understandable and appropriate information (in Kinyarwanda and English) to stakeholders to ensure that they have the opportunity to express their views on potential changes arising from the Proposed Project. These comments have been taken into account during the ESIA and Project design processes.

The ESIA will be disclosed to stakeholders in Rwanda and by potential Lenders, and comments will be addressed in a final version of the ESIA.

3. WHAT ALTERNATIVES TO THE NEW BUGESERA INTERNATIONAL AIRPORT PROPOSAL WERE CONSIDERED?

An analysis was undertaken of alternatives which considered the following:

- Alternative modes of transportation;
- Possible alternative locations for a new airport; and
- No action alternative.

3.1 Alternative Modes of Transportation

There are no alternatives to the Proposed Project that will fulfil the functions of providing fast, relatively cheap international transportation. Rwanda is a landlocked country and there are no suitable road, rail or water transport options that offer an efficient alternative to air transport over long distances.

3.2 Alternative Locations

The Proposed Project location has been selected for its proximity to Rwanda's capital city of Kigali, suitable land area and its relatively flat topography in a country where there are many undulating hills and slopes.

3.3 No Action Alternative

Based on the increasing trend in air traffic passenger numbers arriving or transiting through KGL, the existing airport is currently operating beyond its current capacity with insufficient space for expansion. Without the Proposed Project, the people of Rwanda would still need to be served by KGL. As this would limit Rwanda's air-traffic potential, it was considered unfeasible to take no action to further increase airport capacity to accommodate this rising trend.

4. HOW WILL THE NEW BUGESERA INTERNATIONAL AIRPORT BE PLANNED, CONSTRUCTED AND OPERATED?

4.1 How is the airport development planned?

The Proposed Project will be delivered in five phases. The first phase is planned to be completed by 2020 and the final phase by 2045. Table 4-1 summarises the five phases associated with the Proposed Project.

Table 4-1: Masterplan Development Phases[1]

Phase	Phase 1	Phase 2	Phase 3	Phase 4	Phase 5
Completion Year	2020	2030	2035	2040	2045
Million Annual Passengers	1.77	2.52	3.42	4.48	5.72
Design Peak Hour (Passengers)	856	1,157	1,490	1,859	2,253
Annual Cargo (tons per annum)	13,803	19,542	27,626	39,434	56,416
Projects per Phase	Runway Taxiway Apron Passenger Terminal Presidential Terminal Airport Facilities Cargo Area Aircraft Maintenance Landside Roads Commercial Area Parking Area	Apron Passenger Terminal Airport Facilities Parking Area	Apron Airport Facilities Cargo Area Extension Office Area Hotel Aircraft Maintenance Parking Area	Taxiway Apron Passenger Terminal Airport Facilities Landside Roads Parking Area	Taxiway Apron Passenger Terminal Airport Facilities Cargo Area Parking Area

4.2 Proposed Project Facilities

Runway

The runway will be 3.5 km long and its alignment has been based on the prevailing wind conditions, regional airspace, local obstacles and site geometry. Taking this into consideration, the runway was designed to run in a northwest/southeast direction. Taxiway layouts have been developed to support proposed runway operations and optimise efficiency, minimising taxi times and delays.

[1] Note: Any items repeated in phases 2-5 are extensions to the facilities constructed in the previous phase

Passenger Terminal

The Passenger Terminal will be the main terminal for the airport and will comprise 22 check-in counters, six security check points, 10 gates, six passenger boarding bridges, 10 immigration counters for arrival and 10 emigration counters for departure. There will be space in this terminal for retail and commercial activities. Figure 4-1 provides a cross section of the building.

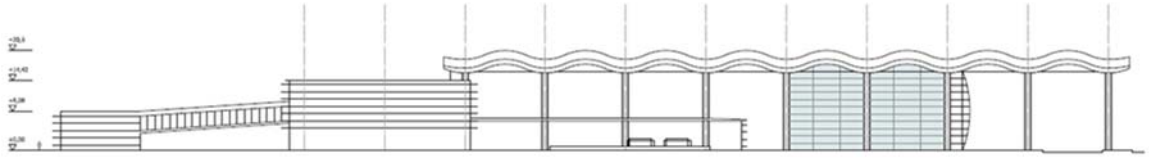

Figure 4-1: Cross Section of the Passenger Terminal

General Aviation Terminal

The General Aviation Terminal will be a one level building with elevated sections for administrative offices and technical rooms. Figure 4-2 provides a cross section of the building.

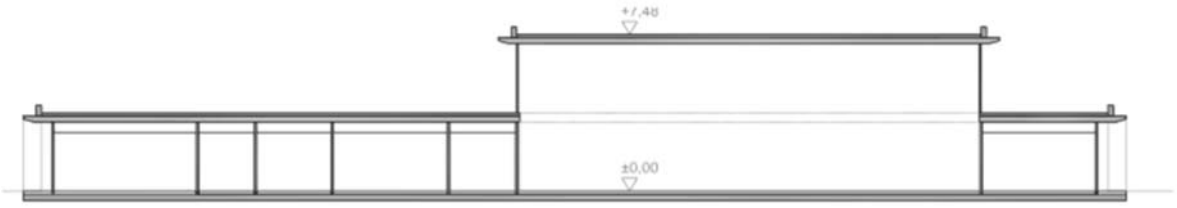

Figure 4-2: Cross Section of the General Aviation Terminal

Presidential Terminal

The Presidential Terminal will be in a separate location to the Passenger Terminal and General Aviation Terminal to assure a high level of security with separate access and additional security checkpoints. The building will provide a diplomatic reception area, conference and lounge areas for very important persons (VIPs), a press conference area and security and catering facilities. Figure 4-3 provides a cross section of the building.

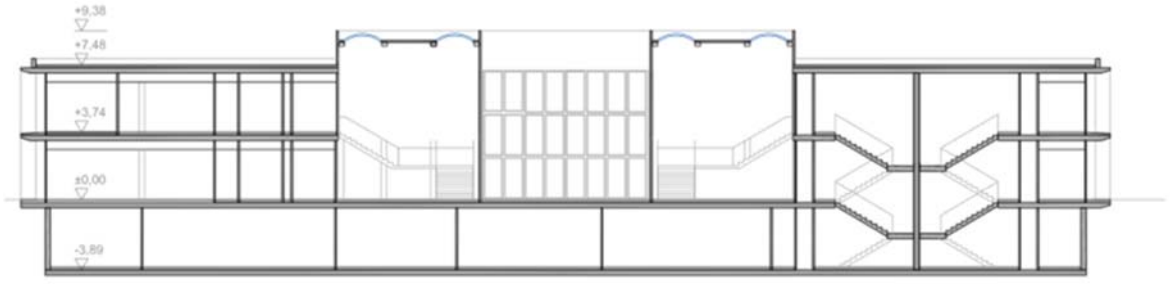

Figure 4-3: Cross Section of the Presidential Terminal Building

Airport Support Facility Requirements

Support areas will be required to accommodate a wide range of facilities. These include aircraft maintenance, rescue and firefighting services, and catering facilities.

Cargo

The cargo facility will include a terminal, which will include customs, import and export, manipulation areas, and storage.

Air Traffic Control Tower

The Air Traffic Control Tower will comprise the tower itself, work stations for the controllers and the radar, electrical equipment room, uninterrupted power supply (UPS) room, break rooms and a kitchen.

Rescue and Firefighting Services

The Rescue and Firefighting Services facilities will include a fire station, including offices, garages and other functional areas, along with a service bay, training area and additional water supply.

Ground Service Equipment

The Ground Service Equipment will include space for servicing and repair of all vehicles and equipment used for the servicing of aircraft.

Flight and Employee Catering

The catering facilities will consist of a facility where meals are prepared for inflight use. The facility will be able to handle up to 1 million meals per year. The building will include a kitchen and refrigeration, storage and wash areas. An employee canteen will be integrated in the ground floor of the building.

Police and Anti-Terror Buildings

There will be a police station, administration areas, detention cells, dog kennels and a medical station. The anti-terror building facility will include an operation centre, closed-circuit television (CCTV) control room and an accommodation area.

Maintenance Repair and Overhaul

A maintenance repair and overhaul facility will be constructed to service aircraft and include a hangar, apron area and offices.

Office Park

An office park will comprise the Airport Administration building, additional office buildings and a hotel.

Fuel Farm and System

The fuel farm will include above ground storage tanks, truck and airside manoeuvring areas and an airside fuelling station. No underground storage tanks will be installed and only jet fuel will be stored. It is estimated that four 2,200 m^3 tanks will be installed in various phases during the Proposed Project. Two to be installed by 2020, a further tank by 2030 and a fourth tank by 2040. The apron has been designed with a standard hydrant fuelling system.

Security Fencing

There will be security fencing around the Airport boundary with a patrol road, security lighting and a video surveillance system.

Drainage

The drainage system will comprise a network of drainage trenches covering the entire Airport Footprint. Surface water from the apron areas will be treated through oil separators. The discharge will then pass through two passages and join the drainage channel located in the valley to the southwest of the Airport Area. Both passages will pass the Expressway via rectangular

tunnels. There will also be two retention basins designed to manage the stormwater runoff and prevent erosion of the surrounding areas.

Wastewater and Waste Management

A permanent wastewater treatment plant and a central waste collection and management area will be constructed on the site.

Lighting

The airfield ground lighting for the runway, taxiway and apron have been designed following ICAO requirements. The lighting for the taxiways will include centreline lights, stop bar lights, runway guard lights and retroreflective markers. The lighting for the apron will comprise edge markers and floodlighting.

Bird Control System

Measures will be in place to manage wildlife hazards such as bird strikes. These may include devices that beep to scare birds, netting or draining of streams, grass management, removing waste disposal sites and limiting other attractions to birds.

Obstacle Limitation Surfaces

A zone will be implemented to define airspace around the Proposed Project to be maintained free of obstacles to permit safe airport operations. This zone will extend approximately 8 km in all directions from the runway. There will be controls on siting and heights of structures within this zone.

Expressway

The new Expressway will join the national KK-15 Road at the existing Nyabarongo Bridge, which crosses the Akagera River. The road will be paved, catering for one lane of traffic in both directions; this will be upgraded to two lanes of traffic in both directions in the future. The Expressway will be constructed in an area that is sparsely populated, crossing areas of subsistence farming, rural homesteads, floodplains and a wetland. The Expressway will be designed and developed with regard to safety aspects such as traffic lights, stop signs, speed humps, traffic calming zones, street lights, etc. The Expressway will also incorporate drainage and stormwater control systems. A proposed route alignment is shown in Figure 4-4.

Permanent Electricity and Water Supply

The Rwanda Water and Sanitation Corporation (WASAC) and Rwanda Energy Group (REG) will be responsible for supplying water and power respectively for the operation phase. Limited information is currently available with regard to the design (in particular route alignment) or the date of these services. However, WASAC and REG will be obligated to provide water and power at least six months before the Proposed Project begins operation.

A new water treatment plant is planned in the vicinity of the Proposed Project Area that will supply water to the NBIA. It is understood that the water treatment plant will treat water coming from the Kanzenze Well Fields and then distribute the water to three reservoirs. A connection point from the Airport Area to the Kigali Water Distribution Network is foreseen. Further details of the exact location and capacity of the water treatment plant and the pipeline route to the Airport Area are not currently available.

The source of electricity has yet to be confirmed. However, the power will likely be provided from two sources; the new Mamba peat power plant (80 MW installed capacity which is expected to be commissioned in 2019) located in Gisagara District in the Southern Province and the Rusumo hydroelectric project (80 MW installed capacity) on the border between Rwanda, Tanzania and Burundi.

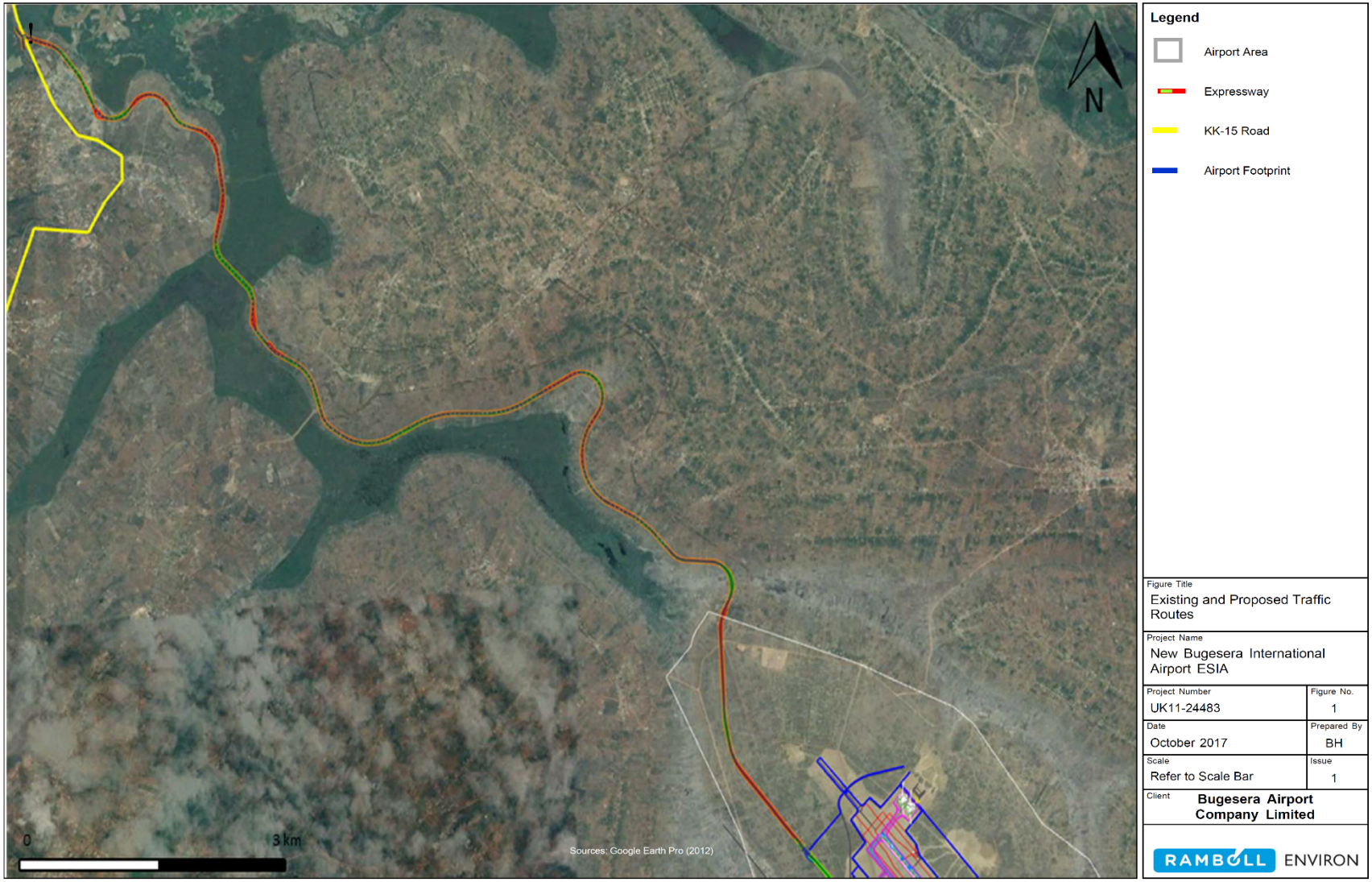

Figure 4-4: Expressway Route (Source: Google Earth, 2017)

4.3 How will the airport be constructed?

4.3.1 Airport Area

Site Compound and Welfare Facilities

A Construction Camp will be constructed within the Airport Area (Figure 4.5) and comprise site offices, laboratories, changing rooms, canteen, first aid station, vehicle parking and maintenance sheds, gas station/fuel tank area and water treatment plant. Prior to a waste treatment plant being constructed, temporary septic tank systems will be utilised. The Construction Camp will also include a steel yard, carpentry, two batching plants and a cement warehouse.

It is estimated that the Proposed Project will generate approximately 1,800 jobs during the peak construction period between October 2018 and September 2019. BAC has a target of 80% for hiring local people.

No onsite accommodation will be provided for any employees, contractors or subcontractors. Accommodation is only provided for a limited number of senior employees at a lodge approximately 9 km southeast of the Construction Camp. The remainder of the employees will live offsite in their own accommodation and will be transported to the site by company vehicles. It is estimated that 13 mini-buses (25 seats) and 25 light vehicles will be used daily for the transport of construction personnel. Approved caterers provide meals onsite.

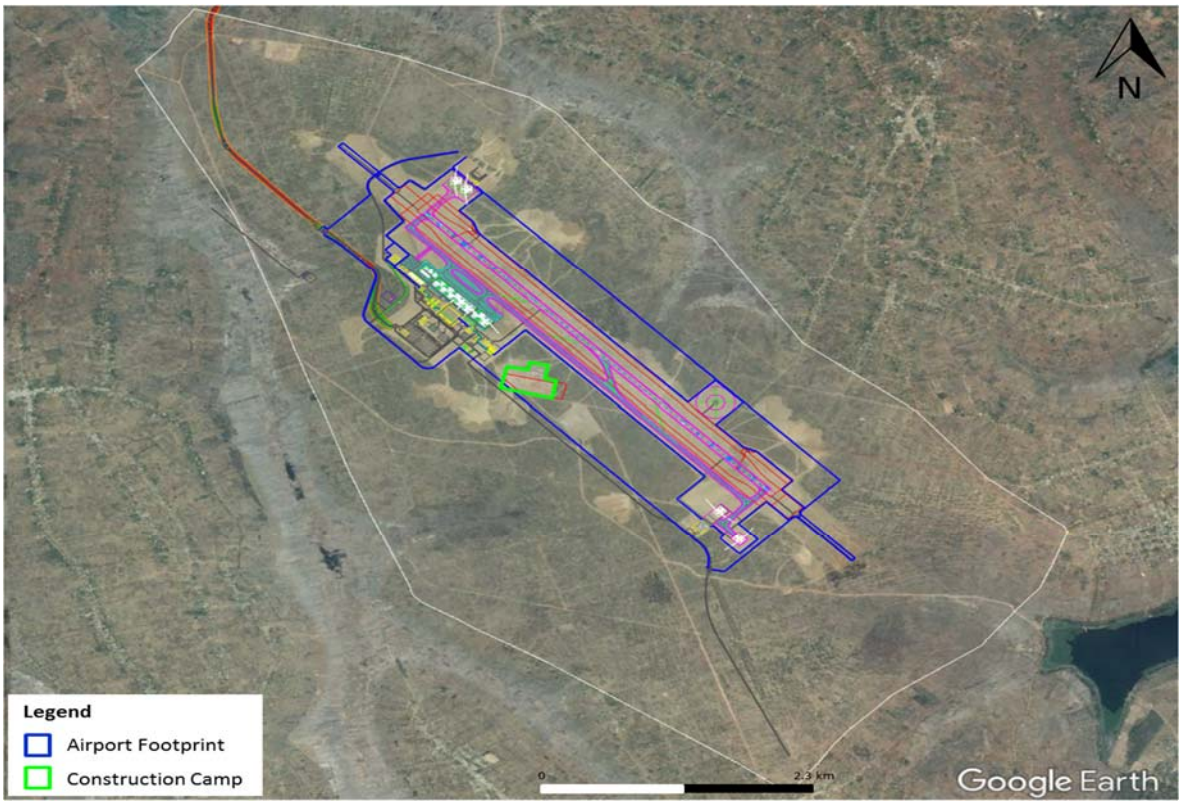

Figure 4-5: Location of Construction Camp

Construction Activities

The following construction activities are required for the Proposed Project:

- Vegetation clearance;
- Aggregate from a quarry located 10 km to the northeast will be transported via the upgraded quarry road to the Airport Area;

- To level the Airport Area, five borrow pits are proposed to obtain fill material and six sites to store spoil material, and these have been separated in the Airport Footprint;
- A temporary asphalt plant will be constructed which will be used during the construction phase;
- Concrete batching plants and mechanical plants will be installed;
- A Water Pipeline will be laid along the embankments of a stream located to the southeast of the Airport Area and will provide water from Lake Kidogo to the Construction Camp;
- A temporary water treatment plant will be constructed;
- Sanitary wastewater and solid waste will be collected onsite at designated areas and will be disposed of offsite to approved facilities;
- Power will be generated onsite via a series of diesel-fuelled generators. Fuel will be delivered to the Construction Camp area and stored onsite.

The locations of the spoil and borrow pit areas are illustrated in Figure 4-6.

Figure 4-6: Location of Spoil Areas and Borrow Pits within the Airport Area

4.3.2 The Expressway

Currently, no expropriation or resettlement activities have commenced for the Expressway. This will be managed by the Rwanda Transport Development Agency (RTDA). BAC will be involved in ensuring that any resettlement and/or livelihood restoration is undertaken in compliance with national and international requirements.

Material for the Expressway will be used from the same borrow pits and spoil areas as for the Airport Area.

4.4 What happens once the airport is operational?

The airport will support an estimated 70 flights per day initially, expected to rise to approximately 171 flights per day by 2045. Support areas are required to accommodate a wide range of

facilities, such as cargo, aircraft maintenance and catering facilities. It is estimated that the Proposed Project will employ 1,260 persons during Phases 1 to 5. Civil aviation workers currently working at KGL will be offered job opportunities at the Proposed Project.

During Phase 1 operation, approximately 1,021 vehicles will be visiting the airport along the Expressway in a typical 24 hour period. Of this, approximately 133 will comprise heavy goods vehicles.

5. ESIA METHODOLOGY

5.1 ESIA Process

The ESIA process is a systematic approach to identifying, describing and evaluating the potential environmental and social impacts of the Proposed Project, and to developing measures that will be implemented to manage these impacts. The objective is for potential adverse impacts to be avoided or reduced to an acceptable level and for beneficial impacts to be enhanced.

In outline, the ESIA process involves four key stages: scoping; baseline studies and surveys; impact assessment and development of mitigation measures and monitoring requirements; and environmental and social management.

Stakeholder engagement is at the heart of the ESIA and is an ongoing process from pre-development, through construction and on into the operation phase of the development. This is to ensure that Project Affected People can input into the Proposed Project's development from the very beginning and throughout its operation.

5.1.1 Scoping

Scoping is the process of determining the content and extent of the matters that should be covered in the ESIA and associated documentation. The purpose of scoping is to focus the ESIA on the environmental and social issues, stakeholder concerns, and potential impacts which need the most thorough attention and to identify the approaches to assess these.

A Scoping Report was submitted to the RDB and potential Lenders. The RDB further consulted with a number of national level stakeholders and government institutions as part of its review of the Scoping Report. They subsequently issued a Terms of Reference for the ESIA.

Potential Lenders also provided comments on the Scoping Report, which were considered in the ESIA. The stakeholder engagement process has also helped the ESIA to scope potential impacts and concerns identified by the wider public

The following environmental and social issues have been scoped for the NBIA:

- Traffic and Transport;
- Air Quality;
- Noise and Vibration;
- Biodiversity;
- Water Resources;
- Geology and Soils;
- Archaeology and Cultural Heritage;
- Landscape and Visual;
- Waste Management;
- Resource Efficiency; and
- Socio-economics, including Community Health and Safety.

5.1.2 Baseline Studies and Surveys

Following on from the scoping phase, more detailed studies and surveys were undertaken to establish the baseline conditions prior to the Proposed Project. These involved desk-based studies of publically-available information, site walkover surveys and measurements. The full details of the studies and surveys undertaken (timing, location, methods and results), together

with information gathered through desk-based data reviews, are presented in the relevant chapters of the ESIA Report.

5.1.3 Identification of Receptors

Receptors are environmental and social components that may be affected, adversely or beneficially by a Project. Potential receptors were identified and their sensitivity was determined as part of the scoping work and baseline studies and surveys.

5.1.4 Impact Assessment

The actions undertaken to determine the significance of potential Project impacts involved the following four key steps:

- **Prediction**: What will happen to the status of specific receptors as a consequence of this Project (primarily; what is the magnitude of the impact?);
- **Evaluation of significance**: How significant is the impact? What is its relative significance when compared to other impacts?
- **Mitigation**: If there are impacts of concern (adverse), can anything be done to avoid, minimise, or offset the impacts? Or to enhance potential beneficial impacts?
- **Residual Impact**s: After mitigation, are the impacts still of concern? If yes, the process needs to be repeated at least once before the 'final' determination of residual impact significance occurs.

Potential impacts arising from planned activities, cumulative impacts with other developments and unplanned events (e.g. accidents, natural disasters, etc.) were also assessed. Stakeholder engagement is undertaken throughout the development of the Proposed Project to ensure that interested parties are aware and informed of the Proposed Project and have an opportunity to provide input regarding potential Proposed Project impacts and mitigation measures.

Impact Definition

The final prediction of impact significance was made on the basis of a combination of factors' which include the sensitivity of the identified receptors to any change which the Project may exert upon it, and the scale, frequency, duration and reversibility of the identified impact. The assessment is effectively done twice: once before any mitigation measures are applied and again after mitigation measures resulting in an overall 'residual impact'. The process for defining the impact significance is summarised in Table 5.1 below, and the resulting description of what the defined significances mean is shown in Table 5.2.

Table 5-1: Impact Significance Matrix

		Receptor Sensitivity		
		Low	**Medium**	**High**
Impact Magnitude	**Very Low**	Negligible	Negligible	Minor
	Low	Negligible	Minor	Moderate
	Medium	Minor	Moderate	Major
	High	Moderate	Major	Major

Table 5-2: Impact Significance Definitions		
Adverse Impacts	**Major**	Impacts with a “Major” significance are likely to disrupt the function and value of a receptor, and may have broader systemic consequences (e.g. ecosystem or social well-being). These impacts are a priority for mitigation in order to avoid or reduce the significance of the impact.
	Moderate	Impacts with a “Moderate” significance are likely to be noticeable and result in lasting changes to baseline conditions, which may cause hardship to or degradation of a receptor, although the overall function and value of a receptor is not disrupted. These impacts are a priority for mitigation in order to avoid or reduce the significance of the impact.
	Minor	Impacts with a “Low” significance are expected to be noticeable changes to baseline conditions, beyond natural variation, but are not expected to cause hardship, degradation, or impair the function and value of receptor. However, these impacts warrant the attention of decision-makers, and should be avoided or mitigated where practicable.
	Negligible	Any impacts are expected to be indistinguishable from the baseline or within the natural level of variation. These impacts do not require mitigation and are not a concern of the decision-making process.

Mitigation

As part of the ESIA process, when adverse impacts are identified (which cannot be managed via design controls/incorporated mitigation), mitigation measures are developed. First, efforts are made to avoid or prevent, then minimise or reduce adverse impacts. For remaining significant residual impacts, mitigation measures are developed. Figure 5-1 shows the mitigation hierarchy used in the ESIA.

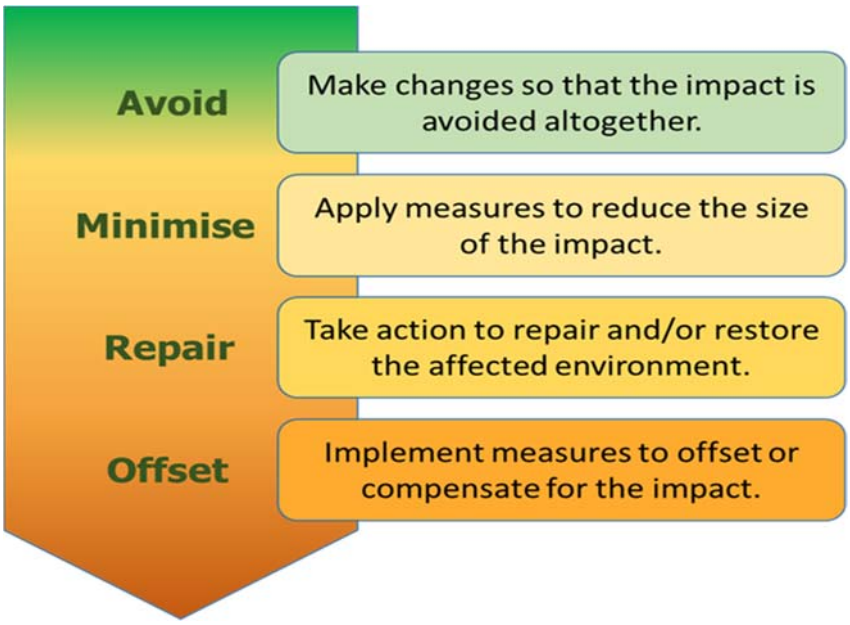

Figure 5-1: Mitigation Hierarchy

5.2 Environmental and Social Management

A framework ESMP was prepared as part of the ESIA, which explains how environmental and social commitments have been captured from the ESIA to ensure that the Proposed Project is constructed and operated in accordance with the relevant regulatory and legislative requirements, international guidance and Good International Industry Practice (GIIP).

Full overarching ESMPs for the construction and operation phase and topic specific ESMPs will capture environmental and social commitments made within the ESIA Report in relation to mitigation, monitoring and management measures.

5.3 How will the New Bugesera International Airport monitor possible impacts during construction and operation?

Introduction

BAC is committed to developing and operating the Airport in an environmentally and socially responsible manner. A framework for the management of the environmental and social elements of the Project throughout its lifecycle has been developed to ensure that it is constructed and operated in accordance with relevant Rwandan and international regulatory and legislative requirements and standards.

The management of environmental and social issues will be achieved through the development and implementation of an Environmental and Social Management System (ESMS) and accompanying Environmental and Social Management Plans (ESMPs).

BAC will hold ultimate responsibility for the environmental and social performance of the overall Project, including the performance of the EPC contractor (Mota-Engil) and all sub-contractors.

The Proposed Project Health, Safety and Environment (HSE) Manager will be responsible for ensuring adherence to environmental and social commitments, the development and maintenance of the ESMS and the ESMPs. The HSE Manager will be supported by an HSE Engineer and three HSE Officers.

Environmental and Social Management Plans

The ESMPs will provide reference documents to guide the Proposed Project to manage and control environmental aspects of the Project during construction and operation. The ESMPs will be subject to regular reviews to determine adequacy and effectiveness.

The following topic or activity specific plans/procedures will be prepared:

- Biodiversity Action Plan;
- Chance Finds Procedure;
- Community Health, Safety and Security Management Plan;
- Disaster Management Plan;
- Dust Control Plan;
- Emergency Spills and Abatement Management Plan;
- Emergency Response Plan;
- Environmental Induction and Training Plan;
- Hazardous Substance Management Plan;
- Grievance Mechanism/Comments Procedure;
- Health and Safety Management Plan;
- Labour, Working Conditions and Employment Management Plan (to include as annexes a Workers Grievance Mechanism and a Recruitment Procedure);

- Occupational Health and Safety Management Plan;
- Pollution Prevention Plan (covering air quality, noise, geology and soils, water resources and biodiversity);
- Resettlement Action Plan or Livelihood Restoration Plan for the Expressway;
- Site Clearance, Excavations and Earthworks Management Plan;
- Soil Management Plan;
- Spoil Areas and Borrow Pit Management Plan;
- Stakeholder Engagement Plan;
- Stormwater Management Plan;
- Traffic Management Plan;
- Waste Management Plan; and
- Wildlife Hazard Management Plan.

6. WHAT ARE THE RESULTS OF THE IMPACT ASSESSMENT?

6.1 General approach and impact assessment before and after mitigation

The impact assessment process has been undertaken for the construction and operation phases for each of the identified receptor types. The assessment is done twice – once before mitigation measures are applied and again afterwards to produce a final 'residual' impact significance as defined by Table 5-2 in Section 5.

6.2 Impacts on the Physical and Social Environment

6.2.1 Air Quality

Key impacts related to the air quality, during both the construction and operation phases, will include:

- Impacts associated with fugitive particle emissions (assimilated in this study as PM_{10} emissions, which are dust particles equal to or less than 10 microns), especially during the construction phase; and
- Impacts related to combustion gases emissions, notably nitrogen dioxide (NO_2), sulphur dioxide (SO_2) and benzene during the Phase 5 scenario (2045).

Construction Phase

During the construction phase, the highest potential impacts observed will be associated with PM_{10} emissions. However, these impacts will be significantly reduced by implementing the mitigations measures proposed (e.g. prohibit activities during high winds, control dust particularly on unpaved roads, notably the quarry road, and spoil piles areas).

Residual impacts: **Minor Adverse**

Operation Phase

During the operation phase, emissions related to combustion gases (such as NO_2, SO_2, benzene) will be generated. Mitigation measures, such as the optimisation of the aircraft ground traffic, will be implemented in order to keep the impacts identified at an acceptable level.

Residual impacts: **Negligible** and **Minor Adverse**

6.2.2 Noise and Vibration

Noise and vibration impacts during the construction phase will be generated from site clearance and construction machinery and vehicular movements to and from the quarry and to transport workers attending the construction site. During the operation phase, the key sources of noise impact will be the traffic attending the airport along the Expressway and that from the arriving, departing and taxiing aircraft.

Construction Phase

Noise from construction work will have a Minor Adverse noise impact on dwellings. Although construction activities may be undertaken 24 hours per day at certain periods, activities will not be undertaken at a single location concurrently and timeframes of construction will be limited near individual dwellings along the Expressway, the Airport Area and the quarry road. Dwellings located closer than 25 – 45 m may be exposed to high noise levels but this will be for shorter periods of time.

Residual impacts: **Minor Adverse**

Operation Phase

The main impact from the Proposed Project will be noise from aircraft operations and road traffic on the Expressway. It is assessed that the road traffic noise will have a Moderate Adverse impact as the number of dwellings exposed to noise levels above the guidelines is estimated to be less than 25 households in 2020 and less than 50 households in 2045.

Aircraft operations are expected to cause a noise impact above the noise guideline at a large number of dwellings in a predominantly rural environment along the flightpaths into and out of the Airport. The impact significance on dwellings is anticipated to be Major Adverse.

Mitigation measures to reduce noise impact from aircraft operations could be departure and approach procedures, including noise preferential routes, and use of night time or other operating restrictions, as well as ensuring that, in the medium to longer term, development planning ensures that noise sensitive receptors such as further dwellings are positioned outside of the unavoidable noise impact envelopes identified in this assessment.

Residual impacts (Expressway): **Moderate Adverse**

Residual impacts (airport operation): **Major Adverse**

Whilst not quantitatively assessed as part of this ESIA, the movement of aircraft operations from Kigali International Airport to NBIA will reduce noise impacts from aircraft operations on some densely populated areas in Kigali.

6.2.3 Biodiversity

The ecological baseline was characterised through a combination of secondary data and field surveys. The field surveys conducted in May and June 2017 included:

- **Flora**: was surveyed to assess habitat quality, provide a comprehensive plant species list for each habitat type and locate any endemic, restricted-range, threatened flora, or invasive species;
- **Herptiles**: amphibians and reptiles were surveyed using a combination of visual encounter surveys (VES), audio encounter surveys (AES) and dip netting;
- **Birds**: were surveyed using a combination of point counts, timed species counts, and timed observations; and
- **Mammals**: were surveyed in combination with the other surveys and all incidental sightings were recorded.

The biological environment includes designated sites (both protected by Rwandan Law as well unprotected sites that are Internationally Recognised Areas), habitats (including terrestrial and freshwater), and their component species. The Nyabarongo Wetlands Important Bird Area (IBA) was identified as Critical Habitat. This is associated with natural habitat swamp and aquatic vegetation and three IBA trigger bird species (Papyrus Gonolek, Black-lored Babbler and White-winged Swamp-Warbler), and the fish *Labeo victorianus* (Ningu). Other sensitive biodiversity receptors include Grey Crowned Crane Balearica regulorum, modified habitats, the fish *Varicorhinus ruandae* and Hippopotamus.

Construction Phase

Construction phase impacts relate to direct loss of habitat, with the majority of the terrestrial habitat within the Airport Area and Expressway lost and small amounts of wetland habitat lost. Fragmentation of habitats used by birds and Hippopotamus could occur. Potential indirect impacts include hydrological changes to wetlands, pollution, disturbance, and increased fishing pressure.

Residual Impacts: **Minor Adverse**, **Moderate Adverse** and **High Adverse**

Operation Phase

Operation impacts primarily relate to disturbance resulting from noise impacts, disturbance from lighting, influx of people, induced access, pollution and changes to hydrology, birdstrikes and bird control measures to avoid birdstrikes.

Residual Impacts: **Minor Adverse**, **Moderate Adverse** and **High Adverse**

6.2.4 A detailed biodiversity monitoring strategy and a Biodiversity Action Plan, focusing on critical habitat features as well as natural habitat, will be developed to manage construction and operation impacts.

6.2.5 Water Resources

The water resources assessment included a review of potential impacts on water quality to surface water bodies and downstream receptors; flood risk to watercourses and downstream receptors; groundwater; water supply; and wastewater management.

Construction Phase

The Airport Area and Expressway will be constructed in accordance with Rwandan legal requirements and international best practice. A Stormwater Management and Pollution Prevention Plan will be developed. Residual impacts are identified on the basis that all mitigation and design measures will be implemented.

Residual impacts: **Minor Adverse**

Operation Phase

Surface water drainage infrastructure is to be included in the design of the Proposed Project to manage surface water runoff across the Proposed Project Area. This and the implementation of management plans will ensure that no significant impacts will occur in surface water flows to hydrological receptors and downstream receptors. This will also control pollutants and prevent discharge of polluted surface water off-site.

Residual impacts: **Minor Adverse**

6.2.6 Geology and Soils

Key impacts considered as part of the impact assessment, during both the construction and operation and phases include:

- Soil contamination due to an unplanned release of a hazardous substance;
- Geology is unlikely to be impacted by the Project since no blasting is proposed at the site and no direct removal of sub-surface materials is proposed; and
- Soil disturbance either due to construction or operational activities or due to erosion from wind or rain.

Construction Phase

A risk to identified receptors as a result of residual soil contamination that may potentially be found to be present during construction cannot be completely ruled out, although is considered unlikely given the known previous land use of the project site (subsistence agriculture). The introduction of new contamination during construction and impacts upon soil resources could also occur, however this scenario relies on the unplanned release of a hazardous substance to ground (i.e. accidental spillages of diesel, etc.). Given that there will be major earthworks activities, there is potential for soil disturbance and loss of topsoil resources associated with vegetation removal, topsoil stripping and stockpiling of soil resources. With incorporated mitigation

measures in place, the significance of impacts identified for the Proposed Project upon soil resources during construction is assessed as being Minor Adverse.

Residual impacts: **Minor Adverse**

Operation Phase

Impacts to soil resources during the operation phase derive from contamination potential. This includes the potential to impact on soil resources due to the unlikely exposure of pre-existing contamination during excavation associated with maintenance work, or the potential for new contamination due to unplanned releases of hazardous substances. In addition, vehicle movements on unsurfaced ground has the potential to result in soil disturbance and erosion of topsoil resources. The impact significance, taking account of incorporated mitigation measures, is assessed to be Minor Adverse.

Residual impacts: **Minor Adverse**

6.2.7 Cultural Heritage

A cultural heritage assessment was undertaken to define the baseline archaeology and cultural heritage resources across the Proposed Project Area to determine the potential impacts on these resources. The survey was undertaken through desk-top review, stakeholder engagement and a site walkover. A total of 32 scatters of potsherds were identified during the survey; however, none was of archaeological significance. These potsherds were considered to be used for cooking, brewing alcohol or storage.

Potential exists for additional artefacts with low cultural heritage significance to be identified across the Proposed Project Area. Furthermore, areas of individual burial sites may occur within the Proposed Project Area.

Construction Phase

A Chance Finds Procedure will be developed and implemented to assist with the management of potential findings during construction activities.

Residual impacts: **Minor Adverse**

Operation Phase

No impacts are perceived to the archaeological and cultural heritage environment during the operation phase of the Proposed Project. The Chance Finds Procedure will be maintained during the operation of the Proposed Project should unforeseen findings be identified.

Residual impacts: **None**

6.2.8 Landscape

A landscape and visual impact assessment (LVIA) was undertaken in order to identify potentially significant landscape features and visual resources within a 10 km radius of the Airport Area. The visual study area comprises a large scale non-designated landscape largely valued for its agricultural productivity and rural character. Access through the landscape is almost exclusively by a network of minor local roads and tracks that connect communities and scattered residential properties and farmsteads. Concentrations of receptors are centred on villages and small towns around the edges of the Proposed Project Area, many of which are located on slopes and low lying positions within valleys and incised landscapes associated with river corridors and catchments.

Construction Phase

Taking into account proposed design measures, significant residual effects during the construction phase would occur in respect of landscape fabric and landscape character within 2 km of the Airport Area. Impacts minimise with the increase of distance from the Proposed Project Area.

Residual impacts: **Minor** and **Moderate Adverse**

Operation Phase

Effects during the operational life of the Proposed Project would be broadly consistent with that of the construction phase. The only effects occurring within 2 km radius of the Proposed Project will be associated with built forms, movement and lighting.

Residual impacts: **Minor Adverse**

6.2.9 Waste Management

Waste will be generated as a result of the construction and operation of the Proposed Project and will comprise inert waste (concrete), non-hazardous waste (plastic bottles, paper, scrap metal, etc.) and hazardous waste streams (waste oils, contaminated soils, etc.).

Construction Phase

Based on a qualitative assessment of potential waste arising during construction, large quantities of the following waste streams are anticipated:

- Excavated soil;
- Organic material;
- Putrescible waste including food waste; and
- Packaging waste including plastic films, paper and cardboard.

A construction phase Project Waste Management Plan has will be prepared which outlines the key management processes that will be put in place to effectively manage waste. The plan will describe the waste streams that will arise provide details of storage areas, and outline all the relevant licensed waste contractors and facilities to be utilised and audit processes to be implemented.

Residual impacts: **Negligible** and **Minor Adverse**

Operation Phase

Wastes generated during operation will include wastes generated from aircraft and by airport users and staff (non-hazardous waste), recyclable wastes (such as scrap metal), tyres and hazardous waste (such as used oil). Phase 1 operations are anticipated to generate approximately 30 m^3 of mixed waste per month. This waste will be managed by the airport operator, similarly to how waste is currently being managed at the Kigali International Airport.

A detailed operation phase Waste Management Plan will be prepared which outlines the key management processes that will be put in place to effectively manage waste within the airport. The plan will set out estimated quantities of each waste stream that will arise, explain how waste will be stored, and outline all the relevant licensed waste contractors and facilities to be utilised and audit processes to be implemented.

Residual impacts: **Negligible** and **Minor Adverse**

6.2.10 Resource Efficiency

Key impacts considered as part of the impact assessment, during both the construction and operation phases, include:

- Use of electrical energy and fuel for construction vehicles, the Construction Camp, and operation of the airport;
- Use of water for construction uses, and the operation of the airport; and
- Use of materials for the construction of the airport and Expressway.

Construction Phase

The impacts identified for the construction phase are:

- Aggregates and concrete required for the construction of the airport buildings, Expressway and runway;
- Fuel used for construction vehicles;
- Fuel required to generate electrical energy for the Construction Camp and associated construction processes e.g. asphalt plant; and
- Water required for construction e.g. concrete mixing and dust suppression. Approximately 600 m^3 per day will be required.

Residual impacts: **Negligible**.

Operation Phase

The impacts identified associated with the operation phase are:

- Fuel and electricity for airport buildings and operations e.g. to run ventilation, air conditioning and lighting;
- Water for airport buildings for sanitation, drinking, catering ,washing, etc.; and
- Materials required for ongoing maintenance of airport buildings, taxiways and runway.

A number of mitigation measures are proposed for incorporation in the design for the airport. The impact significance of each of these impacts after mitigation is judged to be Minor Adverse with respect to water and energy and Negligible with respect to materials.

Residual impacts: **Minor Adverse** (water) and **Negligible** (materials)

6.2.11 Transport

Traffic and transport issues were identified through a comparison of the baseline conditions against the construction and operation phases of the Proposed Project; an assessment of potential impacts; the definition of additional mitigation measures that are required and an assessment of residual impacts following additional mitigation. Impacts were assessed on severance, driver delay, driver safety and amenity.

Construction Phase

The construction phase assessment identified a range of negligible to minor adverse impacts, with minor impact significance identified for severance, safety and amenity. Considering the implementation of the design controls and mitigation measures, lower adverse impacts are anticipated.

Regarding severance, reducing the number of construction staff vehicles will assist in reducing the magnitude of construction traffic to very low, with high receptor sensitivity resulting in a Minor Adverse impact significance.

As stated above, the driver delay effect of construction traffic across all phases is considered overall to be of Negligible significance, based on a low receptor sensitivity and low magnitude of impact.

Reducing construction vehicle flows within the Proposed Project Area will be insufficient to reduce the overall fatality rate per 100,000 inhabitants; however, erecting visual signage of hazardous construction activities will create awareness for vehicle users and pedestrians, thereby reducing the magnitude of impact (scale change in accident rate, resulting in low magnitude) against high sensitivity receptors to give a Minor Adverse impact significance.

In terms of amenity, reducing the number of construction vehicle flows will minimise the magnitude of the impact of construction traffic within the Proposed Project Area resulting in a Minor Adverse impact significance.

Residual impacts: **Negligible** and **Minor Adverse**

Operation Phase

Operation phase activities identified a number of severance, traffic safety, driver delay and amenity impacts for the Proposed Project ranging from Major Adverse to Minor Adverse as a result of the magnitude of the impact and sensitivity of the receptor.

Severance resulting from the Proposed Project can be mitigated through design controls and management commitments contained in the Construction Traffic Management Plan, developing and implementing pedestrian, vehicle and animal crossing points along the Expressway, and ensuring that adequate maintenance of these crossings is conducted. Although receptor sensitivity will remain, the magnitude of the impact can be considered as very low.

Therefore, severance from Phase 1 operation activities can be deemed as Minor Adverse impact. Similarly, severance associated with Phases 2 – 5 operation activities can also be defined as having Minor Adverse impacts within the Proposed Project Area.

It is understood that traffic will increase within the Proposed Project Area as a result of the operation of the airport; however, upgrades to the Expressway and junction of the KK-15 Road will result in capacity increases of the routes to accommodate additional traffic volumes/flows. Additionally, providing shuttles from Kigali to the airport will minimise the volume of private vehicles utilising the Expressway. These will lower the magnitude of traffic resulting in a Minor Adverse impact significance on driver delay.

Similarly, the upgrades to access routes, such as the Expressway as well as the implementation of a monitoring programme to assess safety aspects along the Expressway will result in the ability to reduce the accident rate and minimise the magnitude of an accident thereby resulting in a **Minor Adverse** transport safety impact.

The significance of impact on amenity for transport users during operational Phases 1 and 2, either using or seeking to cross at-grade and the Expressway during peak periods, was considered to be Moderate Adverse. During Phases 2 to 4, the change in forecast traffic flow is less than Phases 1 and 2 and therefore the impact was considered to be Minor Adverse. Maintaining crossing signals, slow traffic lanes and paved shoulders of the Expressway will lower the residual magnitude resulting in a Minor Adverse amenity impact.

Residual impacts: **Minor Adverse**

6.2.12 Socio-Economics

The scope of the socio-economics assessment included consideration of the following:

- Labour and working conditions;

- Land acquisition and livelihoods;
- Community, health, safety and security;
- Influx (unplanned in-migration);
- Economy, employment and livelihoods; and
- Food security and livelihoods.

The mitigation measures that will be implemented will reduce the impact magnitude resulting in a reduction in the impact significance in most cases.

Previously Proposed Project Residual Impacts

A post-resettlement audit is being undertaken to review the process that was followed to clear the Airport Area for development. Depending on the outcome of the audit, a Supplemental Resettlement Plan may be required.

Pre-Construction Phase Residual Impacts

Three adverse impacts will occur in the pre-construction phase. These are:

Land Speculation

This is likely to have occurred, and to be occurring, with relation to the proposed Expressway alignment and, to a lesser extent, near the Airport Area.

Influx (unplanned in-migration)

Work done to establish the social baseline conditions of 40 villages located near to the Airport Area found that influx of households to some of the villages had occurred and was occurring. Further, village leaders stated that the reasons for the in-migration was the expected presence of the Airport and the expected economic opportunities that would arise. The scale of influx in this phase is limited.

Construction Phase

Upgraded Quarry Road and Water Abstraction Facility/Pipeline

The residual impact is of **Negligible** significance (medium receptor sensitivity and very low impact magnitude).

Labour and Working Conditions

The residual impact is of **Minor Adverse** significance (high receptor sensitivity and very low impact magnitude – significantly reduced number of risks to workers).

Influx

This impact will be of **Moderate to Major Adverse** significance (high receptor sensitivity with considerable uncertainty whether the mitigation measures will have a noticeable effect on impact magnitude).

Expressway

The residual impact is of **Minor Adverse** significance if livelihoods are, at a minimum, maintained at pre-expropriation levels. This Minor significance level is justified based on the disruption and uncertainty that people experience, especially elderly people, when displacement occurs.

Economy, Employment and Livelihoods

- Job Creation and Equity

  The adverse social tensions impact is expected to be reduced to **Negligible** significance.

- Local-Level Inflation

  The impact of local-level inflation remains as **Minor Adverse** significant for most people and of **Major Adverse** significance for vulnerable individuals and groups as there are no realistic mitigation measures within the control of BAC/EPC Contractor that can avoid/prevent or reduce the impact of local-level inflation.

- Local-Level Loss of Existing Employees

  This impact remains as being of **Minor Adverse** significance (as there are no realistic mitigation measures within the control of BAC/EPC Contractor that can avoid/prevent or reduce the loss of existing employees from local businesses).

- Local-Level Construction Job Loss

  The residual impact is a temporary impact of **Minor to Moderate Adverse** significance.

- Loss of Access

  The residual impact is of **Minor to Moderate Adverse** significance (there is considerable uncertainty about the ability to provide viable alternative routes that effectively reduce the severance impact – for all existing routes).

- Agriculture

  The residual impact is a temporary impact of **Negligible** significance (low receptor sensitivity and low impact magnitude).

- Local-Level Water Resources and Fisheries

  The residual impact is a temporary impact of **Moderate Adverse** significance (high low receptor sensitivity and low to medium impact magnitude).

- Local-Level Accidents to Livestock

  The residual impact is of **Negligible** significance (medium receptor sensitivity and very low impact magnitude).

- Bee-Keeping/Honey Production

  The residual impact is of **Minor Adverse** significance.

<u>Community, Health, Safety and Security</u>

- Sexually Transmitted Infections

  The residual effect is a temporary, reversible adverse impact of **Negligible** significance except for those infected with HIV/AIDS when the impact remains at **Moderate Adverse** significance.

- Other Communicable Infections and Non-Communicable Diseases

  This residual impact is of **Minor Adverse** significance (medium receptor sensitivity and low impact magnitude).

- Pollution and Health Status

  The residual air quality-related health impact is of **Minor to Moderate Adverse** significance (medium to high receptor sensitivity and low to very low impact magnitude).

  As Chapter 10: Noise and Vibration already presents before and after mitigation allocations of significance of impacts regarding annoyance from noise, the significance level of the residual impacts are not presented here nor in Table 18-9 to avoid double-counting of impacts.

In terms of water resources, the residual health impacts, arising from pollution of waterbodies and increased surface water run-off from impermeable areas, is of **Negligible** significance (see Chapter 12: Water Resources).

- Road Traffic and Construction Site Accidents

  The residual impact is of **Moderate Adverse** significance (receptor sensitivity remains high as many receptors will not be able to adapt easily to the increased traffic and/or the consequences of an accident and the magnitude of the impact is low).

- Security Provision

  The residual impact is permanent (security will always be in place) and of **Minor Adverse** significance (high receptor sensitivity and very low impact magnitude).

Infrastructure and Utility Services

The residual impact is temporary, reversible and of **Minor Adverse** significance (medium receptor sensitivity and low impact magnitude).

Operation Phase

Community, Health, Safety and Security

- Pollution and Health Status

  The residual air quality-related health impact is of **Minor Adverse** significance in relation to NO_2 levels (low to medium receptor sensitivity and high impact magnitude) and **Negligible to Minor Adverse** for all other air-quality-related health impacts for the airport.

  As Chapter 10: Noise and Vibration already presents before and after mitigation allocations of significance of impacts regarding annoyance from noise, the significance level of the residual impacts are not presented here nor in Table 18-9 to avoid double-counting of impacts.

  In terms of water resources, the residual health impacts, arising from pollution of waterbodies and increased surface water run-off from impermeable areas, is of **Negligible** significance (see Chapter 12: Water Resources).

- Road Traffic and Construction Site Accidents

  The residual impact is of **Minor Adverse** significance (receptor sensitivity remains high, but magnitude will be very low)

- Security Provision

  The residual impact is permanent (security will always be in place) and of **Minor Adverse** significance (high receptor sensitivity and very low impact magnitude).

Operation Phase

The operation phase is expected to result in fewer impacts compared to the construction phase and those that will occur are, in general, beneficial and most of the adverse impacts are lower in terms of significance level compared to those present for the construction phase. Essentially, this is due to the following factors:

- Fewer workers employed;
- Operation of the Expressway (taking traffic off existing roads);
- No ground preparation works with closure of roads/paths and potential to damage infrastructure; and
- Limited need for land acquisition.

The key beneficial impacts are those related to permanent employment and the expected economic opportunities presented by the airport. However, influx and land speculation remain as adverse impacts that have not changed the significance level.

7. HOW WILL THE NEW BUGESERA INTERNATIONAL AIRPORT BE DECOMMISSIONED?

Closure and decommissioning of the airport may comprise the dismantling and demolition of all structures and infrastructure, unless alternative arrangements are made for the development. If decommissioning does take place, the impacts are likely to be similar to those identified in the construction phase and similar mitigation measures to those discussed for the construction phase are likely to be adopted. Given that the decommissioning programme is uncertain and would only be developed towards the end of the operation phase, the assessment of impacts during closure and decommissioning was not considered in detail in the ESIA.

8. HOW HAS THE NEW BUGESERA INTERNATIONAL AIRPORT ADDRESSED RISKS FROM UNPLANNED EVENTS?

Unplanned events are episodes that are not expected to occur during the Proposed Project's normal construction and operation phase activities, such as accidents, fuel spillages and uncontrolled fires. The Proposed Project will follow safety and engineering design criteria that aim to avoid unplanned events that could lead to adverse environmental, socio-economic or health and safety impacts. Table 8-1 summarises potential emergencies from unplanned events. Cognisance has been taken of these emergencies and an Emergency Response Plan and Emergency Spills and Abatement Management Plan have been developed to reduce the likelihood and to control unplanned events.

Table 8-1: Construction and Operation Phase Unplanned Events

Activity	Event	Receptor	
		Environmental	Socio-economic
Construction Phase Unplanned Events			
Use of construction machinery, equipment and vehicles and power generation equipment	Hydrocarbon and oil spillages	X	X
	Damage to third party property or utilities		X
	Fires	X	X
	Traffic accidents		X
	Animal fatalities	X	
Third party activities	Damage to machinery, equipment and vehicles as well as to structures and infrastructure	X	X
	Strikes, protests and communal violence		X
Operation Phase Unplanned Events			
Use of operation machinery, equipment, vehicles and aircraft as well as operation of structures and infrastructure	Hydrocarbon and oil spillages	X	X
	Damage to third party property or utilities		X
	Fires	X	X
	Traffic accidents		X
	Aircraft failure/accidents		X
Third party activities	Damage to machinery, equipment and vehicles as well as to structures and infrastructure	X	X
	Strikes, protests and communal violence		X

9. WILL THE NEW BUGESERA INTERNATIONAL AIRPORT BE COMBINED WITH OTHER PROJECTS AND RESULT IN CUMULATIVE IMPACTS?

The assessment of cumulative impacts is a long established requirement for any comprehensive ESIA. For the purposes of this Proposed Project, the IFC Performance Standards and IFC Good Practice Note: Cumulative Impact Assessment and Management Guidance for the Private Sector in Emerging Markets have been used as a primary reference source.

A number of sources were reviewed to establish whether there are existing, planned or reasonably defined developments that are located within a geographical scope where potential environmental and social interactions could act together with the Proposed Project to create a more or less significant overall impact.

The Local Urban Development Plan of the Bugesera Airport Belt acknowledges the intention to develop the Proposed Project and outlines proposed development plans for the area surrounding the Proposed Project, including a development referred to as the Aerotropolis and a Special Economic Zone (SEZ). The development plan indicates that the Aerotropolis would include:

- Retail complexes;
- Sports and recreation facilities;
- Commercial areas including business parks;
- Manufacturing and industrial areas;
- Residential areas; and
- Transport upgrades.

A SEZ is included in the development plan to follow the development of the Aerotropolis. The SEZ would be approximately 1,500 ha and comprise areas zoned for commercial and light industry and an entertainment area, including hotels, general entertainment and a theme park.

There are no timeframes for the development of the Aerotropolis or SEZ included in the development plan. Furthermore, GOR officials at MININFRA have indicated that the development of the Aerotropolis and the SEZ will depend on the successful development of the Proposed Project and must be further integrated with urban planning at the district level. As such, it can be assumed that the construction of the Aerotropolis and SEZ will not start before Phase 1 of the Proposed Project, and so no cumulative impacts would likely occur before then.

Given the uncertainty on the timeline and design details of the proposed Aerotropolis and SEZ developments, only an outline cumulative impact assessment was undertaken. It is anticipated that any significant cumulative impacts arising from the development of these projects would be appropriately mitigated in line with national and international standards and good international industry practice. Notwithstanding, should more detail become available on the timelines and design of these developments, and potential cumulative impacts be identified, a cumulative impact assessment would be undertaken.

10. WHAT ARE THE POTENTIAL TRANSBOUNDARY IMPACTS?

Transboundary impacts are defined as impacts which affect an area under the jurisdiction of another company, person or state. The transboundary impacts associated with the Project are expected to be limited to greenhouse gases from aircraft